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Abstract

This research addresses the nexus between the need for sustainable development and the need meaningfully to engage traditionally marginalized community voices in natural resource management decisions that affect them. As a global community, we are facing serious environmental and socio-economic challenges, due in part to inappropriate natural resource use and the further marginalization of the world's disenfranchised peoples. One possible response to this challenge is to engage citizens in learning forums that enable them to participate more fully in natural resources management decision-making and that facilitate the transition towards more sustainable behaviours. As such, the purpose of this research was to explore the potential for adult and transformative learning through participation in the Instituto Costarricense de Electricidad's (ICE) watershed management agricultural programme (WMAP) and subsequently through participation in a community-based strategic environmental assessment of ICE’s proposed second phase of their WMAP. Further, it was to investigate whether such learning promoted the social dimensions of sustainable development as well as behavioural changes.

The work presented in this dissertation is based on a qualitative case study done in Costa Rica and focusing on the participatory work that ICE has been doing with farmers to protect watersheds from erosion and contamination. My theoretical framework was transformative learning theory and my data collection methods included participant observation, participatory workshops, document review and semi-structured, qualitative interviews.

The first phase of the case study focused on public involvement in the planning and operations of ICE's WMAP. It involved farmers from two different watersheds, Reventazón and Sarapiquí, who were directly involved in the agro-conservation programme. As such, a description of ICE’s WMAP, how farmers participate in it, and a qualitative analysis of the kind of learning that participants are experiencing is included in this dissertation. This study found that ICE used collaborative as well as hands-on activities to raise awareness and promote alternative environmentally-sustainable farming practices and technologies. These activities resulted in instrumental and communicative learning as found in transformative learning theory. The instrumental learning that occurred included: acquiring skills and information; determining cause-effect relationships; and task-oriented
problem solving. The communicative learning that occurred included understanding values, normative concepts, and understanding others’ points of view. Finally, findings showed that the WMAP was promoting sustainability on an individual farm basis but that these benefits could be augmented through greater participation in planning and design.

For the second stage of the research, more participatory approaches to the planning and design of WMAP Phase II were tested through the implementation of community-based strategic environmental assessment (CBSEA). This stage involved community members from both watersheds who were either directly involved in the programme or who were interested in agro-conservation and sustainable community development. A comprehensive presentation of results is given from the CBSEAs, from the initial planning stages to facilitation of the workshops to follow-up interviews. An evaluation of this participation showed that participants did provide valuable input into the CBSEA process right from its inception. With respect to the WMAP, the CBSEA facilitated public input at the planning stages between the initial and second phases of ICE’s WMAP.

This study established that both instrumental and communicative learning occurred as a result of participation in the CBSEA process. In terms of instrumental learning, participants learnt both skills and information. More precisely, participants learnt about the CBSEA process as a whole, and the role a CBSEA could play in the planning process; as well, participants acquired certain skills and information associated with doing a SEA. Further, participants also learnt a great deal of information including, but not restricted to, agro-conservation projects, community needs, and watershed protection.

Communicative learning outcomes included understanding values, normative concepts, and understanding others’ points of view. More specifically, the deliberative process enabled participants to gain a more critical understanding of themselves and their community. It helped them recognize that within the community an environmental conscientiousness existed which inspired them to take greater responsibility for the protection of the environment. It showed them the utility of working together as well as the potential for the CBSEA process to enable a voice in decisions that affect them. In terms of learning experienced by ICE WMAP teams, ICE learnt a new participatory method and reflected critically on the role communities should play in the decision-making process.

With respect to what facilitated learning, outcome and process results showed that the most important aspects in the CBSEA process that facilitated learning were working
collaboratively in generating alternatives and subsequently assessing the impacts of the proposed programme components. Horizontal learning was facilitated through farmers critically engaging in a deliberative process with each other in both small and large groups in these structured assessment activities. The first and final workshops allowed participants and ICE to share information and dialogue although critical engagement with one another was limited. The facilitator played an important role in creating a structured learning environment where participants could stay focused, be productive and feel valued.

This study concludes that although participation in ICE’s WMAP did contribute to sustainability at an individual farm level, greater public involvement in the planning and operations of ICE's WMAP, such as through a CBSEA, could facilitate a more community-level response to sustainable watershed management. Particularly with respect to community sustainability, participating in the CBSEA facilitated the strengthening of community relations and the creation of social infrastructure through constructive engagement. Participation also facilitated capacity building that led to more informed and collaborative community-level planning decisions. Further, it has helped participants better face the enduring challenges as found in natural resources management.

This research has both theoretical and practical implications. It contributes to the elaboration of theory in the areas of transformative learning theory as well as learning through public involvement in natural resource management decision-making processes, especially through a CBSEA. In terms of practical contributions, this case study has brought together transformative learning theory, strategic environmental assessment and community-based environmental assessment literature to create and test a learning-focussed CBSEA framework. The benefits to the communities involved and to ICE have been numerous. I conclude that, if done well, a CBSEA can be an incredibly useful and facilitating natural resource management tool that enables a transition towards sustainable development and more community input into local programme development.
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Dedication

For my mom and dad, your ever present strength of spirit, sense of adventure, unconditional love, and love of life-long learning have inspired me every step of the way.
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List of Acronyms

ACCS – Asociación Costarricense de Ciencias de Suelos [Costa Rican Soil Science Association]

ASOPROA – Asociación para la Protección Agropecuaria [Farming Protection Association]

CATIE - Centro Agronómico Tropical de Investigación y Enseñanza [Tropical Agronomy Research and Teaching Centre]

CBEA – Community-based environmental assessment

CBNRM – Community-based natural resource management

CBSEA – Community-based strategic environmental assessment

CIDA – Canadian International Development Agency

COMCURE – Comisión para el ordenamiento y manejo de la cuenca alta del río Reventazón [Commision for the Arrangement and Management of the Upper Reventazón Watershed]

EA – Environmental assessment

EM – Effective micro-organisms

HIV - Human Immunodeficiency Virus

ICDPs – Integrated conservation and development projects

ICE – Instituto Costarricense de Electricidad [Costa Rican Electrical Institute]

IMF – International Monetary Fund

INA – Instituto Nacional de Aprendizaje [National Institute of Learning: Adult education and training]

MAG – Ministerio de Agricultura y Ganadería [Ministry of Agriculture and Livestock]

MINAE – Ministerio del Ambiente y Energía [Ministry of the Environment and Energy]

NGO – Non-governmental organization

NRM – Natural resource management

PAR – Participatory action research

PPP – Policy, plan or programme

PR – Participatory research

PRA – Participatory rural appraisal
SEA – Strategic environmental assessment

SETENA – Secretaria Técnica Nacional Ambiental [National Environmental Technical Secretary]

SSHRC – Social Sciences and Humanities Research Council (Canada)

UMCRE-ICE – Unidad de Manejo de Cuenca Reventazón – Instituto Costarricense de Electricidad [Watershed management Unit for the Reventazón River – Costa Rican Electrical Institute]

WMAP- Watershed management agricultural programme (ICE’s agro-conservation programme)
CHAPTER 1: LEARNING OUR WAY OUT

1.1 Introduction

This research addresses the nexus between the need for sustainable development and the need to engage meaningfully traditionally marginalized community voices in natural resource management decisions that affect them. Currently, as a global community, we are facing serious environmental and socio-economic challenges, due in part to inappropriate natural resource use and the further marginalization of the world's disenfranchised peoples, these trends exacerbated by economic liberalization (Barber, 1996; Barlowe, 2003; Finger & Asún, 2001; Friedmann, 1987; La Belle, 2000; Ludwig, 2001; Michaelidou, Decker, Lassoie, 2002; Neefjes, 2000; Sinclair & Diduck, 2001). Most fair-minded people from an ecological rationality accept that the world's resources are finite and would also agree that sustainable development is desirable (CIDA, 2005; Friedmann, 1987; Lange, 2004; Maida, 2007; Neefjes, 2000; Orr, 1994; The Brundtland Report, 1987). One possible response to this challenge is to engage citizens in learning forums that enable them to participate more fully in natural resources management decision-making and that facilitate the transition towards more sustainable behaviours. A possible forum for this kind of learning for sustainability and empowerment is through public involvement in community-based approaches to environmental assessment (Diduck, 1999; Diduck & Mitchell, 2003; Sinclair & Diduck, 1995, 2005; Spaling, 2003).

Participatory activities in local development initiatives have provided a venue for non-formal adult education and empowerment. Research has shown that public involvement in decision-making around development and natural resource management has provided many meaningful opportunities for non-formal adult learning to occur. These opportunities have facilitated individual and social learning that has been significant, and often transformative, for the participants especially in regards to their personal and collective sense of agency, their understanding of the interrelationship between their actions and the environment, and their sense of ecological and communal responsibility (Alexander, 1999; Diduck, 1999; Fitzpatrick & Sinclair, 2003; Keen & Mahanty, 2005; Neefjes, 2000; Petts, 1999a; Sims, 2003; Sims & Sinclair, 2008; Sinclair & Diduck, 1995, 2001, 2005; Spaling, 2003; Webler, Kasternholz, & Renn, 1995). Such participatory activities in development undertakings have been seen by many educators as a fundamental tool to enable social change and emancipation as well
as facilitate a transition towards sustainability if they include a critical\textsuperscript{1} pedagogical approach (Diduck, 1999; Finger & Asún, 2001; Fitzpatrick & Sinclair, 2003; McDonald, 1999; Mezirow, 1995; Sims, 2003; Sims & Sinclair, 2008; Sinclair & Diduck, 2001, 2005). Further, public involvement in natural resource management decision-making is consistent with the principles of participatory democracy, improves planning and decision-making, helps reduce conflicts, encourages the inclusion of local knowledge and values in decisions, and makes political decisions more acceptable (Diduck, 1999; Mitchell, 1997; Parkins & Mitchell, 2005; Petts, 1999a; Shepherd & Bowler, 1997; Sinclair & Diduck, 1995, 2005; Sinclair, Diduck, & Fitzpatrick, 2008).

Community-based approaches to environmental assessment provide a participatory approach to development and natural resource management decision-making that enables communities to engage in decision-making and to take more control of local livelihood initiatives. Community-based strategic environmental assessment provides a development framework that allows a community to engage directly in the sustainable co-management of their resources through participation in the assessment of social, environmental and economic impacts of programmes, policies and plans that are potentially entering their communities. It provides a participatory forum where NGOs, government, the private sector and community members can meet to develop goals, share knowledge, problem-posses and problem-solve (Neefjes, 2001; Spaling, 2003). This process is potentially empowering because local knowledge is valued and local communities have direct input into the decisions that affect their lives (Neefjes, 2000). Results from research reported in the literature indicate that within the parameters of community-based approaches to environmental assessment local participants are able to provide solutions that reflect their individual, communal, and environmental needs and aspirations (Meredith, 1992; Neefjes, 2001; Spaling, 2003).

With respect to my approach to this research, it is interdisciplinary looking at individual learning through public involvement in a community-based strategic environmental assessment.

1.2 Purpose

The purpose of this research is to explore the potential for adult and transformative learning through participation in the Instituto Costarricense de Electricidad's (ICE) [The Costa Rican Electrical Institute's] watershed management

\textsuperscript{1} Critical education is an educational philosophy that approaches learning from a framework that is cognizant of the power relations that permeate society.
agricultural programme and subsequently through participation in a community-based strategic environmental assessment of ICE’s proposed second phase of their watershed management agricultural programme\(^2\). Further, it is to investigate whether such learning promotes sustainable development (particularly the social dimensions of sustainability such as empowerment, equity, and a more direct control of local development initiatives) as well as behavioural changes.

1.3 Objectives

Given this purpose, my research objectives were to:

i) Explore the participatory nature of the planning and operations of ICE’s watershed management agricultural programme.

ii) Determine the extent of adult and transformative learning through participation in ICE’s watershed management agricultural programme planning and operations.

iii) Examine the enablers of, and barriers to, learning in ICE’s watershed management agricultural programme and in community-based strategic environmental assessment.

iv) Determine how participation in ICE’s watershed management agricultural programme helps communities negotiate a place\(^3\) in development decisions that affect them.

v) Examine the potential of community-based strategic environmental assessment as a new approach in local programme development.

1.4 Methods

I used a qualitative, case-study approach. Guidance for the design of the sampling techniques was based on transformative learning and participatory research literature. A critical social science methodology informed my research approach. This methodology enabled me to collect the data I needed and to engage in a democratic form of research that allowed me to include community participants in shaping some areas of the research to reflect local priorities. The main qualitative tools used included:

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\(^2\) For this thesis, I call the programme the Watershed Management Agricultural Programme (Phase II) for reader clarity and use the acronym WMAP (Phase II) for brevity.

\(^3\) “Negotiate a place” here refers to the community’s capacity to participate in development decisions that affect them. The capacity and extent to which they participate in this negotiation process is a reflection of political voice, participatory democratic engagement, and empowerment; it could even prove emancipatory depending on to what extent they critically reflect upon and act to change the structures within which they live and which limit them.
semi-structured interviews, focus-group discussions and workshops, participant observation, and document analysis. Methods are detailed in Chapter 3.

1.5 Theoretical Framework

Relevant to community-based strategic environmental assessment and complementary to the fields of critical non-formal adult education and environmental education, transformative learning theory offers a theoretical framework that attempts to provide a comprehensive theory that can be applied to studying the process of adult learning (Clark & Wilson, 1991; Cranton, 2006; Finger & Asún, 2001; Freire, 1970; Kovan & Dirkx, 2003; McDonald, 1999; McDonald, Cervero, & Courtenay, 1999; Merriam, 2004; Merriam & Caffarella, 1999; Mezirow, 1981, 1994, 1995, 1996, 2000; Taylor, 2007). This theoretical framework was adopted here because transformative learning theory focuses on the process of learning (rather than on characteristics, as most theories do) and accommodates the social context in which the learning occurs (Clark, 1993; Diduck, 1999; Fitzpatrick & Sinclair, 2003; Freire, 1970; Merriam & Caffarella, 1999; Mezirow, 1995, 1996, 2000; Sinclair & Diduck, 2001; Taylor, 2007). In recent literature, the application of transformative learning theory to different non-formal adult learning contexts has facilitated a deeper understanding of how transformative learning can contribute to more sustainable, democratic, socially and ecologically responsible governance processes that allow citizens to find innovative solutions to complex issues (Diduck, 1999; Finger & Asún, 2001; Keen & Mahanty, 2006; Lange, 2004; McDonald, 1999; Petts, 1999a; Sinclair & Diduck, 1995; Sinclair et al., 2008). More specifically, a transformative learning theoretical framework has been applied in a natural resource management context in order to understand better how meaningful public participation in an environmental assessment process can translate into learning that enables more meaningful civic engagement and a transition towards sustainability (Diduck, 1999; Diduck & Mitchell, 2003; Fitzpatrick & Sinclair, 2003; Keen & Mahanty, 2006; Orr, 1994; Sims & Sinclair, 2008; Sinclair & Diduck, 1995, 2001, 2005; Webler et al., 1995).

Many critical pedagogues, theorists and practitioners believe that critical adult education should strive to support participatory egalitarian decision-making. They argue that adult education must be dedicated to the defence of human rights and the democratic control of society from an ecological rationality. It must help create a civil society that provides counter-hegemonic solutions and possibilities to the power of
economic and political systems. Critical adult education must try to make society more humane, free, equal, tolerant, and democratic (Belenky & Stanton, 2000; Diduck, 1999; Diduck & Mitchell, 2003; Diduck & Sinclair, 2001; Finger & Asún, 2001; Fitzpatrick & Sinclair, 2003; Freire, 1970; McDonald, 1999; Mezirow, 1995, 1996, 2000; Miller, 1997; Sinclair et al., 2008). Transformative learning theory provides the learning framework through which this is possible. An underlying premise is that transformative learning, in conjunction with a critical adult education paradigm and practice, could facilitate learning towards a new level of citizen awareness and engagement in civil society.

In Chapter 2, I shall explain in detail the fundamental elements of transformative learning theory as a theoretical framework for the research I have undertaken. This is followed by an analysis of transformative learning theory as it relates to the relevant literature and to this particular case study.

1.6 Contributions to Knowledge and Capacity-Building

This research is meant to contribute to both theory and practice in the fields of transformative learning theory and community-based approaches to environmental assessment as well as to contribute positively to the communities involved. As transformative learning is a theory in progress (Cranton, 2006), there are theoretical gaps that I have considered. Cranton (2006), Clark and Wilson (1991), Merriam and Caffarella (1999), and Taylor (2000), establish a number of issues with transformative theory; two are central to this research. The first, social action, suggests that individual transformation has been the focus of analysis at the expense of social change, ignoring the fact that perspective transformations may lead to, or happen through, social action and change. In the discussion of results in Chapters 4 and 6, I consider whether learning is resulting in action that is causing changes, or potential changes, in the condition of the environment. The second, context, suggests that there is a need to better understand whether transformative learning applies to adult learning in a variety of cultural contexts and what it means within a cross-cultural context. Yershova, DeJaeghere, and Mestenhauser (2000) indicate, for example, that developing intercultural competence can trigger critical reflection. As such, I consider transformative learning within a Costa Rican context and at the cross-cultural nexus between industry and farmers.

In addition, although researchers are beginning to consider the potential for transformation through the non-formal learning that may occur with an individual's
participation in environment and resource decision-making (Diduck, 1999; Diduck & Mitchell, 2003; Diduck & Sinclair, 1997; Fitzpatrick & Sinclair; Renn et al., 1995; Sims & Sinclair, 2008; Sinclair & Diduck, 2001; Webler et al., 1995), the results of this work are inconclusive. This research adds to the elaboration of the theory in this context by examining CBSEA’s potential as a forum for non-formal adult education and transformative learning within a non-traditional context (Taylor, 2007). This empirical study adds to the testing of Mezirow's (2000) transformative learning theory and to the literature on learning outcomes in a natural resource management context. Particularly, little research has been done on the learning component of the community-based strategic environmental assessment (Neefjes, 2001; Spaling, 2003).

At a practical level, there is a need to create non-formal contexts for adult education that are inclusive and that promote a transition towards environmental and social sustainability (Belenky & Stanton, 2000; Daloz, 2000; Finger & Asún, 2001; Friedmann, 1987; Lange, 2004; McDonald, 1999; Orr, 1994; Welton, 1993). Integrating transformative learning theory into the design and facilitation of a community-based strategic environmental assessment could potentially facilitate this transition (Diduck, 1999; Petts, 1999b; Sinclair & Diduck, 2005).

Sinclair and Diduck (2005) amongst others argued that there is a need for more community-based approaches to environmental assessment with early ongoing participation that is more deliberative and where there are opportunities for ongoing mutual learning (Neefjes, 2001; Spaling, 2003). Also, Partidário (1999), Noble (2005, 2006), Thérivel and Brown (1999), and CIDA (2005) articulated the need for context-appropriate strategic environmental assessment models to be created. This research contributes to the creation of basic frameworks for community-based strategic environmental assessment for assessing small-scale local programmes, particularly as they relate to a developing world context (CIDA, 2005). This has been done by adapting and elaborating upon a community-based approach and participatory methods as found in community-based environmental assessment (Neefjes, 2001; Spaling, 2003) with the basic elements of a strategic environmental assessment (Noble, 2005; Partidário, 1999; Petts, 1999b; Thérivel & Brown, 1999). Further, this research contributes to literature by elaborating upon existing empirical studies specifically examining aspects of public participation in environmental assessment processes in a developing-world context (Kakonge, 1995; Neefjes, 2001; Spaling, 2003).
Finally, as I have engaged community members in participatory research which is considered potentially emancipatory and as per the results presented in Chapters 4 and 6, I humbly argue that the communities involved in the case study have benefited from involvement in this participatory research process as they have learnt to become more self-reliant in managing local resources and more critically self-aware through the community-based strategic environmental assessment and participatory research process.

1.7 Organization of Thesis

The thesis has been organized into seven chapters. Following the introduction to the problem, purpose, and theoretical framework of this study in Chapter 1, Chapter 2 considers relevant literature that problematizes certain aspects of the theory and that contextualizes the learning within public involvement in natural resources management decision-making processes. Chapter 3 outlines the methodology including the underpinnings of a critical social science approach, a description of a case-study approach, participatory research, and the data collection tools that I used. Chapter 4 is a description and discussion of the participation and learning results from public involvement in the planning and operations of ICE's watershed management agricultural programme. Chapter 5 follows with a description of the learning and participation results from community involvement in the community-based strategic environmental assessment process. This is followed in Chapter 6 with a discussion of these results. Chapter 7 gives the conclusions drawn from the study, followed by a list of references and appendices.
CHAPTER 2: LEARNING, DECISION-MAKING, AND COMMUNITY-BASED STRATEGIC ENVIRONMENTAL ASSESSMENT

In the first part of this chapter, I explain in detail the fundamental elements of transformative learning theory. In the sections that follow, I attempt to situate transformative learning within a larger educational context. Subsequently, I reflect upon certain aspects of the learning theory that remain problematic as they apply to learning in resource and environmental governance settings. Section 2.4 of this chapter describes how meaningful public participation in decision-making processes like environmental assessment and community-based approaches to environmental assessment can facilitate learning that can support a transition towards sustainability and greater civic engagement in natural resources management.

2.1 Transformative Learning Theory

Transformative learning theory (also known as transformational theory) is an adult learning theory with an emphasis on contextual learning, critical reflection on assumptions, and validating meaning by assessing reasons (Mezirow, 2000).

Transformative learning refers to the process by which we transform our taken-for-granted frames of reference (meaning perspectives, habits of mind, mind-sets) to make them more inclusive, discriminating, open, emotionally capable of change, and reflective so that they may generate beliefs and opinions that will prove more true or justified to guide action. Transformative learning involves participation in constructive discourse to use the experience of others to assess reasons justifying these assumptions, and making an action decision based on the resulting insight. (p. 8)

Transformative learning theory centres on how to encourage learning so that an individual’s perceptions and consciousness can be altered as that person is critically engaged in a process of reflection. It aims to explain the process of “formulating more dependable beliefs about experience, assessing their contexts, seeking informed agreement on their meaning and justification, and making decisions on the resulting insights” (Mezirow, 2000, p. 4); this process is central to the adult learning process. A goal of transformative learning is to help adults realize their potential for becoming
more liberated, socially responsible\(^4\) and autonomous learners (Merriam, 2004; Mezirow, 2000). As language and culturally specific social practices are implicated in learning, an individual’s understanding will be enabled or constrained by the historical knowledge-power networks in which s/he is embedded (Welton, 1993). “The assumptions of these historical networks and their supporting ideologies need to be brought into awareness and critical reflection by the learner to make possible a greater degree of autonomous learning” (Mezirow, 2000, p. 7). The ultimate goal of transformative learning is for adults to develop to their full capacity of rational dialogue in order to achieve a broader and more discriminating understanding of their experiences as a guide to action (Mezirow, 1995). Through critical reflection and authentic critical discourse comes reflective consciousness and collective reasoning (Alexander, 1999; Mezirow, 1995). This transformation in perspective and meaning-making can potentially lead to conscientization\(^5\), empowerment, and emancipation.

Transformative learning describes a process by which individuals improve their instrumental and communicative competence and develop more functional frames of reference (Mezirow, 1995, 1996, 2000; Sinclair & Diduck, 2001). Instrumental learning involves learning which pertains to controlling or manipulating the environment or other people as in task-oriented problem solving to improve performance (Mezirow, 1995, 2000). The logic used is hypothetical-deductive (e.g., test a hypothesis; analyze its consequences). “Communicative learning, on the other hand, involves understanding what somebody means or the process by which others understand what you mean. It involves understanding values, ideals, feelings, and normative concepts like freedom,… justice,…responsibility,” (Mezirow, 1995, p. 49) democracy, and moral issues. Communicative competence refers to an individual’s ability to negotiate meanings, intentions and values for oneself.

Understanding in communicative learning requires that we assess the meanings behind the words; the coherence, truth, and appropriateness of what is being communicated; the truthfulness and qualification of the speaker; and the authenticity of expressions of feeling. That is, we must

\(^4\) The description of transformative learning theory (Mezirow 1981 – 2000) is closely related to the critical educational paradigm which defines its political agenda as social empowerment and emancipation. As an adult learning theory it is not limited to this interpretation.

\(^5\) “Conscientization” is learning to perceive social, political, and economic contradictions--developing a critical awareness--so that individuals can take action against the oppressive elements of reality (Paulo Freire, Pedagogy of the Oppressed 1970, translator's note, University of Iowa web page: http://mingo.info-science.uiowa.edu/~stevens/critped/freire.htm).
become critically reflective of the assumptions of the person communicating. (Mezirow, 2000, p. 9)

Assumptions include intent (sometimes implied in the subtext), what is taken for granted (like conventional wisdom), a particular religious worldview, the character (e.g., honest, dishonest) and qualifications of the person communicating, and the relevance and timing of the communication and context (biographical, historical, and cultural) within which what is being communicated makes sense. Communicative learning often involves a critical assessment of assumptions supporting the justification of norms (Mezirow, 2000). “In communicative learning, inquiry assumes a metaphorical-abductive logic (e.g., make an analogy; let each step in understanding dictate the next one)….Learning may involve a transformation in frame of reference in either domain” (p. 9).

Validity of problematic beliefs for instrumental learning is asserted by empirical testing for truth of an assertion. For communicative learning, validity of a problematic assertion is determined through rational discourse. Rationality refers to assessing reasons supporting one’s options as objectively as possible and choosing the most effective means available to achieve one’s objectives. In instrumental learning this is judged by whether we are able to achieve technical success in meeting our objectives (for example, using methods that result in improved performance). In communicative learning, it is judged by our success in coming to an understanding concerning the issues at hand (Mezirow, 2000).

To advance our discussion of learning, we introduce the concept of a frame of reference. “A frame of reference is a ‘meaning perspective,’ the structure of assumptions and expectations through which we filter sense impressions. It involves cognitive, affective, and conative dimensions” (Mezirow, 2000, p. 16). It selectively delimits and shapes perception, cognition, feelings and disposition by predisposing our intentions, expectations, and purposes. “It provides the context within which we choose what and how a sensory experience is to be construed and/or appropriated” (p.16). Frames of reference are the results of interpreting experience and often represent cultural paradigms and personal perspectives from primary care givers.
A frame of reference consists of two dimensions: a habit of mind and resulting points of view. “A habit of mind is a set of assumptions - broad, generalized, orienting predispositions that act as a filter for interpreting the meaning experiences” (Mezirow, 2000, p. 17). A habit of mind becomes expressed as a point of view. “A point of view comprises clusters or meaning schemes – sets of immediate specific expectations, beliefs, feelings, attitudes, and judgements - that tacitly direct and shape a specific interpretation and determine how we judge, typify objects, and attribute causality” (p. 18). Our values and our sense of self are anchored in our frames of reference; consequently they are often emotionally charged and strongly defended. Often there is reluctance to question critically our frames of reference because this might threaten our sense of identity, community, and stability. However, cognizant of the emotional and sometimes physical risk learners entail in this critical questioning, Mezirow and others believe that frames of reference are more functional when they become more inclusive, differentiating, permeable, integrative of experience, and especially when they are critically reflective (Diduck, 1999; McMurty, 1988; Mezirow, 1995, 2000; Sinclair & Diduck, 2001).

“Learning occurs in one of four ways: by elaborating existing frames of reference, by learning new frames of reference, by transforming points of view, or by transforming habits of mind” (Mezirow, 2000, p. 19). Transformations in frames of reference occur when there is critical reflection (elaborated on below) on the underlying assumptions of the various elements of the points of view and habits of mind. To engage in critical reflection requires moving beyond the acquisition of new knowledge and understanding, into questioning existing assumptions, values, and perspectives (Merriam, 2004). “The resulting transformation in perspective or personal paradigm is what Freire refers to as ‘conscientization’ and Habermas as emancipatory action” (Mezirow, 1981, p. 7). There are three kinds of critical reflection: content reflection, process reflection and premise reflection. Merriam (2004) elaborates:

Content reflection is thinking about the actual experience itself; process reflection is thinking how to handle the experience; and premise reflection involves examining long-held socially constructed assumptions, beliefs, and values about the experience or problem. (p.62)

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6 Between 1995 and 2000, it seems that Mezirow slightly changed the way he defined meaning structures; in 1995 he defined a frame of reference as consisting of two dimensions: meaning perspectives (broad epistemic, psychological and socio-cultural predispositions) and meaning schemes (specific beliefs, feelings, attitudes and value judgements). The phrases “habit of mind” and “points of view” did not appear.
The first two may result in a transformation of a point of view, but the third is the most significant because it is often able to transform a habit of mind. “When we critically reflect on the premise or pre-supposition of the problem, we are often able to transform a meaning perspective” (Mezirow, 1995, p. 45). Mezirow (1991) argues that only premise reflection can lead to transformative learning.

Taylor (2007) found in his review of literature pertaining to transformative learning theory that recent case studies have validated Mezirow's definition of meaning schemes and frames of reference. In particular, Baumgartner's (2002) longitudinal case study working with people who are HIV-positive elucidates a few subtleties around meaning schemes and meaning perspectives. She found empirical evidence showing that perspective transformations are irreversible, that meaning schemes can change without one's worldview being altered, and that changes in meaning schemes often lead to action. Further, she found that after a significant premise reflection, people often start asking more process questions like how to implement their new worldview.

The characteristics of this process of critical self-reflection are as follows: i) a ‘disorienting dilemma’ or a series of smaller transitions; ii) self examination; iii) critical assessment of role assumptions and social expectations; iv) recognition that one’s problems may be shared by others in the community; v) exploring new patterns of behaviour; vi) building competence and self-confidence in those new patterns; vii) planning a course of action; viii) gaining knowledge and skills for implementing one’s plan; ix) provisional efforts to try new roles and gain feedback; and, x) re-integration with a new perspective (Mezirow 1981, 1994, 2000). There are two kinds of analytical critiques that can be used in understanding reflection. An “operational critique” involves problem-solving within a given structure, and a “structural critique” which involves reflecting critically on the structure itself (Mezirow, 1995). We reflect by critically reassessing our underlying beliefs and assumptions. Learning in adulthood can allow us to transform our meaning structures so they may be considered more “developmentally advanced”. This means that they are “more inclusive, discriminating, permeable, integrative of experience and are validated through rational discourse” (Mezirow, 1995, p. 51).

In the process of transformative learning, discourse also plays an important role in understanding and validating our meaning structures and perspectives. Discourse, a special form of dialogue, involves an effort to set aside bias, prejudice, and personal concerns and to do our best to be objective and open in presenting and assessing
reasons, evidence, and arguments for and against a problematic assertion to arrive at a consensus (Mezirow, 1995). It is a dialogue devoted to searching for a common understanding and assessment of the justification of an interpretation or belief.

“Reflective discourse involves a critical assessment of assumptions. It leads toward a clearer understanding by tapping collective experience to arrive at a tentative best judgement” (Mezirow, 2000, p. 11). “When we critically reflect on assumptions in communicative learning and arrive at a newly transformed way of knowing, believing, or feeling, we need to validate the assertions we make based upon these transformative insights through this process of discourse” (Mezirow, 1995, p. 53). Discourse always reflects wider patterns of relationships and power. Effective participation in discourse that leads to transformative learning requires emotional maturity including characteristics such as: awareness, empathy, social skills, open-mindedness, trustworthiness, and control (Mezirow, 2000). Merriam (2004) opines that one's ability to participate in rational discourse and critical reflection on fundamental assumptions necessitates that the learner be at a more mature stage of cognitive development.

Mezirow (1995) described the seven ideal conditions for discourse. These ideals should be considered as goals or standards to be worked towards in the learning environment. In the ideal conditions of discourse participants would:

1) have accurate and complete information, 2) be free from coercion and distorting self-deception, 3) be able to weigh evidence and assess arguments objectively, 4) be open to alternative points of view, that is, to care about the way others think and feel, 5) be able to become critically reflective upon assumptions and presuppositions and their consequences, 6) have equal opportunity to participate in the various roles of discourse, and 7) be willing to accept an informed, objective, and rational consensus as a legitimate test of validity until new perspectives, evidence, or arguments are encountered and are subsequently established through discourse as yielding better results. (Mezirow, 1995, p. 54)⁷

“These ideal conditions and communicative values also imply a set of values and preconditions which must pertain if adults are to be permitted to explore fully the meaning of their experience. The implicit values include participatory democracy, tolerance, freedom, education, equality of opportunity” (p. 57). Discourse may include interaction within a group or between two people, including a reader and an author or an artist and the viewer (Mezirow, 2000).

⁷ When evaluating learning within a natural-resources-management context, Diduck and Mitchell (2003) refer to these as the ideal conditions for learning.
Transformative learning may occur through objective and subjective reframing. “Objective reframing involves critical reflection on the assumptions of others encountered in a narrative or in task-oriented problem-solving, as in ‘action learning’” (Revans, 1982, as cited by Mezirow, 2000, p. 23). Subjective reframing involves critical self-reflection of one’s own assumptions about a narrative, a system (e.g., economic, cultural, political, etc.), an organization or workplace, feelings and interpersonal relations, and the ways one learns. Subjective reframing often involves an intensive and difficult emotional struggle as old perspectives are challenged and transformed (Mezirow, 2000).

Transformative learning is political because it often involves reflecting upon underlying assumptions and then acting to change them (Belenky & Stanton, 2000; Brookfield, 2000; Inglis, 1997; McDonald et al., 1999). In 1995, Mezirow addressed the critical political implications of transformative learning for adult learners. He explained how the process of equal participation in an open, non-dominating dialogue by people who normally feel silenced and disenfranchised can lead to tolerance and respect. Transformative learning can address inequalities by fostering social change to make possible more ideal conditions for critical reasoning and adult learning. This transformation allows for enhanced emancipatory participation in democratic decision-making. Diduck and Mitchell (2003) describe the role enabling the ideal conditions for learning could play in facilitating emancipatory learning within an environmental assessment process. They wrote:

The concept of emancipatory learning suggests that disagreements or problematic assertions related to communicative learning are usually resolved through force, authority, or discourse. Resolution through discourse can be emancipatory (i.e. free the learner from oppressive social relations) under the ideal conditions of learning. (p. 3)

Through more functional frames of reference, learners can participate in discourse that questions a system that perpetuates inequality and engaging in adult education that allows us, as Finger and Asún (2001) put it, to “learn our way out” by offering and formulating counter-hegemonic possibilities. Transformative learning involves a potential movement from alienation to agency (Belenky & Stanton, 2000;...

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8 Political means “of or relating to your views about social relationships involving authority or power” (www.cogsci.princeton.edu/cgi-bin/webwn, 2004).
Freire, 1970; Kovan & Dirkx, 2003; McDonald et al., 1999; Mezirow, 1995, 2000; Sims & Sinclair, 2008; Walter, 2007). A sense of agency implies that one can critically reflect on one’s own assumptions as well as those of others, engage fully and freely in discourse to validate one’s beliefs and then effectively take reflective action to implement them (Mezirow, 2000).

Action is an integral part of the transformative learning process and “an indispensable phase of the process of adult learning” (Mezirow, 1995, p. 58). It can mean either a behavioural change or the learner deciding to take individual or collective social action. “Taking action on reflective insights often involves overcoming situational, emotional and informational constraints that may require new learning experiences in order to move forward” (Mezirow, 2000, p. 24). As mentioned earlier, this involves emotional maturity and the power to act to attain one’s convictions. Praxis, which is usually defined as taking reflective action, often requires instrumental learning of tactics like how to collaborate, plan, anticipate resistance, and select an activity; it also requires communicative learning like how to negotiate meaning with others. The role of the adult educator in this process is to support the decision the learners have made by teaching skills for social action.

Mezirow (1995) explained: critical adult educators should be

dedicated to fostering social change to achieve a society in which all may participate more freely and fully in critical discourse and reflective action, that is, in a democratic learning community. As citizens of a democracy, we are obligated to engage in political solutions to assure greater freedom, equality and democratic participation in decision-making…. As adult educators, we can foster critical reflection, rational discourse, and action in the conviction that informed rational adults will determine the need to take collective social action to overcome social practices inimical to their development. (p. 68)

An obvious challenge to applying these transformative learning ideas outside of the classroom (e.g., as in a non-traditional context like a community-based strategic environmental assessment) is that not all process facilitators are educators and not all share these goals articulated by Mezirow (1995).

The role of others is important in transformative learning. It is with others that we engage in critical discourse to form more mature frames of reference. It is also others who provide us with the critical questioning, dialogue and emotional support to reflect critically upon ours and others’ assumptions (Belenky & Stanton, 2000; Brookfield, 2000; Mezirow, 2000).
Transformative learning theory provides us with an educational framework that allows communities to use rational discourse to cope with contemporary society. It allows citizens to negotiate complex issues through critical reflection, discourse, collective decision-making and action. Transformative learning theory grounds its argument for an emancipatory participatory democracy in the very nature of adult learning in modern society (McMurty, 1988; Mezirow, 1995; Welton, 1993). One challenge facing transformative learning theory and adult educators is finding or creating protective learning environments with norms and practices that assure everyone may participate in emancipatory discourse.

Particularly as regards environmental sustainability, McDonald (1999) argued, reflecting on Mezirow’s (1990) definition of critical reflection, that “within an ecosystem context, it would seem prudent to find ways to foster critical reflection if there is to be any hope of finding innovative solutions to complex issues” (p. 173). This need to: find forums that enable discourse and that engage citizens in democratic decision-making processes, find innovative solutions to complex problems within natural resources management, and change current unsustainable behaviours has motivated researchers to apply transformative learning theory to natural resource management decision-making processes. The goal is to facilitate individual and social learning that enables a transition to sustainability and more meaningful civic engagement in the decision-making process (Diduck, 1999; Diduck & Mitchell, 2003; Fitzpatrick & Sinclair, 2003; Renn, Webler, and Wiedeman, 1995; Sims & Sinclair, 2008; Sinclair & Diduck, 1995, 2005; Sinclair et al., 2008). In this regard, transformative learning is consistent with the ecological rationality and focus on sustainability of environmental adult education and is relevant to this particular research; it can help facilitate the building of environmentally sustainable societies (Diduck, 1999; Finger & Asún, 2001; Friedmann, 1987; Keen & Mahanty, 2006; McDonald, 1999; Mezirow, 1995; Orr, 1994; Sinclair et al., 2008).

2.2 Educational Context of Transformational Learning Theory

2.2.1 Transformative Learning and the Dominant Learning Theories

Soltis (1991), based on Dewey’s (1938) work, wrote:

[A]n educative experience for an individual is one that grows out of an interest based on purposeful activity and is connected with past and future experiences. It is an experience that helps an individual to transform, reconstruct and re-organize other experiences. It expands
meaning and understanding. It equips us to deal with future experiences more effectively. It stimulates cognitive, emotional, aesthetic, moral and social growth. (p. 91)

Merriam and Caffarella state that “learning can be thought of as a process by which behaviour changes as a result of experiences” (1999, p. 250). Learning as a process, rather than as an end product, focusses on what happens when the learning takes place. Learning theories are explanations of what happens during this process. The dominant theories include: behaviourist, cognitivist, humanist, social learning, and constructivist. I will briefly describe the essential components of each theory and then explain where transformative learning is situated.

Merriam and Caffarella (1999) provide an excellent synopsis of these dominant theories. They explain that behaviourists “define learning as a change in behaviour” (p. 265). Behaviourists focus (their research) on overt behaviour, which is a measurable response to stimuli in the environment. “The role of the educator is to arrange contingencies of reinforcement in the learning environment so that the desired behaviour will occur” (p. 265). Cognitivists, in contrast to behaviourists, focus on internal mental processes and not external behaviour. “Cognitivists are interested in how the mind makes sense out of stimuli in the environment – how information is processed, stored, and retrieved” (p. 265). The humanist orientation emphasizes human nature, human potential, human emotions, and affect. Humanists believe that learning involves more than cognitive processes and overt behaviours. They believe that learning is a function of motivation and involves choice and responsibility. The social learning perspective differs from the rest in that it focusses on the social context where the learning occurs. From this perspective, learning occurs through observing people in one’s immediate environment. Furthermore, learning is a function of the interaction of an individual, the environment, and behaviour. “Variations in behaviour under the same circumstances can be explained through idiosyncratic personality traits and their unique interaction with the environmental stimuli” (p. 265). Finally, constructivists argue that learners construct their own knowledge from their experiences. “The cognitive process of meaning making is emphasized as both an individual mental activity and a socially interactive interchange” (p. 265).

Transformative learning, as principally defined by Mezirow (1981 – 2004), is part of the constructivist paradigm of learning with humanist elements. Transformative learning theory is one of the most prominent attempts at codifying the differences that
distinguish adult learning as a set of principles, a model, or even a theory (Merriam, 1993). The other theories include andragogy and self-directed learning (Merriam, 1993; Merriam & Caffarella, 1999). Mezirow (1981) explained:

Andragogy, as a professional perspective of adult educators, must be defined as an organized and sustained effort to assist adults to learn in a way that enhances their capacity to function as self-directed learners… I believe that the recognition of the function of perspective transformation within the context of learning domains, as suggested by Habermas’ theory, contributes to a clearer understanding of the learning needs of adults and hence the function of education. When combined with the concept of self-directedness as the goal and the means of adult education, the essential elements of a comprehensive theory of adult learning and education have been identified. (p. 22).

At the core of Mezirow’s theory is the humanist concept of a rational, autonomous and responsible adult. “This view assumes that adults have the potential for a high level of freedom of thought and action. While there are ‘libidinal, institutional, or environmental forces which limit our options and rational control over our lives’ (Mezirow, 1981, p. 5), the goal of transformational learning is to gain ‘a crucial sense of agency over ourselves and our lives’ (1981, p. 20)” (Clark, 1993, p. 50). Mezirow (2000) later described this as the way we control our lives and experiences rather than be controlled by them.

Transformative learning is constructivist in the sense that reality is less an objective fact and more a subjective construction by individuals and society (Baumgartner, 2002). Mezirow's focus on communicative and instrumental learning illustrates his understanding that knowledge is not a unified objective reality but instead a complex construction that we create to serve different purposes (Clark, 1993). Mezirow (2000) acknowledged that meaning lies within individuals and that it is subsequently validated through interaction with others. Critical reflection is central to the process of knowing. “While Mezirow never clearly explains how rational discourse functions under less-than-ideal conditions, it is clear that, in his view, cogency or argument is the final arbiter on the validity of constructed knowledge. Rationality determines what is reliably known” (Clark, 1993, p. 51).

2.2.2 Critical Adult Education

As mentioned earlier, critical education and transformative learning are closely related but are by no means synonymous. Critical education is an educational philosophy that approaches learning and education from a framework that is cognizant
of the power relations that permeate society. In relation to transformative learning, a critical education paradigm helps us understand the nature of the assumptions upon which we base what Mezirow (1995, 2000) calls “our dysfunctional frames of reference”. A critical paradigm also addresses the question of agency.

With critical education there is a move from focussing on the individual learner to looking at the greater context where the learning is taking place: the larger systems in society, the culture and institutions that shape learning, and the structural and historical conditions framing and defining the learning event (Belenky & Stanton, 2000; Brookfield, 2000; Freire, 1970; Merriam & Caffarella, 1999). Adult learning from this perspective is informed by a number of philosophical and theoretical orientations including marxism, critical theory, multiculturalism, post-modernism, and feminist theory (Belenky & Stanton, 2000; Brookfield, 2000; Freire, 1970; Merriam & Caffarella, 1999; Welton, 1993). Common themes examined in critical adult education include: an analysis based on race, class and gender; an understanding of how the intersections of race, class, and gender affect the distribution of resources and power (such that some groups in our society are privileged and some are oppressed); and the consideration of the construction of knowledge and truth as it relates to learning (Merriam & Caffarella, 1999). Questions are raised about the learning like: whose interests are being served? who has access to the learning experience? how is power used and distributed between those participating in the learning setting? and, what are the intended and unintended outcomes of the learning? Also, assumptions about the nature of knowledge (including what counts as knowledge, whose knowledge is valuable, where is the knowledge located, and how is it acquired) are challenged (Caffarella & Merriam, 2000). This stance is called critical adult education “because it critiques and raises questions about the assumptions we make about the world around us, including those underlying the practice of adult education” (Merriam & Caffarella, 1999, p. 341). Critical adult education must accommodate instrumental and training needs as well as emancipatory ones.

Transformative learning, as a learning process, complements the educational philosophy found in critical adult education. The goal of using critical discourse in order to create more socially-responsible learners by examining dysfunctional frames of reference is consistent with critical education (Lange, 2004). Mezirow (2000) recognized that our identities are formed within a shared “lifeworld” and he proposed a philosophy of education where critical reflection and dialogue on re-ified forms of
thought are the key to self-empowerment and liberation. He explained that transformative learning helps create citizens who can actively participate in a (participatory) democracy by developing capacities of critical reflection that question taken-for-granted hegemonic assumptions and work towards a more inclusive society.

This being said, the transformative learning process is not exclusive to critical adult education. Transformative learning can be appropriated by a variety of other educational approaches to serve different social, economic and cultural goals.

### 2.2.3 Influences on Mezirow’s Work

Mezirow (2000) explained the major influences on his work:

Although the context and terminology were different, our understanding of transformative learning was influenced by the concept of paradigm, made popular as a factor in the development of scientific thought by Thomas Kuhn (1962), and that of conscientization, described by Paulo Freire in his influential *Pedagogy of the Oppressed* (1970). Another influence was the development of Critical Theory by the Frankfurt School of German philosophers and social critics that saw critical reflection as the means of unmaking hegemonic ideology. (p. xiii)

In particular the work of Jurgen Habermas (1984) was a major influence on transformative learning theory. More specifically: “Habermas’s delineation of the concepts of communicative competence and instrumental learning as the major domains of learning; the recognition of the central role of discourse in validating beliefs; and the idea of reflection as a form of self-formation that emancipates as it dissolves the constraining spell of unexamined beliefs” (Mezirow, 2000, p. xiii).

Contemporary influences include the dynamic public discourse that has transpired over the past two and a half decades between Mezirow and his contemporaries. Brookfield (2000) and Belenky and Stanton (2000) complimented Mezirow for developing his theory by proposing taxonomies and then responding to his critics in a public forum (mainly found in the journal *The Adult Education Quarterly*). Through the years, transformative learning theory has been developed, challenged, modified and updated through a process of dialogue.

For Mezirow, Habermas established beyond a reasonable doubt that knowledge could take three different kinds of primary cognitive interests: technical, practical, and emancipatory. These three primary cognitive interests (which Mezirow (1981) calls “learning domains”) are grounded in different aspects of social existence including work, interaction and power respectively. Habermas argued that the most significant
was emancipatory because it allowed individuals to see the underlying power relations between individuals and groups (Welton, 1993). Mezirow referred to these domains as instrumental learning and communicative learning. Habermas defined knowledge as being the outcome of human activity motivated by interests that guide and shape their learning process. Habermas’s philosophy of education affirmed that humans were both historical and material beings and that human learning could be blocked due to negative conditions; nonetheless, he thought that we had the capacity to be active reflective creatures and overcome these blockages (Mezirow, 1981; Welton, 1993). Mezirow argued that critical reflection on learning blockages is significant because it has the potential to change the way in which we as human beings communicate with others and relate to nature (Mezirow, 2000; Mitrović, 1989; Welton, 1993). Mezirow should be credited for introducing Habermas’s ideas into a field (i.e. adult education) known for its pragmatism. However, Clark (1993) criticized Mezirow for having appropriated critical social theory for individual purposes.

Habermas focussed on the importance of language arguing that dominance-free communication would be emancipatory. Habermas established four validity claims for communication, these include: i) comprehensibility, ii) sincerity and trust, iii) legitimacy or appropriateness, and iv) truth. In a learning forum learners must make utterances intelligible, provide good grounds for the assertions and justify their values in a sincere way. There must be an attempt to create “rule-structured communication conditions that enable free and non-coercive learning to occur” (Welton, 1993, p. 86). These validity claims for dominance-free communication provided the foundation for Mezirow’s (1995) “ideal conditions of discourse” (Merriam & Caffarella, 1999).

Habermas’s theory of dominance-free communication that facilitates non-coercive learning to occur provides an enormous potential for hope. Habermas’s theory of communicative action provided adult educators who are committed to emancipatory education an ideal standard for their pedagogical work.

Underlying Habermas’s extensive body of writing lies a fundamental concern for dominance-free forms of social relations. In particular, his ideal of dominance-free communication directly speaks of forms of life which are not power-bound, but which are based on and allow for, an authentic consensus among all those concerned about what norms shall guide their actions. (Hart, 1990, p. 126)
This directly relates to Mezirow’s theory that transformative learning, through critical reflection and rational discourse, can help us work towards empowerment and emancipation.

Habermas used the concepts of "systems world" and "lifeworld"\(^9\) to understand how much communicative rationality existed in the [post] modern world. “Habermas claims that the capitalist economic system, the legal-rational political system, and even the modern mass communications system employ media such as money and power in a largely coercive, anti-communicative way” (Welton, 1993, p. 87). The lifeworld (where everyday practice and everyday communication occur) is being taken over by the system (Habermas, 1987; Mitrović, 1989). Education can help address this imbalance.

An enlightened and thoughtful pedagogy would be impelled by a vision of a lifeworld and system world acting on each in mutual benefit. Adult educators would work within industrial and bureaucratic organizations, steered by an ideology of technique, to create democratic learning communities…including community-based initiatives to ‘protect the lifeworld interests’ (Collins, 1991, p. 97). Adult educators who agree with Habermas’s indictment of modern technological society must help adult learners acquire the requisite competencies to engage in free and non-coerced dialogue and to work with others to recreate institutions, large and small, that do not ‘nullify…genuine democratic discourse’ (Collins, 1991, p. 112). (Welton, 1993, p. 88)

Renn et al. (1995) and later Petts (2003) wrote that applying a dominance-free approach to communication within natural resources management decision-making processes could help us negotiate solutions to complex problems. Petts (2003), focussing on the value of deliberation within a natural resource management context, opined that "deliberation as a process of discussion before the making of a collective decision can help to reveal information, force justification of claims, render the ultimate choice legitimate in the eyes of the participants and improve their moral or intellectual qualities…[It] requires that all the deliberators are amenable to changing their views and preferences" (Petts, 2003. p. 272). I think that integrating a theoretical approach derived from transformative learning, in conjunction with community-based learning opportunities, offers an opportunity to reclaim the lifeworld and promote a critical awareness of the system world.

\(^9\) Systems world: that which is strategic, imposed and external. Lifeworld: that which is familiar and knowable.
Freire, like Habermas and Mezirow, shared the humanist view that human beings are capable of change and are free to act on the world. He believed that knowledge was a human construction rather than an objective truth that they discovered (Clark, 1993; Freire, 1970). “The pedagogy of the oppressed, as a humanist and libertarian pedagogy, has two distinct stages. In the first, the oppressed unveil the world of oppression and through praxis commit themselves to its transformation. In the second stage, in which the reality of the oppression has already been transformed, this pedagogy ceases to belong to the oppressed and becomes a pedagogy of all people in the process of permanent liberation” (Freire, 1970, p. 54). His radical approach to literacy campaigns in Brazil was part of a larger campaign that became known as the “popular education movement”. Clark (1993, p. 54) stated: “[P]robably the most dramatic example of transformative learning in practice is found in community-based adult education, particularly in organizations of popular education”.

There are many similarities between Freire’s approach to critical pedagogy as characterized by the popular education movement and Mezirow’s transformative learning theory. Most importantly, both have critical consciousness and transformative learning at the core (Merriam & Caffarella, 1999). Further, both focus on: learning based on experience, critical reflection, development of the individual (and collective) where participants learn to deal with their broader reality, and social action. However, some significant differences lie in the importance of political social action.

Popular education’s form of critical non-formal adult education was and still is profoundly political, democratic, empowering, transformative and engaging for individuals and communities. Since the 1950s, non-formal adult education has been used for many purposes. It has been used in literacy campaigns, work-force training and to organize resources to respond to community needs (La Belle, 2000). Popular education has been used for decades in Latin America as a form of resistance and empowerment (Bruno-Jofré, 1989; Freire, 1970; Hammond, 1999; La Belle, 2000). In the late 1950s and early 1960s, new efforts in non-formal education were being initiated by Paulo Freire and others that included consciousness-raising through “providing opportunities for dialogue that would result in a more socially and politically aware and literate population” (La Belle, 2000, p. 24). The intent was to build an alternative educational approach consistent with social justice (Arnold & Burke, 1983).

Pedagogical techniques, first brought forth to North America by Freire, were designed to encourage active critical participation in the learning process and to bridge
the hierarchical gap between teacher and learner (Freire, 1970; Hammond, 1999; Shor, 1993). This deconstruction of power relations leads to conscientization and overcoming oppression. Hammond (1999) cited an example of how community control of the educational process made education a form of resistance for people in El Salvador during the revolution; he felt that this process of popular education was profoundly political and emancipatory. All this being said, it is important not to idealize the Latin American popular education movement of the 1960s and 1970s. It was a movement informed by alternative projects for society. It was also a chaotic period (Austin, 1999; Bruno-Jofré, personal communication, June 15, 2004; Bruno-Jofré, 1989; La Belle, 2000).

Shor (1993, p. 25) explained that these “critical methods ask teachers and students to question existing knowledge as part of the questioning habits appropriate for citizens in democracy”. Popular education enables students to examine their lived experiences and the social context within which they are situated. In groups, learners are encouraged to problem-pose based on their life experiences. They are also actively encouraged to question social constructs that limit them, and to act to change them. This critical reflection and dialogue leads to conscientization and critical consciousness which in turn leads to social action (an ongoing process that Freire called praxis). Shor explained that the four qualities of critical consciousness are: awareness of power, critical literacy, de-socialization, and self-organization. Within the popular education movement, students/participants are actively encouraged to take control of their lives and situations and to act to improve them. This action based on critical reflection is empowering because it enables learners to take control of their lives (Hammond, 1999; Neefjes, 2000). La Belle (2000) felt that this kind of educational process would increase good governance and help make democracy sustainable by educating citizens in a participatory-democratic way.

As referred to earlier, La Belle (2000, p. 25) explained that popular education “emerged as a means of incorporating consciousness raising into social action as it pushed for reform at the community level, and thus was intended to lead to a more egalitarian and classless society” (emphasis added). Literacy and political reform were conscious goals within the popular education movement and amongst its educators (Freire, 1970).

Mezirow’s idea of transformative is directed at personal development but Freire’s idea of transformational learning has the ultimate goal of social
change. Initially it\(^\text{10}\) was formulated in the context of literacy education for the poor of Brazil, his ideas have currency in any setting in which power is inequitably distributed. Freire seeks to liberate adults through dialogic, problem-posing pedagogical style that challenges students to become aware of the oppressive social structures in their world, to understand how those structures have influenced their own thought, and to recognize their own power to change their world (Freire, 1973). (Clark, 1993, p. 49)

Along with his colleagues, Freire was educating for political emancipation from real social constraints like poverty, alienation from decision-making power, and exploitation. According to Freire, education was never politically neutral since it either domesticated or liberated participants by enabling them to reflect on their world and act to change it (Freire, 1970). Fundamental was his vision of a just society where all people could live freely and with dignity.

Mezirow (1995, pp. 58 – 59), on the other hand, described “action as an indispensable phase of the process of adult learning. But action can mean making a decision, being critically reflective or transforming a meaning structure as well as a change in behavior.” Mezirow’s description of action in transformative learning is much more focussed on the individual than on the social or collective (Inglis, 1997). However, Mezirow added that the result of transformative learning is often “social action to effect changes in the system, in institutions, or in social practices”. According to Mezirow, the social action is a result of the learning and not necessarily a political intent.

Unfortunately, contemporary critical educators who are focussing on emancipation, democracy, and humanizing the industrialization process have been further alienated. This is due to some extent to economic globalization’s neo-liberal political agenda’s influence on education and in particular to the appropriation of transformative learning theory for certain initiatives. A neo-liberal agenda has a distinct purpose for education. The global market economy is a driving force behind educational programs focussing on problem-solving within a market rationality. Citizens are treated as clients and education as a commodity. Citizens are trained to participate in the global market economy. Humans are seen as resources and training programs are used to increase human capital to suit business needs. Interest-based cooperation/competition and school-business partnerships are encouraged. Educational institutions and educators

\(^{10}\) “It” refers to Friere’s approach.
are held accountable through outcomes-based learning. Currently, a neo-liberal agenda in education is transforming collective values into consumer values (Billett, 2002; Finger & Asún, 2001; Friedmann, 1987; Korsgaard, 1997; La Belle, 2000; Lange, 2004; McMurty, 1991; Merriam & Caffarella, 1999; Miller, 1997; Sims, 2003; Welton, 1993).

This being said, Mezirow, Habermas and Freire all focus on learning as a vehicle for a more enlightened and equitable society. I believe that incorporating a transformative learning theoretical approach into the design, organization and facilitation of participatory initiatives can facilitate a more inclusive and equitable dialogue within the learning environment. Further, this approach, integrating an environmental focus (Finger & Asún, 2001; Friedmann, 1987; Lange, 2004; McDonald, 1999; Orr, 1994) provides a sound base for community-based decision-making initiatives in natural resources management that deal with complex issues, include multiple stakeholders with diverse interests, and that aim to facilitate learning that can lead to sustainability (Diduck, 1999; Diduck & Mitchell, 2003; Fitzpatrick & Sinclair, 2003; Keen & Mahanty, 2006; Sims & Sinclair, 2008; Sinclair & Diduck, 1995, 2005; Sinclair et al., 2008).

2.3 Reflections on the Application of Transformative Learning in Resource and Environmental Governance Settings

2.3.1 Cultural Factors and Learning

All learning, including transformative learning, happens within a cultural context. Culture shapes the way we as humans develop. Cultural psychologists, including Rogoff (2003), Ratner (2006) and Cole (1996), explain that culture has a significant impact on the way we as humans communicate, the way we think about things, the way we problem-solve and reason, the way we act in different situations, and the way in which we engage with each other on both a micro- and macro-level. Culture shapes what we consider normal and what we consider extraordinary. At a macro-level, cultural factors influence who has power and who is alienated, who is included or excluded from decision-making processes, and governmental/corporate intentions in land-use planning (Ratner, 2006). As researchers, cultural paradigms are certain to influence the way we perceive situations and give more importance to certain concepts, say rationality, over others, say affect (Rogoff, 2003).

Rogoff (2003) explained that: "[H]uman development is a cultural process. As biological species, humans are defined in terms of our cultural participation. We are
prepared by both our cultural and biological heritage to use language and other cultural tools and to learn from each other" (p. 3). Ratner (2006) described the macro-cultural factors that influence us and that, to some degree, we can actively influence. He determined that there are three categories of macro-cultural influences: i) social institutions and policies (such as family, schools, governmental institutions, economic enterprises, and spiritual institutions), ii) physical infrastructure and artifacts (such as art, tools, clothing, and housing), and, iii) cultural concepts (for example about time, wealth, women, morality, nature, and the way one approaches everyday activities) that comprise the cornerstones of a social system. Ratner (2006) argued that "humans survive and fulfill ourselves through these macro-cultural factors" (p. 13). In relation to learning, Caffarella and Merriam (2000) explained that: "learning cannot be separated from the context in which the learning takes place…The physical and social experiences and situations in which learners find themselves and the tools they use in that experience are integral to the learning process" (p. 59).

Specifically in regards to this case study research, the cultural context of my farming-community participants' lives has influenced the way they have traditionally farmed, their relationship with the land, and the way they value (or do not value) concepts like environmental sustainability and sustainable watershed management. It has influenced the way they have been engaged (or not) in community-level decision-making processes. It has influenced the manner in which they participate and their openness to participate in programmes like ICE's watershed management agricultural programme and a community-based strategic environmental assessment process. It has influenced the way farmers interact with each other, with governmental institutions, and the way government institutions interact with farmers (Ratner, 2006; Rogoff, 2003).

In terms of transformative learning, this means that the cultural context has had a direct influence on shaping participants' (both ICE watershed management teams' and farmers') frames of reference, their potential ability to engage in rational discourse (e.g., access to opportunities to develop language skills and articulate more complex ideas), and their willingness to question authority. It also has had an influence on what might "trigger" the learning or what might prove to be a "disorienting dilemma".

Based on what has been elaborated in Section 2.1, I propose that transformative learning theory offers great potential for both designing and implementing pedagogical activities as well as for understanding non-formal adult learning in a variety of contexts. This being said, I think that it is important to keep in mind the influence that cultural
factors have within a learning context (Caffarella & Merriam, 2000). For these reasons, and because I work with marginalized communities in Central America, I believe it important to consider further and clarify certain aspects of transformative learning theory that remain problematic as they might prove to be barriers to learning for the cultural community involved in this case study. Further, as the designer, organizer and facilitator of the community-based strategic environmental assessment process, I tried to be cognizant of both the potential enablers and the barriers to learning so I could design and implement a pedagogical process using (participatory) strategies to overcome the barriers and enable learning. The following analysis has been greatly informed by post-modern, feminist and critical-theory scholars who have engaged in dialogue with Mezirow over the years trying to make transformative learning theory more responsive to the question of power and how it plays out in the learning context.

2.3.2 Power, Knowledge, and the Exclusion of Marginalized Voices

Transformative learning theory, as described by Mezirow (1981-2000), privileges rationality and presumes equality amongst participants in the learning setting, focusing on learners who are educated, emotionally intelligent and mature thinkers (Belenky & Stanton, 2000; Merriam, 2004; Mezirow, 2000; Taylor, 2007; Yorks & Kasl, 2002). This is problematic because it fails to acknowledge the importance of other ways of knowing and the importance of affect when teaching the "whole person" and when fostering critical reflection and engaging people in critical discourse. These oversights have important implications as they have the potential to marginalize further the disenfranchised, excluding them from rational discourse and devaluing their potential contributions. In terms of democratic engagement and empowerment, this could translate into their exclusion from decision-making processes. Merriam (2004) asks the following questions when considering this privilege to rationality:

- How 'mature' or 'cognitively developed' must one be to have a transformational learning experience? How related are the 'pre-conditions' of education, socio-economic class, gender, and so on to transformational learning? Is a Western (male?) model of cognitive development with its pinnacle of independent, autonomous, critically reflective thought the only place to situate transformational learning?
- What about 'connected knowing' and 'interdependence' being the goal of mature thought? (pp. 65 – 66)

Feminist scholars in particular argue that transformative learning theory is too cognitive and that there is a lack of recognition of affective (Hart, 1990) and
experiential ways of knowing (Belenky & Stanton, 2000; Merriam, 2004; Yorks & Kasl, 2002). Although Merriam (2004) wrote that she believed learners had to be at a more cognitively mature stage of development in order to participate in rational discourse leading to transformative learning, she acknowledged that:

adults need not be at the pinnacle of some model of cognitive development to experience transformational learning. Freire's (1973) work with illiterate peasants would seem to confirm this. Furthermore, at least two studies on transformations in perspective include participants for whom transformations were effected without conscious critical reflection. Both Taylor (1994), who studied adults who had lived and worked in a culture different from their own, and McDonald (1998), who investigated how people became ethical vegans, reported that some participants had transformed their perspective without being aware of the change process. (p. 66)

Furthermore, Merriam adds that Kovan and Dirkx's (2003) study of environmental activists found that their transformations rarely indicated a strong reliance on critical reflection; their inner work that facilitated transformation was characterized as being grounded in affective, emotional, and spiritual dimensions of life.

Transformative learning theory’s focus on rational discourse through dialogue fails to acknowledge other forms of expression and knowledge garnered through lived experience. It focuses on highly-skilled mature thinkers presuming "relations of equality among participants in reflective discourse when, in actuality, most human relationships are asymmetrical” (Belenky & Stanton, 2000, p. 73). Belenky and Stanton argued that discourse communities could include the immature and marginalized. They continued that the consequences of excluding the marginalized from discourse communities are that we: do not struggle with injustice; fail to harvest the knowledge that marginalized people have to share; and we fail to support many people in developing the full range of their potential. Participation in reflective dialogue would enable the disenfranchised (and us as educators and academics) better to understand the meaning of their experiences as well as the nature of the society that we share. Rogoff (2003) explained that we need to look at our cultural practices through discussion with mixed groups in order to challenge assumptions and because sometimes we are blind to our own sociocultural paradigms and practices. Facilitating the sharing of different perspectives on a phenomenon helps build understanding. “Not only would participation and reflective dialogue support their development as individuals, it could also support the development of a more inclusive, just and democratic society” (Belenky & Stanton, 2000, p. 74). Dewey's (1916) definition of a democratic society directly speaks to the
issue of inclusion and facilitating a voice for the marginalized. Soltis (1991, p. 90), citing Dewey, defined a democratic society by the extent to which it has two qualities in evidence: The first: how numerous and varied are the interests which are consciously shared? [And second] How full and free is the interplay with other forms of association among various subgroups?

In practical terms, I wonder how we can address or understand issues that we might never have experienced if those who have experienced them are left out of the dialogue because they are considered immature thinkers? (see also Merriam, 2004) For example, how could an urban theory-based programme designer with no farming experience expect to create a successful agro-conservation programme to protect the watershed with no input from the farmers themselves? Without a dialogue between them, the programme designer would lack a more grounded understanding as to the day-to-day challenges faced by the farmers as well as the context-specific barriers and enablers that exist that could make the programme a success or failure. For this research, this was particularly important when creating inclusive forums for natural resource management decision-making that include traditionally marginalized communities.

Knowledge and power are closely related to learning (Inglis, 1997; McDonald et al., 1999; Merriam & Caffarella, 1999; Pietrykowski, 1996; Tisdell, 1993). Questions related to knowledge, power, and learning include: what constitutes knowledge? who owns knowledge? how is knowledge created? and how is knowledge understood? (Merriam & Caffarella, 1999). Freire spoke of human beings as creators of knowledge. “To exist, humanly, is to name the world, to change it…[We] are not built in silence, but in word, in work, in action-reflection” (Freire, 1970, p. 76). “This naming of the world is the means whereby adults find voice and begin their empowerment. The work of constructing truth is both a personal and a collective responsibility and Freire equates it with the creation of culture” (Clark, 1993, p. 51). As explained earlier, life is a negotiation of contested meanings, knowledge and truth are human creations (Mezirow, 2000). Often marginalized groups have been excluded from the knowledge-creation process or their contributions to knowledge have been undervalued and ignored. These two aspects, the first being that marginalized groups are excluded from participating in discourse and the second being that other ways of knowing are not considered valid or important, hold particular resonance for this research as the goal was critically to engage
in rational discourse traditionally-marginalized communities whose knowledge base was primarily experiential so that they could participate in the decision-making process around issues that directly affect them. Merriam and Caffarella (1999) argued that space needs to be made for personal experience and other ways of knowing as sources of knowledge and truth.

Research has shown that transformative learning is not just rationally driven but equally dependent on relational ways of knowing (Baumgartner, 2002; Taylor, 2000, 2007; Yorks & Kasl, 2002).

In essence, it is through establishing trustful relationships that individuals can have questioning discussions wherein information can be shared openly and mutual and consensual understanding be achieved…It is through building trusting relationships that learners develop the necessary openness and confidence to deal with learning on an affective level, which is essential for managing the threatening and emotionally charged experience of transformation…without healthy relationships, critical reflection would seem to be impotent and hollow, lacking the genuine discourse necessary for thoughtful and in-depth reflection. (Taylor, 2000, pp. 307 - 308)

Yorks and Kasl (2002) feel that it is very important to recognize the different ways of knowing with experiential knowing as the foundation if adult educators are to educate the whole person. “Many educators critique the hegemonic force of an epistemology that privileges rationality….’ The development of affect is inhibited…leading to a lack of emphasis on people as whole persons”’ (Yorks & Kasl, 2002, p. 184 citing Boud, Cohen, and Walker, 1993).

Taylor’s (2000) overview of studies done on transformative learning theory found that critical reflection is significant in transformative learning but affective learning plays a primary role in the fostering of critical reflection. Studies have shown that “the journey of transformation is more individualistic, fluid, and recursive than originally thought…certain phases or components, such as working through feelings, seem to be more significant than others” (p. 292). It is our very emotions and feelings that often provide the impetus for us to reflect critically. Confirming this, Baumgartner's (2002) longitudinal study working with people who are living and learning with HIV found that social interaction was a key in the transformative learning process. Social interaction prompted critical reflection and the realization that the person was not alone in his or her experience. The group experience also gave people a chance to try out their new perspectives and roles in a reasonably safe environment and gain confidence in new roles. It gave participants a sense of belonging and decreased feelings of marginality. (p. 57)
Approaching transformative learning from a critical perspective, Brookfield (2000) explained that “critical” reflection must include reflecting on structural constructs that have been established through power relations. Power is central to Habermas’s concept of creating dominance-free communication (Hart, 1990; Inglis, 1997) because changing how humans relate to one another radically transforms power relations. Brookfield (2000) argued that all subjective critical self-reflections are really an ideology critique because we are actively questioning underlying assumptions that informed our way of being, knowing and understanding. “The reflective discourse that adults engage in to come to best judgments concerning the accuracy of their interpretations and beliefs can not happen without a critical assessment of assumptions” (Brookfield, 2000, p. 142).

Further highlighting the omission of other ways of knowing and difference in the development of transformative learning theory, Taylor (2000, 2007) found in his review of research done on transformative learning theory that few studies included the influence of context or cultural factors on transformative learning (see also Clark & Wilson, 1991; Inglis, 1997; Kovan & Dirkxx, 2003; McDonald et al., 1999; Merriam & Caffarella, 1999). To date, the vast majority of the studies reviewed (Taylor, 2000, 2007) have taken place in an American context and cultural diversity involved recently-arrived Americans or non-white Americans. Some studies revealed that there are differences in how diverse groups respond to, and make meaning from, significant experiences in life (Taylor, 2000). In fact, in 2000 and still prevalent in his 2007 review, Taylor found no studies on the influence of culture per se and few research participants of diverse perspectives (i.e. class, race, ethnicity, and sexual orientation) were included in studies. Considering the paramount influence of culture on human development and learning (Cole, 1996; Ratner, 2006; Rogoff, 2003), the oversight of studies from different cultural perspectives or within different cultural contexts and communities seems critical to address when trying to assess whether transformative learning theory is in fact a comprehensive adult learning theory that is applicable to other cultural contexts.

In addition, critiques of transformative learning theory have indicated that Mezirow (2000) gives too much attention to the individual (Inglis, 1997; Merriam & Caffarella, 1999; Taylor, 2007) and not the individual within his/her socio-cultural context (Taylor, 2007). Related to this focus on the context of the learning, Taylor
(2007, p. 186) advocates that "[t]here is a definitive need to explore other settings particularly where the teaching contexts are more informal, less controlled by the instructor, and more susceptible to external influences." Hence, this leads me to believe that the dialogue around, and understanding of, transformative learning theory would be greatly enhanced with the inclusion of more empirical research, not only done by researchers from diverse perspectives and socio-cultural contexts, but also focusing on and inclusive of participants of diverse perspectives and within different socio-cultural contexts.

This discussion and critique points to an under-theorizing of the role that affect and other ways of knowing play in transformative learning and knowledge creation and how this can privilege certain groups and further marginalize others. Merriam (2004) called upon "Mezirow himself to substantively expand the theory of transformational learning to include more 'connected', affective, and intuitive dimensions on an equal footing with cognitive and rational components" (p. 66 - 67). Being cognizant of the cultural context and influences on the case study participants and of these critiques of transformative learning theory allows for a more holistic approach to creating pedagogical activities and opportunities for non-formal learning to occur. In order for transformative learning theory to be used to engage learners critically, enabling them to negotiate the complex issues we face in contemporary society, we as educators must struggle to enable learning forums where different kinds of learners can participate in rational discourse. This means acknowledging that other ways of knowing are valid and that the role of affect in transformative learning is important. We do not live in a vacuum, we as educators must acknowledge power imbalances and struggle to mitigate them in the learning setting if we hope to facilitate empowerment and greater democratic participation in decision-making processes. Community-based participatory initiatives offer an opportunity to create inclusive non-formal adult learning environments that potentially facilitate transformative learning (Diduck, 1999; Merriam & Caffarella, 1999; Percy, 2005; Sinclair & Diduck, 2001; Spaling, 2003; Webler et al. 1995).

**Working Towards Inclusion**

For this research I looked at community-based strategic environmental assessment as a forum for transformative learning. As mentioned earlier, the cultural communities involved in this case study are Costa Rican and include both small-scale farmers and ICE watershed management teams. In a macro-cultural context, small-scale
Costa Rican farmers have not traditionally been included in the decision-making process at a community level for watershed management issues. Cognizant of this cultural consideration as well as the critiques of transformative learning theory, and considering the purpose of my research, I tried to create a pedagogical approach that was both pedagogically sound and that enabled the meaningful participation of traditionally marginalized community voices.

In order to include marginalized voices we must create a safe space, allow people to express themselves in a variety of ways, and be inclusive of different ways of knowing and experience. To foster transformative learning in the learning setting adult educators, or in this case the facilitator of the community-based strategic environmental assessment, should: promote openness and trust; provide instructional methods that support a learner-centred approach and hands-on, direct and personally engaging experiential learning activities; stimulate reflection upon experience; encourage student autonomy, participation, and collaboration; allow for solitude and self-dialogue; and encourage activities that promote exploration of alternative personal perspectives via problem-posing and critical reflection (Taylor, 2000, 2007). Facilitators of the learning process must be trusting, empathetic, caring, authentic, sincere, and demonstrative of high integrity. Cranton (1994) (as cited by Percy, 2005, p. 133) concludes: "If the educator is authentic, fosters healthy group interaction, is skilled in handling conflict, encourages learner networks, gives personal advice when appropriate, and supports learner action, critical self-reflection and transformative learning will be supported."

Educators must also appreciate the importance of discussing and working through feelings and emotions before critical reflection. The essential elements of successful discourse include an emphasis on empowerment and self determination of the participants, a participant-based agenda, validation of emotions as a part of the process, and a recognition that confusion is invariably involved and legitimate…if the process is successful participants are able ‘to articulate their own voices clearly and to recognize each other’s voices as valid’ (Rothman, p. 352, italics mine). (Daloz, 2000, p. 115)

These considerations will help facilitate a dialogue across difference.

Daloz (2000) explained that when we acknowledge that difference exists, we then adapt to, and perhaps even celebrate, the difference and finally integrate the deeper knowledge of the other with our own sense of personal and cultural identity. Burbules and Rice (1991) added that there is a fundamental shift in the worldview from regarding
difference as a problem, a threat, a nuisance or an insurmountable barrier, to regarding
difference as an opportunity and as a challenge to our abilities to communicate and
understand. This latter view can benefit our abilities to understand ourselves and others,
to say nothing of the greater social benefits in terms of promoting social concord and
cooperation. Pursuing and maintaining dialogue across difference develops such
“communicative virtues” as tolerance, patience, and a willingness to listen. A
significant advantage to dialoguing across difference is the cultivation of an ethic of
social responsibility.

It is the growth toward this capacity to identify one’s own sense of self
with the well being of all life that undergrids our use of the term social
responsibility…. This commitment to the common good is understood
not as a final state but rather as a stance of openness to necessary and
ongoing dialogue with those who differ or who may not yet be full
participants in the commons. When justice is defined as a matter of who
is included and who is excluded (Marstin, 1979), commitment to the
common good means a commitment to justice. Yet it is an unending
process; justice is never ‘done’, and discourse is itself an essential part of
vibrant democracy (Chambers, 1995). (Daloz, 2000, p. 105)

To create a forum for dialogue across difference we must make dialogue more
inclusive and not less; we as educators must take a believing stance and we must re-
think dialogue and acknowledge that a partial understanding is important (Burbules &
Rice, 1991). Even in failure to reach a full or even a partial agreement we learn that
persistence does not resolve all conflicts and that some problems are not solvable but
only manageable (Burbules & Rice, 1991).

There are many things to consider in a dialogue across difference. Dialogue
should be aimed at respect and tolerance. We must take personal and cultural context
into account because it will either negatively or positively influence the dialogue
(Scribner & Donaldson, 2001). We must work to avoid domination through non-
dominating agreement. When communicating across languages we must look to other
ways of communicating besides rational discourse. Finally, we can use communicative
qualities as virtues and apply them thoughtfully to different situations. This often leads
to new understandings and usually parties can find some commonalities. Daloz (2000,
p. 120) explained that:

Emancipatory learning is not about escape from but rather about a deep
immersion into the rough and tumble relationship. An education that
reveals and enhances our radical inter-dependence with all creation frees
us from a ‘false consciousness’ of our separateness into a richer
understanding of our underlying relatedness….we come to recognize ourselves as beings-in-relation.

It is the “conviction of the essential humanity of the other that turns a former ‘us’ and ‘them’ into a shared ‘we’, making possible work for the common good” (Daloz, 2000, p. 109).

Yorks and Kasl (2002) described the paradox of diversity in a dialogue across difference. It is that:

the more diverse the perspectives among a group of learners, the more likely it is that they will challenge each other’s habits of mind and habits of being. Thus, diversity is directly and positively related to the possibility for growth and transformation. At the same time, it is also negatively related: the more diverse the learners, the less likely it is that they will be able to create an empathic field that enables them to understand the other’s point of view, thus blocking their capacity to lead each other toward growth and transformation. (p. 186)

Our responsibility as educators and citizens is to “seek out and encourage engagement with those different from ourselves, to foster critical reflection on the meaning of our differences, to create mentoring communities where socially responsible commitments can be formed and sustained, and to make available opportunities to practice these emerging and vital commitments” (Daloz, 2000, p. 121). This mentoring community is characterized as an ecology of relationships with people who value diversity and transformative discourse. In a group setting when trying to facilitate meaningful learning, there is a need to discuss positionality between members (race, class, gender, ethnicity), to embrace conflict and attempt to resolve it, to act upon the decision to act, and to dedicate time to go through the process (Scribner & Donaldson, 2001).

This whole process of bringing different individuals together in an atmosphere of understanding can help strengthen civil society, reconnect person to place and community, and re-claim the lifeworld. Hart (1990, p. 134) said that we must create a moral environment which touches the deep structure of non-hierarchical, caring and solidarity relations and where the negative task of diagnosing and correcting distortions is complemented by the positive task of nurturing and practicing new virtues and of acquiring new ethical sensibilities for a social intercourse which is not based on the need to control or be controlled.
Transformative learning can help civil society reclaim the lifeworld by being more engaged in the decision-making process about decisions that directly affect them. Citizens who come together to assess critically their environment and their community can act upon their insights through collective knowledge creation and decision-making. This process of bringing individuals together can also promote solidarity, form a shared common purpose and provide for a broad exposure to different forms of human social experience (Rogoff, 2003; Soltis, 1991).

This, in turn, enlarges the sense of possibility beyond one's primary group's traditions and experiences. Thus there is a larger reservoir of diverse experience for individual development, for social problem solving and for learning from as well as with others. (Soltis, 1991, p. 90)

The previous discussion on working towards inclusion had important implications for the design, organization and facilitation of the community-based strategic environmental assessment as a potential forum for transformative learning. The purpose of the community-based strategic environmental assessment was to enable learning so being cognizant of potential barriers was important, especially considering that my participants were from traditionally marginalized communities. How these theoretical considerations were translated into a meaningful and practical pedagogical approach in the design and implementation of the community-based strategic environmental assessment will be discussed in Chapter 3.

### 2.3.3 Toward an Understanding of Group Dynamics in Transformative Learning

Up until now I have tried to show clearly that a variety of elements are central to the transformative learning process. Two of these elements include, but are not limited to, social interaction and rational discourse (Mezirow, 2000; Taylor, 2007). Notwithstanding their importance, there are certain subtle aspects of the social dynamic where these two elements intersect that, to my knowledge, have yet to be adequately explored. These aspects include: the intended learning outcomes and motivating agenda of the facilitator of the transformative learning experience; the learning agenda of the participants involved in the process; the characteristics of the participants involved; and the context where the learning takes place. In what follows, I have distilled out four different kinds of group dynamics in an attempt to understand further how these aspects affect the transformative learning process and outcomes. The dynamics (and associated
learning outcomes) are defined largely by learner intentions and goals, and the organizational contexts in which the learners are situated.

Particularly relevant when taking a critical approach, I think that understanding and recognizing learners' and facilitators' intents-for-the-social-learning-dynamic could help inform both the design and analysis of learning experiences. For this research, I used this understanding of group dynamics to inform both the design of the community-based strategic environmental assessment as well as the analysis of results.

Different group-learning dynamics and scenarios have been described in the literature, but so far as I am aware, these have not been categorized (Argyris, 1982, 1994; Bandura, 1963; Belenky & Stanton, 2000; Billett, 2002; Burbules & Rice, 1991; Clark & Wilson, 1991; Cranton, 1996; Daloz, 2000; Freire, 1970; Hall, 1981; Kasl & Elias, 2000; La Belle, 2000; Mezirow, 2000; Scribner & Donaldson, 2001; Yorks & Marsick, 2000). The proposed four categories are: users (where the focus of the learner is on individual transformation), sharers (where the focus is on transformation of self and others), group learning (where the focus is on transformation of a group as an entity separate and apart from its individual members), and corporate group learning (where the focus is on individual transformation to benefit the instrumental ends of an organization, which is often corporate).

**Users**

The first kind of participation with others focuses on individual transformative learning. It is the approach most consistent with Mezirow’s (2000) description of the interaction between the individual and the group. Essentially, the individual is using rational discourse with others to understand him/herself better and to create more functional frames of reference. This kind of interaction works for people who are more or less on equal footing, and who have well-developed linguistic and critical-thinking skills. The primary focus is on helping the individual better understand the meaning of his/her own experiences (Mezirow, 2000). This kind of interaction is focussed on helping learners become more autonomous thinkers. “Fostering a greater autonomy in thinking is both a goal and a method for adult educators. Autonomy here does not represent a fixed goal to be achieved or an arbitrary norm, but movement in the process of transformative learning toward greater understanding of the assumptions supporting one’s concepts, beliefs, and feelings and those of others” (Mezirow, 2000, p. 29). Cranton (1996, pp. 30-31) argues that in a transformative group learning dynamic “people have a basic interest in their own growth and development. They wish to be
free from self-distortions and social distortions of knowledge.” Politically and educationally, I would call this a liberal paradigm because it is principally focused on the individual. Cranton (1996) sights a variety of contexts where this kind of interaction might occur including counselling groups and professional-development workshops. Outcomes resulting from participation in this kind of group dynamic would probably be individual behavioural change like what happened through participation in ICE's watershed management agricultural programme where individual farmers were changing their individual behaviours (Sims & Sinclair, 2008).

**Sharers**

The second kind of participation with others is different because, even though there is still a focus on individual transformative learning through rational discourse, there is also a focus on learning by the other members of the group. Individuals who are keen on their own personal transformative learning can participate in a group and have a parallel goal of facilitating the growth of others within the group. Members of the group are mentors, facilitators, and questioners. This kind of collaborative learning can be facilitated through a ‘synergetic inquiry’ process that brings about transformation through a series of cycles of engagement with the other.

Each cycle begins by differentiating self from other, then integrates the two in a larger frame by cultivating ‘the capacity to hold different consciousnesses as equals.’ This capacity itself is then re-equilibrated as ‘a new synergic consciousness’. Those who have achieved such a consciousness display the ability to hold a rich sense of legitimate difference without compromising their own cultural identities. (Yongming Tang, 1997, as cited by Daloz, 2000, p. 110)

This synergetic process is in line with Daloz’s concept of identifying oneself with the well-being of all life and Cranton’s (1996) description of collaborative group learning.

Compared with the previous kind of group dynamic (users), this approach is much more inclusive. It accommodates the importance of interpersonal relations to validating claims (Welton, 1993). Belenky and Stanton (2000) would characterize this kind of group as a “connected-knowers” group. They argue that a ‘critical stance’, like the one found in *users*, effectively shuts out immature or marginalized people. Critical discourse, the doubting game, can only be played well on a level playing field. The believing stance of connected knowing creates a level playing field where even the very dissimilar can meet as equals. This kind of group interaction allows for other ways of knowing, experiential learning, and rational discourse. Cranton (1996) argues that this
kind of group dynamic is ideal for individuals to work together to construct knowledge rather than discover objective truths. There is not necessarily a “group ethos” *per se* but the group is cognizant of everyone’s growth within a group. This concept of collaborative learning has been strongly influenced by post-modern and feminist scholars. Mezirow (2000) observed that constructing knowledge together bonds people. I think that this kind of collaborative learning allows the group to forge common goals and take collective action around certain issues. A concrete example of this kind of interaction was found in a project facilitated by the Tepic Comité in which local (Mexican) volunteers worked diligently to help communities develop sustainably on the community’s own terms. For example, during a week-long nutrition workshop, the whole community of Concepción worked together to share resources, learn about the medicinal properties and nutritional value of local plants, and explore regional economic development possibilities based on what they were learning (Sims, 2002, 2003). Outcomes resulting from participation in a sharer's group dynamic might include the formation of community organizations like the ones described in Baumgartner's (2002) study working with people living with HIV.

**Group Learning**

A third kind of participation occurs when a group of individuals chooses to participate not as individuals collaborating in a joint process, but as members of a group dedicated to the group and focused on learning as a whole group. This happens when the group is formed of dedicated individuals who have often spent a significant amount of time together (in some cases years), and have a common focus, a core vision, a commitment to the group and to resolving emotional and deep-set issues within the group, and a collective identity. Within the group, participants can tap into other ways of knowing, experiential learning, and critical discourse to understand each other and to articulate core values and operating rules. The transformative learning that occurs can be as a group transformation as an entity (Kasl & Elias, 2000). Kasl and Elias offer an example of this kind of interaction in their case study describing an independent praxis collective that “emerged from its originating identity as a faculty group in a small institution of higher education in California” (p. 233). They trace “the group life of the transformative leadership faculty as it evolved into the Transformative Learning Collaborative” (p. 234).
Corporate Group Learning

The fourth category is organizational or corporate group learning. Here the group creates knowledge for itself as a strategic group. The team is a vehicle to move new information throughout the organization. “Learning on the part of individuals is desired for purposes of meeting organizational goals” (Yorks & Marsick, 2000, p. 255). An organization’s “primary motivation to change habits of mind is instrumental: the organization is intent on enhancing its performance” (p. 274). To accomplish this, they must develop communicative learning skills in order for individuals and groups to negotiate meaning during problem-solving activities. “This learning is fostered by a kind of guided or even directed critical reflection on the organization’s part” (p. 274). Two participatory strategies for organizational learning are action learning and collaborative inquiry (see Yorks & Marsick, 2000). These strategies represent concrete examples of how transformative learning theory could be appropriated by certain agencies to suit their own purposes.

For example, organization group learning could be a telling example of how a neo-liberal educational agenda can influence the use of transformative learning for the benefit of an organization/corporation.

The focus of criticality is on the instrumental task performance issues at the individual, business unit, and organizational level: reframing of roles, rethinking assumptions about the larger business environment, and the like. At the level of the individual learner the organization may want to raise issues of what it means to be an employee and the need for taking charge of one’s own career. However, for the most part, the political dimension of how the organization functions is off limits, as are discussions of larger social consequences….As practiced in organizational settings, the critical reflection is more of a critical thinking emphasis - a sort of bounded critical reflection. At first blush, its processes move the practice of adult education in the opposite direction of the intentions of critical theory - namely in the service of further decoupling and colonizing the lifeworld by the system. (Yorks & Marsick, 2000, pp. 274–275)

An example of this corporate group learning dynamic is found in the Canadian federal government's strategic move to promote an informal conflict resolution system. The federal government has developed legislation and policies, which are promoted by the managerial staff, that are intended to move employees away from more

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formal, litigious, and time-consuming forms of resolving conflict to resolving them at the lowest level. Considering that they are functioning in a unionized environment, this saves the federal government money. Outcomes associated with this learning are employees resolving conflict directly with one another rather than immediately seeking out legal recourse (Rohatgi, personal communication, August 23, 2007) 12.

To conclude, these interrelationships between the individual and the group are important for understanding theoretical, political and pragmatic considerations of transformative learning. Recognizing the different kinds of group interactions can help educators and organizations tailor programs and methods to better suit their educational goals.

In the community-based strategic environmental assessment, I tried to achieve a "sharers" dynamic using participatory tools and by facilitating a safe and inclusive environment (a more detailed description on what was done to facilitate this dynamic is outlined in Section 3.3.2.4). I felt that a sharers group dynamic would be the most appropriate to address the environmental and social sustainability goals of a community-based strategic environmental assessment process as these issues are collective challenges we are all facing that must be addressed at least at a community (or higher) level and not only at an individual level.

2.3.4 Which Educational Aspects Will be Considered and Why

As the nature of my research was two fold, I applied transformative learning theory in the analysis of the learning results as found through farmer participation in ICE's watershed management agricultural programme and I incorporated it into the design and facilitation of the community-based strategic environmental assessment process. For this reason, it was paramount that I was also cognizant of the elements of the theory that remain problematic as they might prove to be barriers to learning (e.g., like it being too rationally-based). Because I worked with traditionally-marginalized communities, I wanted to be particularly mindful of: meaningfully engaging marginalized voices; valuing other ways of knowing; the interrelationship between power, knowledge creation and learning; and the group-learning dynamics.

In the design and facilitation of the CBSEA many steps were taken to create an inclusive, supportive, engaging and safe environment. My goals were to: create an environment that was open to anyone interested; ensure that the focus of the learning

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was of interest to the farmers and related to their lives; and provide opportunities where farmers could engage in rational discourse sharing their knowledge, learning from others, problem-solving and problem-posing. The specific steps I took to accomplish this are outlined in detail in the methods chapter in Section 3.3.2.4.

2.4 Critical Learning and Public Participation in Community-Based Strategic Environmental Assessment

This research explores how learning through public participation in community-based approaches to environmental assessment potentially provides a vehicle for sustainability and for the meaningful engagement of citizens in local resource-management decisions. Participatory forms of planning in natural resource management offer a forum where local knowledge can be shared and valued, mutual learning facilitated, and communities work towards greater self-reliance and a greater voice in local decision-making (CIDA, 2005; Friedmann, 1987; Neefjes, 2000; Pretty, 1995; Sinclair & Diduck, 2005; Sinclair et al., 2008; Spaling, 2003).

2.4.1 Sustainability and Sustainable Development

Throughout this dissertation I integrate the concepts of sustainability and sustainable development as desirable outcomes of public participation and learning through a (community-based) environmental assessment. Maida (2007, p. 429) cites two definitions of sustainability that seem particularly appropriate for my research. The first is that sustainability involves "improving the quality of human life while living within the carrying capacity of supporting eco-systems" (The World Conservation Union, 1991). The second is that "[S]ustainability encompasses the simple principle of taking from the earth only what it can provide indefinitely, thus leaving future generations no less than we have access to ourselves" (Friends of the Earth Scotland). As regards sustainable development, this "is development that meets the needs of the present without compromising the ability of future generations to meet their own needs" (The Brundtland Report, 1987, p. 8). Maida (2007, p. 429) further clarifies, based on the Sustainable Community Roundtable Report South Puget Sound and the Northwest Policy Institute of the University of Washington respectively that:

'In a sustainable community, resource consumption is balanced by resources assimilated by the ecosystem. The sustainability of a community is largely determined by the web of resources providing its food, fibre, water, and energy needs and by the ability of natural systems to process its wastes'…'Sustainable communities foster a commitment to
place, promote vitality, build resilience to stress, act as stewards, and forge connections beyond the community'.

McKenzie (2004, p. 18) explains that

Social sustainability occurs when the formal and informal processes, systems, structures and relationships actively support the capacity of current and future generations to create healthy and liveable communities. Socially sustainable communities are equitable, diverse, connected and democratic and provide a good quality of life.

How environmental assessment, community-based approaches to environmental assessment and learning relate to these goals of sustainability and sustainable development, particularly as they relate to the dimensions of social and environmental sustainability, will be elaborated throughout this document in both the theoretical development of the problem and the analysis of results in Chapters 4 and 6.

2.4.2 Environmental Assessment, Strategic Environmental Assessment and Learning

Environmental assessment (EA) and strategic environmental assessment (SEA) are considered environmental tools or processes of making decisions that can contribute to the achievement of the key principles of environmental and social sustainability (Hanna, 2005; Noble, 2005, 2006; Petts, 1999b; Thérivel & Brown, 1999). Linked effectively with, and supportive of, other policy and planning instruments, they should contribute as a sustainability mechanism for better planning (Petts, 1999b; Wood, 1995). There is now a growing recognition that EA and SEA should serve as integrated planning tools "for decision-making, characterized by integrating cumulative and global environmental effects, empowering the public, recognizing uncertainties, favouring a precautionary and adaptive approach, and making a positive contribution towards sustainability" (Noble, 2006, p. 8).

EA [also known as impact assessment or environmental impact assessment] is a process to aid decision-making through which concerns about potential environmental consequences of proposed actions or projects are incorporated into decisions (Hanna, 2005; Noble, 2006). It “is a proactive planning tool that allows developers, regulatory authorities, scientists, and the public to identify, evaluate, and mitigate, where possible,

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13 Key environmental sustainability principles include: anticipate and prevent; exercise caution; remain within source and sink constraints; maintain natural capital at or near current levels; avoid conversion of land to more intensive uses; and make the polluter pay (Petts, 1999b, p. 10).
14 Key social sustainability principles include: equity, diversity, interconnectedness, quality of life, and democracy and governance (McKenzie, 2004).
the potential changes to an environment from a proposed initiative before development is undertaken” (Fitzpatrick & Sinclair, 2003, p. 161). “The purpose of EA is to evaluate the environmental and related social implications (negative and positive) of carrying out a development project, of any size, before irrevocable decisions are made. Such an evaluation can then be set alongside economic objectives of the proposal in order to make balanced decisions” (Sadar, 1996, p. 2). Meredith (1991a, p. 225) described EA as “no more than a process by which common-sense concerns about community futures are incorporated into decisions – public or private – which will affect the future.” Initially, EA was created as a governmental response to the environmental movement (in developed countries like the United States, Canada, and Australia) and has since been regulated through law (Meredith, 1991a, 1991b; Noble, 2006).

The aim of these environmental tools "is not only to prevent environmental damage, but also to enhance environmental benefits. These tools can therefore help in developing more effective, better adapted, and contextually relevant development and poverty reduction initiatives, which have better chances of success and of long-term sustainability" (CIDA, 2005, p. 1; see also Meredith, 1991a, Noble, 2006). Further, especially important in the current political climate of economic globalization, meaningful public participation allows citizens a direct voice in these environmental decision-making processes around the control and management of natural resources (Barber, 1996; Diduck, 1999; Michaelidou et al., 2002; Neefjes, 2000; Petts, 1999a; Sinclair & Diduck, 2001, 2005). This participation could facilitate both social and individual learning which enable the transition to sustainability (Meredith, 1991a; Sinclair & Diduck, 2005).

Noble (2006, p. 9) notes that "[A]dvancing the sustainability initiative will require increasing the application of EA principles beyond the project level to address environmental issues at the strategic levels of policy, planning and program decision-making. This can be accomplished through strategic environmental assessment (SEA)….SEA is based on the notion that the benefits of sustainable development trickle down from policy decision to plans, programs, and eventually to individual projects" (see also Partidário, 1999). SEA is increasingly recognized as an important tool for advancing a sustainability agenda by influencing the design of more sustainable policies and strategies (CIDA, 2005; Neefjes, 2001; Noble, 2006; Partidário, 1999; Petts, 1999b; Thérivel & Brown, 1999). Glassen (1995) explains that SEAs hopefully will provide an approach for the better integration of socio-economic development and the bio-physical
environment in the interests of present and future generations. They can help to ensure that environmental and sustainability considerations are incorporated into the objectives of policies, plans and programmes and they can help appraise whether the impacts of a policy, plan or programme are likely to be in accordance with sustainability objectives (Partidário, 1999).

SEA is an extension of EA but has to be "resource-led rather than activity-led, not least because it is emerging in response to the challenges of sustainable development. SEA deals with concepts rather than particular activities and has to provide for cross-cutting environmental and sustainability objectives to be achieved" (Petts, 1999b, p. 7; see also Partidário, 1999). To an even greater extent than with EA, SEA "has to be flexible and fully open to any necessary fundamental change and improvement as new perspectives are brought to light…SEA has to be transparent and involves providing fundamental opportunities for different parties to consider and influence objects and sustainability…" (Petts, 1999b, pp. 7–8).

SEA is "generally presented as the assessment tool that addresses the environmental implications of decisions made before or 'above' project level" (Partidário, 1999, p. 60). It is a formalised, systematic and comprehensive process of evaluating the environmental impacts of a policy, plan or programme and its alternatives. These findings can then be used in publicly accountable decision making (CIDA, 2005; Glassen, 1995, Noble, 2005, 2006; Partidário, 1999; Thérivel & Brown, 1999). Thérivel and Brown (1999, p. 441) explain that "SEA aims to expand the competent authority's focus by providing a mechanism by which its goals and objectives will include cross-cutting environmental and sustainability perspectives (e.g., minimizing waste, improving equity)...SEA aims to provide the competent authority with a tool which enables it to be fully aware of the environmental/sustainability issues associated with a particular policy, programme or plan (PPP) while that PPP is still being formulated or, at the very least, evaluated before it is implemented".

"SEA evolved in the light of disillusionment over the ability of project environmental impact assessment (EIA) to assist sound environmental decision-making from policy through to projects" (Partidário, 1999, p. 60; see also Noble 2005, 2006). The purpose of a SEA is to "address the strategic component of any decision in a way that is practical and responsive to integrative approaches towards sustainability goals" (Partidário, 1999, p. 62). Because SEAs happen early in the planning process, they can ensure that all the alternatives and impacts relevant to sustainability goals are
adequately considered. Further, it serves to identify opportunities to achieve environmental benefits and positive environmental outcomes (CIDA, 2005). SEAs provide the context for an analysis to be done of the cumulative effect of policies that is not possible at a project level (Noble, 2005, 2006; Partidário, 1999; Wood, 1995). SEAs can potentially address the suitability or wisdom of a programme or policy. SEAs can also increase the weight given to the environment in decision making, facilitate and increase consultation and participation on environmental matters and establish principals for the development of certain classes of projects (Wood, 1995). SEAs can either be implemented at the planning stage of a PPP, or used in evaluating a PPP before it is implemented. Alternatively, Thérivel and Brown (1999, p. 447) explain that a SEA could be used with an already existing PPP to revise and appraise the "original PPP as a way of both learning about the SEA process and also getting ideas for possible changes to the next PPP: another SEA can then be carried out for the evolving new PPP." The latter approach is what was done for this research by doing a community-based strategic environmental assessment on the second phase of the Instituto Costarricense de Electricidad’s proposed watershed management agricultural programme in Costa Rica.

A few formal definitions for SEA have been proposed in the literature, the following by Partidário (1999) is the most appropriate for the purposes of this particular application of SEA within a community-based participatory approach:

SEA is a systematic, ongoing process for evaluating, at the earliest possible stage of publicly accountable decision-making, the environmental quality, and consequences, of alternative visions and development intentions incorporated in policy, planning, or programme initiatives, ensuring full integration of relevant biophysical, economic, social and political considerations. (Partidário, 1999, p. 64)

One major challenge for SEA is that "it is still in its initial stages of development, and there are many questions to be resolved, particularly those concerning the nature and benefits of SEA and how it is best practised" (Noble, 2005, p. 93; see also Neefjes, 2001). There is no single method for conducting a SEA, and "organizations are encouraged to adapt the tool to best reflect their realities" (CIDA, 2005, p. 21). The Government of Canada’s (2004) general guidelines are: to be flexible, in that they can be applied in a variety of policy settings; to be practical, in that they do not necessarily require specialist information and skills, or a substantial commitment of resources and time; and to be systematic, in that they are based on logical transparent analysis. Facilitators of a SEA include: good environmental legislation; strong political
will; a good working relationship between various stakeholders and interest groups; and, a political environment of accountability, openness, and inclusion.\textsuperscript{15}

Notwithstanding the lack of definition on a specific methodological approach to the SEA process, both Thérivel and Brown (1999) and Noble (2005) provide a framework for implementing a SEA. The following phases represent an integration of the essential components of their work. The community-based strategic environmental assessment process that was used to assess ICE's proposed watershed management agricultural programme Phase II was based on guiding principles derived from their work and incorporated the framework outlined below in the design of the process within a participatory, community-based approach.

Phase I: The initial step is to determine the purpose of the SEA and who should carry it out. Once this is established, there is a need to scope the assessment issues (i.e. identify the problem) and identify the baseline existing environmental conditions. Part of this initial step involves clearly identifying what, in this case, a programme aims to achieve. The programme's objective could be primarily social, or as in this case study, primarily environmental. Where sustainability is an objective, an accepted approach to help guide decisions about future developments is to identify a 'vision' for how the area should look in the future (Thérivel & Brown, 1999). The next step in the SEA process is to identify the topics that should be covered and then targets and relevant indicators. When describing the existing environmental conditions, quantitative as well as qualitative information can be brought into the discussion, including an examination of current environmental management practice and capabilities with respect to the PPP's area of activity. Questions might include: What is the current capacity of the people and institutions working in the programme areas to cope with environmental and social problems? Can current management achieve appropriate environmental management and promote sustainable development? This baseline information should include broad thinking beyond government management regulations including, especially in developing countries, traditional cultural and religious practices that may have a

\textsuperscript{15} Limitations exist to implementing SEAs. On the technical side, the range and geographical spread of activities, alternatives and impacts can lead to great analytical complexity, and information may be limited. Specific technical issues in applying a SEA include: establishing area capacities for particular environmental components/receptors, establishing good baseline data, and delineating appropriate operational/territorial units and levels of responsibility. Policies can evolve in an incremental and unclear fashion and the boundaries surrounding policies, plans and programmes are often nebulous and vague which can make impact prediction difficult. Political challenges exist at a lack of willingness to carry out a SEA. This may be true because policy-makers may wish to keep their policies confidential until they are well developed and SEA implies some power-shaping between the proponent and the environmental assessor/competent authority.
dominant influence. Within the collection of this baseline information, problem areas and constraints can be identified. These include areas that people are particularly concerned about that affect the PPP.

Phase II: Phase II of a SEA involves identifying and describing feasible alternatives either to the PPP or, in this case study, alternatives of projects within a proposed programme. Thérivel and Brown (1999) explain that "alternatives can be identified through public consultation. In particular this will identify the locally most favoured option; as well as that most beneficial to the environment" (p. 456).

Phase III: The following phase involves determining a set of factors and associated assessment criteria that allow an assessment of the PPP and the alternatives. "These factors are valued system components to be included in the assessment; these may relate to public health and safety or groundwater quality, and should address the sustainability of the environmental and human system…The objective is to identify a comprehensive set of factors and criteria that reflects all concerns relevant to the problem" (Noble, 2005, pp. 303 - 304). The relative importance or significance of these factors and criteria should be determined before the evaluation of the PPP and alternatives so as not to favour consciously or unconsciously certain alternatives or outcomes.

Phase IV: Phase IV involves the prediction and evaluation of potential impacts of each alternative. Impact predicting involves predicting what the difference will be at a given future date between the situation without the PPP (the baseline environment projected forwards) and with the PPP. "Impact evaluation determines whether this change is acceptable and, where several alternative PPPs are being considered, which alternative is best from an environmental/sustainability point of view. Both impact prediction and evaluation offer the possibility of revising the PPP to make it more acceptable; again, the ultimate aim is to make the final PPP as good as possible" (Thérivel & Brown, 1999, p. 459). The main aim of impact prediction is to highlight environmental problems with the PPP as it is currently proposed and to identify possible improvements to eliminate or reduce those problems. If a current PPP exists, it can be used to help determine some of the existing problems and to identify possible changes needed for the future plan. Impact evaluation involves considering whether the likely future impacts of the PPP are acceptable, based on factors such as compatibility with established regulations, the PPP objectives, and issues such as sustainability or social equity. Where the PPP’s impacts are not acceptable, they can either be rejected or
revised until they are acceptable; in EA terms, this is the mitigation stage. This phase also involves comparing the alternatives in order to summarize and compare the impact assessment results of each alternative in order to determine the preferred strategic option or PPP direction.

Phase V: Phase V involves the monitoring of the PPP and linking this monitoring information back to the predictions made in the SEA to ensure that the PPP achieves its objectives and that mitigation measures proposed in the SEA are implemented.

2.4.2.1 Public Participation in Natural Resources Management

Public participation\textsuperscript{16} is an integral component of EA processes: EAs are not EAs without consultation and participation (Petts, 1999a, 2003; SAIEA, 2005; Sinclair & Diduck, 2005; Wood, 1995). Renn et al. (1995) define public participation in environmental decision-making as "forums for exchange that are organized for the purpose of facilitating communication between government, citizens, stakeholders, interest groups, and businesses regarding a specific decision or problem" (p. 2). Petts (1999b), based on Stern (1991), explains that "Effective public participation in EA requires processes that can combine technical expertise and rational decision-making with public values and preferences" (p. 145). When trying to comprehend the value and the breadth of possibilities of public participation in an EA process, it is important to consider the potential benefits of meaningful participation, the different levels of participation, the objectives of participation, the techniques and provisions for involvement, what comprises meaningful participation, and of particular attention for this case study, the learning that occurs through participation in EA processes.

The value of public involvement in resource-management decisions is well established in the resources-management literature (Fitzpatrick & Sinclair, 2003; Petts, 2003; Renn et al., 1995; Webler et al., 1995; Wood, 1995). Parkins and Mitchell (2005), amongst others, establish that such involvement is consistent with participatory democracy, improves planning and decision-making, helps reduce conflicts, encourages the inclusion of local knowledge and values in decisions and makes political decisions more acceptable (Diduck, 1999; Mitchell, 1997; Petts, 1999a, 2003; SAIEA, 2005; Shepherd & Bowler, 1997; Sinclair & Diduck, 1995). Further, it helps professionals do a better job by challenging them to think in broader terms, shows a concern for the

\textsuperscript{16} The terms public participation and public involvement will be used interchangeably.
community, provides opportunities for learning social responsibility, contributes to the
general goal of individual empowerment, and provides opportunities for learning about
and through the EA process which can improve participation and environmental
management (Fitzpatrick & Sinclair, 2003; Palerm, 2000; Petts, 1999a; Sinclair &
Diduck, 2005; Webler et al., 1995).

In practical terms, the benefits of public participation are numerous and touch on
a variety of fields including law, politics, conflict resolution, planning, and decision
making (Diduck, 1999; Fitzpatrick & Sinclair, 2003; Luijten, Knapp, & Jones, 2001;
Meredith, 1995; Mitchell, 1997; Petts, 2003; Pretty, 1995; SAIEA, 2005; Shepherd &
Bowler, 1997; Sinclair & Diduck, 2005; Webler et al., 1995;). Reflecting this
interdisciplinary nature, the literature suggests that public participation in EA:
-provides access to local and traditional knowledge from diverse sources;
-enhances the legitimacy of proposed projects because the assessment process appears
to be transparent;
-helps define problems and identify solutions;
-permits a comprehensive consideration of factors on which decisions are based;
-ensures that projects meet the needs of the public, in terms of both purpose and design;
-accentuates the effectiveness of the EA process;
-brings alternative ethical perspectives into the decision-making process;
-broadens the range of potential solutions considered;
-furnishes access to new financial, human, and in-kind resources;
-encourages more balanced decision-making;
-increases accountability for decisions made;
-facilitates challenges to illegal or invalid decisions before they are implemented;
-illuminates goals and objectives, a necessary condition for working through value or
normative conflict;
-furnishes venues for clarifying different understandings of a resource problem or
situation, this aspect being a key to resolving cognitive conflict;
-helps avoid costly and time-consuming litigation; and,
-reduces the level of controversy associated with a problem or issue (Sinclair & Diduck,
2005).

This list accentuates the assertion that public participation in these EA processes
can provide diverse and important benefits for planning and decision making. It also
highlights how public participation in EA can potentially facilitate the social principles
of sustainability if it: provides meaningful and equitable opportunities for communities
to participate in a democratic decision-making process, tries to engage diverse
perspectives on the issue, provides opportunities for people to connect with one another
and with institutions, and aims to improve the quality of life of those directly affected
by the project but who are often marginalized from the decision-making process.
There are different levels of participation within the EA process that relate to the
meaningfulness in the participation process (Neefjes, 2001; Petts, 1999a, 2003; Pretty,
1995). Arnstein's (1969) ladder of participation illustrates the different degrees (or
steps) of participation, from being informed to controlling the decision (Petts, 1999a).
Significantly, especially in regard to public participation in EA, a distinction is made
between consultation and participation.17

Another important aspect which should be taken into account when considering
public participation are the objectives of participation (Petts, 1999a). These could either
include outcome objectives or process objectives. Outcome objectives might include a
focus on an immediate product (e.g., consent to develop) or on broader outcomes like
the resolution of a conflict, gaining support for an action or legitimizing decisions.
Process objectives might include: encouraging different stakeholders to share views,
bringing local knowledge and a fresh perspective into the assessment process;
identifying opportunities for project modification and impact mitigation; ensuring that
alternatives are considered; and making decision-making and proponents more
accountable (Petts, 1999a).

Elaborating on this concept of participation, Sinclair and Diduck (2005) add that
"We use the word participation to mean the active involvement of the public in the EA
process through various means, ranging from open houses to panel reviews…” (p. 53).
Meaningful public participation "is used in referring to participatory processes that
incorporate all of the essential components of participation, from information sharing to
education, and it includes the active and critical exchange of ideas among proponents,
regulators, and participants" (pp. 53 – 54; see also Sinclair et al., 2008).

17 "Consultation refers to the process of asking for information and comments about proposals (plans and
projects). In the decision-making process consultation often focuses more on the need of an authority or
developer to consult other bodies and named individuals than the broader public. It is the top-down
strategy, where the proponent or authority remains firmly in control and, in the public context, is mainly
concerned with passing on information. It is often a one-way process….Participation is a process of
engagement, where people are enlisted into the decision process to contribute to it. Participation methods
provide for exchange of information, predictions, opinions, interests and values. Participation requires
that those initiating the process are open to the potential need for change and are prepared to work with
different interests to develop plans or to amend or even drop existing proposals" (Petts, 1999, p. 147).
Within a conventional EA process, there are a variety of provisions for public participation. These include: adequate notice to inform the public about the proposal, access to information so that the public has access to the proponent's information and public comments, participant assistance that financially facilitates participation, public comment where the public has a right to comment on the proposal, and public hearings. Like in conventional EA, public participation of stakeholders is an integral part of SEA (Partidário, 1999; Thérivel & Brown, 1999). Thérivel and Brown (1999) outline numerous opportunities for public involvement in a SEA; of particular attention here as they relate to this research are: identifying public concerns; soliciting new ideas for alternatives and mitigation measures; sharing expertise; gaining acceptance for the PPP before it is adopted; and, ensuring accountability that the PPP is fully implemented. "However, 'which members of the public', 'how', 'when', 'to what extent' and, most importantly, 'with what purpose' participation should take place remain significant practical issues" (Petts, 1999a, p. 145).

In a conventional SEA, the methods used to engage the public vary depending on the stage of the proposed initiative and the objective of the proponent. For example, for the information provision, the proponent could use leaflets, advertising, local media or open houses, field trips, and technical assistance. The former examples are passive public information techniques and the latter are active public information techniques. Various small- or large-group input techniques that the proponent could use to share information, obtain feedback or consult with the public, include: (in-person, telephone, mail or internet) surveys, interviews, and small- or large-group public meetings. Finally, more participatory problem-solving techniques could be used such as community advisory committees, workshops, sharing circles, and panels (Petts, 1999a; Sinclair & Diduck, 2005). This list is by no means exhaustive, but it allows us to see that depending on the objective of the proponent, there are a variety of techniques that could be used during the EA process to engage the public, all of which have both advantages and disadvantages (see Petts, 1999a, pp. 163-164 for a full list). Petts (2003) outlines different participatory approaches to natural resource management decision-making processes that have evolved over the past decade, like integrated environmental assessment, participatory integrated assessment, participatory impact assessment, and the "analytic-deliberative" process, that have sought to extend "participatory concepts through formal, focused, integrated and iterative application of technical assessment with public views and values" (Petts, 2003, p. 273). She continues, however, that
unfortunately within the conventional frameworks and existing institutional decision-making structures, there are many barriers that inhibit meaningful deliberative processes to exist.

Within the relevant literature (CIDA, 2005; Government of Canada, 2004; Noble, 2005, 2006; Partidário, 1999; Thérivel & Brown, 1999) there are numerous challenges identified that exist with the SEA process that directly relate to meaningful public participation. Three of these relate to where I feel this research can make a contribution. They include: i) the development of effective SEA approaches, for both formal and informal applications, that are adapted to the specific context in which they should operate; ii) that in the end, SEA should be about the values of communities and how to incorporate their concerns; and, iii) that even though the abstract nature of strategic planning processes might make it difficult to attract effective public involvement, practical examples exist that prove that this attention may be generated by tying public participation to issues that are meaningful to the public and that ultimately will be affected by projects influenced or flowing from the policy or programme.

2.4.2.2 Learning and Public Participation in Natural Resources Management

Learning through public involvement is an integral part of resource management decision-making processes that engage citizens, reconstruct social spaces, and are democratic (Fitzpatrick & Sinclair, 2003; Keen & Mahanty 2006). In creating social spaces for public deliberation, participants are exposed to different ideas and perspectives with learning as an outcome (Barabas, 2004). Such learning has the potential to transform behaviour and may help change current patterns in resource management to a more sustainable and equitable economy (Diduck, 1999; Keen, Brown, & Dyball, 2005; Orr, 1994; Sinclair & Diduck, 2005; Webler, et al., 1995). More authors now believe that recognizing and enhancing opportunities for education and learning in resource management decision-making is important to active citizenship and meaningful public engagement (Keen et al., 2005; Sinclair & Diduck, 2005).

Webler et al. (1995), Diduck (1999), Fitzpatrick and Sinclair (2003), and Keen and Mahanty (2006) establish that there are numerous opportunities for critical non-formal adult education in public involvement in resource and environmental management decisions that can result through social and transformative learning (see also Neefjes, 2001; Noble, 2005; Petts, 1999a; Sinclair & Diduck, 1995, 2005). Education and learning occurring in this context, particularly when they are focused on the sustainable use of natural resources, are considered to be within the realm of
environmental adult education (McDonald, 1999). Education in this sphere underscores the importance of individual behaviour change and collective action to achieve sustainability (Finger & Asún, 2001).

EA, combined with the principles of critical non-formal adult education\(^\text{18}\), could be used to up-ramp citizens into public participation that could empower them to become involved in decisions that directly affect their lives (Diduck, 1999). The goal is to produce social activists through critical dialogue exploring counter-hegemonic ideas (in response to the market-driven neo-liberal paradigm) that are environmentally and socially sustainable (Sinclair, Diduck & Fitzpatrick, 2002). In order to achieve this, the EA process must be fair, discursive, democratic, question relations of power, facilitate discourse that encourages the production of new knowledge, and examine why some ‘choose’ not to participate (or are not invited to participate) (Palerm, 2000). Sinclair and Diduck (2001) and later Diduck and Mitchell (2003) determined that the ideal learning conditions in an EA process include: accurate and complete information; freedom from coercion; openness to alternative perspectives; opportunities to reflect critically upon presuppositions; equal opportunity to participate; and, the ability to assess arguments in a systematic manner and accept rational consensus as valid (based on Mezirow 1994, 1995).

Researchers are beginning to consider the potential for transformation through the non-formal learning that may occur with an individuals’ participation in environment and resource decision-making. The results of this work are inconclusive. Diduck and Mitchell (2003) found the extent to which public participation in environmental assessment facilitated the ideal conditions of learning was limited, as was the resulting learning. Further, Petts (2003) found that many barriers exist within the existing institutional and decision-making structures that inhibit a meaningful

\(^{18}\) Diduck (1999) proposed a model for critical EA education that allows the public a greater say in natural resource management within a globalized context. His model of critical EA education would: help participants understand different stakeholders positions; provide counter-hegemonic arguments to the pro-development paradigm and understand underlying (power) structures; increase the public’s capacity in democracy through participation; empower locals to take social action; have learning content based on a deeper understanding of the relationship between nature and humans; help shift the focus from a market-rationality to a social-rationality; and help the public adapt to change, deal with uncertainty, resolve conflict, and understand complexity. Critical EA education would allow participants to improve their communicative competence. “This will involve education that facilitates socio-political empowerment (Rocha, 1997) to create a future that is less tied to the dynamics of industrial capitalism” (Diduck, 1999, p. 90). The objectives of critical education (critical consciousness and the development of appropriate skills and competencies related to social action) would be served in this process.
participatory deliberative process to occur. However, Fitzpatrick and Sinclair (2003) found that participants in an environmental hearing did engage in critical education and potentially transformative learning. This research adds to the elaboration of the theory in this context.

Unfortunately, many challenges exist that stifle meaningful public participation and learning in the EA process. Some of these include: the quasi-judicial adversarial format; power imbalances amongst stakeholders; the lack of public participation at normative and strategic levels of planning; information and communication deficiencies such as inadequate notice, inaccessibility of project documents and lack of dialogical processes; accelerated time-limited decision-making processes which limit interested members of the public's ability to study documents; weak public participation in follow up; a lack of shared decision-making power with the public; and the increasing application of a market concepts to the administration of public affairs (Fitzpatrick & Sinclair, 2003; Petts, 1999a, 2003; Sinclair & Diduck, 2001, 2005). Further, there seems to be a discrepancy and lack of clarity in the literature regarding learning through public participation in EA as to who sets the parameters of the discussion and whether knowledge is being acquired (Diduck, 1999; Fitzpatrick & Sinclair, 2003; Shepherd & Bowler, 1997; Webler et al., 1995) or produced by participants. As Sinclair and Diduck (2001) explain, who controls the EA process can also direct the learning process. Usually in Canada it is the project proponent who is responsible to do the EA.

2.4.2.3 The Field of Community Development and the Environment

In the community-development literature there are a number of approaches\(^{19}\), including integrated conservation and development projects, community-based natural resource management and most recently community-based approaches to EA, that have developed to address the human-nature interface (Alpert, 1996; Berkes, 2005; Leach, Mearns & Scoones, 1997b; Michaelidou et al., 2002; Newmark & Hough, 2000; Wells & Brandon, 1993). Traditionally, approaches were either anthropocentric or bio-centric, but recently, especially over the past twenty years, development workers, governments and civil society have recognized the need to address these areas in conjunction with each other in order "to enhance the conservation of natural areas and the welfare of local communities" (Michaelidou et al., 2002, p. 600). As Michaelidou et al. explained, "ecosystem viability and community survival are two interdependent objectives that

\(^{19}\) See Appendix K for a more detailed description of the different approaches.
should be given equal focus if both are to benefit\textsuperscript{20} (p. 600). To this broader approach to decision-making, community-based approaches to EA bring an opportunity for community members to engage actively in the systematic assessment of social, environmental and economic impacts that a new proposal might bring to their community based on existing information, local knowledge, and participant-lived experience. Meaningful participation in this process not only potentially allows participants to provide input into the development of these proposals in their initial stages before implementation, but it also provides opportunities to learn through and about the EA process and could facilitate collaborative decisions being made that lead to a more sustainable management of local resources (CIDA, 2005; Neefjes, 2000; Spaling, 2003).

2.4.2.4 Community-Based Approaches to Environmental Assessment

Community-based approaches to EA have emerged as critical tools in development planning (CIDA, 2005; Neefjes, 2001; Spaling, 2003). Spaling (2003) stressed the importance of an EA as a part of development work in order to achieve sustained benefits over time. “Development projects that rely directly on natural resources to meet basic human needs of clean drinking water, food, shelter, and livelihoods must be environmentally sustainable if the benefits of the project are to be achieved over time...EA is one way of evaluating the sustainability of projects before implementation” (p. 152).

Traditionally, the EA process has been lacking in developing countries because there is: a shortage of trained people, low public awareness about EA, the perceived priority of economic need, insufficient environmental data, no tradition of public consultation in decision making, and inadequate financial resources (Barrow, 1996; Hirji & Ortalano, 1991; Kakonge, 1995; Kakonge & Imbevbore, 1993; Neefjes, 2001; Wood, 1995). When implemented, conventional EA has usually been applied to the assessment of mega-projects, imitating the models used in more developed countries. This approach relies on a reductive model of environmental analysis to support a rational planning framework, and has too often ignored community input and participation (Amery, 2000; Kakonge, 1995; Neefjes, 2001; Spaling, 2003). Local participation in the developing-world context is usually weak because of illiteracy, a

\textsuperscript{20} See Appendix J for a description of Michaelidou et al.'s 2002 theoretical framework for integrated development approaches.
factor that greatly favours the project proponent. Also, a donor-imposed model of EA does not necessarily take into account local forms of decision making and cultural norms. To date, there is very little published literature on EA in the developing world focussing on public involvement or that directly relates to learning through community-based approaches to EA.

In contrast to the EA approach used in mega-projects, community-based environmental assessment (CBEA) “has been adapted in an innovative way to smaller, community-based projects that utilize natural resources for basic livelihood needs” (Spaling, 2003, p. 153) (see also CIDA, 1997, 2005; Neefjes, 2000, 2001; Pallen, 1996). Typical projects suitable to CBEA include boreholes, gravity water systems, small reservoirs, agro-forestry, fish ponds, construction of latrines, clinics, schools, and small bridges.

Since these projects interact directly with bio-physical systems, many already stressed, there is potential for resource degradation through over-extraction, land-clearing, soil erosion, contamination and other forms of exploitation. Application of (CB)EA to these projects is emerging as a way to facilitate management of local resources and ensure continued project benefits. (Spaling, 2003, p. 153)

CBEA not only has environmental and community foci, but also a human needs focus.

Community projects are characterized by local communities organising their knowledge, resources, and skills to satisfy basic livelihood needs. In CBEA, “communities are the project proponents that conceive, design and implement development activities. This process is usually facilitated by NGOs that specialize in building institutional capacity for local self-determination. NGO applications of (CB)EA at the community level are focussed on indigenous environmental information and values, participatory processes and tools, and community-based resource management. (Spaling, 2003, p. 153)

It is a collaborative process between the community and the EA team.

CBEA is considered an instrument for learning in the development field as it could facilitate the creation of a culture of environmental stewardship (Neefjes, 2001). One essential element of the CBEA process is focussing on local capacity-building, through the provision of providing training and resources to communities (a key factor when working towards social sustainability). Education and learning are essential to success in the process. Meredith (1987) believed that the CBEA process should be

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21 I believe that Spaling (2003) is refering to CBEA and not conventional EA here, that is why I modified the acronym to say “CBEA” and not simply “EA”.
grounded in community aspirations and faithful to the goals of sustainable environmental management.

Neefjes (2000, 2001) explained that a CBEA approach is meant to mitigate the impact of a proposed development project within financial and economic parameters. The CBEA process provides access to good information and could influence development that is potentially harmful socially and environmentally. The overall goals of CBEA would be equity, sustainable development (Meredith, 1992), provision of alternatives to the contemporary neo-liberal paradigm, and facilitation of a more holistic evaluation process (Kakonge & Imevbore, 1993). Neefjes (2000) wrote that the benefits of including the public in a CBEA are: improved data from local knowledge; improved focus on relevant issues; better response to stakeholders in EA; and a reduction in costs due to fewer conflicts. These benefits are consistent with the benefits of meaningful public involvement in a more conventional EA process (Diduck, 1999; Shepherd & Bowler, 1997; Sinclair & Diduck, 2001). Neefjes (2000) continued by saying that a CBEA approach empowers local people in natural resource management to have more advocacy. He felt that a CBEA approach is positive for communities because, in collaboration with NGOs, it focusses on re-generating and sustaining the environment and improving health and opportunities for locals. Ameyaw (1992), Kakonge (1995), and Spaling (2003) also determined that CBEA would improve the implementation and success of local development projects and support the creation of environmental legislation. NGOs are realizing that sustained project outcomes depend on sound management of local resources particularly in stressed environments.

(CB)EA can improve the effectiveness and efficiency of projects by evaluating technologies, selecting suitable sites, setting harvest limits or designing local resource management plans, thus avoiding costly and unsustainable interventions. Community-based environmental assessment is another tool to help plan effective and sustainable projects. (Spaling, 2003, p. 154)

A CBEA provides a development framework that allows a community to take more direct control in the sustainable co-management of their resources (Neefjes, 2000; Spaling, 2003). Neefjes (2001), when explaining Oxfam Great Britain's experience, cited a few successful cases where local knowledge was incorporated through participatory forms of EA into the development decision-making process. For example, in Mozambique a good analysis of local agriculture and markets with local farmers led to various attempts at crop diversification.
Due to the successful application of a CBEA approach, a variety of organizations like CIDA and OXFAM are now adapting their EA strategies to incorporate community-centered assessments (CIDA, 2005; Neefjes, 2001; SAIEA, 2005). The CIDA (2005) handbook for community development acknowledges that there are challenges specific to the context of EA’s conducted in community-level development projects, thus requiring adapted guidelines that account for integrated community involvement, such as provided by CBEA.

One of the biggest challenges of CBEA is re-aligning power so that communities feel empowered to make resource and development decisions (Spaling, 2003). Often communities rightly feel that decisions about projects have been made before they have been asked for input, or they do not feel well enough informed to participate. Although Neefjes (2001) praised CBEA for its practical application in "that it assists in systematically assessing a broad range of issues that are of immediate importance to local people and their environments" (p. 123), he stressed that there is a need to look at broader aspects of development like institutional aspects and relations between project activities, markets, national agricultural policies and land tenure policies. One opportunity to deal with the dual challenge of involving and informing local communities early in the decision cycle and dealing with broader aspects related to development planning is through the application of a strategic assessment. Community-based strategic environmental assessment (CBSEA) marries a CBEA approach with a SEA framework as outlined by Thérivel and Brown (1999) and Noble (2006) for assessing proposed local development policies, plans and programmes.

2.4.2.5 Community-Based Approaches to EA and Learning

As the relevant literature has found that public participation in conventional natural-resource-management processes facilitates learning (Diduck, 1999; Diduck & Mitchell, 2003; Fitzpatrick & Sinclair, 2003; Keen & Mahanty, 2006; Palerm, 2000, Petts, 1999a, 2003; Renn et al., 1995; Sinclair & Diduck, 2001, 2005; Thérivel & Brown, 1999; Webler et al., 1995), so too community-based approaches to EA potentially offer many non-formal opportunities for learning. In community-based approaches to EA, a participatory forum facilitates a process of communal dialogue and collective decision-making that includes: the development of goals, the sharing of knowledge, negotiation and compromise, problem-posing and problem-solving, the evaluation of needs, the definition of goals; and research and discussion usually around
questions of justice and equity (Ameyaw, 1992; Meredith, 1992; Neefjes, 2000, 2001; Spaling, 2003). This process helps communities clarify values, be more adaptive and pro-active, respond to change, develop an appreciation for the human/ecological interface, set personal and communal goals, and participate in a process where they are heard (Keen & Mahanty, 2006; Meredith, 1992). Not only do community-based approaches to EA focus on dialogue, they include capacity-building and institution-building which are key factors for sustained and sustainable outcomes. This is very important if community development is to include environmental objectives as well as social and economic ones. Spaling (2003) described the process as a communal selecting of valued environmental components, assessing of impact significance, determining of mitigation measures, and finally, collectively approving the project. Kakonge (1995) believed that the community-based approaches to EA would strengthen the analytical and implementation capacities that legislated policies demand.

This process of participating in a community-based approach to EA could potentially lead to learning, social action and empowerment (Diduck, 1999; Freire, 1970; Friedmann, 1987; Keen & Mahanty, 2006; Meredith, 1992; Mezirow, 1981, 1995). This process could also contribute to sustainability in the sense that environmentally, a community-based approach to EA enables people to approach the decision-making process learning how to anticipate and prevent or minimize negative impacts and exercise caution when planning. Socially, it can: provide equitable access for marginalized communities to engage in a (potentially) meaningful community-level planning process; enable diverse perspectives to be heard; allow citizens to propose alternatives so that the programme can reflect better their needs and aspirations; and, facilitate community inter-connectedness.

Integrating elements and practices from critical pedagogy in community-based approaches to EA could potentially provide an excellent tool for enhancing democratic processes because participants learn basic citizenship skills through critical reflection and participation. These participatory processes can encourage civic responsibility, social rationality, collective problem-solving with the community, and political conflict management (Diduck & Sinclair, 2001; Moote, McClaren, & Chickering, 1997; Petts, 2003; Shor, 1993). Community-based approaches to EA, as potential educational forums, address Finger and Asún’s (2001) concern that non-formal adult education needs to be used to create sustainable communities and sustainable livelihoods that are real alternatives to the present consumer lifestyle. Participating in a community-based
approach to the EA process could potentially help citizens better situate themselves within a market-economy reality through a transformative learning process and the development of critical consciousness (Sims & Sinclair, 2008).

A major component that facilitates learning through community-based approaches to EA comes from a reliance on legitimate participatory methods to engage the public (Neefjes, 2001). Participatory methods are recognized by development practitioners as “a growing family of approaches and methods to enable local people to share, enhance and analyse their own knowledge of life and conditions, to plan and to act” (Chambers, 1994, p. 1 as cited by Binns, Hill, & Nel, 1997). It was recognized that a top-down methodology did not work in development practice so there was a need to create a new approach. Common principles of these participatory methods are that they: include multiple perspectives; have a defined methodology and systems-learning process; focus on group-learning processes; are context specific; are facilitating information sharing between local communities, experts and stakeholders; are flexible; and are a process leading to sustained action (Beebe, 1995; Pretty, 1995). Further, they are holistic, inclusive of local knowledge, helpful in developing alternatives with communities (Binns et al., 1997) and allow for the incorporation of participants' lived experiences. Community-based approaches to EA, using legitimate participatory methods, allow people to construct knowledge around a problem that they define (Geilfus, 1998; Spaling, 2003). Chambers (2003) outlined the benefits to participants as being empowering, insightful and transformative. This results in improved project process, direct learning, diversification of views, and research.

Empowerment is a long process and community-based approaches to EA provide a good interface between communities, government, and law-making. The greater the level of local participation and the more control and power marginalized people have over decisions that affect them, the more empowering the process is (Lather, 1986; Petts, 1999a; Rocha, 1997). Involving citizens in local decision-making improves civil society and allows them to address the underlying development issues of poverty and isolation (Myers, 1999). With time and practice, communities become self-reliant as local capacity grows (Spaling, 2003). Participating in a CBEA process, there are opportunities for knowledge to be created by the participants and the other

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22 Including ones from participatory rural appraisal, rapid rural appraisal, and participatory learning in action.
stakeholders collectively. This collective knowledge-creation process, from a learning perspective, can be very empowering (Freire, 1970).

2.4.2.6 CBSEA Design, Implementation, and Facilitation Considerations

Just as describing and reflecting upon transformative learning theory had important implications in terms of designing a potentially transformative learning process (see Sections 2.2.1, 2.2.2, and 2.2.3), so too the relevant literature on EA, community-based approaches to EA, and literature linking learning and public involvement in natural resource management decision-making has had a significant impact on the design and facilitation of the CBSEA. This is especially true as I approached this challenge intending to use a CBSEA as a means potentially to engage participants in a critical learning process that might lead to a transition towards sustainability.

In terms of public involvement in the CBSEA process, I tried to involve community members in the decision-making process as early as possible and throughout different stages of the planning, implementation and facilitation of this CBSEA process. The understanding was that the greater the degree of participation, the more meaningful it could be and the more beneficial it could be (see Sections 5.1 and 5.2). For example, in both watersheds community members along with ICE and Ministry of Agriculture employees were included when: planning the venue and the times for the workshops; assessing who would be most interested in participating, deciding how to get the word out, and inviting the participants; and organizing the logistics of the workshops. When implementing the workshops, community members were actively engaged through participatory activities, the communal visioning activity was meant to help elucidate what the participants considered valuable when considering development planning, this provided criteria for assessing the programme whilst the generation of alternatives was meant to accommodate community-generated components as part of the list of components to be assessed in the CBSEA. Within the facilitation of the CBSEA process, community members played different roles including participants, organizers, and facilitators. This inclusion of community members in the decision-making process was meant to address traditional power imbalances by creating an equitable learning environment where participants not only learn through the process but they learn about the SEA process and potentially take ownership of it. Further, it was meant to provide a forum where participants could directly engage with a programme proponent from a
more equitable footing enabling community participants and programme proponents to engage in constructive dialogue.

Finally, in terms of designing and implementing a CBSEA framework, I used the basic SEA framework provided by Thérivel and Brown (1999) and Noble (2005) and combined it with a CBEA approach based on Neefjes (2001), Michaelidou et al. (2002), and Spaling (2003) and applied it with communities from two different watersheds in Costa Rica. Within this larger framework and community-based approach, I approached the design of the specific activities where community members would be involved from an educator's perspective, trying to create participatory activities that would engage participants in a critical way such as to facilitate transformative learning. I did this because I wanted to create a community-based approach to SEA that engaged the public in a meaningful way and that used the CBSEA as a learning forum so as to enable participants to engage in a critical process that could potentially enable learning, in turn leading to sustainability and a more meaningful participation in natural resources management decisions that effect them.

2.5 Summary

This chapter reviewed literature that provides context and a theoretical foundation for my dissertation. In Section 2.1 it started with a thorough description of transformative learning theory. In brief, transformative learning theory is a comprehensive adult learning theory with an emphasis on contextual learning, critical reflection on assumptions, and validating meaning by assessing reasons. This is followed by an overview of how transformative learning is situated within the larger educational context. This involved situating transformative learning theory amongst the general learning theories (i.e. concluding that transformative learning theory is part of the constructivist paradigm of learning with humanist elements), linking transformative learning theory with the tradition of critical education, and outlining major influences on Mezirow's work (i.e. Habermas and Freire). I conclude by explaining that I chose this critical transformative learning theoretical approach when designing, organizing and facilitating the community-based strategic environmental assessment aimed at facilitating sustainability because it could facilitate a more inclusive and equitable dialogue and provide a sound pedagogical base for dealing with complex issues.

In Section 2.3 this is followed by a discussion highlighting certain aspects of the learning theory that remain problematic as they apply to learning in resource and
environmental governance settings. These aspects included how the privileging of rationality and the lack of recognition given to other ways of knowing and affect might prove to be barriers to learning, particularly when working with traditionally-marginalized communities. Following this discussion, I proposed a pedagogical approach, grounded in the relevant literature, that would potentially enable meaningful participation from traditionally-marginalized voices in a community-based learning forum. This involved creating an inclusive, supportive, and safe environment where the focus of the learning was relevant to farmers' lives and where farmers could collaborate through rational discourse to problem-solve and problem-poser based on their experiential knowledge base. In terms of contributions to learning theory, this case study will contribute to empirical research by examining transformative learning theory within a different cultural context, that being a Costa Rican rural context, with small-scale farmers, in the cross-cultural nexus between farmers and ICE (a governmental institution).

Section 2.4 explores how learning through public participation in a community-based approach to environmental assessment potentially provides a vehicle for sustainability and for the meaningful engagement of citizens in local resource management decisions. I argued that a community-based strategic environmental assessment, a strategic environmental assessment whose framework I adapted to accommodate a community-based participatory approach, could provide a non-formal adult-learning forum where traditionally-marginalized communities could participate in a programme-planning process. I continued that if a community-based strategic environmental assessment were designed and facilitated incorporating the principles of critical education and legitimate participatory methods then it could provide a meaningful forum where local knowledge could be shared and valued, mutual learning facilitated and communities could work towards greater self-reliance and a greater voice in local decision-making. In terms of contributions to natural resources management literature focussing on public participation, learning and community-based approaches to environmental assessment, this case study will contribute to both practice and theory. In practice, it will contribute to empirical research by elaborating a participatory community-based framework for a strategic environmental assessment and test it with Costa Rican farmers evaluating ICE's agro-conservation programme. In theory it will contribute to literature examining how public participation in a community-based
approach to environmental assessment can lead to adult learning and potentially transformative learning.
CHAPTER 3: RESEARCH PLAN AND METHODOLOGY

As stated in Chapter 1, the purpose of this research was to explore the opportunities for adult and transformative learning through public participation done through a study of the Instituto Costarricense de Electricidad's (ICE) watershed management agricultural programme (WMAP) and also through a community-based strategic environmental assessment (CBSEA) process of ICE's proposed WMAP Phase II. To some extent, this has been a continuation of research I did at the Master’s level at Queen’s University (Sims, 2002, 2003) that looked at a case study in Nayarit, Mexico. It focussed on education for re-creating civil society and how education was used to promote sustainable development, political voice, and safety.

In the current research, I used a qualitative, case-study approach (Merriam, 1998; Neuman, 2000). A qualitative study is defined as “an inquiry process of understanding a social or human problem, based on building a complex, holistic picture, formed with words, reporting detailed views of informants and conducted in a natural setting” (Creswell, 1994, p. 1-2). Analysis was based on a search for common experiences, indicated by patterns within the data (Bernard, 1994; Creswell & Clark, 2007; Silverman, 2006) and then a subsequent grounding of these findings within the relevant literature.

Primary data collection emphasized researcher observation and the use of semi-structured interviews to record the experiential observations of the participants. This form of survey allowed literate and semi-literate participants to express themselves in their own terms about the specific research topic. I drew upon research protocols developed for contemporary studies exploring the nature and function of learning through participation in the Canadian EA process (Diduck, 1999; Fitzpatrick & Sinclair, 2003; Sinclair & Diduck, 2001) and adapted them to this Costa Rican context.

3.1 The Paradigm Dialogue

In social science and educational research there are three major research paradigms. They are positivism, interpretive social science and critical social science (Neuman, 2000). Although the three approaches are distinct one from the other, they do share some commonalities including that they are all empirical (i.e. they are all rooted in people's observable reality), they all emphasize meticulous and careful work, they are all theoretical (i.e. they emphasize using ideas and seeing patterns), and they all indicate that a researcher’s work must be candidly expressed and shared with other researchers.
and the public. All approaches also state that researchers must think about what they do and be self-conscious, and all see research as an open-ended process that is constantly evolving (Neuman, 2000, p. 84).

A qualitative approach (a.k.a. interpretivist and constructivist) arose as an alternative to the positivist paradigm (Neuman, 2000) with the basic assumption that meanings are constructed by humans as they engage with the world that they are interpreting. Qualitative researchers tend to use open-ended questions so that participants can fully express their views. Researchers believe that individuals “engage with their world and make sense of it based on their historical and social perspective – we are all born into a world of meaning bestowed upon us by our culture. Thus, qualitative researchers seek to understand the context or setting of the participants through visiting this context and gathering information personally” (Creswell, 2003, p. 9). Researchers then make an interpretation of what they find, a subjective interpretation informed by the researcher’s own experiences and background. The process of qualitative research is largely inductive with the researcher usually generating meaning from the data collected in the field. “The basic generation of meaning is always social, arising in and out of interactions with a human community” (Creswell, 2003, p. 9). “In general, the interpretative approach is the systemic analysis of socially meaningful action through the direct detailed observation of people in natural settings in order to arrive at understandings and interpretations of how people create and maintain their social worlds” (Neuman, 2000, p. 68). From this general qualitative (interpretivist/constructivist) paradigm came different forms of inquiry including a case-study approach.

Critical social science is an approach that has evolved from almost a century of vibrant and dynamic multi-disciplinary work within the tradition originally called critical theory (White, 2004). Critical theory is a social theory that aims to critique and change society as a whole, in contrast to traditional theory oriented only to understanding and explaining it. It applies to both the research process and adult learning. Dant (2003) explained that:

Each version of critical theory challenges how history and society are currently understood within the entrenched patterns of power which shape modern society. The challenge amounts to critique because it argues that how the social world has been previously understood is part of the reason why it is the way it is. Rather than seeing history as transparent to knowledge, critical theories argue that a particular history produces a particular knowledge that obscures the constraints on lived experience.
that it engenders. The critique of the culture of modern society is intended to initiate change; it is not disinterested description or mere criticism of mistakes. (p. 156)

The term "critical theory" originated from the Institute of Social Research (more commonly known as the Frankfurt School). Buck-Morss, as cited by Dant (2003) stated that "critical theory was never a fully articulated philosophy which members of the Institute applied in an identical fashion. It was more a set of assumptions which they shared, and which distinguished their approach from bourgeois, or 'traditional' theory' (1977)" (p. 157). Friedmann (1987) (writing about the traditions of planning thought and action) explained that the Frankfurt School was part of a larger movement including both Historical Materialism and the Utopians, Social Anarchists, and Radicals. Friedmann wrote that:

Proponents of all three oppositional movements were chiefly motivated by their moral outrage over the conditions of early industrial capitalism. They were guided in their quest for a better society by their belief in the possibilities of social emancipation; they were concerned with changing the course of history through varieties of collective action; and they asserted their firm belief in the necessity of scientific and technical knowledge for radical action: it was through the application of scientific thought that the tasks of revolution and social reconstruction would be accomplished. (p. 228)

Brookfield (2005) outlines the defining characteristics of critical theory. The first is that critical theory is "firmly grounded in a particular political analysis" (p. 23), usually the primary unit of analysis has been the conflicting relationship between social classes within a capitalist system. A second distinctive characteristic is "its concern to provide people with knowledge and understandings intended to free them from oppression. The point of theory is to generate knowledge that will change, not just interpret, the world" (p. 25). A third crucial difference is that it "breaks down the separation of subject and object, of researcher and focus of research, found in traditional theories" (26). And fourth, "it is normatively grounded…not only does the theory criticize current society, it also envisages a fairer, less alienated, more democratic world" (p. 27). Brookfield continues "Because of this exercise of internal criticism, critical theory has undergone a number of important reformulations over the years" (p. 37). Of particular relevance to this research is that class is no longer the only or sometimes even the primary unity of analysis amongst those who identify themselves as critical theorists. Though it remains crucial, it is usually linked with race and gender in the holy trinity of contemporary ideology critique. (p. 37)
Dant (2003) pointed out that
critical theory adopts a mode of engagement that can be described as
praxis-knowledge as action. It calls for active thought that continually
challenges the existing state of affairs in society. The praxis of critical
theory is in its provocation to thought – thinking differently about the
social world will lead to change in the way society is lived. (p. 160)

In terms of applying critical social science to the research process, Neuman
(2000) wrote that “the critical researcher questions social situations and places them in a
larger, macro-level historical context” (Neuman, 2000, p. 75). Lather (1986, p. 268),
coming from a post-modern feminist perspective, explained:

Critical inquiry is a response to the experiences, desires, and needs of
oppressed people (Fay 1975)…Critical inquiry is fundamentally a
dialogic and mutually educative enterprise. The present is cast against a
historical backdrop while at the same time the 'naturalness' of social
arrangements is challenged so that social actors can see both the
constraints and the potential for change in their situations…Critical
inquiry focusses on fundamental contradictions which help dispossessed
people see how poorly their 'ideologically frozen understandings' serve
their interests…It stimulates 'a self-sustaining process of critical analysis
and enlightened action' (Comstock, 1982).

Further, it should enable a critical response to the research findings (Lather, 1986).

Critical researchers believe in the unrealized potential of people to dispel their
illusions and join collectively to change society. “It is emancipatory in that it helps
unshackle people from the constraints of irrational and unjust structures that limit self-
development and self-determination. The aim of …critical studies is to create a political
debate and discussion so that change will occur” (Creswell, 2003, p. 11). It is
collaborative and practical because it is inquiry that is completed “with” participants
and not “on” or “to” them. Participants "have a moral right to participate in decisions
that claim to generate knowledge about them' (Heron, 1981)…Doing research on
persons involves an important educational commitment: to provide conditions under
which subjects can enhance their capacity for self-determination in acquiring knowledge
about the human condition” (Lather, 1986, p. 262; see also Friedmann, 1987). In this
spirit, researchers engage participants as active collaborators in their inquiries. The
collaborative theorizing is at the heart of critical inquiry research which both advances
emancipatory theory and empowers the researched (Lather, 1986). In general, critical
social science “defines social science as a critical process of inquiry that goes beyond
surface illusions to uncover the real structures in the material world in order to help
people change conditions and build a better world for themselves” (Neuman, 2000, p. 74).

In sum, the development of emancipatory social theory requires an empirical stance which is open-ended, dialogically reciprocal, grounded in respect for human capacity, and yet profoundly skeptical of appearances and 'common sense'. Such an empirical stance is, furthermore, rooted in a commitment to the long-term, broad-based ideological struggle to transform structural inequalities. (Lather, 1986, p. 269)

Finally and of great value in terms of the overall purpose of this research, Brookfield (2005) clearly articulated the relevance of critical theory to adult learning. He wrote:

A critical theory of adult learning is inevitably also a theory of social and political learning. It studies the systems and forces that shape adults' lives and oppose adults' attempts to challenge ideology, recognize hegemony, unmask power, defend the lifeworld, and develop agency...critical theory springs from the desire to extend democratic socialist values and processes, to create a world in which a commitment to the common good is the foundation of individual well-being and development. A critical theory of adult learning will always come back to the ways in which adults learn to do this. (p. 32)

My Approach

My theoretical paradigm has been informed by critical theory. Due to the nature of my case study, as the context of the learning that I was investigating was situated within a real-life natural resource management decision-making process meant to engage marginalized people in a meaningful way in decisions that affect them, I decided that a critical stance was the most appropriate. My position was that of desiring potentially to empower participants by facilitating learning through participation in the study and by engaging the participants in what is considered to be emancipatory research (Lather, 1986, 1992). This was reflected in a variety of ways throughout my approach to data collection and the design and implementation of the CBSEA.

In terms of creating and facilitating the CBSEA, this critical stance motivated me to try to enable non-formal learning that was inclusive of marginalized voices, that worked to mitigate power imbalances [often influenced by macro-cultural factors (Ratner, 2006)] in the learning setting (e.g., between farmers and professionals/technicians), that involved a critique of power related to the real world context of the agro-conservation programme, and that enabled a voice for farmers in the decision-making process.
In terms of my approach to data collection, I had wanted to, and did, collaborate extensively with participants during the research process providing opportunities for participants to help shape the research, be informed of the progress and provide feedback when appropriate. My research strategy, which is consistent with a critical research paradigm, was a case study using participatory research and participatory methods; the latter two were employed with the intention of enabling meaningful participation that was potentially empowering.

Data collection tools included semi-structured (often sequential) interviews, participant observation, and participatory workshops. In creating the questions for the semi-structured interviews focussing on ICE's agro-conservation programme and later the CBSEA process, I tried to facilitate critical reflection and rational discourse around underlying questions of power that the participants face. When approaching both ICE and farmer participants, I tried to create an equitable environment for discussion where participants' views were valued and where participants felt comfortable. This included meeting them on their terms where they felt most comfortable and by allowing them the freedom to answer the questions they felt most comfortable to answer. Further, in the data-collection process and analysis of results, I provided opportunities for participants to provide feedback on the credibility of the data collected and critique the emerging analysis and conclusions. In the participatory workshops and subsequent interviews, I tried to engage participants in a critical reflective dialogue on what they had learnt through and about the CBSEA process as a way of facilitating a critical understanding of the shared lived experience as well as its potential significance for them in future natural resources management decision-making processes. This was done in the hopes of involving participants in a collaborative effort to generate knowledge and understanding as well as build empirically-rooted contextually-relevant theory (Lather, 1986).

A very important part of approaching this research from a critical perspective has been trying to reflect on my own role as a researcher and educator/facilitator within this whole process. Baumgartner (2002) and Caffarella and Merriam (2000) provide some thought-provoking questions that have helped me examine my own role, my position of power as an educator, questions around the learning process and
organization, and questions around the nature of knowledge. Reflection upon these questions has been woven into the discussion of results in Chapter 6.

3.2 Case Study

I chose a case-study approach in order to build upon relevant national and international studies focussing on learning through participation in natural resource management decision-making processes that also have used a case-study approach (Diduck & Mitchell, 2003; Fitzpatrick & Sinclair, 2003; Neefjes, 2001; Petts, 2003; Spaling, 2003; Walter, 2007; Webler et al., 1995). This approach allowed me to investigate educational practices and learning in their uniqueness whilst still considering the context where the learning takes place. Furthermore, case studies can be empowering and are a commonly used approach within critical inquiry (Lather, 1986).

“A case study is an empirical inquiry that investigates a contemporary phenomenon within its real-life context, especially when the boundaries between phenomenon and context are not clearly evident” (Yin as cited in Merriam, 1998, p. 27). It is a study within a bounded system. It “does not claim any particular methods for data collection or data analysis” and it is a method chosen by “researchers interested in insight discovery, and interpretation rather than hypothesis testing” (Merriam, 1998, p. 28). Becker (1968 as cited by Merriam, 1998, p. 29) identifies the purpose of a case study as being: “…to ‘arrive at a comprehensive understanding of the groups under study’ and ‘to develop general theoretical statements about regularities in social structure and process.’” “A case study”, as Merriam (1998, p. 33) put it, “might be selected for its very uniqueness, for it can reveal about a phenomenon, knowledge we would not otherwise have access to.”

Qualitative case studies are characterised by being particularistic, descriptive, and heuristic. They are particularistic because case studies themselves are important for

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23 Questions about my own role as educator include: As an educator, what right do I have to plan for perspective transformation? How responsible am I as an educator for those changed by the perspective transformation?
Questions about my position of power as an educator: Are those who hold the power really operating in the best interests of those being educated? Do our behaviours and actions as educators actually reinforce our power positions, or do they acknowledge and use the experiences and knowledge of those with whom we work, especially those who have been traditionally under-represented in adult-learning programmes?
Do we use our power as adult educators to enable or avoid discussions about the importance of underlying issues like race, gender, class and ethnicity in the learning enterprise?
Questions about the learning and organization process: Whose interests are being served by the programmes being offered? Who really has access to these programmes? Who has the control to make changes in the learning process and outcomes?
Questions about the nature of knowledge: What counts as knowledge? Where is it located? How is it acquired?
what they reveal about the phenomenon and for what they might represent. They are
descriptive because the end product is a rich or “thick” description of the phenomenon
under study. They are described as being holistic, life-like, grounded and exploratory.
They are heuristic because the case study will illuminate the reader’s understanding of
the phenomenon under study (Merriam, 1998, p. 30). Case-study knowledge is concrete,
contextual, developed by reader interpretation, and based on reference populations
determined by the reader (Merriam, 1998).

A case-study approach includes the following advantages. It allows a rich and
holistic account of the phenomenon. It offers insights and illuminates meanings that
expand the researchers’ experiences. It allows for applied field study, and is useful for
studying educational innovations, for evaluating programs, and for informing policy
(Merriam, 1998). Limitations include that a researcher may not have the time or
resources to do such an undertaking justice. Sometimes case studies oversimplify or
exaggerate a situation, and case studies are limited by the integrity of the researcher. In
order to counter this, investigators must be aware of their own biases and the inherently
political nature of case-study evaluations. Often the investigator has some sort of power,
directly or indirectly, over the participants involved in this study. Further limitations
include problems associated with reliability, validity, and generalizability (Merriam,
1998). One possible limitation is that a case study of one community might not lend
itself to generalisation to other contexts.

For these reasons and appropriateness of this approach for realizing my research
objectives, I chose to do a case study looking at individual learning through public
participation in ICE’s WMAP and participation subsequently in a CBSEA process.

Case Study Site Selection
When initially looking for an example of a community-based approach to EA,
my broad case study selection criteria included:

i) That the community had a project or programme pending.

ii) That the community was collaborating with an organization that was
facilitating a community-based approach to EA process.

iii) That the community was willing to participate with me, the researcher, as a
facilitator in the community-based approach to EA process.

Why Latin America?

When looking for an appropriate case study, I chose Latin America for primarily
two reasons. The first was that the relevant literature had few documented case studies
looking at learning through community-based approaches to EA in Latin America. The second was because I speak Spanish and I am familiar with the general cultural context of the region.

*How did I find my case study with ICE?*

The journey to find an appropriate community-based approach to EA case study was greatly facilitated by a few key contacts, these included: Dr. Dave Lobb, Dr. Iain Davidson-Hunt, Dr. Harry Spaling, Dr. Ted Gullison, and Dr. John Sinclair. With their help, I was able to contact a variety of potential organizations searching for an appropriate site. Some of the ensuing contacts included: CATIE (Costa Rica), COSTACAN III (Costa Rica), Fundación AVINA (Argentina), International Association for Impact Assessment (USA), Oneworld/Unmundo, Oxfam, Sierra Madre Alliance (Mexico), and World Vision Canada (Central America). Finally, as a result of exploring possibilities with COSTACAN III, I came into contact with Laura Ramírez Cartín (COSTACAN III is a Costa Rican-Canadian CIDA-sponsored agricultural initiative).

There is not enough I can say about Laura Ramírez. She was single-handedly invaluable in finding an appropriate case-study in Costa Rica. We initially started communicating in October 2004 and at the beginning of December 2004 I went to Costa Rica to assess the projects that we had been discussing via email. Because she has lived in Costa Rica most of her life and has worked professionally as a private consultant and for the government in both EA and community-based participatory programmes, Ramírez proved invaluable. Due to her enormous amount of hands-on professional experience and her down-to-earth manner, she was/is very well respected in the field and has an enormous number of contacts in both the private and public sector. My initial visit to Costa Rica was amazingly productive. When I arrived, Laura Ramírez had already organized what she called “Proyecto Laura Sims” which proved to be a series of contacts that she thought would be appropriate, she had also convinced her friends to chauffer me around to the different meetings around the country.

During this initial visit, I met with two to three different organizations every day. The organizations varied enormously and, in truth, there were probably three to four different possibilities that would have worked as case studies. Some interesting smaller initiatives included: a cooperative of women who were implementing hydroponics in their homes and community to be able to feed their families and generate a little income, and the ASADA de San Rafael which is a volunteer-run
community-based aqueduct-administrator organization that provides water to the community and which is now in the process of wanting to expand the water pipes (it appears that they use a very participatory model to decide where to implement the new pipes and what the needs of the community are). Other contacts I was able to make this trip included: Cedarena (NGO) which is like the Costa Rican Sierra Legal Defence Group that looks at the legal framework that is available to the communities; the Ministro del Ambiente y Energía (Ministry of the Environment and Energy, more commonly known as MINAE) and the Secretaria Técnica Nacional Ambiental (National Environmental Technical Secretary, more commonly known as SETENA) which are government agencies that make and enforce the environmental laws; university-based NGO ProDUS and government-based INTI which are professional organizations that implement environmental management plans; and, the Naranjo governmental planning committee that is just initiating a huge environmental management plan to help preserve the watershed.

The two most appropriate initiatives that I encountered, based on the broad criteria outlined earlier, included ICE's agro-conservation work with communities in the Sarapiquí watershed and the Talamanca Initiative’s work with communities. The Talamanca Initiative is a group of three local NGOs that are working in Talamanca on the east coast of Costa Rica. They recently won the Equitorial Initiative Prize. They use very participatory methods with the communities to decide about economic development and conservation projects. They are two very different projects with very different goals and approaches to engaging communities.

The following criteria helped me narrow the search that led me to finally choosing the publicly-owned Instituto Costarricense de Electricidad in Costa Rica: experience with EA; existing information and knowledge about the project or programme; potential impact of the research; logistical considerations (especially access to site and participants); and scale of the project or programme. At this initial field visit, ICE's (Sarapiquí) WMAP team explained that they collaborate with farmers and with communities to implement conservationist agricultural projects that reduce the negative impact of human activity on the watershed. ICE focusses on protecting the Sarapiquí watershed because they are mandated to do so by law as a public company and also, financially, it is a good investment to protect their hydro-electric resources. Together with farmers, they explained, they assessed the potential impacts that these
environmentally-, socially- and economically-sustainable projects would have at a farm and community level.

I chose this particular initiative as my focus because:
i) I perceived at the time, according to ICE (Sarapiquí's) agro-technician's explanation, that the ICE (Sarapiquí) WMAP team was doing CBEAs around the agro-conservation projects with individual farmers and with participating communities in the Sarapiquí watershed.

ii) There was accessible existing background information about the case study location (especially natural-resource related), the physical impacts of the projects and the watershed management agro-conservation programme itself.

iii) In terms of the potential impact of the research, ICE could potentially use the results of this research to facilitate more effective and meaningful ways to involve communities in decision-making processes within the agro-conservation programme in both Sarapiquí and in other watersheds where they were either implementing or planned to implement similar watershed-management agro-conservation programmes.

Further, not directly related to their watershed management plan but related to ICE's work with their hydro-development projects, in 2005 ICE formed an interdisciplinary task force to investigate and develop more effective and potentially meaningful ways to engage the public in the EA process. This made the timing of this research very auspicious if lessons learnt from this case study were potentially to have an influence on the methods used by ICE to engage communities within a more conventional EA process. Results from this case study would also complement the more quantitative approach to watershed protection and community development that ICE has taken up until this point.

On a broader scale, this research might have implications at a larger regional level. At initial interviews with ICE, I was told that other Latin American countries are looking at the work that ICE is doing to engage communities in the decision-making process in order to create their own policies and practices. Helping create sound participatory practices in Costa Rica could have a ripple effect throughout the region.

iv) In terms of size of project or programme, I perceived the number of participants in ICE Sarapiquí's WMAP small enough to be manageable but large enough to obtain an adequate sample size. The study site was rural yet accessible. Most participants in the programme had phones and all the farms were accessible by road. All the participants lived within a 2.5-hour drive from the capital San José and in or around towns that had
accommodation, eating facilities, and access to public transport. This accessibility was particularly important in terms of my ability to contact participants directly and visit them independently. Further, in terms of logistical support, ICE offered to: cooperate fully with me, provide access to requested relevant information, and provide logistical support when necessary (like transportation and food if needed).

v) Significantly, ICE Sarapiquí watershed management team indicated that they would be open to participating in a community-based approach to the EA process with me if in fact I found that what they had been doing with their farmer participants was not in fact a CBEA (as I had first perceived).

vi) On a personal level, when I met José Luis Gonzalez and Allan Retana from ICE Sarapiquí's watershed management team my first impression of them was that they were honest, straightforward, open, sincere and cooperative. I felt that on an interpersonal level it would be easy to collaborate with them for this case study.

The whole process of initially searching for a case study to finally finding one took from the beginning of April 2004 to mid-December 2004. After that, it took two months of negotiation and clarification with Dr. Sinclair and Dr. Spaling to make sure that working with ICE was in fact appropriate.

At the beginning of my second field visit to Costa Rica, I met with Marco Jaubert (May 6th, 2005), coordinator of the watershed management units for ICE. At this initial meeting I learnt about the history of the watershed management programmes, including the agro-conservation programme, and that in fact the programme had started in the Reventazón watershed. I decided to broaden my case study to include both the Sarapiquí and Reventazón ICE WMAPs for a variety of reasons. First, I wanted to be inclusive of a wider range of experiences so I selected communities from both watersheds who were collaborating with two different ICE WMAP teams. In addition to the initial inclusion of the Sarapiquí WMAP, the Reventazón WMAP was chosen because it had been collaborating with ICE (Reventazón) since the programme’s inception in 2000-2001.

3.3 Data Collection

Guidance for the design of the sampling techniques was based on transformative learning literature (Belenky & Stanton, 2000; Daloz, 2000; McDonald et al., 1999; Merriam, 2004; Mezirow, 2000; Taylor, 2000, 2007; Yorks & Kasl, 2000), participatory research and critical inquiry literature (Fals-Borda, 1991; Freire, 1970; Hall, 1981;
Kemmis & McTaggert, 2003; Lather, 1986; McTaggert, 1991), participatory methodology literature (Binns et al., 1997; Chambers, 2003; Pallen, 1996; Pretty & Vodouhè, 2003), and on methodologies used in previous case studies investigating learning through public participation in conventional and participatory natural resource management decision-making processes (Diduck & Mitchell, 2003; Fitzpatrick & Sinclair, 2003; Neefjes, 2001; Spaling, 2003). Transformative learning and participatory research are integral to critical education, the latter of which is particularly relevant to popular education in Latin America. Participatory research and methods are commonly used in community-based approaches to EA.

For my research I used a participatory research approach based on tools developed by Freire (1970), Hall (1981), Gianotten and de Wit (1982), Fals-Borda (1988), McTaggert (1991), and Kemmis and McTaggart (2003). Even though some of these writings are not recent, they are still relevant and central to participatory research philosophy and the context of my research in Latin America. They provide a substantial link between a research methodology common to non-formal adult learning, community-based approaches to EA, and participatory assessments. Further, for me this kind of approach is familiar because it is very similar to the participatory assessment I used doing my Master’s research in Nayarit, Mexico (see Sims, 2002, 2003).

Using a participatory research approach allowed me to collect the data I needed and to engage in a democratic form of research that included the participants (community, NGOs and government) in shaping some of the aspects of the research. (For example, logistically, participants collaborated in the decision-making and implementation of the planning and promotion of the CBSEA workshops. In the workshops and contextualized within the guiding framework of the CBSEAs, they generated ideas that provided components for the impact assessment. Further, during and following the workshops, participants were given opportunities to reflect critically on and discuss the CBSEA process as a whole providing important feedback not only for this research but also for building local understandings.) Participatory research does indeed apply to a peasant economy (Gianotten & de Wit, 1982) and is considered an authentic tool in adult education for trying to reach an equitable society (Finger & Asún, 2001; Lather, 1986). Participatory research allowed me as a researcher to not only observe the CBSEA process, but to participate in it. It enabled me to include participants in shaping some of the aspects of the research to reflect local priorities and objectives. It also allowed me to engage in a methodology that is theoretically
congruent with the process I was investigating. A critical social science paradigm, transformative learning theory, participatory research, and CBSEA all share a commitment to equality, a just society, learning, and facilitating meaningful local participation in dialogue.

3.3.1 Participatory Research

Participatory research (PR) [also known as action research and participatory action research] has a long historical tradition in critical adult education and the struggle for a more equitable society. “It has roots in liberation theology and neo-Marxist approaches to community development (in Latin America, for example), but also has rather liberal origins in human rights activism (in Asia, for example)” (Kemmis & McTaggart, 2003, p. 337). Hall (1981) elaborated that during the 1950s and 60s the dominant research paradigm was a North American and European model based on positivism and empiricism characterized by a focus on instrument construction and rigour defined by statistical precision and replicability. These practices extended to the Third World and acted as another manifestation of cultural dependency.

The reaction from the Third World has taken many forms. “The Third World’s contribution to social-science research methods represents an attempt to find ways of uncovering knowledge that work better in societies where interpretation of reality must take second place to the changing of that reality” (Hall, 1981, p. 8). By the early 1960s and 70s practical experience in what was known as PR was being practised in parts of Africa and Latin America by adult educators and development workers. “One of the most useful roles of Paulo Freire has been to bring some of the current ideas of Latin American social scientists to the attention of persons in other parts of the world” (Hall, 1981, p. 8).

Similar to themes found in critical social science, transformative learning theory, and critical non-formal adult education, the main themes emerging from the PR literature are the relationship between knowledge and power, the kind of participation participants engage in during the course of the investigation, and the researcher/participant relationship. The ultimate goal of PR is the production of popular knowledge and social transformation. Popular knowledge is described as a collective creation by participants of new knowledge about themselves and their reality. It is a “raw knowledge” that is brought forth. Through discussion, connections and deeper insights are made to the bigger socio-political context. This creation of popular
knowledge is a form of counter-hegemonic activity. PR is a kind of dis-indoctrination because it allows participants to see critically the construct within which they live (Hall, 1981).

PR is a combination of research-oriented, adult education and socio-political action. It is an “experiential methodology” that implies gaining reliable and serious knowledge upon which to construct power for the poor and for their organizations (Hall, 1981). As Fals-Borda (1988, p. 36), a Latin American author and researcher, wrote:

there was being developed a theoretical-practical possibility represented in participative action-research. This is a collective invention peculiar to the Third World and inspired in our distinct reality and our complex of problems, and it bears the character of a serious and creditable search for the great solutions for which these movements yearn.

In defining PR methodology an attempt is made to answer “the how – as well as the why and wherefore- of social knowledge in this our age of expectations and conflicts” (Fals Borda, 1988, p. 36). The central features of PR are that it is a social process, participatory, practical and collaborative, emancipatory, critical, and recursive (i.e. reflexive, dialectic) (Kemmis & Wilkinson, 1998, pp. 23-24).

Fals-Borda asserted that “PR is ‘a process that combines scientific research and political action,’ whose objective is a ‘radical transformation of social reality (economic-ideological)’ and the construction of popular power for the benefit of everyone” (as cited by De Souza, 1988, p. 36). De Souza continued, stating that “a society is sought, that enables the humanization of all human beings. PR is understood as one of the instruments that contributes to this process insofar as it allows to generate the adequate kind of knowledge and social transformation and the construction and consolidation of new social relationships” (De Souza, 1988, p. 36).

The role of the researcher in PR is to “be committed to seeing the PR process through to the end, avoid actions that endanger community members, and see clearly and support, the situation of subordinate groups within the community” (Hall, 1981, p. 10). It is also the researcher’s role to learn with the community, build indigenous capacity for collective analysis and action, and build new knowledge. Spaling (2003) reaffirmed this by describing the role of the researcher as learner, listener, catalyst, and facilitator.

Although I consider my research to be PR, it was not a completely organic process originating in the community. This case study was bounded by the focus of the research (i.e. focussing on individual learning through participation in natural resources
management decision-making processes) and a community-based approach to EA provided a framework for the participatory activities. This helped avoid the criticism of PR of confusing social activism and community development with research (Kemmis & McTaggart, 2003). The characteristics of PR (Hall, 1981) that are reflected in my research are: that the problem originated through a negotiation between my research goals and community participants' desire to participate in a larger dialogue around ICE's agro-conservation programme; that one of the aims of the research was that participants in the study benefit from the research and that their lives be improved through the course of that participation; that certain aspects of the research were controlled by the community participants; that the research focussed directly on involving marginalized peoples in the research process; that, especially facilitated through community participation in the CBSEA workshops, it tried to strengthen the awareness in people of their abilities and resources and tried to support organization and mobilization; and that both myself as the researcher and the people involved were committed participants and learners in a process that potentially led to praxis.

3.3.2 Participant Selection and Data Collection Tools

Participants from a cross-section of groups related to ICE's WMAP and Costa Rican rural development were approached. All participation was voluntary. For this research, I worked with key participants from both the Reventazón and Sarapiquí watersheds which included: ICE employees, Ministry of Agriculture (MAG) employees, farmer participants, and environmental activists. Working with local communities, the following data-collection tools were used: semi-structured interviews, community workshops, attendance collection, personal observation and content analysis of documentation provided by the participants, governmental and non-governmental agencies.

The following data collection tools are consistent with a PR approach as well as other case studies looking at learning through participation in conventional and participatory natural resources management decision-making processes. PR literature clearly states that data collection tools should facilitate deeper-level examination and analysis of participants’ reality by the participants themselves and the researchers. I have provided below a description of the data-collection tools, how they were implemented and some of their limitations.
Further, in order to ensure trustworthiness and generalizability as well as provide greater context, I have: provided a detailed description of the phenomena I have studied, triangulated the information with at least three sources (when appropriate), taken descriptions and analysis back to participants for critical feedback, and asked my colleagues to comment on the findings as they emerge. Finally, the nature of my study involving communities from two different watersheds collaborating with two different ICE watershed management teams has provided a kind of cross-site analysis that helps build general explanations.

3.3.2.1 Sample Selection

For both the WMAP data collection stage and the CBSEA data collection stage of this case study research, I attempted to recruit volunteer participants in a variety of ways from a cross-section of interest groups related to ICE's agro-conservation programme and community development. For the WMAP stage, I met with ICE watershed management employees, farmers participating in the agro-conservation programme, community leaders and MAG employees from both the Reventazón and Sarapiquí watersheds who had already worked with the communities to ask if they knew of anyone who might be interested in participating in this study. These intermediaries were important in carrying out my research because they were my link to the communities and the local participants. I realized that getting a spectrum of voices was very important; I made sure to remind those who were approaching potential participants on my behalf that all participation was voluntary and I requested that they not try to persuade people to volunteer. I only contacted those who wished to participate.

For the initial stage of this research, in Reventazón, small-scale dairy farmers who are members of the local dairy cooperative and who are collaborating with ICE in its agro-conservation programme were involved in the research as were a few "integrated" farmers who were also collaborating in the agro-conservation programme. In Sarapiquí, all interviewees were small-scale agricultural producers whose major source of income was producing milk to sell to the local dairy company. ICE employees in managerial positions and those implementing the agro-conservation programme from both Reventazón and Sarapiquí were interviewed. Finally, government employees from both MINAE and the MAG were interviewed as they often collaborate to realize ICE

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24 That is farmers who grow a variety of crops and have some livestock.
projects. A total of 33 people were interviewed, 13 from ICE and other related governmental agencies, and 20 from the communities. The context of this stage of the case study was not as an evaluation of ICE’s agro-conservation programme but rather to inform further research into participatory approaches to programme development and learning outcomes. All of the data collection was done in Spanish and was in no way completed under the employ or direct financial support of ICE.

For the second stage of this research, the CBSEA process and follow-up interviews, I invited initial participants to continue in the research by participating in the CBSEA workshops. Then, again through similar intermediaries as in the initial WMAP stage (ICE employees, MAG employees, community leaders, and farmer participants), I extended a more general invitation to other community members to participate in the CBSEA process. For this second stage of the case-study, there were a total of 82 participants (mostly farmers) from the two watersheds who participated in at least one of the CBSEA workshops and 11 governmental institution employees who attended. In Reventazón, there were 36 participants who attended at least one of the meetings, approximately 22 participants were able to see the process through from start to finish. Three geographically-close communities were represented in these meetings: two were dairy-based communities and the other was agricultural-based. In Sarapiquí, there were 46 participants who attended at least one meeting, approximately 24 participants were able to see the process through from start to finish. Five distinct, but geographically-close and socio-economically similar, communities were involved in these meetings.

Finally, from those who participated in the CBSEA workshops, I made a general invitation to participate voluntarily in follow-up interviews. During follow-up interviews, 40 farmer participants who had attended at least two or three of the workshops were interviewed as were the three ICE employees directly involved. (See Table 5.1 for participation levels at the CBSEA workshops). Chapter 5 Sections 5.1 through 5.3 provide more detail on participation in the CBSEA phase of this case study.

Throughout the whole research process, I focussed on trust-building with the community and with individual participants. It was important for me to establish that I was an independent researcher, with no formal ties to ICE, in order to establish trust and legitimacy for this study. I think that my ability to speak Spanish and my numerous experiences studying, working, travelling and living in Latin America helped establish an authentic relationship with participants.
Semi-Structured Interviews

Semi-structured interviews were used throughout both stages of the data collection process. The primary purpose of interviews was to gain participants’ insights into the learning and participation-related dimensions of farmers’ involvement in the agro-conservation programme and in the CBSEA process. The main topics covered in the interviews included: the ways and means through which individuals participated in the agro-conservation programme; the adequacy of the information provided through the agro-conservation programme; the learning that occurred in and through participating in the agro-conservation programme and how it was facilitated; the learning that occurred in and through participating in the CBSEA process and how it was facilitated; and exploring how (or if) the participants’ perceptions of themselves, their community and their political voice have been transformed through participation in the agro-conservation programme and/or the CBSEA process.

Semi-structured individual interviews provided participants with an opportunity to share their thoughts and feelings privately on ICE’s agro-conservation programme and later on the CBSEA process. For both stages, key participants were interviewed once or twice for a period of between an hour to an hour and a half depending on participant availability and the depth of the interview. These interviews were key to understanding the learning and participation-related components found in the agro-conservation programme and the CBSEA process. Key participants were identified as those participants who were the most knowledgeable and insightful about the research under question. For the initial stage looking at public involvement in ICE’s WMAP, this meant farmers who were actively collaborating with ICE in their agro-conservation programme. For the second stage looking at public involvement in the CBSEA process, this meant participants who had participated in at least two or three of the four workshops. In the initial stage, non-key informants were also interviewed, their information was essential to corroborate information and identify divergent views. For both stages, the interview questions were used as a guide for discussion, but the discussion was not restricted to these questions. (See Appendices A and B for a list of guiding questions focussing on participation in the WMAP and Appendices I and J for a list of CBSEA questions). During the interviews, I was able to probe further and beyond the format of the interview questions. Interviews were in Spanish. Interviews were recorded by audio-tape or hand-written notes depending on what format the participant felt most comfortable with. Once the interviews were complete, I transcribed them and
returned them to the participants so that they could verify if I had captured their ideas well. At this point they could add or eliminate information from the transcript.

In conducting interviews I was better able to contextualize the community and establish good working relationships with participants. Importantly, face-to-face interviews allowed illiterate and semi-literate participants to communicate their ideas, as particularly with those participants, written communication would have been inappropriate. The main limitation included the amount of time needed to conduct interviews. Some participants might have felt initially suspicious of my intentions, and some participants might have had difficulty articulating their thoughts which might have caused them embarrassment. To allay these fears, I tried to be as honest, open, forthright and supportive as possible throughout all of the research steps, including the interviews.

3.3.2.3 Log Entries

Throughout this case study, all of my daily observations were recorded in my log book. This included any informal conversations and broader reflections. At the end of the day, I annotated my impressions on my lap-top computer. When focussing on public involvement in the WMAP, for example, this enabled me to have detailed descriptions of: how farmers were interacting with ICE technicians, the difference and similarities between what ICE and farmers were saying about project implementation and what I observed happening on the ground, the learning that I observed happening through interaction with the projects, and generally the context of the study. For the CBSEA process, my observations focussed on, but were not limited to: how participants were participating in the workshops, the inter-personal dynamics in the workshops, the learning that was occurring through public involvement in the CBSEA, how dialogue and different participatory pedagogical activities facilitated learning, the different approaches to engagement by both ICE and farmer participants between the initial workshops and the final workshops, the individual and collective outcomes from the CBSEA workshops, and the level of commitment. This observation and descriptive process enabled me to compile a more complete understanding of the processes I was observing and analyse the data. This critical reflection on daily observations enabled me to identify emergent themes which subsequently facilitated an iterative process that allowed me to better ground my findings and further explore important themes that were emerging.
Initially, I had thought that participants might be willing to journal their learning experiences throughout the CBSEA process. This I recognized to be an unrealistic expectation on my part as they already had numerous demands on their time.

3.3.2.4 Participatory Workshops

The CBSEA process involved participatory workshops with communities in each watershed. The process was broken down into four components that were addressed in four half-day workshops in each of the Reventazón and Sarapiquí watersheds in order to fulfil the fundamental components of a SEA (see Section 2.4.2.) from a community-based approach. Macro-cultural factors (Ratner, 2006) such as the power imbalance between community members and ICE technicians and the goal to try to mitigate this imbalance were taken into consideration in the design and facilitation of these workshops. I recognized that within the workshops it was important to provide a space where community members could develop ideas independently and make sure that the context and content of the workshops were accessible to the participants (i.e. making sure the process was accessible logistically, linguistically, and providing appropriate steps to participate effectively in activities).

The following is a brief description of what happened in each workshop. For a more detailed description of the CBSEA workshops see Appendix F (initial plan for the workshops) and Section 5.2 for a description of the results from the workshops.

Determining the purpose and presenting the programme: In the first workshop, the CBSEA process was explained to participants and ICE explained what their proposed WMAP Phase II was and answered any questions that the participants had. At this initial workshop, the farmer participants listened to what I and ICE had to say and then farmers were able to ask questions to clarify any misunderstandings about the programme or about the CBSEA process. The community visioning activity involved small group work and the sharing of the ideas generated.

Assessing the programme and identifying alternatives: In the second workshop, community participants collaboratively assessed the proposed programme to see how it could be improved and suggested alternative components that should be part of this agro-conservation programme in order to come up with a more inclusive programme proposal that better reflected farming-community needs and interests. At the second workshop, small- and whole-group discussions were designed to facilitate discourse, enabling participants to both listen and participate in discussions. Critical questioning by the facilitator was meant to promote critical reflection.
Identifying real and potential impacts of the proposed programme components including the identified alternatives: In the third workshop, community participants identified real and potential social, economic, and environmental impacts that the components within the new modified proposed programme would have if they were implemented. Participants then collectively developed mitigation strategies to minimize negative impacts and thought of strategies to enhance positive ones. In the third workshop small- and whole-group discussions focussing on assessing component impacts and on creating mitigation strategies were meant to facilitate critical reflection and rational discourse. During these activities, participants were both listening and contributing their thoughts and ideas.

Sharing CBSEA results with the proponent: In the fourth workshop, communities and related institutions (e.g. MAG, MINAE, INA) came together to discuss the CBSEA process and the results from the process. During the fourth workshop, the proponent and related institutions listened to the results of the assessment done by the community participants of the proposed WMAP Phase II. Following this presentation of results, there was time for dialogue between the proponent and the participants discussing the results, asking questions and clarifying issues.

Throughout the CBSEA process, a variety of activities were used to: encourage participation and inclusive dialogue; generate, discuss and assess ideas; and enhance learning. These activities included small-group discussions, facilitated full-group discussions, and individual presentations. Ideas were usually recorded by the participants and/or the facilitator on flip-chart paper and then posted around the room. An effort was made in the design and facilitation of these activities to try to make them as participatory as possible. Within the workshops, there was an effort to strike a balance between making sure everyone had a chance to participate whilst also making sure that all ideas generated were brought forth and shared collectively with the whole group.

The following is a list of specific things I did as the designer, planner and facilitator of these CBSEA workshops and as an educator in order to enable learning and to overcome potential barriers (see Section 2.3.2 for more details). In order to create an inclusive, supportive and safe environment I:

- made participation open to all community members who were interested; this was meant to allow for community members who normally did not work together to meet around a common issue that was directly related to their lives;
- decided on the time and location of the workshops with farmers according to their needs;
- personally invited all the participants individually to all of the workshops and provided opportunities to "break the bread" in order to create a more amicable environment where farmers felt valued and to acknowledge the role of affect in the learning process;
- provided structured rules-of-engagement for the pedagogical activities so that differences of opinion and critiques could be discussed respectfully and constructively;
- allowed participants the opportunity to develop and assess their ideas thoroughly (without the proponent's presence at the workshops) before sharing them with the proponent. This was meant to mitigate the power imbalance between the proponent and farmers as farmers were able to share their collective assessment in a non-formal setting with the proponent directly;
- provided opportunities for participants to work in both communal and mixed groups (i.e. with people they knew and did not know) in order to avoid exclusion, build a broader sense of community, and to allow for more diversity of views in the sharing of experiences (the inclusion of multiple communities greatly facilitated this); and,
- used collaborative activities to foster the sharing of stories and experiences hence acknowledging the whole person in the learning process.

Further complementing this approach, in order to facilitate a "sharers' group dynamic" (see Section 2.3.3. for more details), I:
- used individual, small- and whole-group activities to facilitate the sharing of knowledge that was based on farmers' lived experiences farming the land and using the projects. These participatory activities were designed to allow for participants to engage and interact with one another in a variety of ways and on a variety of levels;
- planned consecutive, multi-levelled structured collaborative discussions that were meant to enable participants to act as mentors, facilitators, dreamers, and critical questioners. As the facilitator, I adopted a "connected-knowers" stance to allow for other ways of knowing, experiential learning and rational discourse to happen during the workshops. These discussions, combined with thoughtful questioning on behalf of the facilitator, were meant to push participants to evaluate underlying assumptions and more complex issues and interrelationships; and,
- guided participants through a SEA process. This involved explicitly teaching certain analytical skills like how to assess the real and potential impacts of a programme.
component and how to brainstorm. This was meant to enable a more equitable and fuller participation in the discursive activities.

Taking the approach of doing a CBSEA as a collaborative deliberative process was meant to represent an analysis that went far beyond what an individual could do alone.

In order to create a potentially empowering learning experience, I made sure that within the CBSEA process, opportunities were provided through the visioning activity and the impact assessment where knowledge was created through the generation of programme alternatives, the assessment of programme components and the creation of mitigation strategies. This knowledge was firmly grounded in farmers lived experiences, their needs, and their aspirations. This sharing of personal knowledge and the creation of knowledge not only had the potential to validate farmers' lived experiences but also it had the potential to bring a clearer understanding of their realities as ideas were articulated in word. It also had the potential to encourage community participants to forge common goals and take collective action. Definitely, the role of the facilitator in a community-based initiative such as this one is paramount to either enabling a dialogue across difference or inhibiting it.

3.3.2.5 Documentation Provided by the Community, NGOs, or Government Agencies

Throughout the case study, a critical content analysis of the documents provided by the community, NGOs, and government provided insight into their pedagogical and political discourse. It also explained the origins and the content of the different projects and their implementation.

My content analysis focussed on political, sustainability and learning-related dimensions of the programme, the history of the projects and the programme, and their implementation. Guiding questions included:

1) How or is the agro-conservation programme enabling participants to have a greater say in local resource management and development?

2) How are they opening an autonomous educational and productive space within a dominant market scheme? What are the educational concepts that are in line with sustainability, critical education, and transformative learning theory?

3.3.3 Consent and Anonymity

Participants were not asked to sign a consent form giving permission to use the information collected through the use of these research tools. Instead participants were asked to consent orally. Consent forms, particularly in Latin America, can be
problematic for a variety of reasons including literacy levels and a suspicion on behalf of participants as to the motives of the researcher. For the interviews, I met with the participants individually in a neutral, non-threatening and private place of their choice. All information has been and will be kept confidential and my advisor and I have been the only ones with access to the raw data. All participants were given a pseudonym to conceal their identity unless they chose otherwise. Participants were able to withdraw information upon request during the course of the research. (I either erased it from my notes or erased it on the audio-recording.) All raw data has been and will be kept confidential. All transcribed data is being kept in secure computer files. Also, all questions were of a general nature related to the educational aspects of the agro-conservation programme and the CBSEA process.

3.3.4 Trustworthiness and Generalizability of Data and Results

Lather (1986, 1992) explains that there are a number of methods to determine the trustworthiness and generalizability of data and results in a critical inquiry, several of which were used in the course of this research. These included triangulation, member checks, peer review, rich description, the explanation of one's position, and, to some extent, cross-site analysis.

Member checking was used throughout the research process. First, all individual semi-structured interviews in both stages were transcribed and returned to participants to ensure that I had captured their ideas accurately, providing them with an opportunity to eliminate information or add any further information. Second, immediately following the CBSEA workshops, both in Sarapiquí and in Reventazón, all CBSEA participants and ICE participants were given a summary of the raw information generated in the workshops (see Appendices G and H). Third, a summary of data analysis results was returned to all community and ICE participants following the initial stage (see Appendix C) and the second stage (see Appendix M) of this research. At this time participants were able to provide critical feedback on results. The multiple-trip design of my data collection process lent itself well to member checking, the time between the trips allowing me to work with the data and bring a summary of the results back to the participants following major phases of the research. Finally, after the defence of this thesis, I shall send to the communities involved, as well as the participating ICE watershed management teams, a copy of this thesis (in English).
In terms of triangulation, information was triangulated with at least three sources when possible. This was done by comparing answers from different individuals, documents provided by participants, documents provided by ICE and other government agencies, and personal observations. This was not only meant to ensure trustworthiness and generalizability but also to provide greater context (Spaling, 2003). I believe that this process of validating information and results with participants and by validating information with a variety of sources, combined with critical self-reflection on my part, has helped eliminate bias in the research and has helped ensure that the data and results are both credible and dependable.

With respect to peer review, throughout this research process – from its inception to finding a case study to collecting and analyzing data from the initial phase to designing the CBSEA workshops to organizing and facilitating the CBSEA process to analyzing the data from the second phase – discussions and feedback from my peers has been invaluable. Particularly significant has been input from my academic committee and discussions with them.

In terms of the generalizability of these results, as can be seen throughout the writing of this dissertation, I have tried to provide a rich description of the context, the participants, the WMAP being researched, the CBSEA process and the results from both phases of the research. This was done in the hopes that others interested in doing a similar case study would have a base of information from which to work. Finally, as stated earlier, having involved both the communities and ICE watershed management teams from two different watersheds has provided a kind of cross-site analysis that helps build general explanations as well.

Understanding that doing research is a subjective process, I have tried to be both clear and critically reflective of my role as researcher with myself and with my participants (both ICE and community) throughout the research process. When explaining the purpose of my research to those involved, I have made an effort to articulate clearly my theoretical orientation (i.e. coming from a critical perspective) and my goals for the process (both social and theoretical). I have tried to be forthright in what my expectations were/are for myself and others in the process as well as open with what would be done with results and raw data. Within the process of analyzing data and writing this dissertation, I have tried to reflect critically upon my own underlying assumptions in order to understand how they have influenced this research.
3.4 Method of Analysis

To help provide focus for the analysis, I returned to my objectives set out in Section 1.3. In the analysis I focussed on the learning and participatory dimensions of the planning and operations of ICE's WMAP. When analyzing the learning outcomes and the process of learning found through participation in the agro-conservation programme and the CBSEA process, I paid particular attention to: if and how adult and transformative learning were occurring and to what extent they were occurring; if and how this learning affected or transformed the participants’ behaviour, either collectively or individually; if and how this change in behaviour led to sustainability; and the enablers and barriers to learning in the learning context.

As with Diduck and Mitchell's (2003) study, the analytical framework included two primary categories derived from the theory: instrumental and communicative learning. These were divided into secondary, theory-based subcategories, which were further subdivided into grounded themes. Data analysis included categorizing methods such as coding and thematic sorting and contextualizing methods such as narrative analysis. All interviews were recorded, transcribed, returned to the participants to ensure accuracy and trustworthiness, and analyzed using Nvivo (Creswell & Clark, 2007; Muhr, 1997). Nvivo was used to select and code data segments, create memos, and build families of codes based on themes that emerged from the data. The results that follow are presented around the key themes: that is, themes that were consistent across the data set and that emerged from what participants told me.

The actual analysis process was a reflective journey where I would take a few steps forward and then pause to reflect on what I had found and use the relevant literature to understand better the results that were emerging. In the data collection and analysis stages for both stages of this research, I initially transcribed all the interviews and observations watching for emergent themes, paying particular attention to the aspects outlined above. Once I had identified some initial emergent themes, I went over all of the interviews, observations, and CBSEA workshop results, looking for examples and quotations to support the emerging themes. Then I uploaded these interviews into Nvivo and read through them meticulously coding them to the themes that I had already identified and establishing new themes or sub-themes as they presented themselves. In order better to understand the results that I had found, I re-read key articles on transformative learning theory, environmental education, public participation in natural
resource management decision-making, learning through public participation in natural resource management, EA, community-based approaches to EA, sustainable development, and participatory democracy to see how my findings relate to the literature. Finally, I re-read all of the raw data again to make sure that the conclusions that I had formed were in fact existent in the data and to make sure that I had not missed anything.

3.5 Summary

This chapter has presented the methodology used for this case study research. The first section briefly reviewed my readings in research paradigms and explained how I have chosen a primarily qualitative critical social science approach. This approach was appropriate considering the context and focus of this research and its emphasis on engaging farmers meaningfully in a CBSEA process and the resulting learning. Section 3.2 outlines how the case study was chosen, including a list of criteria and rationale. The result was choosing to do a case study with ICE focussing on their WMAP in both the Sarapiquí and Reventazón watersheds.

For this research I used tools consistent with a participatory research approach. Participants involved in the study included ICE watershed management employees, community members in the target areas, and MAG employees. Throughout the data collection I used semi-structured interviews, log entries, and content analysis of documents. For the CBSEA phase, I also used participatory workshops. Consistent with a critical inquiry approach, I tried to ensure trustworthiness and generalizability particularly by providing a rich description of the phenomena being studied, triangulating results, and by doing member checks on data collected and results. Finally, my analytical framework focussing on the learning aspect of this research was informed by two primary categories derived from transformative learning theory, those being instrumental and communicative learning. Data analysis included categorizing methods such as coding and thematic sorting and contextualizing methods such as narrative analysis.
CHAPTER 4: PARTICIPATION AND LEARNING THROUGH ICE'S WATERSHED MANAGEMENT AGRICULTURAL PROGRAMME

4.1 Costa Rica Country Context

Figure 4.1 Map of Costa Rica
(Available at: http://www.lib.utexas.edu/maps/americas/costa_rica.gif)
Costa Rica is a Central American success story. In the region, it is renowned for its long-standing tradition of adherence to democratic principles, its relative high standard of living, its high literacy rate, its high degree of national security, and its environmental and ecological leadership (CIA, 2004; Nelson, 1983).

Costa Rica is located south of Nicaragua, north of Panama, and borders both the Caribbean Sea and the North Pacific Ocean. Its total area is 51 100 km². The terrain is characterized by coastal plains separated by rugged mountains including over 100 volcanic cones of which several are major volcanoes (CIA, 2004; Nelson, 1983). Figure 4.1 provides a general map of Costa Rica and its topography. Approximately four million people live in Costa Rica. Spanish is the official language with Costa Rica having a 96% literacy rate25 (CIA, 2004; World Bank Group, 2004). Ethnically and religiously Costa Rica is quite homogeneous; an overwhelming 94% of the population considers themselves white although most have mestizo (indigenous and Spanish) blood and roughly 92% of the population are Christian (77% being Roman Catholic) (CIA, 2004; Nelson, 1983).

Costa Rica enjoys a basically stable economy. It is operated primarily by a well-entrenched private sector in an open business climate that is favourable to private enterprise. There are autonomous government agencies that are active in some production and key service sectors although these agencies were greatly reduced through structural adjustment programmes sponsored by the IMF in the 1980s (Mesa-Lago, 2000; Nelson, 1983; Zarate, 1994). A broad social security system attempts to uphold minimum working and living standards; this includes strong social programmes in the areas of health, education, sanitation, and pension services which extend to virtually the entire population (Clark, 2001a). Quality of life is indicated through a high life expectancy of 77 years, and a low infant mortality rate of 10 deaths/1000 births. The large majority of Costa Ricans are middle class although 20% of the population live below the poverty line (CIA, 2004; Nelson, 1983; Seligson, 1980).

The Costa Rican economy traditionally has been very agriculturally-based and has depended on coffee and banana exports. In the early 1980s, due to falling commodity prices and “structural reform” to have greater participation in the global market, Costa Rica was forced to diversify. As a result, tourism, textiles, and electronics, and to a lesser extent exotic plants and fish/seafood, have become major forces in the Costa Rican economy (Clark, 2001b). In general the reforms were

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25 Literacy rate is defined as people over the age of 15 who can read and write.
introduced using a political-participatory manner that has made the reforms sustainable (Clark, 2001b). The immediate consequence of these reforms was increased poverty but by the late 1990s the result had been a decrease in poverty. Another consequence was to exacerbate the gap between the rich and the poor in urban centres. This was coupled with a marked increase in the incidence of violent crime and prostitution (Clark, 2001b). Further, the Costa Rican government continues to grapple with its large deficit and massive internal debt (CIA, 2004).

Costa Rica’s history is distinct from most of the other countries in Central America. It is for this reason that many scholars believe that Costa Rica was able to develop into the democratic, peaceful, and relatively egalitarian society that we find today. Even though Costa Rica was called Costa Rica (i.e. rich coast), the Spaniards never found gold or lucrative resources and they were met by a hostile, diverse indigenous population that made colonization difficult. Unlike other Central American colonies, settlers had no large highly-structured indigenous population to exploit so they were only able to cultivate the amount of land that they could work themselves. “The result was a proud and self-reliant but poor and often primitive colonial society, composed of small landholders who had common economic interests despite their differing social backgrounds” (Nelson, 1983, p. 3; see also Paige, 1997). The community that developed was relatively homogeneous in wealth, culture, and religion. Over time, there was a high degree of indigenous and Spanish descendent integration.

Nelson (1983) argues that

the colony’s relative isolation from Spanish colonial centres in Mexico and the Andean region, buttressed by the population’s ethnic and linguistic homogeneity, contributed to the development of an autonomous and individualistic agrarian society. From these early experiences came traditions of democracy, egalitarianism, and a landholding system based on interdependency rather than patronage…Costa Ricans have been spared the imposition of a ruling elite that is ethnically different from the bulk of the population. (p. XXII)

In the 19th and 20th centuries, social stratification became more pronounced. Land ownership and wealth became more exclusive through the growth of Costa Rica’s participation in the global trade market of commodity goods, especially coffee and bananas. The growth in these industries brought immigration and the construction of a formal internal infrastructure (roads and railway). In the 20th century, upper and lower middle classes expanded due to a growth in industry, commerce and government.
“The growth of democratic institutions and personal freedoms that would set Costa Rica apart from most of its neighbours followed from greater access to education and the improvement in economic well-being” (Nelson, 1983, p. 3). The first competitive elections were held in 1889; however, it was not until after a (short) civil conflict in 1948 that “real democracy” was established (Nelson, 1983; Zarate, 2001). There has been no army since 1949 and Costa Ricans take pride in its system of free and compulsory public education as its most significant national achievement. Teachers far outnumber police (Nelson, 1983, p. XXIII).

In general, Costa Ricans are very proud and supportive of their adherence to democratic principles and of their political system. The 1949 Constitution lays out political institutions making Costa Rica unique in that the president’s power is very limited. Clark’s (2001a) study on the Costa Rican democracy found that “Costa Ricans are participatory, tolerant, civic-minded, and satisfied citizens. With the exception of the low interpersonal trust and intolerance of homosexuals, this is about what we would expect in a stable democracy”. She also found that the Costa Rican government was less corrupt than any other Latin American government according to a study by “Transparency International” (Clark, 2001a, p. 86). Until recently, concerns about neoliberalism were reserved for élites and academics but recently there has been a swell of popular concern about the influence of the market economy and neo-liberalism on Costa Rican social institutions, including ICE, precipitated by the potential signing of a free trade agreement with the United States (personal observation; Nemagon Blues Prodakchons, 2006)

Costa Rica has a strong tradition in environmental leadership. Biologically, Costa Rica is a power house, it is home to half a million species, which constitutes 4% of the world’s terrestrial biodiversity. Conservation has been a joint initiative between environmentalists, scientists, policy makers, and government. From the mid 1920s to today, environmental conservation has taken a variety of forms. Initially, individuals took the lead in educating the general public regarding conservation. Between 1970 and 1986 there was the creation and expansion of the Costa Rican park system which now constitutes approximately 25% of the land. In the 1980s and the 1990s hundreds of environmental organizations were formed around the country, initiating thousands of environmental activities every year. The goal of conservation has been to improve the conditions of life for the citizens (Steinberg, 2001).
Environmental conservation in Costa Rica has been facilitated by a few major developments. The first is the recognition of the natural environment as a major economic asset. Eco-tourism has become one of Costa Rica’s major industries and attractions to the world. The second is the creation of environmental laws that serve to protect and conserve Costa Rica’s natural resources and biodiversity (Salazar, 2004). In the early 1990s, there was a constitutional amendment that “every person has the right to a healthy and ecologically balanced environment. Therefore it is legitimate to denounce acts that infringe on this right and to claim redress of any harm caused” (Rodriguez, 1997, as cited by Steinberg, 2001, p. 83). Further, “the Organic Environmental Law strives to provide Costa Ricans and the state with the necessary instruments for preserving a healthy and balanced environment. It is made up of three parts: environmental impact assessments (EIAs), territorial ordering plans, and restrictions on land use” (Salazar, 2004, p. 283).

Unfortunately, these eco-friendly developments must be tempered with a look at the reality on the ground. Even though, in the past 20 years, a good deal of legal infrastructure has been created to protect the environment, it has not been well enforced (Bustos, 2004; Frankie & Vinson, 2004; Mata, 2004; Salazar, 2004). This is due in part to: i) judges’ lack of knowledge about the environment; ii) an impunity of violators before environmental laws; iii) the Ministry of the Environment and Natural Resources’ lack of enforcement of forestry management plans; iv) an usurpation and logging in lands donated to the state; v) an exploitation on behalf of corrupt officials to exploit the conflict between the laws and the social policies to destroy the environment; vi) inadequate budgets and human resources dedicated to environmental protection; and, vi) a lack of clarity in governmental policies (Bustos, 2004; Salazar 2004; Sorózano et al., 1991). Salazar (2004) argues that more education is needed, focus should be put on prevention and participation, and, only as a secondary measure, fines should be levied. Bustos (2004) concludes that the Costa Rican government seems unable to protect and conserve the environment on behalf of its citizens.

In spite of these problems, environmental advocates have been very successful at holding the government accountable and making policy become practice. Further, it is important to recognize Costa Rica’s successes especially because it has overcome so many hurdles in trying to implement its strategies (Steinberg, 2001).
4.2 Instituto Costarricense de Electricidad (ICE)

The Instituto Costarricense de Electricidad, better known as ICE, is a publicly-owned electrical and telecommunications company whose mandate is to develop, execute, produce, and commercialize a variety of electrical and telecommunications services. The creation of ICE in 1949 came from a citizen-initiated, then subsequently state-led, movement away from American-owned for-profit electrical hydro-production to a publicly-owned electrical system meant to serve the Costa Rican population and stimulate economic development in Costa Rica. ICE’s stated goal is to develop, in a sustainable manner, the existing energy sources in the country and to use these to promote the well-being of Costa Rican citizens and to strengthen the national economy (October 19, 2005, grupoice.com). In general, ICE enjoys a good reputation in Costa Rica (Cerdas, 2000). Since 1949 when ICE was formed, they have brought electricity, and now telecommunications, to approximately 97% of the population in both urban and rural areas. Costa Rica is self-sufficient in its electrical energy needs, generating 81% of its power by way of hydro developments, the remainder being generated by a combination of geothermal, wind and thermal electrical plants. Figure 4.2. provides a map of Costa Rica highlighting the different watersheds, two of these, Reventazón...
(number one) and Sarapiquí (number twelve), are where the WMAPs involved in this case study are taking place. At the moment, ICE employs 13,380 people (spring 2007) and they have 27 functioning electrical generating plants (J.L. González Lobo, personal communication, August 24; 2007). Currently, a total of 30 people work in the Watershed Management Units department of ICE.

One of ICE’s functions, according to its constitution and entrenched in law, was/is to conserve and defend the country’s hydro-resources whilst protecting the watersheds, the sources, the rivers and the streams ("El ICE", no date). In 1998, as part of a condition of a loan from the Inter-American Development Bank to build the Angostura dam on the Reventazón River, ICE hired international and subsequently national consultants to do a watershed management plan focussed on solving ICE’s problem of silt build-up in the dam caused by erosion. Following the elaboration of this watershed management plan and although not legally bound to do so, ICE, based on this tradition to conserve and protect the watersheds, created the ICE Watershed Management Units in 2000. The goal of these Units was to realize a series of activities and projects aimed at facilitating the sustainable development of the natural, social, and economic resources in watersheds where they were mandated to do so (ICE, 2004). As objectives this included: elaborating watershed management plans, the idea behind these plans being to approach watershed management in an integrated and coordinated way (Jaubert Vincenzi, 2006); showing that ICE is a leader in the protection and management of the natural resources; planning, coordinating and executing programmes and projects in areas that benefit the inhabitants socially and economically; and, implementing and coordinating efforts with other governmental, non-governmental, and civil social organizations (ICE, 2004).

The Reventazón Watershed Management Unit was formed in 2000 following the elaboration of the watershed management plan for the Reventazón River. It has two main objectives, the first to maintain the quantity, quality and abundance of the hydro-resources now and in the future; this includes extending the life of the hydro-plant, especially the reservoirs. The second objective is to improve the socio-economic situation of the residing population by capitalizing on renewable resources and by generating local employment through appropriate conservationist technologies and systems (Calvo Domingo & Pérez Gómez, 2003). Currently, Reventazón is the only watershed that has an existing watershed management plan (ICE, 2004). The Reventazón watershed includes a total area of 2,950 km² but the focus of the watershed
management plan is on the upper and central watershed comprising an area of 1,531 km². This area has three hydro plants in operation producing 38% of the nation's electricity (Calvo Domingo & Pérez Gómez, 2003). The area is located just east of the capital San José and is characterized by rich fertile volcanic soils, rolling hills, and significant deforestation. Economic activities include: agriculture (producing ornamental plants, sugar cane, coffee, and 85% of the nation's potatoes and onions), animal production (dairy and beef totally 30% of the nation's production, and pork) and eco-tourism. Erosion is a significant problem with between 1.5 and 2 million tonnes of sediment clogging the hydro-electric reservoirs in Angostura alone annually (Calvo Domingo & Pérez Gómez, 2003). Figure 4.3 provides a map of the Reventazón River's Watershed Management Plan and of land use in 1999.

![Map of the Reventazón River's Watershed Management Plan](image)

**Figure 4.3** Map of the Reventazón River's Watershed Management Plan

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The Sarapiquí’s Watershed Management Unit, established in 2001, came about a little bit differently and consequently has slightly different stated objectives. Its stated objectives are first to elaborate a watershed management plan for the Sarapiquí River watershed that is participatory and integrated and second to initiate coordinated concrete actions so that the citizenry can become sensitized to watershed management (ICE, 2004). The Sarapiquí watershed comprises an area of 1,704 km² with its waters draining into the San Juan River that borders with Nicaragua. It is located just north of the capital San José. It comprises a territory that extends from low-lying lands (7 to 25 metres above sea level) to higher altitudes of 2,900 metres; its climate is tropical and rainy and it has a significant amount of existing forest cover. Due to these characteristics, it has a variety of economic activities including: agriculture (producing bananas, palm hearts, pineapple, citrus fruits, ornamental plants, and tubers), animal production (both dairy and meat), forestry, and tourism (eco-tourism and adventure tourism like rafting). The rivers are central to the economy as well as transportation. Because of this, community representatives started to object to the presence of existing ICE hydro-electric plants as well as the construction of new ones. Resistance took on many forms including peaceful protest against new projects, educating the local population about the negative impacts of new hydro-projects and successfully organizing a plebiscite to have the Sarapiquí river declared as a national historic monument (González Lobo, 2006).

Within this charged environment, ICE presented their plans to get environmental approval to build the Cariblanco Hydro-project. This provoked greater tension with communities which in turn made ICE recognize the need to inform the public and clarify doubts around hydro-production. At this moment, ICE authorities also decided to create the Sarapiquí Watershed Management Unit in 2001 to coordinate with the social viability component of the Cariblanco hydro-project and to develop the watershed management plan for the Sarapiquí watershed (González Lobo, 2006). Figure 4.4 provides a map of how the land was being used in the Sarapiquí Watershed in 2000.

The watershed management agricultural programme (WMAP) that exists in both the Sarapiquí and Reventazón watersheds initially came into existence through the elaboration of the watershed management plan for the Reventazón River. The consultants concluded that conventional farming practices (which include planting homogeneous crops, a heavy reliance on chemicals, and regular tilling of the land) were having a negative impact on ICE’s hydro reservoirs. As part of the greater watershed management plan, the consultants elaborated a WMAP for ICE to address concerns
pertaining specifically to the agricultural sector. The initial most viable options to address the problem included projects like vermi-composting and planting trees, but subsequently the list has expanded to include biodigestors, semi-stabling animals,

27 Symbols: white with red outline- watershed limits; dark green -primary forest; lighter green - secondary forest; yellow -scrub land; blue- water; pink - crops and grain; white -clouds and shadows; red -crops and trees; brown -naked earth.

28 Vermi-composting is a technology used to transform organic waste by using the natural biological activity of worms. The most common worm used is called the California red. It is a conservational technology that can be used as a solution to eliminate sources of environmental contamination on the farm or in the community and to produce high quality organic fertilizer.

29 A biodigester is a technology that is used sanitarily to manage animal manure by transforming it into biogas and organic fertilizer. It is a sealed system where naturally occurring bacteria decomposes animal excrement. Biodigestors not only reduce the bad smells associated with livestock but also reduce water contamination caused by the organic matter, micro-organisms and minerals found in manure by preventing the waste from entering the watershed. It can be used with stabled or semi-stabled animals. Biodigestors not only reduce contaminants from entering the watershed, they also reduce costs at a farm level by producing biogas (that is often used for cooking) and fertilizer.
forage (tall-grass) crop varieties\textsuperscript{31}, integrated farming\textsuperscript{32}, and planting fruit trees, amongst others. Because ICE only had limited resources available for the watershed management plan, it decided to implement some (and not all) of the projects recommended by the consultants.

A variety of components link ICE’s WMAP to its hydro-electric projects. Beyond the initial mandate to address silt and contaminant build-up in ICE’s reservoirs, the implementation of the WMAP specifically, and the watershed management plan in general, has proven useful to: reduce community opposition to hydro-electric projects, raise awareness about sustainable resources management, involve the community in meeting ICE’s objectives, and promote a better public image. As explained earlier, subsequent to this initial watershed management plan in Reventazón, ICE has been a leader in creating watershed management plans in other watersheds where they are currently building hydro-projects, including the Sarapiquí watershed. Each plan is unique depending on ICE’s needs, the characteristics of the watershed, the regional legal framework, and the communities involved. In general, most participants perceive that ICE is helping create and implement these watershed management plans – which include a multi-disciplinary approach to watershed management - in order to take greater responsibility for their actions.

4.3 Public Involvement in ICE’s WMAP\textsuperscript{33}

4.3.1 WMAP Participation Results

As has been explained in Chapter 2 of this thesis, public involvement in natural resource management programmes can take on different forms in different contexts. Public involvement in natural resources management provides opportunities for potentially meaningful participation as well as learning. Opportunities for dynamic and innovative forms of collaboration present themselves when mutually congruent goals, like the sustainable management of natural resources and the protection of watersheds,

\textsuperscript{30} Semi-stabling animals is a farming practice where, instead of putting cows to pasture for the whole day, they are stabled for part of the day and fed forage crop that has been harvested by hand. This practice involves more manual labour for the farmer but it greatly reduces the amount of erosion on the land and farmers are able to support more animals without expanding their farm size.

\textsuperscript{31} Forage tall grass varieties are crops grown as animal feed and in Costa Rica are harvested manually. Growing forage crop reduces erosion.

\textsuperscript{32} Integrated farming involves growing a variety of crops and having some livestock.

intersect and when interested stakeholders are open to cooperation. In Costa Rica, an example of this nexus has been found in the WMAP where farmers and the ICE are collaborating to meet simultaneously both the institution’s needs to reduce sediments from getting into its hydro-electric reservoirs and farmers’ needs to maximize the use of available resources on their farms. The purpose of this section is to present the participatory work that ICE has been doing with farmers to protect the Sarapiquí and Reventazón watersheds from erosion and contamination through their WMAP.

4.3.1.1 Public Involvement in the Planning and Design of the WMAP

With respect to information around public involvement in the design and planning of the WMAP back in 1999, it is not entirely clear in spite of having interviewed the organizers as well as some participants and acquired the minutes from almost half of the 1999 participatory workshop. Challengingly, few organizers or participants seem to remember any specific details or participating at all in the 1999 workshops. Nonetheless, based on minutes recorded from seven of the sixteen participatory workshops, a few key interviews with farmer participants who were involved, and on an interview with Alfonso who acted as a consultant and then subsequently was hired as a manager for ICE Reventazón's Watershed Management Unit, I believe that I have been able to piece together a fairly accurate description as to who, why and how the public was involved in designing what came to be ICE's WMAP.

According to available data, it appears that public involvement in the planning and design of ICE's WMAP was limited. A discrepancy was identified between ICE and the participants as to the perceived degree of participant involvement in the WMAP planning process. According to Roberto, currently a participant in ICE Reventazón's WMAP and former president of ASOPROA (Santa Cruz farmer's association called the Asociación para la Protección Agropecuaria), the consultants held an initial meeting with technicians and a few farmer representatives to get feedback on their proposed reforestation programme and agro-conservation initiative. He described this initial meeting as being awkwardly formal, confrontational, highly technical, and unrepresentative of farmers' views: "there were over 100 technicians and perhaps six of us". Roberto explains:

ICE's project was reforestation and a few initiatives to stop sediment from getting to the reservoirs. It was just starting. So we were invited and I as the president of the Association went to the meeting, and they, as an organization, didn't really have it very clear what they wanted...if it was reforestation, apparently they wanted us the farmers to start reforesting
but nothing more. That we do everything and they do nothing. So I was very clear with them, I told them that no, all of us producers are in a very bad economic situation. I explained to them that if they weren't going to help us with a few resources for the project then we wouldn't be able to collaborate. They seemed to understand this position because when we came to the next meeting there was a complete change. So they started doing studies into what they had to do.

It appears that from this initial meeting, the consultants recognized the need to do further consultations with the public in creating their watershed management plan, particularly the agro-conservation component of it. Consequently, the consultants did a series of sixteen community workshops to validate their findings and to obtain community feedback on proposed solutions to problems that they had identified related to ICE’s goals.

As detailed in the minutes from the meetings, the purpose of these community workshops was to open-up communication with communities. At the meetings the consultants wanted to hear community experiences in terms of sustainable conservation, what actions farmers had taken, what had worked and what had not worked. In these workshops, ICE Reventazón management explained and minutes from the meetings corroborate, participants had an opportunity to provide input and help prioritize the proposed projects. How this was done is not specified. Participants at the workshops included government, non-governmental, and civil society representatives as well as farmers. Gustavo and Alfonso, ICE Reventazón management, described the workshops as “very participatory”. However, the farmers participating in this case study did not remember the consultations in quite the same way. Roberto (farmer Reventazón) thought that farmers were not really involved at all in the planning process but only at the implementation level of the programme. Roberto explained: "In the creation of the project we didn't participate but when they started working it and implementing it, yes". In addition, it remains unclear if this participation really had any influence on the final decisions that the consultants and ICE made around the design of the WMAP. For example, as described in the minutes of the meetings the consultants presented the current state of the micro-watersheds to participants and then asked for community participants to generate possible solutions to the problems. It is unclear to me if the ideas generated and prioritized by community members had any influence on the design of the WMAP, or if they had done the participatory workshops as a public relations activity to inform the communities as to their concerns and to gain legitimacy for ICE’s
potential agro-conservation programme and specific projects by engaging the public in this way.

In terms of implementation, it appears that public involvement in these workshops in Reventazón did lead to greater farmer control over who would participate in the WMAP, or at least in Reventazón. Initially, ICE chose participants for their WMAP according to their criteria, that being to set up "window" or "model" farms in the areas that they were targeting. Roberto, farmer in Reventazón and former ASOPROA president, explained that once the programme was up and running, he and others from the farmers' association approached ICE representatives and negotiated a larger role for ASOPROA in choosing participants for the WMAP. For example, on a yearly basis ICE Reventazón's watershed management team members define what communities they are targeting and how many participants they want from each community according to their needs (for example, two farms from Santa Cruz, one from Las Virtudes, etc.). ASOPROA in turn organizes a meeting where farmers can learn about the WMAP and then they solicit potential volunteers to participate in the programme. As a final step, successful participants are drawn by lottery. In Sarapiqui, because of a lack of existing social infrastructure like farmers' associations, it is ICE and MAG who chose the participants according to the physical location of the farm, the farmer's stature in the community and the farmers' willingness to participate.

4.3.1.2 Implementing the WMAP and Impacts of Participation

Essentially, ICE, in collaboration with other governmental agencies like the MAG, target individual farmers to implement more environmentally sustainable technologies, projects, and practices on their farms. Usually with MAG’s help, ICE raises awareness and promotes the projects, chooses the participants, implements the projects, and provides follow-up technical support. A variety of activities, targeted interventions, and serendipitous events help farmers become aware of, and learn about, the projects. ICE uses five different approaches to promote its projects. Examples of formalized ICE-sponsored activities include: community workshops and talks where ideas are presented on specific relevant topics; farm demonstration days where farmers can see projects up-and-running on a local farm; panoramic tours where farmers are taken to visit model farms or educational institutions; and project implementation days that provide an opportunity for farmers to see a project (e.g., a biodigester) be

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34 The word “project” will be used as an all-encompassing term to identify ICE-promoted projects, technologies and practices as reviewed previously.
implemented on a farm. Farmers are able to participate in these awareness-raising activities both as spectators or as "local experts" depending on the context and their willingness to be in the spotlight. Aside from these structured activities, it is common for farmers to learn about the projects through word-of-mouth or by seeing them working in their community.

A common sequence of events for implementing a project is as follows: a farmer learns about a project and decides that s/he is interested in implementing it; s/he contacts ICE and they discuss the project and the appropriateness of the project to suit the farmer’s needs; depending on the watershed, the availability of resources, the availability of space to participate in the programme (see earlier), they then arrange for a best time to implement the project. Once the project is installed, ICE and/or MAG provide continuing support to ensure that the projects are successful. At the moment, farmers’ decision-making power is limited to deciding whether or not they want to participate with ICE in implementing these projects, which projects they want to implement, and where they want to implement them. Farmers make their decisions based on their needs and in discussion with ICE/MAG technicians and sometimes other farmers.

The projects (e.g., biodigestors or forage crop) are designed to address the needs (e.g., waste management, erosion) of certain production sectors (e.g., dairy farming). ICE promotes established projects, usually developed by local research institutions, that help meet its objectives whilst at the same time benefiting the farmers. The projects are characterized as being sustainable, easy to learn, inexpensive, robust, and profitable. They are able to support changes in variables and the benefits are able to be seen in the short term. Significantly, in terms of sustainability, the projects promoted by ICE exemplify what Orr (1994) describes as ecological design competence which “means maximizing resource and energy efficiency, taking advantage of the free services of nature, recycling wastes, making ecologically smarter things, and educating ecologically smarter people” (p. 104). Depending on the watershed, ICE either brings solely the technical support (i.e. a technician, in collaboration with the farmer, will install a project, train the farmer on how to use it, and answer questions that might arise) to implement the projects [as in Sarapiquí], or the technical support and the materials necessary (i.e. they supply all the materials needed to build a project) [as in Reventazón].
The ongoing technical support that ICE provides involves technicians running a circuit every week to visit the different farmers that are collaborating in the WMAP. As is to be expected, some farmers find the quality of the technical support excellent whilst others feel that there is room for improvement. The positive economic, social and environmental benefits of the projects and the support provided by ICE to collaborate in the WMAP act as intrinsic and extrinsic motivators for participation.

Public involvement in ICE-facilitated awareness-raising activities is open to anyone (although ICE only promotes the activities to farmers in certain targeted areas). However, participating at a more committed level in the WMAP comes with a few parameters. In order to participate in the WMAP, a farmer must live in the designated area that ICE is targeting (e.g., the upper watershed), own their land, and have the primary resource (e.g., manure). Further, ICE must have the technical and financial resources available to accommodate the individual’s participation. ICE usually does not work with communities per se but with sectors of the community, like dairy producers, or with farmers associations. In Sarapiquí this makes participation challenging because of the lack of existing social organizations and infrastructure in the area.

Farmers choose to participate with ICE for a variety of reasons. Some farmers have been motivated by crisis, either climatic or financial, to find alternate ways to farm. Others believe in a conservationist philosophy and these projects enable them to put their beliefs into practice. However, the most prevalent reason why farmers participate is because they understand the positive impacts associated with adopting the projects. It is fair to say that the positive impacts of these projects at a farm level outweigh the negative ones but, often when ICE is promoting the projects, technicians fail to explain anything besides the most obvious positive impacts based on what they perceive to be the farmers’ priorities (i.e. economic). It is only with time and experience that farmers come to realize the full range of positive, and negative, impacts that these projects bring to their lives.

For example, deciding to semi-stable animals (which includes having to grow forage crop, rent or buy a forage crop mulcher, and install a biodigester for waste management) brings the advantages of reducing erosion, the amount of land needed to support the animals, the amount of contaminants entering the river system and some farm costs. It also allows farmers to produce biogas as an energy source and organic fertilizer for crops. However, the conversion to this more conservationist farming practice has its disadvantages. Farmers explained that it involves more daily work.
hours, the use of the crop mulcher increases electrical consumption and costs, and semi-stabling dairy cows shortens their useful productive life. Unfortunately, because the full array of impacts are rarely discussed before implementation, some projects are abandoned as farmers become disenchanted with the unexpected negative impacts and return to conventional practices. Many participants thought that if farmers were able to make a truly informed decision to collaborate in the WMAP, i.e. understanding all of the potential impacts, that there would be a deeper level of commitment to ensure project success.

In general, the relations between ICE’s watershed management unit’s personnel and farmers are good. ICE’s personnel are respectful and value the knowledge that farmers bring to the discussion. Farmers are open, trusting, and they describe the relations as amicable and close. Farmers understand that ICE is implementing these watershed plans to fulfill their environmental objectives, to reduce costs to both themselves and farmers, to promote awareness, and to re-create a positive public image.

Participation in the WMAP is having an important impact on the participants, both farmers and ICE personnel. ICE’s primary agenda with the WMAP is environmental: it is to reduce sediment and contaminants from getting to their hydro-project reservoirs. Some of the most pronounced environmental benefits of the projects include: the amount of manure that is no longer contaminating the river because of biodigestors and vermi-composting; the amount of trees saved by cooking with biogas; the reduction of erosion through reforestation and forage crop use, and the use of organic fertilizer to produce healthier soils (hence using less agro-chemicals). For example, Ricardo (integrated farmer Reventazón) explained that

when we started (3 years ago) there was only 2 cm of fertile soil, now, according to the last soil analysis, there is around 33 cm of fertile soil…I would say that in this zone our land probably is one of the most fertile plots but this represents tons of organic fertilizer from the biodigester, from compost, and from vermi-compost that has been integrated into the soil.

ICE has yet to test if these projects are having a positive effect on its dam reservoirs; potentially they could significantly reduce costs, environmental destruction and conflict by having to flush out its reservoirs less frequently.

Economically, many farmers see these projects as an opportunity to turn what is traditionally considered waste into a resource that reduces costs at a farm level. One farmer in particular has taken this a step further. Hernán, a Reventazón farmer, started
vermi-composting five years ago with ICE’s help and now processes “30 tonnes a month of what was called waste, but we call it our primary resource. But this primary resource is different than others because I am decontaminating the environment, I bring it to my farm and process it until I have organic fertilizer”.

Socially, the most profound impacts for farmers have been the impact on their quality of life and the hands-on learning process that they have experienced. Alfonso (ICE manager Reventazón) explains some of the advantages:

We explain to the producers, ‘don’t change your activity, change the way you do the activity’. That is very important. First, the size of the farm doesn’t have to change, they don’t have to buy more land, they don’t have to invest more, they don’t have to abandon their community, they don’t have to dismember their family, and they don’t have to learn a new activity. There are many ways to continue their way of life and their stability…. 

In a very pragmatic sense, farmers’ quality of life is improved because many projects help reduce the unpleasant aspects of country life like the smells and flies associated with livestock production (using EM\textsuperscript{35}, biodigestors, and vermi-composting). Further, these projects, to some degree, allow farmers to be more independent of market trends, and they have more stability and resiliency in a time of crisis. Most noticeably, implementing these sustainable projects gives many farmers an incredible sense of satisfaction. Participating in the WMAP has provided the opportunity for farmers to meet new people who are interested in the projects and this contact is very motivating. Inés (integrated farmer Reventazón) explained that “there is no price to knowing that you have something important to share with people”.

Even though the WMAP is having a significant impact on the participants directly involved, ICE as well as MAG and rural communities living in the watershed face many challenges to participation. Culturally, Costa Ricans perceive themselves as individualistic and generally uninterested in working for the betterment of the community. Logistically, there is a lack of resources both at an institutional and farm level to implement fully the projects. At an institutional level, ICE needs more resources to be able to serve more farmers and to provide more adequate in-depth follow-through. At a farm level, producers need financial resources and time to be able to experiment and to attend educational workshops.

\textsuperscript{35} EM stands for effective micro-organisms.
This section presents the research findings about the adult learning that is taking place through active citizen participation in ICE's WMAP. In doing so, both learning outcomes and the processes that help to facilitate those outcomes are elucidated through considering farmers’ participation in the protection of the Sarapiquí and Reventazón watersheds. As advanced in Chapters 1 and 2, the application of transformative learning theory in the analysis is appropriate since it argues that significant learning in our lives can lead to transformation in worldview, which could result in behaviour changes of the sort that would be important to achieving sustainability in resource use. In the following section, I reflect on the application of transformative theory in a cross-cultural, non-formal adult learning context, with people whose voice is often marginalized and consider whether such learning can result in the transformation in the conditions of life and not merely of mind. Specifically, I consider transformative learning within a Latin context and at the cross-cultural nexus between industry and farmers. Further, I consider whether learning is resulting in action that is causing changes, or potential changes, in the condition of the environment.

4.3.2.1 What Farmers are Learning through Participation in ICE's WMAP

The analytic framework was based on two primary categories derived from transformative learning theory considered earlier – instrumental and communicative learning. These were divided into secondary subcategories that are grounded in the theory, and that emerged from what participants told me. These were further subdivided, when appropriate, into grounded themes (Diduck & Mitchell, 2003). Results are often represented by direct quotations from the interviews. Frequency tables for the number of times participants raised discrete issues are not provided, but the quotations are representative of majority viewpoints unless otherwise stated. The categorization shown in Table 4.1 should help with the discussion which ensues.

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Table 4.1 Public Involvement in WMAP: Instrumental and Communicative Learning Results

<table>
<thead>
<tr>
<th>Primary Category</th>
<th>Secondary categories</th>
<th>Grounded themes</th>
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<tbody>
<tr>
<td>Instrumental learning</td>
<td>Obtaining skills and information</td>
<td>-Information about ICE.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>-Project-specific skills and information.</td>
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<td></td>
<td></td>
<td>-Technical information about the specific projects.</td>
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<tr>
<td></td>
<td>Determining cause-effect relationships</td>
<td>-Positive impacts of projects at a farm level motivates continuity and openness to alternative projects.</td>
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<tr>
<td></td>
<td>Task-oriented problem-solving</td>
<td>-Projects act as a catalyst for independent or collaborative experimentation and problem-solving.</td>
</tr>
<tr>
<td>Communicative learning</td>
<td>Understanding values and normative concepts</td>
<td>-Interaction with projects and in programme facilitates critical reflection on concepts like autonomy, worth, responsibility and environmental stewardship.</td>
</tr>
<tr>
<td></td>
<td>Understanding others' points of view</td>
<td>-Farmers sharing alternative points of view with each other.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>-Farmers and ICE negotiating projects.</td>
</tr>
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**Instrumental learning**

Instrumental learning is learning which pertains to controlling or manipulating the environment or people. As Diduck and Mitchell (2003) note, it “provides competence in coping with the external world through technical understanding and therefore control of natural variables” (p. 3). Mezirow (1995) establishes that instrumental leaning has a number of characteristics, three of which provide the grounding for the following sub-categories of analysis of the data: i) obtaining skills and information, ii) determining cause-effect relationships, and, iii) task-oriented problem solving.

**Obtaining Skills and Information**

Skills and information are very important for instrumental learning. As outlined below, the range of skills and information learnt by the participants range from a very broad overview of what ICE is and what it is doing to how specific agricultural projects
and practices promoted by ICE relate to the broader concept of watershed management as outlined below. Specific skills and information generally focus on detailed information related to implementing and successfully working with the projects themselves. Often, while farmers are learning more technical and theoretical information about the interrelationships between the watershed and their actions, ICE technicians are becoming more grounded in the pragmatic reality of daily farm living. A discussion of various themes follows.

i) Information about ICE

José Luis (ICE Sarapiquí) explained that during the formalized activities that ICE organizes in communities their technicians give an overview of ICE and what they are attempting to do. Then the technicians move to more specific information about the actual projects they are trying to promote on the farms and how the projects work. When asked what was taught at these activities, José Luis explained:

First, what is ICE, what is ICE dedicated to, why does ICE use hydroelectricity, what relationship is there between hydroelectricity and what people are doing, what does the water have to be like in order to generate current, what are the different alternative renewable and non-renewable energy sources, what is a hydrographic watershed, what are the problems that effect the watershed like contamination, throwing in soil and waste, grey water…how can I be a little bit responsible for my watershed, what activities do I do that are good and bad and what can I do to improve. In the ideological part…how does this affect biodiversity, what type of ecosystem is there here and how does it get affected…. There is an enormous amount of information that we inform them of…how to protect the water for human use, how to make a biodigester so that it works, what is an integrated farm, what is a farm with semi-stabled animals, lots and lots of information.

José Luis’s comments encourage content reflection (what is ICE and what are they doing) and process reflection (what are strategies to managing a watershed) within instrumental learning. The skills and information related to mounting and running an integrated farm allow farmers to learn sustainable lifestyles and practices. Further, his comments touch on more complex interrelationships like between an individual’s actions and the effect on the watershed and an individual’s responsibility to protect said watershed (communicative learning).

ii) Project specific skills and information

Instrumental learning was also very present in the skills and information provided by ICE and related to the different project options farmers may adopt. Gustavo (ICE Reventazón) explained the importance of giving people options to farm
differently, for farmers to choose for themselves and to learn to assess whether a project works for them or not:

When we arrived there were a lot of people like Inés and her husband Pablo who didn’t know about organic agriculture, vermi-composting, biodigestors, and now they can explain everything. I think that the best thing we have accomplished is that people have learnt new things. With soil erosion for example, farmers know what works and what doesn’t work. The goal is to not only learn but to see what works and for farmers to draw conclusions for themselves. For me, that is what we have done, it is not only to teach but for people to see the different possibilities for making decisions and to be able to say this works, this doesn’t, ‘to manage waste I know that I can use a biodigester or vermi-composting worms…’ before they didn’t know what to do with waste and so they threw it into the river but now there are many options… That is what we do, we arrive and we propose ideas that will allow the farmer to live a better life than the one he has. We have given options so that the producers can choose according to his needs. For them, learning is by doing, if it works they keep doing it but if it doesn’t…there are people who have tried vermi-composting worms but they don’t like them… That is the idea, that we give them more and more options and they can make the decisions.

Gustavo’s comments, and José Luis’s previous one, exemplify what participant farmers also confirmed: that the skills and information related to the different projects learnt by the farmers allowed them to understand better the detrimental impact of current practices, to assess through experience and critical reflection on the alternative options, and to choose what they want to incorporate into their farming practice (i.e. praxis).

iii) Technical information about the specific projects

Mario (farmer Reventazón) explained the skills and information he learnt that allow him independently to use the projects promoted by ICE.

When they told me that they were putting in biodigestors, I found myself surprised and I went to see one (at a project implementation day). I was very admiring and my wife was very happy. I learnt how to put it in, how the gas came out, and how to hook up the kitchen part. And they explained to me how the fertilizer came out of this end and that you have to feed it this much manure and this much water, and finally when they came to talk with us we already were familiar with it. We had to dig the hole but nothing else. Like with everything, at the beginning everything is hard but by the end everything is easy. It is like a school. When people come I explain to them that it isn’t hard at all, all you need is a little bit of technical help and then you can manage it on your own.
Mario’s comment, and others like it, show that the process of learning specific skills and technical information often gives farmers the confidence needed to explain to others how these projects work. 

**Determining Cause-Effect Relationships**

All of the participants interviewed mentioned that seeing the economic, quality of life, and environmental benefits of the projects at the farm level showed them that the projects worked and convinced them to keep using the projects. For example, when asked if he became convinced about the projects by working with them and implementing them, Don Ubaldo (farmer Reventazón) replied:

> Yes, exactly…Doing and seeing the results one gets more and more excited that to plant a plant in organic fertilizer one can have a good result and that one can eat what we harvest with no chemicals. And one becomes more and more convinced because one sees with each day that the earth is improving, that the hill has a better quality crop. And one becomes more and more convinced and with time all becomes easier. Like before we could only buy 1 kilo of beans to plant but now we can buy up to 2 or 3 kilos to plant…I had confidence in God that all would come out well, and without agriculture we wouldn’t have been able to do it.

Don Ubaldo describes how the projects act as a catalyst for determining cause-effect relationships. Later Don Ubaldo’s son Olman (farmer Reventazón) described how the other members of his family were not supportive until they saw that it worked:

> You know, when we started our other siblings didn’t want to support us; even our dad had to see that you could plant a bean without any chemicals or a peach tree before he was convinced about this kind of agriculture. And that is what happens with all of the other farmers in this zone…until they see that it works they won’t even consider it.

Beatríz (MAG extension worker Reventazón) explained that farmers would be more open to other projects once they see positive sustainable effects on the ground.

> Of course, look, what happens is that we start with semi-stabling and at the same time we offer vermi-composting worms and fruit trees to avoid erosion beside the river. After this they see that a biodigester would be fantastic on their farm and maybe more fruit trees and then you have three or four projects on their farm. If they work then they want more and more.

Olman and Beatríz’s comments demonstrate how the community has to see the cause-effect relationship between organic farming and successful crops in order to be open to learning other ways of farming that might be more sustainable.
**Task-Oriented Problem-Solving**

Examples of task-oriented problem-solving involved farmers taking a project and making sure it worked effectively or adapting it to suit their needs. Usually the ICE project acted as the catalyst that facilitated task-oriented problem-solving, this problem-solving was either done independently through experimentation or in discussion with ICE technicians or other interested farmers. For Hernán (farmer Reventazón), ICE’s introduction to vermi-composting worms was a catalyst to try to create an alternative income source to farming. Since he found the information given to him inadequate, Hernán independently researched and experimented for the answers he sought.

So I started to study, in an empirical way and almost like a laboratory. To know what they (worms) eat I had to compost, from how you have to do a whole bunch of things for them….I realized that a vermi-composting worm is the same as any other stabled animal, or semi-stabled…it has its time to eat, it has to have its food ready, it has to have water prepared with its ph balanced-not any kind of dirty water as I was told, it has to have its food with a special carbon-nitrogen balance, and it has to have the right temperature checked with their corporal temperature…I found a huge amount of things that nobody explained to me. So that’s how we prepared ourselves technically…and all that with the idea of creating a market.

Significantly, Hernán annually processes 360 tonnes of waste generated by the town of Cartago.

Roberto (farmer Reventazón) explained how farmers and technicians have the opportunity to problem-solve together around specific project-related concerns at ICE-organized activities.

A few times a year they (ICE) do a farm demonstration day where people go to a farm to see a project. For example, people came here to see vermi-composting, to see the worms, how to do it, to explain the process and that you can sell the organic fertilizer. So they (ICE) explained very well and I, as a producer, explained what I do…All the producers are invited that are in the programme and not in the programme…it was very well attended. On top of it, they prepared something to eat and a little coffee so that people would come. We spent a very nice day talking with other producers, neighbours; it is really nice to have the opportunity to share ideas and opinions. To discuss and say ‘well, my biodigester doesn’t work, this is what is wrong’ and with the technician what has to be done is clarified and explained….It is a dialogue which is critical and constructive at the same time. For example, a producer says ‘well, my biodigester doesn’t work after 4 o’clock and we can’t make dinner’ and the technician responds ‘remember that when we were putting your biodigester together we recommended that it be 10 metres long but you thought that that would be too big’…. 
All of these exemplify participants learning task-oriented problem-solving skills. Farmers are learning independently or collaboratively how to maintain or adapt projects depending on their needs. Also significant, Roberto’s comments show how ICE-organized activities and the process of collaborative problem-solving facilitate participants learning how to dialogue and share ideas.

**Communicative learning**

Learning sustainable lifestyles and skills shifts from being instrumental to communicative when the learning moves from skills and information, determining cause-effect relationships, and task-oriented problem solving, to the realm of understanding and negotiating concepts and values. For some farmers interviewed, living with the projects is forcing them to reassess their values and to reflect critically on concepts like sustainability, stewardship, and self-sufficiency. For these participants, this has caused them to reflect critically on their relationship to the land and their role in the community. The insights generated by this critical reflection allow these participants to understand the positive impacts that their lifestyle and farming practices have on the environment and the community; this sometimes allows them to better situate themselves within a larger globalized context. Mezirow (1995) establishes that communicative learning has a number of characteristics, two of which are reflected in the sub-categories of analysis below, and are also observed in the data: i) understanding values and normative concepts, and ii) understanding others’ points of view.

**Understanding Values and Normative Concepts**

Pablo (farmer Reventazón) explained how he has learnt to value the earth and to question the need for many materialist products. He reflects on his own resiliency and self-sufficiency in the face of an uncertain international market.

**Pablo:** There are so many things that we have learnt and we can’t really say what we have learnt because we learn something everyday, in every moment, and every time we talk. The more we talk about this theme (of integrated farming), the more we learn. But we have learnt the basics, the most important is that we don’t need so many things to live…or things that are so expensive, so modern or technologies…the other day I went to a chat put on by the small producers association and it was talking about free trade and the only thing that it taught us was that if we don’t protest we are going to find ourselves without any food. In contrast, Beatríz (from MAG) is teaching me just the opposite, that having a cow, a biodigestor, forage crop, everything, we are not going to find ourselves without food.

**Researcher:** Exactly, because you are self-sufficient.
Pablo: I was telling Luis Diego (his son) that we have everything here and there is no reason to worry about electricity, food, we don’t have to buy anything. Secondly, if we are working this land then we don’t have to look for work elsewhere. If we could work all this at 100% then it is not only that we don’t need others but if we want we can even buy more land. So this señor was telling us that with free trade we weren’t going to have anything to eat, but on the contrary, we aren’t going to be lacking anything…. So what I have learnt, everyday so many things but the most important is to value…before this piece of land wasn’t worth anything, I took weeds out and that’s it….

This exemplifies communicative learning because Pablo is gaining a better understanding of values and concepts like autonomy and worth. Pablo’s comments show that he has critically reflected on how his farming practices and lifestyle make him self-sufficient within a globalized economic system (premise reflection).

ICE’s WMAP, and especially the implementation of specific projects, have caused participants to reflect critically upon their interrelationship with the watershed and to understand normative concepts like responsibility. Through participation, farmers are starting to see themselves and their role differently. José Luis (ICE Sarapiquí) explained:

And further, people who use a biodigester are starting to see themselves as part of the watershed, to visualize the impact that their farm is having on the level of the watershed and being able to place themselves in it, and to take responsibility for their share as part of the watershed so that everyone can benefit.

Tomás (farmer Sarapiquí) for example, explained that learning about and implementing a biodigester inspired him to take a more active role in his community and in doing his part to keep the river clean.

**Tomás:** They taught us that you could produce gas from manure. That seemed incredible to me. Gas from manure! Unimaginable! On top of it, you can get organic fertilizer….

**Researcher:** Do you think that biodigestors are helping raise awareness in the community?

**Tomás:** Yes, it is an example, people are no longer polluting the river and it is a source of income….This project conscientizes one that we must take care of the earth. On a social level, I have had much more contact with people, there are many people who have come and I had to explain and show them how biodigestors work. One time Allan (ICE Sarapiquí) came and brought together a bunch of other producers on my farm and I thought that Allan was going to explain the biodigester project but, after the introduction, Allan said: ‘And now Don Tomás will explain how a biodigester works’. That moment was a big shock for me. I have always considered myself a timid person and at the beginning it
was very difficult but with time this has helped me be able to better relate to people. At the beginning I didn’t know what to say but now I am much more comfortable….I contribute to the natural environment, maybe others don’t but I do. I feel like the implementation of the biodigester has helped me make a positive turn. Now I am not so timid, I am more open with people, more communicative. Now I am taking a more active role in my community to promote projects like a biodigester.

Initially, Tomás describes instrumental learning (like skills and information as well as learning to share ideas and communicate) around the projects but then Tomás’s comments show that he has critically reflected (process reflection) on the interrelationships between farming practices and watershed health, and on his role in conserving the watershed within the community.

Mario describes how he cooperates with neighbours to try to persuade them to use the projects.

Perhaps we have to have more sense of community. Yes, there are many interested people who ask for the (ICE) phone numbers and I give them to them. I was telling my neighbour that if he wanted a biodigester I would give him manure…he told me that he had asked his other neighbour and he didn’t want to give him any…What? To not give manure! Yup, we have to think differently.

Here Mario is critically reflecting on the concept of community and his role in the community as a facilitator to help make positive environmental changes with the neighbours (communicative learning) and describing the instrumental learning needed to coordinate helping his neighbour.

Later, Inés and Pablo (farmers Reventazón) explain how they feel about changing from conventional farming practices to farming in a more sustainable way. In the past five years they have moved to integrated farming practices: they have two semi-stabled dairy cows who not only provide milk for the family but generate biogas and organic fertilizer with the biodigester; in addition they use almost no chemicals to grow the variety of crops on their modest piece of land. Pablo explains:

So we talked and figured out that there were five other families in the region who had cows and lived differently. They had cows and a patch of forage crop behind their houses and this piqued my interest and we talked and talked and I realized that I still have a lot to learn and to practice but…it is like I said before, it has been twenty years that we haven’t been practicing (integrated farming) and, why not? Later, especially with our parcel of land, it has been many years that I have noticed that with the less land one has, the more you have to take care of it and use it well. Right? But we haven’t put it into practice until now.
Inés continues:

On a personal level, an enormous satisfaction, in the sense that if you try to do something you can realize it. It isn’t so much the money, it is how much one can learn, how much one can share with other people. We have had the experience of meeting the different people who come, it is something so agreeable, so satisfying when people tell you to keep up the struggle, that yes, it is worth it even though now you don’t see the fruits of your labour but your children will. Especially with the smallest, all that we have received, we are so proud, so satisfied to be teaching them that one must struggle, that one must continue and one must not contaminate this earth. God gave us this earth to take care of and not to let it get wrecked.

Communicative learning is evident in Inés having reassessed her role and sense of responsibility, identifying problematic ideas like contamination, understanding concepts like what is worth while, and then learning instrumental skills like sharing and how to farm sustainably. Praxis is reflected in her awareness that the way she is now farming (i.e. acting) is congruent with her conservationist philosophy.

Roxana describes well the transition that she and her husband Rudy have gone through to become more conservationist farmers and the variety of impacts that it has had on their lives: from environmental impacts like cleaning up their farm and the river to social impacts like improving their quality of life and changing their role in the community.

Roxana: Rudy had heard through word-of-mouth that they were going to start implementing these activities (in the region). For us it was all new. Rudy did a tour of the University to see the project examples. What he found most fascinating was the forage crop, the vermi-composting worms, and the biodigestor because we have acidic soil…this way we could have semi-stabled animals – the biodigestor and the worms could help with the waste. After the projects were implemented (with ICE’s help) there were many people who came to see our farm to see if it was working.

Researcher: What impact has it had on your farm?

Roxana: With the forage crop, even with a lot of rain, the cows can still graze 3 to 4 hours a day and not compromise the earth as much. With the waste – before the waste from the milk barn went directly into the river but now it is going into the biodigestor and the fertilizer is used for planting. We, as two people, save 3500 colones/month (8 US$) using gas instead of electricity…We have a better quality of life with the biodigestor and with gas because we don’t have to worry if the electricity fails because we can always cook…we always have gas, even in an emergency. On top of it, there are fewer flies with the pigs – before we had tons of flies but now they have been eliminated.
Researcher: What have you learnt?

Roxana: These experiences help us see the connection between the farm and the watershed. Especially with the help of (ICE) talks and our relationship with ICE we have learnt about the projects and the impacts of farming….Rudy learnt through participating in the activities and building a biodigester on our farm and now he is an expert, from time to time he even earns a bit of money on the side building them…to date he has built 11 in the community! Rudy has also become an expert on forage crop and now people come to see and learn about forage crop and our experience…. The farm is more clean now, manure used to roll down the hill into the river but now the river is cleaner too. Already it has been 4 years that we have been working with these projects and the impacts have been fantastic. We have also built a gas stove ourselves for big pots. If I notice a problem with the gas then I tell Rudy and he goes outside and figures out how to fix it. We are independent and self-sufficient.

Roxana’s comments illustrate clearly how instrumental learning has led to behaviour change which in turn has led to significant positive environmental impacts not only at a farm level but within the community. Communicative learning is evident in Roxana critically reflecting upon, and understanding, the interrelationship between their change in farming practice and how it has positively impacted the health of the watershed. It is also evident through Roxana’s cognizant understanding that their quality of life has improved and that they are more self-sufficient and independent because of this transition in farming practice. Further, learning, both instrumental and communicative, have caused her and Rudy to take a greater leadership role in the community and in preserving the watershed.

Understanding Other’s Points of View

Through the process of promoting and implementing projects, a space is generated where people are able to negotiate ideas and express their points of view. This sharing of ideas happens on a variety of levels. On one level, farmers are sharing new insights and practices with each other, on another level there is an exchange and negotiation that happens between farmers and ICE. One outcome of this is that it allows ICE to be more in touch and responsive to community needs; another outcome is that it is reducing conflict between ICE and the communities.

i) Farmers sharing alternative points of view with each other

On two separate occasions, Inés (farmer Reventazón) and Roxana (farmer Reventazón) explain how they provide an alternative point of view to other women in the community who are used to conventional farming practices.
Inés: But we have talked with many other people who are on the other side of the coin shall we say, especially woman, I don’t know why but they find it gross. Like to go and get manure, or the vermi-composting worms, or to cook with biogas…but why is it gross when you light the stove and burn the gas and there is no odour? I don’t know, it doesn’t gross me out. With the vermi-composting worms, many women find it gross. They don’t even want me to show them the worms. And I tell them, if you knew what little workers those worms are and how the fertilizer that they create is excellent! They want to see the product but not the process.

Roxana: For me, the biodigester is like part of my kitchen. It has to be clean and nice, it is part of my house and so I put flowers around it and chilies…it doesn’t stink. The first women who came to see didn’t appreciate my biodigester because it was full of manure but now they have changed their minds when they saw the impact that biodigestors have. The women especially like saving money, the social impact of having more freedom and the fact that they (the biodigestors) always work, and the environmental impact that the farm is cleaner with fewer flies.

These exemplify communicative learning because they involve a process of understanding values; also, both women question the premise of the social construction of appropriate (feminine) behaviour.

ii) Farmers and ICE negotiating projects

Farmers and ICE negotiate projects on a variety of levels, sometimes this negotiation takes the form of an individual farmer with an ICE technician or sometimes it is as a community with an ICE WMAP team. Alfonso and Gustavo (ICE Reventazón) explained:

Gustavo: Here is another farm plan\textsuperscript{37} where we can see priorities at each level, the forage crop mulcher, afterwards the trees, a biodigester, vermi-composting worms which is more or less important, and finally forage crop.

Alfonso: It is a negotiation, it is not an imposition. It is very directed according to the farmer’s work priorities, not ours, and after we have come to co-define a work plan, we arrive at a legal point and we create a contract with the farmer.

Allan (ICE Sarapiquí) described how the watershed management plan in Sarapiquí is a response to community demands for accountability.

\textsuperscript{37} A farm plan is a survey that ICE Reventazon has started doing with new participants in the WMAP that helps define what the farmer’s resources are and what projects he/she wants to implement.
Well, at the beginning when we the institution arrived, ICE wanted to develop the Cariblanco hydroproject, but there was a certain amount of social resistance to the construction of that infrastructure. The product of this negotiation stage, of the conversations with the groups that were opposed, was a consensus or an accord that for this project to get under way we must create a watershed management plan. So ICE accepted to create this watershed management plan but it wanted to do it in conjunction with the other stakeholders in the watershed in a participatory way, with the institutions, with civil society, with organized groups, with all of the social stakeholders or institutional ones that are in the watershed and that can bring something to the watershed management plan....

Later he explained how ICE’s WMAP is trying to accommodate certain community demands through a process of negotiation.

Many things go from ICE to the producer, but there are many things that are responses to demands made by the farmers. For example, right now we are being asked to provide a course on organic agriculture so we are trying to prepare a training course around organic agriculture. And this has come from the farmers to ICE. You see it is a two-way street, our goals but also the farmers’ goals. In this too we have been learning that there are many things that have their moment and their meaning. So, we must be attentive to signals from the population, from those signals coming from the producers we must capture them and put them into practice as soon as possible.

Allan’s comments show an iterative negotiation process where stakeholders are forced to clarify goals, values and come to a consensus. This negotiation process not only allows people to become aware of each others’ needs and objectives (communicative learning) but also it helps them learn and practise instrumental skills like dialoguing and negotiating. The adaptive nature of ICE’s WMAP shows that ICE, within the confines of its mandate, is listening to farmers and adapting its interventions accordingly based on the farmers knowledge and values.

4.3.2.2 WMAP: Considering Participation and Learning Outcomes

The data reveal that all respondents experienced instrumental learning in some form. For example, through the process of learning skills and information, participants were better able to place themselves within a larger geographical context and understand the interrelationships between themselves, farm-related practices and watershed management. Learning skills and information provided options for more sustainable farming practices and supplied the instrumental learning to implement and use projects independently. Learning cause-effect relationships is allowing farmers to
monitor the success of the projects on their farms. There is an implicit ongoing process reflection to assess whether the farming practices are appropriate for them and whether they bring positive impacts. Praxis is seen as farmers reflect on the projects and continue to use them or implement new ones. This ongoing process is acting as positive reinforcement for those already implementing projects and it is also opening up others’ minds to trying projects. Instrumental learning, and the ensuing change in farming practice, was also shown to have tangible environmental and social benefits. These include a reduction in agro-chemical use, erosion, and operating costs. Significantly, between 2002 and August 2006, the combined use of vermi-composting worms and biodigestors prevented 4,440 metric tonnes of waste from entering the watershed in Sarapiquí and 3,340 metric tonnes in Reventazón (ICE, 2006). These measurable outcomes from farmers participating in the WMAP are the ones that ICE is most interested in. These very tangible learned outcomes directly address the issues of environmental protection and the need to promote a more sustainable use of natural resources as Orr (1994), McDonald (1999) and Finger and Asún (2001) argue adult education should.

Other instrumental learning outcomes such as learning to dialogue and share ideas and problem-solve were clearly established by participants and were an important on-ramp not just to successful project implementation but also to communicative learning outcomes. Other authors have identified similar instrumental learning outcomes by participation in environmental decision-making and have also found these important to peoples’ perception of process and higher-level learning outcomes (Diduck & Mitchell 2003; Fitzpatrick & Sinclair 2003). Evidence of critical reflection on one’s role and responsibility within the watershed resulted in farmers acquiring a new sense of agency. Mezirow (2000) argues that a sense of agency implies that one critically reflects on assumptions as well as those of others, engages fully and freely in discourse to validate one’s beliefs and then effectively takes reflective action to implement them. What happens through the WMAP for most participant farmers is not such a cognizant process; it seemed to be more of an organic process that naturally led to a greater sense of agency. “Transformative learning involves movement from alienation to agency, and ‘centering’, movement from a lack of authenticity, being true to one’s self, to authenticity (Loughlin, 1990)” (Mezirow, 1995, p. 48).

This being said, for those participants who are cognizant of their role to protect the watershed, a major outcome of communicative learning is participants feeling an
enormous sense of satisfaction by mindfully living in harmony with their environment. These findings are consistent with the McDonald et al. (1999) study of ethical vegans that found that changing the way one lives in the world, in this case changing one’s farming practice, questions the normative ideology of conventional farming. Similarly, McDonald et al.’s (1999) study indicated that, for some participants, transformation means more than simply changing practice, they are inspired by their convictions and sense of responsibility to educate others in their community. For these farmers, as with the environmentalists in Kovan and Dirkx’s (2003) study, transformative learning is happening through an active engagement with everyday experience. For example, Inés’s comments on her role as steward reflect a spiritual connection to the earth which, combined with the profound form of ongoing learning that Pablo described earlier (understanding values and normative concepts), appears to be at the core of sustained commitment (Kovan & Dirkx, 2003; Lange, 2004; Orr, 1994).

Communicative learning outcomes were, however, only revealed in the interview data from approximately half of the farmers. This corresponds with the limited communicative learning outcomes found by other researchers considering learning in the realm of resources and environmental decision-making (e.g., Diduck & Mitchell, 2003). In this case there are a number of things that could be contributing to this: i) the time the ICE programmes have been on the ground; ii) the lack of agency in programme design; iii) the lack of meaningful public involvement at the early stages of programme design; and, iv) the inability to discuss higher-level sustainable outcomes such as watershed protection.

As was evident throughout the participants’ comments, and consistent with transformative learning theory (Mezirow, 2000), learning was rarely exclusively instrumental or communicative. Often the process moves either from instrumental learning (learning sustainable practices) to communicative learning (seeing impact of actions which leads to understanding one's role in protecting the watershed), or it moves in the other direction from having a conservationist view (understanding responsibility in protecting the watershed) to instrumental learning (actually learning the skills to implement philosophy). Interestingly, this characteristic of diversity-of-learning-outcomes-mediated-by-experience is not only a hallmark of adult learning but also of ecosystems and ecosystems management (McDonald, 1999).

It was clear from working with and observing farmers over three field seasons that many of them had gone through the “steps” of critical reflection outlined by
Mezirow (1994). In the critical-reflection process, ICE projects might act as the catalyst to transform a frame of reference or they might act as a series of events that reinforces a new habit of mind. Participating in the WMAP enabled more functional frames of reference in that participants were often more open to new ideas and have changed their farming methods to incorporate more sustainable practices. However, within the WMAP, critical reflection is often limited to content reflection. This could be because ICE’s focus is on facilitating project implementation to meet their environmental goals. At the time of the initial stage of this research (June 2005), farmers’ decision-making power was limited to deciding which ICE awareness-raising activities they wanted to attend, whether or not they wanted to participate with ICE in implementing these projects, which projects they wanted to implement, and where they wanted to implement them. This reflects that meaningful public involvement in decisions around the WMAP has been almost exclusively at the implementation phase of the programme. This potentially limits the impact of the learning as it limits the depth and scope of discussion as well as the democratic engagement of participants in larger watershed-level natural resource management decisions. Facilitating premise reflection that might result in a transformation in habits of mind and not simply points of view is not part of ICE’s mandate. Even though some members of ICE’s WMAP team had expressed the need for a more profound discussion around power generation, consumption, environmental degradation, and responsibility, until January 2006 there were no formal or informal mechanisms for analysis by the various stakeholders and communities.

Transformations in perspective and meaning-making can lead to conscientization, empowerment, and emancipation (Mezirow, 1981, 1995, 1996). ICE’s WMAP certainly leads to a greater degree of awareness about the impacts of individual actions at a farm level and at a watershed level. It also empowers some participants to be more active in the community, to have more confidence, and to make decisions that are more sustainable. However, its emancipatory impact is limited. Occasionally profound premise reflections are happening as a consequence of farmers changing the way they farm. For example, Inés and Roxana’s comments about sharing alternative points of view call into question the whole construction of “what is acceptable” and what is not and the construction of appropriate (female) behaviour. Their words and their actions ask some fundamental questions of the other women in the community and they encourage them, for the sake of all the positive environmental, social and economic impacts of the projects, to challenge their understanding of what should be appropriate
social behaviour; they also challenge the other women to explore alternative practices. Pablo’s premise reflection on the interrelationship between farmers and the international market economy shows a greater understanding of his own resiliency and autonomy within a global economic context. His premise reflection, inspired by a radical change in farming practice, echoes results found by Baumgartner (2002) in her case study working with people living with HIV. Baumgartner found that her HIV-positive participants, following diagnosis, had a heightened sensitivity to life, valued people and nature more, and re-evaluated the value given to material things. Pablo's premise reflection is also consistent with the goal of communicative competence, which is to move from a market rationality to a social rationality (Diduck, 1999) and the goal of environmental adult education which is to build sustainable communities (Finger & Asún, 2001; Orr, 1994).

In the case of ICE’s WMAP, specific activities, practices and projects are effective on-ramps to facilitating transformative learning which in turn is helping clarify more sustainable paths for agriculturally-based livelihoods. Through the implementation of projects and the ongoing learning that is happening, communities are becoming more sustainable because: i) environmentally, individually and collectively, farmers are reducing their negative impact by reducing the amount of contaminants entering the watershed by re-using natural resources on their farms; ii) economically, projects help farmers reduce their costs at a farm level which makes farming viable and for some, the projects have inspired complementary yet distinct economic opportunities; and, iii) socially, farmers see a future for themselves and their children that enables them to stay in the community and live creatively and with dignity – which encourages them to care better for their community.

Critical learning outcomes have resulted in the kind of behavioural changes that are important to achieving sustainability in resource use as shown by the many examples outlined above. “Action is an indispensable phase of the process of adult learning…Critical reflection often results in the learner deciding to take collective social action to effect changes in the system, in institutions, or in social practices” (Mezirow, 1995, p. 59). At an individual farm level, informed and motivated farmers are consciously choosing to implement these projects even though they require a substantial level of personal commitment in both economic and human resources. At a community level, some participants have moved beyond responsibly managing their own resources to taking a lead role in the stewardship of communal natural resources. Rudy, Roxana,
Inés, Mario, Tomás, Don Ubaldo, and Pablo did this by engaging with their neighbours either by educating them about alternative farming practices, by living exemplary lives, or by actively collaborating to implement projects. Hernán did this by engaging with the municipality to vermi-process some of its compostable waste.

Learning that has resulted in behavioural changes was also by no means limited to farming participants. The WMAP reflects a significant change in approach to working with communities by ICE and is an important step towards greater public participation in watershed management decisions. Over the past six years, ICE has come to appreciate better the value of integrating communities into the watershed management process through the WMAP because it can see the political, environmental and social benefits of it. At a programme implementation level, ICE watershed management teams are constantly refining their community outreach skills so that they can more adequately tailor the WMAP to meet community needs and interests whilst still fulfilling ICE’s mandate.

4.4 Summary

Chapter 4 presents the results from the initial stage of this case study, that being to look at participation and learning through ICE’s WMAP. In it, I describe how Costa Rica is considered a Central American success story as it enjoys a stable economy, a long-standing tradition to democratic principles, a high standard of living, a high degree of national security and strong environmental leadership. Although Costa Rica faces some very significant challenges in implementing its environmental policies, it should be lauded for what it has done, especially in the face of such limited resources.

In Section 4.2, I begin with an overall description of ICE, the publicly-owned electrical and telecommunications company that provides all of Costa Rica's electrical needs, and move to a more detailed description of the Reventazón and Sarapiquí Watershed Management Units. I explain how ICE is bound by law to develop Costa Rica's hydro-electric resources in a sustainable way. As a result of a watershed management plan developed for the Angostura dam in 1998, ICE began developing WMAPs to address contamination and siltation problems in their hydro-electric reservoirs caused by conventional farming practices. These WMAPs focus on promoting a change of farming practice through individual farmers adopting certain agro-conservation projects and practices that are considered more environmentally sustainable than conventional practices.
Section 4.3 focusses on public involvement in ICE's WMAP in both the planning and design as well as the implementation phase of the agro-conservation programme. There was insufficient information accessible to understand with certainty how the public was involved in the design and planning of the original WMAP. It is clear, though, that there were community workshops held during the planning process where the public was involved; however, the meaningfulness and the participatory nature of these workshops is debatable. In terms of public involvement in the implementation of the programme, particularly in Reventazón through ICE's collaboration with ASOPROA, farmers were able to have some role in the decision-making process when choosing the amount and who should participate from targeted communities. At an individual level, farmers who were participating in ICE's WMAP actively collaborated with ICE and MAG technicians to choose and implement appropriate projects on their farms.

Farmers and ICE have noticed significant environmental, economic and social benefits from participating in the WMAP. One important impact has been the learning that has resulted through participation and through interaction with the projects. Farmers interviewed described both instrumental and communicative learning outcomes. In terms of instrumental learning, farmers have obtained new skills and information about ICE and the projects. They also learnt or developed their skills determining cause-effect relationships. In addition I found that the projects acted as a catalyst for independent or collaborative experimentation and problem-solving. In terms of communicative learning, interacting with projects facilitated critical reflection on concepts like autonomy, worth, responsibility and environmental stewardship which in turn helped farmers to understand better certain values and normative concepts. Further, the programme allowed farmers the opportunity to share alternative views with each other and negotiate the projects with ICE; with respect to learning this has helped farmers and ICE better understand others' points of view.

The final material of the chapter is a discussion of participation and learning results. In it I explain that all participants experienced instrumental learning but only about half experienced community learning though learning was rarely exclusive to either domain. These learning outcomes have led to tangible environmental benefits, as well as social and economic ones. These include a reduction of contaminants entering the watershed, an improved quality of life, and a reduction of costs at a farm level. It was clear that farmers experienced the "steps" of critical reflection but that the majority
of their reflection was content reflection. I found that participation did lead to empowerment in some circumstances, for example many participants were motivated to take a more active role in their community, have more confidence and make more sustainable decisions as a result of participation. However, its emancipatory impact was limited. To conclude, I found that through the implementation and the ongoing learning that is happening in the programme and with specific activities, practices and projects, communities are becoming more sustainable because environmentally farmers are reducing the amount of contaminants entering the watershed, economically they are reducing the costs at a farm level, and socially farmers see a future for themselves and their children in their community.
CHAPTER 5: PARTICIPATION AND LEARNING RESULTS FROM A CBSEA OF ICE'S PROPOSED WMAP PHASE II

5.1 Planning the CBSEA Framework and the Field Visit

The data-collection field visit to Costa Rica in May and June 2005 revealed that participants in both Reventazón and Sarapiquí were generally satisfied with ICE’s WMAP at an individual farm level but they wanted to raise the level of engagement in the agro-conservation programme to a more community-level discussion around watershed protection. Significantly, participants expressed a desire to participate in a more inclusive and meaningful community-level planning process, one done in conjunction with ICE where they could assess the impacts of short-term, medium-term and long-term projects for their farm and for the community. This reflects their recognition of the shortcomings in the design of the original WMAP, as outlined in Chapter 4. Ricardo's words articulate well the need for community-level organization as well as opportunities where participants can engage in constructive dialogue. Ricardo (farmer Reventazón, June 2005) explained:

There are 80 farmers around this watershed. We could form a partnership, we could ask for help from ICE and the government to facilitate the implementation of more conservationist strategies. As a community of producers we could do an analysis of the environmental, social and economic impacts of the projects before implementation. As an organization we could receive certain benefits like obtaining credit, and creating alliances…We could form a farmers' board of directors to help with follow-through and continuity.

The grass-roots interest to engage in constructive dialogue combined with the results from the initial stage of this case study showing that participants had learnt through group "awareness-raising activities" boded well for an openness on the part of participants to participate in activities like a CBSEA. Also, farmer participants and ICE showed an interest in continuing the WMAP, an interest in improving the programme, and an ability to work together. Further, both groups showed a real concern for the environment. Significantly from an organizational point of view, ICE showed a sincere interest in learning more participatory methods for engaging communities in dialogue. Marco (ICE Watershed Management Units' Manager San José, June 2005) explained, when asked what he wanted to gain from this case study, that: "I hope that you can suggest participatory strategies that assure that effectively
there is an exchange of communication and that it is possible to develop more effective participation." And finally, in the process of planning the WMAP for the coming year, ICE WMAP teams in both watersheds were assessing the direction they wanted to take with the programme. Within this planning process for the WMAP Phase II they wanted to obtain input into the future direction of the programme. The space generated between the original WMAP and the proposed WMAP Phase II provided an interesting SEA opportunity (Thérivel & Brown, 1999).

In order to address these complementary desires and to engage farmers in the decision-making process at a community level rather than at an individual level, a CBSEA [based on work by CIDA, 2005; Diduck, 1999; Glassen, 1995; Mezirow, 2000; Michaelidou et al., 2002; Neefjes, 2000, 2001; Noble, 2005, 2006; Partidário, 1999; Sinclair & Diduck 2001; Spaling, 2003; Thérivel & Brown, 1999] was tested in February 2006 as a participatory tool to involve community members in a more meaningful way in the programme planning process for the second phase of the WMAP.

With these considerations in mind, I set out to create a learning-focussed CBSEA framework. I saw this as an exciting opportunity as SEA, and especially CBSEA, is just in its initial stages with many questions around how it could best be put into practice (Neefjes, 2001; Noble, 2005). I approached this challenge from an educator’s perspective, trying to build a participatory learning process that incorporated transformative learning theory (Mezirow, 1994, 1995, 2000), a “Freirean method” (Friere, 1971; Shor, 1994) and that aimed to facilitate the ideal conditions for discourse within an EA context (Diduck & Mitchell, 2003; Palerm, 2000; Renn et al., 1995; Sinclair & Diduck, 2001 based on Mezirow, 1994, 1995). Then, to put together a meaningful CBSEA process, I pulled together the basic components found in SEA (CIDA, 2005; Noble, 2005, 2006; Partidário, 1999; Thérivel & Brown, 1999), and CBEA (Ameyaw, 1992; Kakonge, 1995; Neefjes, 2000, 2001; Spaling, 2003) to act as a framework around which to build the activities for the learning process. Once the draft CBSEA framework was completed, I compared it with ideas from Friedmann’s (1987) social mobilization theory, Michaelidou et al.’s (2002) theoretical framework for ecosystem and community viability, and Moote et al.’s (1997) participatory democracy model for public participation. Once this was completed, I sent my CBSEA framework field plan to my academic committee to obtain input (see Appendix D for this initial
CBSEA framework). Feedback from my committee affirmed that the field plan was theoretically sound but very ambitious considering time constraints.

5.2 Organizing and Facilitating the CBSEA

5.2.1 Preliminary Organizational Activities

The purpose of the third visit to Costa Rica from January to March 2006 was to share initial results, facilitate (or have facilitated) a CBSEA of ICE’s proposed WMAP (Phase II) with at least two different communities, and finally to evaluate the CBSEA process through ongoing observation and through follow-up individual interviews. To accomplish this I structured my field visit into four phases: i) returning initial results to participants and proposing the idea of a CBSEA; ii) organizing the CBSEA; iii) facilitating the CBSEA workshops; and, iv) follow-up interviews.

i) Returning initial results to participants and proposing the idea of a CBSEA

During these first weeks I tried to do two things simultaneously, that was to return a summary of initial results to participants and to gauge ICE’s, as well as community-level participants’, interest in participating in a CBSEA. When I initially arrived in Costa Rica I immediately started returning a summary of results to the participants who had been interviewed in May – June 2005. At these initial meetings with participants, I provided them with a four page summary of results (see Appendix C for a copy of this summary) and discussed these results with them. I also explained what I would like to do, i.e. a CBSEA, during this field visit. In general the participants were interested in participating in the CBSEA and thought that the summary was accurate and fair. Participants especially loved the colour photos in the summary.

What I proposed to ICE watershed management teams in both Sarapiquí and Reventazón as well as to the Watershed Management Units’ manager in San José was to facilitate a series of participatory workshops with communities currently involved in their WMAP to look at the proposed future plans for their agro-conservation programme, what I shall refer to from now on as the proposed WMAP Phase II. Together we went over the activities that I proposed to do with communities as found in my initial CBSEA framework (see Appendix D). For the proposed WMAPs Phase II, both watershed management teams were working within an approximate three year time-line with the programmes being re-visited yearly. The specifics around what both WMAP teams proposed for their agro-conservation programmes is outlined in Section 5.2.2.
On the part of the ICE watershed management employees the reaction to the summary and to the prospect of doing a CBSEA was varied. Marco (Watershed Management Units’ Manager, San José), however, was very positive. As regards the summary of results looking at learning through public involvement in ICE's WMAP, he found the independently gathered feedback excellent to reaffirm the value of what ICE was doing already and to help him identify areas that needed improvement. As regards openness to participating in a CBSEA, he thought doing a CBSEA was a great opportunity to get feedback on the original WMAP and on the proposed direction that they would like to take; he also was open to try a new participatory tool. He did, however, leave the final decision-making up the individual WMAP teams of Sarapiquí and Reventazón on whether or not they wanted to participate.

In Sarapiquí the reaction was very positive. José Luis (ICE Watershed Management Unit Manager, Sarapiquí) thought that the summary of initial results was excellent; it showed him that ICE has an opportunity to have a much more profound impact than he had first anticipated. He and Allan (Agro-Technician WMAP Sarapiquí) also thought that the timing was good to facilitate a CBSEA because they were just about to plan this year’s agro-conservation programme.

The reaction in Reventazón was varied. Initially, Alfonso (Watershed Management Unit's Manager Reventazón) was completely opposed to the idea of doing a CBSEA as he felt it was a complete waste of time and resources and would potentially do more harm than good. He then went on to explain that if ICE Reventazón were to do a CBSEA, the participants would have to be very carefully chosen and the circulation of the product restricted. At this point Gustavo (WMAP Manager Reventazón) intervened to say that he thought facilitating a CBSEA in Santa Cruz would help him understand better how to serve the community, especially those people who chose not to semi-stable their animals. Within a period of 15 minutes, Gustavo convinced Alfonso that there was merit in doing a CBSEA for the dairy-production programme within the WMAP. Initially, Alfonso wanted to restrict participation to whomever he and Gustavo chose. I could not accept this. As a result, we negotiated that participation would be open to all the people I had already interviewed during my first field visit in May – June 2005, and that ICE, ASOPROA (dairy farmers association in Santa Cruz) and the local MAG extensionists would choose who else should participate based on who they thought would be the most committed to participating. Notwithstanding this negotiation process, I still felt uncomfortable with these limitations; hence, I manoeuvred around
these apparent restrictions to participation by asking initial participants in this case study to invite those people in their community that they thought might be interested in participating. I recognize that although I tried to stretch these parameters as much as I could whilst still being true to what had been agreed upon with Alfonso and Gustavo (ICE Reventazón watershed management), I must indicate that access to participation was more restricted in Reventazón than in Sarapiquí. Logistically, I started working towards organizing the initial CBSEA meetings for two weeks later, i.e. the second week of February 2006, as Gustavo needed that time to organize what components he wanted to include in his proposed WMAP Phase II.

This process showed me that within the ICE Watershed Management Units' hierarchy, there is support to try new initiatives, an openness to criticism, and that employees at different levels have decision-making power within their realm of authority. It also showed me that introducing new community-based approaches to decision-making can either be seen as an opportunity or a threat. Successfully implementing them [whilst trying to stay true to the spirit of a critical approach and negotiate around contextual parameters] can be a delicate dance.

ii) Organizing the CBSEA

When organizing the CBSEA in Reventazón, I visited all of the original participants from the May to June 2005 data-collection field visit, explained the CBSEA process to them, and invited them to participate. Some, like Roxana, invited others as well from her community. Collaboratively with these initial participants we decided on the most appropriate date, time, and place for the first meeting, that being Wednesday February 8th at 5 o'clock at the community hall in Santa Cruz de Turrialba.

At a meeting with the current president of ASOPROA, Carlos, and with Gustavo (ICE Reventazón) we decided to invite ten farmers who were already participating in ICE’s WMAP and five who were not. This was done in order to have a balance between those who were familiar with the agro-conservation programme and those who might have different perspectives.

Initially I thought that I would have between ten to fifteen participants in the CBSEA workshops for each watershed but I was pleasantly surprised to find the response much stronger than expected. I think that it is important to mention that both in Reventazón and in Sarapiquí there was a prevalent attitude amongst farmer participants

38 I thought that this was superb that participants recognized the value of participating in a CBSEA and wanted to engage other community members as well as take a lead role in inviting participants.
and ICE employees alike that getting people to participate would be very challenging. As mentioned earlier, most, if not all of the participants, feel that Costa Ricans are generally unwilling to participate in events that have no direct tangible benefit for them as individuals. The awareness of this fact motivated me to be as inclusive as I could be of people who were genuinely interested in participating.

Even though it made the process more complex, I felt morally obliged to allow any initial participants who wanted to be involved in the CBSEA to participate. This meant that in Reventazón seven participants from Torito and seven from Pacayas came. Torito is a similar community to Santa Cruz de Turrialba in the sense that they are primarily dairy producers but the town is much smaller and much more isolated than Santa Cruz de Turrialba, being located about 9 kms from there down a very bumpy gravel road. Pacayas is different because the farmers are not solely dairy producers but also practice integrated farming techniques. Pacayas is 20 kms from Santa Cruz de Turrialba.

In Sarapiquí I approached organizing the initial CBSEA meeting slightly differently. I did this for a variety of reasons. Firstly, there is less communal social infrastructure in Sarapiquí so I was unable to work through local farming organizations (like ASOPROA) to invite potential farmer participants. Secondly, farmers in Sarapiquí have a reputation of being very individualistic and disinterested in working in communal projects (even more so than in Reventazón). Thirdly, José Luis (ICE Sarapiquí) was keen to hear a variety of voices to try to get a greater breadth of opinions. For these reasons, I decided to try a variety of techniques to try to get community members out at the initial CBSEA meeting.

Initially, I invited the participants whom I already knew and asked them to invite people they thought might be interested. I worked with Allan (ICE Sarapiquí) and Roger (MAG Sarapiquí) to see who they thought would be interested and together we invited these potential participants. I then called the Development Association for San Miguel and asked them to send some representatives. Finally, I got the local catholic priest, Father Ronald, to announce the date of the first CBSEA workshop and offer a brief explanation of the CBSEA process at Mass in the communities of San Miguel and Colonia Virgen del Socorro (these two communities were where the majority of the original participants came from). As in Santa Cruz de Turrialba, the date was negotiated according to participant availability, space availability, and the ICE WMAP team being prepared to present their proposed WMAP Phase II. In the end, there were participants
from five different communities all located within a ten-kilometre radius of San Miguel that chose to participate, these communities included San Miguel de Sarapiquí, Cariblanco, Ujarrás, Río Cuarto, and Colonia Virgen del Socorro. These communities are geographically close and socio-economically similar.

To organize the meetings and invite the participants was one aspect of organizing the CBSEA process; another was discussing with ICE WMAP teams what they envisaged for their proposed WMAP Phase II and explaining the presentational style and format that I hoped they would use to share their proposed WMAP Phase II with the participants. I wanted them to present the essential components of their proposed WMAP Phase II clearly and simply, preferably using poster boards as pedagogical supports. I wanted a simple approach for two main reasons: poster paper, as an education support tool, invites dialogue and interaction between presenter and participant (unlike a power-point presentation), and the posters could then be used throughout the CBSEA workshops as a record of the basic components within the proposed WMAP Phase II.

iii) Facilitating the CBSEA workshops

When I began facilitating the CBSEA workshops, two factors forced me to simplify my original field plan: one being the inclusion of a variety of communities in the CBSEA process rather than just one community; the other being the logistical reality of time constraints, both on the participants' part and on my part. Luckily, when it came time to simplifying the CBSEA process, Dr. John Sinclair was in Costa Rica with me so we were able to simplify the originally-planned CBSEA process down to its essential components (see Section 2.4.2) whilst still maintaining a sound pedagogical approach. The CBSEA was broken down into four half-day workshops. The first focussed on determining the purpose and presenting the programme, the second involved assessing the programme and identifying alternatives, the third focussed on identifying real and potential impacts of the proposed programme components including the identified alternatives, and the fourth involved the sharing of CBSEA results with the proponent. (See Section 3.3.2.4 for a more detailed description of these workshops.)

**Attendance**

In the two watersheds, there were a total of 82 community participants, 80 of them small-scale farmers and two interested community members, who participated in at least one of the workshops and 11 governmental institution employees who attended.
Table 5.1 gives a breakdown of attendance at the workshops and in the follow-up interviews.

Table 5.1 Attendance at CBSEA Workshops and Participation in Follow-up Interviews

<table>
<thead>
<tr>
<th></th>
<th>Community Participants Reventazón</th>
<th>ICE Participants Reventazón</th>
<th>Other Institutions Reventazón</th>
<th>Community Participants Sarapiquí</th>
<th>ICE Participants Sarapiquí</th>
<th>Other Institutions Sarapiquí</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Total number of participants</strong></td>
<td>36 small-scale farmers (14 women, 22 men)</td>
<td>3</td>
<td>1 – MAG 2 – MINAE 2 – INA</td>
<td>44 small-scale farmers and 2 community members (15 women, 31 men)</td>
<td>2</td>
<td>1 – MAG</td>
</tr>
<tr>
<td><strong>First workshop</strong></td>
<td>32 participants (10 women, 22 men)</td>
<td>3</td>
<td>0</td>
<td>37 participants (8 women, 29 men)</td>
<td>2</td>
<td>1 – MAG</td>
</tr>
<tr>
<td><strong>Second workshop</strong></td>
<td>23 participants (11 women, 12 men)</td>
<td>N/A</td>
<td>N/A</td>
<td>33 participants (13 women, 20 men)</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td><strong>Third workshop</strong></td>
<td>16 participants (6 women, 10 men)</td>
<td>N/A</td>
<td>N/A</td>
<td>33 participants (12 women, 21 men)</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td><strong>Fourth workshop</strong></td>
<td>22 participants (8 women, 14 men)</td>
<td>1</td>
<td>1 – MAG 2 – MINAE 2 – INA</td>
<td>24 participants (11 women, 13 men)</td>
<td>2</td>
<td>1 – MAG</td>
</tr>
<tr>
<td><strong>Number of participants who saw process start to finish</strong></td>
<td>22 participants</td>
<td>1</td>
<td>1 – MAG</td>
<td>24 participants</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td><strong>Follow-up interviews</strong></td>
<td>19 participants (8 women, 11 men)</td>
<td>1</td>
<td>1 – MAG</td>
<td>24 participants (9 women, 15 men)</td>
<td>2</td>
<td>0</td>
</tr>
</tbody>
</table>

INA = National Institute of Learning
MAG = Ministry of Agriculture and Livestock
MINAE = Ministry of the Environment and Energy

The times and dates of the CBSEA workshops:

Reventazón:
1st Workshop: February 8th, 2006 5 pm – 8 pm, Community Hall Santa Cruz
2nd Workshop: February 15th, 2006 8 am – 12 pm, Community Hall Santa Cruz
3rd Workshop: February 22nd, 2006 8 am – 12 pm, Community Hall Santa Cruz

39 See List of Acronyms for the Spanish names.
4th Workshop: February 22nd, 2006 1 pm – 4 pm, Community Hall Santa Cruz

Sarapiquí:
1st Workshop: February 9th, 2006 5 pm – 8 pm, Church Hall San Miguel
(all communities)
2nd and 3rd Workshops: February 16th, 2006 8:30 am – 4 pm, Church Hall San Miguel
(Communities of Rio Cuarto and San Miguel)
2nd and 3rd Workshops: February 17th, 2006 8:30 am – 3:30 pm, Health Centre Ujarrás
(Communities of Ujarrás and Cariblanco)
2nd and 3rd Workshops: February 18th, 2006 8:30 am – 4 pm, José’s house, Colonia Virgen del Socorro (Community of Colonia Virgen del Socorro)
4th Workshop: February 23rd, 2006 5 pm – 8 pm, Church Hall San Miguel
(all communities)

5.2.2 The First Workshop: Determining the Purpose and Presenting the Programme

In what follows I present the results from all of the CBSEA workshops. The first workshops in both Reventazón and Sarapiquí took place in the late afternoon and both were followed by a sit-down meal. Coffee and snacks were served throughout the meetings. (For a detailed description of the initial plans for the workshops see Appendix F.)

Results from the First Workshops

In Reventazón, a total of 32 adults arrived with a large number of children from Santa Cruz de Turrialba, Torito, and Pacayas. All participants were small-scale farmers except for ICE representatives. Some of the farmer participants were already collaborating with ICE in their original WMAP but others were not participating in the agro-conservation programme. The mood in the meeting was collaborative and amicable.

In Sarapiquí, a total of 37 adults with about six children arrived from San Miguel de Sarapiquí, Rio Cuarto, Cariblanco, Ujarrás, and Colonia Virgen del Socorro. The mood in this meeting was more strained than it had been in Reventazón. Because local communities were directly affected by the construction of ICE’s Cariblanco hydro-project, there was much distrust of ICE. I think for this reason, it was more challenging keeping the meeting focussed on ICE’s agro-conservation programme and not the Cariblanco hydro dam.

In both watersheds, the introduction part of the workshops went smoothly. However, during the visioning activity, there was some confusion. There was confusion as to whether I wanted them to think about individual projects or communal projects, if they should be working in their own community groups or with mixed community
groups, and how this visioning activity related to, or did not relate to, ICE’s plans for its proposed WMAP Phase II. Nonetheless, I had participants work in groups of five or six with the people around them thinking about what they saw as their vision for their community, and what objectives they thought could be met during this CBSEA process. After working for 10 – 15 minutes on this, participants generated a variety of ideas that reflected a vision for their community.

In Reventazón this vision reflected concepts like: equity, conservation, creativity, risk-taking, opportunity, and learning. The specific ideas the Reventazón community members generated included:

i) At a farm and communal level, they would like to see: income equity and equal opportunities for training at a farm level, an organized community where all family members participate, communication and exchange of ideas and resources with other communities, and collaboration to access resources.

ii) In the area of education and training, they would like to have: access to information and technology, training on how better to market goods, producers learning to be investigators and business people, and adequate and good technical assistance before implementing new projects from ICE and MAG.

iii) For future rural livelihood viability, they would like to: produce a broader range of dairy products including high-quality cheeses and by-products, diversify production on the farm, and conserve soil through increasing reforestation with zone-appropriate trees and adequate resources.

iv) With respect to creating marketing opportunities, they would like to see: community products able to be sold for a good price, a 'commercial centre' (group/association) that gives farmers a good price for their product, and a communal-level board for dealing with the problem of overproduction.

In Sarapiquí, the future that Sarapiquí participants envisioned for their community included them continuing farming whilst branching out to diversify with complementary economic opportunities. This would be done by collaborating with others in the community and region. Specific ideas that came out included: trying to diversify production on their farms, having families and communities each develop a distinct project that complements one another, creating a cooperative milk-processing plant, and developing a system of collaborative tourism. Larger underlying themes that participants expressed were trying to protect the environment and improve soils, create local employment, improve infrastructure and collaborate with local institutions to
ameliorate programmes and access resources. At the Sarapiquí meeting, one challenge I noticed was that there were a few very dominating voices in certain groups. These people only wanted to discuss their projects and this effectively silenced others.

As is evident from these results, the visioning activity was important because it allowed the participants to think more broadly about the direction they would like the community to take and then they could see how this broader vision related to the programme that ICE was proposing. A danger of the visioning activity is that it could confuse participants to think that a CBSEA is a community-development process and not a SEA of the proposed programme.

When presenting the proposed WMAP Phase II, both Gustavo (ICE Reventazón) and Allan (ICE Sarapiquí) used poster paper with a few ideas on each page to explain basic concepts about the proposed WMAP Phase II. In Reventazón, Gustavo started by explaining the history of the first phase of the WMAP (up to February 2006) and continued that ICE intended to continue in the same direction in the future for Phase II. Their proposed WMAP Phase II (specifically their dairy-sector programme) would see ICE allowing ten new farmers in Santa Cruz and five new in Pacayas into their WMAP Phase II every year for the next three years. This would mean providing some materials, training and technical support for farmers who would like to move towards semi-stabbling their animals, planting forage crop pasture, managing waste with biodigestors, vermi-composting and EM, and reforesting. This programme would be implemented in collaboration with other governmental agencies like the MAG and ASOPROA (the farming organization). Gustavo (ICE Reventazón) also mentioned that in Pacayas (the agriculturally-based community) they have other projects like promoting the integration of diversified crops and fruit trees. Table 5.2 gives a synopsis of ICE Reventazón's WMAP Phase II.

<table>
<thead>
<tr>
<th>Table 5.2</th>
<th>Synopsis of ICE Reventazón's Proposed WMAP Phase II</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Number of new farms entering into dairy programme over next 3 years</strong></td>
<td></td>
</tr>
<tr>
<td>Santa Cruz 10 farms/year</td>
<td>Pacayas 5 farms/year</td>
</tr>
<tr>
<td><strong>Number of new farms entering into fruit-tree programme over next 3 years</strong></td>
<td></td>
</tr>
<tr>
<td>Santa Cruz 0 farms/year</td>
<td>Pacayas 15 farms/year</td>
</tr>
<tr>
<td><strong>Projects to be promoted:</strong></td>
<td></td>
</tr>
<tr>
<td>Semi-stabbling of animals: Waste management: biodigestors, EM, vermi-composting</td>
<td></td>
</tr>
<tr>
<td>Erosion reduction: reforestation, forage crop pasture</td>
<td></td>
</tr>
<tr>
<td><strong>Technical support includes:</strong></td>
<td></td>
</tr>
<tr>
<td>Visits, tours, farm demonstrations days, talks</td>
<td></td>
</tr>
<tr>
<td><strong>Other agencies collaborating in the programme:</strong></td>
<td></td>
</tr>
<tr>
<td>MAG, ASOPROA, UMCRE-ICE, COMCURE</td>
<td></td>
</tr>
</tbody>
</table>
The Reventazón participants then had an opportunity to ask questions about the proposed WMAP Phase II. The main focus of the questions was on the specifics of the projects, as for instance, on the kinds of trees that ICE was using to reforest and the kinds of forage crop and shrubs they were promoting. Some farmers took the opportunity to explain how effective ICE’s WMAP had been in helping them and the community; others commented on the need for better technical support for farmers already participating in the WMAP.

In Sarapiquí, Allan (ICE Sarapiquí) started by explaining what the WMAP looked like at the time (February 2006), what the proposed programme was for the future and what ICE’s watershed management team’s focus was. Sarapiquí’s proposed WMAP Phase II was less developed than in Reventazón. This was because, at the time of the CBSEA workshops, they were in the process of elaborating their watershed management plan, unlike in Reventazón where it had already been developed and was being implemented. In Sarapiquí they had only recently started implementing their agro-conservation projects to raise awareness about ICE’s WMAP team and to foster better community relations. Table 5.3 gives a synopsis of the Sarapiquí proposed WMAP Phase II.

Table 5.3 Synopsis of ICE Sarapiquí’s Proposed WMAP Phase II

<table>
<thead>
<tr>
<th>Administrative duties:</th>
<th>Agro-conservation programme:</th>
</tr>
</thead>
<tbody>
<tr>
<td>- Finish the agriculture diagnostic/study for the watershed</td>
<td></td>
</tr>
<tr>
<td>- Signal policies and directions for development</td>
<td></td>
</tr>
<tr>
<td>- Propose sustainable production schemes</td>
<td></td>
</tr>
<tr>
<td>- Develop inter-institutional partnerships with MAG</td>
<td></td>
</tr>
<tr>
<td>Agricultural Training:</td>
<td></td>
</tr>
<tr>
<td>- Managing stables, dairy-production, organic agriculture</td>
<td></td>
</tr>
<tr>
<td>Productive Alternatives:</td>
<td></td>
</tr>
<tr>
<td>- Ornamental plants, vegetables, orchids</td>
<td></td>
</tr>
<tr>
<td>Waste management:</td>
<td></td>
</tr>
<tr>
<td>- Biodigester, EM, vermi-composting</td>
<td></td>
</tr>
</tbody>
</table>

Not surprisingly, considering the charged environment in the communities around the construction of the Cariblanco dam, Allan's presentation of Sarapiquí’s WMAP Phase II did not go as smoothly as in Reventazón. During his presentation, two participants decided to take ICE's presence as an opportunity to vent their frustration about how ICE’s Cariblanco hydro-project was ruining their land. In spite of their angry response, Allan (ICE Sarapiquí) and Roger (MAG) effectively brought the discussion back to the proposed WMAP Phase II and agro-conservation. Allan spent much time
addressing people’s frustrations with ICE, explaining the parameters of the watershed management programme, and elaborating how MAG might be able to collaborate to realize some community goals that had been mentioned. It is important to note that the hydro-project and watershed management teams are completely separate units within ICE. Allan, even if he had wanted to, did not have the power to address hydro-project concerns. Allan mentioned the potential of this CBSEA process to help show ICE where it should put its efforts. Roger (MAG Sarapiquí) took a few minutes to explain MAG’s role. There was no time for a separate question period in the Sarapiquí workshop.

This whole exchange in Sarapiquí certainly showed me the importance of a strong facilitator and the need to stay focussed, especially with such time constraints, on the goals of the CBSEA process and not to let the ideas, needs, and anger of a few dominate the group process. Granted, they should have an opportunity to have their say, but this was not necessarily the appropriate occasion. After the meeting, many participants were very disappointed that a few people had wanted to dominate the meeting with their individual complaints against the ICE hydro-project and were unwilling to allow the ICE watershed management team sufficient time to present their proposed programme.

In spite of these problems described above, in both watersheds when it came time to planning the next meetings, I was very impressed and relieved that all of the people present were keen on continuing with the CBSEA process. Together we planned the times and dates for the following workshops. Participants were kind enough to accommodate having a half day meeting when Dr. Sinclair could also participate. In Reventazón, the organizing of the workshops was left up to me. In Sarapiquí, participants proposed the idea that we should have three all-day consecutive meetings, one in each community and then one together at the end. They wanted this format because they wanted to be able to spend more time focussing on local concerns and logistically it was much easier for them to organize. The advantage of this format was that we could potentially do a better job with the community analysis and at the end bring together points in common. I left it to the respective Sarapiquí communities to organize the food and the place for the meeting.

Finally, in both watersheds, at 8:00 pm we enjoyed a delicious dinner together. This sharing of a meal helped create an amicable environment and made the participants feel that their participation was valued.
5.2.3 The Second Workshop: Assessing the Programme and Identifying Alternatives

The second workshops either involved all of the participants (as in Reventazón) or involved participants from particular communities (as in Sarapiquí).

Results from the Second Workshop

In Reventazón, 23 participants attended the second workshop in Santa Cruz. For Sarapiquí, the following is a summary of all the results from the second workshops in the communities of San Miguel-Río Cuarto (9 participants), Ujarrás-Cariblanco (13 participants), and Colonia Virgen del Socorro (11 participants).

Step I-

When farmers were asked what they thought of ICE’s proposed WMAP Phase II, in both watersheds participants in general agreed with ICE’s vision for the programme and they were very keen on bringing forward ways to improve the programme.

As I learnt doing the workshop in Reventazón, the initial approach of asking participants to take individual components and assess how they would like these integrated (or not) into their community did not work very well. What was more effective was asking how participants would improve the proposed WMAP Phase II. Participants started elaborating problems with the existing programme which gave clarity on what ICE had to improve for the future.

In Reventazón, participants decided that they would like to do the next CBSEA in three years so we worked within a three year time frame. Suggestions Reventazón participants made to improve the WMAP Phase II included:

a) to prioritize participation of the producers who were causing the biggest negative environmental impact;

b) to increase the kinds of trees made available to implement (not only profitable ones for wood but ones that are good for the regional fauna and variety in the local diet);

c) to provide better follow-through (including technicians that are better prepared for that region and more support);

d) to facilitate a more holistic initial planning process for individual farms and also for the community;

e) to facilitate opportunities for communal dialogue (perhaps through information exchanges and more farm tours);

f) to help establish communal organizations for marketing and industrialization;
g) to train farmers in what they feel they need (e.g., providing training on how to develop community-generated local initiatives like trout fishing);  
h) to share more of the benefits from the hydro-projects; and,  
i) to help build and train farmers in organic green houses for ornamental plants and vegetables.

In Sarapiquí, once what ICE was offering was clear, participants made suggestions on how the proposed programme could be better implemented, these included:

a) a need to make participation more accessible and open;  
b) a greater clarification of roles and explanation as to what is being offered;  
c) a need to provide better follow-up which includes training and good technical support;  
d) a more complete collaborative planning process at a farm level that would enable the development of sustainable farm management plans;  
e) a study being done on the sources of community contamination;  
f) a prioritization of project implementation according to farmers’ needs, community needs and watershed needs;  
g) a need to support communal projects; and,  
h) training courses being available based on the needs, interests and time schedules of the farmers; and, another CBSEA being done in two to three years.

**Step II**

Working in small groups, farmers identified other components that they wanted to see as part of the proposed WMAP Phase II; these were then shared with the whole group. Recall that this identification of alternatives by community members is an important part of a SEA process. It helps clarify locally most-favoured options and those that are most beneficial to the environment (Thérivel & Brown, 1999). In Reventazón, understanding that this was an ICE initiative, Pacayas farmers started by defining what characteristics they thought components had to possess in order for them to be acceptable to ICE. The necessary characteristics included: protection of the natural environment; erosion prevention; water contamination prevention; and wildlife protection. The components themselves that the Pacayas group came up with included: incentives for organic producers, crop diversification and productive projects (e.g., raising pigs, goats), reforestation that benefits the biological corridors, development of incentives to maintain projects, economic resources to help build greenhouses,
incorporation of a market analysis in order to have more successful initiatives, and training and economic resources to develop agro-tourism. Santa Cruz and Torito farmers identified the following potential components: diversifying farms with other products like fruit trees (e.g., avocado and peach) and different crops, promoting the region for agro-tourism, providing training according to local needs, and studying new opportunities (see Appendix H for a full list of results).

In Sarapiquí, other components community participants would like to add to improve the proposed WMAP Phase II included training courses in strategies for erosion minimization (e.g., reforestation, forage crop), waste management (e.g., recycling, compost), alternative crops, and tourism. Community-specific projects included communal tourism in Colonia Virgen del Socorro and a communal park in Ujarrás-Cariblanco. (See Appendix G for a full list of results).

Following this activity, in all workshops participants responded positively when they were asked whether they had a clear understanding as to what was proposed in the WMAP Phase II and how they (the community) would like to modify that proposal. To prepare for the following meeting participants were asked to think of what impacts these components would have. This time between meetings allowed participants to digest what had been done in the previous workshop and to reflect critically on the impacts for the following one.

5.2.4 The Third Workshop: Identifying Real and Potential Impacts of the Proposed Programme Components

Participants were to identify the real and potential impacts of all of the components, both ICE and community-generated alternatives, that were part of the new "modified" proposed WMAP Phase II taking into consideration environmental, social, and economic impacts. As is consistent with a conventional SEA process (see Section 2.4.2), the aim of this was to identify the impacts in order to maximize the positive and minimize the negative ones (Noble, 2005; Partidário, 1999; Thérivel and Brown, 1999). This assessment was intended to elucidate what new things should be added and what could also be done. This activity had the potential to change participants’ perceptions on what the programme should look like. As this was a SEA, we were to look at more abstract community, regional, and national impacts of the proposed components (Partidário, 1999) rather than on specific project impacts. The purpose of the impact assessment was not only to consider the cumulative effects of the programme and its
alternatives but also to assess the suitability in terms of communal, environmental and economic sustainability (Partidário, 1999; Noble, 2005, 2006; Wood, 1995).

**Results from the Third Workshops**

In Reventazón, 16 people were present at the workshop whilst in Sarapiquí, a total of 33 people participated in the three community workshops. In all of the workshops, the participants were incredibly focussed and worked very hard analyzing potential impacts. They were very on task. The level of discussion during the identification of real and potential impacts was usually excellent with a balance of small-group and full-group discussions. Participants identified a variety of impacts ranging from more obvious concrete community-level impacts to more abstract regional and national direct and indirect impacts related to the projects. A brainstorming activity was used in order to identify real and potential impacts at a strategic level of the different components. This was meant to enable farmers to draw on their lived experiences to do the assessment. We started by looking at the physical-works components that they suggested as well as those that ICE suggested in order to do a more concrete assessment; then we assessed “softer” components like the impact of training courses. The generation of ideas through brainstorming was done as a whole-group activity as well as in smaller groups. We focussed first on community-specific components (e.g., the communal park in Ujarrás-Cariblanco) and then continued with the more general components in order to maximize the benefits of our time together. Due to time constraints, in some communities we were unable to think at a strategic level about all of the impacts of the modified proposed programme components.

In all of the workshops we started by doing an impact assessment on the implementation of more biodigestors in the community because it was something that was very concrete. I have provided the combined impact assessments of the implementation of biodigestors as an example of the impact assessments done by the participants and recorded in the workshops. I have synthesized results in Table 5.4 to give an idea of some of the impacts that were identified by participants with accompanying mitigation strategies that they generated. First we defined what, for example, more biodigestors would mean in real terms and then we brainstormed the real known and potential impacts. *In italic are the mitigation strategies that were suggested to minimize negative impacts and enhance positive ones.*

In Reventazón, ICE's WMAP Phase II proposed including 45 more biodigestors implemented in the region over the next three years. In Sarapiquí, ICE's WMAP Phase
II did not provide specific numbers so the communities generated numbers of their own that they thought were reasonable and realistic. In Colonia Virgen del Socorro five more could be built in the next three years (already there were three and with five more everyone would have one); in Ujarrás Cariblanco participants thought 24 more in the next three years was realistic as eight had been put in the previous year.

*In all of the following Tables outlining the impact assessment results, "+" indicates a positive impact, ";-" indicates a negative impact, and ";-+" indicates one that is considered both positive and negative.

Table 5.4 Summary of Strategic Impact Assessment on Biodigester Component

<table>
<thead>
<tr>
<th>Environmental Impacts</th>
<th>Economic Impacts</th>
<th>Social Impacts</th>
</tr>
</thead>
<tbody>
<tr>
<td>+Less contamination in the rivers and streams.</td>
<td>+Savings in house-hold costs (gas, electricity, fertilizer).</td>
<td>+There is no stress that it will explode – safer!</td>
</tr>
<tr>
<td>+Better use of natural resources on the farm.</td>
<td>+It is profitable (lasts 10 to 12 years).</td>
<td>+Less odour and fewer flies.</td>
</tr>
<tr>
<td>+Fewer chemicals used.</td>
<td>+Labour involved is the same because you already have to do the chore of mucking out stalls but this way you take advantage of the manure.</td>
<td>+You always have gas.</td>
</tr>
<tr>
<td>+Less use of propane.</td>
<td>+If you have pigs or cows it is easier to acquire a permit because you are not contaminating.</td>
<td>+A cleaner yard and house.</td>
</tr>
<tr>
<td>+There is no smoke in the house.</td>
<td>-It costs between 40 000 colones and 80 000 colones (but you save on gas costs) (Mitigation: long term financing, sell the effluent, biodigester parts could be bought in bulk for a better price)</td>
<td>+Better for health because smoke hurts your lungs.</td>
</tr>
<tr>
<td>+Saves on electrical use.</td>
<td>NB: A community-level analysis is needed to see who is contaminating a lot and to facilitate loans for those who need a biodigester. Biodigestors should not be given out free because if they are people won’t appreciate them and will let them fall to ruin.</td>
<td>(Mitigation: tours, farm demonstration days, sharing experiences amongst farmers)</td>
</tr>
<tr>
<td>+Less fire wood is used and this signifies less deforestation = more protection of the watershed and the waters.</td>
<td>+Electricity could be sold</td>
<td>+The electricity that has been saved through reduced consumption could be re-distributed to other areas of the country (this would mean a more equitable and fair distribution of electricity).</td>
</tr>
<tr>
<td>+The effluent is fertilizer (Mitigation: analyze how much should be applied on a crop so that the crop doesn’t get burnt; do an analysis of the effluent in order to know exactly what it is; make sure to do a long-term study to assess any potential damage to the environment).</td>
<td></td>
<td>+More satisfaction with life (people with a biodigester often have a</td>
</tr>
<tr>
<td>+Less transportation needed which means safer roads, less contamination from trucks, less noise, less exhaust pollution, (there isn’t a need to transport tanks to the house or from outside the community).</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
have on health?  
(Mitigation: do a study to find out).
+ Less need to build electrical dams if there is less consumption of electricity.
+ The people who use a biodigester become promoters of the technology in the community and this augments the positive impacts.

<table>
<thead>
<tr>
<th>If you were able to produce a lot of it.</th>
</tr>
</thead>
<tbody>
<tr>
<td>- You have to wait for someone to install one biodigester so that people can be more independent.</td>
</tr>
<tr>
<td>- Technical support is a public cost.</td>
</tr>
<tr>
<td>+ You can adapt a biodigester to generate power for many things like motors, light, etc.</td>
</tr>
<tr>
<td>+ Creation of a market for biogas products = generation of employment.</td>
</tr>
</tbody>
</table>

sense that they are contributing and not contaminating the environment).
+ People who are convinced that it works become promoters of sustainable development; at a communal level there is more collaboration.
+ Creates independence from the global market economy and fluctuations in gas prices.
+ More self-sufficiency (less dependence on economic consortiums) …this brings great satisfaction.

In Reventazón, other initial components that they evaluated included: tourism; nurseries and reforestation; sport fishing; semi-stabling animals, forage crop and edible shrubs; and diversifying crops and products. Table 5.5 presents the results from their impact assessment done of semi-stabling animals. For identifying the real and potential impacts of this particular component, the participants assessed the cumulative impacts of changing their farming practices to include forage crop, edible shrubs, and biodigestors as well as semi-stabling animals because they saw the four components as too closely linked to be assessed separately. They argued that if a farmer were to semi-stable animals, s/he would realistically have to do all of the changes together so they combined them for the assessment. After assessing these "physical works" components in small groups and then together, participants broke off into smaller groups again and did impact assessments on the remaining "softer" components which included: technical support; establishing communal organization for marketing and industrializing; training programmes; exchange opportunities; and incentives to adopt projects.

Table 5.5  Strategic Impact Assessment of Semi-Stabling Animals
45 farms in the Reventazón area

Initial considerations:
- An economic analysis would have to be done to see feasibility of this system.
- An analysis of the forage crop would have to be done to see what options exist that do not have to be mulched before given to the animal.
- A long term plan needs to be done with each farmer.
+ More animals can be cared for in a smaller space.
- Taking advantage of the resources on the farm.
- It is a whole system.
- Taking advantage of good training and technical assistance.
- If there isn't good follow up support then it could be a disaster at a farm and institutional level.
- There is more control of the food (e.g., putting the animal feed in silos).
- Better control of production (e.g., when to plant and when to harvest).
- Better nutrition for the cattle.
- Less dependence on food supplements.
- Less erosion.
- More labour.
- Expensive equipment (forage crop mulcher and stable for the animals).
- Transporting the forage crop from the field to the animals.
- It is boring.
- Needs a good plan at the farm level.
- Less milk production (depending on the food given the animals) (*Do a study on which forage crop produce high-quality milk*).
- Planting edible shrubs is a long-term project.
- Enhances the earth by incorporating organic fertilizer.
- Reduces the useful life of a cow.
- Produces fertilizer and biogas.

* Table 5.5 is a direct translation of notes taken on poster paper during the workshop.

In Sarapiquí, the other "physical works" components that they evaluated included: agro- and eco- tourism; reforestation; forage crop; edible shrubs; training in marketing, hydroponics, waste management; EM; and the Ujarrás-Cariblanco communal park. Table 5.6 outlines the strategic impact assessment done in Ujarrás Cariblanco of their communal park idea and Table 5.7 outlines the strategic impact assessment done in Colonia Virgen del Socorro of promoting communal tourism.

### Table 5.6 Strategic Impact Assessment of Ujarrás Cariblanco Communal Park

<table>
<thead>
<tr>
<th>Environmental impacts</th>
<th>Economical impacts</th>
<th>Social impacts</th>
</tr>
</thead>
<tbody>
<tr>
<td>- Produces contaminants (Mitigation: garbage cans, have recycling for the park and perhaps the community, compost the organic waste, vermi-composting, biodigestors and green-filters for the restaurant)</td>
<td>+ Tourist attraction. + Creation of local jobs. + Income for families.</td>
<td>+ It is a project for the future and the present + It presents an opportunity to work in groups (this is good because working in groups helps people collaborate, realize dreams together, create a sense of community BUT it can also be complicated because sometimes there is a need to resolve conflicts or different people have different visions for the place) (<em>A mitigation strategy is to get training on conflict resolution and</em>)</td>
</tr>
<tr>
<td>+ Work with organic agriculture. + Earth-friendly as it increases the number of trees.</td>
<td>- Lack of resources in order to develop the park (Mitigation: have to look at the institutions to see who could collaborate; create an association to have a bigger voice; training in development and follow-through).</td>
<td></td>
</tr>
</tbody>
</table>
+ Avoids contamination
+ If there is certified it is more credible... for example, if local produce were sold in a little market.
+ If people only think about money and profit perhaps the projects would be developed in a way that is unfriendly environmentally.
+ Take advantage of the whole space to develop the projects.
+ Use native plants.
+ It would attract wild animals because it gives them a place to eat and live.
+ More traffic in the zone from this tourist attraction but at the same time local people can get more local products (like fruit, medicinal plants, vegetables, cheese, shampoo, etc. and they do not have to leave to get them).

+ Income diversity that enables you to survive the more difficult times.
+ Resources needed to buy and keep animals and plants.

_also learn how to organize oneself at an association level_
- It is very hard to get women out of their houses to be business women (it is very hard to leave the home sometimes due to the food, kids, in order to develop something outside the home)
+ With training to be business women and develop a business women will have more self-esteem and be more self sufficient.
+ The region can become more well-known at a local, national and international level.
+ It is necessary to create a good business plan in order to obtain resources (Mitigation: training is necessary in order to make a good work plan... that is a challenge!)
+ The level of benefits is at a community level.
+ It generates employment (this is very important because the town has a ton of people who will be unemployed and this can cause serious problems).
+ Brings in tourists but we do not have all of the resources to satisfy them.

* Table 5.6 is a direct translation of notes taken on poster paper during the workshop.

### Table 5.7 Strategic Impact Assessment of Developing Communal Tourism in Colonia Virgen del Socorro

<table>
<thead>
<tr>
<th>Environmental impacts</th>
<th>Economic impacts</th>
<th>Social impacts</th>
</tr>
</thead>
<tbody>
<tr>
<td>+ Better conservation of the natural environment because the focus of development must be about the environment. + Improve the roads (positive because transportation is easier and this signifies more income, but negative because it is easier for hunters, thieves, and people who cut trees to get into the community) (Mitigation:</td>
<td>+ Income diversification. + More income. + More employment and better employment. - Resources are spent and possibly no one arrives. - Tourists do not buy anything in the community (Mitigation: You have to give them something to buy and do; take away their car and the need to go</td>
<td>+ Raises the cultural level of the community. + People from here are becoming trained and education has value. + A better quality of life. + A better understanding of the community (outsiders at a national and international level learn about the community and also the community members learn about themselves).</td>
</tr>
</tbody>
</table>

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choose the tourists that you want to attract to the community; organize yourselves to stop hunters from coming in; choose the roads that should be improved; make sure that only responsible workers do the work in the community). -Will generate garbage. -There are tourists who will take native plants with them (Mitigation: explain to them and educate them that they should only take photos and local handicrafts or local products from the community). -If there is more transportation then there is more noise contamination (especially 4 wheelers).

* Table 5.7 is a direct translation of notes taken on poster paper during the workshop.

In Colonia Virgen del Socorro, participants decided to continue along with the planning process of their communal tourism project; there was a follow-up meeting on the 11th of March 2006.

In all of the workshops, when participants were working in small groups, I observed that everyone was participating by adding in ideas, including the more quiet participants. There were a lot of more conceptually-abstract impacts that were coming out in the discussions, like the relationship between their own production of biogas and the market, and the relationship between using less energy and having to build new hydro plants. Participants had little difficulty generating mitigation strategies. As can be seen in the examples, these mitigation strategies often reflect strategies that enable more community autonomy (e.g., training local teams on how to install biodigestors so that people can be more independent), reflect a concern for the environment (e.g., making sure to do a long-term study to assess any potential damage that effluent might have on the environment), reflect innovative solutions to overcome the challenges they face (e.g., exploring the possibility of buying biodigester parts in bulk to get a better price), and reflect their knowledge based on lived experience (e.g., Rudy suggesting that the effluent has to be analyzed to see how much can be applied so as not to burn the crop).
Both in Sarapiquí and Reventazón, participants’ responses to doing the impact assessment was very positive. After finishing identifying real and potential impacts and creating mitigation strategies, participants were asked if there were any components that they would like to take out of the proposed programme and they said no. In all of the workshops the participants thought that definitely their modified proposed programme contributed to the sustainable development of the community. In Sarapiquí, the participants explained that it facilitated communal sustainable development as it helped diversify incomes but with the environment and the community as priorities.

At the end of the impact assessment workshops, all communities wanted to know what would happen afterwards. I explained that at the following meeting we would have an opportunity to share this CBSEA with ICE, that they would be able to discuss results, but that I had no idea what ICE’s response would be. The participants explained that it had already been a very valuable experience because they thought the process in and of itself was meaningful and they felt much more qualified to assess potential programmes in the future.

5.2.5 The Fourth Workshop: Sharing CBSEA Results with the Proponent

Even though the goals for the final meetings were the same, the actual way they played out was quite different and quite unexpected. In Reventazón, the final meeting ended up being less of a dialogue between ICE and the participants involved as a forum for participants to explain to other regional institutions what they had done and what they would like to do in their communities. This was followed by these other regional institutions explaining how they might collaborate to realize some of the ideas generated in the CBSEA. In Sarapiquí the final meeting ended up being a constructive dialogue between ICE and the participants involved. It focussed on the CBSEA process and how ICE would take their recommendations into consideration. For me the interesting part was seeing what kind of discussion and interaction came out of the meeting.

Results for the Final Workshop

In Reventazón 28 people and in Sarapiquí 27 people were present at the final workshops. At both workshops, the introductions, the summary of the original purpose and the presentation of the modified proposed WMAP Phase II went smoothly. In Reventazón, the participants had decided through consensus that Luis, a farmer, would present the findings of the CBSEA to institutional representatives. Together we had decided that someone from the community should present the results to show
community ownership of the process and provide potential for continuity. At this final workshop in Reventazón, there were representatives from INA, MAG, MINAE, and Gustavo from ICE Reventazón. When Luis was presenting he focussed on the CBSEA process and explained what we had gone through to do the assessment. He then explained how we had assessed the impacts of the different proposed components as well as how participants had generated mitigation strategies to minimize negative impacts. As he was presenting, others were adding in ideas in a very respectful and orderly way. The presentation was fantastic and showed me that at least some of the participants had completely grasped the concept of a CBSEA.

At this last workshop in San Miguel de Sarapiquí, the format was a little different as the second and third workshops had been held separately in different communities. For this reason, I wanted to allow an opportunity for community participants to share with each other the results from these different community workshops before Allan and José Luis (ICE Sarapiquí) arrived. For the first half hour of the meeting, we shared what had come out of the meetings, what everyone (all three groups) had agreed should be part of the modified proposed programme, what a couple communities had agreed to, and what only had come out of one or two communities. We discussed the learning that had happened and how, interestingly, the greater the number of participants involved in the process, the richer the outcomes. At this time, Ujarrás was able to explain in more detail their idea of a communal park and I explained Colonia Virgen del Socorro’s idea of communal tourism. This was followed by a discussion on who should present the modified proposed WMAP Phase II on the community’s behalf; the participants decided that I should because I was the common link among the three groups. During the presentation of the CBSEA process and the results of the assessment to ICE and MAG representatives, community members consistently enriched the presentation with their comments and ideas. We sat in a big circle with the posters at the front and with everyone facing each other. The atmosphere was constructive and amicable.

The subsequent reaction to the presentations from the institutional representatives in the two watersheds was varied. In Reventazón, the non-ICE

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40 For this meeting I was able to provide participants with a summary of all of the information that had come out of the workshops (see Appendix G), including a synopsis of ICE’s proposed WMAP Phase II.

41 No one from Colonia Virgen del Socorro was able to attend the final meeting; I learnt later that this was because of a conflict with another meeting happening in the community and because of a lack of transportation.
governmental institutions (i.e. MINAE, MAG, INA) were the first to react. Their main points included that they would be more than willing to collaborate in the areas they were responsible for but that communities were responsible to organize themselves in order to access their programmes. They explained that institutions had resources to offer but they had to deal with communal organizations and not individuals. MAG explained that they could help with the development of a strategic plan, INA could provide learning-for-work courses and MINAE could help with reforestation. During these presentations it was very important, as a facilitator, to keep the focus of the meeting on the CBSEA that we had done of ICE’s proposed WMAP Phase II, and not to let individual participants or institutional representatives stray too far off-topic. Following the other institutional responses, Gustavo (ICE Reventazón) reacted to the results of the CBSEA; in his presentation he spoke to the recommendations posted around the room one at a time but never commented on the assessment process itself as a whole. Finally, at around 4 o’clock, I wrapped up the meeting as participants were becoming tired and the discussion was becoming too specific. At this time, I summarized what I had heard the institutions saying and thanked everyone for participating. One aspect of the Reventazón meeting which I really appreciated was that so many representatives from other institutions were able to come to the meeting to hear what the communities had to say and to explain what they (the other institutions) had to offer.

In Sarapiquí, José Luis (ICE Sarapiquí) started off by saying that this process had opened up a space for communication and that that was very important. He explained that it was very important for public institutions to hear from communities on how to improve their programmes. Allan (ICE Sarapiquí) continued by thanking people for participating and explaining that he would take these ideas into consideration. Allan then went on to address the points that he thought were the most fundamental like: dealing with contaminants, providing more options, providing better follow-through and planning, and clarifying ICE’s role. It was a meeting where José Luis and Allan (the ICE Sarapiquí representatives), with help from Roger (MAG extensionist Sarapiquí), were able to address specific questions about ideas that were brought up (like green filters, soil analysis and access to different training courses) as well as to address more broad issues, such as what they felt should be included in the proposed WMAP Phase II as per ICE’s WMAP mandate and what were realistic objectives. One thing that was again elucidated for me in seeing this discussion was the enormous potential for learning different information through dialogue (i.e. among the different participants and each
other and the institutional representatives within) the space generated through a CBSEA process. In general, ICE Sarapiquí's response was positive and constructive but tempered with the reality that their resources were split between implementing the WMAP and creating the watershed management diagnostic. The start of this dialogue process, especially in a watershed where relations were so strained, struck me as so very useful both for the institutions to hear what the communities had to say (and *vice versa*) and for the communities to talk with each other.

Following this dialogue around the CBSEA process and results, Sarapiquí community participants asked how and when they would hear back on the progress of their proposal. Allan (ICE Sarapiquí) was unable to give a specific date but he said that he would start organizing with MINAE, MAG, and other institutions to understand better what resources were available and to make a plan in collaboration with these other institutions about what to offer in what communities in order to address their needs and interests. In order to facilitate some continuity to the process, we decided to create a phone tree that would be distributed to all participants during the follow-up interviews. This phone tree would make communication much easier, and would enable ICE to communicate more easily with communities and the communities to be able to hold ICE more accountable. It was established that there would be one contact person for each community and that if Allan (ICE Sarapiquí) did not call in a month or so then they would call him to see what was going on.

In both watersheds, at the end of the workshops I reminded participants that they were welcome to participate in follow-up interviews if they wished the following week.

### 5.3 Public Involvement in the CBSEA Process

In sum, in terms of public participation in the CBSEA process, a total of 95 people participated in at least one of the CBSEA workshops: 80 were small-scale farmers, two were ordinary interested community-members (in Sarapiquí), 11 were institutional representatives and two of us (myself and Dr. Sinclair) were researchers and facilitators of the workshops. Community participants were involved throughout the process in a variety of ways. As mentioned in the introductory paragraphs to this chapter, feedback from participants during the initial stage of this case study indicated that participants wanted to participate in a community-level planning process, one done in conjunction with ICE, around the agro-conservation programme and watershed protection. This desire, combined with my desire to facilitate a community-based
approach to EA, provided an opportunity to elaborate a CBSEA framework that would potentially enable meaningful public involvement in the planning process at a programme level. Once the CBSEA framework was elaborated, my original participants' openness and enthusiasm to participate in the CBSEA process, combined in both watersheds with ICE WMAP teams openness to collaborate, allowed me to start organizing the workshops focussing the strategic impact assessment on ICE's proposed WMAP Phase II. For me, this nexus between my initial community participants' desire and my research goals indicates that community participants started providing valuable input into the CBSEA right from the initial planning stages of the CBSEA framework; this continued through to the facilitation of the workshops to feedback on the process in the follow-up interviews. With respect to the WMAP, the CBSEA facilitated public input at the planning stages between phases I and II of the WMAP.

As a participatory process, one of the CBSEA's strengths is that it involved community participants at the strategic planning stage of the WMAP. This participation at an early stage of planning allows theoretically for the public to have a greater say in programme planning (Noble, 2005; Partidário, 1999; Sinclair and Diduck, 2005; Thérivel and Brown, 1999). Certainly, as Neefjes (2000) points out, public participation in a CBSEA allows ICE the potential to respond better to stakeholders' concerns and ideas. However, ICE in this case was under no obligation to do anything with the results generated in the workshops or to share the decision-making authority with farmers as to the design or implementation of the proposed WMAP Phase II. Nonetheless, there are a number of features that hint at a real possibility that ICE might be open to sharing some of the decision-making authority with collaborating communities and farmer participants. These features are ICE's openness to participate in the process, its understanding that it needs community-level collaboration in order to maintain existing hydro-projects as well as build new ones, and its understanding as well that in the original WMAP it does share some of the existing decision-making authority with community organizations as well as with individual farmers when it comes to project implementation. Further, especially in Sarapiquí where the relationship between ICE and the communities is more strained, the possibility that engaging community participants meaningfully in WMAP decisions might facilitate a more productive relationship with communities and might encourage ICE to risk sharing some of its decision-making authority. Considering the limited resources available to ICE and
farmer-participants' willingness to engage in this process, sharing the responsibility for the successful implementation of decisions might be very appealing indeed.

With respect to public involvement in organizing the CBSEA workshops, depending on the watershed, participants from the first stage of this case study and local community organizations (i.e. ASOPROA, San Miguel development committee, church) along with MAG and ICE personnel took an active role spreading the word and inviting people to the workshops. In both watersheds, the dates and times for all of the workshops were decided with participants according to their schedules. Particularly in Sarapiquí, community participants took a lead role organizing the logistics of the meetings including the location and the food.

As regards actual involvement in the workshops, activities were created to be as inclusive and participatory as possible. The initial workshop allowed ICE to share information around its proposed WMAP Phase II and to answer any questions that the participants might have. For the interim workshops, I met with ICE representatives between the first and second workshops to clarify any areas I thought had not been well explained so that I could answer any questions that might arise pertaining to the programme. The final workshop also provided opportunities for information sharing between the proponent and the participants. Small- and whole-group activities were meant to facilitate a learning environment that enabled different people to express their ideas, problem-solve and problem-posses, and participate in forums for dialogue where they felt comfortable. Throughout the steps of the CBSEA, participants took on a variety of roles, sometimes they were co-facilitators, sometimes contributors to discussions, sometimes experts on certain topics, and sometimes they were representatives for the whole group (as in the last workshop). Participation at the workshops was facilitated through funding provisions\textsuperscript{42} for day labourers and for transportation. Food was provided at all of the workshops.

In terms of 'with what purpose' (Petts, 1999a) the public was involved, from my perspective it was to enable community input into ICE's proposed WMAP Phase II when it was still in its planning stage, to educate both ICE and community participants about and through the strategic impact assessment process, to facilitate a constructive dialogue between institutions and community participants, and to test whether CBSEA

\textsuperscript{42} I provided funding for participants through a grant provided by the Asociación Costarricense de Ciencias de Suelos and SSHRC.
as a participatory process enables non-formal adult and transformative learning that potentially leads to sustainability.

However, one limitation of this CBSEA process is apparent in terms of public decision-making authority around programme planning and the potential for a lack of follow-through. The results from the workshops were shared by the community with ICE but, as mentioned earlier, ICE is under no obligation to incorporate the suggestions into the programme. Further, even though the community participants did decide that they wanted to do another CBSEA of the WMAP in the future (usually three years hence), the realization of this depends on the community's ability to organize itself and ICE's willingness to participate once again. Nonetheless, both ICE WMAP teams (especially in Sarapiquí) and farmer participants were keen to ensure follow-through. Both are now familiar with the tool and educated on how to use it, and the formation of community organizations as a result of the CBSEA workshops bodes well for their ability to organize such a process in the future.

The following results related to why participants chose to participate in the CBSEA process, what facilitated participation, and what inhibited participation are based on what participants told me in follow-up interviews and what I observed in the workshops.

Participants chose to participate in the CBSEA workshops for a variety of reasons that ranged from wanting to learn to environmental concern to wanting to look for communal solutions. Many farmer-participants explained that they saw the CBSEA workshops as a kind of training workshop to learn new skills such as how to do an environmental assessment. Delio (farmer Sarapiquí) explained: "I went to learn about what an impact assessment was. I had never heard of that before so it caught my attention." Some participants wanted to learn information about ICE’s proposed WMAP Phase II and to hear about what ICE was offering. Pablo (farmer Reventazón) said: "I participated to learn more profoundly and in more detail about what the farmers, ICE and MAG are doing, why they are doing it and for whom they are doing it." Both ICE WMAP teams explained that they wanted to hear, from a farmers’ perspective, suggestions on how they (ICE) could improve their programme. (Perhaps the fact that ICE did not have to make any promises as to what they would do with the results of the CBSEA made them more open to participating.)

Many farmer-participants were motivated to participate either out of a sense of obligation or inspiration towards their community and the environment. In Reventazón,
some participants felt motivated, perhaps almost obliged, to participate because they were already participating in ICE’s WMAP. Johnny (farmer Reventazón) explained: "I went because I was one of the ones picked for ICE’s original WMAP with a biodigester, mulcher and forage crop…so I was motivated to help and to see what it was all about."

Others were motivated because they wanted to see what kinds of programmes or resources were available for community development. In Sarapiquí, a few participants explained that they participated to make the world and their community a better place. They felt it important to support activities intended to improve the community. Lidiette explained:

> It has been a long time, already 13 years that I have this idea of improving the environment, of trying to do something for the global situation, to do a little something for Ujarrás and everyone doing a little bit can help improve the planet…When I learnt from the priest about these meetings I thought it was very interesting, you have to support these activities. And even if we are only a few people who are struggling we have to support these initiatives and continue on ahead.

Environmental concern was another motivating factor for participation. In both watersheds, participants explained that they were motivated to participate because they wanted to see the possibility of more sustainable management on their farms and in the community. Carlos (farmer Reventazón) explained: "I participated to see the possibility of a good sustainable management and to participate in a good training". They wanted to find productive (economic) possibilities for their farm and their community that were constructive and not destructive. Many participants were partially motivated by a sense of curiosity or simply because they had been invited to. In Sarapiquí, two participants explained that they had wanted to see what ICE was going to do to compensate for all of the environmental destruction that it had caused by building the hydro-electric dams.

Both in Reventazón and in Sarapiquí, participants explained that there were many factors that facilitated a commitment to participation on their part and that would facilitate others to participate as well. These included: ensuring that the meetings were participatory, focussed, meaningful, productive, and genuine; creating an inclusive, trusting environment where people felt open to share; and, scheduling the time and place for meetings in consultation with farmers according to their schedules. Roy (farmer Sarapiquí) explained:

> In terms of the scheduling, it was good. In the groups it was good because there was the meeting in San Miguel and then the next ones here and then again in San Miguel. It was the first time that anyone had ever
asked us about what time we wanted. Normally ICE (the hydro-project) sets the meeting according to their work day and that's it.

Other factors included directly inviting more people either by calling them, through the priest, or on another occasion through a public bulletin and being clear right from the start, and re-enforcing throughout the process, that day-labourers' costs would be covered. Jorge (farmer Sarapiquí) mentioned that knowing that there would be some follow-through by ICE with the information generated in the workshops would certainly encourage greater participation. He said: "On top of having more processes like this one it is important to see results. ICE is an institution that has to be careful because they are very good but there is a lot of bad publicity against ICE." Another thing that would facilitate participation was ensuring that farmers knew that the study dealt with the future development of the region. As Don Paco (farmer Reventazón) explained: "You have to give more information to each person in the region so that everyone realizes that these activities are for the improvement of the region".

ICE WMAP teams had a different perspective on what they thought motivated farmers to participate in the CBSEA; some of the reasons were, however, very similar. Some factors they thought motivated participants to participate included: genuinely listening to participants’ ideas and then knowing that something would be done with the information generated; inviting people individually; paying for the daily replacement labourer; and, providing a meal.

Farmer participants explained some of the inhibiting factors that might affect participation levels. These included: farmers having many chores to do during a day; a general apathy due to a self-perception that Costa Ricans are individualistic or that farmers are paternalistic (i.e. expecting a hand out); a need for the discussion to be more focussed on the specific community involved; and the need for more clear and well distributed information publicizing and explaining the CBSEA process before it starts. Xinia (farmer Reventazón) explained: "There needs to be more information for the community, so that we know what the process will be. Many people don't recognize what the benefit will be for themselves and others." Further, there is also a perception that this CBSEA, like other “similar participatory workshops”, would be a waste of time with little follow-through or results. Tomás's (farmer Sarapiquí) comments elaborate upon this last point: "The problem is that ICE has done other meetings that weren't so participatory; lots of times they are presenting propaganda about what they are going to do and perhaps people didn't come because they thought it would be more of the same
and people are disenchanted." Finally, I observed that at least one "initial participant" chose not to participate in community-level meetings because of an already-existing conflict with another farmer who was participating.

5.4 CBSEA Learning Results

5.4.1 Instrumental Learning Outcomes from Participation in the CBSEAs

Instrumental learning, that which pertains to controlling or manipulating the environment, was facilitated through participation in the CBSEA. Mezirow (1995) establishes that instrumental learning has a number of characteristics; obtaining skills and information is the subcategory that provides the grounding for the following analysis of the data. The data comes from both personal observation of the process and from what participants told me in follow-up interviews. Communicative learning will be treated later in Section 5.4.2.

Through participation in the CBSEA, participants learnt about the CBSEA process as a whole as well as acquiring certain skills and information associated with doing a SEA. In the following section focusing on instrumental learning, I begin with how participants learnt information about the CBSEA as a whole including recognizing the role a CBSEA can play in the planning process. This is followed by a description of the skills community participants learnt through participation including how to: identify real and potential impacts of proposed programme components, create mitigation strategies and how to work more effectively in groups. Finally, I describe some of the information that participants learnt at the workshops. Table 5.8 summarizes both the communicative and instrumental learning results as determined from follow-up interviews and personal observation during the CBSEA workshops. The quotations used are representative of majority views unless otherwise stated.
Table 5.8 Participation in the CBSEAs: Instrumental and Communicative Learning Results

<table>
<thead>
<tr>
<th>Primary categories</th>
<th>Secondary categories</th>
<th>Grounded themes</th>
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| Instrumental learning | Obtaining skills and information | -Basic conceptual understanding of a CBSEA  
-Effective participatory strategies that enable working in groups  
-Information related to the proposed programme, their community, the environment, and the potential and real impacts of the components |
| | Problem-solving skills | -Problem-solving skills related to evaluating systematically the impacts, creating mitigation strategies and generating solutions |
| Communicative learning | Understanding values and normative concepts | -Critical self and communal awareness  
-Environmental conscientiousness: recognizing the value of conserving the environment |
| | Understanding other's points of view | -Recognizing the power and utility of working together  
-Institutions learning to engage differently with communities |

5.4.1.1 Obtaining Skills and Information

**Basic conceptual understanding of the CBSEA process as a whole**

During the follow-up interviews, when asked to define what a CBSEA was, the participants showed different levels of understanding of the process as a whole as well as different capacities for articulating what a CBSEA was. I think one challenge for participants was that they might have understood the concept but it was difficult for them to put into words what they had lived. Nonetheless, through the course of the interviews, the vast majority of participants were able to outline the purpose, the method, and the value of doing a CBSEA.

As the following statements show, participants were able to explain, either succinctly or more elaborately, what a CBSEA is. Eladio (farmer Sarapiquí) and Cecilia (farmer Reventazón) provide brief explanations of the CBSEA process.

**Eladio:** A CBSEA is to visualize the positive and negative aspects of a project, of an anti-project or of a new situation and to determine the aspects that have to be minimized, the adverse or negative aspects - you can even talk about this kind of evaluation at a personal level.
Cecilia: It (a CBSEA) raises awareness because one tries to see the bad in order to realize something better. It might facilitate governments hearing people's needs; it is a means of communication.

In what follows, Luis (farmer Reventazón) and Tomás (farmer Sarapiquí) elaborate:

Luis: My perception is that first you have to understand what the project is, what is the project trying to accomplish. With a good understanding of this, deconstruct it to see what impact it will have on the environment, know the impact on people, know the economic impact, and from there get an idea if the project is viable, see if it is really good for the community. When one compensates the good and the bad, if the good is in more quantity than the bad then decide to go ahead but if the result isn't clear, decide what changes need to be made in order for it to be positive. For me, that is what an impact assessment of a project would be for the community…This process introduces a guide, a map that when you follow it, it will improve the quality of the evaluation.

Tomás: It would be to evaluate point by point each one of the proposals and the problems that exist in the community in order to improve the environmental impact…to highlight the more important problems…with the positive and negative impacts.

Researcher: Is it clear what role this kind of assessment might have in the planning of programmes before they are implemented?

Tomás: Yes clearly, it is fundamental.

Researcher: In what way?

Tomás: You have to sit down to look at the pros and cons of a programme, you have to assess before implementing what you are proposing doing.

Participating in the CBSEA workshops not only taught community-participants the basic aspects of the process but it also taught ICE WMAP teams the fundamental concept of a CBSEA. Allan (ICE Sarapiquí) explains:

Allan: We presented the proposed WMAP Phase II, you (plural) took the programme, assessed it to see where it could be improved, what should be added and created a counter proposal; then you analyzed those components in order to do a screening of the ideas that came out.

As participants were learning skills and information related to particular aspects of a SEA, participating in all of the workshops enabled them to grasp the essence of the CBSEA process as a whole. One of the more striking examples of participants showing that they had captured the essence of a CBSEA was when it came time to present our findings to ICE at the final meeting. This final meeting provided a good opportunity to bring together all of the separate components that make up a CBSEA to allow participants a more holistic understanding of the process as a whole. In Reventazón,
Luis's explanation to the participants and the institutional representatives was excellent. He outlined the process, the purpose as well as the results clearly and concisely. Other participants in the audience added to his explanation which only reaffirmed to me that they too had grasped what a CBSEA was all about. In Sarapiquí, I was the one who presented the process back to ICE with participants from the audience continuously adding in their comments to enrich the explanation.

However, not all participants developed a conceptual understanding of the CBSEA process. A few (one or two) of the participants understood certain components of the whole process but had difficulty grasping the concept as a whole. For example, for Maria Isabel, when the discussion left what was directly related to agro-conservation, she explained that she got lost.

One part of understanding the concept of a CBSEA is recognizing its valuable role as an educational process that facilitates communication and collaboration. Participants recognized the value of participating in this CBSEA as a learning opportunity to raise awareness in the community and to acquire skills associated with doing assessments of incoming programmes; it was not just an opportunity to assess ICE's proposed WMAP Phase II. Maria Ester (farmer Sarapiquí) explains:

You came, but between all of us we did an evaluation - we shared everything, one person put in one thing and another person another and in that way we evaluated…I see the role very clearly that it can play (in future programme planning), for that reason I saw it as a kind of training that can be used in the future…we never got bored during the evaluation because it was so animated, we all wanted to come and come.

Gabriela and Roy describe the CBSEA as a kind of training or guide that helps participants focus their ideas and make more grounded, sophisticated, and thorough decisions. Gabriela (farmer Sarapiquí) describes participating in the CBSEA process as being a kind of learning tool that helped guide, and will help guide in the future, individuals and communities in assessing projects. Interestingly, she also touches on how this tool could be used as a kind of rapprochement on the part of the proponent to improve relations with communities.

**Gabriela:** These impact-assessment workshops, what I felt is that they were like a training and perhaps a tool that ICE wants to use with the watershed in order to correct and apologize a little bit for all of the injustices that they do when they enter a town in order to build a hydro-project…It seemed to me that the impact assessment gives people a guide that helps them organize themselves a bit better to more
thoroughly assess projects, from family projects to community projects. Within it (the assessment) the positives and negatives can be seen.

Here Roy (farmer Sarapiquí) laments that they had not done a CBSEA earlier for all the nature that has been lost through people making poor decisions. He comments that the government implements some good projects but that it should be accompanied by workshops or processes like this so that people have the capability to make better decisions.

Roy: It is fantastic what you are doing, but what a shame that you didn't come five years ago for all of the nature that we have lost in the meantime! It is a shame that there isn't this kind of training available to us normally; the government through MAG or through ICE offers things like biodigestors but not education and training in this form.

CBSEA facilitates a space where proponents and communities can constructively engage in dialogue and rational discourse. This openness leads to better understanding and better communication, and ultimately a better relationship between the proponent and the communities. Carlos (farmer Reventazón) explains:

Carlos: I learnt how we can make ICE see our needs so that they can improve the programme that they are offering. I learnt how to see what our needs really are and analyze them…I saw the possibility to improve, to do an impact assessment, to evaluate what has already passed and to make it better for the future…I would use this process in the future, it is a democratic process.
Researher: Should government and industry use this process before implementing a programme?
Carlos: For sure, they have to create a management plan for their programmes.

An important outcome, as articulated by Carlos, is that the CBSEA facilitated the communities being able to better communicate their needs to the proponent.

Sergio and Toñon (farmers Sarapiquí) continue that the CBSEA facilitates a space where ICE and communities can learn to collaborate.

Toñon: This process can be very enriching for ICE as well because normally people arrive with a complaint, but this way ICE can learn to negotiate. Normally they (ICE) arrive and try to give the minimum possible instead of negotiating.

When Sergio was asked if he thought a CBSEA should be used by the government or industry before programmes are implemented, he responded:

Yes because it is one way in which it gives ICE the opportunity to let the community participate, to see the needs and to learn how to collaborate so that we can continue forward together…Through these workshops I
saw a different vision on how things can be accomplished. When there is someone from outside who arrives, it is possible to see ICE from a different perspective; many see ICE as an ogre.

In Santa Cruz during the second workshop, I observed how the Pacayas group of participants tailored their suggestions for their community-generated proposed components to complement ICE's objectives (see Section 5.2.3 for results from the second workshop). This was an intentional strategy on their part as they wanted to target resources that complemented both their and the proponent's needs; they reasoned that they could more effectively "sell" their ideas if the common ground was clear. Strategies like this one show how participants can make more effective use of the space generated in the CBSEA to influence incoming programmes.

José Luis (ICE Sarapiquí) explains from his perspective how a CBSEA facilitates better communication.

I saw it as a tool that allows us to know what communities are thinking in general and the producers in particular about the agro-conservation programme. What is important isn't what I believe they are thinking but what they actually say. It is a good way to validate a programme…An impact assessment of a proposed programme is a comparison between what I can offer and what they (i.e. the farmers) need…from that comes out the interconnected points that can improve the programme.

As José Luis and the farmer-participants' comments clearly illustrate, a CBSEA creates a constructive deliberative space where the proposed programme can be analyzed, discussed, and modified to suit better the needs of the targeted community and to minimize impacts.

**Learning more effective participatory strategies that enable working in groups**

Broken down into its parts, the CBSEA can be a series of educational activities involving a variety of group activities designed to accomplish the required content objectives of a SEA. As far as learning a systematic framework that facilitates a collaborative assessment, participating in these participatory activities achieved a few interesting results. Although community participants have worked in groups before, in the follow-up interviews they explained to me that participating in these workshops taught them the skills and a framework to work more effectively and efficiently in groups; second, it showed participants that meetings could be done in an engaging way; and third, it inspired a very high level of commitment to the process on the part of participants. All participants, including all of the ICE employees involved, explained
that they had learnt how to collaborate better with others and improved their group-working skills.

Many participants explained that they really appreciated the participatory nature of the workshops. The specific guided activities during the workshops were designed to facilitate participants collaborating to meet educational goals. An effort was made to use both whole-group and small-group activities to engage different types of learners in different ways. I observed that task-oriented problem-solving activities, like identifying real and potential impacts and creating mitigation strategies, allowed participants to engage constructively with each other and learn different skills on how to work together (see Section 5.4.4. for more details on what facilitated learning). Some participants explained that this actually taught them another productive and effective way to run a community-based workshop.

In what follows, Lidiette (farmer Sarapiquí) explains how participating in the CBSEA workshops taught her the skills associated with a participatory approach, learning in what order things should take place and how to work more effectively in both smaller and larger groups.

Researcher: What did you learn by participating in the CBSEA?
Lidiette: First I learnt the order in which you have to do things - first looking at what ICE was offering, next what we could add to it - I liked it a lot how you organized us, then how we worked in groups - we looked at the proposals in each group and then we put everything together and everything came out in the same line. Another thing here in Costa Rica is that many times when we are participating in large groups we all talk at once and we don't get anything done. In the small groups we wrote down our ideas and we were able to put together all of the information. In that workshop we all were able to speak and participate in the groups but we chose one person to represent the group and it was much more organized.

Significantly, when I re-visited Lidiette in April 2007 to return final results to her, she told me that she has incorporated some of these strategies into her own teaching of catechism classes with children in the community.

Here Roy and Lorena (farmers Sarapiqui) describe how participating in the CBSEA helped them learn how to work more effectively in groups and they explain the value of working in groups.

Researcher: What did you learn participating in this CBSEA?
Lorena: I learnt more or less how to work in groups. You explained how to do it. Then one person says something and another something else and you learn something.
Researcher: What exactly facilitated your learning?
Roy: The most useful thing was working in little groups, writing the information on the papers and putting them up on the wall so that we could see what was coming out.
Lorena: I think that what comes out when working in groups is better than working alone because one person can say something and another something else and what comes out is better.
Researcher: What size of groups?
Roy: People express themselves best in groups of four or five.
Lorena: There is more confidence in smaller groups; with four people everyone can give their opinion and what sounds best comes out.
Researcher: Do you think that participating in this CBSEA has been useful?
Roy and Lorena: Yes because it is enriching as an individual and for the community; we learnt to work in groups and listen to other ideas and opinions.

Miguel and Teresita (farmers Sarapiquí) further explain how the CBSEA showed them a more dynamic way to facilitate workshops and that this participatory approach not only worked in promoting productive interactions between the participants but it was much more engaging than what they were used to.

Researcher: Did you learn any information or skill in particular?
Miguel: You learn something every day…I like the way that the workshops were developed, it taught me that it can be done in a very dynamic way…the way you did it was the right way. It gives us a very good example. I have gone to many different meetings and they are so boring but they don't have to be like that. Don Jorge is someone who is very serious and he really enjoyed seeing things done like this.
Teresita: We learnt how to share there.

All of these comments highlight how these participants learnt, or at least became aware of, the logistical skills required to facilitate organized, orderly, inclusive, and productive collaborative meetings.

Some participants explained that participating in the CBSEA taught them how to collaborate better with one another within their communities. Tomás and later Manuel (farmers Sarapiquí) explain:

Tomás: I learnt how to share more in community groups, to share with my neighbours perhaps. Everything was pura vida (i.e. fantastic)!

Manuel: I learnt how to share with others during the whole process right from the beginning and how to work in teams, I learnt information like how to improve certain things on the farm like using organics, I learnt about reforestation, how to improve the environment. Then about how to improve reforestation, like what that gentleman was saying about using edible shrubs…It was useful and very important to participate in a CBSEA because I learnt lots of things, I met many new people and I
learnt how to improve and how to conserve the environment which I think was a principal objective.

Manuel's comments are rich because he not only describes the value of working together in terms of collaborative problem-solving, but he explains how much there is to be learnt from other people's lived experience.

As is shown by the following statement, it was not only the farmer participants who learnt skills associated with facilitating participatory workshops and engaging the community. All three ICE employees who participated explained that they had learnt new participatory methodologies. Here Gustavo (ICE Reventazón) explains that he learnt how to facilitate more participatory workshops when engaging communities and that he hopes to replicate this framework with other projects. Later he elaborates on how traditionally "participatory workshops" have been used by institutions as an appeasement-to-opposition tool. Finally he outlines the benefits for communities if they were to be able to do such a planning process in order for them to be more focused and organized.

Researcher: Did you learn something participating in the CBSEA?
Gustavo: Some of the things that you said…I have participated before in assessments but with your methodology some of the things have stuck. For example, with the biological corridor we want to do some workshops and I would like to incorporate some of the activities that you did. In the first workshop I was going to plant the idea of the biological corridor and then develop a work plan. Now, instead I want to first brainstorm with the community about their dreams and then see what points of collaboration exist. That way they can see what is theirs is the focus.

Researcher: Do you think that this process facilitated community members having a stronger voice in the design of programmes proposed to the community by outside agencies?
Gustavo: In theory yes, but it is difficult for institutions to do processes like this. Let me be very sincere, of the institutions it is only we who do this. The different institutions' visions are very sectoral. The workshops that we have done are not as participatory as yours, I have never seen ones like these…In Pirris they do workshops but they are never as elaborate as these…Primarily it is because of community pressure that institutions listen, they hear it and then they develop the project. It would be interesting if all of the communities were to develop a plan that would help them focus and prioritize.

Gustavo's last comment, where he suggests that a community vision would help prioritize and focus planning, is intriguing because it suggests a few things. This last comment relates to the notion of a need for grassroots community development and perhaps signifies an openness on the part of some institutional employees towards
having a community's vision as a starting point and focus for institutional programme development. This approach differs from this particular CBSEA case study where an institutional programme was used as the starting point to involving communities in decisions rather than the other way around.

Gustavo's comments, combined with results from the second workshop where Pacayas farmers tailored their proposed component alternatives to complement ICE's programme objectives, show how a CBSEA could potentially help facilitate communication enabling the realization of both community-development goals and of institutional objectives. This is especially true when there is a strong correlation between the two (synergy). Ricardo's (farmer Reventazón) comments touch upon this synergetic potential.

Ricardo: The role a CBSEA could play is very important, it situates us better and an assessment can help us not make so many errors. It will benefit those who are doing the projects as much as us the producers….For example if an institution helps us with a project and at the end it doesn't work then they lose as much as we do. One thing that they have to look for is how to practically conserve the resources and avoid sediment problems that go to the reservoirs…If there is preliminary planning, all projects that are planned well can be successful…You can feel very proud that you did something really positive for a group of people who are sometimes adrift and others who are thinking about what we are going to do but this opened up many of our eyes to see where we want to get to, where we are going, and how to do things better.

All of these statements, both from farmer participants and ICE employees, show that the participatory approach used was found to be engaging, productive, and appropriate.

Learning information related to the proposed programme, their community, the environment, and the potential and real impacts of the components

Aside from acquiring a basic conceptual understanding of the CBSEA as a whole and group-working skills, participants also learnt a great deal of information through participation. Participants learnt a broad range of information including: i) learning about ICE's WMAP plans; ii) learning about the impacts of the different farm practices, iii) learning about their and neighbouring communities; iv) learning about the projects within the programme; v) seeing their experiences shared by others; and, vi) learning how to lessen their impact on the environment. All participants explained that they had learnt some form of information.

A more traditional educational format was used for the proponent's initial presentation where ICE shared information about their proposed WMAP Phase II with
community participants. ICE's presentation at this first meeting taught participants about what it intended to do regarding reducing erosion and contamination in the watershed through its agro-conservation programme. Specifically in Sarapiquí, participants learnt about the legal parameters surrounding the programme when participants asked why they were not receiving more direct benefits as a result of the Cariblanco hydro-project. The CBSEA also allowed ICE and MAG to clarify their roles in the watershed vis à vis agro-conservation.

However, most of the information exchanged was farmer to farmer. At the second workshop in Santa Cruz, a perfect example of this horizontal learning was when Luis, who was new to farming, did not know how semi-stabling animals reduced erosion so Rudy and Carlos explained how it did. These are just a few examples of the kind of information learnt through the CBSEA. The following quotations exemplify the broad range of information learnt:

**Inés (farmer Reventazón)**
[Information: ICE's proposed WMAP Phase II, learning from others’ ideas]

_Inés:_ First it was very useful to know that ICE has these proposals to improve the community that are already working in this line. It is excellent seeing the positive things that ICE is doing. Second, one can share with other people and communities, the exchange of ideas is very important and one can learn a lot.

**Maria Ester (farmer Sarapiquí)**
[Information: environmental impacts, neighbouring communities]

_Maria Ester:_ I liked it very much…it was very participatory, very happy, we learnt a lot about environmental impacts. Yes, things that I have never heard before and about what is happening in other communities - like in Ujarrás they want to build that community park.

**Cecilia y Orlando (farmers Reventazón)**
[Information: situation in other communities, impacts of projects, shared experiences]

_Cecilia:_ They talked about trees, that in Pacayas they lost them in all of the different regions. They talked about planting forage crop here and there, that it is a lot more work having cows semi-stabled, that the mulcher consumes a lot of electricity…we didn't realize that so many people had the same experiences as us. Before we didn't really say anything to anyone but they had lived a similar situation. It was important to learn that we have shared experiences.

**Miguel (farmer Sarapiquí)**
[Information: about the environment and about concrete actions that could be taken to preserve it. Skills: how to work in groups]
Researcher: Do you think that participating in this process was useful as an individual and as a community?

Miguel: Useful, yes…As much for communicating in a group as for acquiring knowledge about the environment and about what we are destroying. No, we can't say that we are constructing. For there (in the workshops) we learnt how to build rather than how to destroy.

Researcher: And as a community?

Miguel: Yes, because there are a lot of people that hadn't even heard of composting, recycling or a biodigester.

The combination of the participatory nature of the CBSEA, the focus of the proposed WMAP Phase II, and the creation of a deliberative space provided a forum where participants learnt information about the environment and about reducing their negative impact on the environment. Miguel and Teresita, Tomás (farmers Sarapiquí), as well as Ricardo (farmer Reventazón) elaborate:

Researcher: Did you learn something about your environment?

Miguel: From what was talked about there I learnt a lot about how to recycle and to set aside garbage…we are talking about starting a programme here in our house.

Researcher: Did you learn something about the interrelationships between your actions and the environment?

Miguel: Yes, I understand better how to protect the environment, I understand the steps that should be taken and we learnt how - like with the biodigestors or to plant trees, we learnt the steps to take. One learns something everyday in this regard.

Teresita: What caught my attention was that woman having fruit trees in order to attract birds. Or having Allan and Roger's phone numbers in order to get vermi-composting worms because many times I have peels for the compost.

Researcher: Did you learn something about the potential impacts of the proposed agro-conservation programme?

Tomás: Yes, it was interesting. At first I didn't really see what impact it could have, even including the impacts of the hydro-project, even up until ICE being able to reduce its impact on the environment.

Researcher: Was there one impact in particular that was more interesting?

Tomás: Perhaps the most interesting was about the waste from the dairy production and the houses, perhaps reforestation and the importance that it has.

Ricardo: Of course I learnt something about the environment because this helped us share ideas and opinions with other producers. We are all doing things the same way, even if we aren't working in exactly the same thing. This helped us try, in a different way, what the other producers are doing in order to improve what we are doing.
More specifically, some participants explained that certain structured activities, like the brainstorming activity identifying impacts of programme components, helped them learn information about the projects as well as acquire a greater appreciation of the potential impacts of the projects. This was a key instrumental learning outcome. After this activity in the San Miguel workshop, Gabriela (farmer Sarapiquí) told me that she had learnt an enormous amount of information through the impact assessment process because of the wealth of experience that existed in the group. The following quotations exemplify this kind of information sharing and learning through the brainstorming activity and through the CBSEA process in general:

Johnny and Ana Victoria (farmers Reventazón)
Johnny: I learnt a ton of things there that I had never thought about before…I realized that all of the negative impacts like more work, that the cows aren't used to being semi-stabled, I realized all of this and it had never crossed my mind before. How are they not going to look for a means to help us? I learnt that work has its price and I learnt that everything we have seen about the programme like erosion, everything that ICE has talked about, that if they want it they can help pay for it – that ICE should put in its share. I also learnt how to co-habitate in a group, share ideas with others, and I learnt ideas that can be put into practice in the future….I learnt information about how to open a market, about cheese and other crops. I learnt that we have to reforest and take care of our natural resources.
Ana Victoria: I learnt about what animals are like and how to take care of them and about biodigestors; more than anything I learnt about animals like cows.

Jorge and Eladio (farmers Sarapiquí)
Eladio: I wasn't very clear on biodigestors and it was pretty interesting. And with those loans…but we already knew about the forage crop and the other things that were talked about…Other information that was interesting was on composting and green filters.
Jorge: It was interesting talking about soapy water and green filters…

José (farmer Sarapiquí)
José: It (the brain storming impact assessment activity) seemed like a really good activity to me; it taught me new things that I didn't know about before. For example, with the biodigester I knew that it was good for the environment but I didn't know that the effluent, if you didn't use it, continued contaminating. You have to keep a good eye on it.

Further, learning about the different components and their impacts, like EM and vermi-composting, motivated participants to incorporate these projects into their farming practice (i.e. praxis) (e.g., Tomás and Teresita amongst others).
All of their comments show that the inclusion of both ICE components and community-generated components allowed for a broader range of topics to be addressed whilst the impact assessment facilitated a more in-depth exploration of information around projects.

5.4.1.2 Learning New Systematic Problem-Solving Skills

Learning how to identify systematically real and potential impacts of proposed programme components.

Throughout the different steps of the CBSEA, participants were continuously being asked to assess their needs, the programme and the impacts of the different components, and propose strategies to mitigate negative aspects and enhance positive ones. Instrumental learning was seen as community participants learning the skills associated with systematically identifying real and potential impacts of proposed programme components. Everyone who participated in the second and third workshops explained that they had learnt how to assess impacts. Ninety percent could explain what a mitigation strategy was. It was not clear from the interviews whether the ten percent who could not explain did not understand the concept or just the term used in the question. Critical reflection was seen throughout the process.

Working collaboratively to identify impacts of proposed programme components at a strategic level through the brainstorming activity enabled participants to acquire the skills associated with systematically assessing impacts. It also facilitated a discussion which allowed participants to clarify individual and collective needs (communicative learning) as well as resources. Miguel (farmer Sarapiquí) explains:

One starts understanding what goes first, that is to say what is most important, a project can't be realized without understanding what is most important…Since doing this analysis we can see what kinds of resources we have here and we can continue on ahead. Like here in San Miguel Rio Cuarto its agro-tourism, recycling and ornamental plants…Yes, the brainstorming helped me better understand the projects within the programme.

Gabriela (farmer Sarapiquí) adds that specific activities within the CBSEA taught participants the skills on how better to arrange their thoughts so that they could do a more thorough analysis and make more effective life decisions.

Gabriela: The brainstorming activity makes it easier to see the advantages and disadvantages at the time of developing a project. And if there hadn't been this process fewer things would have come to light because at the time of arranging one's thoughts it opens up your mind and you can see more clearly. You can see things more conveniently,
you don't have to walk so far because if you walk with more agility your steps are smaller.

Assessing the positive and negative real and potential impacts of the components forced participants to reflect critically which in turn allowed them to see the projects in a more critical light, this was especially important when assessing certain projects that up until that point had been seen only in a positive light by the majority of community members. For example, in Colonia Virgen del Socorro we assessed the impacts of improving certain roads to the community as part of their plan to develop communal tourism. In Colonia Virgen del Socorro, it forced participants to reflect collaboratively and critically upon potential negative outcomes of a road being improved as well as the positive ones. I would consider this a premise reflection because they collectively called into question the commonly held notion that development is good. The following is an example of the kinds of potential or real impacts that were identified in the workshop by participants (as recorded by the facilitator on poster paper; see Table 5.7 for a full description of impacts identified for this programme component) followed by one of the participant's comments on the process:

+ improving roads (it is positive because transportation is easier and this signifies more income, but negative because it is also easier for hunters, thieves, and people who want to cut down the trees to access the community, and there would be more pollution) Mitigation strategies include: choosing the tourists that you want to attract to the community; organizing ourselves to prohibit hunters; choosing carefully the roads that should be improved; and making sure that only responsible workers do the road improvements.

Luis (farmer Sarapiquí): This CBSEA process would be good for whatever they proposed doing. It is very variable…we saw that everything has its impact…to have it all written out in order to see what we should do or not. For example, with the road, the positive impact is that it would serve us all, but the negative impact is that bad people can come and harm us, to rob us at night.

The CBSEA's role as a forum for dialogue was important here. Up until this meeting, the development of a new road had been a very contentious issue where everyone in the community, except for one family, had wanted the development; however, as a community they had never actually been able to discuss what that one family's

43 The last group of workers to improve a road near José's farm set up a "portable toilet" arrangement that drained its grey water (illegally) straight into a fresh-water stream. An action considered a bit environmentally irresponsible by the folks in the neighbourhood!
misgivings were. [It might be important to recall that there are only twelve families in
this community and half were represented at the meeting.] The CBSEA allowed all of
the participants to articulate their concerns through the impact assessment in a non-
confrontational environment. The community-generated components like developing
tourism allowed former "opponents" (i.e. José and Gerardo) on this particular road issue
to see other common areas where they could potentially collaborate. The fact that the
CBSEA allowed for such inclusive communal participation and facilitated a structured
assessment of components in this case directly contributed to greater understanding
between neighbours which potentially could lead to a reduction in animosity.

When ICE's WMAP team was asked to comment on the quality of the
communities' impact assessment, Allan (ICE Sarapiquí) explains:

Allan: It was very thorough, very diverse and the observations – the
depth to which they saw things was quite impressive.
Researcher: What were the weaknesses?
Allan: The weaknesses that I saw, well, they weren't really weaknesses
they were more from lack of information. For example, some of the
proposed waste management ideas were outside of our agro-conservation
programme or ideas like mini vegetables and sugar cane might not work
well in this particular region…we would have to work these more but in
general the ideas were solid that they were proposing and they included a
good level of analysis.

Consistent with what Allan found, José Luis (ICE Sarapiquí) explains that:

José Luis: They were able to identify the impacts well...they even
identified certain weaknesses that I was feeling about the programme.
Researcher: What were the weaknesses?
José Luis: A lot of times the solutions aren't technically viable that they
proposed, or perhaps the legislation has changed like in reforestation and
that the solutions they proposed aren't possible. For example, with a
course in eco-tourism…it would be easier if someone who actually knew
the legislation or the technical processes, during the process when ideas
are being assessed, were able to guide the process; that way we don't
have to arrive at the end and tell them it is not possible.

Their comments not only illustrate that the communities did a thorough job but that the
weakness in the process, that being a lack of information, could be easily
accommodated if an expert (neutral) technician were present or if the facilitator were an
expert in the field. Also significant in terms of addressing this weakness, the final
workshop provided an opportunity for community participants to become more
informed through dialogue about the parameters of ICE's agro-conservation programme
and current legislation.
Creating mitigation strategies
After doing the initial brainstorming activity identifying real and potential impacts of the different proposed programme components, participants were asked to create mitigation strategies to minimize the most significant negative impacts and enhance the positive ones. This activity helped participants develop systematic problem-solving strategies as they related to mitigating impacts. It allowed participants concrete opportunities for them to generate solutions for potential problems. Cecilia (farmer Reventazón) explains: "…with this, one will try to eliminate the negative and try to augment the positive – to think about what can benefit me and be beneficial for the river and for the environment."

In what follows, Luis (farmer Reventazón) and later Tomás and Toñon (farmers Sarapiquí) explain what "mitigating impacts" means followed by their understanding of the value of being able to develop mitigation strategies.

**Luis:** Mitigation strategies are first to understand what the negative impact will be and to develop ideas on how to minimize it so that perhaps a project could be developed where there is a more equal balance - but if there is a negative impact, and that negative impact can be minimized then that project would be good. So, you have to look at what strategies exist to minimize that negative impact and perhaps bring the project to a point that is worth doing. Unto itself it is a way to try to save a project. Also, through this process you see, if there isn't much that can be done to minimize the negative impact, that project isn't very good. Mitigation is a key factor.

**Tomás:** I understand the basics on how to mitigate impacts - It is important to have these skills in order to provide a counterbalance to the damage that we are doing to something. It is important to have a solution to improve that damage. For example, I used to wash the dairy barn throwing all of the manure into the sugar cane field and into the river, they (ICE) taught me how to cause less damage to the environment using the biodigester. Also, planting trees are ideas that help.

Later in the conversation…
**Tomás:** Participating in the CBSEA was very useful. The knowledge that we have and that we learnt, the way to face problems, the needs that we have… This gives us the basics to face these kinds of problems and know how to mitigate these impacts. Now we know the basics on how to get to the problem.

**Researcher:** Do you understand what a mitigation strategy is or how to mitigate impacts?
**Toñon:** Yes, it is to try to make it so that the impact that will hit the environment won't be as strong…Mitigation strategies are very important because we are trying to take care of what we have…if we don't then we will destroy everything. That wouldn't be useful for either us or future generations if we don't try to make the minimum negative impact.
When assessing the components of the modified proposed programme, areas of potential synergy appeared where community-generated components and ICE-sponsored projects became apparent. That is to say, some of the negative impacts generated by a community-generated component could sometimes be partially addressed by incorporating the use of ICE-sponsored projects, thus serving both the community's and ICE's purpose. For example, in Ujarrás when participants were assessing the impacts of creating a communal park they realized that it would produce waste. The mitigation strategies that they suggested included: "garbage cans, recycling for the park and the community, compost for organic waste, vermi-composting, biodigestors and green filters for the restaurant" (as recorded by the facilitator on poster paper). In this particular case, the mitigation strategies that they thought of reflected incorporating ideas generated earlier in conversations around community concerns (such as incorporating green filters and recycling to deal with the negative impact of contamination) as well as incorporating ICE-sponsored projects like vermi-composting and biodigestors to deal with organic waste. This shows how the creation of mitigation strategies can provide a nice interface between ICE's programme and components that come from a larger community-generated vision.

Creating mitigation strategies allowed participants to create dynamic solutions to negative impacts like buying bulk to reduce costs for materials to build a biodigester or selling effluent as a different economic opportunity. In creating mitigation strategies for the wait times associated with implementing a biodigester, all communities wanted to create a local team of trained experts who could implement the biodigestors by themselves. I would argue that this showed a general openness on the part of participants to taking a greater responsibility for the implementation of biodigestors. Also, especially notable in the workshops in Sarapiquí, participants wanted to prioritize the implementation of biodigestors depending on watershed needs. This reflects a real and pragmatic concern for the greater environmental good.

Participants explained that doing the impact assessment had been worthwhile, even if ICE did nothing with the results, because they were more prepared to assess programmes in the future and because they had learned something. Further, as a result of doing the impact assessment and creating mitigation strategies, participants in all communities, when queried, thought that their new modified-proposed programme did contribute to community sustainability. They explained that the goal of the CBSEA was
to avoid errors and maximize benefits for all of the stakeholders including the community. If things were well planned out, they argued, then there would be fewer failures. For example, in Colonia Virgen del Socorro, participants explained that it contributed to sustainability because it was diversifying income and keeping the environment as a priority.

In sum, instrumental learning was facilitated through active engagement in the CBSEA workshops. Through participation, participants learnt about a SEA process as a whole and learnt specific skills related to systematically assessing real and potential impacts of the proposed components, creating mitigation strategies, and facilitating more participatory and effective ways for working collaboratively. They also learnt a variety of information related to the proposed programme, their community, the environment, and the impacts of the projects.

5.4.2 Communicative Learning Outcomes from Participation in CBSEA

The CBSEA provided a framework through which participants could critically engage with one another, with ICE, and with their ideas around the themes of agriculture, conservation and watershed management. Learning outcomes indicate that not only instrumental learning was facilitated through participation. Communicative learning also was facilitated as many of the discussions focussed on negotiating ideas related to livelihoods and the environment. The CBSEA process forced participants to reassess their personal and communal values and to reflect critically on concepts like stewardship, personal responsibility, and sustainability. A significant communicative learning outcome was facilitating a more critical awareness of self and the community. Recognizing that they shared a common concern for the environment and for the community allowed many participants to learn to move beyond participating for self-interest to participating for the collective good. At an informal level, this led to the creation of mentoring networks during the workshops and subsequent to them. Working collaboratively, participants came to realize the value of working together in terms of having a greater voice in development and accessing resources. In some communities, this in turn motivated them to organize themselves into associations for more effective engagement with institutions. Finally, through participating in this CBSEA process, institutions like ICE have learnt to engage with communities differently.

Mezirow (1995) establishes that communicative learning has a number of characteristics, two of which are reflected in the sub-categories of analysis below and
are also grounded in the data: i) understanding values and normative concepts, and ii) understanding others’ points of view. Communicative learning outcomes were not described by all of the participants interviewed but certainly the vast majority (around 95%) experienced, at least to some degree, communicative learning outcomes related to these areas. In the following section, although quotations often include examples of both instrumental and communicative learning, my primary focus will be on identifying and understanding the communicative learning outcomes.

5.4.2.1 Understanding Values and Normative Concepts

Communicative learning that facilitated a critical self and communal awareness

The CBSEA process provided a forum where people could discuss issues that were important to them as they were directly related to their livelihoods, their community and their environment. The CBSEA facilitated an iterative negotiation process where stakeholders had to clarify goals, values, and when possible, come to a consensus. This process, done at a community and regional level, allowed people to become aware of each other's needs and objectives as well as to learn (or refine) instrumental skills like participatory ways for working in groups and systematic problem-solving skills. As will be presented in the following analysis, the deliberative experience provided a better understanding of what natural and human resources they have in their community and their region (instrumental learning), and provided as well a more critical understanding of their current situation. It also provided an opportunity for them to envision goals for the future based on this more thorough understanding of common concerns and values. Often this greater awareness engendered a deep feeling of personal commitment for making responsible decisions vis à vis the environment and the community whilst the CBSEA provided a mechanism to participate in the decision-making process.

Participants learnt more about themselves and their community by hearing other people's opinions and views and by having to articulate their own. Within the CBSEA process, participants were able to hear and share a variety of opinions and ideas in a non-threatening environment. Participants explained that this was valuable because: it brought people together; it allowed them to hear alternative views; it illustrated that collectively they have shared common concerns about the community, their farming practice and the environment; and it motivated them to act. Luis (farmer Reventazón) explains well how, on the one hand, the CBSEA acts as a kind of guide to shepherd participants through the assessment of a programme and that in turn allows them to
make better, more grounded decisions when planning. On the other hand, it acts as a forum for dialogue where ideas can be shared, participants can learn about how things are happening in their communities, and they can be motivated by the fact that their concerns are shared with others.

Luis: …The process facilitated a framework or a guide that allowed the participants to focus their ideas. As regards group work (facilitating learning), the interaction between all of the participants hearing the ideas that they contribute, one realizes the way in which people are thinking and also it gives you an idea in one community of what is happening in another community. So one sees the play of ideas and the whole process becomes enriched as each person brings in ideas…The change that I see is that with this new knowledge one is opening windows for people to think that there is a way through which projects can be done in a way that is better organized, or at least increases the probability of success. Also, participants realize that there are other people like them that are interested and want to organize themselves; that also gives them strength or re-enforces the will to help the community. Another big support is that there are people from outside, either from government or educational centres, that give support to the community so that they can develop these kinds of processes.

Communicative learning is seen as participants hear alternative views which leads them to reflect critically on what is happening in their community (content reflection), how programmes are implemented in the community (process reflection), and their role and responsibilities as facilitators for positive change in the community (premise reflection).

Ricardo's (farmer Reventazón) comments focus on the importance of being able to meet each other, share ideas, and work collaboratively. Not only did this process allow individual farmers to improve their own practice, but through this interaction, the farmers in Pacayas saw that they all had common concerns and challenges regarding the nexus between their farming practice and the environment which in turn motivated them to form a conservationist farmers' association.

Ricardo: The most important thing was to share with the rest of the producers that we are doing very similar conservation projects - learning from what they have. It helped me a lot to try to improve what we have now (on our farm). And more importantly it helps us improve what is coming in the future, in fact we are just about to create an organization that will work for everyone's well being - In fact, I think that that is the most important thing, the most positive that could have come from this…I think that one of the most important things is to socialize and in socializing we realized that we are all speaking the same language, that we all will do the same things - that is conserve our natural resources which are the most important things that we have to preserve right now. So, I think that everyone who was there is thinking in the same positive way with respect to conservation.
Later in the conversation…

Ricardo: I think that what you are doing is something that is very, very important and you know why? Because you have succeeded in extracting the words that the producers never wanted to say or that they were keeping or that they were reserving and everything that you succeeded in getting out of the farmers like information or that they wanted to express is very important. Really, doing those little workshops was fantastic, primarily because we met a group of people, some we knew and others we didn’t, but the most important part was sharing and getting so many good ideas out, such good ideas!…Your work has been so important, the fact that you were able to get that information from the farmers, to have extracted the words that they didn't want to say or perhaps wanted to say, and to have clarified who was between the yes and the no, and it activated us, mobilized us, to really look for alternatives - I think that this will help us a lot. I think that from now on the UMCRE programme (ICE's WMAP in Reventazón) or any other institution that wants to involve farmers in conservation will have to analyze it more and will have to take us into account.

Significantly, Ricardo's final statement clearly sums up the value of a CBSEA as a forum where community members and proponents can engage in discourse – he explains that the CBSEA allowed farmers to express words that they had never been able to express before. Communicative learning is seen as participants critically reflect on their individual and collective roles in community development, the decision-making process, and environmental stewardship. It is also seen through Ricardo recognizing the value of socializing, working together and sharing to achieve common goals. Praxis is seen as participants organize themselves and actively look for alternatives.

As individuals, the CBSEA helped participants contextualize themselves better within the community, that is to say they were able to see their role more clearly within the community and better understand how their actions affect others. Some participants explained that participating facilitated a more mature critical self awareness, especially in relation to how they shared similarities and differences with others. Pablo's (farmer Reventazón) comments show how participating with others in his community who share similar practices and convictions helped him see himself and his community more profoundly.

Researcher: Did you learn any information in particular?

Pablo: I learnt that others are talking the same language, that we are practising the same thing. Sometimes you can feel kind of alone; there I felt that there were more people. In Santa Cruz there are people who are organized who have the same vision.

Researcher: Participating in this CBSEA process, has the perception of yourself or of your community changed?
Pablo: I see myself more profoundly now; yes, the way in which one thinks and acts becomes more profound because one sees that there are many people who are the same…Also, the way in which you see your community is more profound because you can see others with the same ideas.

Communicative learning is seen as Pablo critically reflects on the concepts of self in relation to others, and the interrelationships between self, others in the community and one's farming practices and environmental philosophy. Toñon (farmer Sarapiquí) explained that he gained a better understanding of what and how he could contribute to his community through participating in the CBSEA.

Toñon: I learnt more to value where I am. I learnt that I can bring more to the community…because I can directly or indirectly affect the community. Later in the conversation he explains how he could help in future CBSEAs…

Toñon: … I am conscious of how I can help in the programmes, to be present in the meetings and to help with what is going on…Here is an easy example; in our dairy barn I can make a decision to act but first I have to think through a bunch of things like: how am I affecting others? In contrast, before (doing the CBSEA) all I did was go ahead with a project and that's it.

Toñon's comments show how participating in the CBSEA helped him recognize how important it is to take the impacts of his actions on others into account when making decisions. Communicative learning is seen as Toñon critically reflects on his role in the community as a facilitator for positive change, the interrelationships between his actions and their impacts on others and the watershed, and on normative concepts like personal responsibility.

Manuel, Roy and Lorena, and later Gabriela (along with at least five other participants), specifically state how they have transferred the analytical problem-solving skills (instrumental learning) that they learnt in the CBSEA workshops to their personal lives. The latter three describe this as having acquired more mature decision-making skills and that it has been beneficial to their growth as individuals. What they learnt through participating in the CBSEA, and what makes this communicative learning, is that an impact assessment provides a framework that facilitates a discursive and iterative process where partners in a home can clarify their values and weigh all of the different considerations and come to an informed decision (collaboratively) based on what they think is most important. This dialogue helps them identify problematic ideas.
and allows them to hear alternative views. Together, they are able to make more conscious decisions by doing a systematic evaluation of a certain project.

Roy and Lorena's (farmers Sarapiquí) statements clearly illustrate how participating in a CBSEA can be transformative at an individual decision-making level. Here they explain how their newly-acquired analytical skills have helped them analyze their farm-level decisions in a more systematic way.

Roy: (Through the CBSEA process) I learnt to see a theme from another point of view. To see how it all links together. For example, with Lorena I arrived home after the first workshop and we started analyzing the advantages and disadvantages of stabling pigs and semi-stabling cows in order to see what is more profitable…we are doing it with the costs and everything and the work involved, we haven't finished yet. We can do this (analytical) process with everything, even with selling eggs.

Researcher: Does this mean that you have changed the way that you make decisions?
Roy: Yes, because now I have another way to develop a theme in order to make the most of it and to see things in the most positive way.

Later in the conversation they continue on how now they can make more conscious decisions:

Researcher: Do you think that participating in this CBSEA was useful as an individual and as a community?
Lorena: Yes, because it is enriching as an individual and as a community; we learnt how to work in groups and how to listen to others' ideas and opinions.
Roy: And it makes you grow as a person.
Researcher: What do you mean by growing as a person?
Roy: More mature in the sense of making decisions.
Lorena: Doing more correct things.
Roy: It helps you make decisions in a more conscious way.

It is worth while to mention that when I visited Roy and Lorena in April 2007 to return final case-study results to them they told me that they are still using the analytical problem-solving skills they learnt at the CBSEA workshop. At that time, they were assessing what would be the impact of integrating cattle for beef production on their farm.

Manuel and later Gabriela (farmers Sarapiquí) further elaborate about how participating in a CBSEA can be transformative to individual decision-making processes:

Manuel: Yes I would use the CBSEA because it is really good to plan…It doesn't have to be used only at the government level but also it can be used at the family level because you can see where you are failing. If monthly we did an assessment in order to plan better it would be really good.
When asked if she would use this assessment process in the future, Gabriela responds:

**Gabriela:** I am already using it, for example yesterday when I was talking about the casino (i.e. building one in their bed and breakfast). The CBSEA process taught people how to analyze more profoundly and with more finesse. It is like an internal maturity. It has been very useful for me; I have to take advantage of these analytical skills because I have to convince my husband Marco.

Here Gabriela understands that in order for them to reach a consensus on what action to take, she needs to make sure that all of the environmental, social and economic consequences of their actions have been thoroughly explored and weighed according to their values. The deliberative process is essential, especially when trying to reach a consensus about a contentious issue (and still love each other at the end of the day!). She too explained in April 2007 that she is still using these analytical problem-solving skills in her personal life.

In an individual's personal growth and the realization of goals, a very significant step is being able to recognize one's own limitations - to be cognizant of one's own learning needs. Pablo (farmer Reventazón), and earlier Roy (farmer Sarapiquí), were the only participants to explain how the learning they experienced through the CBSEA workshops has helped them recognize where they need more capacity-building.

**Pablo:** I learnt in the workshops that in order to do these things we must train ourselves and prepare ourselves. Train ourselves in order to continue becoming more capable. It is necessary to know what one has to learn.

When asked for further clarification, Pablo explained that one has to learn how to prepare oneself in order to be capable of doing an evaluation before implementing a programme; you can not just jump right in. You actually have to learn how to evaluate in order to understand your own limitations.

Communicative learning is seen as Pablo critically reflects on his own strengths and limitations as a learner in relation to taking on different roles in the community like participating in a CBSEA. At a community level, I observed that identifying potential and real impacts and creating mitigation strategies helped participants recognize their strengths and weaknesses and better understand areas that they need to develop in order to realize their goals. This often included training courses.

As briefly touched upon earlier in previous comments by participants, the CBSEAs helped participants gain a better understanding and appreciation for their communities as well as their neighbours' communities. The shared experience of
participating in the CBSEAs inspired community members to show an interest in their neighbours' activities and to move beyond self-interest. Further, the recognition of a shared environmental concern motivated participants at a communal level to collaborate in order to speak with a more united voice and to take a greater responsibility for protecting the environment.

Contrary to what I had been led to expect, the CBSEA workshops were very well attended, which showed participants were not too individualistic and that there was a genuine openness and interest to participate in community events; follow-up interviews confirmed this. Consequently, it became apparent that an outcome of participating was that in fact it facilitated people moving beyond self-interest and becoming more community-minded.

Elisa found, as did many others, that engaging with her neighbours through participation in the CBSEA was useful because it raised her level of perception from an individual to a communal level. Elisa (farmer Sarapiquí) explains: "For me, the CBSEA was quite important because there I saw things, I learnt to see things at a communal level instead of at an individual level." Communicative learning is seen as, because of having participated in this dialogic process, Elisa has broadened her scope of perception.

Ricardo (farmer Reventazón), and later Lidiette and Toñon (farmers Sarapiquí), explain how people's perceptions of themselves and their community changed through participating in the CBSEA workshops.

Ricardo: ...The most significant learning that we experienced there was to have the right disposition to all get together. That is one of the most difficult aspects that we face is to try and unite human beings, in some ways we are very egotistical, we don't share, and that is the best learning that we experienced is that we are all open to sharing our ideas and sharing our work – that was very important...In reality this is one of the those points that we touched on earlier, we participate very individually in this region and it is really challenging getting people to get together. At first we went to participate as individuals but by the end we were all carrying the same concerns and the same needs. So by the end we saw it differently. What happens is that there are regions like this one where it is very hard to get people together and to try to work communally because no one wants long-term projects, everyone wants short-term projects that give us money right away; perhaps this is because of the needs we have in the community.

Ricardo's statement reflects a possible reason for the change in perception, namely, gaining an understanding of common needs and concerns; and a possible explanation as
to why people are individualistic in the first place, namely, immediate individual financial needs. Ricardo also clearly outlines how part of moving beyond self-interest is having an openness to share your experiences and value the experiences of others. Communicative learning is seen as Ricardo critically reflects on the relationship between self and other community members and the role individuals should take in helping others.

Lidiette and Toño's comments describe the consequences of such a change of moving beyond self-interest. They describe how now people are more concerned about their neighbours, their neighbours' communities, and they are more united. They also mention a possible factor for the change in heart as having had the opportunity to establish common ground and then to dream and plan together.

Lidiette: That is the best part: we were working together for something but not for our own (individual) interest. Well, you benefit as an individual (to realize something like the communal park) but at the same time it changes and improves the whole community to work together...People came for those workshops; we could have had more people but at least this gave us the opportunity to dream together and propose ideas.

Toño: Yes, we have come closer together, there is more interest and preoccupation in what is happening. Before we weren't preoccupied with the other communities. The fact that they are preoccupied and interested in what we are doing is something. Now we are more united and it is very important to organize ourselves and be united...A few years ago there was a very bad rainy season and the cows had nothing to eat. I called the federal minister and he told us that without us being organized he can't help us and he didn't...in contrast, in Turrialba they got help because they had formed that association (ASOPROA).

Later in the conversation...

Lidiette: I saw the people, I have seen the interest from Cariblanco and from Ujarrás before, but from all of the communities – even Colonia Virgen del Socorro – that are interested in each other. I have never seen that before. There is that José calling saying that we have the CBSEA meeting; now there is communication between them and us. Also with the people in San Miguel...Manuel is very interested (in what we are doing)....The CBSEA helped us form a more united movement.

Toño's words speak to the fact that not only is this change in focus from the individual to the communal significant in terms of community building, but also pragmatically, working together and being more organized allows them to access more resources and approach institutions with a more united voice. At the end of our interview, Toño concludes by describing the CBSEA as having been a valuable opportunity for them to grow as individuals and as communities with a greater sense of common purpose.
Toño: The experience has been very interesting because it has helped to bring us together as a community and as people, and now we have more of an idea as to what we have to do. Thanks to these meetings that you did with us we have grown as individuals and as neighbours and now we are more concerned with each other; before it wasn't like that.

Here communicative learning is seen through Lidiette and Toño's description of how participating in the CBSEA seems to have triggered a change in perception amongst the participants as they became more community minded.

Sharing ideas and dialoguing in community groups allowed participants to see the wealth of knowledge, skills and resources that exist within their communities as well as showing them that a common environmental concern exists. The framework provided through the CBSEA allowed participants to discuss their concerns and it helped them see that they were not alone. For those already convinced about the value of conservation and reducing one's ecological footprint, it allowed them to see that they were part of a larger movement. Inés (farmer Reventazón) explains: "I learnt that there are people who share the same ideas as I have to improve, to conserve and who want to change their lives and have a change in the natural environment".

Jorge and Eladio and later Tomás (farmers Sarapiquí) explain the presence of a conscientiousness of caring that they saw emerge through the workshops. They also talk about the value of learning how to evaluate proposed projects and the value of collective solution-finding – the latter helping with community integration. For Eladio, this opened up his "panorama" to be able to see things at a more general level.

Jorge: Something interesting that I learnt (by participating in this CBSEA) was that there were many people interested in finding solutions together and it is difficult to find that here. Also, that there is a lot of interest to conserve the watersheds and the natural environment.  
Eladio: I learnt that a consciousness of caring exists (in the community), for example with garbage to recycle it or make compost…It was interesting to learn how to evaluate; if someone wanted to get a project off the ground, how to analyze the positive and the negative in order to minimize the negative. Also to meet other members of the community and learn how to conserve…Participating in this process opened up the panorama for me a lot. It is interesting listening to solutions at a more general level, not only at a farm level, at a personal level as well. In a small space you can get a lot accomplished with the small projects; I didn't realize that before.  
Later in the conversation…  
Researcher: Do you think that participating in this CBSEA process was useful as an individual and as a community.  
Jorge: Community integration is very important; here in Río Cuarto we are many new comers to the community and integration is important.
Eladio: Yes, to see that there is more than just one person who is thinking about conservation; if there is more than one person then it is a whole conscience. It is really exciting to see that there are others with similar ideas and that you are not alone.

Tomás: I see that the ones who participated in the workshops have changed in their ecological consciousness.  
Researcher: Does this include yourself?  
Tomás: Of course.

Gabriela (farmer Sarapiquí) explains what she learnt about the social and natural environment. As a result of the CBSEA, she, like many other participants, started to see her community differently, to see the potential.

Gabriela: … I did get something that I had wanted to learn and that was to know who really has the desire to come out ahead in what they are doing from those around them. Because it is very common here in the countryside to encounter people who are always doing the same thing. I was very satisfied to hear that my neighbours wanted to make the most economically of what they have like their cows, their land, a good mountain…to develop what they have without having to leave this place….I liked participating in the CBSEA; it was very interesting for me. I didn't know that in the areas around this place there were so many people who were so prepared (knowledgeable) in their activities…I knew it because they talked with such confidence. And I like to see that they are trying to protect what we have left around us in changing chemical products for organic and often for natural ones.

Gabriela's words not only show that she learnt information about projects and what others are doing in the community to help themselves and the environment, but they also show that she learnt to appreciate her community more for the diversity of knowledge and potential that exists within it.

In the previous statements by Inés, Jorge and Eladio, and Gabriela, communicative learning can be seen as, through dialogue and the clarification of values, these participants have gained a better understanding of how their (environmental) philosophy relates to others in the community. Their statements show how participating in the CBSEA process has allowed them to reflect critically on the interrelationships between their individual and collective actions and the health of the watershed; participation as well has allowed them to explore normative concepts like responsibility and environmental stewardship.
Communicative learning that resulted in the recognition of the value of conserving the environment

As can be seen in both the instrumental and communicative learning outcomes, the combination of specific activities and dialogue facilitated a few significant changes in behaviour. At a very basic level, the discussion facilitated through the workshops helped raise participants' awareness about what natural resources existed in the region, and what factors, including their individual farming practices, contributed to the preservation or the contamination of these natural resources. This awareness often led to a greater sense of responsibility on the part of individuals and the participants as a collective. This in turn has led to a change in behaviour at an individual farm level and at a communal level. Instrumental learning has given participants different skills and information to inform their decision-making whilst communicative learning has rooted those decision in a strong environmental ethic (praxis). This was a very common learning outcome amongst the participants in both watersheds. Sergio (farmer Sarapiquí) explains: "I learnt, or better, had re-enforced, that we have to take care of the environment because it is the source and strength for all life."

Dialoguing with other participants through structured activities in the CBSEA workshops helped participants gain a better understanding of the value of conserving the environment and this motivated some participants to take greater responsibility for their individual impacts on the community and the watershed. As a first step, the CBSEA helped participants appreciate that development must include environmental conservation. Toñon (farmer Sarapiquí) explains how engaging with others in dialogue in the CBSEA process "…was useful because it helped us see where we are, where we want to go, what we want to do and how we can get help, but the most important is that we saw that we have to conserve and not destroy (our environment)." Communicative learning is seen as participants gain a more acute awareness of where they are and where they want to go. Critical reflection happens as participants try to negotiate the interrelationships between realizing their dreams and their responsibility as regards conserving the environment.

After this initial awareness around the value of preserving the environment, the CBSEA provided an opportunity for participants to bridge the gap between awareness and actions (praxis). Rudy, Roxana, and Mynor (farmers Reventazón) explain what they learnt through discussion with others in the workshops about their responsibility in relation to the environment and what they can do to help preserve it.
Roxana: I learnt that the lot or the little that we have, we have to take care of it.

Mynor: I learnt that we have to try to conserve the environment, we have to educate and train for the well-being of everybody.

Researcher: What information or skills in particular did you learn through the CBSEA?

Roxana: Tons of information, like how to take care of nature and how to not contaminate.

Researcher: Did you learn anything about the interrelationships between your actions and the environment?

Roxana: We go back to the same thing: I learnt how to conserve, for example that a biodigester is beneficial at a household level as well as a larger environmental level.

Later in the conversation…

Mynor: You know, it would be so great if we could implement some of the projects like reforestation…it would be excellent for conserving the environment and it could provide food and a place to live for animals.

Researcher: Is it clear for you the potential role that a CBSEA could have in programme planning (before implementation)?

Rudy: It can help us better understand the benefits that a programme could bring.

Roxana: It helps generate new ideas and makes us feel more responsible.

Rudy: An evaluation like this one helps to conscienticize people on how to conserve our natural resources.

Significantly, they (Rudy and Roxana) clearly articulate the role that community participation and dialogue in a CBSEA can play in conscientizing people about weighing the importance of the environment in planning decisions. For example, dialogue helped Roxana to identify problematic ideas like contamination as well as better to understand the interrelationship between individual farming practices and watershed health.

Related to Rudy and Roxana's previous comments, Tomás and Delio (farmers Sarapiquí) continue on what role the CBSEA played in raising awareness as well as the concrete steps they will take to protect the environment.

Tomás: I learnt to take care of the environment more, to be more careful, it is we who are destroying the planet…we can do a lot for the environment…I am going to be more careful with the sources (i.e. springs) on my land, I will plant trees where the water is born. I will be more careful with the chemicals that could get into the water…Here there are quite a few streams that are born, we have to increase the number of trees beside the streams and the sources, we have to be careful…In this farm almost all of the grazing areas have sources for the cows…If we could go and see other places in the country and the world, we would be much more careful with what we have here.
Researcher: What did you learn through participating in the CBSEA of the WMAP Phase II?
Delio: I learnt so many things, but what called my attention the most was reforestation, it is so beneficial for the environment!…Unfortunately I only have 3 manzanas (5.25 acres) so I can't really reforest too much, only a few trees for wood and I already have some fruit trees, only 100 mind you…they aren't profitable but they are good for the environment …I learnt a lot, there are many ways to take care of the environment that before I didn't know, like how to avoid using chemicals and how to use organic matter or EM. All of these help conserve the natural environment.
A little later in the conversation…
Researcher: Participating in this process, did your perception of yourself or of your community change?
Delio: Completely different; I have talked with my companions, we are so satisfied with the process…People confused the agro-conservation programme, they thought it would bring hand-outs. But this programme is for agriculture and environmental conservation…As a small producer I see that I can act in a different way, using fewer chemicals and before I felt that they didn't see the relationship between agriculture and conservation. But yes, it is possible to help with the environment even if it is just a little.

In both Delio and Tomás's comments, instrumental learning is seen through a greater awareness of conservationist agricultural practices; communicative learning is seen as these two farmers critically reflect on their own agricultural practice, its impact on the environment, and their own responsibility, as part of a greater communal ecological consciousness, in preserving the environment as a result of participating in the CBSEA.

Delio's final comments bring to light how the CBSEA educated participants about ICE’s proposed WMAP Phase II and cleared up any misconceptions that might have existed about the programme. It also highlighted possible areas where communities and government institutions could collaborate. Praxis is seen as this "ecological consciousness" translates into a greater sense of personal responsibility vis à vis conserving the environment which leads to concrete changes in farming practice.

Interestingly, Delio's last comment about handouts also illuminates to some degree how community participants have participated in other institutional programmes in the past.

Roy and Lorena (farmers Sarapiquí) explain how the CBSEA helped them better appreciate the environment and taught them strategies to help protect it. Communicative learning is seen as they identify problematic ideas like contamination and gain a better understanding of what is worth while and what they individually and collectively consider valuable.

Roy: I learnt that we must try to contaminate as little as possible.
Lorena: To make better use of our natural resources and to value them more too... Also, to value nature more... with each workshop I valued more and more what we have. Later in the conversation...

Researcher: Participating in the CBSEA, was your perception of yourself or your community changed?

Lorena: I think I see things differently now because I value nature more and I think that the community does as well (values nature more) and now we have ways to do something about it.

Researcher: Meaning that you know now how to realize different ideas?

Lorena: Yes.

For some who were already implementing the ICE-promoted projects, the CBSEA allowed them a greater appreciation for the real significance of what they were contributing to the environment through their individual actions. Pablo (farmer Reventazón) explains how the brainstorming activity that focussed on assessing potential impacts of the components done with other community members helped him grasp the real importance of his conservationist farming practices.

Pablo: Yes Laura, it did help because when they (ICE technicians) come they tell us that biodigestors will reduce costs, but as my cousin Roxana said, that even if we hadn't realized initially the impact that we were having, we started that day (in the workshop). That at the beginning perhaps we didn't realize all of the impacts that our actions were having, but now we realize.

Researcher: Do you mean that initially you didn’t realize how important or what kind of impacts your actions were having, but now you have a much greater understanding?

Pablo: Exactly.

Reflecting this understanding leading to greater commitment, many participants like Orlando and Cecilia, Don Paco, and Mynor (all farmers Reventazón), expressed the intention to fix their biodigestors that had fallen into disrepair because they have a better appreciation of their real worth. Don Paco describes how learning through the CBSEA motivated him to act:

Paco: ...My biodigester isn't working right now because I don't have the money to repair it. My biodigester helped me out a lot and it was good – I learnt to continue with it. I think that this agro-conservation programme helps the environment, in the sense that all of us keep conserving. Above everything else it helps conserve.

In all of these cases, being part of discussions facilitated through the CBSEA process made people critically reflect on their responsibility towards protecting the environment and provided them with the knowledge of how to act.
The strategic impact assessment brainstorming activity generated discussion on how certain projects (e.g., biodigestors) provided farmers with a certain degree of self-sufficiency in terms of power generation; this in turn allowed them some independence from certain market dependencies (see Table 5.4 for a full description of impacts identified for the biodigester component). It also helped them more clearly understand the value of their actions in terms of environmental benefits which directly benefited Costa Rican electrical generation (in turn saving the public money). Unfortunately, the link between the contribution that these farmers are making to Costa Rican watershed protection through "value-added" farming practices and how the Costa Rican population at large values their actions through fair market renumeration or larger subsidies was never explored in detail during these CBSEAs. Only Ricardo (farmer Reventazón), Jorge (farmer Sarapiquí) and José Luis (ICE Sarapiquí – first stage of this research) clearly called for the need to have a larger-scale evaluation done that would allow the general population to understand the relationships between farming practices, conservationist techniques, electrical generation and consumption, fair market prices, and watershed integrity.

Ricardo explains his frustration at the lack of value, as seen through market prices, that is given to conservationist farming, and how an assessment is necessary so that farmers can make informed decisions based on that harsh reality.

**Ricardo:** For example, when people have cows in the field which are causing sediment, erosion, and a ton of other things and when one produces that product it comes out cheaper. When you have semi-stabled cows, it takes more labour and you have to charge more for that product. And the intermediaries that are working in this zone aren't willing to pay a little more for those products. Another reason why it is important to do an assessment before implementing those projects.

Jorge continues on how it is necessary to put their actions together with the larger context of electrical generation.

**Jorge:** There are people who are very mad at ICE, but if we think about how much greater the environmental damage caused by producing electricity in other ways is...It is true that we have to be careful and try to make the least impact, but we are also using electricity and we have to generate it somehow. We have to make people think about that.

All of these men's comments indicate the need for a larger dialogue in Costa Rica as to the impacts of people's collective actions (i.e. using electricity and buying products produced in an unsustainable way) and the need to mitigate those, perhaps
by valuing and supporting locally-grown foods using sustainable practices that reduce electrical consumption and protect the watersheds.

5.4.2.2 Understanding Others' Points of View

Recognizing the power and utility of working together

One very important aspect of the CBSEA workshops is that it got people together talking about a common theme that was meaningful to them. This deliberative space cannot be under-valued as it allowed people to see similarities and to establish common ground with each other. In Pacayas, Colonia Virgen del Socorro, and Ujarrás-Cariblanco, this led to the establishment of communal organizations. Participating in the CBSEA taught many participants that working collaboratively was valuable for two main reasons, one being that together they had more collective knowledge and ideas, and the second being that united they could potentially access more resources and develop projects together.

A CBSEA provides a dialogical space where participants, working collaboratively, can share their experiences and build ideas together inspired by their dreams for the community. Not only did participants learn how to work together, but participating in the CBSEAs facilitated a space where participants were able to see the breadth and depth of the knowledge that exists in the community. Definitely, the whole is much greater than the sum of its parts because together they are creating knowledge.

Maria Ester and Elisa (community participants Sarapiquí) explain how working together they have more collective knowledge and are better able to develop ideas.

Maria Ester: What facilitated the learning for me was that all together we were sharing ideas. United we can learn a lot. Everyone has different ideas, everyone has their own thoughts and together each person helps the other to develop something. I got to know people really well that I didn't know at all before from Río Cuarto…I was thinking that we could even form a little business together.

Researcher: Did you learn any information and skill during the CBSEA? Elisa: I think that the information we already had, we had it in ourselves at an individual level, there in the church hall we brought together our ideas…All of us had different knowledge but we never had the opportunity to…What do I know?...An opportunity to say: Why don't we do this or the other thing?

With both women, the discussions within the CBSEA allowed them to recognize the human resources in the community, and to recognize as well that the exchange and exposure to different ideas enabled people to reflect critically, to clarify and to develop
their own ideas. In both cases, it has allowed them to envision new collaborative possibilities with their neighbours and taught them some of the skills needed to assess such a possibility. Participating in the CBSEA also enabled many participants to gain a better understanding of how working together can strengthen community relationships. This sharing of ideas contributed to the creation of a mentoring community within the workshops which subsequently evolved into an informal mentoring network amongst the participants after the workshops were done. When I revisited communities a year later in April 2007, participants like Carla (from Santa Cruz) and Ricardo (from Pacayas) (who had met at the CBSEA workshops) were collaborating to share ideas about how to develop their farms to promote agro-tourism.

Ricardo (farmer Reventazón) explains how farmers must share their experiences in order to find solutions to significant environmental problems that they are facing and how a CBSEA can be a valuable communicative tool between communities and institutions. In the following statement, communicative learning is seen as Ricardo critically reflects on whose knowledge is valuable, and on communal autonomy and self-sufficiency as regards pooling their intellectual resources to find solutions to the problems they are facing.

Ricardo: …There is nothing better than another farmer's experience. Perhaps an agricultural technician will come and tell us something but perhaps he will never have had dirt under his nails. I think that experience and what a producer has done on his farm, being an experimenter, an investigator…in all areas, is very valuable…Yup, if someone knows what you are doing, perhaps they will want to do something similar. There are a lot of things that we want to do but we lack motivation. For example, it has been a long time that we have wanted to organize ourselves but we never could and we never could and within half an hour (at the CBSEA) we had decided and then, what happened?

Researcher: Well, within half an hour you had the date, time, place and half of the participants (for what became the Pacayas Conservationist Farmers Association)!

Ricardo: What we needed was a little bit of motivation and someone who would listen. And within the brainstorming activity that we did, well, that helped us recognize our needs because it isn't the same telling someone that we are going to form a group, to organize ourselves to see what we can accomplish…when you have shared needs it gets done much quicker.

Significantly, Ricardo touches on some important benefits of having participated in a CBSEA, those being that having shared ideas with one another it reaffirmed the wealth of knowledge farmers have about the projects and that the impact assessment problem-
solving skills they learnt can be easily transferred to other contexts where farmers can collaborate to help other farmers make more informed decisions. Another consequence of working collaboratively in the CBSEA, that should not be underestimated, is that it motivated people to act and inspired them to continue along their chosen path. In this case their path is linked to conservationist farming practices and sustainability. Further, an important outcome of the Reventazón workshops was the formation of the Pacayas Conservationist Farmers' Association that Ricardo mentions, of which he was elected president.

Maria Ester and Elisa's previous comments and the following example from Ujarrás Cariblanco communal park impact assessment confirm an observation that I also made based on workshop results, that being that the breadth and scope of discussion generated through the impact assessment brainstorming activity was much wider and deeper when the whole group was participating. The following are some of the impacts recorded in the Ujarrás-Cariblanco workshop (see Table 5.6 for a full description of the impacts identified in the workshop):

**Social impacts**

+ It presents an opportunity for group work (this is good because group work allows people to collaborate, realize dreams together, and create a feeling of community, BUT it also can be complicated because sometimes there are conflicts to be resolved or different people have different visions for the place.) *A mitigation strategy is to train people on how to resolve conflicts and also on how to organize ourselves at an association level.*
  
  – It is hard to get women out of their homes to be business women (it is hard many times to leave the house, the meals, or the children in order to develop something outside of the house).
  
  + With training to be business women and to develop a business, women will have more self esteem and be more self-sufficient.

These results are very interesting because they clearly illustrate how collaboratively participants were able to articulate some of the complexity of the underlying issues that they are facing in wanting to realize this park (e.g., the pros and cons of group work and the barriers to women's participation in business). They also show how the CBSEA, as a forum for rational discourse, allows participants to reflect critically on larger social constructs like women's traditional role in the community (premise reflection) and the possible implications of changing that role (i.e. women starting a business would increase self-esteem and self-sufficiency). Since it was female participants who generated the idea of a communal park and almost half of the participants in that
meeting were women (6/13), it suggests strongly that they will want a role in developing the park. These impacts and mitigation strategies are clearly real considerations for their success. Significantly, these learning results also show CBSEA's potential role in helping facilitate women's greater participation in development activities. For example, an inclusive CBSEA can create a space where traditionally marginalized sectors of the community could learn to assess incoming programmes, have a voice within the generation of ideas, and through the identification of impacts and the creation of mitigation strategies could provide a starting point for discussion to address contentious issues. This would not only be consistent with the goals of critical education and transformative learning (Friere, 1970; Merriam & Caffarella, 1999; Brookfield, 2000; Mezirow, 2000), but also with the concepts of participatory democracy and communities having a greater voice in local natural resource management decision-making (Friedmann, 1987; Neefjes, 2000; Sinclair & Diduck, 2005; Spaling, 2003).

Not only did working together in the CBSEA allow participants to see the wealth of human resources that existed, farmers, who are always necessarily pragmatic, recognized that united, they have greater political voice and a greater probability of accessing resources. As both Cecilia (farmer Reventazón) and Sergio (farmer Sarapiquí) explain, communication is the key to fostering more productive relationships:

_Cecilia_: I learnt that when we unite we can accomplish more, in union there is strength. Communication can be strengthened through these types of activities and that way we can accomplish more. The people from Pacayas learnt this because here we have the (ASOPROA) farmers' association.

_Researcher_: What did you learn participating in this CBSEA process?

_Sergio_: I learnt that one way to be listened to is to work together. I learnt that in the world today we have to unite, otherwise we won't be listened to. One thing that surprised me was that ICE was so open to the farmers and open to improving itself and bringing economic resources through this programme.

My guess is that in Sarapiquí the experience of (confidently) sharing well-thought-through ideas with a united voice was probably more significant for participants as chances are it was the first time they had interacted with ICE in such a productive and non-confrontational way.

José (farmer Sarapiquí) explains the value of working collectively as a community – not only is it beneficial in terms of building constructive relationships in
the community, but it is also logistically beneficial in terms of accomplishing communal projects.

José: I learnt that neighbours' participation is very important...when we were walking in the jungle I told you that I separated myself from the committee\(^4^4\) because I was so deceived with what was happening with the (Cariblanco) hydro-project and with the environmental committee that wasn't working, but I decided to participate (in the CBSEA) because I realized that nothing can get done like that. We have to unite in order to accomplish something.

Later in the conversation:
José: What I perceive of my community is that we are a web...if one breaks it affects everyone...unity is very important, *la convivencia*, harmony...what affects one neighbour affects us all.
Researcher: Did you learn this or did participating re-enforce this?
José: It re-enforced what I already knew.

Communicative learning is seen as José critically reflects on the concept of community and his role and responsibility as a facilitator for positive change. I should explain that José's participation in the CBSEA was particularly significant. José decided to take the risk of participating in the CBSEA even though he had had negative experiences with ICE (hydro-project) in the past. José is in many ways a marginalized member of the community, an environmental activist, and an out-spoken critic of ICE. He does not support "development" for development's sake. I think that he decided to participate because he saw an opportunity to engage constructively with ICE and with his neighbours to see if there were others who shared similar concerns as he did. Also, he and I have a good relationship. Through constructive engagement in the CBSEA, he became a leader in the process: volunteering his house, inviting people to participate, organizing transportation to the meetings, and calling other communities to remind them of the meetings. As far as improving his relations with other community members, the CBSEA provided a forum to discuss contentious issues (e.g., the road issue) which reduced communal tension, taught the community the appropriate skills and an effective framework within which they could discuss issues and develop common projects, and allowed him to find common ground with his neighbours around dreams like promoting local eco-tourism.

Miguel and Teresita (farmers Sarapiquí) echo José's thoughts about the value of working together at a community level in terms of personal relationships and the

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\(^4^4\) ICE's communal environmental committee
sharing of ideas. However, they take the recognition one step further by placing themselves within a globalized (market economy) context.

**Researcher:** What did you learn participating in this CBSEA process?

**Miguel:** It was nice because I shared with other people.

**Teresita:** I learnt from the different ideas.

**Miguel:** I learnt that to unite ourselves is to come out ahead. In this country we are getting more isolated, everyone for themselves, and it will be hard to come out ahead especially within economic globalization. We have to unite - we are very poor compared to the investors and they can crush us if we don't unite.

**Teresita:** There were many things, there were many projects like in Cariblanco Ujarrás that they want to do.

**Miguel:** It is important to learn to dream and to learn to realize projects together.

A few minutes later:

**Researcher:** Participating in the CBSEA, has your perception of yourself or your community changed?

**Miguel:** Absolutely…Like in Sarchí, someone painted a wheel and now they are exporting them all over the place. I was thinking of forming a group with the people in Río Cuarto, to think of an idea that everyone in the community could benefit from. Ideas are always born from a small grain and then they grow and grow…At a group level we can approach institutions and their help can be more substantial because no institution will give anything to a single person; they will only give resources to organizations… I think what we have to improve is our organizational skills in the sense of how to create a farmers' organization; agro-tourism is important but we have to be organized.

Again, gaining a clearer understanding of common concerns and goals led to individuals being motivated to unite with their neighbours and develop communal projects that would benefit everyone.

Gabriela (farmer Sarapiquí) provides an interesting example of a participant who started off highly confrontational but, after participating in the CBSEA, became very collaborative. At the initial CBSEA workshop, Gabriela wanted to push only her own point of view and her ideas. As Father Ronald, the local priest, put it after the initial meeting, some people have to learn to participate for the *nos* (us) and not only the *yo* (I). Then, through constructive engagement, she started participating as one of the group rather than all for herself. Interestingly, I observed that she was not going to stay for the second and third workshops, but then she found it so interesting and productive that she stayed the whole day. Perhaps initially she thought that she was the only one with good ideas, but then recognizing a common concern she saw that she was in fact one of many, and that collaborating she could get more done than
alone. Regardless of what triggered the change, there was a definite transformation in her attitude and behaviour.

There are many similarities between Gabriela's situation and José's (described earlier): both had had negative interactions with the proponent which caused José to want to disengage from collaborating, and Gabriela to push her own ideas. Both, through seeing commonly-shared concerns and interests became much more collaborative; perhaps it was this recognition that triggered the subsequent transformation in their behaviour. Over the course of the CBSEA process, I observed that these two participants became positive leaders rather than being a dominator at the workshops or completely disengaged. From a proponent's and greater community perspective, there was a reduction in conflict as these two were collaborating around common objectives rather than being confrontational.

By collaborating and communicating with each other and with other communities in doing a SEA of ICE's WMAP Phase II, participants were able to establish a more realistic perspective of what ICE is really offering to contribute to their community. Working together assessing the proposed programme was useful in three respects: firstly, it allowed participants to see what was being offered in a more critical light and to understand the community and regional-level impacts of the proposed programme; secondly, it allowed participants to hear others' experiences with ICE and with its agro-conservation programme up until that point; and thirdly, in hearing what ICE was doing in the different communities, it broadened participants' panoramas as to what possible alternative components existed for the proposed programme. These three things could not have been accomplished if engagement with ICE had been limited to an individual level or if ICE were controlling the parameters of discussion as in the awareness-raising activities found in the WMAP. Also very importantly, feedback from the assessment as well as seeing the level of engagement on the part of community participants allowed ICE to have a greater appreciation for the contribution farmers were making to conservation and could make in the future.

The following comments by Luis and Inés (farmers Reventazón) show how the space generated in a CBSEA facilitated this more accurate understanding of the institution by the participants in the workshop.

Luis: One thing that I learnt here, it is something indirect that perhaps you didn't have the intention that it would be learnt, but it is the relationship that exists or should exist between the people and
governmental entities. In my opinion, governmental agencies are wrapped up in a lot of politics, they create a very pretty front, but the reality of what they are really doing or contributing is less than what they say it is. Also, that through this process, it has enabled us more easily to coordinate directly with these agencies, to access more support from them in order to benefit the community.

Inés: What is important is that ICE communicates with farmers and farmers with ICE. That they appreciate what we are doing ...that it is something very beneficial for everyone even if it is only a grain of sand. It is important to recognize that all of us are contributing to the betterment or the destruction of the environment.

Luis and Inês's comments show how a CBSEA helps the different participants and the proponent appreciate the work being done on both sides as well as recognizing each others' limitations. This mutual understanding is important because it allows farmers to know exactly what is being offered so that they can access those resources as well as know the limitations so that they do not have unrealistic demands that would never be able to be fulfilled (e.g., Allan explaining at the first CBSEA meeting that the law prohibits ICE WMAP giving financial resources directly to the farmers). ICE's understanding of the contribution farmers are making is important because it demonstrates to those in the institution who think that farmers are collaborating only for economic reasons (e.g., Alfonso ICE Reventazón, that this is not in fact the case for the majority of interested participants).

In relation to the goals of a SEA, one of the primary functions of a CBSEA process is to facilitate more pro-active programme planning. Public participation in a SEA allows the public to have a voice in programme development. Significantly, the CBSEA did not just teach the skills associated with assessing a potential programme (instrumental learning), the CBSEA taught community participants an effective tool that potentially allows them to influence programmes at the initial planning stages before they are implemented so that these programmes can better reflect community needs and values. I think that the scope and breadth of the assessment illuminated for everyone the incredible contribution that communities can and should make in a programme planning process. This allowed participants to recognize the utility of a CBSEA in enabling a voice in natural resource and environmental planning and decision-making processes.

Here Roy (farmer Sarapiquí) explains the importance of planning well before implementing projects not only from a logistical perspective but also from a personal
and communal growth perspective. He learnt this through discussions with others in the CBSEA workshops.

Roy: The most important information is that we have to get people together to do a good planning job for things…. It might seem so vulgar but we are so ignorant that we don't even evaluate when a project arrives and we install it without even thinking about the benefits or the impacts. What ignorance! …There are a ton of examples like the biodigester of that guy who has his biodigester 300 metres away and he has to carry the manure every day and he doesn’t even want it anymore or with the green filters there are other consequences such as plants like "San Pedro's tear drops" that could potentially be harmful…What was so lovely was to see everything that people were coming up with; each person had different ideas about the same theme; everyone looking at the same thing from a different perspective; it is important to learn to value and respect ideas and also decisions that people choose to take on their path.

Roy's words are at once critical and hopeful. They not only represent an example of him being able to see himself and his community in a very critical light, that of recognizing their own ignorance for a lack of forethought before implementing projects, but at the same time they are hopeful as he describes the value and need for a good project assessment and planning process in the future. Finally, his words illustrate how the CBSEA facilitated communicative learning: the structured activities facilitated a focussed dialogue where alternative perspectives could be heard about the same theme; this led to participants learning to understand, and value, others' points of view.

Communicating face-to-face with the proponent and with each other allows participants to have a voice in the development of programmes that will affect their community. Communicative learning is seen as the following participants, Ricardo (farmer Reventazón), Roy, Miguel, and Lillia (farmers Sarapiquí), critically reflect on their right, as well as their responsibility, as stakeholders to articulate their needs to institutions if they want appropriate programmes. They felt that the chances of obtaining appropriate programmes were greatly enhanced by virtue of their participation in the CBSEA process. This is a message that José Luis (ICE Sarapiquí) heard loud and clear (see quotation later).

Ricardo: It is our obligation to say what we need because really what we need are means and that they take us into consideration. And in taking us into consideration we will have more resources, but I continue insisting that we can’t be paternalist or wait for things to arrive into our hands. We have to look for them.

Researcher: And be more stakeholders?
Ricardo: Exactly. I can't wait for my wife to bring me dinner if I don't tell her that I am hungry. It is a dialogue.

Miguel: This process should be used by institutions before a programme is implemented as much for the future of Costa Rica as for the family. At least for those of us who live in the rural areas. For sure it should be used. In Costa Rica there are many things that benefit the powerful, but us little guys have to organize ourselves in order to access resources.

Roy: For sure, a voice and a vote because we have a right to be heard, I don't know what they will do, but we have a right to be heard....I know Allan and he seems like a very good person. I think that, yes, they will take our ideas, but I don't know if the people higher up will approve of the ideas.

Researcher: After participating in this CBSEA, do you feel like you have had a voice in the direction that the programme will take?

Lillia: Yes, I think that we have to continue having meetings, to have communication with ICE, to write letters, we can't wait for them to look for us, we have to push them....Yes they have to take us into account because we are annoying....If the opportunity presents itself when we can use this (assessment) again I would. Yes, they should ask us to evaluate their programmes (before they are implemented).

I find Roy's statement particularly interesting because I had always thought of it as ICE having to do something concrete with the results, but Roy clearly explains that it is being listened to that is also very important.

By improving communication between communities and the proponent as well as by educating participants on how to assess incoming programmes, CBSEA offers an opportunity for the programmes better to reflect community needs. When asked what potential role CBSEA might play in the planning of potential programmes, Roy explains:

Roy: One is more capable of unpacking something that ICE is offering to us; we can arm it according to our needs and later bring it back to them so that the programme can be more in accordance with our needs. It is so that we can accrue more benefits and so that it isn't only beneficial for them (the proponent).

Maria Ester (community member Sarapiquí) adds how she feels that they have had a voice in the development of the proposed WMAP Phase II because they feel that they have had something to contribute. Maria Ester: "I feel that they took me into consideration – they are taking us into account because our ideas will help them with the direction of the programme."
Seeing that ideas generated in the workshops are taken into consideration in the decision-making process in programme development is important. Participants expressed reservations about the effectiveness of a CBSEA if there were no assurances that the proponent (ICE) would take their assessment into account. In Reventazón, participants were generally confident that their ideas would be taken into account even without assurances. In Sarapiquí, the reaction was mixed: just over a quarter of the participants were confident that their ideas would be taken into consideration [this confidence was usually based on a good relationship with Allan (ICE Sarapiquí)] whilst just under three quarters were hopeful, but tempered their statements with a "we will wait until we see results" clause. In Sarapiquí this hesitation might be due to previous negative experiences with ICE after their participation in the Cariblanco Dam environmental assessment. Many participants at the Ujarrás-Cariblanco meeting explained that ICE had deceived them and that it had made promises that it had not kept.

Nonetheless, what I think bodes well, as explained earlier, is ICE's openness in the first place to participate and that the WMAP teams are generally respected. Also encouraging are Gustavo (ICE Reventazón), José Luis (ICE Sarapiquí), and Allan's (ICE Sarapiquí) thoughts on the importance of ongoing communication and continuity with communities after the results from the CBSEA have been shared with the proponent.

**Gustavo:** …It is important that there is follow-through in order to fulfill something from this process, a physical and economic support. If there was the hope of seeing something done from what comes out of this process I think tons of people would participate.

**Allan:** I would like to know a little more, to go a little further…we just did the first step, there is still the implementation and monitoring and afterwards evaluating the whole process to see how it went and what steps should be institutionalized or not.

**Researcher:** Does this process facilitate community participants having a greater voice in the development of proposed programmes entering the community?

**José Luis:** It certainly has the potential. There must be follow-through so that communities can take their vision and keep moving ahead with it; that they go to the institutions to insist that they fulfill and to see where they can collaborate.

**Researcher:** Do you think that participating in this process was useful as an individual and as an institution?
José Luis: Yes, personally, it is a very valuable space to interact with communities. At an institutional level, it is also validating a process which allows us to improve some things and change others.

Directly related to these CBSEAs, Allan clearly states that he intends to move forward with results generated in the workshops.

Allan: It was so important what came out of that night that we are analyzing what came out with MAG and we are seeing how we can include those ideas as part of our annual plans…For the success of the participatory process and the programme, we have to continue along together with the community and it can't be like a cross, that this evaluation was only a nice memory and nothing else; we have to continue walking together.

Gustavo also elaborates on what he intends to do with the results from the CBSEA.

Gustavo: Taking this information we can see what to improve and what to mitigate. Next week (the 27th of March, 2006) we have a meeting with ASOPROA and we can discuss some things…It is important to do an assessment. We are going to take into account the information that came out with you.

Researcher: Do you have the intention of returning to the communities to discuss with them?

Gustavo: Yes, we can discuss more, perhaps not with those kinds of workshops or with all of the farmers that participated in the workshops…I want to take this opportunity to generalize what came out of the workshops. I will talk with some of the farmers, like with Ricardo, about certain things that have to be clarified.

The constructive dialogue facilitated between community participants and ICE enabled ICE WMAP teams to reflect critically on the relationship between how their response to the CBSEA results (especially as seen through concrete actions) would affect public interest in participatory processes, institutional accountability, and the successful implementation of the agro-conservation programme. Their statements also show that through engaging in discussions with farmers and seeing the results from the SEA, they have gained a better understanding as to the knowledge-based contribution farmers can make in programme development.

In sum, actively engaging with others in the CBSEA workshops facilitated communicative learning as participants were forced to evaluate their needs and the vision they have for their community, to reflect critically on what they value as a community, to identify real and potential impacts of proposed programme components, and to generate mitigation strategies where required. This deliberative process enabled participants to gain a more critical understanding of themselves and their community.
through understanding what they value and what direction they would like to go; it helped them recognize that within the community an environmental conscientiousness exists which not only reassured them, but inspired them to act responsibly and protect the environment; it showed them the utility of working together not only in terms of accessing resources, but in terms of tapping into the wealth of human knowledge that exists in the community; and they recognized the potential for the CBSEA process to enable a voice in resource and environmental planning decisions that affect them.

5.4.3 Instrumental and Communicative Learning: Institutions Learning to Engage Differently with Communities

As we have seen, the CBSEA was not only a learning experience for the community participants, it was also a learning experience for institutional participants. As regards instrumental learning, ICE learnt a new participatory approach that was simple and could engage communities in a meaningful way. As regards communicative learning, seeing the level of communal engagement and that communal interests were stronger than individual ones, this inspired ICE WMAP employees involved to reflect critically on the role communities should play in the decision-making process. Some ICE employees found that collaborating in the CBSEA deepened their level of commitment to the programme. Hearing the communities' assessment of their programme perhaps taught, but definitely reaffirmed, to ICE WMAP teams that participants have a great deal to contribute, this allowing ICE to see their programme from another perspective. Finally, participating in a CBSEA has provided ICE with a participatory approach that allows them to engage with communities in a more meaningful way when it comes to programme planning.

Allan's (ICE Sarapiquí) comments provide insight into the benefits of a CBSEA from ICE's point of view. From an instrumental learning perspective, Allan (like Gustavo in Reventazón) found that by participating in the CBSEA he learnt a participatory approach that is replicable as well as skills on how to communicate more effectively with communities. With respect to communicative learning, listening to the farmers' strategic impact assessment of the proposed programme allowed Allan to see the programme and its impacts at a community level rather than at an individual level; this reaffirmed the value of working collaboratively. It also reaffirmed Allan's
understanding of the importance of consistency, openness and honesty when working with communities.

Allan: First I learnt that learning systems can be systemized, I learnt how to systemize participatory processes, how to do a participatory methodology. It is a participatory tool that can be replicated; it is a science, it was a myth that it couldn't be like that. That was new for me and that is the most important thing that I learnt. And also the techniques for communicating can be improved, not for communicating in order to play tricks, but in order to have a communication that is more at a horizontal level with the communities.

Researcher: Did you learn any skill or information in particular?

Allan: I learnt that we have to be consistent. It isn't something new but participating in this confirmed that we have to say the same thing so that it will enter into people's heads because ours is a new programme. I knew it before, but participating in this process confirmed that we have to continue disseminating and disclosing information.

Researcher: Did you learn anything about different ways to interact with the communities?

Allan: One always learns, I can tell you that I learnt to see things from a different optic, from another point of view. A programme and projects can be seen at the farm level, at a community level, or at a regional level. There were five communities represented there and so we have to see things from a higher-level perspective than simply at a farm level. We have to see it also at a community level.

Researcher: What facilitated your learning?

Allan: Learning through this process helped us develop ways to polish better horizontal communication strategies. This face-to-face communication is very important: to have the whole group, to have a group talking about common themes like agro-conservation, with common objectives - that their needs are complemented with our needs.

Later in the conversation Allan explains how ICE is an organization that is open to new approaches and how, depending on the results of this case study, they might try to duplicate the CBSEA process again.

Allan: Up until now, ICE has been a very open institution, very innovative, always working to better itself, even though it is hard, it has a technical order, but I think that it would be open to these kinds of participatory processes.

Researcher: Does this process allow for communities to have a greater voice in the design of potential programmes coming into the community from outside agencies?

Allan: For sure, without a doubt, it unifies all of the voices so that they can make communal proposals and be heard with a united voice.

Researcher: Do you have anything else you would like to say about this study?

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45 I think he means that ICE's focus is building energy plants, not social development.
Allan: We are very interested to know the results from your work so that we can improve our programmes. Depending on what comes out, it would be important to duplicate what comes out in other watersheds or here in our watershed.

Earlier, José Luis (ICE Sarapiquí) explained that initially he chose to participate in the CBSEA because he saw it as a good way to hear, directly from the community participants, what people think of the programme and how to improve it. He learnt new ideas and a participatory approach (instrumental learning). Here he continues how, significantly, he learnt that communities want to be included in the decision-making process, that communal interests were stronger than individual ones, and that collaborating in this process deepens the level of commitment of the participants involved (communicative learning).

José Luis: ...I learnt that the people in the communities want us to take them into account, that the programme has a lot of potential, that there are ideas and activities that we hadn't considered but that are very interesting like the green filters, that there are people who have particular and communal interests and the communal interests were outstanding. The communal interests were stronger...I really liked the methodology, it provided a space where people could really assess the programme... Normally we have meetings with people in the communities so that aspect wasn't new, but this process was a different way for us to meet, a different form.

Researcher: Would you recommend to your bosses that this process be institutionalized?
José Luis: Yes, I will communicate it to my bosses. As to being institutionalized? Well, it has to be evaluated, but yes I think that it is worth institutionalizing it for programmes like watershed management. Later in the conversation...
Researcher: Do you think that participating in this CBSEA will have any effect on the relationship that you have with participants and communities?
José Luis: Yes, absolutely. When one participates in something it changes the level of personification which then changes the level of commitment and everything...There is more confidence and clarity...Your work was really a success. It allows the programme to be improved as well as the tool and each one of us can have something better. It is not possible to work in an isolated way on either side, we have to cooperate...it is a tool that can be used periodically in order to check certain things. One very important thing is that you are a person from the outside and that gives transparency to the process which helps the process.

In Reventazón, I found that the majority of Gustavo's (ICE Reventazón) learning was instrumental; he seemed very satisfied with having learnt a new participatory approach to engage with communities that he hoped to use in other
contexts, and further, he seemed satisfied with the results generated in the CBSEA (see instrumental learning section). Alfonso (ICE Reventazón), on the other hand, even though he was only involved at the very initial stages of the planning process for this CBSEA, provides a potentially good example of communicative learning within the institution. Recall that Alfonso was initially completely opposed to the idea of facilitating a CBSEA. He did not understand why they would ask farmers to assess the programme if it were working fine already. He explained that farmers were not going to change the way they farmed and the only reason that they implemented the projects was for financial reasons. Alfonso's words paraphrased:

Alfonso: The key concerns like erosion?...Forget it, farmers don’t care a smidge about them!!! And farmers learning the skills to organize themselves? Forget it!! They have had bad experiences in the past and so why would they want that again, better to work alone.... I have lived here all my life and I know what they are going to say and the priorities that farmers have, this will help you with your studies but it won’t help us at all, it will just cause problems!

Generally Alfonso’s attitude was: 'no no no, why would we want to make ourselves more vulnerable as an institution (with free trade and ICE on the chopping block) if what we are doing is great, we had those sixteen meetings five years ago and that is enough public participation’. I think that he was hesitant because he would not be able to control the process, the participants, the discussion, the outcomes, or the consequences. It was in discussing the merits of a potential community-based evaluation of ICE’s proposed programme with Gustavo that opened up his mind to doing a CBSEA (with a few caveats, of course). Unfortunately, Alfonso never attended any of the CBSEA workshops and when I returned to Reventazón to do follow-up interviews, we were unable to meet. I should have liked to have heard his perceptions of the results.

5.4.4 Learning Process Results: Aspects of the CBSEA Process that Helped Facilitate Learning

Through the presentation of learning outcome results, it quickly becomes apparent that the facilitation of learning has been a multi-faceted and interrelated process. Cognizant that aspects of the CBSEA process that have facilitated learning have been woven throughout the presentation of the learning outcomes, I nonetheless think it valuable, considering the focus of this research, to highlight process results. In general, in terms of facilitating learning, the CBSEA provided a framework that brought
a governmental institution and community participants together to talk about a common theme that was meaningful to them. This deliberative space allowed people to see similarities and establish common ground with each other, as well as to assess critically the proposed WMAP Phase II according to their knowledge base, needs and aspirations. What follows is an attempt to articulate learning process results directly related to what aspects in the CBSEA process either enabled, or might have proven to be a barrier to, learning.

I think that the overall sequence of pedagogical activities and information presented in each workshop enabled the successful acquisition of the necessary skills and information to do a SEA of ICE's proposed WMAP Phase II. Participants, both community and ICE, learnt about the CBSEA process and how to do a CBSEA by doing it. This process guided the participants' analysis from a macro level (the programme vis-à-vis their needs), to a more meso level (component impacts) and then back to the macro level (the community-modified proposed programme with alternatives and its role in contributing to community development).

In terms of specific elements of the CBSEA process, the initial and final workshops were the most "traditional" in their pedagogical approach. The initial workshop, where ICE presented its proposed WMAP Phase II to community members, enabled participants to learn new information about the programme and to engage directly with ICE WMAP teams. However, the formal structure of the meeting, the large size of the group, time constraints, the prevalent cautious attitude of let's-wait-and-see-what-this-is-all-about with many community members, and a confrontational attitude apparent in others limited the depth and breadth of the discussion. This became essentially a question and answer time clarifying aspects of ICE's proposed programme. Critical deliberation between ICE and community members was limited. With respect to my own learning, apart from information, this first workshop allowed me to understand better the relationship that existed between ICE WMAP teams and community members.

In regard to the final workshop, it provided a good opportunity to clarify information and share results, but the level of critical engagement with one another was limited because of the more formal structure of the meeting and the number of people present. However, this final meeting served an important role as it allowed community members to speak directly with ICE WMAP teams and other agencies, so allowing a clearer picture as to the kinds of activities they (the community members) would like to
realize at a communal level. In terms of facilitating learning, it provided an opportunity to start a deliberative process that could be continued at a later date, and it enabled participants to see the value of speaking with a united voice. It also allowed ICE WMAP teams to gauge the level of knowledge and commitment of the community participants.

Both generating alternatives and assessing impacts of programme components through the identification of real and potential impacts facilitated critical reflection and horizontal farmer-to-farmer learning. The generation of alternatives, which focussed on how to improve the proposed WMAP Phase II, encouraged people to look at the programme and their needs and to propose creative alternatives. The identification of impacts enabled participants to better understand the projects within the programme. With projects that were commonly seen as overwhelmingly positive, this allowed participants to see them in a more critical light. It also enabled them to see the incredible knowledge base that exists in the community.

Tomás, Eladio, and Elisa (farmers Sarapiquí) explain how they learnt through the impact assessment brainstorming activity:

**Tomás**: I learnt especially through the brainstorming activity because I listened to many different opinions and about things like EM, I heard things I didn't know…The system seemed perfect to me, the brainstorming activity was excellent, I have never attended a meeting with this variety of themes at it. All the themes that we saw there are clear, as much the negative as the positive ones. It was an effective and interesting way of doing things. I learnt about EM, hydroponics, and there were things I didn't know that are very clear now…What helped the most was when we were in the half-moon sharing, because there were a variety of projects and ideas and you could learn more.

**Eladio**: The activity was excellent and, yes, it did help me better understand the projects…It was through that activity that I learnt about the biodigester. Those people that knew about it shared and those of us who didn't listened.

**Elisa**: The brainstorming activity helped me better understand, listening to others' ideas, I thought that the biodigester was only for economic benefit. I didn't realize that it had anything to do with the environment.

Toñon and Lidiette's (farmers Sarapiquí) words outline how the impact assessment helped clarify what was important to them and it helped teach participants strategies on how to protect what they value (instrumental learning).
Toñon: It (the brainstorming activity identifying impacts) helped me become more conscious. It helped me see that we have to struggle for what we want here.

Lidiette: In the brainstorming activity not only the positive came out but the negative as well.

Toñon: We have to try to do the positive things. We have to get better in order to do that. Why do we do all of this? …so that people become more aware.

A common outcome of this greater awareness was, as they mention, participants being motivated to take greater responsibility for the environment and the community (praxis).

However, as stated earlier, for a variety of reasons it was not initially easy to get participants to criticize the programme or certain components, especially participant-generated ones. Eladio and Jorge (farmers Sarapiquí) share their thoughts on why this might be and what could be done to facilitate critical reflection.

Jorge: It is something very human to promote the positive and one needs a very cold mind in order to think of the negative things.

Eladio: It is up to the mediator to say 'well, that all seems very nice but we have to put something negative too…'

As the facilitator of this CBSEA and an educator, this reminds me how important the facilitator's role is to gently yet insistently push participants to think more critically about programme components. It also reminds me that, being cognizant of the strengths and limitations of the people with whom you are working, it is not if you should push participants to question but how to do it in a respectful and effective way.

Within the impact assessment process, an example of seeing an "overwhelmingly positive" programme component in a more critical light was assessing the impacts of more biodigestors in the community. When actually assessing the impacts, participants were able to consider more thoroughly aspects like the production of effluent (for fertilizer) and biogas (for fuel). In all of the workshops, participants began to realize the limitations of their knowledge surrounding the potential negative impacts of the effluent as a contaminant and the biogas as a potential poison for human health. Consequently, this assessment process enabled participants to become more critically self-aware of their individual and communal learning needs.

In terms of facilitating learning, an important step in the impact assessment process was creating mitigation strategies. This step focussed on skill development through collaborative problem solving, learning how to mitigate impacts through the systematic generation of solutions and feasible possibilities. Farmer participants and
ICE employees explained that creating mitigation strategies helped participants understand how to minimize negative impacts or choose to abandon a plan if no mitigation existed. It also enabled them to create dynamic solutions to complex situations as was shown with the Ujarrás-Cariblanco communal park and women's participation example described earlier. In all of the workshops I observed that as the participants worked through the different components they became more skilled at identifying both specific and abstract impacts as well as creating mitigation strategies.

Throughout the presentation of learning outcome and process results, participants' comments clearly show that working collaboratively and constructively with other community members as well as the facilitator and ICE WMAP teams facilitated learning. In terms of collaborating effectively with others I think that two aspects are key here, one being to provide opportunities for people to work in groups where they can engage in constructive dialogue, and the other being to create a structured learning environment where participants can stay focussed, be productive and feel valued. A significant part of the learning process was being able to hear other people's views and by having to articulate their own. In what follows, Lidiette (farmer Sarapiquí) explains what facilitated her learning:

Lidiette: Well, paying attention and being present in what we were doing, not thinking about other things…I liked the way you said things. It taught us in what order things should be done…Working in small groups (helped facilitate learning) more because there was more confidence and everyone was able to share.
Reseacher: I liked it a lot when you put people into groups with others that they didn't know well, mixing them up a bit.
Toñon: It is much easier to work with people that you are familiar with.
Lidiette: Yup, you have to work with others in order to hear other ideas.

One thing that was particularly striking in Lidiette's participation at the workshops was the leadership role that she took at the meetings to ensure that participants worked in diverse groups with neighbours they didn't know well.

Xinia, Orlando (farmers Reventazón) and Manuel (farmer Sarapiquí) elaborate on how working in groups in the CBSEA facilitated their learning either by providing them with new information or making them think more deeply about things.

Xinia: I learnt all about ICE's conservation programmes, what is happening in other communities and how things are developing in each community… Yes, I learnt a lot about how to relate to others; we don't know what kind of work we are doing in this region and how to associate with each other so I learnt something in that regard…I learnt when you (the facilitator) explained the ideas and then how to develop them in the
groups…What was best at facilitating the learning was working in big groups because everyone shared in big groups – there is more controversy because everyone is sharing different ideas but better ideas are coming out. There is more discussion and with more ideas one can make better decisions.

**Manuel:** What was important was when people were sharing, one person had a problem and knew how to solve it and so one learns from other's experiences…In small groups there is more participation from everyone and everyone can share their experiences, groups of about six to eight are good but when they are bigger only a few participate.

**Orlando:** I thought the process was nice, you go along learning from others' ideas and from one person something comes out and from another something else that is interesting comes out…It is useful because you get to know other people because even if we are all neighbours we don't know each other – we could share our experiences and learn to do things better learning from others' experiences…Working in small groups was better because we all shared; it works better because sometimes in bigger groups one doesn't speak.

Their words show that the CBSEA provided a forum where local knowledge was valued, people felt comfortable to share, and, as a forum for dialogue, this shared interaction facilitated the building of communal relationships.

I was very heartened, as an educator and the facilitator of the CBSEA, to hear from participants that the dialogue facilitated through group work was at an appropriate level of complexity and that participants, even those with limited formal schooling, felt comfortable to express themselves in the activities. I believe that one important reason for this was community participants being able to tap into their lived experiences.

Gabriela and Delio (farmers Sarapiquí) explain:

**Gabriela:** The process seemed very simple to me, effective at making you think about something quickly because I have been in other processes and even though they were very well educated, those who wanted to present to us, they treated us all as if we were professionals. I really liked this (CBSEA) because there was a respect for the academic level of the people who arrived to participate. For example, I have been in processes at the national university and they didn't have any consideration for the academic level on the other side; one felt stupid.

**Researcher:** Do you think that the people participating in the CBSEA felt intelligent and that they had something to contribute?

**Gabriela:** Yes, they felt comfortable and useful, it caught their attention. How do I know? Because people wanted to participate…Delio is a person who doesn't know how to read, but yes he participated when he had something to say; it is an accomplishment when a person has the confidence to say what they think. He told me he felt comfortable.
Researcher: What facilitated your learning?
Delio: Working in groups of between four and ten people facilitated learning. For that you need time because otherwise your mind just doesn't want to add anything. It is hard for me to express myself because I am lacking preparation – I had never participated in a workshop like this one before. I thought I was going to be bored but it all flew by so quickly. It was really nice.
Researcher: Did sharing ideas help you learn?
Delio: Yes, sharing ideas with my companions.

A significant outcome of working together was a stronger programme assessment with the identification of both specific and more complex community, regional, and national impacts. For example, continuing with the biodigester example, in Ujarrás Cariblanco participants started by identifying quite obvious impacts like that a biodigester "reduces electrical consumption" or "saves money on propane". However, when pushed, participants started to generate more abstract impacts like "people becoming more self-sufficient because they are less dependent on economic energy consortiums and this leads to a greater sense of life satisfaction". I observed, as did the participants, that the level of ideas generated in the impact assessment went up exponentially the greater the number of participants that were part of the process. That is why we chose to work first in small groups and then in the full group when doing the impact assessments. In the second and third workshop in San Miguel, after working in smaller groups, participants chose to work as a whole group (even as a whole group there were only between eight and ten people at most) because they recognized that together they could more effectively identify potential impacts and it provided them with the opportunity to tap all of the human resources in the room. An example was when discussing the impacts of EM on the farm, Gabriela and Tomás asked Eladio to explain first what EM was, and then all together they were able to discuss the benefits (and drawbacks) of that particular project. The impact assessment provided a nice opportunity for clarification and for understanding the wealth of human resources in the community.

There are a variety of skills associated with facilitating group work in a participatory workshop that contributed to participants learning effective group-working skills. In small groups these included: having group members focus on certain topics, assigning different roles to the different group members (like a secretary and a presenter), recording ideas as they were generated, and explaining the rules of engagement (like discussing ideas based on merit, and participation meaning to listen as
well as to talk). In larger groups these included staying focussed on the task at hand, and
listening and contributing constructively in turn. One good practice is to set and
articulate clear goals for the meeting and the activities. Inés (farmer Reventazón)
explains:

> What facilitated my learning was the whole written analysis on the
> papers; it helped me see the interrelationships and that way I could place
> myself better – In little groups it was excellent because everyone,
> absolutely everyone had good ideas to share.

Related to learning the skills on how to work more effectively in groups,
participants in Sarapiqui who took a larger leadership role in organizing the workshops
became exposed to some of the logistical considerations associated with organizing a
CBSEA. Although I have no hard evidence of this, in handing over the responsibility of
organizing the second and third meetings in Sarapiquí, I suspect that participants had a
greater appreciation for the logistical considerations and costs associated with
facilitating meetings. Interestingly, I did observe that in Ujarrás where certain
participants were given a greater opportunity to organize the process, these same
participants took strong leadership roles during the workshops: Alexander organized,
paid for and served the food; Toñon arrived early, cleaned and organized the meeting
room, and then co-facilitated the part of the meeting where we were putting ideas up on
the wall; and Lidiette, whenever I was breaking people into smaller groups, insisted that
the groups be mixed up so that people were always working with those they did not
know well. Subtly different, when the meeting was held in San Miguel, Tomás, Eladio,
and Maria Teresa were very helpful but they did not try to take over leadership roles
within the workshops. Consistent with the de-socializing\(^{46}\) nature (Shor, 1993) of this
methodology, I would argue that handing over responsibility for certain aspects of the
process gives participants the confidence and a sense of ownership over the process
which in turn creates a space for them to take a greater leadership role within the
workshops.

In sum, especially for the community participants, experiencing the CBSEA
process as a whole as well as engaging in specific pedagogic activities facilitated
learning. Outcome and process results show that the most important aspects in the
CBSEA process that facilitated learning were working collaboratively in the visioning
activity and subsequently assessing the impacts of the proposed programme

\(^{46}\)“De-socializing” from passivity (Shor, 1993).
components. Horizontal learning was facilitated through farmers critically engaging in a deliberative process with each other in both small and whole groups in these structured assessment activities. The first and final workshops provided an opportunity for community members and ICE to share information and dialogue although critical engagement with one another was limited. In terms of the facilitator's role, s/he plays an important role in creating a structured learning environment where participants can stay focussed, be productive and feel valued. S/he is also responsible for critically questioning the participants so as to have them think more deeply and for ensuring that the level of dialogue facilitated through group work is at an appropriate level of complexity for the participants.

5.5 Summary

Chapter 5 has been a comprehensive presentation of results from the CBSEA process, from the initial planning stages to facilitating the workshops to follow-up interviews in the Reventazón and Sarapiquí watersheds. This presentation of results focussed on public involvement in the CBSEA process and learning through and about CBSEA. In the introductory sections, I explained how the initial data-collection field visit to Costa Rica in 2005 revealed that participants in both Reventazón and Sarapiquí were generally satisfied with ICE’s WMAP at an individual farm level but they wanted to raise the level of engagement in the agro-conservation programme to a more community-level discussion around watershed protection. This desire was complemented by ICE WMAP teams being in the process of establishing Phase II of their WMAP and their openness to participate.

Section 5.2 provides a detailed description of what transpired in all four workshops in both watersheds. The initial workshop allowed ICE to share information around its proposed WMAP Phase II and to answer any questions that the participants might have. In Reventazón, this initial meeting went very smoothly reflecting a general good level of cooperation between ICE and the Reventazón communities. A bit differently, in Sarapiquí, the initial meeting was a balance between ICE's WMAP team trying to present its proposed WMAP Phase II and some community members venting their frustration about the building of the Cariblanco hydro-project. Nonetheless, in both initial meetings, ICE WMAP teams were able to provide enough detail about their proposed WMAP Phase II such that a SEA could be done.
In the second workshop, community participants collaboratively assessed ICE's proposed WMAP to see how it could be improved and suggested alternative components in order to come up with a more inclusive programme proposal that better reflected farming-community needs and interests. Initially some participants were hesitant to criticize ICE's proposed agro-conservation programme but when the focus shifted to how this programme could be improved, ideas were easily forthcoming and varied.

In the third workshop, community participants identified real and potential social, economic, and environmental impacts that the components within the new modified proposed programme would have if they were implemented. Participants then collectively developed mitigation strategies to minimize negative impacts and thought of strategies to enhance positive ones. In all of the workshops, community participants had little difficulty assessing impacts or creating mitigation strategies. Significantly, the more participants assessed impacts, the better they became at identifying more complex and abstract-level impacts. In both the second and third workshops, small- and whole-group discussions were used to facilitate critical reflection, rational discourse, and horizontal learning.

The final workshop provided opportunities for information sharing between the proponent and the participants. In both watersheds, the final meetings were very well attended. In Reventazón, the final meeting was characterized by participants presenting their CBSEA to a variety of governmental institutional representatives. The focus was on collaborating to realize ideas that were generated in the CBSEA. In Sarapiquí, the focus was on sharing results amongst the communities and then sharing the results and engaging in dialogue with ICE and MAG representatives. The spirit of this meeting was much more collaborative than the initial meeting.

Following the presentation of results from the workshops, Section 5.3 provides an evaluation of the level of public participation in the CBSEA process. This evaluation concludes that community participants were able to provide valuable input into the CBSEA right from the initial planning stages of the CBSEA process, this input continued through to the facilitation of the workshops to feedback on the process in the follow-up interviews. In respect to the WMAP, the CBSEA facilitated public input at the planning stages between phases I and II of ICE's WMAP.

In terms of actual involvement in the workshops, small- and whole-group activities facilitated a learning environment that enabled different people to express
their ideas, to problem-solve and problem-Pose, and to participate in forums for
dialogue where they felt comfortable. The activities were both inclusive and
participatory. Throughout the steps of the CBSEA, participants were able to take on a
variety of roles from being co-facilitators to contributors to group representatives
depending on the activity.

Section 5.4 focussed on instrumental and communicative learning outcomes.
In terms of instrumental learning facilitated through participation in the CBSEA,
participants learnt both skills and information. More precisely, participants learnt about
the CBSEA process as a whole, and the role a CBSEA can play in the planning process;
as well participants acquired certain skills and information associated with doing a SEA.
Specific skills community participants learnt included how to: identify real and potential
impacts of proposed programme components, create mitigation strategies and how to
work more effectively in groups. Aside from information related to a SEA, participants
also learnt a great deal of information including, but not restricted to, agro-conservation
projects, community needs, and watershed protection.

In terms of communicative learning, the deliberative process enabled
participants to gain a more critical understanding of themselves and their community
through understanding what they value and what direction they would like to take. It
helped them recognize that within the community an environmental conscientiousness
exists which not only reassured them but inspired them to take greater responsibility for
the protection of the environment. It showed them the utility of working together not
only in terms of accessing resources but in terms of tapping into the wealth of human
knowledge that exists in the community. Finally, they recognized the potential for the
CBSEA process to enable a voice in resource and environmental planning decisions that
affect them.

In talking with ICE WMAP teams, it was clear that the CBSEA was not only a
learning experience for the farmer participants, it was also a learning experience for
institutional participants. In terms of instrumental learning, ICE learnt a new
participatory approach that was simple and could engage communities in a meaningful
way. As regards communicative learning, seeing the level of engagement and
commitment on the part of the communities, as well as seeing that communal interests
were stronger than individual ones, inspired ICE WMAP employees involved to reflect
critically on the role communities should play in the decision-making process. Some
ICE employees found that collaborating in the CBSEA deepened their level of
commitment to the programme. Hearing the communities' assessment of their programme perhaps taught, but definitely reaffirmed, to ICE WMAP teams that participants have a great deal to contribute; this allowed ICE to see their programme from another perspective. Further, participating in a CBSEA has provided ICE with a participatory approach that allows them to engage with communities in a more meaningful way when it comes to programme planning.

Finally, this chapter ends with a consideration of what aspects of the CBSEA process in particular helped facilitate learning. Outcome and process results showed that the most important aspects in the CBSEA process that facilitated learning were working collaboratively in generating alternatives and subsequently assessing the impacts of the proposed programme components. Horizontal learning was facilitated through farmers critically engaging in a deliberative process with each other in both small and whole groups in these structured assessment activities. The first and final workshops provided an opportunity for community members and ICE to share information and dialogue although critical engagement with one another was limited. In terms of the facilitator's role, s/he plays an important role in creating a structured learning environment where participants can stay focussed, be productive, engage in rational dialogue and feel valued.
CHAPTER 6: CONTEXTUALIZING CBSEA LEARNING RESULTS
WITHIN A LARGER THEORETICAL CONTEXT

6.1 Learning Through Participation in CBSEA

Table 6.1 A Guide to the Discussion on CBSEA Learning and Participation

| What transformative learning occurred through participation in the CBSEA process |
| ↓ |
| What factors in the learning environment and in the pedagogical activities contributed to adult and transformative learning |
| ↓ |
| What does this mean in terms of sustainability and natural resource management |
| ↓ |
| Recommendations |

Table 6.1 presents a guide to the discussion of the CBSEA learning and participation results. The various entries in the table are discussed in detail below.

6.1.1 What Transformative Learning Occurred through Participation in the CBSEA Process

Learning results clearly show that both instrumental and communicative learning did occur as a result of participation in the CBSEA process. These results are consistent with similar studies looking at learning through public involvement in natural resource management decision-making processes (Diduck & Mitchell, 2003; Fitzpatrick & Sinclair, 2003; Palerm, 2000; Webler et al., 1995). The data reveal that all CBSEA participants experienced instrumental as well as communicative learning in some form. Instrumental learning was seen as participants learnt new skills and information directly related to improving their ability to collaborate effectively and efficiently with a view to assessing a proposed programme before it enters their community. Communicative learning was seen as participants critically reflected on concepts like sustainable community development, their responsibility as stewards of the land, and their roles as
individuals in facilitating positive change in their community and the environment. It was seen as participants critically reflected on the interrelationships among their individual and collective actions, the impact of these actions on the community and the watershed, and how their behaviour empowered them (or not) within a globalized context. The iterative deliberative process allowed participants to hear alternative points of view, clarify goals and values, identify and discuss problematic and contentious issues, and gain a better understanding of concepts like what is worthwhile. Consistent with Diduck's (1999) model of critical EA education, learning through public involvement in the CBSEA workshops improved instrumental and communicative competence by developing a deeper understanding of the relationships amongst natural and human systems.

For many participants, the learning that occurred through participating in the CBSEA process was transformative. It was transformative in the sense that a number of key features of participation (seeing common shared interests, recognizing the social and environmental concerns, and appreciating the wealth of existing knowledge and natural resources in the community) transformed the way participants saw themselves, each other, the community, and the environment. This change in perspective allowed participants to move beyond self-interest to the possibility of collaborating with others in shared projects or associations, thus engendering a deep sense of responsibility towards the environment that inspired them to act at an individual level and at a communal level. These results are consistent with results from Walter's (2007) case study focussing on transformative learning through participation in the Clayoquot Sound rainforest protest movement.

Learning more participatory approaches to working collaboratively enabled participants to work more effectively in groups and led to at least one participant changing the way she facilitates group work in another context. Learning systematic analytical problem-solving skills related to assessing potential programme components combined with information about specific agro-conservation projects has enabled participants to make more sustainable and appropriate decisions at a farm level through the use of a sound planning practice (i.e. like incorporating more agro-conservation projects on their farms).

Critical reflection, that being reflecting upon unexamined assumptions that are no longer working for an individual or that are no longer functional, was evident throughout the CBSEA process. Structured activities and the facilitation of rational
discourse were pivotal to triggering critical reflection on issues related to farming practices, one's responsibility towards the community and the watershed, possible sustainable economic opportunities, and one's place within the larger global market economy. This resulted in farmers acquiring a new sense of agency. For example, over the course of the CBSEA workshops, as observed through what transpired in the CBSEA workshops and as is evident from what participants told me in follow-up interviews, participants reflected on their role as individual farmers within the community, the impact their practices have on the health of the watershed, and the communal vision that they would like to realize. Through this process of critical reflection, they came to realize that working alone is no longer viable within a globalized context and also is no longer viable when trying to address regional issues like watershed management. Learning results show that this realization, combined with an awareness of a communal (environmental) conscientiousness, caused people to reassess their own behaviour and re-evaluate in what capacity they would like to engage with others. It was clear from observation in the workshops and through discussion in follow-up interviews that the participants had gone through the "steps" of critical reflection as outlined by Mezirow (1994).

There are many examples of this transformation happening at both an individual and communal level. More specifically with respect to participants moving away from being rational egoists to working more towards collective goals (Webler et al., 1995); Jorge, Eladio, Pablo, Gabriela, Tomás, Inés, Luis, Ricardo, Cecilia, Orlando and Maria Ester explained how participating in the process as a whole made them see that they had shared interests, a common concern for the environment and it re-enforced the value of the agro-conservation work that they were doing. It also inspired them to work for the betterment of the community. Elisa, Ricardo, Lidiette and Toñon further described how identifying strategic-level impacts enabled them to see the impact of their own proposed actions at a communal level. This broadening of one's perspective, according to Lidiette, Toñon and Maria Ester, led people to showing a greater interest and concern for neighbouring communities and showing an interest in each other. Considering the pervasive "individualistic" cultural perception and the apparent lack of opportunities to engage in constructive deliberative forums with other farmers or with institutions, participating in collaborative workshops might have been particularly significant in this regard (Ratner, 2006; Rogoff, 2003). In Pacayas, Ricardo and Luis explained that in seeing the nexus between farming practice, impacts, the value of what they are doing,
and a common concern for the environment motivated them to form the Pacayas farmers conservation association (March 2006). In both Ujarrás Cariblanco (spring 2007) and Colonia Virgen del Socorro (March 2006) this facilitated the formation of communal associations. The formation of these three communal organizations are concrete examples of how participants organized themselves so that they could engage differently with institutions and with each other. At an individual level, a deeper understanding of the interrelationship between one's actions and the impact at a watershed and communal level transformed the way Roy and Lorena, Gabriela and Manuel make planning decisions on their farms. For Tomás, Delio, Rodrigo and Rebecca, Miguel and Teresita, and Gabriela it inspired them to incorporate more agro-conservation projects into their farming practice.

The majority of the critical reflection found in the CBSEA was either at a content or process level (Mezirow, 1995). Initially content reflection was seen as participants assessed their own needs and later when they assessed programme components, and directly or indirectly their own practices, and the impacts that these generated. Content reflection was seen as participants, through the identification of real and potential impacts, came to understand how proposed components often have both negative and positive impacts, even projects like biodigestors which up until then had been seen as overwhelmingly positive.

Process reflection was seen as participants critically reflected on the way they make decisions, the way they collaborate (or do not) with others, and the way they would like to realize their goals. Instrumental learning outcomes show that many participants found that their previous strategies were inadequate or insufficient in these domains, consequently they either learnt new decision-making and group-working skills or they elaborated and transformed old ones.

Premise reflection was seen as participants reflected on concepts like the right they have to participate in the decision-making process around watershed management and the role they should play as farmers and community members in this process. It was also seen as participants in Ujarrás Cariblanco critically reflected on larger social constructs like women's traditional role in the community and the possible implications of changing that role. Premise reflection was seen as participants in Colonia Virgen del Socorro were forced, through the SEA of constructing roads, to question the underlying assumption that all development is positive. Another example would be farmers critically reflecting on the real value of what they are producing and how this is under-
valued in the market economy, yet they choose to continue. An interesting example of a possible perspective transformation, which could be relevant in other contexts like in understanding participants getting involved in or forming communal organizations, was seen through Pablo and Roxana's comments and reflected in Cecilia and Orlando, Don Paco, and Mynor's intended actions. As mentioned earlier, Pablo and Roxana explained that they both, through participating in the CBSEA, came to have a deeper understanding as to the value of their actions vis à vis the health of the watershed. As a result, this has caused them to feel even more committed to the conservationist path that they have chosen (i.e. elaborating their existing meaning schemes). This echoes Lange's (2004) finding in her study with adult students in a university extension course that critical reflection helped re-establish one's "inner compass". Cecilia, Don Paco, and Mynor also explained that they had a greater awareness as to the positive environmental impact that their actions could contribute to the watershed and this has motivated them to repair their broken biodigestors. Supposing that the latter three participants initially installed their biodigestors mostly for economic reasons47, which is how they were promoted by the ICE Reventazón watershed management technicians, I would argue that a perspective transformation could have occurred if their commitment to using these conservationist projects had been transformed from being only for economic benefit to being grounded in a personal environmental conviction. In this regard, transformative learning as demonstrated by these participants contributes to the efficacy of this programme and of the goals of watershed protection. With this in mind, Baumgartner's (2002) finding that perspective transformations are stable over time is significant.

Critical consciousness was seen as participants became more critically aware of their roles as individuals, the challenges they have to face in negotiating a balanced sustainable development for their community, and in acknowledging and trying to overcome the barriers that exist to facilitate their goals. The path that participants followed in the CBSEA led to critical consciousness in a few domains. For example, Rodrigo, Orlando, Luis, Maria Ester, Gabriela, and Elisa explained that collaboratively identifying potential impacts made them more aware of the natural and human resources

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47 I suspect this because all of these participants are from Reventazón where materials for biodigestors were free and when the time came to invest more resources they abandoned the projects. If there had been a larger investment initially of resources, as in Sarapiquí where no biodigestors have fallen into disrepair, or if they had a stronger conservationist conviction, they might have been more motivated to maintain the project.
available in the community. This led to a clearer understanding of what they value, the importance of what they are doing and the impacts of their actions. Pablo, for example, explained that seeing others with similar practices and convictions helped him see his community more profoundly. In collaborating to do this strategic assessment, participants like Roy came to recognize their right and responsibility to be included in the planning process in order to ensure that programmes adequately reflect community needs. Toñon commented that participating in the CBSEA enabled him to become more conscious of the role he could play in the development of programmes in the community. It also showed participants the value of speaking with a united voice, especially when engaging with institutions and when trying to be successful within a globalized context (see comments by Cecilia, Sergio, José, Miguel and Teresita, Gabriela, Miguel, Roy and Lillia). Creating mitigation strategies, like proposing strategies to overcome barriers to greater participation (e.g., conflict resolution training or business training courses for women) shows participants critically reflecting on their learning needs as a community, thus allowing them to realize collectively their goals more effectively. Further, most participants were critically aware of the role a CBSEA process could play in facilitating community participation in the planning process for proposed programmes by enabling constructive dialogue between communities and the proponent, and by allowing an assessment of programme components and alternatives according to sustainability goals.

CBSEA did facilitate more dependable frames of reference. More dependable frames of reference are ones that are more likely to be justified through discursive assessment or through empirical assessment. As explained in Chapter 2, frames of reference are more functional when they become more inclusive, differentiating, permeable, critically reflective, and integrative of experience. Participants not only learnt systematic problem-solving and group-working skills that would help them evaluate and justify their frames of reference, but they also learnt, or had reaffirmed, the value of working collaboratively, the value of hearing other's views, and the value of assessing an idea before taking action. More functional frames of reference resulted from a "sharers" group dynamic where experiential and intellectual resources were pooled facilitating meaningful dialogue. Examples of more dependable frames of reference are seen as farmers like Toñon or Luis or Eladio explained how, after identifying the potential impacts through the brainstorming activity and creating mitigating strategies, they are better able to make informed decisions as they have a
deeper understanding of the impact of their actions. Also, this assessment process combined with generating alternative components based on participants' needs and vision for the community, provided a space where participants could hear alternative views on issues (which enabled participants like Luis, Johnny and Gabriela to see ICE in a more realistic way) including contentious issues (like the road issue in Colonia Virgen del Socorro). These shifts in frames of reference were often a long time coming (Daloz, 2000) and were quite gradual.

Objective reframing (Mezirow, 2000) was seen when participants critically reflected on ICE's proposed WMAP Phase II and the individual components found in the programme. Subjective reframing was seen as the rational discourse surrounding the analysis of the modified proposed WMAP Phase II (which included community-generated components) caused participants to reflect on their own learning needs, their own farming practices, their own responsibility as part of the community to make positive change, and their own role as an actor within a larger system.

6.1.2 What Factors in the Learning Environment and in the Pedagogical Activities Contributed to Adult and Transformative Learning

There were many factors in the methodological approach and in the facilitation of the CBSEA workshops that contributed to the facilitation of adult and transformative learning. Structured pedagogical activities were designed to facilitate rational discourse focussing on the strategic impact assessment of ICE's proposed WMAP Phase II. A critical participatory approach and the intent to facilitate the ideal conditions for discourse enabled a supportive learning environment and more equitable relationships amongst participants with each other and with the proponent.

A CBSEA is an excellent forum for dialogue, debate and mutual learning (Keen & Mahanty, 2006; Moote et al., 1997). Participants in both watersheds explained that the CBSEA workshops facilitated the sharing of ideas with other interested neighbours about new technologies, more sustainable farming practices, community plans, and how to deal with common problems. The genesis of the discussion was agro-conservation, but the CBSEA allowed participants to explore their interests, concerns, and values as well as other possibilities. Significantly, CBSEA helped open up participants' minds to new ideas and possibilities; it allowed people to hear a diverse range of ideas about a specific topic. Elisa (farmer Sarapiquí) explained: "In the workshops there were many different opinions… it is like the people had opinions on things, but before there was no
place for them to express them but there all of the ideas came out." All of the community and institutional participants found that the process facilitated communication between various communities within a watershed and between communities and government institutions. Just as Baumgartner (2002) found in her case study working with people living with HIV, social interaction was a prominent factor in the transformative learning process.

Structured educational activities in the CBSEA workshops, especially the systematic assessment of the components of the proposed WMAP Phase II, played an important role in facilitating rational discourse. Building upon Keen and Mahanty's (2006) work, in the CBSEA process there was room for reflection as the process combined participants' experiential knowledge, dialogue, analysis and included abstract conceptualization. The CBSEA allowed farmers to bring their own experience into linguistic consciousness and then reflect upon it. For Freire (1970), this naming of the world was the means by which adults find their voice and begin their empowerment.

The majority of the instrumental learning, that is learning skills (like how to identify real and potential impacts, create mitigation strategies, conduct participatory workshops, and work more effectively in groups) and information, was facilitated through intentional pedagogical activities whose aim was to facilitate the acquisition of such skills and information. Rational discourse enabled participants to reflect critically on their own assumptions and explore new patterns of behaviour as individuals. The collaborative (and non-threatening) nature of the CBSEA activities allowed for a variety of assumptions and ideas to be placed within a public deliberation forum (such as the advantages and disadvantages to agro-tourism development or to road development or to biodigestors which previously had all been seen as overwhelmingly positive).

Specific activities within the CBSEA, the facilitator's intervention, and especially the discourse between participants pushed participants to question and see more complex interrelationships (like the interrelationships that became apparent through the biodigestor-impact-assessment discussion, such as between their using biogas in their houses and the relationship this has with the market economy, profit, conflict, petrol consortiums, individual autonomy, and sustainability). Communicative learning was facilitated through rational discourse with the structured activities providing the scaffolding for the dialogue.

As explained earlier in Chapter 2: “Reflective discourse involves a critical assessment of assumptions. It leads toward a clearer understanding by tapping collective
experience to arrive at a tentative best judgement” (Mezirow, 2000, p. 11). Discourse always reflects wider patterns of relationships and power. Discourse was facilitated through the generation and elaboration of alternative components for the proposed programme as seen in the second workshop. The initial community visioning activity provided an important broader backdrop against which the outputs of the proposed programme could be compared (for example, community members generating alternative components for the proposed programme like the communal park in Ujarrás Cariblanco and the development of communal tourism in the communities of Colonia Virgen del Socorro, Santa Cruz, San Miguel, and Río Cuarto). In elaborating these components together it made participants appreciate the human and natural resources available to them, including the strengths and weaknesses in their community. It allowed them to create common goals and it made participants reflect on how they could participate (or not) in the proposed project. It also elucidated common ground between a community's vision for the future and with ICE's agro-conservation programme (like the implementation of biodigestors as a tourist attraction or the processing of organic waste in the proposed park).

The third CBSEA workshops provided an opportunity for participants to engage in rational discourse through the identification of real and potential impacts of the proposed WMAP Phase II components. This included a critical assessment of assumptions and did lead to a clearer understanding as a result of the collective experience. This was particularly important when assessing components that traditionally had only been seen in a positive light. Revisiting the biodigester example, the identification of strategic impacts facilitated a discourse that enabled participants to: become cognizant of their own learning needs (e.g., needing community training on how to install biodigestors); explore their roles as individuals and as a community to be actors in the sustainable development of their community (e.g., giving high priority to biodigester installation according to watershed needs and then collaborating to install more); and combine experiential knowledge with abstract conceptualization (Keen & Mahanty, 2006) (e.g., the impacts generated were often based on farmers' experiences like 'implementing more biodigestors will reduce farm costs and provide more self-reliance at a farm level' but then they moved to abstract conceptualizations when they discussed what this self-reliance would mean in terms of sustainability and autonomy as a nation). In other words, the discourse generated in the workshops helped participants think through the consequences of the proposed actions which in turn helped clarify
what direction they collectively wanted to take for the future. Through the assessment process, they were better able to refine their collective goals and objectives.

The communal generation of alternatives allowed for the parameters of the discourse not to be limited to proponent-proposed components directly linked to ICE's focus on agro-conservation. This consideration of alternatives shows an openness to competing perspectives within the SEA process (Sinclair & Diduck, 2001). As the participation and learning results show, the scope and breadth of the discussion encompassed components that would contribute to communal sustainable development. For example, in the Ujarrás Cariblanco assessment of the proposed communal park component, participants easily identified positive social, environmental and economic impacts, but when pushed to reflect critically upon potential negative impacts, they were able to identify the existing social limitations that limit women's participation in the parks creation and governance. This then led them to reflect critically upon women's role in Costa Rican farming society which subsequently led them to discussing both strategies to overcome these limitations and potential positive impacts of enabling women's participation in this project. The result of this particular discussion was a much more realistic view of what would really be involved in creating a communal park in Ujarrás Cariblanco; this in turn could lead to participants making more informed decisions.

Creating mitigation strategies that would potentially minimize negative impacts and enhance positive ones also allowed for the critical assessment of assumptions that would lead to greater understanding and more informed decisions. Continuing with the biodigester theme, in creating mitigation strategies participants proposed training groups of farmers in the community to be able to install a biodigester independently; this would allow them a certain degree of self-sufficiency at a community level and make them active promoters of technologies that contribute to the conservation of the watershed. This proposed strategy questions the common prevalent view that Costa Rican farmers only work in their own best interests; it also opens the possibility for collaboration for those participants who are interested. A related example of participants generating mitigation strategies that would enable more effective community-level collaboration was found in the Ujarras Cariblanco workshop when participants were discussing the benefits and challenges of working together to realize their communal park. In order to facilitate group work they proposed training people in conflict-resolution techniques and organizing themselves at an association level.
The combination of these activities allowed for the underlying assumptions about rational discourse to be addressed in the CBSEA. Within the workshops, greater understanding was achieved; the conditions and the structured activities did promote understanding, objectivity, actions, and statements that were open to question and discussion; and understanding was derived by weighing evidence and measuring the insight and strength of supporting arguments. The establishment of trustful relationships, which is very important in facilitating genuine rational discourse (Taylor, 2000), was seen through participants feeling comfortable enough to critique ideas and share their knowledge with others.

Rational discourse also included the assessment of potential areas of collaboration where community-generated ideas intersect with ICE's agro-conservation programme. The discourse provided a nexus between community visions and a proponent's programme. An example of this is Colonia Virgen del Socorro proposing to implement more biodigestors in their community in order to promote environmental conservation and eco-tourism. Another example is the discourse generated by the Pacayas participants when they tailored their proposed programme alternatives that were consistent with the vision they had for their community with the objectives ICE had for its agro-conservation programme.

These learning results show that these structured activities within the CBSEA were creative processes that led to the discovery of new insights, novel solutions, and group development. Consistent with Kovan and Dirkx's (2003) findings with environmental activists and Lange's (2004) study involving adult students in a university extension course, these structured activities seemed to facilitate transformative learning over a series of engaged interactions with others rather than an epiphanic shift.

Taking a critical participatory approach towards designing and facilitating the pedagogical activities allowed this CBSEA process to accomplish many of the underpinnings of critical education (Belenky & Stanton, 2000; Diduck, 1999; Diduck & Sinclair, 2001; Finger & Asün, 2001; Freire, 1970; Mezirow, 2000; Miller, 1997; Shor, 1993). Comparing the CBSEA results to Shor's (1993) descriptors of a "Freirien method" provides insight on how CBSEA accomplished, or fell short of, a critical educational experience (Diduck, 1999; Fitzpatrick & Sinclair, 2003). The context was multicultural in the sense that it was inclusive of participants of all ages from different communities and it included farmers as well as technicians and university-trained
professionals. However, it was not multi-cultural in the sense that the community-level participants were overwhelmingly small-scale farmers, all Christian and all "white". The workshops were all situated in participant thought and language as the focus of the programme being analyzed related to their livelihoods, their community and their environment; also, the level of complexity of the language used was appropriate for the farmer participants. A particularly poignant example of this for me was seeing Delio (who has very little formal education) feel comfortable enough in the learning environment to participate confidently in the discussions, call on his breadth of experience to inform his opinion, weigh arguments and come to conclusions. The CBSEA was critical and research-oriented in the sense that specific activities enabled participants to reflect critically on programme components as well as on broader social, environmental, and economic issues. The process was democratic as discourse was mutually facilitated by both the facilitator and the participants. The approach was dialogical as the basic format for the activities was based on dialogue around problems posed in the workshops within the broader framework of doing a strategic impact assessment of ICE’s proposed WMAP Phase II. The CBSEAs provided a positive atmosphere where neighbours could meet, share productive social interactions, and develop trustful relationships with others in their community. Participants sharing common experiences facilitated empathy and understanding of other's points of view. Within the CBSEA workshops, an effort was made to facilitate both affective and cognitive development, hence educating the whole person. It provided a friendly and trusting environment where participants were able to question critically assumptions around proposed components and potential community-development initiatives. The process was reliant on praxis in so far as it educated participants so that they could take action based on critically-informed decisions. Finally, the CBSEA workshops were participatory, active and interactive which "de-socialized" participants from passivity. Participants were engaged in both small-group and whole-group discussions throughout the process where they could openly express their views and share their experiences with each other and with the facilitator. Many factors, including the recognition of common shared concerns, a will to contribute to the community and an engaging participatory approach, allowed participants to take an active role in their own learning. Like with Fitzpatrick and Sinclair's (2003) case study, particularly significant was how experiential learning (i.e. learning the process by doing it) provided greater understanding of the issues and process.
There are many factors that influence the ability of participants to engage in rational discourse in the context of natural resource management decision-making. Sinclair and Diduck (2001) and Diduck and Mitchell (2003) incorporate the ideal conditions for learning into their assessment of public involvement in conventional EA in order to provide insight into the social context of the learning experiences. The following is a consideration of how the ideal conditions for learning were attained or not in the CBSEA process. Participants had access to accurate and complete information as far as provided by ICE and as far as the knowledge they shared was derived from their own experiences. Incomplete information was seen through neither the participants nor the facilitator knowing certain legal, political or logistical constraints that might restrict the feasibility of some of the components that were proposed. Throughout the CBSEA process, participants and the proponent were free from manipulation or control. Having the process facilitated, funded and controlled by a neutral outsider greatly enhanced this (Diduck & Mitchell, 2003). This being said, some participants originally accepted to participate in the workshops out of a sense of obligation to ICE because they had benefited from the WMAP. Although they were not actually obliged as all participation was voluntary, I recognize that under some circumstances this could be considered coercion. The structured learning activities allowed participants to weigh evidence and arguments objectively. An openness to diverse perspectives was evident whilst participants generated a communal vision, proposed alternative components, critically assessed components through the identification of real and potential impacts, and learnt information from each other. Critical reflection upon assumptions and presuppositions and the opportunity to evaluate arguments in a systematic fashion was facilitated through active participation in the identification of real and potential impacts and the creation of mitigation strategies. The opportunity to participate was facilitated through funding opportunities for day labourers, transportation and by providing food for participants. As explained earlier, participatory activities allowed participants to engage with each other in a meaningful and equitable way. Finally, participants showed the inclination to accept informed decisions. This was exemplified when, at the fourth workshop, participants presented their modified-proposed WMAP Phase II to ICE (which they had analyzed and thought contributed to the sustainable development of their community). Unlike either Sinclair and Diduck's (2001) or Diduck and Mitchell's (2003) findings, I think that this CBSEA did have a high degree of meaningful public involvement in the process.
The CBSEA process provided a learning environment that facilitated more equitable power dynamics. Considering questions like whose interests were being served? who had access to participate? how was power shared? and, what were the intended or unintended learning outcomes? help elucidate how this was done. Through the CBSEA process both farmer and ICE's interests were being served. In theory, access to participate in this learning experience was open to anyone, although in reality it was effectively restricted by logistical constraints. In Sarapiquí a variety of methods and vocales were used to publicize the meetings; access was facilitated through a more flexible arrangement for the second and third workshops which were held in the individual represented communities and which were organized by the participants themselves. However, in Reventazón, access (in practice) was more restricted as notification of the workshops was limited to personal invitations and who-was-to-be-invited was decided through a process of negotiation between myself, ASOPROA, and ICE. Further, the location being limited to Santa Cruz, mainly for logistical reasons, made it more difficult for outlying community members to participate if they had wanted to. Notwithstanding these potential challenges, in both CBSEAs, there was a significant representation from a variety of community participants, including both men and women, and government agencies.

In terms of how power was shared, it was shared in the learning setting between the facilitator and participants. For example, depending on the activity, different participants were able to take on different responsibilities and leadership roles within the learning process (e.g., when participants like Rudy and Carlos explained the disadvantages of semi-stabling animals or when Toñon co-facilitated the sharing of group-work results in the Ujarrás Cariblanco workshop). Intended learning outcomes included: participants learning skills and information on how more effectively to assess a proposed programme before it enters the community; participants learning skills on how more effectively to work collaboratively; and participants gaining a better understanding of the interrelationships between proposed actions and their impacts on the community and the environment. Unintended yet positive learning outcomes included: participants recognizing common shared needs like watershed protection and the need for a more efficient use of resources at a farm and communal level, this in turn motivated them to move beyond self-interest and organize themselves to act collaboratively to address common concerns (e.g., the formation of the Pacayas agro-conservation farmers association).
In regard to assumptions about the nature of knowledge, within the CBSEA process a variety of kinds of knowledge from farmers, ICE and MAG technicians, and myself (i.e. experiential, theoretical, technical, emotional) were accepted as valid and valuable. The effect of valuing knowledge from traditionally marginalized groups can be profoundly empowering (Rocha, 1997). New knowledge was created through the elaboration of a community vision based on common goals and needs, the generation of new components, and the critical analysis of the modified programme. This knowledge was linked to the farmers' lived experience and watershed management, but conceptualized within the larger global market economy. It was acquired and developed through sharing, open dialogue and rational discourse. As a result, the participatory approach of the CBSEA facilitated more equitable relationships, thereby creating more horizontal power dynamics by breaking down power structures and facilitating rational discourse. Similar to McDonald et al.'s (1999) case study focussing on the role of power and how it influences transformative learning with ethical vegans, the creation of this knowledge (that is informed by the principles of sustainable development) represents a questioning of the dominant normative ideology that promotes conventional farming techniques.

The CBSEA workshops allowed a more equitable relationship between ICE technicians and farmer participants. For example: participants were able to criticize proponent-proposed components and propose ideas of their own which was empowering because it facilitated a two-way dialogue between ICE technicians and farmer participants; this process allowed them potentially to contribute directly to the content of the proposed programme which previously was ICE's exclusive domain. This is a substantial change from conventional participation which some participants (and even some ICE employees) described as publicity events, simply getting hand-outs, or opposition-minimization activities. Mezirow (1995) explained that this process of equal participation in an open, non-dominating dialogue by people who normally feel silenced and disenfranchised could lead to tolerance and respect. I think that communicative and instrumental learning outcomes from both participants and ICE employees concur with his findings [e.g., José becoming a leader in the CBSEA process and the transformation of Gabriela's participation from the first workshop (negative) to the last (highly positive) exemplify this]. This dialogue and evaluation of all of the components showed ICE WMAP teams more clearly what community needs are, the depth of commitment on the part of the communities, as well as the wealth of knowledge and creativity that
farmers can contribute to solution-finding around the issue of sustainable watershed management. It also showed farmers ICE's intentions for the agro-conservation programme, its commitment to watershed health and some logistical and political considerations that limit the breadth and scope of what they can do within their proposed agro-conservation programme.

The CBSEAs allowed an opportunity for participants to "dialogue across difference". Especially in Sarapiquí, multi-community meetings balanced the development of ideas within individual communities with facilitating communication at a regional level. As Xinia (farmer Reventazón) found, the regional diversity of the participants facilitated growth and transformation; this is consistent with Yorks and Kasl's (2002) description that the more diverse the perspectives amongst the learners, the more likely it is that they will challenge each other's habits of mind and habits of being. This collaborative solution-finding and analysis is needed when addressing regional issues like sustainable watershed management and led to communicative learning outcomes. Daloz (2000) argued that a significant advantage to dialoguing across difference is the cultivation of an ethic of social responsibility. This cultivation of an ethic of social responsibility was seen in both instrumental and communicative learning results as participants showed more tolerance for other's points of view and a greater willingness to listen. Renn et al. (1995, p. 8) explain that "by participating with others in democratic decision-making, people learn that they have things in common. By banding together, they can achieve their goals and meet their needs. They also discover that other groups and individuals have interests and values in direct contradiction to their own." Particularly worthwhile was participants wanting to take a greater role in terms of actively working to protect the environment and to promote development that is sustainable. This resulted in a change in collective and individual behaviour that contributes to watershed health and community well being. These results are consistent with Kovan and Dirkx's (2003) and Baumgartner's (2002) findings that transformative learning with the participants in their studies facilitated a shift in consciousness and self-understanding, this shift influencing and shaping the way they were in the world; in fact, often they found that their working for the common good superseded their own needs. Further, for the environmental activists in Kovan and Dirkx's study, learning was at the core of their sustained commitment.

One significant learning outcome from participating in the CBSEA was participants learning, or having reaffirmed, the value of dialogue as a means to
understanding. This dialogical process did not always lead to full consensus, but it definitely provided a safe environment where people could share a variety of views around (potentially contentious) issues and where common meanings could be established in which differences could be discussed (Burbules & Rice, 1991). Full consensus was often attained when farmer participants were working collaboratively, especially in small groups. Partial understandings were achieved when working in larger groups or when ICE and participants were engaging in dialogue. Particularly in Sarapiquí, the importance of these different levels of understanding is seen in the difference between the atmosphere from the first meeting, which was quite adversarial, to the atmosphere in the last meeting which was quite collaborative. It was through constructively engaging in dialogue that certain participants went from trying to undermine ICE's agro-conservation programme to collaborating to improve it. Perhaps with time, and an openness and commitment to ongoing collaboration on both the proponent and participants' side in planning the WMAP Phase II based on the results generated in the CBSEA, full consensus could be attained as regards the direction the proposed WMAP Phase II should take.

Related to transformative learning outcomes and group learning dynamics, it is important to identify the proponent's underlying goal for engaging the public in order to understand the intention of the process and the possible learning outcomes that might occur. Earlier in this thesis I proposed four kinds of group learning dynamic categories, two of which directly related to this discussion are sharers (where the focus of the learning is on the transformation of self and others), and corporate group learning (where the focus is on individual transformation to benefit the instrumental ends of an organization which is often corporate). In general, I would categorize the group learning dynamic, as facilitated through the participatory educational activities in the CBSEA, as being one of sharers where individual participants experienced transformative learning through rational discourse and where individuals were inclusive of facilitating the growth of others within the group. Participants within the workshops were mentors, facilitators, and questioners. This kind of 'synergetic inquiry' process (Daloz, 2000) acted as a catalyst for individual and communal growth and allowed participants to identify themselves with each other and with their environment.

Mezirow (1995) explained that the role of the adult educator in this transformative learning process is to support the decisions the learners have made by teaching skills for social action. I think that the learning results show that the skills for
social action were in fact developed through both participation in the CBSEA process and the facilitator's collaboration. At an individual level, the skills and information associated with the agro-conservation projects themselves combined with the analytical problem-solving skills, allows participants to make more informed decisions. Teaching the combination of skills related to doing a SEA enables participants and ICE alike to engage with each other around programme planning decisions in a more effective, participatory, and meaningful way.

However, as a critical pedagogue a few questions are left outstanding, those being: as an educator, have I operated in the best interests of those being educated? and how responsible am I for those changed by the perspective transformation (Baumgartner, 2002)? In response, certainly it was my intention to serve the interests of community participants by facilitating a voice for them in programme development through the CBSEAs. In retrospect, based on the results coming both from observation and from what participants told me, I do believe that participating in the CBSEA served the interests of the participants involved. I thought, and still think, that ICE WMAP teams would also benefit from being involved as participating: facilitated the creation of a stronger programme that more accurately reflected community needs and interests, improved community relations, and more effectively engaged community members in meeting ICE's goals to reduce sedimentation and contamination from reaching their hydro reservoirs. Nonetheless, I do recognize that potentially not everyone benefited from the CBSEAs. Those community members who either chose not to participate, could not participate or were unaware of the workshops, risk being unable to capitalize on opportunities and connections that were facilitated through the workshops. Those people who were "out of the loop" as a consequence of not having participated, risk being further excluded from both community-level and ICE's WMAP Phase II activities.

In terms of responsibility for those changed by a perspective transformation, I must admit that there are a few aspects I have struggled with in this regard. Since the inception of this case study, I have wondered: what right do I have to intervene if I know that my participation in the community and in the WMAP will be temporary (i.e. regular visits over two to three years) and not permanent realizing that the impact on participants might be transformative? Tempering and finally overriding this concern has been an ongoing desire to contribute constructively through this case study to both the participants involved and relevant theory. With these concerns and desires in mind, I
have tried to act responsibly by minimizing potential risk and augmenting potential benefit. To minimize any potential risk to participants that might arise from a perspective transformation or engagement in a critical pedagogical experience, I chose a context that was safe, where the proponent did not have significant power over the participants and where the proponent was supportive of the research. Further, all of my participants were informed and consenting adults and were in no foreseeable danger as a result of participation in this research process. Also, in so far as was possible, when perspective transformation did occur I have tried to be as supportive as possible. This support has taken on different forms such as attending new community-organization meetings, engaging in dialogue with participants during and subsequent to workshops and interviews, keeping ongoing personal communications since the case study started, and facilitating contacts between participants when appropriate.

6.1.3 An Interpretation of the Meaning of Results in Terms of Sustainability, Participatory Democracy and Natural Resources Management

In relation to community and environmental sustainability, CBSEA contributes to these goals by educating participants on how to make more informed and balanced decisions based on a preliminary SEA of proposed actions (Noble, 2005; Petts, 1999b; Sinclair & Diduck, 2005; Thérivel & Brown, 1999). This formation could be used in a variety of contexts including for proposed programmes, policies, and projects or in the context of community development. This educational outcome shows how CBSEA can prove to be an inexpensive and simple process that can help address Salazar's (2004) concern that more education is needed in Costa Rica focusing on prevention and participation vis à vis environmental protection. Another aspect related to sustainability is the public's ability to propose solutions which are counter-hegemonic to the dominant paradigm found in economic globalization (where the main drivers for development are economic and political). CBSEA definitely provides a forum where participants can propose counter-hegemonic ideas that reflect community values to be included as components in proposed programmes. As a result of doing an impact assessment of all of the components based on social, environmental and economic considerations, and creating mitigation strategies, participants can be more confident that their suggestions are in fact feasible, do contribute to environmental sustainability, do reflect community aspirations, and do allow farmers to sustain their rural livelihoods and potentially to diversify their incomes.
Results are encouraging that CBSEA is a meaningful tool to promote programme development that is congruent with environmental, social and economic sustainability. Michaelidou et al.'s (2002) ecosystem and community viability theoretical framework (see Appendix K) provides guidance for the following discussion on how this CBSEA process contributes to sustainability.

As regards ecosystem viability, through participation in the CBSEA, participants reaffirmed the value of the natural environment and the natural resources available to them. The CBSEA enriched the areas of water, soil, and ecosystems preservation by having farmers better understand these areas, the impact of their actions upon the environment, and by generating further solutions to address the sustained preservation of these key areas of their livelihoods. They were able to generate ideas that were outside of ICE's proposed WMAP Phase II specific mandate; these ideas included a more holistic look at the impacts that they were having on these areas (i.e. water, soil, and ecosystems preservation) through other aspects of the daily lives (e.g., the impact of grey water from their washing machines and looking for solutions to reduce this negative impact on the watershed). In the area of species diversification, the CBSEA allowed participants to explore other complementary economic opportunities such as eco-tourism, the impact of introducing alternative farming opportunities like fruit trees, and the impact of reducing erosion through reforestation. Through the evaluation process within the workshops, participants identified that a positive impact on their environment would be the enhancement of local flora and fauna through the re-creation of bird and animal habitat which would lead to the probable return of wildlife to the area, especially birds. Participants valued species diversification not only as an economic resource to promote tourism, but also as a valued environmental component unto itself. Further, with regard to the continuation of ecological processes, Michaelidou et al.'s (2002) suggestion for a kind of monitoring programme is served through the learning facilitated by the CBSEA – one major learning outcome from participation in the CBSEA workshops was participants learning the skills and information necessary to do a community-based environmental assessment in the future.

With respect to community viability, engaging in discourse facilitated through the structured pedagogical activities (especially the visioning activity, generating alternative components, identifying real and potential impacts of the proposed components and creating mitigation strategies) enabled communities (and ICE) to recognize that farmers are interested in sustainable watershed management and
conservationist farming practices for much more than economic benefit. Participating in the CBSEA allowed farmers, and ICE employees, to develop a more holistic appreciation for the impacts the proposed WMAP Phase II would have on farmers', and the communities', well-being. Collaboratively identifying real and potential social, environmental and economic impacts of the proposed components showed farmers what aspects of the programme and the projects were most worth while. Consistent with Kovan and Dirks's (2003) case-study findings, learning results show that the level of understanding facilitated a deeper level of commitment that is more likely to ensure a sustained commitment even when the variables change. If it were only economic benefit that convinced farmers to participate, then they would abandon the projects when they were no longer profitable.

The results from the initial stage of this case study looking at learning through public involvement in the original WMAP illustrated that the adoption of conservationist farming practices (which included using biodigestors, fewer chemicals and diversifying crops) led to psychological and physiological well-being as, for many participants, it led to a greater sense of independence, livelihood satisfaction, and better health. Building upon these initial results, participating in the CBSEA facilitated: community building through constructive engagement, capacity building that led to more informed and collaborative community-level planning decisions, and a greater understanding on the part of participants as to the contribution they were making.

In both watersheds, building community relations and social infrastructure were important outcomes. Participants from both watersheds thought it valuable (and fun!) to meet others in the community who shared similar environmental concerns and who were motivated to work for a more sustainable future. The wealth of collective knowledge became apparent through the sharing of experiences within the CBSEA. This revelation helped instil confidence in the participants that collaboratively they could accomplish more than individually. This finding is consistent with Baumgartner's (2002) case study where she found that social interaction was a prominent factor in transformative learning as it empowered her participants to have more confidence. In this CBSEA case study, the dialogue, especially when it focussed on surviving within a globalized context, elucidated the importance of collaborating to realize joint projects that could potentially benefit the whole community. For the first time for many they started to create a communal vision for the future based on community needs and guided by the principles of sustainable development.
Webler et al. (1995) argued that social learning facilitates participants moving away from being rational egoists and moving towards strengthening democracy. Communicative learning results from participation in the CBSEA showed that there was a strong transition in participants from working for self-interest to working for communal interests. At an intellectual level, part of this was due to recognizing that others share common needs and that working collectively they can achieve much more than working individually. The formation of communal organizations exemplify creative channels of communication that not only provide counter knowledges to the dominant corporate discourse, but also help maintain democratic civil society (Walter, 2007). At a different level, participants recognized the existence of a collective environmental (caring) conscientiousness – participants saw that they were part of a larger movement concerned with sustainability within the community and this inspired them to be more conscientious. This echoes Kovan and Dirkx's (2003) findings with environmental activists that their participants reflected systematic thinking grounded in a strong emotional and spiritual connection to themselves, nature and humanity.

Social infrastructure was greatly enhanced through the formation of different communal organizations as well as the formation of informal mentoring networks in both watersheds. In Reventazón and Sarapiquí, participating in the CBSEA motivated community members to form different communal organizations depending on local needs and interests (Pacayas = conservationist farmers association; Ujarrás = communal park association; and Colonia Virgen del Socorro = community committee). In Ujarrás Cariblanco, a communal organization was formed in spring 2007 as part of a larger movement of which the CBSEA workshops played a role. Walter (2007) argued that the emergence of these kinds of organizations strengthens the lifeworld and promotes civil society. Significantly in terms of democracy, Friedmann (1987) argued that this linking of households to create community associations could help re-centre political power in civil society. The formation of these community-level organizations potentially opens up the possibility of participants initiating community-level projects/programmes themselves and/or having a greater voice in development of other institutional programmes (like with INA, MINAE, and MAG).

Building community means more than facilitating relationships between neighbours, it includes facilitating constructive relationships between community and governmental institutions. From a community point of view, many participants found it very valuable to have been able to directly engage with representatives from
governmental institutions regarding the agro-conservation programme. The CBSEA allowed participants to speak to the proponent with a united voice, confidently presenting well-thought-through suggestions for making the proposed programme more responsive to their community needs and better for the environment. As explained earlier, the CBSEA, as a participatory process, facilitated more equitable power dynamics between stakeholders in the learning environment. As a result of participating in the CBSEA, participants are more skilled at asking questions of the proponent and holding the institutions accountable. Further, the formation of community organizations enables participants to negotiate better with institutions. ICE explained that the space generated through the CBSEA permitted more openness between institutions and communities and facilitated a more horizontal communication; this helped solidify the work relations between ICE and the communities. José Luis (ICE Sarapiquí) explained that doing a CBSEA together generated a deeper level of commitment, more clarity and more confidence.

For ICE as a public institution, CBSEA could potentially be a catalyst for organizational learning (Molnar & Mulvihill, 2003) starting at the grass-roots level and moving up. ICE WMAP teams learnt a new participatory process and approach to public participation which they say they would like to incorporate in the future. This being said, this optimism regarding the potential for organizational learning is tempered with the realization that there is the chance that only the front-line workers and lower-level management will understand the value of a participatory process like a CBSEA as they have shared in the experience and seen the results. Based on Petts's (2003) study that found that institutional paternalism and an expert culture within institutions were barriers to more deliberative participation, upper-level ICE management, who have more decision-making power, might not be too keen on sharing the decision-making power with the public. However, hopefully, if the proponent is open to participating in the first place, then they probably would at least be moderately open to learning about more participatory methodologies for engaging communities in the decision-making process.

As mentioned earlier, one of the learning outcomes from participation in the CBSEA was ICE WMAP teams learning a new participatory process to engage the public in natural resource management decisions which they would like to use, in whole or in part, again in the future in other contexts. Of particular interest here is when Gustavo (ICE WMAP Reventazón) explained that he would like to use the
brainstorming activity (from the second workshop) with communities during the "biological corridor" meetings; he explained that he would like communities to see that their interests are the focus of development. His comments highlight one of the potential dangers of intention for these kinds of participatory activities – that is, the proponent might be trying to appear to be taking community interests into account, seemingly including community voices and interests into the development process by engaging them in what appears to be a meaningful process, when in fact the proponent is just trying to reduce opposition, deceiving the public by facilitating the development of a certain agenda through false pretenses. This kind of approach I would categorize as *corporate group learning* since the "learning on the part of individuals is desired for the purpose of meeting organizational goals" (Yorks & Marsick, 2000, p. 255). In this particular case I have no idea what Gustavo's intentions are for the "biological corridor" meetings, but a danger of a participatory process is that participants might be tricked into thinking that their interests are more of a focus than they really are. As Sinclair and Diduck (2001) explained, who controls the EA process can direct the learning process.

Moote et al. (1997), Petts (1999a), Michaelidou et al. (2002) and Noble (2005) concur that citizens must take a central role in designing, implementing and evaluating policies that affect their lives. Participating in the CBSEA gave citizens a chance to do just that with ICE's proposed WMAP Phase II, although a greater commitment on the proponent's part to incorporate community suggestions into programme design and more defined ongoing follow-up strategies would greatly enhance this. Significantly from a sustainability and an empowerment standpoint, participating in the CBSEA taught participants the skills necessary to do a CBSEA of future proposed programmes entering their communities. This kind of capacity building is essential for locals to be able to participate in natural resource management decisions. Further, it showed participants that they have a right, as a stakeholder and as citizens, to participate in the decision-making process.

Participants in both watersheds and ICE employees cognizantly grasped the essence of a CBSEA. Similar to Fitzpatrick and Sinclair's (2003) findings, it raised awareness about how to participate in an EA process and about how to think about complex issues. Both ICE and community participants explained that participating in the process conscientizes people to a programme’s potential impacts and allows communities to give input into what the programme should look like. The CBSEA facilitated a space where ICE could hear critiques of their programme, validate what is
happening, and improve it for the future. Consequently, this inclusive participatory approach allowed ICE to see the agro-conservation programme from a different perspective. Hopefully, this will help ensure that the programme meets the needs of the public in both purpose and design (Fitzpatrick & Sinclair, 2003). Specifically, the identification of real and potential impacts for the proposed components combined with the creation of mitigation strategies helps make a stronger, and less damaging programme if implemented. Participants from both watersheds and ICE explained that within the process they learnt fundamental assessment concepts that are adaptable to other programmes and situations.

Results show that participation in the CBSEAs did in fact enable participants to have a voice in programme development. Friedmann (1987), Moote et al. (1997), Petts (1999a), Michaelidou et al. (2002) and Sinclair and Diduck (2005) (amongst others) explain that meaningful public participation in natural resource management decision-making facilitates the democratic engagement of citizens by allowing them an opportunity to participate in decisions that affect them. Significantly, in both Reventazón and in Sarapiquí most participants felt that they had had a voice in the development of the agro-conservation programme. In both watersheds, most farmer participants argued that institutions would listen more because communities were now more knowledgeable, organized and capable of assessing incoming programmes as well as holding ICE accountable to follow through. Congruent with the community participants’ sentiments, most ICE employees explained that they thought it was important to evaluate and include community ideas and to follow through with what was generated in the workshops.

Spaling (2003) explained how public involvement in community-based environmental assessment improves effectiveness and efficiency as participants are able to evaluate projects and participate in local decision-making around logistical considerations thus avoiding costly and unsustainable interventions. Sarapiquí participants provided a good example of farmers setting targets for project implementation when they proposed a suitable amount of biodigestors to be implemented in each community. Examples at an individual level of how participation in the CBSEA improved effectiveness and efficiency in meeting programme goals included participants fixing broken projects and the incorporation of new agro-conservationist techniques as participants learnt, or became conscious of, the real value of their actions and of the projects themselves. At a communal level, participants in
both watersheds suggested that ICE train teams of farmers independently to implement biodigestors in the area as a mitigation strategy to alleviate the wait to obtain a biodigester. The incorporation of this mitigation strategy into the agro-conservation programme could potentially greatly enhance effectiveness and efficiency. Another community-level example is the formation of community organizations which potentially facilitated the implementation of the WMAP Phase II as ICE could more effectively collaborate with associations rather than individuals. As a result, this enabled an approach which would be more efficient. Significantly, if ICE followed the example of what happened in Reventazón with ASOPROA (where ASOPROA helped choose participants for ICE's WMAP and acted as an effective conduit of communication with its communal members), these communal organizations would have a greater voice in the development and implementation of the programme.

Also related to efficacy, conflict reduction was seen through a transformation of attitude towards ICE on the part of some participants. An example includes participants like Gabriela who, at the initial meeting, was very confrontational but by the end of the process was much more amenable to engage in dialogue with the proponent. Another example is reflected by Sergio's and Jorge's description of how their perception of ICE's image was improved through its openness to participate in the CBSEA. These reaffirm Moote et al.'s (1997) and Neefjes' (2000) (amongst others) argument that decisions will be more acceptable to the public if the public collaborates in the decision-making process.

Community members' environmental and cultural knowledge were not really included in any substantial way in the original WMAP except in deciding about which projects they would like to implement and where on their farms they would like to implement them. Some might suggest it is an exaggeration to consider farmers knowledge of their own farms as "cultural and environmental knowledge" but it certainly can not be "not" considered such. However, the CBSEA proved an effective forum where knowledge, including traditional ecological knowledge, could be shared with each other; as well, new knowledge could be created and incorporated into the programme-planning process through analysis and the generation of ideas. This incorporation of local knowledge improved data and improved the focus on relevant issues (Neefjes, 2000).

Consistent with Michaelidou et al.'s (2002) comment that re-enforcing "local knowledge can enhance people's self-esteem and confidence in their ability to influence
their future" (p. 610), results indicate that participating in the CBSEA showed participants that a wealth of information and skills were present in their community and that together they could work towards a better future. This concept is consistent with Diduck's (1999) argument that public involvement in a meaningful education-based process empowers communities to take greater control of natural resource management decisions that directly affect them. An example of this is participants taking a lead role in certain aspects of the CBSEA process.

I would argue that participation in the CBSEAs did lead to empowerment, more direct control of local initiatives and to some extent social emancipation. Learning through participation in the CBSEAs was empowering for many participants as it taught them skills and information that helped them more effectively to assess the impacts of incoming programmes and to communicate that assessment to the proponent. The format of the CBSEA allowed participants the flexibility to modify the programme so that it better reflected their needs and goals. The CBSEAs opened up a productive space within the existing relationship between communities and ICE where participants could directly communicate, if not actually negotiate, with ICE technicians who were directly responsible for the programme under question. Empowerment was seen as participants, including traditionally marginalized ones, recognized their right to be heard as well as their right to participate in the decision-making process. Further, through the formation of communal organizations, participants were becoming active agents for change at a community level and were taking more control of their own development.

Daloz (2000) describes emancipatory learning as an education that reveals and enhances our radical interdependence with all creation and enables a richer understanding of our underlying relatedness. Diduck and Mitchell (2003) explain that learning can be emancipatory (i.e. free the learner from oppressive social relations) if problematic assertions or disagreements can be resolved through discourse under the ideal conditions of learning. Friedmann (1987) suggests that in an emancipatory practice the goal is a non-repressive, life-supporting community in which individual and collective needs are carefully balanced. The CBSEAs, as educational experiences, were emancipatory in the sense that they strove to promote, and accomplished to some degree, an understanding of this deeper underlying relatedness with others in the community and with the environment. The instrumental learning outcomes combined with a deeper appreciation of the value of the existing human and natural resources available to them, enable participants to make community-development decisions that
will be more sustainable (i.e. life-supporting). Participants moving beyond self-interest bodes well for decisions to be made in which individual and collective needs are carefully balanced. As discussed earlier, to a significant extent, the social context of the learning did facilitate the ideal conditions for learning and did promote more equitable relationships amongst participants, that is, with each other and with the proponent. The learning-focussed CBSEA framework attempted to address the challenge adult educators face in finding protective learning environments with norms and practices where everyone could participate in emancipatory discourse (Mezirow, 1995). In terms of actually changing a system (Inglis, 1997), I think that the CBSEA process could not really be seen as emancipatory in the strict sense of the word as mechanisms already existed to try to engage the public in the decision-making process; what the CBSEA did was to create a more meaningful and effective way of engaging them in this process.

External social, political and economic forces can have a significant influence on local ecosystem and community viability (Michaelidou et al., 2002). Positive external forces facilitating public participation and sustainability in ICE's WMAP currently and in future programme planning initiatives include: the international lending agency's pressure to create the original Reventazón watershed management plan as part of a condition of the loan to build the Angostura Dam; a general positive public attitude in Costa Rica towards both natural conservation and public institutions, including ICE (Cerdas, 2004; Salazar, 2004; Steinberg, 2001); and a general awareness amongst citizens that ICE is obliged by law to include the public when developing a new hydro-project. Negative external forces which might work to undermine public participation and sustainability include: an ever-increasing demand for ICE to generate more power for both local and international markets; and pressure within multi-lateral trade agreements (e.g., Central American Free Trade Agreement) to privatize ICE, in turn which might lead to the watershed management programme being eliminated because it might not be seen as "profitable". As far as communities coping with external forces, the CBSEA facilitated instrumental and communicative learning which allowed participants to learn how to organize themselves and work collaboratively; many participants thought that this would help mitigate some of the negative external forces, like economic globalization, as united they have more political voice than individually.

Facing Challenges in Natural Resources Management

Learning, as facilitated through participation in the CBSEAs, helped participants better face the enduring challenges as found in natural resources management (Diduck,
As regards participants being more prepared to address change and complexity, learning results showed that the CBSEA process facilitated knowledge creation, critical questioning, problem solving, capacity building and awareness raising. This empowered participants to become agents of change at a community level, a concrete example being the formation of community-level organizations. Pragmatically, the skills and information learnt through participation will potentially help participants better understand complex situations, anticipate change and create (mitigation) strategies to cope with change, complexity and uncertainty. In respect to uncertainty, a more aware, skilled, and empowered community who is able to do a CBSEA of incoming programmes should be able to make more informed decisions and plan better for their future, thus reducing uncertainty.

In providing a meaningful forum for dialogue between stakeholders and the proponent, CBSEA reduced conflict by facilitating a common base for understanding, by enhancing social cohesion, and by providing an opportunity for participants to identify inadequate or misleading information that could help them make better strategic and operational decisions. An example of conflict reduction was seen in Colonia Virgen del Socorro around the contentious 'road improvement' issue. As already stated, the CBSEA provided a forum where community members could clarify their positions, negotiate solutions by deciding which roads would be most appropriate to improve according to the community's vision for the future, and think of possible mitigation strategies to minimize the negative impacts of these decisions. Within a natural resource management context, these results show that when participants engage in a meaningful collaborative process it can lead to critical reflection, rational discourse and the facilitation of more functional frames of reference which can lead to participants being more capable of collaboratively addressing issues around community development and environmental sustainability (Diduck, 1999). Significantly, conflict reduction through constructive engagement in the CBSEA led to a change in behaviour and level of commitment on the part of participants (and ICE) towards the environment and the community. This showed ICE and participants how important it is to collaborate to meet common goals like sustainable watershed management. As we saw from the learning results from participation in ICE's original WMAP, only interacting with conservationist projects at an individual level is not enough if we want to change collective behaviour towards sustainability.
6.1.4 Recommendations

6.1.4.1 General Recommendations

Enabling a more thorough CBSEA

In this CBSEA process, we brainstormed elements of the proposed programme and their impacts on individuals and the community. However, we did not get an opportunity explicitly to put it all together and assess what the overall impact of the programme would be. Therefore, a recommendation would be, following the component impact assessments, to bring the focus of the discussion back to a programme level. At this time community members could decide which they think would be the best possible components to include as part of a new WMAP, and they could collaboratively assess the overall impacts of the proposed programme.

Related to this, as valid as local community knowledge is, it is often limited to participants' experience. What could potentially strengthen the CBSEA as a learning process as well as the results from the SEA is to complement it with knowledge gleaned from other resources. Incorporating other perspectives and sources into the assessment process could enrich the depth and breadth of the discussion. A recommendation would thus be that a subsequent and complementary meeting be arranged between the communities and other outside voices (e.g., researchers from local Universities like CATIE or related NGOs).

Allowing participants to take leadership roles in the CBSEA process

Often during the organization and facilitation of the CBSEA workshops, participants showed initiative to take greater leadership roles. I think that it is very important to allow participants the opportunity to take responsibility for whatever aspects of the process they want to within the framework of a SEA. In Sarapiquí this included: leaders from each community organizing the second and third workshops in their own communities (including food, location and inviting participants); participants like Lidiette insisting on mixed groups when discussing the programme and assessing the potential impacts of the components so that participants could hear a variety of views; and Toñon co-facilitating the whole-group discussion with me. I think that allowing participants to take responsibility where and when they feel inspired to is empowering and shows participants taking ownership for the process. Allowing them to do this, however, requires that the facilitator and the process itself be flexible and accommodating.
The facilitator

The importance of a good facilitator cannot be overstated. A strong, yet non-confrontational, facilitator is very important to keep participants on task, to push participants to think through all of the ideas thoroughly as well as to facilitate a dialogue across difference. Ideally, it would be a substantial advantage to have a local expert in the field who is familiar with participatory processes to facilitate the CBSEA. This would have allowed me, the researcher, more easily to observe the process and this might have avoided some misunderstandings due to mis-communication (my own language limitations with respect to some local colloquialisms or agricultural-related technical terms) or lack of expertise. Unfortunately these local (neutral) experts are hard to come by, especially in Costa Rica where the agricultural technician and EA communities are very small. On the positive side, facilitating and organizing the CBSEA process myself, I think, allowed a much closer relationship with the participants and a greater level of trust to develop.

Multi-community meetings

Ideally, I think that the best CBSEA would see a balance between distinct communities working independently and collaboratively with other communities in the watershed. This would be similar to how the process unfolded in Sarapiquí. In practice this would mean holding the first meeting with all of the participating communities in attendance, thus allowing the proponent to present only once, and for the participants to meet each other and hear what is happening in their neighbouring communities. This would be followed by the second and third workshops taking place separately in the individual communities. This would allow for individual communities to assess the programme and create alternative components that could be included based on their individual perspectives and needs; further, it would allow them to explore things more deeply at a community level. Finally, the fourth workshop, where the proponent and communities meet, could be done all together again. It is important from an accountability, solidarity, inspirational and collaboration level that all of the communities are able to hear what comes out of the CBSEAs and collectively to hear the proponent's response.

I think that this approach is best because it balances developing individual communal plans with seeing the larger regional context. This is especially important if they are addressing a problem that affects the whole watershed and not only a specific community. It also allows participants to meet others from neighbouring communities.
In follow-up interviews, when asked, participants in general concurred with this kind of CBSEA format, but added that it would be very important to put communities-of-equal-footing together to avoid more organized communities dominating the process. In Costa Rica this is particularly important because of the overarching individualistic malaise and this intra-communal sharing helped participants acquire a sense of community at a local and regional level. The disadvantages to this approach are logistical (in that there are more meetings to organize), it is more costly (more meals to provide and more halls to rent), and it means more work for the facilitator as s/he has a total of (in this case) eight workshops to facilitate instead of four.

Logistical considerations

i) Publicizing the CBSEA: In the two watersheds, the invitation of participants was done in two different ways. I think that the most valid in terms of openness and process legitimacy was the approach taken in Sarapiquí where the invitation was made by a variety of sources and the process was open to whoever wanted to attend. This allowed for a greater diversity of voices to be heard.

When first organizing the workshops, an important consideration is deciding who should invite the people: el convocatorio. If there is a respected local organization (e.g., ASOPROA) or the proponent is well known and respected (i.e. ICE WMAP team Reventazón) then they can help invite participants because the participants will probably respond positively. In Sarapiquí, however, even though ICE’s WMAP team’s relationship with the communities is good as is their reputation, ICE’s reputation in general is more problematic due to the Cariblanco hydro-project being built. For this reason, compounded with the reality that there were no established community farmers’ organizations, I had to collaborate with other respected local institutions like the Parish Church to get the word out. To target a broader audience that is representational of the community, participants in both Reventazón and Sarapiquí explained in follow-up interviews that in the future it would be important openly to invite participation through posters, pamphlets and personal invitations clearly outlining the: time, place, topics to be covered in each workshop, and the potential for day-labour compensation (for both women and men).

ii) Organizing the workshops: As a researcher, and potentially the facilitator, try to delegate the organizational responsibilities as much as possible. Try to have someone else organize certain parts of the process such as the food, the location for the workshops, and the logistics during the workshops. It is too difficult to watch the show.
if you are simultaneously a spectator as well as the director and an actor. A definite facilitating factor in this regard is using existing social infrastructure. In Santa Cruz de Turrialba, the presence of a strong social infrastructure made organizing these workshops much easier: from inviting the participants to booking the hall to organizing the food.

iii) Scheduling workshops: As much as possible, the scheduling of workshops was tailored by farmers’ needs and their time line, but also balanced with my needs. In follow-up interviews, in general, participants were satisfied with how it had been scheduled, but when asked, they all had differing opinions as to when would be an ideal time to schedule the workshops. Definitely this is one aspect that has to be negotiated with the participants that show the highest level of commitment to the process.

While logistically difficult, it would probably be best to do the half-day meetings from 8:20 a.m. to lunch, with an opportunity to break the bread and discuss things on four different occasions. As the day progresses people run out of energy. Most participants were keen to spend at least some time on their farms during the day. This would allow the key SEA elements to be split rather than trying to deal with them all in one day.

Doing the programme evaluation on the same day as the impact assessment (workshops two and three) has both advantages and disadvantages. On the one hand, doing both of these components in the same day limits time to reflect critically, but has the advantage that everything is fresh and in the front of one’s mind. Ample wall space to put up ideas helps remind participants of all of the ideas that have been generated.

iv) Staying focussed: For each meeting, posting the agenda, the goals of a CBSEA, and the importance of a CBSEA helps people stay focussed. Participants also suggested that a written outline with the major goals, themes and topics to be covered in the process be created so that people can arrive mentally prepared and focussed for the workshops.

v) Creating a nice atmosphere: It is important to create a nice atmosphere in order to encourage and facilitate a commitment to sustained participation and constructive dialogue. Providing food, drink, and a convenient location is very important.

vi) Resources: If possible, try to coordinate with local institutions to access available resources. In this case, ICE was often able to provide transportation (for me) and the Asociación Costarricense de Ciencias de Suelos [The Costa Rican Soil Sciences Association] provided a significant grant of $1 360 CND (567 980 Costa Rican colones) that paid for workshop materials and meals for the participants. Also, for all of the
workshops, local organizations (ASOPROA, Parish Church, health centre) provided a free location where the meetings could be held. As mentioned earlier, ample wall space was a huge asset for posting posters. It allowed us to document our progress, return to previous ideas, and create a narrative together. I think that having local support for the process brought some legitimacy to it and showed participants that what they were doing was valued locally. However, it is important to make sure to temper accessing resources if it means compromising your position of neutrality, or even the perception of having that compromised (e.g., if ICE had paid for everything).

vii) Influence of prior experience: In communities like Santa Cruz de Turrialba, people were open to participating because they had had positive experiences participating in other studies in the area. On the other hand, in Sarapiquí, very few people had participated in studies and their experience with ICE had not necessarily been positive due to the ongoing construction of the Cariblanco hydro-project; this made convincing people to participate more challenging.

6.1.4.2 Recommendations Related to Specific Activities in the CBSEA Process

Visioning activity

At the first workshops, I observed that there was some confusion around the initial visioning activity, community goals, and the notion of looking forward. In hindsight, I think the best thing to do would be to work in communal groups and look at communal projects (not individual projects) leaving time for people to start exploring broad community-development issues and then gradually getting them more focussed. The facilitator has to remain keenly aware that the goal of the visioning activity is twofold: it is part of a community development exercise and at the same time provides a broader backdrop against which the outputs of the proposed programme can be compared. This activity cannot be foreshortened as it is essential to critical reflection later in the process.

Proponent's presentation

As for the proponent’s presentation, it should be elaborate enough so that the components of the programme are clear and well explained. The presentation can be complemented with posters that are concise but detailed enough to give a proper outline of the programme. I would argue that ICE’s posters for these CBSEAs were too brief.
Critiquing the original proposed programme and components

In the second and third workshops, community participants were reluctant to offer any criticism of ICE's initial proposed programme and other participants' ideas generated in the brainstorming activity of alternatives. When queried during follow-up interviews, participants explained that this was because: they know the limitations of the resources; farmers are friendly and respectful; perhaps they are afraid of offending, of negative repercussions, or of appearing as ingrates; farmers are shy to criticize someone with more education; they might lack trust in the facilitator and/or do not know what will be done with results; they recognize that they might not know the whole story; and, some participants might be working for ICE and it would be uncomfortable to criticize (especially in Sarapiquí because of the building of the hydro-project). For criticizing their own ideas, some participants explained that they wanted to focus on the positive and did not want to get weighed down by the negative. However, they did recognize the value of providing constructive criticism in order for the programme to improve.

In order to facilitate critical reflection of the proposed programme, the facilitator could ask guiding questions that force participants to look at the programme and the community-generated alternatives in a more critical light. For example, the facilitator could ask participants what problems they see with the proposed programme and the proposed components and how they would improve them.

Identifying real and potential strategic-level impacts

When teaching participants the skills associated with identifying strategic level impacts for the proposed components, start by doing the identification-of-potential-impacts-brainstorming activity as an entire group for a physical work like a biodigester. This helps participants learn the process of how to do a strategic impact assessment together. Then, have the participants break off into smaller groups, perhaps four or five participants in each group, to assess the impacts of the rest of the components. For me, the small-group-work assessments worked best if participants were asked to identify the major impacts and not to spend more than a few minutes on each component. This was beneficial because it allowed participants in small groups to look at all of the components (not getting stuck on one component) because they knew that later they would be able to discuss the components in more detail in the full group. Finally, have participants come together as a whole again and explore the components in more depth.

In these CBSEA workshops, I observed that this whole-group discussion usually (almost always) generated more conceptually-abstract community-level and regional-
level impacts. I think that this was because there was a greater breadth of voices involved in the discussion and the facilitator was able to ask questions and query participants to make them think more deeply about possible impacts. After the physical projects have been assessed, participants can move on to assessing more capacity-type projects like the impacts of training programmes where the impacts are more abstract.

In the workshops, I observed that participants easily identified impacts at a broad level of proposed programmes. The process got people thinking about the programme in the context of more abstract and broader social and environmental benefits (e.g., helping farmers who are most negatively impacting the watershed first shows a concern for community and national sustainability). Also, participants easily identified realistic mitigation and enhancement options for the impacts established. The combination of these two aspects, i.e. easily identifying impacts and generating mitigation strategies, helped the groups to focus on what they really wanted the programme to look like. There was no problem generating discussion in this regard.

One thing that did not happen this time but that would be worthwhile is to generate some discussion around whether the impacts they are generating are at an individual, community, or watershed level, and whether the impacts are at the project level as distinct from the programme level. These distinctions could enable participants to make more informed decisions.

*The final workshop where CBSEA results are shared with the proponent*

I have two recommendations for the final workshop:

i) I would recommend, in order to tie things together nicely between the initial workshop and the last one, that in the last meeting the initial visions and goals that participants generated for their community and for the process be brought up. At this time the facilitator can discuss with them how these initial goals and visions relate to the outcomes of what was actually accomplished in the CBSEA.

ii) For the fourth workshop, there is an opportunity to invite relevant organizations (e.g., MAG, INA, MINAE) in order for them to hear about the CBSEA process and to listen to community-generated ideas. This is an ideal opportunity for organizations to learn about CBSEA as a more meaningful way of engaging communities in the decision-making process. It is also very beneficial for them to hear what ideas were generated by the communities and articulate how they feel they could collaborate in meeting some of these goals; to some degree this is what happened in Reventazón. However, having outside organizations participate at the final meeting could detract
from the focus on the CBSEA and become more of a community-planning meeting. Also, especially if the relationship is strained between the proponent and the communities, it might be best not to include other organizations yet but rather to focus on the CBSEA *per se* and building a rapport between the proponent, in this case a public institution, and the community.

**Monitoring strategies to provide continuity**

Subsequent to the CBSEA, there is a need for follow-through and monitoring strategies (especially in this case for real identified impacts of current established activities like testing the effluent from the biodigestors). Participants explained in follow-up interviews that knowing that the results from the CBSEA would be taken into account by the proponent is very important. They also explained that it is their responsibility as communal citizens to initiate the process of realizing their goals as well as organizing themselves to hold ICE accountable to continue with the ideas generated. I would highly recommend that, if possible, the intent to take the results of the CBSEA into account in the programme decision-making process be clear from the first meeting and subsequently the monitoring strategies be negotiated at the final or subsequent meetings with the proponent.

### 6.2 Summary

Chapter 6 contextualizes CBSEA learning and public participation results within a larger theoretical context. The discussion starts by examining what transformative learning occurred and progresses to examining what factors in the learning environment and in the pedagogical activities contributed to adult and transformative learning. This is followed by a discussion as to what these results mean in terms of sustainability and natural resource management. Finally, this discussion concludes with a list of both general and specific recommendations for the CBSEA process.

Learning results clearly show that most, if not all, CBSEA participants experienced both instrumental and communicative learning to some degree. For many, participation led to transformative learning. These results are consistent with similar studies looking at learning through public involvement in natural resource management decision-making processes. It was transformative in the sense that a number of key features of participation (seeing common shared interests, recognizing the social and environmental concerns, and appreciating the wealth of existing knowledge and natural resources in the community) transformed the way participants saw themselves, each
other, the community, and the environment. This change in perspective allowed participants to move beyond self-interest to the possibility of collaborating with others in shared projects or associations, and it engendered a deep sense of responsibility towards the environment that inspired them to act at an individual and communal level.

Critical reflection was evident throughout the CBSEA process. Structured activities and the facilitation of rational discourse were pivotal to triggering critical reflection on issues related to farming practices, one's responsibility towards the community and the watershed, possible sustainable economic opportunities, and one's place within the larger global market economy. This resulted in farmers acquiring a new sense of agency. Critical consciousness was seen as participants became more critically aware of their roles as individuals, the challenges they have to face in negotiating a balanced sustainable development for their community, and in acknowledging and trying to overcome the barriers that exist to facilitate their goals. CBSEA did facilitate more dependable frames of reference. Participants not only learnt systematic problem-solving and group-working skills that would help them evaluate and justify their frames of reference, but they also learnt, or had reaffirmed, the value of working collaboratively, the value of hearing other's views, and the value of assessing an idea before taking action.

There were many factors in the methodological approach and in the facilitation of the CBSEA workshops that contributed to the facilitation of adult and transformative learning. The combination of structured pedagogical activities, a critical participatory approach, and the intent to facilitate the ideal conditions for discourse enabled a supportive learning environment and more equitable relationships amongst participants with each other and with the proponent.

The skills for social action were developed through both participation in the CBSEA process and the facilitator's collaboration. At an individual level, the skills and information associated with the agro-conservation projects combined with the analytical problem-solving skills allow participants to make more informed and sustainable decisions. Teaching the combination of skills related to doing a SEA enabled participants and ICE alike to engage with each other around programme planning decisions in a more effective, participatory, and meaningful way. Consequently, this learning contributed to both community and environmental sustainability. This finding is consistent with other relevant literature linking sustainability outcomes with public participation in SEA processes.
In this chapter, Michaelidou et al.'s (2002) ecosystem and community viability theoretical framework provided guidance for the discussion on how this CBSEA process contributed to sustainability. As regards ecosystem viability, through participation participants reaffirmed the value of the natural environment and gained a better understanding about the natural resources available to them. The CBSEA enriched the areas of water, soil, and ecosystems preservation by having farmers better understand these areas, the impact of their actions upon the environment, and by generating further solutions to address the sustained preservation of these key areas of their livelihoods.

In respect to community viability, participating in the CBSEA facilitated community building through constructive engagement, capacity-building that led to more informed and collaborative community-level planning decisions, and a greater understanding on the part of participants as to the contribution they were making. Communicative learning results showed that there was a strong transition in participants from working for self-interest to working for communal interests. In both watersheds, building community relations and social infrastructure (like the formation of communal organizations as well as the formation of informal mentoring networks) were important outcomes. The high level of communal interest and commitment to participating enabled community members and ICE to see that farmers were interested in sustainable watershed management and conservationist farming practices for much more than economic benefit. Participation in the CBSEA improved both the effectiveness and efficiency of the programme. This was seen as participants set their own community targets for project implementation and through a positive change in attitude towards ICE. Further, learning, as facilitated through participation, helped participants better face the enduring challenges as found in natural resources management.

Participation did lead to empowerment and to some degree emancipation as participants learnt how to participate more effectively in the decision-making process by assessing the impacts of incoming programmes and communicating that assessment to the proponent. The CBSEAs, as educational experiences, were emancipatory in the sense that they strove to promote, and accomplished to some degree, an understanding of a deeper underlying relatedness with others in the community and with the environment.

This chapter ends with a list of both general and specific recommendations that could potentially strengthen the CBSEA process. These recommendations touch on the
need to conclude with an explicit macro-level assessment of the proposed programme, the value of including alternative voices and sources, the value of allowing participants to take on leadership roles in the process, the importance of a good facilitator, and how to balance individual and multi-community meetings. Logistical considerations include how to best publicize, organize and schedule the workshops; suggestions are also made on how to create a nice atmosphere, keep people focussed, and access independent resources. Finally, recommendations are made that are specific to certain activities in the CBSEA process.
CHAPTER 7: CONCLUSIONS

7.1 Key Findings

When I initially started this research four years ago, the broad purpose was two-fold. At one level it was to find meaningful ways to engage traditionally-marginalized communities in natural resources management decisions that would enable them to have more direct control over local initiatives. At another level it was to create forums where non-formal adult learning could occur that would enable a transition towards sustainability. This broad purpose became distilled into a case study exploring the potential for adult and transformative learning through participation in ICE's WMAP and subsequently in a CBSEA of ICE's proposed WMAP Phase II. This included investigating whether such learning enabled the social and environmental dimensions of sustainable development. As summarized in Table 7.1, and outlined below, a number of interesting findings can be drawn from the research findings.

My first objective was to explore the participatory nature of the planning and operations of ICE's WMAP. Community members were involved to a limited degree in the initial planning of the WMAP. In the 16 "participatory community workshops" that consultants facilitated on ICE's behalf, community members (a limited number of them farmers) were consulted about the kinds of projects that were to be included in the WMAP. During the workshops they were able to suggest projects that fulfilled ICE's mandate to reduce erosion and contaminants from reaching the hydro reservoirs. However, how these community-generated ideas were incorporated into the final design of the WMAP remains unclear. In ICE's original WMAP, participation in the operations of the agro-conservation programme was limited by ICE to specific sectors and communities based on their hydro-project needs and perception of what projects particular communities would be interested in initiating (e.g., biodigestors or fruit trees).

In the actual implementation of the original WMAP, farmers could either participate in awareness-raising activities and/or in the programme itself. Participation in the awareness-raising activities was open to everyone and within these forums farmers could take on different roles, either being spectators or local "experts" on certain agro-conservation projects. Involvement in the actual agro-conservation programme was more restricted. Choosing the participants for ICE's WMAP was a
Table 7.1 Summary of Key Findings According to Research Objectives

<table>
<thead>
<tr>
<th>Research objectives</th>
<th>Original WMAP process</th>
<th>CBSEA process</th>
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<tbody>
<tr>
<td>i) Explore the participatory nature of the planning and operations of ICE's WMAP.</td>
<td>Planning: -Farmers consulted through 16 &quot;participatory workshops&quot; about projects. Operations: -Awareness-raising activities open to all farmers, full participation in WMAP restricted. -In WMAP, farmers' decision-making limited to operational decisions at farm level.</td>
<td>Planning: Community involvement in the planning and logistical decisions of CBSEAs. Operations: -Active engagement in participatory CBSEA workshop activities. -Participants took on different leadership roles in facilitation of process. -Ambiguity as to what would be done with results.</td>
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<tr>
<td>ii) Determine the extent of adult and transformative learning through participation in ICE's WMAP planning and operations.</td>
<td>-All participants experienced instrumental and about half communicative learning. -Instrumental learning included: information about ICE, project-specific skills and information, skills related to determining cause-effect relationships and task-oriented problem-solving. -Communicative learning included understanding values and normative concepts and others' points of view.</td>
<td>-Both instrumental and communicative learning experienced by almost all participants. -Instrumental learning included learning about the CBSEA process, participatory group-working strategies, theme-related information and problem-solving skills like how to identify impacts and create mitigations strategies. -Communicative learning included a more critical self and communal awareness, a recognition of the value of conserving the environment, and a recognition of the value of working together. -ICE learnt a SEA participatory process and reassessed the role communities should play in planning process.</td>
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<td>iii) Examine the enablers of, and barriers to, learning in ICE's WMAP and in CBSEA.</td>
<td>Enablers: -Active engagement with agro-conservation projects, participation in awareness-raising activities, and dialogue with neighbours. Barriers: Lack of pedagogical intent in design of activities. -Few opportunities to dialogue as focus on individual.</td>
<td>Enablers: -Working in groups, a good facilitator, learning by experiencing the process as a whole, the dialogue being at an appropriate level, and structured participatory educational activities (especially the systematic assessment of programme and impacts). Barriers: -Logistical constraints, ambiguity around what would be done with results.</td>
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<td>iv) Determine how participation in ICE's WMAP helps communities negotiate a place in development decisions that affect them.</td>
<td>-Decision-making limited to operational decisions at individual farm level. -Limited, if any, meaningful involvement in planning decisions. -ASOPROA creates potential space for input into programme planning.</td>
<td>-CBSEA enabled direct communication between farmers and ICE. It provided an opportunity for alternative components to be proposed and the programme to be assessed according to community values, goals and vision. -CBSEA resulted in the creation of communal social infrastructure and greater awareness which could enable communities to participate more meaningfully in development decisions. -ICE employees learnt the value of incorporating community voices into strategic decisions and learnt a participatory SEA process which might have important implications for community involvement in decision-making processes.</td>
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<td>v) Examine the potential of CBSEA as a new approach in local programme development.</td>
<td>-CBSEA efficiently, inexpensively, and effectively engaged public in decision-making process. -Community involvement did: facilitate learning towards sustainability, improve focus on relevant issues and responsiveness to stakeholders, and did help address the challenges facing natural resource management.</td>
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negotiation process between ICE's watershed management teams (who had a specific hydro-reservoir agenda) and individual interested small-scale farmers. Participants' decision-making was limited to deciding which agro-conservation projects they would like to implement on their farms and where they would like to implement them. In Reventazón, as a result of the involvement of certain key participants in the initial "community workshops", facilitated by consultants, ASOPROA started to play an instrumental role in promoting the agro-conservation programme to its members and holding a raffle to choose participants from a list of interested farmers.

With the CBSEAs, community participants were involved in two different but complementary domains: they participated in the CBSEA as an educational participatory activity, and they also, through the structured activities based on a SEA framework, contributed to the planning of ICE's proposed WMAP Phase II. Right from the outset, community participants were germane to the planning of the CBSEA process; it was from the nexus between participants wanting to partake in a more inclusive and meaningful community-level planning process and my research objectives that enabled this CBSEA to become a reality. Participants contributed to the logistical decisions within the CBSEA planning process (i.e. they decided on the time and location of the meetings, they helped invite community participants). They also took leadership roles within the facilitation process including guiding activities, sharing information, and sharing results from the CBSEA process with ICE.

In terms of the planning of the proposed WMAP Phase II, involvement in the CBSEA enabled community members to participate actively in a SEA of ICE's proposed programme. Using participatory activities meant to promote critical discourse, they: assessed the usefulness of the programme; proposed alternative components based on their needs, interests and values; assessed the different proposed components by identifying real and potential impacts and by creating mitigation strategies; evaluated whether these components contributed to sustainability; and then they shared results with the proponent. Unfortunately, how the results from this CBSEA were to be incorporated (or not) into ICE watershed management teams' programme decision-making has yet to be determined.

My second objective was to determine the extent of adult and transformative learning through participation in ICE's WMAP planning and operations. The results reveal that in both the WMAP and the CBSEA, learning was rarely exclusively instrumental or communicative. In the WMAP, instrumental and communicative
learning were clearly facilitated and critical reflection resulted both during, and as-a-result-of, participation. Most of the learning was instrumental in terms of learning information about ICE and technical skills and information specific to the projects. Other instrumental learning included learning skills related to determining cause-effect relationships and task-oriented problem-solving. This instrumental learning is what ICE intended the farmers to learn through participation in both the programme and the awareness-raising activities. Some communicative learning did occur with about half of the participants interviewed; this communicative learning involved understanding values and normative concepts and understanding others’ points of view. The latter happened as farmers shared alternative views with each other and as ICE and farmers negotiated projects. Occasionally, profound transformative learning (that which involved premise reflection upon assumptions) did occur. Transformative learning evolved through a kind of organic process. Incorporating agro-conservation projects into their day-to-day practice caused participants to reflect critically on their role and responsibility vis à vis the watershed, this enabled them to recognize their roles as stewards of the land and in turn this inspired them to change the way they approached farming. For some participants, participation in ICE's WMAP empowered them to be more active in their community, to have more confidence, and to make decisions at a farm level that were more sustainable. For one farmer (Pablo), this change in farming practice and participation in ICE’s WMAP caused him to reflect critically upon the interrelationship between his environmentally-friendly farming practice, the international market economy, and his role and resiliency in this larger globalized context. For Pablo this resulted in a greater sense of self-reliance within a globalized market economy and facilitated an even stronger commitment to agro-conservation in his own practice. For two other farmers (Roxana and Inés), using a biodigester and vermi-composting worms has caused them to question the whole construct of what is "acceptable" female behaviour. This in turn has inspired them to encourage other women in their community to overcome their "inhibitions" and adopt the agro-conservation projects for all the positive environmental, social and economic impacts that they bring.

As with participation in the WMAP, instrumental and communicative learning were clearly facilitated during, and as-a-result-of, participation in the CBSEAs. Learning results clearly showed that all CBSEA participants experienced instrumental and the vast majority experienced communicative learning in some form. To a large
extent, because the CBSEA workshops were approached from a pedagogical perspective, these instrumental and communicative learning outcomes were intended learning outcomes. Instrumental learning was seen as participants learnt new skills and information directly related to improving their ability to collaborate effectively in the assessment of a proposed programme before it enters their community. For example, participants learnt systematic problem-solving skills such as how to identify real and potential impacts of proposed programme components and how to create mitigation strategies. They learnt participatory group-working skills and they learnt information about the proposed programme, their community, the environment and the real and potential impacts of the programme. Communicative learning was seen as participants, enabled through dialogue with each other, reflected on concepts like sustainable community development, their responsibility as stewards of the land, and their roles as individuals in facilitating positive change in their community and the environment. It was seen as participants collaborated to reflect critically upon the interrelationships between their individual and collective behaviour, the impact on the environment, and how their behaviour empowered them (or not) within a globalized context.

Transformative learning did occur more frequently through community participation in the CBSEA than through participation in ICE's original WMAP. Seeing shared needs as well as social and environmental concerns, elaborating a shared common vision for the future, recognizing the wealth of human and natural resources in the community, and seeing that an environmental conscientiousness existed, these transformed the way participants saw themselves, each other, the community, and the environment. This recognition that was elucidated through participation in the CBSEA workshops motivated participants to reflect critically on their individual and collective roles in protecting the watershed. This change in perspective allowed participants to move beyond self-interest to the possibility of collaborating with others in shared projects or associations and it engendered a deep sense of responsibility towards the environment that inspired them to act at an individual level and at a communal level.

The ICE employees involved in the CBSEA experienced both instrumental and communicative learning as well. In respect to instrumental learning, hearing the communities' assessment of their programme allowed ICE to see their programme from another perspective and taught and/or reaffirmed that participants have a great deal to contribute. They also learnt new skills associated with a participatory approach that allows them to engage with communities in a more meaningful way when it comes to
programme planning. In terms of communicative learning, through active engagement in dialogue with community participants in the CBSEA, ICE WMAP employees came to see the level of commitment on the part of the communities as well as that communal interests were stronger than individual ones. This inspired ICE WMAP employees involved to reflect critically on the role communities should play in the decision-making process.

My third objective was to examine the enablers of, and barriers to, learning in ICE's WMAP and in CBSEA. Through participation in the original WMAP, learning was enabled through the awareness-raising activities and through an ongoing engagement with the agro-conservation projects and with each other. The awareness-raising activities provided a forum where participants could dialogue with other farmers and technicians around ICE’s goals and the agro-conservation projects. These activities provided an opportunity for participants to learn information and skills related to the agro-conservation projects. Active engagement with the projects facilitated learning because participants were constantly experimenting and problem-solving. The most significant learning outcomes resulted from interactions that were critical, dialogical, and experiential.

ICE WMAP teams' approach to promoting agro-conservation projects by targeting individual farmers, and without providing opportunities for critical dialogue around larger issues like sustainable watershed management, have proven to be major barriers to learning. ICE's focus through their agro-conservation programme has been to promote projects and techniques that reduce contamination and sedimentation of their hydro-electric reservoirs at an individual farm level. Facilitating adult and transformative learning was not part of their intent. This very specific technical-environmental focus combined with an absence of consideration given to pedagogy in the design of their outreach activities had resulted in few opportunities for participants to engage in critical discourse with each other or with ICE employees. These very limited parameters for deliberation often did not include critical questioning or problem-posing around larger issues like sustainable watershed management or community development. Instead, the focus was often on a search for technical solutions. This in turn limited communicative learning outcomes.

There were many factors in the methodological approach and in the facilitation of the CBSEA workshops that enabled adult and transformative learning. Unlike participation in the WMAP, participation in the CBSEA workshops focussed on
community-level participation; this raised the level of discussion from an individual to a communal level. The CBSEA's ability to provide a constructive and open forum for dialogue enabled and encouraged participants to engage in rational discourse and to discuss more conceptually-abstract concepts such as watershed protection. This discourse took place in a respectful, inclusive, dialogical, critical, democratic, affirming, and active learning environment. The ability to suggest alternative components and assess them provided more open parameters for discourse. Further, farmers' experiential knowledge was valued and the subject was relevant to them.

A critical participatory approach and the intent to facilitate the ideal conditions for learning enabled a supportive learning environment and more equitable relationships amongst participants with each other and with the proponent. The structured yet flexible activities facilitated constructive dialogue between farmer participants and with ICE WMAP teams, thus providing a forum to address challenging issues in a productive way. The iterative deliberative process allowed participants to hear alternative points of view, clarify goals and values, identify and discuss problematic and contentious issues, and gain a better understanding of concepts like what is worth while. These pedagogical activities were designed to facilitate rational discourse and critical reflection focusing on the SEA of ICE's proposed WMAP Phase II. They were also designed and succeeded in facilitating the acquisition of certain skills and information related to doing a SEA. Mindfully experiencing and participating in the activities that constituted a SEA taught participants how to do a CBSEA. In addition, these guided activities provided the scaffolding for the discourse which led to communicative learning. In the CBSEA process there was room for reflection as the process combined experience, dialogue, analysis and included abstract conceptualization. The CBSEA allowed farmers to bring their own experience into linguistic consciousness and then reflect upon it. The role of the facilitator was very important in enabling learning, both instrumental and communicative. In terms of communicative learning, especially worth while was the creation of a productive and affirming learning environment and the facilitation of productive, collaborative group-work activities. Further, the facilitator was valuable in terms of keeping people on task and querying them to think more critically about the components, especially ones that previously had only been seen in a positive light.

Barriers to the learning in the CBSEA resulted from logistical considerations like time constraints and participants being unable to participate in all of the workshops because of other obligations. Further, the lack of clarity around what would be done
with the results from the CBSEA potentially negatively impacted community participants' motivation to participate in the workshops.

My fourth objective was to determine how participation in ICE's WMAP helps communities negotiate a place in development decisions that affect them. In the original WMAP, community participants' input into the decision-making process was limited to operational decisions at an individual farm level. They had a very limited voice, if any at all, in the planning of the WMAP or watershed management. In Reventazón, collaboration between ICE and ASOPROA creates a potential space where farmers can provide more effective input into the agro-conservation programme, but to date, that participation is still limited to operational decisions.

Participation in the CBSEA enabled community members to learn how to participate more effectively in development decisions that affect them. Participants became empowered as they learnt skills and information that helped them more effectively assess the impacts of incoming programmes and communicate that assessment to the proponent. The format of the CBSEA provided a forum where participants could propose counter-hegemonic ideas that reflected community values and goals to be included as components in ICE's proposed WMAP Phase II. The CBSEAs opened up a productive autonomous space within the existing relationship between communities and ICE where participants could directly communicate, if not actually negotiate, with ICE technicians who were directly responsible for the programme under question. For many participants, this process enabled them to recognize their right to participate in the planning process. Communicative learning results from participation in the CBSEA showed that there was a strong transition in participants from working for self-interest to working for communal interests. To a large extent this was due to recognizing that working collectively they can achieve much more than working individually. The formation of communal organizations and an informal mentoring network is potentially facilitating participants taking more control for their own development and holding ICE accountable to fulfil its commitments. As a result of the acquisition (or elaboration) of this skill set combined with an understanding of the value of working together and their right to be involved in planning decisions, community participants are better able to negotiate development decisions that affect them through the deliberative forum provided by a CBSEA process.
Institutions learning to engage differently with communities has important implications for incorporating community voices into programme planning. The CBSEA process did teach some ICE employees, and reaffirmed for others, the value of incorporating the public into the decision-making process at a strategic level. It taught those involved a systematic participatory tool that could be replicated in other contexts or watersheds if they so desired. The inclusion of multiple communities within the region was an effective approach when addressing a regional issue like watershed management.

My fifth objective was to examine the potential of CBSEA as a new approach in local programme development. CBSEA does have the potential to help in local programme development. Results from this empirical study show that CBSEA did prove to be an effective participatory process to engage the public in local decision-making that did indeed facilitate adult and transformative learning towards sustainability. If the facilitation of the CBSEA succeeds in creating more equitable relations amongst the different stakeholders and the proponent, there is considerable potential for a constructive dialogue to ensue. A good facilitator plays a very important role towards facilitating this kind of "sharers" dynamic.

A CBSEA provides a forum where debate and mutual learning can occur. In this study, it provided a forum where community participation did improve the focus on relevant issues, where data were more relevant as a result of the inclusion of local knowledge, where the programme has become more responsive to stakeholders' needs and interests, and where an iterative deliberative process has facilitated conflict reduction. The format of the CBSEA can allow participants to move beyond the scope of ICE's agro-conservation programme potentially to develop initiatives independently or in collaboration with other institutions. Results from these CBSEAs clearly show that this process can help address some of the challenges facing natural resource management as well as enhance social infrastructure.

Significantly in terms of programme development, learning results show that participation in a CBSEA can help facilitate the creation of a culture of environmental stewardship. The CBSEA can contribute to ecosystems and community viability as it facilitates the acquisition of skills and information so that communities and ICE can make more conscious decisions based on an understanding of the social, economic, and environmental impacts of their actions at a strategic level.
7.2 Theoretical and Conceptual Implications

As regards theoretical implications, this empirical study has added to the testing of Mezirow's (2000) transformative learning theory in a natural resource management context (Diduck, 1999; Diduck & Sinclair, 2003; Fitzpatrick & Sinclair, 2003; Keen & Mahanty, 2006; Renn et al., 1995; Sims & Sinclair, 2008; Sinclair & Diduck, 1995; 2001; 2005; Webler et al., 1995). As described in Chapters 1 and 2, researchers have identified a few theoretical gaps that I have considered through this case study research. With respect to transformative learning theory, Cranton (2006), Clark and Wilson (1991), Merriam and Caffarella (1999) and Taylor (2000, 2007) establish a number of issues; two have been central to this research.

The first, social action, suggests that individual transformation has been the focus of analysis at the expense of social change, understating the fact that perspective transformations may lead to social action and change. In the discussion of results in Chapters 4 and 6, I considered whether learning was resulting in action that is causing changes, or potential changes, in the condition of the environment. As exemplified throughout this case study, public involvement in the planning and operations of ICE's WMAP has resulted in action through farmers adopting more sustainable farming practices that do protect the watershed. Learning has resulted not only in changes in the condition of mind but also in both individual and social action. In the WMAP, these learning outcomes have resulted in the kind of behavioural changes that are important to achieving sustainability in resource use as shown by the many examples outlined in Chapter 4. At an individual farm level, motivated and informed farmers are consciously choosing to implement these agro-conservation projects even though they require a substantial level of personal commitment in both economic and human resources. At a community level, some participants have moved beyond responsibly managing their own resources to taking a lead role in the stewardship of communal natural resources. Farmers have done this by engaging with their neighbours either by educating them about alternative farming practices, by living exemplary lives, or by actively collaborating to implement projects. One farmer, Hernán, did this by engaging with the municipality to vermi-process 360 tonnes annually of its compostable waste.

The adult and transformative learning that was facilitated through participation in the CBSEA process enabled participants to move beyond self-interest and to start working towards collective communal and environmental goals. At an individual level, a more informed understanding as to the impact of their individual and collective
actions on the watershed and on the community inspired participants to integrate new and maintain existing agro-conservation practices and projects. It also motivated some participants to make more conscious and conscientious family-level decisions that included a full analysis of potential impacts. At a communal level, the CBSEA facilitated the formation of at least three communal organizations and an informal mentoring network that were focussed on initiating projects and programmes consistent with the concepts of sustainable community development and environmental conservation. These findings are consistent with other case-study findings cited at the outset of this dissertation which have shown the value of creating a social space that allows for increased dialogue and learning for sustainability outcomes (e.g., Diduck & Mitchell, 2003; Keen et al., 2005; Neefjes, 2000; Orr, 1994; Webler et al., 1995).

The second issue, context, suggests that there is a need to understand better whether transformative learning applies to adult learning in a variety of cultural contexts and what it means within a cross-cultural context. As such, I considered transformative learning within a Latin context and at the cross-cultural nexus between industry and small-scale farmers. Over the past three decades, transformative learning theory has been developed by Mezirow and others as a prominent attempt at codifying the features that distinguish adult learning as a set of principles, a model, or a theory. For this reason, the lack of consideration given to the implications of the cultural context where the learning occurs is a significant oversight (Taylor, 2000, 2007).

With respect to whether transformative learning theory applies to adult learning in a variety of cultural contexts, the learning results from this case study affirm that indeed it can. Case-study results from both public involvement in ICE's WMAP and the CBSEA process show how transformative learning has occurred within a different cultural, socio-economic, and non-formal adult educational context. This context is one that is outside North America and involves participants who are small rural land-owners of modest means whose voices are often marginalized in the decisions that affect them.

The cultural context of the learning and the livelihood characteristics of the participants involved influenced both what enabled, and what proved to be barriers to, the learning. Through participation in the original WMAP, the most significant learning resulted from the incorporation of the agro-conservation projects on their farms which caused farmers to reflect critically on their roles and responsibilities as stewards of the

48 “Different” meaning different from the other case studies published to date that almost exclusively take place in the United States (Taylor, 2000, 2007).
land. These farmers' strong individual spirit, powers of observation, experiential-knowledge base, and willingness to experiment facilitated learning outcomes that were highly context-specific. However, ICE's goal to target individual farmers and the Costa Rican cultural "individualistic" paradigm negatively influenced opportunities to engage in critical discourse.

Through participation in the CBSEAs, the same "individualistic" paradigm that was a barrier to learning in the original WMAP provided fertile ground to trigger transformative learning. This is because, in the CBSEA workshops, participants saw the strong and consistent community level of engagement and desire to contribute positively to the sustainable development of their community. For many participants, this triggered a profound change in their perception of the community and their roles and responsibility towards working for communal interests. The cultural context of the CBSEA influenced the focus of the discussion, the level of complexity of the language and pedagogical approach used, and the kind of knowledge that was shared. The resulting local theory that was constructed collaboratively (especially focussed on farmers' lived experiences and on their needs, interests and communal aspirations) was also influenced by the cultural context of the workshops.

This case study affirmed that transformative learning can be facilitated through a CBSEA with rural communities in Costa Rica. Rational discourse did occur, complex arguments were developed and assessed based on community participants' knowledge using structured pedagogical activities and simple language. Learning results showed that even if participants had limited formal schooling they could still engage in rational discourse, that this discourse did lead to critical reflection including premise reflection, and that they could, as was seen through the impact assessment, articulate conceptually-abstract ideas. These learning results question Mezirow's (2000) argument that learners have to be highly-mature thinkers to engage in rational discourse. However, as educators, one aspect that is important to acknowledge is that, depending on the context of the learning and the characteristics of the participants involved, we might have to teach specific skills or provide structured activities that enable participants to participate more successfully in rational discourse.

So, although the cultural context of this case study is distinct from other published case studies focussing on transformative learning theory (Taylor, 2000, 2007), the learning results affirm that transformative learning theory does apply to learning in a Costa Rican farming context through the planning and operations of ICE's
WMAP. This finding validates that transformative learning theory does indeed apply to understanding the process of adult learning in a variety of cultural contexts.

Another aspect of the cultural context is the cross-cultural nexus between industry and small-scale farmers created by the WMAP; especially interesting is looking at how constructive engagement with one another resulted in learning. Cross-cultural learning that resulted from constructive engagement with farmers through the WMAP was seen through ICE changing the way it interacts with farmers in managing the natural resources that generate hydro-electricity. This is reflected in the creation of the WMAP, the tailoring of the agricultural programme to the individual communities, and participation in the CBSEA.

Farmers and community members collaborating in the WMAP activities and the CBSEA workshops learnt that they could collaborate with a public institution to meet mutually congruent goals. This cross-cultural nexus generated (especially in the CBSEAs) a productive space to negotiate specific action plans through the planning and implementation of the proposed WMAP Phase II that not only reflected ICE’s agenda, but communities’ needs and interests as well. Cross-cultural learning was seen as each group (ICE and community members) gained a better and more realistic understanding as to what each could contribute to the realization of common goals and objectives. This often led to a greater appreciation of the knowledge and skills the other could bring to the process.

7.3 Methodological Contributions and Practical Implications

The practical contributions of this research are twofold: the first is bringing together SEA and CBEA literature to create a CBSEA framework and field test it in Costa Rica; the second is taking transformative learning theory and putting it into practice through the elaboration and facilitation of the CBSEAs. This approach to studying the nexus between learning, sustainability and EA also has methodological implications.

Partidário (1999), Noble (2005, 2006), Thérivel and Brown (1999), and CIDA (2005) articulated the need for context-appropriate SEA frameworks to be created. By adapting and elaborating upon a community-based approach and participatory methods as found in CBEA (Neefjes, 2001; Spaling, 2003) with the basic elements of a SEA (Noble, 2005; Partidário, 1999; Petts, 1999b; Thérivel & Brown, 1999), this research has contributed to the creation of a basic framework for CBSEA for assessing small-
scale local programmes, particularly as they relate to a developing-world context (CIDA, 2005). Strengthening this contribution has been the field testing of this CBSEA framework in two watersheds in Costa Rica. Participation and learning results clearly build upon Neefjes (2001) and Spaling's (2003) findings that a CBSEA is an appropriate tool to use in a natural resources management context in the developing world. In practical terms, this case study has also elucidated how a simple CBSEA framework can nonetheless produce many benefits including: meaningfully engaging community members in a natural resources management decision-making process, facilitating a more comprehensive assessment of incoming programmes, improving community relations, and facilitating a transition towards sustainability. Further, in terms of an applied contribution, the development of this simple CBSEA framework enables community members to independently assess the potential impacts of a programme or plan entering the community.

The key findings and their theoretical implications have methodological implications regarding the creation of learning-centred community-based approaches to EA. Integrating an approach informed by transformative learning theory into the design and facilitation of the CBSEA workshops did enable early and ongoing participation in the planning process that was inclusive, deliberative and that provided opportunities for ongoing mutual learning. Learning results showed that the incorporation of the ideal conditions of learning through a participatory approach can facilitate certain desirable social objectives, such as local participation, equity, and empowerment. This finding builds on previous research by Diduck (1999), Diduck and Mitchell (2003), and Fitzpatrick and Sinclair (2003) amongst others who argued that the incorporation of transformative learning theory into the public participation component of an EA process would indeed result in greater learning outcomes and more meaningful participation. As such, this research improves an existing system for doing research into EA, learning and sustainability.

The practical implications of seeing the benefits of incorporating transformative learning into the framework of a community-based approach to EA are threefold. Firstly, it shows that this learning-centred participatory approach to a CBSEA has been successful and could be elaborated upon by future researchers. Secondly, the lessons learnt highlighting successful strategies that facilitate meaningful public involvement could be adapted to a more conventional EA process. Finally, in approaching this challenge of implementing as well as analyzing the CBSEA process from an educator's
perspective, it has helped clarify the importance of the role of the facilitator as educator. Taking this into consideration means that the activities within the CBSEA can be considered as pedagogical activities with learning outcomes as goals. Facilitators in this context should see their role not only as the facilitators of a SEA of a proposed programme, but as facilitators of knowledge creation and acquisition. This research elucidates the valuable role that we as educators can play outside the conventional classroom in other non-formal adult learning contexts, including natural resources management contexts.

7.4 Contributions to the Communities and ICE

Feedback from community participants and ICE employees from both Reventazón and Sarapiquí has indicated that collaborating in this research process, particularly the facilitation of the CBSEAs, has been a positive experience. In terms of contributing to the communities involved in this research, participation in the CBSEAs facilitated the production of local knowledge through the visioning activity and the generation and assessment of programme components. Through this experience, participants have learnt a great deal of new information and skills related to (but not limited to) agro-conservation and the SEA process. Collaborating with neighbours and other communities showed a common concern for the environment and a willingness to collaborate in communal projects. This, combined with the formerly described learning results, has led to a greater communal awareness and more self-reliance in managing local resources. The CBSEAs initiated a productive dialogue with ICE WMAP teams at a communal level about watershed management and agro-conservation. The CBSEAs facilitated direct communication between community members and ICE as well as other governmental organizations. Participating in this process enabled participants to see that they have a right and responsibility to be part of the planning process for local initiatives. In a very tangible way, the CBSEA process has contributed to the building of social infrastructure through the creation of local organizations and an informal mentoring network. Finally, but no less significant, on an affective level this research has enabled neighbours to meet each other, outsiders like myself, and institutional representatives, as well as to collaborate in a process that has been meaningful.

The benefits to ICE have also been important. First of all, the initial stage of this research examining public involvement and learning through the original WMAP validated and provided critical independent feedback on the existing WMAP. Also,
publications in international journals (for example in the Adult Education Quarterly, Sims & Sinclair, 2008) and the presentation of findings at conferences has raised the profile of the WMAP and provided positive press for the public institution. Collaboration in the CBSEAs provided an opportunity to hear feedback on the existing programme and hear ideas on ways to improve the proposed WMAP Phase II. With respect to greater efficacy in meeting its goals of contamination and sedimentation reduction, the CBSEA raised the profile of the agro-conservation programme in the communities. In addition, participation and learning results showed that the community participants involved were keen on taking a larger role in the sustainable management of the watershed. Significantly, CBSEA results showed an improvement in community relations as a result of participation in the process. Finally, ICE employees were able to interact with me and with Dr. Sinclair to learn about the latest research on meaningful public participation.

7.5 Recommendations for Future Research

In terms of recommended directions for further research that would potentially contribute to theory and practice in the aforementioned areas, I would make a couple of suggestions. In terms of contribution to theory, my first suggestion would be to continue with a longer-term study with participants from this case study to build upon empirical evidence cited in Taylor (2007). Of particular interest is Baumgartner's (2002) findings that perspective transformations were irreversible and that after a significant premise reflection people often start asking more process questions, like how to implement their new worldview (i.e. there have been many instances of premise reflection described in this dissertation and it would be interesting to see how, over the long term, these affect the way participants approach their farming practice, watershed management and community initiatives). A longitudinal study with the participants from this Costa Rican case study might help further elucidate our understanding of frames of reference and meaning schemes building upon Mezirow's (2000) definition and Baumgartner's findings. Further, a longitudinal study, particularly focussing on the communal organizations and the informal mentoring network that have been formed, could contribute to our understanding of the importance of social relations to long-term sustained commitment.

I think that one of the strengths of this CBSEA framework is that it could be used in the future and adapted to other cultural and socio-economic contexts. It is a
simple, comprehensive, efficient, and inexpensive participatory approach to doing a SEA. As such, I would highly recommend that this CBSEA framework be tested in other cultural and socio-economic contexts. I would be particularly interested to see what impact the incorporation of the recommendations have, if any, on the results.

Finally, considering the benefits that resulted from doing these initial CBSEAs with ICE and the communities, I think it would be worth while doing another CBSEA in other watersheds where ICE has a WMAP. I also think that organizing a follow-up CBSEA for the "proposed" WMAP Phase III with the same communities in a few years as was suggested during the workshops would be beneficial.

7.6 Concluding Comments

When initially elaborating this CBSEA framework I underestimated the kind of community and proponent response that I could expect. I was reserved because I was cognizant of Costa Ricans' reputation of being individualistic and because I appreciated that everyone I wanted to involve in the process was very busy in their farming and professional practice. In spite of this, I was overwhelmed by the positive response from both ICE and the community participants in terms of their level of commitment and in terms of the number of people who came to the workshops and participated in the follow-up interviews and their enthusiasm.

Initially, irrespective of my understanding of the theory, I had not fully recognized how significant participating in a CBSEA would be. The responses I heard in the follow-up interviews, and the work ethic and enthusiasm I observed in the workshops, humbled me in terms of how valuable the participants found the experience; this was compounded by seeing the subsequent impacts having participated in the CBSEA process had on their individual lives (e.g., making decisions differently) and had at a community level (e.g., forming community organizations).

So, my concluding comments are that if done well (meaning that the CBSEA provides a critical deliberative space where participants can participate in an equitable and enabling learning environment assessing the impacts of a proposed programme entering their community) I think that a CBSEA can be an incredibly useful and facilitating natural resource management tool that enables a transition towards sustainable development and more community input into local programme development.
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Other Background Literature


Appendix A: List of Potential Questions for Farmers WMAP

Understanding ICE's agro-conservation programme
May – June 2005

Preguntas para los agricultores

1. Puede describirme un poco como los proyectos específicos (como los biodigestores, métodos orgánicos, el lombrí compost, semi-estubular a los animales) vienen a ser implementados en la comunidad?

2. Describeme la situación antes la implementación del proyecto. ¿Cuál fue el problema?

Proceso

3. Puede describirme, de su punto de vista, ¿cómo fue el proceso desde cuando se interrumpió la estrategia hasta que estaba implementándolo en su finca?
   a) ¿cómo se interrumpió?
   b) ¿por qué decidió sobre una estrategia en particular?
   c) ¿Cómo se decide sobre los mejores proyectos para su finca y el diseño de estos proyectos? (explicame los pasos de esta decisión)
   d) ¿quién tiene acceso y puede participar en las reuniones o los días de campo alrededor de estas estrategias?
   e) ¿Qué información enseñaron en los talleres o durante la instalación?
   f) ¿qué tipos de actividades han hecho durante este proceso? ¿son las actividades y el contenido contextualizados a su comunidad?
   g) ¿por qué la gente participa o no participa?
   h) ¿Qué facilita una participación fuerte en el proceso? ¿Qué lo impide?
   i) En este proceso de planificación e implementación, ¿son todas las voces escuchadas de una manera igual? Explique por favor.
   j) ¿Cuáles son algunos desafíos a este proceso de desarrollo comunitario?
   k) ¿Por qué algunos proyectos son adoptados por ciertos miembros de la comunidad?

Impactos

4. ¿Qué tipos de impactos pensaba que iba a traer? ¿Cómo pensaba que iba a afectar su vida, su finca, sus ingresos, etc.?

5. ¿Qué tipos de impactos consideraron durante la implementación y la toma de decisión?
   l) ¿Quién decidió los impactos (ICE o agricultores)?
   m) ¿Qué tipos de impactos han sido identificados?
   n) Cuando está evaluando a los impactos, ¿tiene Ud. el derecho de sugerir otras soluciones alternativas o ideas de proyectos? ¿Cómo son recibidas?
   o) ¿Cómo se puede minimizar los impactos negativos y aumentar los impactos positivos?
   p) ¿Cómo deciden el mejor sitio?
   q) ¿Quién lo construyó?, cómo consiguió los materiales?

6. Finalmente, ¿cuál fue el impacto sobre su vida? Ha cambiado la manera que Ud. se comporte?
Aprendizaje (broad question…what was learnt and how did they learn it):
7. ¿Cómo uno decide si quiere o no quiere adoptar ciertas estrategias?
8. ¿Qué ha aprendido a través de este proceso?
   r)-¿Este proceso le hace pensar críticamente a uno?
   s)-¿Facilita acciones basadas en la reflexión?
9. La implementación de la estrategia, ¿ha afectado como va a tomar otras decisiones para su finca? ¿Cómo?
10. Las actividades que han hecho, ¿Encuentra que aprendió atraves de estas actividades?
   t)-¿Cuáles fueron las mejores al nivel educativo?
   u)-Ayudan a mejor comprender su ambiente y su comunidad?
11. ¿Cómo describiría Ud. la relación entre los participantes y el facilitador?
12. ¿Por qué las familias secundarias están implementando estas estrategias?
13. A través de participar en este proceso de planificación y implementación, ¿ha sido su percepción o comprensión de sí mismo, su comunidad, su ambiente (o su relación con estos) cambiada ?
14. ¿Cómo la planificación y la implementación de proyectos concretos trata de aspectos como el desarrollo personal, la pobreza en la comunidad o la familia, y la relación entre uno y la naturaleza?
15. ¿Piensa Ud. que los aspectos educativos en este proceso forman una parte importante en el proceso del desarrollo de la comunidad?
16. Este proceso, como un proceso educativo, ¿facilita a los miembros de la comunidad de tener una voz más fuerte en el manejo de los recursos naturales locales y las decisiones de desarrollo? Describe cómo o cómo no.
17. En su opinión, a través de participación en este proceso, ¿ha cambiado la percepción de los participantes de ser entendidos?
18. ¿Cuáles son los aspectos educativos en que Ud. desea que me enfoque durante este estudio?

Las instituciones que están implementandolos
19. ¿Cuál es su conección con ICE?
20. Según Ud., ¿Cuáles son los planes que ICE tiene para la cuenca? ¿Qué piensa Ud. de estos objetivos?
21. Participó en las discusiones alrededor de la implementación del proyecto hidroeléctrico?
22. Según Ud., ¿porque el ICE y el MAG están promoviendo está tecnología?
23. ¿Piensa Ud. que el proceso de planificación comunitaria es legítima?
Appendix B: List of Potential Questions WMAP for ICE

Understanding ICE's agro-conservation programme
May to June 2005

List of Potential Guiding Questions for Interviews for ICE
General comment: Try to untangle what ICE is doing with the communities...is it community development or CBEA?

The following is a list of guiding questions that will be used in the semi-structured and focus-group interviews.

**Introduction Questions:**
1. What do you do? What is your role in ICE?
2. What is your connection to the community planning process done around projects in communities? How did you get involved in this process?

**General Questions about ICE, larger vision and planning process**
3. What is ICE’s history?
4. What is ICE’s larger vision?
5. What are ICE’s development plans in the watershed (or region)?
6. Are there strategic goals and guiding policies for the watershed?
7. Was there a SEA done of the plan?
8. Were communities brought into the discussion in forming these policies/plans and programmes? If so, at what stage? How early? Who was involved?
9. How is ICE executing their development plans in the watershed?
10. i) Is community development part of the bigger plan?
     ii) Has it always been part of the plan or is it an add on?
     iii) What motivated its inclusion?
11. What is the range of projects that are part of the community development process and how did this develop?
12. Is community development a form of mitigation?

**CBEA Project Analysis:**
13. How do you (ICE) decide on projects and on the design of these projects?
14. What are the steps taken to choose specific projects?
15. How do communities participate in the decision-making process around specific projects?
16. How are the impacts of a particular project determined (i.e. by ICE or by the community?)
17. What sorts of impacts have been identified (for example for biodigestors)?
18. How can the negative impacts be minimized and the positive impacts enhanced? What are the options for mitigation?
19. When assessing the impacts, are communities allowed to provide alternative solutions and project ideas?
20. How are optimum project ideas chosen for the community? What sort of analysis is involved?
21. How is the best location for the bio-digester decided (especially from environmental and social aspects)?
22. Who will build the facility? Where will they get the materials?
CBEA Process Participation:
23. Why and how does ICE involve the communities in implementing projects within their own communities?
24. Why and how are you participating in the community planning process?
25. In your opinion, what is the goal of the community planning process?
26. Within the community, who has access to participate in the community planning process?
27. Why do or do not people participate?
28. What possible inhibitors exist to participation?
29. What are some challenges facing this community planning process?

Learning Through the Community Planning Process:
30. What are examples of activities that have been done in this community planning process and around the implementation of specific projects?
31. What skills or information were taught in/through these activities?
32. How would you describe the relationship between the participants and the facilitator?
33. i) Do you find that you or other stake holders learn through these activities?
    ii) What specifically did you learn through these activities?
    iii) Do these activities enable you to better understand the environment and the community?
34. Are the educational activities and the educational content contextualized to the specific community?
35. Do the activities force people to think critically? Please give an example.
36. Does the community planning process facilitate action based on reflection? How and give an example.
37. Are the activities focused on cooperation or competition or a mixture of both. Explain please.
39. In the community planning process, are all voices heard equally? Explain.
40. Has your perception or understanding of yourself, your organization, the community, your environment (or your relation to these) changed through participation in the community planning process?  
   -Has the change affected the way you behave?  
   Give an example and explain.
41. How does the community planning process address aspects like personal development, poverty in the community, and the individual’s relation with nature?
42. a) Do you think that the educational aspects of the community planning process are an important part of this process in community development?
   b) Has ICE linked public participation to learning and education? Do they educate for agreement or informed consent?
   c) Why do you think that secondary families adopt specific strategies (i.e. is it social learning or social marketing)?
43. Do you have any concerns regarding the educational aspects of community planning process?
44. What are the educational aspects that you would like me to focus on during the study?
Political Voice:

45. Does the community planning process, as an educational process, enable community members to have a greater say in local resource management and development decisions? Describe how or how not?

46. In your opinion, through participation in this process, has the perception of participants changed regarding being heard?

47. Do you think the community planning process is legitimate?
Por Laura Sims

Introducción
Yo (Laura Sims) estoy estudiando como los participantes, sobre todo los agricultores, adquieren conocimientos por su participación en el manejo de cuenca con Instituto Costarricense de Electricidad (ICE). En particular durante la primera recolección de información (mayo – junio 2005), se observó cómo y qué aprenden los participantes en el proceso de decidir qué proyectos desean implementar y viviendo con ellos en las cuencas de Reventazón y Sarapiquí. En la segunda fase de la investigación (enero – marzo 2006), quiero probar la creación de un proceso colectivo que tenga sentido para los agricultores y también para el ICE. Quiero que este proceso colectivo facilite a los agricultores la evaluación del programa del ICE y la planificación de lo que desean desarrollar en el futuro como una comunidad. Además, ojalá que este proceso permita a los empleados del ICE evaluar su programa agrícola, de escuchar los planes comunitarios de los agricultores, y posiblemente de desarrollar un plan coordinado. Hay dos razones principales porque las que pienso es importante hacerlo. La primera es que muchos participantes agricultores expresaron un deseo de tomar el nivel de discusión hasta el nivel de la comunidad y no solamente dejarlo en el nivel del individuo. La segunda razón es que en el mundo internacional del desarrollo comunitario, falta mecanismos y procesos para involucrar las comunidades en decisiones acerca de los recursos naturales. Este proceso colectivo, espero, pueda responder a estas dos inquietudes.

A continuación se presenta un resumen de la información recogida durante la primera fase de este estudio.
Cómo es la Participación y Por Qué Participan los Agricultores

En general, cualquier persona puede participar con el ICE en su programa agrícola del manejo de cuenca (desde ahora voy a llamarlo “el programa agrícola”). El ICE utiliza cinco actividades principales para promover a los proyectos (como el biodigestor, la semi-estabulación de los animales, la lombricultura, el pasto de corta, y los árboles frutales) que ayudan a realizar sus objetivos que son de disminuir la erosión y la contaminación en la cuenca. Las actividades son: talleres, charlas, giras, días de campo, y días demonstrativos donde instalan proyectos en la finca de un productor. Eso dicho, para participar no solamente al nivel de las actividades educativas pero en la implementación de proyectos, hay algunas limitaciones dependiendo sobre los recursos que tiene el ICE para comprar materiales para los proyectos (en Reventazón) y hay solamente algunos técnicos que trabajan en la región. Además, los agricultores tienen que ser dueños de sus fincas y normalmente, al menos en Reventazón, formar parte de un grupo organizado. En general, ICE trata de implicar agricultores que son líderes en su comunidad y que viven en la parte de la cuenca que ayuda a realizar sus objetivos ambientales (usualmente la parte alta). Los agricultores deciden cooperar con ICE por muchas razones. Las personas con quien hablé me decían que participaban según: sus necesidades, el conocimiento que tenían de los impactos positivos (económicos, sociales, ambientales) que iría a traer el proyecto, sus intereses, la visión que tenían para su finca, la base de conocimientos que tenían, una filosofía conservacionista, un sentido de una obligación moral, su situación económica, su deseo de tomar riesgos, la simplicidad de los proyectos, y confianza que tienen en los técnicos del ICE.

Impactos de la Participación
El impacto sobre los participantes en este programa agrícola ha sido positivo. Muchos agricultores han mencionado que han visto una disminución de gastos en la finca, que al mismo tiempo de disminuir la cantidad de contaminación que producen en su finca, están aprovechando de recursos que antes no apreciaban como la boñiga, y que, en general, su calidad de vida es mucho más alta ahora que antes. Hay muchos agricultores que me han explicado que un resultado de vivir con los proyectos es que han aprendido mucho y que se sienten mucho más satisfechos con su calidad de vida.

El impacto ambiental ha sido positivo. A causa de la implementación de los proyectos, hay menos contaminación en la cuenca y menos erosión del suelo.

Desafíos en la Participación
Los desafíos que existen para participar, según la opinión de los participantes en el estudio, son que:
1) hay impedimentos logísticos como falta de recursos al nivel del ICE y al nivel de la finca, falta de tiempo para experimentar y para acomodar las necesidades de los...
agricultores, y hay una necesidad de tener un buen proceso de planificación al nivel del individuo y al nivel de la comunidad;
ii) los proyectos tienen que mostrar que funcionan antes de que los agricultores arriesguen su tiempo y sus recursos en implementarlos;
iii) los Ticos son muy individualistas, son cerrados al cambio, o les falta el deseo de comprometerse a un proyecto;
iv) y hay una desigualdad entre las voces, quiere decir que algunas voces son más fuertes que otras como las voces de los más ricos, los más populares, y los hombres.

**Aprendizaje- ¿Qué y Cómo la Gente Está Aprendiendo?**

Los agricultores están aprendiendo una manera de vida y prácticas agrícolas sostenibles, las interconexiones entre sus acciones y la salud de la cuenca, sobre ellos mismos y su comunidad, y habilidades e información ligada a los proyectos. Lo que está abriendo la mente de los agricultores a probar estos proyectos es: viendo que los proyectos funcionan, hablando con otros agricultores que han tenido experiencias positivas con los proyectos, la presencia de una crisis climática o económica, y un nivel bastante alto de educación que le facilita a la gente ser abierta al cambio. La experiencia de vivir con los proyectos muchas veces resulta en abrir la mente de un agricultor para probar otros proyectos.

En general los participantes, que incluyen los agricultores y los empleados del ICE y del Ministerio de Agricultura y Ganadería (MAG), están aprendiendo cuando están conversando con otros agricultores o técnicos, implementando y viviendo con los proyectos, viendo ejemplos en la finca de sus vecinos, participando en actividades que el ICE organiza, y oyendo las ideas que traen los niños de la escuela.

**Impactos del Aprendizaje**

En general, el programa de ICE ha enseñado la necesidad de valorizar y proteger la cuenca. Ha conscientizado a la gente que todos somos responsables de la cuenca y que hay otras maneras más sostenibles para ganarse la vida donde se puede continuar viviendo como agricultor. No todos, pero hay muchos agricultores y empleados del ICE y del MAG, que han dicho que de participar en el programa y de vivir con los proyectos ha cambiado la manera que veen las cosas. Ellos han mencionado que han comenzado a verse de una manera diferente, por ejemplo hay algunos que se ven como educadores o técnicos en la comunidad. Hay muchos que me han dicho que ahora se sienten más como actores en la cuenca y que tienen la responsabilidad de promover los proyectos sostenibles en la comunidad para proteger la cuenca. Me han explicado que han comenzado a ver la tierra y su finca de otra manera, a ver recursos donde antes solamente veían desechos. También, sobre todo con los agricultores que han dado explicaciones a otros agricultores durante un día de campo o una gira, han aprendido a tener más confianza.

Por el ICE, ha enseñado que hay otras maneras para interactuar con el público y para los técnicos este programa ha aterrizado sus conocimientos en la realidad pragmática de la agricultura.

**Críticos del Programa Agrícola**

En general, los participantes estaban muy satisfechos con el trabajo y el apoyo del ICE. Eso dicho, había algunos críticas muy constructivos que salieron de las entrevistas.

i) ICE necesita dar apoyo técnico que es más informado. Por ejemplo, con la lombricultura y con los árboles frutales, algunos participantes encontraron que la
información compartida fue inadecuada, hasta incorrecta. También criticaron que la información fue dada demasiado rápido en los talleres y que el ICE tiene que desarrollar ideas hasta el fin para evitar promover ideas que no funcionen. Un agricultor sugirió que el ICE haga un análisis holístico de cada finca antes de implementar los proyectos. En Reventazón están comenzando a hacer eso con una forma de encuesta.

ii) ICE necesita dar más apoyo después de la implementación de los proyectos, sobre todo con los frutales para ayudar a mantenerlos en buen estado y para enseñar como comercializar los productos.

iii) ICE necesita traer más recursos económicos a la mesa para motivar a la gente a implementar los proyectos.

iv) ICE necesita tener una visión holística para el desarrollo de la cuenca, no solamente acciones aisladas. Parece que la planificación de un manejo de cuenca participativo en Sarapiquí indica que va en esta dirección.

v) Los profesionales tienen que ser más humildes (aquí se referían más a los profesionales en general que a los profesionales del manejo de cuenca)

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Appendix D: Initial CBSEA Framework

Initial CBSEA Framework for January to March 2006 Field Visit

Community-Based Strategic Environmental Assessment (CBSEA) of ICE’s Watershed Management Agricultural Programme (WMAP) Phase II

Trying to put theory into action!

NB: I have filled in most of the tables with examples that might come up to give more context to this description.

1st Visit participants, share results from initial data collection and invite to participate in CBSEA

- First, visit participant farmers and explain what I would like to do (CBSEA) and see if they, or their buddies, want to participate. Set a date and appropriate time for an initial meeting. Make sure to explain what will be done at the initial meeting of the CBSEA. Check with the women to see when an appropriate time for them might be and if I have to do separate meetings, i.e. one for men and one for women, so be it.
- At this initial visit, share the results from initial data collection and give them a résumé of the results written in Spanish. Go over it with them to make sure that if they have any questions I can answer them.

2nd Planning CBSEA process, setting objectives, logistics, and describing WMAP Phase II programme.

Introductions and logistics of the process
- Explain who I am, my objectives, what I propose to achieve through the CBSEA and what could be achieved with a CBSEA. Explain that my initial data collection (May – June 2005) focussed on understanding the existing WMAP and that this CBSEA would evaluate the WMAP Phase II that ICE proposes for the future.
- With farmers who would like to participate, assess what format works best, what resources they need and what time-line frameworks they can work within [schedule meetings, assess available resources (if they need/would like to be paid or paid-in-kind for their time), best places to meet, the logistics].

Getting down to doing the CBSEA:

Educational activity: In groups of 3 the farmers can brainstorm the following ideas (one secretary for each group) and then we can put all of the information together and write it up at the front on a big piece of paper (make sure to use teaching/learning tools that are easily accessible). Have groups present to each other and ask about the differences in the information they present. Right at the beginning, put up the days agenda so that the farmers all understand what direction we are going in.
CBSEA Goals of the activities:
- Collectively set (environmental and sustainability) objectives for the CBSEA, envision future and think of possible targets. (For example: What would they like to see based on their needs and alternatives?)
- With participants, decide on scope and level of information which must be included in CBSEA report.
- Describe WMAP Phase II in sufficient detail that others will understand
  - ICE will present their programme WMAP Phase II to farmers and will answer any questions that the farmers might have. Make sure to touch on: What projects are included, what follow-up, what materials will ICE provide, what activities, why is ICE doing it?

- CBSEA goal: Establish what baseline information should be collected to assess potential impacts of the WMAP Phase II.

Educational Activity: Once you have established what information you need for a baseline, figure out how you are going to collect it. Encourage the farmers to be researchers, create a to-do list before next meeting, participants can have different roles and responsibilities (e.g.: some could volunteer to survey their neighbours about what impacts they have seen already and ones they foresee based on the new WMAP Phase II proposal and others could volunteer to participate in a transect walk and in creating a resource map of the community. This helps to make sure that we have a clear common understanding as to what the community is like right now). Questions that we can’t answer ourselves at the community level, we can look for by asking CATIE (Tropical University located in the Reventazòn) or ICE for support materials to complement local understandings.
- Ask about links to other strategic actions in the area.

3rd/ Collecting base-line data about programme and environment

CBSEA goal: Describe programme environment (biophysical and social) in sufficient detail and the inter-relationships of various components.

Educational Activities: Do a transect walk with a few participants and have them describe characteristics of their community, after the walk, sit down and collectively create a resource map with this group focussing on environmental as well as social characteristics. I (or a volunteer) could write this description up and later this description could act as an initial base that can be added to at the next communal meeting. Time permitting, do a trend line of erosion over the past years that includes the time before ICE’s WMAP intervention to now. Make sure that all relevant aspects of the state-of-the-environment are described, the aspects that are directly related to ICE’s WMAP Phase II should be described in more detail.

---

49 Sustainable and environmental visions and problems should be adequately considered.
50 SEA objectives: example- describe programme, assess impacts, create action plan (which is accompanied by indicators and targets).
51 Scope- focus on significant issues and disregard less significant ones. Difficulties, lack of knowledge, and assumptions should all be discussed and made explicit. Also, what environmental issues and constraints should be considered during decision-making process.
52 Note to self: Laura, create a check list to make sure that the different aspects get brought up during the transect walk. Categories include environmental, social, and economic issues like: biodiversity, population, human health, fauna, flora, soil, water, air, climate factors, material assets, cultural heritage, landscape and their inter-relationships, equity and resilience. Make sure that information and methods used to investigate are appropriate to the size and nature of the task.
4th/ Second communal meeting: Presenting information, assessing impacts, identifying key concerns (ideal would be to have this as a full day meeting)

CBSEA goal: To establish a common understanding of the programme environment and of valued ecosystem components.

Educational Activities: Present findings from the transect walk (information, trend line, and resource map). Perhaps do a “gallery walk” where participants can move from station to station adding information or contesting information as they see fit.

-Do a Stakeholder analysis with corresponding responsibilities (this can incorporate their existing knowledge from the existing WMAP)

<table>
<thead>
<tr>
<th>Who are the principle stakeholders?</th>
<th>Role in WMAP Phase II</th>
<th>Responsibilities in WMAP Phase II</th>
</tr>
</thead>
<tbody>
<tr>
<td>ICE</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Farmers</td>
<td></td>
<td></td>
</tr>
<tr>
<td>?</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

CBSEA goal: Do a social, environmental, and economic impact assessment of the WMAP Phase II

Educational Activity: -Do a baseline survey with participating farmers to assess the impacts that they think the WMAP Phase II will have. Create a table that farmers can fill out in groups of two or three that clearly categorize the different impacts. Have the farmers share these tables with each other and compare their answers. Create a collective chart. Another possibility is each group look at one category of impacts and then they share the results leaving room for others to add comments to their list.

Example of Baseline Survey

<table>
<thead>
<tr>
<th>Environmental impacts¹</th>
<th>Social impacts</th>
<th>Economic impacts</th>
<th>External forces</th>
</tr>
</thead>
</table>
Make sure to include positive and negative impacts

With results from table identify key concerns and valued ecosystems components: E.g.: Ask: What are your biggest concerns that you have socially, economically and environmentally? Rank them and then in smaller groups determine their significance. (Examples of the ranking could be: the most important, very important, less important etc. or 1, 2, 3 by using the Sims equation).

-Make identified issues and concerns more focussed and precise in order to find suitable remedies and alternatives. Identify linkages among programme components and these issues. Assess how to mitigate negative impacts and enhance positive ones.

<table>
<thead>
<tr>
<th>Key concerns (examples) including key valued ecosystems component</th>
<th>how is this significant?</th>
<th>why is this significant?</th>
<th>link to WMAP Phase II</th>
<th>how to mitigate negative impacts</th>
<th>how to enhance positive impacts</th>
</tr>
</thead>
<tbody>
<tr>
<td>erosion</td>
<td>projects like planting trees, semi-stabling animals, forage crop, education about alternative farming methods</td>
<td>- (Neg impact = cost) good funding to implement projects, share seeds for forage crop. - (Neg impact = more work) create work parties to help build projects</td>
<td>- have tree planting parties - share seeds and labour</td>
<td></td>
<td></td>
</tr>
<tr>
<td>quality of water</td>
<td>projects like biodigestors, vermicomposting worms, forage crop</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Lunch break

CBSEA goal: Visioning for the future

Educational activity: -In small groups, have farmers brainstorm their “vision for the future” and elaborate how they want to realize this plan. Share these results with one another and then decide as a collective what they would like to work towards. Rank what is most important for them and then work on these. For example:
<table>
<thead>
<tr>
<th>Vision for the future</th>
<th>Target</th>
<th>Ways to realize this plan</th>
<th>Relationship to proposed WMAP Phase II</th>
<th>Impact of proposed action</th>
<th>Who can collaborate to make it reality?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reduce agro-chemical use</td>
<td>Reduce agro-chemical use by 50% in 2 years</td>
<td>Implement vermi-composting and biodigestors on own farms and promote the use of these technologies and the use of organic fertilizer to the neighbours.</td>
<td>-ICE wants to continue providing technical support and materials for biodigestors.</td>
<td>-production of organic fertilizer, reduction in costs, less pollution in river, higher quality soils, better health</td>
<td>-ICE and MAG (technical support for building projects) -teams of farmers helping build projects -micro -credit through banco nacional</td>
</tr>
<tr>
<td>Reduce erosion</td>
<td>Reduce erosion so that when it rains the water runs clear</td>
<td>Plant forage crop, trees, semi-stable animals</td>
<td>ICE will provide the fruit trees and tree-care follow-up. ICE will not provide support for stabling animals</td>
<td>Increasing biodiversity, reducing erosion, more work hauling crop, ability to harvest manure, potential income from fruit trees</td>
<td>same as above</td>
</tr>
<tr>
<td>Find or Create a market for organic products</td>
<td>Have at least one market where we can sell products directly to consumers.</td>
<td>Learn how to grow organic produce. -Find out stipulations around marketing products as organic (including vermi-compost and fertilizer)- Have integrated farmers share their experiences to interested farmers, perhaps create a co-op.</td>
<td>ICE encourages integrated farming but doesn’t propose to give marketing training (not part of their mandate)</td>
<td></td>
<td>-INA can provide course on marketing products and simple accounting. -ICE can give organic farming course. -Create list of interested farmers with contact info.</td>
</tr>
</tbody>
</table>

-**With the most important visions for the future, have farmers assess and describe anticipated effectiveness of proposed measures.**

-**Collectively create a community-action plan on how they hope to achieve vision.**

-**Pull out stakeholder analysis and they can propose who should participate and how.**
-Establish what they want to monitor and create a time line.

<table>
<thead>
<tr>
<th>Vision for the future</th>
<th>Target</th>
<th>Ways to realize vision</th>
<th>Impact of proposed action</th>
<th>Relationship to proposed WMAP Phase II</th>
<th>who can/should collaborate</th>
<th>Who will monitor results and how</th>
<th>Time line</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reduce agro-chemical use</td>
<td>see previous table for first 3 categories</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>ICE/MAG by providing and training in projects</td>
<td>ICE/MAG by providing and training in projects</td>
<td>farmers on their own farms monitor use by documenting use in “mi finca”. ICE can test their hydro reservoirs 2 times/year for contaminants.</td>
</tr>
<tr>
<td>Reduce erosion</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

-Determine and assess methods to monitor plan and impacts of the plan. Discuss how they hope to achieve and monitor results in a collaborative and consistent way. Define potential roles and responsibilities.

6th / Final Meeting with Farmers, ICE and other government bodies

- Based on farmers’ needs and schedule, plan a meeting in a neutral place. Create a format (see what farmers propose as possible ideas) where farmers can share their findings with ICE personnel in small groups and they can propose their vision for the future. At this meeting ICE can also share their vision and they can explain what they can bring to the process.

- Create/Negotiate a collective plan of action with well defined roles and responsibilities, time-line and monitoring mechanisms.

Evaluating the process: During the process use observations and evaluation survey, after the process, use individual follow-up interviews.

Rating system: 0=not at all 3= more or less 6= yes 7=exceeded expectations

<table>
<thead>
<tr>
<th>Exit Questionnaire</th>
<th>Rating</th>
<th>Specific Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>¿Did you feel that the information collected and used was complete and accurate for the task at hand?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>¿Did you participate in these activities on your own free will?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>During the activities, ¿were alternative perspectives welcomed and discussed?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Question</td>
<td>Answer</td>
<td></td>
</tr>
<tr>
<td>-------------------------------------------------------------------------</td>
<td>--------</td>
<td></td>
</tr>
<tr>
<td>¿Were there opportunities to reflect upon, and question, yours or others’ presuppositions (i.e. pre-existing assumptions)?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>¿Do you feel that you had equal opportunity to participate in the activities and the process in general?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>¿Were you able to assess arguments in a systematic way and accept collectively-reached decisions as valid?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>¿Did you feel that the activities were participatory and that information was shared amongst the participants rather than just being received by the participants?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>¿Was the language used and content of the activities situated in your reality?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>¿Did discussion encourage you to reflect on your ideas and on larger social issues?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>¿Do you think that the participants and the facilitator participated in a meaningful way in the discussions and activities?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Generally, ¿were discussions focussed on problems posed over the course of the CBSEA?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>¿Did the activities help you research problems posed during the CBSEA?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>¿Was the learning setting active and inter-active?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>¿Did this process rely on a action-reflection-action learning cycle?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>¿Were you able to set clear, useful, and realistic goals for the CBSEA process?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>¿Did you achieve your goals?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>¿Was the WMAP Phase II described in enough detail to be able to do a meaningful impact assessment?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>¿Was the information collected for the “base-line data” grounded in your knowledge and experiences?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>¿Was this information sufficient to do the impact assessment?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>¿Were you able to successfully assess the potential impacts of the WMAP Phase II on your community?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>¿Were you able to identify key communal concerns?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>¿Did you create a satisfactory community action plan?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>¿Were you able to negotiate a community action plan in conjunction with ICE and government officials?</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Appendix E: First CBSEA Meeting Information Sheet

This information sheet was given to people who were present at the first CBSEA meetings in both watersheds.

Evaluación Comunal de un Programa Agro-Conservacionista Propuesto Para la Región de Sarapiquí

Yo (Laura Sims) estoy desarrollando una metodología participativa para que las comunidades puedan aportar al desarrollo de programas ofrecidos a la comunidad. Estamos utilizando el programa agro-conservación del equipo manejo de cuenca del ICE como ejemplo, estamos evaluando para potencial los impactos positivos y disminuir los impactos negativos. A través de una evaluación de impactos del programa propuesto, la comunidad va a tener la oportunidad de re-alimentar al ICE (manejo de cuenca) y de aportar al programa para que sea más ajustado a sus necesidades y a la visión que tiene para su comunidad. Este proceso nos abre un espacio donde podemos envisionar su futuro y invitar a otros actores de la cuenca de colaborar en la realización de esta visión.

Objetivo de este proceso: Desarrollar un proceso participativo que les facilite evaluar los impactos del programa propuesto para que tengan una voz en el desarrollo de estos planes ofrecidos a la comunidad.

Resumen del proceso: Este proceso participativo le permitirá al equipo del plan de manejo de cuencas del ICE Sarapiquí compartir la visión que tienen para el futuro del programa agro-conservación y permitirá a los participantes aportar en el desarrollo del mismo.

Primera Reunión (una tarde):
1) El ICE (Equipo Plan de Manejo de Cuencas) va a explicar su visión para el futuro del programa agro-conservación.

Segunda Reunión (un día completo):
2) Los participantes van a evaluar el programa propuesto.
3) Los participantes de las comunidades van a desarrollar una visión para la comunidad según sus necesidades y su visión para el futuro de la comunidad.

Tercera Reunión (una tarde):
4) Los participantes y el ICE (Equipo Plan de Manejo de Cuencas) van a tener la oportunidad de compartir y coordinar áreas de colaboración entre el programa agro-conservación y la visión comunal. Se invitará a otros actores como el MAG, MINAE, INA etc. para discutir, aportar y colaborar.
5) Los participantes y el ICE (y los otros actores si es apropiado) van a tener la oportunidad de desarrollar un plan de acción conjuntos.

NB: ¡En cada reunión siempre vamos a tener muy buena comida para facilitar en los pensamientos!

¡¡Mil gracias por su presencia y participación en estos talleres, lo aprecio muchísimo!!
Appendix F: The Plan for the CBSEA Workshops

What follows is a description of what was planned for the CBSEA workshops. The plan for the first workshop was as follows:

5 – 5:30 Welcoming people to the meeting
Participants were to arrive at the meeting hall, I intended to greet them, make them name tags, and offer them coffee and snacks.

5:30 – 6:00 Introductions and explanation of the CBSEA process
I intended to start the meeting by introducing myself and having them introduce themselves. Then I wanted to go into more detail as to who I am, what I am studying, and where I get my funding (SSHRC, ACCS, Research funds). This was to be followed by an explanation of the CBSEA process [including what the process is, a hand out that summarizes the process, my objectives, the reason behind the CBSEA process and the importance of participating in a CBSEA] and why Costa Rica had been chosen for this case study. Finally, I wanted to explain what participating in a CBSEA would look like (attending four half-day workshops), what supports I had for facilitating participation (money for: transportation, day labourers, and food), and what I would do with the results (return them to the participants once I had finished, publish them in journals and my thesis).

6:00 – 6:30 Visioning for the future and setting objectives for the CBSEA process
I planned to have participants work in small groups of around five people and ask them to envision the future (between five – ten years) for their community according to their needs. A goal would be to set possible objectives that are economically, socially and environmentally sustainable. Groups would then be asked to evaluate which ideas were the most important in order to realize a sustainable future for their community. These ideas would then be shared with the whole group.

6:30 – 7:45 Explaining the proposed programme and answering questions
The proponent (ICE) was to present their proposed agro-conservation programmes, the WMAP Phase II, with the major components of the WMAP Phase II listed on posters. The explanation was to be followed by questions from the participants to clarify aspects of the programme.

7:45 Planning the dates, times, and locations for the following meetings

53 See Appendix E for copy of the hand out.
After the ICE's presentation, I wanted to briefly re-explain what the CBSEA process would include and invite the people present to participate in it. With those who were interested in participating in a CBSEA, we could choose dates, times, and locations for the workshops according to their schedules.

8:00 Serve dinner

At both the Sarapiquí and Reventazón meetings, a delicious typical Tico meal was to be served following the meeting.

The plan for the second workshop was as follows:

Introduction:

In the introduction, the general goal for the workshop (i.e. to give their opinion on the proposed programme and add alternative components they believed should be there) and the CBSEA (i.e. to vision a better programme and then do an impact assessment of the different components of said modified proposed programme) were to be explained; then, the essential components of ICE’s proposed WMAP Phase II were to be re-iterated and/or clarified.

Step I

In this workshop, participants were to visualize what they would like to see in this programme for the next 3/5 years. Participants were to be asked: At first impression, what do you think of this WMAP Phase II proposed programme and the list of projects included in the programme? Should these continue? Do you agree with this vision? How would you modify it? Currently, how is the programme being implemented and how would you improve this? When do you want to reassess the programme (i.e. do another CBSEA?)

After these initial impressions of the proposed WMAP Phase II were given, participants were to be asked to take the individual components (e.g., biodigestors) and to assess how they would like these integrated (or not) into their community (e.g., 10 in the community or more?).

Step II

Focussing on ICE’s proposed WMAP Phase II, Participants were to be asked: What other things would you like to see as part of ICE’s programme? (List them all.)

At the end of Steps I and II, participants should have had an understanding as to what ICE was proposing and how the community would like to modify that proposal. In order to prepare for the following meeting, participants were to be asked to think of what potential impacts these components would have.
The plan for the third workshop was as follows:
Initially, the entire group of participants was to do an impact assessment of more biodigestors in the community. This was meant to help participants learn the process of how to think about the impacts of programme components. Then, the participants were to break off into smaller groups to assess the impacts of the rest of the components. Finally we were to come together as a whole again and explore each of the components in more depth. At this time we also were to create mitigation strategies to minimize what we considered the most significant negative impacts. In the full group, each smaller group was to be able to share the ideas about impacts that they had come up with and together new ideas were generated.

The actual plan for the final meeting was as follows:

*Introductions of everyone in the room and summary of the original purpose.*

At the beginning of both of the final meetings, I wanted all of the participants (ICE, regional institutions, and farmers) to introduce themselves. This was to be followed by a summary of the original purpose of the CBSEA and a few brief impressions. I wanted to explain that participating in the CBSEA had been a big learning experience for me and for the communities. I intended to remind them that everyone had wanted to try out the process for a variety of different reasons: perhaps ICE had wanted feedback from farmers on their proposed WMAP Phase II; perhaps ICE had wanted to try out a CBSEA as a new participatory tool; perhaps ICE had wanted to try a process facilitated by an independent outsider; and/or perhaps the communities had wanted to participate in activities that would facilitate the sustainable development of their communities. I then wanted to re-cap the purpose of a CBSEA.

*Present the Modified Proposed WMAP Phase II Including the Assessed Alternatives*

As the modified proposed WMAP Phase II was being presented to the proponent and to the other regional representatives, it was to be explained (either by myself or by a community representative) that the assessment process had allowed participants to build a more solid and informed list of components that they argued should be part of the proposed WMAP Phase II. Also, that it was important to look at more than just the list of components proposed, mitigation strategies and the impact assessment also had to be taken into consideration.

*Reaction from ICE and the opportunity to question and discuss*

Following the presentation of the modified proposed WMAP Phase II, ICE was to be given the opportunity to react, ask questions of the participants and discuss the
CBSEA process. This time was meant to be an opportunity for participants and ICE representatives to engage in constructive dialogue focussing on the process and the results of the CBSEA.

*Decide what to do next*

At the end of the meeting, it was to be established what should be done next, this could include the creation of an implementation plan and, even if the proposed WMAP Phase II programme stayed the same, it would still be necessary to do an impact assessment at a project level.
Appendix G: Summary of CBSEA Sarapiquí Results Given to Participants

This summary of Sarapiquí results was given to the all Sarapiquí participants at the last meeting.

Resumen Para la Ultima Reunión de la Evaluación de Impactos de un Programa Propuesto

San Miguel de Sarapiquí, 23 de febrero, 2006 a las 5 de la tarde

Este es un resumen de las evaluaciones de impactos y de los programas propuestos modificados desarrollados en las comunidades de San Miguel-Río Cuarto, Ujarrás-Cariblanco, y Colonia Virgen del Socorro.

Descripción de una Evaluación de Impactos de un Programa Propuesto: Evaluar que es el programa que están proponiendo y mejorararlo añadiendo componentes que tienen que estar a dentro

Objetivo del proceso: Tener una mejor comprensión de los impactos que va a traer el programa que les ayudarán a priorizar que acciones desean tomar.

Aspectos muy positivos del proceso:

En general, había gran interés en participar, hasta que en 2 comunidades ellos han organizado las reuniones ellos mismos. En total había 33 adultos que participaron (19 hombres y 14 mujeres) y 8 niños.

Todas las comunidades me decían que se sentían que han aprendido algo a través de participar en estos talleres.

Todas las comunidades pensaron que lo que estaban haciendo (una evaluación de impactos de un programa propuesto) era útil e importante y que quieren la oportunidad de hacerlo otra vez en el futuro (entre 2 o 3 años) para este programa y también con otros programas que están entrando en la comunidad.

Fase 1 de la Evaluación: Comprender lo que está ofreciendo como programa propuesto y mejorararlo

Etapas 1: Comprender lo que está propuesto y mejorararlo

Los objetivos del Programa Agro-Conservación son de disminuir erosión y contaminación en la cuenca

El programa propuesto agro-conservación del ICE equipo manejo de cuenca en colaboración con el MAG es:
La primera pregunta fue: ¿Qué opinan de este programa? ¿Cómo mejoraríamos el programa propuesto? Los comentarios fueron:

Las comunidades pensaron que es muy importante continuar con el programa agro-conservación porque de preservar el ambiente es muy importante y que es la responsabilidad de todos (comunidades e instituciones) de trabajar en esta línea y de conscientizar a la gente. Todos estaban de acuerdo que la erosión y la contaminación son problemas serios.

**Comentarios generales sobre el programa propuesto:**
- Algunos participantes eran satisfechos con el programa propuesto.
- Los participantes pensaron que hay que haber más alternativos realistas para los desempleados y que las comunidades y el ICE tienen que sacar beneficio del programa ofrecido.
- Con el PH Cariblanco, habían personas que pensaron que las comunidades tienen que recibir un % de los ingresos del PH (puede ser en forma de inversión). Es muy importante que la comunidad conozca sus derechos abajo del Estudio del Impacto Ambiental PH para ver a qué tipos de inversiones tienen el derecho.

**Comentarios sobre los proyectos:**
- Continúa con lo que ya tiene, de aumentar la cantidad de biodigestores es algo bueno.
- Hay pocas opciones, estos son para algunas personas pero no para todos... algunos proyectos sí se puede adaptar a mucha gente en la comunidad como las flores o hortalizas.

**Comentarios sobre la implementación:**
**Acceso:** Este programa de agro-conservación está ofrecido a solamente algunos tantos y acceso tiene que ser más generalizada.

**Análisis de la comunidad:** Hay que analizar las diferentes fuentes de contaminación en la comunidad (incluyendo la basura y estudiar otras opciones para arreglarlo como el compost y el reciclaje).

**Proyectos comunales:** El ICE tiene que apoyar proyectos comunales y no solamente enfocarse al nivel de la finca. Hay que traer otras instituciones para poder desarrollar proyectos comunales y facilitar la colaboración institucional para realizar proyectos.
Clarificación: Necesita aclarar los papeles del MAG y el ICE, el ICE tiene que ser más claro en lo que está ofreciendo. Hay que haber acceso a las personas responsables a quien se puede hablar (que no mandan los peones para hablar con la gente).

Seguimiento: Debe tener mejor seguimiento al nivel de los proyectos como los biodigestores y también con las capacitaciones. En todos pasos del proceso debe tener buena asesoría técnica.
-Hay que ofrecer un programa completo que incluye la parte comercialización…ese incluye poniendo las comunidades en contacto con instituciones que pueden ayudarles al nivel de los recursos.

Planificación: Debe tener un buen proceso de planificación antes de implementar los proyectos al nivel de la finca. Los participantes quieren conocer las opciones que están ofreciendo a dentro del programa y quieren la oportunidad de desarrollar un plan de manejo para sus fincas con asesoría técnica (este incluye hacer un plan de manejo para la finca con el productor; hacer un análisis de suelos que viene con el estudio y tener recomendaciones para mejorar la condición del suelo). Parte de una buena planificación puede incluir giras a otras fincas o zonas para ver otros ejemplos.

Prioritizar áreas de implementación de proyectos: Debe priorizar la instalación de los proyectos al nivel comunal según las necesidades de los productores interesados y también tomando en cuenta las necesidades ambientales de la comunidad.

Capacitaciones:
Hay que ofrecer capacitaciones que son según los intereses y necesidades de los agricultores pero también que son flexibles y según sus horarios. Hay que hacer las invitaciones de una manera más generalizadas (no solamente a un grupo en específico), con buena anticipación, y de ser muy claro de ¿cuándo es?, ¿dónde está? y de ¿cómo?. También, asegura que los maestros son bien capacitados en los temas que están enseñando (que conocen muy bien la zona en particular).
-Continúa de dar capacitaciones en los temas ya ofrecidos porque son muy importantes.
-Para comunidades muy chiquitas como Colonia Virgen del Socorro tiene que ser más flexibles en la cantidad de participantes que tienen que tener.

<table>
<thead>
<tr>
<th>Capacitación en:</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>-comercialización</td>
<td>-aprender explotar el negocio de las lombrices</td>
</tr>
<tr>
<td>-cosas ambientales como sobre filtros verdes para el agua</td>
<td>-aprender organizarse y montar un negocio</td>
</tr>
<tr>
<td>-viveros</td>
<td>-como cuidar la tierra con fertilizante orgánico</td>
</tr>
<tr>
<td>-orquídeas/hortalizas</td>
<td>-Agro-turismo como fuente de ingresos</td>
</tr>
<tr>
<td>-compost</td>
<td>-talleres de mantenimiento para la maquinaria en la finca</td>
</tr>
<tr>
<td></td>
<td>(para ser más auto-suficientes)</td>
</tr>
<tr>
<td></td>
<td>-Agro industria</td>
</tr>
</tbody>
</table>

Evaluación de Impactos del Proproma Propuesto Agro-Conservación: Las comunidades quieren hacer otra evaluación del programa propuesto agro-conservación en algunos años, en Virgen del Socorro quieren hacerla en 2 años, en San Miguel/Río Cuarto y Cariblanco/Ujarrás quieren hacer una evaluación en 3 años. En San Miguel/Río Cuarto quieren hacer reuniones anuales para ver como van y para motivar a la gente.
Etapas II: Enfocándose en el programa de agro-conservación...¿Qué otros componentes quieren ver como parte del programa?

**Proyectos**

**Capacitaciones:**

Hay que haber capacitaciones en:

| -hidroponia | -capacitación para que pueden instalar un biodigestor ellos mismos |
| -invernaderos | -manejo de desechos en los hogares. |
| -viveros (árboles apropiados para la zona) | -certificado de finca (orgánica) |
| -Diferentes cultivos (ornamentales y pastos) | -computación (para desarrollar negocios agrícolas) |
| -abono orgánico (otras posibilidades) | -como montar un negocio |

| -comercialización | -turismo |
| -inglés adecuado a sus necesidades y situación (negocio y turismo) | -guía turística |
| -recurso para desarrollar el pueblo (capacitación) |

**Erosión:**

Reforestación (con árboles apropiados por la zona).

Hay que haber acceso, capacitación, y seguimiento en árboles frutales, árboles que traen a los animales, y árboles para la madera. Quieren capacitación en cómo hacer y mantener un vivero local.

**Pasto de Corta:** Hay que haber más información y acceso a las semillas para el pasto de corta, sobre todo el pasto de corta que no utiliza una picadora. Para ayudar con la picadora puede ofrecer préstamos o financiamiento a largo plazo.

**Plantas forajeras** (con ayuda para la picadora) como moreno, nacedero, creatilia, badero negro, poró, suco, gabilana, maní forajero

**Manejo de Desechos:**

**Reciclaje:** Centro de acopio de desechos cerca de las comunidades.

**Otras fuentes de Ingreso:**

NB: Muy importante para los tiempos difíciles y para los empleados del PH que van a perder sus empleos.

**Cultivos diversos** (tienen que ser cultivos apropiados por la zona):

Ejemplo: Explorar los mini-vegetales, caña de azúcar

**Agro turismo:** Promover intercambios; promover la comunidad como una comunidad sostenible; promover extranjeros llegando aquí para trabajar y compartir gratis (o para vivir en una finca)

**Implementación**

**Buena Asesoría Técnica**

Hay que haber estudios sobre el mercado y comparten esta información con la gente -facilitar y agilizar trámites
Proyectos específicos que salieron de las reuniones que diferentes comunidades desean desarrollar:

En Colonia Virgen del Socorro: Turismo - Tiene que ser un desarrollo sostenible (NB: Hay que tener una balance entre las fuentes fijas como la producción de leche y el turismo)

Primero hay que definir qué tipo de turismo quieren explotar:
- Eco-turismo: turistas que vienen para ver los pájaros, el bosque, andar en bicicleta, tours en caballo, pesca de trucha o tilapia)
- Agro-turismo: aprender como manejar una finca, ordeñar, etc.

Dónde comenzar para realizar este proyecto comunal:
- Analizar los recursos que tienen ya (bosque, una comunidad muy chiquita, qué más ??)
- Desarrollar un plan comunal
- Decidir cómo desea participar cada familia en la comunidad (ej: gente que tiene caballos puede utilizarlos para los turistas, la gente que cultiva vegetales puede vender a los que preparan la comida, etc.)
- Unión comunitaria es muy importante
- Guarda-bosque como protección de los animales (MINAE o ICE)

Capacitaciones necesarias
- Inglés
- Guía turística y/o capacitar a alguien en la zona
- Como organizar para trabajar juntos
- Como ser socios
- Como montar un negocio

Ujarrás-Cariblanco Parque comunal...a dentro de este parque hay muchas partes
- Agro-turismo
- Quesera
- Local educativo donde los niños pueden quedarse un año más para estudiar
- ICE PH compraria el terreno
- Una fábrica de champú local (utilizando plantas locales)
- Jardín botánico (capacitación en plantas medicinales)
- Mariposario
- Tienda y taller de artesanía local
- Vivero para la comunidad
- Comité local puede desarrollar eso con buena capacitación y asesoría técnica
- Un restaurante con comida de la misma comunidad y utilizando biogas y lombricompost para los desechos.

También importante pero quizás al lado del un programa agro-conservación:
- Mejora de infraestructura, arreglo de caminos; edificaciones

Fase II Evaluación de Impactos del Programa Propuesto Modificado
Analizamos los Programas Propuestos Modificados para ver qué impactos (negativos y positivos) van a traer los diferentes componentes/ideas/elementos. Evaluamos los impactos ambientales, sociales y económicos de cada componente. Lamentablemente, no tuvimos bastante tiempo para hacer todos los componentes en todas las comunidades.
pero tratamos de hacer los componentes más importantes y también los que fueron específicos por una comunidad en particular. La razón tras ésta actividad es de maximizar los beneficios y minimizar los impactos negativos.

Todos comenzamos con los biodigestores porque es algo muy concreto. (En azul/italic son las mitigaciones que sugerieron para minimizar los impactos negativos)

**Más biodigestores:**
5 más en la comunidad Virgen del Socorro en los próximos 3 años, ya hay 3 así todos tendrían. En Ujarrás Cariblanco 24 más en los 3 años siguientes.

<table>
<thead>
<tr>
<th>Ambientales</th>
<th>Económicos</th>
<th>Social</th>
</tr>
</thead>
<tbody>
<tr>
<td>+menos contaminación en los ríos y quebradas +más aprovechamiento de recursos en la finca</td>
<td>+ economía de gastos (gas, electricidad, fertilizante) +menos transporte (al nivel individual y comunidad) +mano de obra es igual porque tiene que hacer esta tarea de cualquier manera así porque no aprovechar de los desechos -más trabajo (pero hay beneficio) -cuesta entre 40 000 colones y 80 000 colones (pero se economiza con el ahorro de comprar gas) <em>(financiamiento a largo plazo, vender el afluente, comprar por mayor cantidad)</em></td>
<td>+no hay que ir a buscar el tanque +es algo educativo para enseñar como cambiar un desecho a un recurso y también para conscientizar la gente en la protección ambiental +no hay peligro que va a explotar +menos olor +crea independencia del mercado global y de las fluctuaciones en precios de gas +más auto-suficientes (menos dependencia sobre los consorcios económicos)…este da una gran satisfacción de vida +siempre tiene gas +gas crudo huele pero menos que el propano +menos moscas en la finca +más seguro +más bonito porque no se ve el tanque en la cocina -hay que tener cuidado cuando está lleno ¡porque tiene mucho gas! -Hay que esperar mucho para instalar a uno <em>(Capacitar a equipos que pueden instalar a los biodigestores para que puedan ser más independientes)</em> +más limpieza en el jardín y en la casa</td>
</tr>
<tr>
<td>-si no se usa el afluente se vuelve en contaminante <em>(usalo o regalalo a un vecino)</em></td>
<td>-menos productos químicos usados +más afluente (fertilizante) sirve de abono orgánico (abono foliar) -el afluente es bueno para la tierra pero quizás en estas cantidades no sabemos el impacto que va a traer <em>(hay que evaluar el afluente para asegurar que más afluente no va a dañar al ambiente así hacer un análisis del afluente)</em> +re-generando la tierra +menos uso de leña +menos uso de propano +menos transporte que significa menos peligro, menos contaminación, menos ruido, menos humo (no hay que transportar los tanques a la casa o de afuera al pueblo) +menos transporte así cuesta menos -hecho de plástico se rompen y contaminan <em>(reciclarlo o re-utilizarlo)</em></td>
<td>-no hay que evaluar el afluente para asegurar que más afluente no va a dañar al ambiente así hacer un análisis del afluente)</td>
</tr>
</tbody>
</table>
para otra cosa)
-no saben si el gas
contamina o no
+no hay humo en la casa
-poca gente puede tener
un biodigestor (hay que
tener animales semi-
estabulados)
+ahorrar corriente
electrica
+aprovechar más los
recursos naturales que ya
se encuentra en la finca
+biogas contamina menos
que propano
+menos moscas

NB: Hay que hacer un
estudio de la finca para ver
quien está contaminando
mucho y facilitar con un
préstamo a ellos para que
puedan montar uno; no hay
que dar gratis si no la gente
no va a apreciar y van a
dejar arruinar

NB: Hay que explorar otros tipos de biodigestores que tienen una vida útil más larga

Reforestación (con árboles apropiados para esta zona=hay que preguntar a Laura del
PH Cariblanco)

<table>
<thead>
<tr>
<th>Ambiente</th>
<th>Económico:</th>
<th>Social</th>
</tr>
</thead>
<tbody>
<tr>
<td>+evitar la erosión</td>
<td>+puede ser muchos árboles plantados o pocos (al nivel de una finca)</td>
<td>+dar sombra</td>
</tr>
<tr>
<td>+dar alimentación para humanos y animales</td>
<td>-costo (árbol y la cerca arededor de la cerca)</td>
<td>+valor esético</td>
</tr>
<tr>
<td>+producen frutas frescas y gratis</td>
<td>-sacificar terrenos para árboles</td>
<td>+más animales y pájaros</td>
</tr>
<tr>
<td>-hay que haber árboles para la zona que crecen bien (sembrar árboles que las hormigas no comen, viveros con semillas de aquí, chequear estudios que Laura del ICE PH tiene)</td>
<td>+si pagaban incentivos (pero no lo hacen)</td>
<td>+reforestando genera más conciencia y más respecto al ambiente y para la protección ambiental...ahora hay más conciencia que antes.</td>
</tr>
<tr>
<td>+dar protección a los animales</td>
<td>-turismo genera más plata</td>
<td></td>
</tr>
<tr>
<td>+se puede plantar para cortar (madera)</td>
<td>-no hay que sembrar donde hay ganado (pasto no crece bien donde hay sombra)</td>
<td></td>
</tr>
<tr>
<td>+pulmones para el ambiente</td>
<td>+hay que tener beneficio económico (madera- adromaria y cercas vivas)</td>
<td></td>
</tr>
<tr>
<td>+conservación de aguas</td>
<td>-algunas semillas cuestan mucho y otras poco</td>
<td></td>
</tr>
<tr>
<td>-no es fácil conseguir los árboles (sobre todo los frutales) (viveros y ayuda para hacerlo)</td>
<td>-se necesita asesoría técnica (capacitación y acceso a un técnico)</td>
<td></td>
</tr>
<tr>
<td>+con más árboles hay más pájaros y mamíferos</td>
<td></td>
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</tbody>
</table>

NB: -El ICE se enfoque a reforestar al lado de los ríos
Hay que conocer las leyes alrededor de la reforestación para saber cuales son las limitaciones.
-El ICE podría dar árboles para sembrar ahora y también capacitar a la gente en los viveros para el futuro.

**Pasto de Corta: Capacitación y Plantar**
(no hay que cortar: imperial, mulato; hay que cortar: king grass)

| Con el king grass hay que tener una picadora (financiamiento a largo plazo) y también se usa más electricidad | Mejora el ambiente (fotosíntesis) |
| -se puede manejar más animales en menos terreno = más ingresos | -hay que tener animales semi-estabulados |
| -más trabajo, es más carga al animal por producción | +tiene varias funciones para alimentar los animales para abono y otros |
| -de cosechar pica la piel | +evita la erosión |
| +se puede poner en silaje | +se puede utilizar los desechos como abono |
| | -costo de las semillas (el ICE puede dar las semillas para la primera cosecha o conseguir las mejores) |

**NB: Antes hay que analizar el suelo para ver que va a funcionar**

**Agro-Turismo**

| Mejor ingresos $§ a la comunidad | Más tráfico |
| - intercambios de ideas y costumbres, la comunicación al nivel internacional | -hay que tener algo especial o la gente no viene |
| -enfermedades | -el costo para desarrollo proyectos al nivel que sean realmente una atracción |
| +capacitación: curso de hotelaria, las necesidades del turista; cursos de inglés según sus necesidades y sus horarios (aumentar con ICT y INA) | -no poder ofrecer los servicios que ellos demandan |
| +mejor aprovechamiento de los recursos humanos y naturales | +ayuda a mantener la cobertura borcera (?) |
| | +nuevas fuentes de trabajo |
| | +evita la emigración |
| | +generar colaboración comunal. |

**Viveros: árboles frutales y un vivero al nivel familiar o por el lugar**
(solamente analizamos en San Miguel -Río Cuarto)

| Tener un vivero es rentable porque gente compra árboles | Más costo (pero genera ingreso también) |
| +produce alimentos para humanos y animales | +capacitación gratis |
| +atracción turística | +se puede trabajar con materia orgánica |
| -más trabajo y tiempo (mitigación: 2 familias juntas pueden colaborar o con una persona de intercambio puede aliviar la cantidad de trabajo) | + que atrae otros a la comunidad y eso puede generar buenas relaciones entre comunidades |
| | + publicidad y difundir que tiene el vivero (costo pero trae a la gente) |

**Desafío: se necesita un técnico capacitado de la zona**

La lista que sigue son temas que miramos en las diferentes comunidades pero no hicimos todos los componentes en todas las comunidades. En Ujarrás-Cariblanco, por
falta de tiempo, solamente pudimos analizar en grupos chiquitos lo siguiente pero aquí están los resultados.

**Capacitación: comercialización** (Curso y Seguimiento)

<table>
<thead>
<tr>
<th>Beneficio</th>
<th>Costo</th>
</tr>
</thead>
<tbody>
<tr>
<td>+garantiza mejor comprensión del mercado</td>
<td>-costos públicos si ICE y MAG tienen que dar eso</td>
</tr>
<tr>
<td>-ahora las capacitaciones tienen un enfoque institucional y no un enfoque al productor no tienen que ser honestos y franco en que conocen y que no conocen</td>
<td>+mejor venta de productos</td>
</tr>
<tr>
<td>+una capacitación en comercialización es positivo porque toda la información puede ser generalizada a toda la gente</td>
<td>+más auto-suficiencia</td>
</tr>
<tr>
<td>+ganancias obtendría el agricultor …$</td>
<td>-quizás va a hacer una competencia entre comunidades (educación y capacitación pueden evitar eso y un espíritu de colaboración)</td>
</tr>
<tr>
<td>+a través de capacitación pueden desarrollar y aprender sobre empacadora para nuevos cultivos</td>
<td>-acceso al curso es limitado o puede estar en otro pueblo</td>
</tr>
<tr>
<td>-gente solamente pensando en plata puede perjudicar la tierra o lo social.</td>
<td>+una comunidad capacitada en la comercialización ayuda a mejor desarrollar proyectos comunales</td>
</tr>
<tr>
<td></td>
<td>-se necesita asesoría técnica</td>
</tr>
<tr>
<td></td>
<td>+neutral para el ambiente <em>(quizás positivo si es para un desarrollo de negocio sostenible)</em></td>
</tr>
</tbody>
</table>

**Capacitación: hidroponía** (la Universidad de Costa Rica puede ayudar en eso). (solamente analizamos en San Miguel- Río Cuarto)

<table>
<thead>
<tr>
<th>Beneficio</th>
<th>Costo</th>
</tr>
</thead>
<tbody>
<tr>
<td>+se puede producir mucho en poco terreno</td>
<td>+ se puede cultivar productos extraordinarios en la zona (cosas que normalmente no funcionan bien)</td>
</tr>
<tr>
<td>+tener comida muy cerca (menos tráfico en la zona)</td>
<td>+conocer otra manera de cultivar</td>
</tr>
<tr>
<td>+ la comida no se contamina con bichos</td>
<td>+se puede tener menos animales en la finca porque tiene otra fuente de ingresos (así produce menos contaminantes)</td>
</tr>
<tr>
<td>+mucho más sano</td>
<td>-hay que hacer una gira para ver un ejemplo verdadero (es difícil organizar y costoso)</td>
</tr>
<tr>
<td>+más variedad en la dieta</td>
<td>+fuente de ingresos para los que están trabajando y saliendo del PH Cariblanco.</td>
</tr>
<tr>
<td>+menos trabajo que cultivos normales</td>
<td></td>
</tr>
<tr>
<td>+no hay químicos</td>
<td></td>
</tr>
<tr>
<td>+es un negocio rentable pero es costoso para comenzar</td>
<td></td>
</tr>
</tbody>
</table>

**EM** (solamente analizamos en San Miguel -Río Cuarto)

<table>
<thead>
<tr>
<th>Ambiente</th>
<th>Económico</th>
<th>Social</th>
</tr>
</thead>
<tbody>
<tr>
<td>+micro organismos que degrada la composición</td>
<td>-costo</td>
<td>-no huele</td>
</tr>
<tr>
<td>+se puede producir y reproducir</td>
<td>+más barrato que otras soluciones</td>
<td>-no hay moscas</td>
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<tr>
<td></td>
<td></td>
<td>+es fácil hacer</td>
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</tbody>
</table>

**Plantas forrajeras** (solamente analizado en Ujarrás -Cariblanco en grupos chiquitos)

<table>
<thead>
<tr>
<th>Beneficio</th>
<th>Costo</th>
</tr>
</thead>
<tbody>
<tr>
<td>+que hay plantas nativas</td>
<td>+desechos como abono</td>
</tr>
<tr>
<td>-no tener recursos para la picadora</td>
<td>+se elimina parte del gasto en compra de los concentrados por producción</td>
</tr>
<tr>
<td>+sirven como reforestación</td>
<td>+más empleo</td>
</tr>
<tr>
<td>+mejora los suelos</td>
<td>-necesita una picadora</td>
</tr>
</tbody>
</table>
**Capacitación en manejo de desechos** (solamente analizado en Ujarras Cariblanco en grupos chiquitos)
+ que se aprovecha de todos los recursos en la finca

**Certificación de finca** (orgánico) (solamente analizado en Ujarras Cariblanco en grupos chiquitos)
+ evita la contaminación
- no tener los medios para certificar la finca

**Turismo** (solamente analizado en Virgen del Socorro)

<table>
<thead>
<tr>
<th>Ambiental</th>
<th>Económico</th>
<th>Social</th>
</tr>
</thead>
</table>
| +mejorar conservación ambiental porque el enfoque del desarrollo tiene un enfoque sobre el ambiente  
+mejorar las calles (positivo porque el transporte es más fácil y significa más ingresos pero negativo porque más facilidad para los cazadores, los ladrones, gente que corta árboles, y hay más contaminación) (escoger con cuidado los turistas que quieren atraer a su comunidad; organizarse para prohibir los cazadores; escoger las calles que hay que arreglar; asegurar que son trabajadores responsables que hacen el trabajo)  
-va a generar desechos  
-hay turistas que van a llevar plantas nativas (explicarles y educarles que hay que solamente tomar fotos, artesanía y productos locales)  
-si hay más transporte hay más contaminación de ruido (sobre todo con los 4X4) | +diversidad de ingresos  
+más ingresos  
+mayor empleo y diversidad de empleo  
-gasto de recursos y nadie llega  
-los turistas no compran en la comunidad (hay que darles algo a comprar y a hacer; quitarse el carro y la necesidad de ir afuera; ofrecer paquetes todo incluido)  
-si hay gente en la comunidad que solamente están pensando en la plata quizás van a hacer acciones que pueden perjudicar a lo social o al ambiente.  
-hay que conseguir recursos (comenzar poco a poco; aseguramiento; conseguir préstamos...pueden invitar a diferentes instituciones para discutir, invitar a la institución de turismo costariccense) | +aumentar el nivel cultural de los habitantes  
+la gente de aquí está capacitándose y la educación tiene valor  
+una mejor calidad de vida  
+una mejor comprensión de la comunidad (de la gente al nivel nacional y internacional pero también la comunidad tiene una mejor comprensión de sí mismo)  
+mayor solidaridad (hay que asegurar de llamar a todos para las reuniones comunales)  
+trabajar juntos en un gran proyecto (es muy importante aprender colaborar)  
- tener cuidado con los que vienen (turistas seleccionados; una comercialización bien hecho)  
- las drogas  
+ intercambios culturales (son excelentes si todos son tolerantes y respectuosos pero no tan buenos si los turistas entran con constumbres muy raras ej: fumar marihuana) |
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<tr>
<td>-producción de contaminación <em>(basureros, reclicaje para el parque y quizás la comunidad, compost para desechos orgánicos, lombri-compost, biodigestor y filtros verdes para el restaurante)</em></td>
<td>+atracción turística +creación de fuentes de trabajo +ingresos en la familia +ingresos a la comunidad -falta recursos para desarrollar el parque <em>(hay que buscar en las instituciones para ver cuales son puntos de colaboración; hacer una asociación para tener más voz; capacitación para desarrollar y seguimiento)</em></td>
<td>+Es un proyecto para el futuro y para el presente +presente una oportunidad para trabajar en grupos (es bueno porque el trabajo de grupo facilita a la gente de colaborar, realizar sueños juntos, crear un sentido de comunidad PERO también puede ser complicado porque a veces hay que resolver conflictos o diferentes personas tienen diferentes visiones para el lugar)* <em>(una mitigación es capacitación para saber resolver conflictos y también saber organizarse al nivel de una asociación)</em></td>
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<tr>
<td>+trabajo agrícola orgánica +amigable con el medio ambiente hasta que está aumentando la cantidad de árboles +evita de contaminar +si hay certificado hay más seguridad y más creíble…por ejemplo si venden productos locales en un chiquito mercado -si la gente solamente piensa en plata quisas van a tratar de desarrollar proyectos que pueden perjudicar al medio ambiente. +provechar de todo el terreno para los proyectos +plantas nativas +traer animales silvestres porque les da un lugar donde pueden vivir, comer +más tráfico en la zona de la actividad turística pero al mismo tiempo la gente local puede conseguir mucho más productos al nivel local (fruta, plantas medicinales, vegetales, queso, champú ..etc. y no tienen que ir afuera para comprar)</td>
<td>+diversidad de ingresos para tener másabilidad de aguantar tiempos difíciles. -recursos para animales y para comprar plantas. +atracción turística</td>
<td>+presente una oportunidad para trabajar en grupos (es bueno porque el trabajo de grupo facilita a la gente de colaborar, realizar sueños juntos, crear un sentido de comunidad PERO también puede ser complicado porque a veces hay que resolver conflictos o diferentes personas tienen diferentes visiones para el lugar)* (una mitigación es capacitación para saber resolver conflictos y también saber organizarse al nivel de una asociación)</td>
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<td>+aprovechar de todo el terreno para los proyectos +plantas nativas +traer animales silvestres porque les da un lugar donde pueden vivir, comer +más tráfico en la zona de la actividad turística pero al mismo tiempo la gente local puede conseguir mucho más productos al nivel local (fruta, plantas medicinales, vegetales, queso, champú ..etc. y no tienen que ir afuera para comprar)</td>
<td>+recursos para animales y para comprar plantas.</td>
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**Parque Comunal Ujarrás Cariblanco** (solamente analizado en Ujarrás-Cariblanco)

Tema sobresaliente es que sea amigable al ambiente
Al fin de la evaluación de impactos preguntamos si había componentes que quisieron quitar del programa propuesto y todos han dicho que no. No tuvimos tiempo de realmente discutir que mitigaciones quisieran añadir al programa propuesto.

La pregunta más importante al fin fue: este programa que está proponiendo, ¿ayuda a desarrollar una comunidad más sostenible? En las tres reuniones pensaron que definitivamente porque está diversificando los ingresos pero con el ambiente y la comunidad como prioridades.

En Virgen del Socorro, decidieron continuar en el proceso de planificar su proyecto de turismo comunitario, hay una reunión el 11 de marzo a las 5 de la tarde.
Appendix H: Summary of CBSEA Reventazón Workshops

This is a summary of all the information generated in the Reventazón workshops. It was returned to participants during follow-up interviews.

Resumen de la Información que Salió de las Reuniones en Reventazón

Facilitadora: Laura Sims
28/02/06

Primera Reunión: 8/02/06 de las 5 – 8 pm
36 personas presentes
i) Presentarse
ii) Pensar en los objetivos que quieren cumplir durante este proceso y visualizar el futuro.
iii) ICE tiene la oportunidad de presentar su programa agro-conservación propuesto para los años siguientes

Segunda Reunión: 15/02/06 de las 8 – 12 am
24 personas presentes

Fase 1 de la Evaluación: Comprender lo que está ofreciendo como programa propuesto y mejorarlo

Etapas 1: Comprender lo que está propuesto y mejorararlo

Los objetivos del Programa Agro-Conservación son de disminuir erosión y contaminación en la cuenca.

El programa propuesto ganadería agro-conservación del ICE en colaboración con el MAG es:

Lo que ofrece el ICE Programa Agro-Conservación:
10 fincas pueden entrar en su programa ganadería cada año por los 3 años que siguen (en Santa Cruz)
5 fincas pueden entrar en su programa ganadería cada año por los 3 años siguientes (en Pacayas).
15 fincas pueden entrar en su programa árboles frutales cada año por los 3 años siguientes (en Pacayas)

| Semi-Estabulado: Parte del día en un estábulo Establo, Pastos de Corta, | Pasto Corta: Taiwan, | Asesoría técnica: Visitas, giras, días de campo, charlas |
Manejo de Desechos  
+Más alimento en épocas críticas  
+Reducción de Erosión  
camerún, candelaria, otros  
Arbustos Forraje: morera, sauco, macedoro

La primera pregunta fue: ¿Qué opinan de este programa? ¿Cómo mejoraría el programa propuesto? Los comentarios fueron:

En general los participantes están felices con el programa pero había áreas donde se puede mejorar. Trabajamos pensando en los próximos 3 años.

Para la buena implementación del programa y de proyectos sugerieron lo siguiente:

1) Prioritizar los productores que causan mayor impacto negativo.
2) Planificación de finca: Antes de implementar los proyectos en las fincas hay que haber un plan de manejo al nivel de la finca y el mapa se queda con el productor con un análisis de suelos, además el agricultor puede tener el mapa por un tiempo para pensar y después visitar otra vez con el ingeniero agrónomo…para el análisis de suelo el ICE puede ayudar en el costo, también en el análisis y un plan para mejorar el suelo.
3) Establecer organización:
   -comercialización
   -industrialización
   -plan de siembra al nivel comunal
4) Mejor plan de seguimiento (ICE – MAG) y más seguimiento a las puerquierizas y facilidad de ayuda
5) Capacitación: *Plan de ____________
   *Seguimiento
   * Como desarrollar un proyecto cuando requiere
6) Mejor asesoría técnica: realmente desarrollar y planificar; técnicos preparados en la zona y que escuchan a los agricultores; capacitar a alguien en la zona.
7) Más igualdad en compartir beneficios que el ICE-JASEC obtienen –incentivos para implementación de los proyectos
8) Establecer centro para intercambios de información (ej: las experiencias de otros agricultores)
9) Sembrar árboles en las cuencas que alimentan la fauna de la zona

Etapa II: Enfocándose en el programa agro-conservación…¿Qué otros componentes quieren ver como parte del programa?

Identificación de nuevos proyectos aceptables para el ICE:
Características necesarias:
*protección del medio ambiente
*prevenir erosión
*prevenir contaminación del agua
*protección de la vida silvestre
Proyectos:
1) Incentivar productores orgánicos
2) Diversificación de cultivos y proyectos productivos (cerdos, cabras) con seguimiento; estudiar nuevas opciones.
3) Reforestación que beneficie los corredores biológicos, árboles frutales (por ejemplo: aguacates y duraznos) para Santa Cruz y Torito.
4) Desarrollar incentivos para mantener los proyectos
5) Ayuda económica para la construcción de invernaderos
6) Incorporar un análisis de mercado para un mejor éxito de los proyectos
7) Ayuda para incrementar el agro-turismo (capacitación y económica)
   - intercambios con diferentes zonas
   - capacitación en idioma
   - promover intercambios (nacional e internacional)
   - tours de la finca
8) Promocionar la zona para darla a conocer y dar más valor agregado a los productos del lugar.
9) Pesca deportiva trucha/tilapia
10) Viveros orgánicos de plantas ornamentales y vegetales.

Al fin de esta parte, los participantes tienen que tener una buena comprensión de lo que está ofreciendo el ICE y como las comunidades quieren modificar el programa propuesto.

Para la reunión siguiente, había que pensar en como que impactos iban a traer estos componentes.

Reunión 3: (22/02/06) por la mañana
16 – 20 personas presentes

**Fase II Evalúación de Impactos del Programa Modificado Propuesto**

Analizamos el Programa Propuesto Modificado para ver que impactos (negativos y positivos) van a traer los diferentes componentes/ideas/elementos. Evaluamos los impactos ambientales, sociales, y económicos de cada componente. Lamentablemente no tuvimos bastante tiempo para hacer todos los componentes.

Al comienzo del día había 16 personas trabajando muy fuerte analizando los impactos. Primero miramos los impactos sociales, ambientales, y económicos de un biodigestor y después trabajaron en grupitos para evaluar los proyectos (componentes como: turismo; pesca deportivo; viveros; semi-estabular: pasto de corta y arbustos forrajes; reforestación; diversificación de cultivos y producto). Después evaluamos todos juntos. Finalmente, en grupitos analizaron los otros proyectos que quedaron (asesoría técnica: mejor seguimiento, desarrollar y planificar, técnicos preparados, capacitar a alguien en la zona; establecer organización como comercialización e industrialización; capacitación; oportunidades de intercambio; incentivar adoptación de proyectos).

*(En azul/italic son las estrategias de mitigación que sugerieron para minimizar los impactos negativos)*

**Biodigestores +45 más en la zona en los próximos 3 años**

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<tr>
<td>-¿Qué efecto tiene el biogas sobre la salud? <em>(estudio para ver)</em></td>
<td>-asesoría técnica es un gasto público</td>
<td>+mejor para la salud porque el humo daña los pulmones</td>
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<tr>
<td>+evita la contaminación</td>
<td>+creación de un mercado para productos de</td>
<td>+pueden re-distribuir la electricidad en otras zonas</td>
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<tr>
<td>+ el afluente es fertilizante (analizar cuánto tiene que ser la aplicación para que los cultivos no se quemen, hacer un análisis del afluente para conocer exactamente que es, seguimiento del daño)</td>
<td>biogas= generación de empleos +mayores ingresos (no hay que comprar gas, corriente, fertilizante) +es rentable (sirve 10 a 12 años) +ahorra corriente cuando tienen animales para calentarlos +se reduce la demanda de electricidad sobre el sistema eléctrica que reduce la necesidad de hacer otras plantas hidro-eléctricas -el costo para hacer un biodigestor +puede vender electricidad a lo demás si produce mucho +se puede adaptar a diferentes propósitos +hay que adaptar la cocina -es difícil encontrar hornos que funcionan en gas.</td>
<td>del país cuando va a disminuir la consumación en una zona (más equitables y justa la distribución de electricidad) +mejor satisfacción de vida (la gente con biodigestor tiene un sentido de contribución) +gente convencida que funciona se vuelve promotores del desarrollo sostenible, al nivel comunal hay más colaboración +es muy accesible como tecnología +auto-suficiencia del mercado. +más seguridad en la casa que el tanque no va a explotar -más fácil construirlo con un grupo comunal pero difícil organizarse +educar a la gente (giras, días de campo, compartir experiencias de los agricultores) -¿es inflamables el gas cuando está en el plástico? (educar que hay que tener cuidado, no fumar)</td>
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**Diversificación de cultivos y productos**

(hay que tener estudios de rentabilidad y también para ver si estos productos son apropiados para la zona)

| + menos dependencia en un solo cultivo -sacrificar terreno a esto | + mejor calidad de productos -inversión de tiempo para capacitación +más capacitados en diferentes temas +se puede ir a la industrialización (valor agregado) +abrir nuevos mercados o oportunidades pero aumenta el riesgo (buena capacitaciones) |
| --- | --- | --- |

**Turismo: agro turismo y eco turismo**

| mayor ingresos + fuente de trabajo (capacitación en idiomas) + otros trabajadores vienen para trabajar en | - no contar con lo mínimo al nivel de servicios para darle buen servicio al turista. +el turista va a llegar si piensa que tenga |
la zona
+unión de pueblos (intercambiar culturas y conocimientos; vienen malos elementos como drogas y prostitución) (planifica qué tipo de turistas quiere atraer...ej: familia o fiesta)
+motiva la organización
-cambio en el ambiente social
+mejora de caminos (mejor manera para sacar productos pero mala gente llega, más congestión en las calles)
+se educa a la gente
seguridad (ej: acceso a la comunicación)
-se establece zonas “privados” solamente para extranjeros
-costo de la vida aumenta
+valor de los terrenos aumenta (al nivel comunal es muy negativo)
-restaurantes: los precios suben y los ticos no pueden llegar
+mano de obra llega de afuera
+plan de manejo para el turismo que incluye capacitación y albergues

Se necesita una buena planificación de qué tipos de proyectos desean desarrollar en la zona, un comité local puede ayudar a tomar decisiones o guiar el proceso.

**Semi-estabulación: pasto de corta, arbustos forrajes, biodigestores**
45 fincas
(análisis económico de este sistema)
(análisis de pastos y opciones de pastos que no hay que picar)

| Se necesita planificación a largo plazo | +menos erosión |
| +más animales en menos áreas | -más mano de obra |
| +aprovechar de los recursos en la finca | -inversión en equipo (galarones y picadora) |
| +es todo un sistema | -transporte de pasto |
| +aprovechar de una buena capacitación y asesoría técnica | -aburrido |
| -si no hay buen seguimiento sería un fracaso del lado de la finca y del lado institucional | -necesita buena planificación de la finca |
| +se garantiza más control sobre la comida (ej: ensilar) | -reducción en producción de leche (depende sobre la alimentación) (hacer un estudio para los pastos que dan leche de buena calidad) |
| +mejor control de producción (ej: cuándo sembra, qué sembra) | -seembar arbustos forraje es un proyecto a más largo tiempo |
| +mejor nutrición para ganado | +mejorar la tierra con abono orgánico |
| +se reduce la dependencia en concentrados | -reducción de vida útil de la vaca |
| | +produce fertilizante y le da biogas. |

**Pesca trucha:**
+ análisis para ver si se puede tener según la altura (hay que ver que peces son mejores según las condiciones) (el problema es que cuesta) visitar otros proyectos para ver que funciona.
-hay que tener la gente que llega (hay que comprender el mercado) hacer un estudio de rentabilidad
-mueren fácilmente las truchas
+hay que tener un buen plan de manejo
+hay que publicar lo que está haciendo (pero cuesta mano de obra y plata para hacerlo)
+mayores ingresos
+mayor trabajo
+calidad de vida mejorada
+genera turismo
+una fuente de diversión en la comunidad
- posible contaminación de agua
(tratamiento de aguas para reducir...
Viveros: para sembrar diferentes cultivos; para sembrar árboles

+siembras más sanas  
+mejor ingresos a la comunidad  
+más auto-suficiencia  
+menos fungicidas…mejor salud  
+menos pestes  
+más producción  
+mejor calidad de fruta y cultivos en la comunidad  
+mejor fuente de trabajo  
+más control de la producción…más confiable  

-contamina un montón para limpiar un vivero…este es mal para la salud de todos los animales y la gente (tiene que encontrar una manera a desinfectar orgánicamente, informar al los agricultores)  
+sembrar árboles que vayan con la zona para frutales y el corredor biológico.  
-inversión (costos y tiempo)

Asesoría técnica

Significa:

*Hay que conocer la zona y ser capacitados
*Mejor calidad de recomendaciones: recomendaciones aptas para la zona considerando el tipo de suelos, dar capacitación específica por la recomendación incluyendo costos, producción anual, intervalo en cosechos, intervalo entre reemplazo de siembras, punto óptimo para cosechar.
*Mejorar la calidad de la diseminación de la información
  i) información más balanceada  
    -que dan a todos que necesitan y no solo a unos pocos  
    -que hayan un plan de visitas con una frecuencia adecuada (para que todos reciban el mismo servicio)  
*Calidad: i) que información impartida sea para la zona y dado por técnicos calificados y con experiencia en la zona  
  ii)personas calificadas: calificadas en temas de interés para la comunidad
*Promover mecanismos para facilitar préstamos para ejecutar recomendaciones

-La implementación de una buena asesoría técnica es cara, se necesita muchos recursos.

Todos los participantes pensaron que este programa modificado contribuye al desarrollo sostenible de la comunidad.

Reunión 4 22/02/06 por la tarde
27 personas presentes

Era la oportunidad cuando el proponente, en este caso el ICE, y otras instituciones pueden escuchar la evaluación de impactos que las comunidades han hecho del programa propuesto modificado y reaccionar.

En la reunión en Reventazón habían representantes del MINAE, INA, MAG y del ICE. Un participante, con la ayuda muy constructiva de otros en la aula, presentó el proceso (de la evaluación de impactos) que hicimos y todos los resultados al grupo. Realmente fue super bien hecho. Después, cada institución tuvo la oportunidad de reaccionar a la presentación y de hacer comentarios. En general se enfocaron en que podrían ofrecer como instituciones a las comunidades para que ellos pudieran realizar sus proyectos.
El **INA** (556 6917 extensión 103; 556 49 03; 556 4886 y hablar con José Quesada Pacheco) decía que podría ofrecer cursos a las comunidades en las comunidades si los piden con una solicitud.

El **MINAE** (Mario Casto M. y Freddy Pizarro Arias 556 95 07) dijo que podría ayudar en capacitaciones informales y con la reforestación, las comunidades solamente tienen que pedir que quieren y tratará de ayudarles.

El **MAG** (Annie López 824 24 53) también habló de la importancia de la organización comunal y que ella podría ayudar a hacer planes estratégicas con comunidades. Annie mencionó que IMAS puede ayudar con financiamiento de programas y proyectos agropecuarios. **ICE** puede facilitar el contacto con IMAS.

El **ICE** (Gustavo Calvo 556 9692 o 386 3967) enfocó en las recomendaciones específicas en el programa propuesto modificado y comentó sobre ellas.
Appendix I: Follow-Up Questions for Farmers CBSEA

Questions for CBSEA follow-up interviews

**Farmers and ICE:**

1. Why did you decide to participate in the CBSEA

**Learning**

2. What did you learn through the CBSEA process?
   Leads: instrumental and communicative learning after they had talked about what they learnt.
   - What skills and information did you learn through the process?
   - Do you have a greater understanding about: the roles of the different stakeholders and your roles as individuals and as a community? your environment? the potential impacts of the WMAP Phase II? the inter-relationships between your actions and the environment?

3. What specifically facilitated your learning? How did you learn? What facilitated the learning: i.e. group work, discussion, feedbacks amongst whole group? Is there any way that learning could’ve been better facilitated?

4. By participating in this process, has your perception of yourself and/or your community changed?

**Process**

**General:**

1. Can you explain what you understand to be a CBSEA?

2. Are you clear as to the potential role CBSEA can play in pre-programme implementation planning?

3. What would you change about it to make it more suited to your needs?

**Participation:**

4. After participating in the CBSEA, do you feel like you have had some input into the direction of the WMAP Phase II? in other words: Does the process facilitate community members having a greater voice in programmes designed by an outside agency? Describe how or how not.

5. What would facilitate stronger participation (i.e. more involvement of community members) in a CBSEA? What impedes it?

6. Were different opinions and ideas listened to and discussed fully?

**Impact questions:**

7. What did you think about brainstorming impacts of programme components like the social, environmental, and economic impacts of a biodigester? Did it help you better understand the projects within the programme?

8. It was clear to me that there was difficulty thinking critically about what ICE was offering before thinking about new components …why do you think that was?

9. In brainstorming new components you would like to see ICE implement as part of WMAP II, the impacts identified were mostly positive because people obviously view them as positive…how do you think we can make people
evaluate in a more balanced/realistic manner the impacts that new project ideas will bring?

10. Did you understand what mitigation or mitigating impacts is? What do you think is the value of developing mitigation strategies?

11. Logistically, if you were to do it again, what do you think would be the best way to organize meetings (1/2 day- full day) and how much time do you think is needed to do a CBSEA?

12. Do you think that the CBSEA was a useful process to participate in as an individual and as a community?

**Ending questions:**

13. Will having participated in this process help you assess the impacts of proposed programmes in the future?

14. Would you use the process again? Should this process be used by government and industry before programme implementation?

**Final comments:**

15. Is there anything else you want to comment on the CBSEA process or the research I have been doing?

**Things to keep in mind:**

-Make sure to keep in mind the prompts that I use with them and see what they come up with themselves.
Appendix J: Follow-Up Questions for ICE Employees CBSEA

Preguntas para el ICE

1. ¿Por qué decidió participar en la evaluación de impactos de este programa propuesto agro-conservación?
   En algún momento, ¿se sentía Ud. alguna hesitación de participar en esta evaluación participativa del programa propuesto agro-conservación? Explica por favor.
   Después de los resultados iniciales, ¿está contento de haber participado?

   [Why did you decide to participate in the CBSEA?
   Leads: Were you ever hesitant to participate in the CBSEA? Explain please?
   After initial feedback, are you glad you participated?]

2. ¿Aprendió Ud. algo a través de participar en este proceso de evaluación de impactos del programa propuesto agro-conservación?
   -los impactos potenciales del programa propuesto agro-conservación?
   -diferentes maneras para interactuar con comunidades?

   [Did you personally learn anything through the CBSEA process?
   Leads: - What skills and information did you learn through the process?
   -the potential impacts of the WMAP Phase II?
   -the priorities of the communities?
   -ways of interacting with communities]

3. ¿Piensa Ud. que este aprendizaje va a ser comunicado/transferido a su organización (ICE)? Si sí, ¿cómo piensa Ud. que el ICE va a reaccionar?contestar?

   [Do you think this learning will be transferred/communicated to the organization? If so, how do you think ICE will respond?]

4. ¿Recomendaría Ud. este proceso a sus jefes o que sea institucionalizado por el ICE?
   [Would you recommend using this process with your bosses or that it become institutionalized by ICE?]

5. ¿Qué exactamente facilitó su aprendizaje? Cómo aprendió? ¿Qué facilitó el aprendizaje: trabajo de grupo? discusiones en grupos enteros?
   ¿Hay una manera que el aprendizaje habiera sido mejor facilitado?

   [What specifically facilitated your learning? How did you learn? What facilitated the learning: ie. discussion, one on one dialogues with participants?
   Is there any way that learning could’ve been better facilitated?]

6. Participando en este proceso, ¿ha sido su percepción de las comunidades con quien trabaja de la parte del ICE cambiada?
[By participating in this process, ¿has your perception of the communities you work with on behalf of ICE?]

Proceso

General:
7. ¿Podría explicarme en sus palabras que es una evaluación de impactos de un programa propuesto?

[Can you explain what you understand to be a CBSEA?]

7b) Para Ud., ¿es claro los pasos que tomamos para facilitar esta evaluación de impactos? Si sí, ¿puede pensar en maneras que el proceso puede ser mejorado?

[Are you clear on the process steps that were followed to facilitate the CBSEA? If so, can you think of ways to improve the process?]

8. ¿Es claro para Ud. el rol potencial que una evaluación de impactos de un programa propuesto puede tener en la planificación de un programa antes de la implementación?

[Are you clear as to the potential role CBSEA can play in pre-programme implementation planning?]

9. ¿Qué cambiaría en el proceso para que sea más ajustado a sus necesidades?

[What would you change about the process to make it more suited to your needs?]

Participación:
10. ¿Captó el sentido del nivel de la participación que había durante el proceso? Si sí, cómo caracteriza este nivel de participación?

[Did you get a sense of the level of participation in the CBSEA process? If yes, how would you characterize the level of participation?]

11. Este proceso, ¿facilita a los miembros de la comunidad de tener una voz más fuerte en el diseño de programas propuestos a la comunidad de agencias ajenas? Describe cómo o cómo no.

[Do you think that this process facilitates community members having a greater voice in programmes designed by an outside agency? Describe how or how not.]

12. ¿Qué facilitaría una participación más fuerte (más implicación de los miembros de la comunidad) en una evaluación de impactos de programas propuestos? ¿Qué lo impide?

[What would facilitate stronger participation (i.e. more involvement of community members) in a CBSEA? What impedes it?]
Impact questions:

13. Basado sobre la presentación que vió Ud. y el resumen de los resultados que le í, ¿piensa que las comunidades han hecho un buen trabajo identificando a los impactos potenciales de los proyectos en el programa? ¿Cuáles fueron las debilidades?

[Based on the presentation you sat in on (and the resumen de los resultados that I gave you), do you think the communities did a good job of identifying potential impacts of projects under the programme? What were the weaknesses?]

15. Piensa Ud. que participando en esta evaluación de impactos del programa propuesto agro-conservación va a tener algún impacto sobre la relación que tiene con los participantes y las comunidades?

[Do you think that participating in this CBSEA will have any impact on the relationship you have with the participants and the communities involved?]

16. ¿Piensa Ud. que de participar en este proceso (de evaluar un programa propuesto agro-conservación) fue útil como individuo y como una institución?

[Do you think that the CBSEA was a useful process to participate in as an individual and as an institution?]

Final comments:

17. ¿Hay algo más que quiere decir sobre el proceso de evaluaciones de impactos de programas propuestos o sobre las investigaciones que estoy haciendo?

[Is there anything else you want to comment on the CBSEA process or the research I have been doing?]
Appendix K: Theoretical Framework for Integrated Development Approaches

Michaelidou, Decker and Lassoie (2002) proposed a theoretical framework to guide an integrated approach to community development and ecosystem conservation. This theoretical framework helps operationalize Friedmann’s (1987) social mobilization participatory planning paradigm within an environmental context. This framework provides a sound theoretical context for understanding and evaluating community-based approaches like community-based strategic environmental assessment. Michaelidou et al. (2002) found, based on Alpert (1996) and Larson et al. (1998), that projects adopting this integrated approach concept are increasing worldwide. They suggested that “ecosystem viability and community survival are two interdependent objectives that should be given equal focus if both are to benefit” (p.600). Their theoretical framework consists of three dimensions: ecosystem viability, community viability and external forces. These dimensions of their framework will be described in detail here because they were taken into account when creating the community-based strategic environmental assessment framework and are taken into consideration when analysing the results from participating in the community-based strategic environmental assessment.

The ecosystem viability dimension has four main categories: species diversity, water, soil and ecological processes. “Species diversity includes the factors plant diversity and wildlife diversity. Integrated projects should aim to maintain an ecosystem’s ecological integrity…This would entail the maintenance of viable populations of species that make up the particular ecosystem and might require the re-introduction of species that were extirpated from the area” (Michaelidou et al., 2002, p. 604). Water includes the factors water quality and water quantity. This means a focus should be placed on water scarcity, water pollution, access to water, and balancing human and natural needs. Soil includes the factors soil quality and soil fertility. Michaelidou et al. (2002) recognized that the degradation of soil, which involves soil contamination and loss of soil fertility due to erosion, has affected many parts of the world. Ecological processes include nutrient cycling and water and soil dynamics. Michaelidou et al. (2002) stressed the importance of not only monitoring the essential components of a natural system, but also the importance of evaluating the ecological processes such as nutrient cycling, water cycling and purification, and soil purification and stabilization. “These ecological processes are essential in sustaining the ecosystem
in a healthy state, within which the native diversity can thrive” (Michaelidou et al., 2002, p. 606).

The community viability dimension in development is a “shift away from the mere increase of income and the accumulation of material goods (Callicott & Mumford, 1997; Gram, 2000; Jacob, 1994; Meister & Japp, 1998) to encompass qualitative as opposed to quantitative changes in community condition, such as democratic participation in decision making (Lewis, 1995) and cultural sustainability (Brechin et al. 1991)” (Michaelidou et al., 2002, p. 606). Michaelidou et al. (2002) described four main categories as part of this dimension: culture, well-being, participation, and knowledge.

Culture consists of the factors cultural sustainability and social and environmental values. This would include local people having “the option to decide what type of development, if any, is desirable to them, allowing their local beliefs and customs to guide the process of change” (p. 607). Michaelidou et al. (2002) stressed that projects implemented without consideration for local culture not only negatively impact the viability of local communities and culture, but fail to enhance ecosystem conservation as well. They felt that, even in heterogeneous communities, “it is important to understand the full spectrum of values within a specific community so that projects do not erode important customs” (p. 607). It is essential to re-enforce environmental values and practices that are consistent with the goals of ecosystem conservation.

Well-being consists of the factors economic well-being and physiological and psychological well-being. Integrated projects should aim to increase poor people’s quality of life and this can be achieved through income generation, addressing physiological concerns like nutrition and good health, and addressing psychological aspects like whether people feel safe, peaceful and secure within their communities. Participation includes the factors community participation and community capacity. I think it is significant to note that meaningful participation is an important aspect of Friedmann’s (1987) participatory planning paradigm as well as Michaelidou et al.’s (2002) theoretical framework for integrated development approaches. To date, failure to elicit meaningful community participation in local decision-making has been identified as a major weakness of conservation and development initiatives as well as in a conventional EA process (Michalidou et al, 2002; Sinclair & Diduck, 2005; Wells & Brandon, 1993). However, community-based approaches to EA have offered some very
promising opportunities for meaningful community involvement in local decision-making processes (Spaling, 2003).

The development component of integrated initiatives usually focussed on people’s “needs” which were assessed in a top-down centralized way, these often were false assumptions that ended up being more detrimental than beneficial to local communities.

Meaningful community participation entails that local people have a central role in designing, implementing, and evaluating policies and projects that affect their lives. Local people, above all, know how their community functions and might be able to determine which local development activities, if any, would be effective. By participating in the process that would impact their lives, local people can have the opportunity to choose activities that do not compromise the integrity of their culture and the viability of their community. (Michaelidou, 2002, p. 609)

Meaningful community participation can enhance self-determination but “it is important to ensure that the benefits from participation do not accrue to a small number of community members… Studies have shown that when local communities are given greater responsibility to manage natural resources, local support for conservation increases” (p. 609). Sometimes local capacity needs to be reinforced in order to ensure meaningful participation. An inclusive management model can be informed by (western) science as well as traditional ecological knowledge as well as indigenous and local knowledge. This forms a diversity in perspectives which can provide the balance needed for a moral ecology and sustainable development (Diamond, 2003). This also hinders the potential exploitation of people and resources.

Knowledge consists of the factors of environmental knowledge and cultural knowledge. Traditional environmental or ecological knowledge has been described as “a cumulative body of knowledge and beliefs, handed down through generations by cultural transmission, about the relationship of living beings (including humans) with one another” (Berkes, 1999, p. 8). This local cultural and environmental knowledge should be incorporated in the design and implementation of projects that aim to enhance the viability of natural ecosystems and local communities (Michaelidou et. al., 2002)\(^\text{54}\). An effort should also be made to establish avenues where this knowledge can be passed on to future generations. It was recognized that “the reinforcement of local knowledge

\(^{54}\) In Friedmann’s participatory planning paradigm, local knowledge is used to inform the decision-making and implementation aspects in a planning process.
can enhance people’s self-esteem and confidence in their ability to influence their own future” (Michaelidou, 2002, p. 610).

External forces dimension consists of social, economic and political forces. Local communities and associated natural ecosystems are part of a much larger social, political and economic infrastructure that can have a significant impact on local initiatives. Michaelidou et al. (2002) and others felt that it is important to recognize and address these forces.

Social forces imply understanding the social values of the general public as well as the local community affected by the initiative. For example, a public that values fast economic growth over nature conservation may support policies that favour the conversion of natural areas to commodity goods. “Projects aiming to enhance both ecosystem and community viability would need to understand and address the views and values of the general public” (Michaelidou et al., 2002, p. 611).

Economic forces refer to the powerful financial incentives that sometimes exist to facilitate the destruction of natural ecosystems. An example is when local people (or outsiders) exploit wildlife in order to respond to a demand from national and international markets (e.g., wild meat and ivory) (Michaelidou et al., 2002).

Political forces include national and international laws and policies, these have been described as the most powerful external forces that impact ecosystem and community viability (Brandon, 1997 as cited by Michaelidou et al., 2002). Political forces can include national land policies that encourage migration to remote areas and the clearing of forests in exchange for land tenure to “international policies, such as trade liberalization and structural adjustment. Structural adjustment policies were promoted in many developing countries in the 1980s by major international financial institutions and mainly advocated for export-led growth, or the substitution of food grains to export crops for the generation of foreign exchange” (Michaelidou, 2002, p. 611 – 612). These programs had many adverse affects. In Costa Rica these included the clearing of forests for agriculture, the erosion and degradation of soil, an increase in fertilizer use, and a disruption to traditional farming systems which led to community decay.

Michaelidou et al. (2002) felt that this theoretical framework “provides a general guide for local communities, researchers, and policymakers to identify the presence or absence of key factors that contribute to ecosystem and community viability and then use that information to direct the design of projects that address the elements that are
missing” (p. 613). This theoretical framework operationalizes a participatory planning paradigm and acknowledges that management can not be separated from social equity and political or ecological governance; this is especially important if trying to create a democratic and empowering space within the context of economic globalization (Friedmann, 1987; Ludwig, 2001).
Appendix L: Other Integrated Approaches to Development

Approaches that have developed in the community-development literature include integrated conservation and development projects (ICDPs), community-based natural resource management (CBNRM), and most recently, community-based approaches to EA amongst others. All of these “aim to enhance the conservation of natural areas and the welfare of local communities" (Michaelidou et al., 2002, p. 600).

“ICDPs distinguish themselves from other approaches by setting a dual and equal focus on biological conservation and human development. Their main goal is to link conservation and development such that each fosters the other” (Alpert, 1996, p. 845). The main argument behind linking conservation and community development is that “the provision of benefits derived from the conservation of natural areas increases local support for conservation and as a result, both local communities and the environment benefit” (Michaelidou et al., 2002, p. 601). Alpert (1996, p. 845) stated that “they can achieve medium-term solutions to local conflicts between biological conservation and natural resource use in economically poor, remote areas of exceptional ecological importance”. He outlined three major characteristics of ICDPs. The first is that ICDPs link the conservation of relatively intact natural habitats with the development of better living conditions for local human communities. The second is that ICDPs usually are concerned with a specific site and tailor their design to suit those particular problems and concerns. Usually they are a response to an impending loss of an exceptional natural area and the organizers are usually outsiders. The third is that ICDPs are adapted to conditions of the developing world where the land is almost all inhabited, population growth is high, and people depend heavily on local natural resources (Alpert, 1996). “ICDPs aim to fill the developing world’s need for externally funded, locally-based projects that link conservation with development at individual sites” (Alpert, 1996, p.846).

While definitions vary, community in the context of community-development approaches usually means a focus on “the people of a local administrative unit…of a cultural or ethnic group…or of a local urban or rural area, such as the people of a neighbourhood or valley”” (Leach et al. 1997a, p. 4 based on IUCN/WWF/UNDP, 1991 p. 57). However, communities are not homogeneous; rather they are heterogenous groups made up of different social actors who have different uses and purposes for the land and its resources. It is important not to romanticize the notion of community and to recognize the diversity, power differences, and relationships between these different social actors with the land and the community (Leach et al., 1997b; Turner, 1999).
ICDPs are not perfect, however, and there are many lessons to be learned to improve them and other related projects. Concerns include: the need to shift from an expert-based approach to participatory conservation and management (Berkes, 2005); the effective sharing of authority and responsibility between government, NGOs and local communities\textsuperscript{56}; the lack of predictability of external forces\textsuperscript{57}; and that ICDPs might in fact promote dependency of the local communities on the ICDP (Alpert, 1996; Newmark and Hough, 2000, Berkes, 2005). Further, some analysts have found that ICDPs did not halt environmental degradation by locals (Newmark and Houghs, 2000; Michaelidou et al., 2002) and in some cases stimulated in-migration which increased human demands on natural areas (Barrett and Arcese, 1995; Michaelidou et al., 2002). There is also a recognition for the need for ecological monitoring and research in order to help provide useful data and feedback for sustaining present and implementing future projects (Wells and Brandon, 1993; Alpert, 1996; Newmark and Hough, 2000). This ecological monitoring and search for new options could be greatly enriched by incorporating indigenous knowledge, community-level perspectives and experiments (Wells and Brandon, 1993; Berkes, 2005). In general, ICDPs should be lauded for their attempt to bring together conservation and development goals. However, there was a general recognition of the need to find other complementary alternatives to conservation and development (Turner, 1999; Newmark and Houghs, 2000).

Community-based natural resource management (CBNRM) is another common approach found in development (Leach et al., 1997; Newmark and Hough, 2000). It is distinct from ICDPs in that “instead of offering development services in exchange for conservation, it devolves management responsibility for natural resources – wildlife- to local communities” (Newmark and Hough, 2000, p. 590).

CBNRM is different from the conventional management style of management-as-control. There was a recognition of the need to include humans as part of the ecosystem. Berkes (2003, p. 5) explained that “(s)uch alternative management is adaptive as well as participatory in nature, as it engages the knowledge of resource users, their adaptive learning, and their institutions of self-governance. It is human-oriented but uses an ecosystems approach, effectively linking social systems with natural systems”.

\textsuperscript{56} This process would require risk-sharing, “collaboration, transparency and accountability so that a learning environment can be created and practice can build on experience” (Berkes, in press, p. 10).

\textsuperscript{57} i.e. political turmoil, tourist revenues, exchange rate fluctuations, changing commodity prices, urban populations putting greater demands on rural natural resources, and competition for development dollars.
Berkes (2003) used the term “social-ecological system” to illustrate this link. He further argued the need to manage the environment and resource systems for resilience and not simply for products and commodities. CBNRM effectively re-defines resource to mean not commodity but “elements of an ecosystem that support essential processes as well as human beings” (Berkes, 2003, p.5). Management is also re-defined to refer to “governance, learning and adaptive management, oriented to maintaining the productive capacity of resilience of the linked social-ecological system” (p. 5).

CBNRM is characterized by: a shift in philosophy to embrace uncertainty and complexity and reject control; an appreciation of certain (especially common-pool) natural resources as social-ecological systems and more broadly as complex adaptive systems; an expansion of scope of management information to include indigenous and local knowledge; a formulation of management objectives that incorporate livelihoods issues; and development of participatory management with community-based institutions and cross-scale governance (Berkes, 2003; see also Turner, 1999). An example of CBNRM would be small-scale fisheries as found in Bangladesh (Berkes, 2003) or the “Gestion de Terroirs Villageois” approach as found in Sudano-Sahelian West Africa (Turner, 1999).

The goals of such projects, according to Turner (1999) are “to maintain or improve upon the productive potential of local natural resources, and to reduce the level of conflict over these resources” (Turner, 1999, p. 643). Turner recognized the benefits of devolving resource management authority to local communities, giving local autonomy that may improve resource management “by drawing on local knowledge; by being more responsive to environmental change; and by improving the ability of managers to monitor and regulate land uses” (Turner, 1999, p. 650). However, he stated that analysing resource-management problems of semi-arid communities in West Africa with an “unsophisticated adherence to institutional approaches” (p.650) that uncritically treat the village as the community and land as the community’s sole resource would lead to failure. He suggested that “developers need to pay greater attention to the existing and potential role local political systems and informal networks play in more sustainable forms of productions under highly variable environmental conditions” (p. 650). He stressed trust and relationships amongst different community members as fundamental for success in CBNRM.
Appendix M: Summary of Research Results from CBSEA Process

Please see attached 4 page fold out.

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