

**Lessons from the Equator Initiative:  
Honey Care Africa's Beekeeping in  
Rural Kenya**

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## **1.0 Introduction**

### **1.1 Background**

Community-based conservation (CBC) has become a dominant paradigm in international development. It is an approach that seeks to generate income and conserve biodiversity in a manner that includes participation of local communities and resource users. The results from CBC initiatives have been mixed; the difficulty arising from reconciling biodiversity conservation with economic development is thought by some to be a major obstacle to this approach and has been met with varying degrees of success. The Equator Initiative (EI) of the United Nations Development Programme (UNDP) was established to recognize and encourage successful CBC initiatives throughout the equatorial regions. One such initiative recognized by the EI is Honey Care Africa's (HCA) beekeeping initiatives in various regions of Kenya.

This report presents the preliminary findings from research conducted at two sites in Kenya as one of several EI case studies in a coordinated team project at the Natural Resources Institute (NRI), University of Manitoba. The research findings will have theoretical and practical implications for future CBC and other development initiatives.

### **1.2 Purpose**

The purpose of the study is to understand and document the principal lessons learned from two HCA beekeeping initiatives in different areas of Kenya concerning the simultaneous conservation of biodiversity and generation of income for local residents.

### **1.3 Objectives**

This report primarily addresses the following objectives:

- i. To describe the self-organization of two HCA initiatives.
- ii. To describe the cross-scale institutional linkages of the two HCA initiatives.

### **1.4 Research Methods**

The two major components of the research were literature review and field research. The literature review was important for the researcher to get an understanding of the main concepts (such as CBC) that guide the initiatives to be studied. The research design consisted of case studies of two HCA community beekeeping projects in Kenya (HCA has more than a dozen such projects in the country). Fieldwork was conducted in two willing communities between December 2003 and April 2004. The methods employed were derived from the Rapid Rural Appraisal and Participatory Rural Appraisal approaches (Chambers 1994). These included semi-structured interviews, key informants, focus group interviews, participatory resource mapping, transect walks, and participant observation. These methods were chosen both for the flexibility they offer in the field and because they allow local people to participate in the research process.

#### **1.4.a. Data Sources**

The research was based primarily on two types of data: 1) primary sources: semi-structured interviews, focus group interviews, personal discussions, and participant

observation (the researcher was invited to attend several days of a beekeeping training program in Mariakani; and 2) secondary sources: reports prepared by various NGO's, HCA, and the government of Kenya that the researcher was able to acquire.

The researcher conducted a total of 25 semi-structured interviews with beekeepers in the Kakamega area in addition to 6 semi-structured interviews conducted with government and Community Based Organization (CBO) personnel. In the Mariakani area the researcher conducted a total of 20 semi-structured interviews with beekeepers, and 2 semi-structured interviews with Government and NGO personnel. Focus group discussions, and participatory mapping, and transect walks were also used in both sites.

### 1.5 Theoretical Background

The importance of establishing partnerships between communities and other institutions (i.e. governments, NGOs, etc.) in conservation and development projects is now recognized. Such partnerships can be understood in terms of cross-scale linkages, which consist of the linking of institutions both vertically (across hierarchies or levels of organization) and horizontally (across space) (Berkes 2002). Social and ecological systems are too complex and interconnected to be understood by examining them from a single scale in isolation. Furthermore no one organization can solve the problems of ecosystem management of even the least complicated (jurisdictionally) ecosystems unilaterally (Westley 1995). Top-down efforts to manage resources and ecosystems have often not given sufficient care to the different scales that their management affects and is affected by. This centralized approach is limited in its speed and capacity to incorporate feedback from the results of management outcomes and ecosystem changes into future management decisions compared to a system that is integrated across scales.

Little (1994) defines community-based conservation as “voluntary initiatives involving a minimum of several households in which at least one of the outcomes of local management practices is the maintenance of habitats, the preservation of species, or the conservation of critical resources and another outcome is improvement of social and economic welfare”. The idea of community-based conservation projects suggests that they should be planned from the bottom-up. In practice, development projects are often introduced by governments or NGO's that are not local. However this does not preclude communities from playing a vital role in the management of CBC projects. The inclusion of the community as a principal stakeholder in resource management is based on the idea that local populations have a greater interest in the sustainable management of resources than do distant managers; that local people are more familiar with the intricacies of the local environment; and that they are better able to effectively manage said resources through traditional methods (Brosius et al. 1998). Considering that it is the local communities that are the major actors in carrying out the CBC programs, they must be involved in a meaningful way in any conservation program if it is to be successful.

Development projects with an emphasis on cross-scale interactions in resource management have the potential to allow for accommodating or at least recognizing the different interests held by a variety of stakeholders and for a more robust and extensive management regime as different techniques can be better brought together. Cooperation

across scales (most commonly between local communities and governments) can result in a situation where the strengths of one institution can be used to offset the weaknesses of another (Berkes 2002, Oyugi 1985). Berkes (2002) identifies several means through which local institutions can be strengthened for more efficient cross-scale interactions. These are state recognition and legitimization of local institutions, enacting legislation to create the conditions required by local institutions to function effectively, cultural and political revitalization of local institutions, capacity building, and creating new local institutions.

Government control over resource management remains common, particularly in developing countries where local institutions are weak due to lack of funding and/or unwillingness of governments to relinquish authority. The centre sets operational guidelines, allocates resources, and monitors their use; the periphery carries out implementation of development objectives (Oyugi 1985). Though it is now generally accepted that there are benefits to be accrued from collaboration between the centre and the periphery such as cost savings, greater compliance with regulations, and building of trust between local communities and governments.

Self-organization is a key evolutionary characteristic of social and ecological systems (Holling et al. 1998) and can be used to understand many of the resource management problems that occur within complex social-ecological systems that CBC projects attempt to administer. Due to its adaptive nature self-organization underlies resilience in social-ecological systems. Resilience refers to the ability of social-ecological systems to absorb changes (expected and unexpected) and cope with uncertainty in order to keep the system in a state of stability (Walker et al 2004). Adaptive management is important for building the resilience of systems; the more resilient a system is the better able it is to adapt in the wake up change. For CBC projects self-organization is therefore a desirable trait, the examination of which can help to elucidate the success or failure of such projects.

## **2.0 Research Sites**

The two research sites chosen for the case studies were selected from amongst the larger number of sites where HCA has beekeeping operations in Kenya based on several criteria. In both cases it was necessary for the areas to have a sufficiently large sample group of people involved with HCA and willing to participate in the study. In addition to these two prime criteria, other important considerations included: the length of time that the communities have been involved with HCA - with longer time periods being more desirable than shorter ones so that more of the effects of the projects will have manifested (both areas had beekeepers who had become involved with HCA since 2000 as well as others who had joined the project more recently). It was also considered desirable for the researcher to choose two sites that exhibited differences in their physical environment, geographical location, and local culture (i.e. tribal group). The first site, Kakamega District (in western Kenya) was chosen because it met the criteria and had the added benefit of encompassing the only remaining tract of equatorial rainforest in Kenya - the Kakamega Forest, a protected area with a high degree of biodiversity which tied in well

with the EI focus linking conservation and poverty alleviation. The second site, Kwale District (in eastern Kenya) was chosen because in addition to meeting the prime criteria it also provided a contrast to the first site in that it is located near the east coast of the country and has a different climate, vegetation, and tribal group.

## 2.1 Kakamega

The Kakamega forest is located within Kakamega district in the Western province of Kenya (Figure 1). The forest which lies within the Lake Victoria Basin covers an area of roughly 240km<sup>2</sup> that ranges in elevation from 1500- 1700m (KIFCON 1994). The Kakamega forest is the only remaining rain forest in Kenya and is the furthest east remnant of the Guinea-Congolese rain forest. In 1932 the colonial government gazetted it as a forest reserve where logging was allowed (principally for valuable hardwoods) and continued until the late 1980's when the national government decided to protect the forest for its scientific value. During the period of commercial timber exploitation the forest became fragmented and decreased in size due to clear-cut timber harvesting along with encroaching farm development eroded the forest edges. During the late 1940s and 1950s the Forestry Department (FD) developed a plantation scheme called the 'shamba system'. Under this management system farmers were encouraged to grow crops on clear-cut land in return for protecting saplings planted by the FD (often the saplings were exotic species selected for their commercial value) (KIFCON 1994). This system continued until 1985 when due to widespread abuses of the program by local farmers the program was abolished. Tea zones have been planted at the edges of some parts of the forest to hedge against further conversion of forest to farmland, with some success. However, the scale of deforestation in Kakamega has been considerable with nearly 50% of the forest lost between 1965 and 1991 and the remaining forest becoming fragmented (KIFCON 1994).

Currently the Kakamega Forest is gazetted as a National Reserve, which since 1985 has been jointly managed by the Forestry Department and the Kenya Wildlife Service (KWS). Within the forest there are three more intact patches of forest that have been established as nature reserves specifically conserved to protect their diverse biological resources. These are Buyangu Nature Reserve to the north (administered by KWS), Isecheno Reserve (next to the Forest Administration Headquarters) in the central part of the forest and the Yala Nature Reserve in the south (Mutangah 2004). Management focuses mostly around law enforcement, licensing of permitted extraction of forest products, control of problem animals, maintenance of infrastructure such as trails, roads and buildings, fuel wood and pole wood plantations, and education and tourism development. However, management is often ineffectual due to lack of funding to the FD and KWS, a problem common to many government departments in Kenya as well as in other African countries. This problem has been compounded by widespread and publicly exposed corruption in the FD having to do specifically with illegally authorizing logging of indigenous trees from protected areas of the Kakamega Forest and other forests throughout the country. This public embarrassment resulted in the government placing many FD personnel on administrative leave and temporarily replacing them with officers from the General Service Unit (GSU) a national police force used for riot control. The KWS has retained control over its areas of the forest as this branch of the government was not implicated in the scandal.

The Kakamega district is one of the most densely populated districts in Kenya, considerable pressure is thus brought to bear on the forest resources, which are important to the people living around the forest especially fuel wood, pole wood for construction of homes, medicinal plants, and grazing lands for cattle (KIFCON 1994). The main tribe living in the area is the Luhya, a group that is present throughout western Kenya and across the border into Uganda. The majority of the local population are subsistence farmers with small plots typically a few acres in size. The principal crops grown in the area are maize, beans, sweet potatoes, cassava, bananas, and mangos. Tea and sugar cane are the most significant cash crops grown in the area, with more affluent farmers often putting a small part of their land under tea or sugar cane with the rest of their land reserved for food production.

The Lake Victoria Basin receives some of the greatest precipitation in Kenya with an average annual rainfall of 1800-2200mm. The rainfall is fairly well distributed throughout the year with a bimodal pattern of greatest precipitation falling in March/April/May (“long rains”) and August/September (“short rains”). December, January, and February are characterized by lower rainfall. Temperature is fairly constant throughout the year with a mean daily range of between 11C and 26C.

The Kakamega forest is famous for its great diversity of flora and fauna. There are over 330 species of birds that live in the forest as well as 75% of Kenya’s butterfly species. Over 380 species of plants have been identified in the forest, about 50 of which are used by local people for medicinal or cultural purposes (KIFCON 1994).

Due to the great diversity of flora species in the forest, including many different flowering species of plants (for example there are 60 species of orchids – 9 of which are unique to the Kakamega Forest) the area has excellent sources of bee forage to be utilized year-round. As well there are a variety of domestic crops that the bees can forage from including: maize (for pollen), beans, avocado, mango, banana, and passion fruit to name a few.

The climate of the district makes it a high potential area for beekeeping. There is an abundance of flowering plants providing nectar and pollen throughout the year. As well the great variety of nectar sources available to the bees gives the honey produced from this area an interesting and variable flavour. The distinct rainy seasons work to the benefit of beekeepers as bees are less active during these times compelling them to produce and store large quantities of honey to feed the colony during this period, thus there are good honey harvests to be obtained just prior to the rainy seasons. This pattern of periods of favourable and unfavourable (though not too harsh) conditions compels the bees to work hard making honey during the favourable times to store up for the unfavourable times. Even during the rainy seasons that are not favourable for the bees due to cooler temperatures and the rain itself, the climate is not sufficiently adverse for the colony to promote absconding from the hives, rather the bees just become less active. This can be beneficial in some respects as there are likely to be fewer conflicts between

bees and farmers even when the hives are kept on the edge of fields that are under cultivation.

Honey production in Kenya has traditionally focussed on the less-productive agricultural areas, as beekeeping has been seen as an activity that is part of an income generating strategy that is most suited to areas where people are not able to farm the land year round and therefore must look for alternative methods of obtaining food and money. However beekeeping has great promise in areas of high agricultural potential as the climate in such areas tends to be conducive to large quantities of nectar. There must therefore be also an adequate supply of water. However areas of high agricultural potential may have problems for beekeeping as there will be great pressure to convert all available land to crops, which tend to be an inferior source of forage for bees in Kenya compared to the native vegetation.

## 2.2 Kwale

Kwale is one of four districts in the Coast province of Kenya. Kwale is situated such that it overlaps the humid coastal belt and the semi-arid interior, presenting a stark contrast between the eastern and western parts of this district. The town of Mariakani (Figure 1) is the hub of HCA's beekeeping program in the district as this is where the partner NGO the Aga Khan Foundation's (AKF) Coastal Rural Support Program (CRSP) has their office. Mariakani is on the Mombassa-Nairobi highway, roughly 35km west of Mombassa the second largest city in Kenya.

Kwale being mostly semi-arid has a relatively low population density for southern Kenya with a range of 11-50 persons/km<sup>2</sup>, the more humid eastern parts of the district have higher population densities than the drier western parts of the district. Despite the low population density there is significant stress on natural resources, especially on the few remaining patches of forest due to the demand for fuel wood, which is the most common form of cooking fuel in the area.

Within the district of Kwale exist two distinct climatic zones though there is a gradual transition between the two: the humid coastal belt and the semi-arid interior, with the later covering a greater portion of the district than the former and also being the area where most of the HCA beekeeping in Kwale is located.

The semi-arid part of the district is characterized by deciduous species such as thorny *Acacia* and gnarled *Commiphora* scattered throughout the landscape, along with succulents such as *Aloes* and *Euphorbias* (Morgan 1973). Grass cover is precarious, only flourishing after the rains and then dying away again during the dry season (Ojany and Ogendo 1973). During the dry season the landscape appears nearly lifeless with much bare soil exposed and the trees devoid of leaves.

The eastern part of the district which is in the coastal climatic zone has high relative humidity. This area does not display the homogeneity of vegetation that the interior of the district does; the higher rainfall of this area supports a greater variety of vegetation both indigenous and domesticated. There are some forested areas in this coastal zone



including mangroves along the coast itself and other forest communities slightly further inland, such as the Shimba Hills (a protected area) though much of these forests have been cleared for agriculture (Ojany and Ogendo 1973).

The average annual rainfall for the semi-arid interior of Kwale District is 500 -600 mm/year, with the eastern part of the district (humid coastal zone) receiving an average of around 1,000 mm/year. The rain pattern is bimodal with the wettest months being April/May ('long-rains') and October/November ("short rains"). In 2003 both the short and long rains were well below their average levels of precipitation resulting in the semi-arid landscape becoming even more dry and presenting difficulties to farmers both for their crops and for the harvesting of fuel wood much of which now comes from small shrubs rather than trees due to the severe deforestation in the district.

The majority of people in Kwale district are subsistence farmers with small shambas (farms) of usually around 4-5 acres in size. Much of the area was previously a group-ranch and has now been carved up into private lands by the local residents (there are no land titles for these lands held by farmers). The main crops grown in the area are maize, cowpeas, cassava, beans, coconut, mango, and cashew. There are fewer cash crops grown in Kwale by subsistence farmers than in Kakamega, with cashew, and coconut being the main cash crops in the area (the coconut is cultivated both for the fruit as well as for the tapping of palm wine).

The area exhibits variation in climate and vegetation and so to does the potential for beekeeping vary. Closer to the coast there is higher potential for beekeeping than in the semi-arid interior of the district, though even in the drier areas along river valleys there is good potential for beekeeping. The semi-arid areas will likely only produce honey seasonally and there are high levels of bee absconding due to the dearth of water and forage in the dry seasons.

There are high densities of coconuts palms in parts of the district and these provide year round bee forage, improving the bee habitat in these areas. Other sources of bee forage found in the district include: cashew, mango, acacia and euphorbia.

There are a number of traditional beekeepers in the district though not nearly so many as are to be found in the vicinity of the Kakamega Forest. Due to the poor climatic conditions the experience of traditional beekeepers would be of great value to the less experienced HCA beekeepers, in maintaining their colonies and managing their hives in this environment. Due to the limited forage available in the semi-arid parts of the Kwale District, consisting mostly of acacia, the honey produced tends to have a stronger and more bitter flavour that is perhaps somewhat of an acquired taste and is less attractive to some buyers. As well honey from the coastal part of this region tends to be darker and crystallize faster than some other honeys due to the bees foraging for nectar from mangrove trees, again this could potentially make the honey more difficult to sell, though this is not an issue as far as the contract with HCA is concerned.

Honey badgers, one of the most difficult pests that beekeepers in Kenya have to face, are prevalent in the district which is a problem for beekeepers as these animals are prone to destroying hives in order to feed on the bee brood, thus not only do they cause significant bee mortality which can lead to the colony absconding, the hive (an expensive investment) is also damaged or even destroyed.

Areas of low agricultural potential may be suitable for beekeeping as there is less pressure to convert land supporting native vegetation to cropland. As well while it may become necessary to provide water for the bees, the climate of semi-arid lands tends to have warm sunny days frequently which are ideal conditions for bees to work. As well the dearth of nectar in the dry season may encourage the bees to work harder to stock-pile adequate stores of honey to feed the colony during this period, thus there is a good potential for honey yields.

### **3.0 Results and Discussion**

#### **3.1 Honey Care Africa Ltd.**

Honey Care Africa Ltd. (HCA) is a Kenyan owned and based private company that has helped to initiate a number of beekeeping projects in rural communities throughout Kenya. Through HCA nearly 2200 rural households have become involved in beekeeping providing income and teaching beekeepers about the link between conserving biodiversity and beekeeping (Jiwa 2002).

HCA operates within a tripartite model that is an example of a synergistic partnership between the private sector, development organizations, and rural communities (Jiwa 2002). The inclusion of a private sector organisation (HCA) helps to ensure that the projects operate within realistic market conditions, something often lacking in donor-driven projects. HCA typically seeks to partner with some type of development organizations (NGOs and CBOs) that are already established in an area that has potential for beekeeping so that the NGO or CBO can act as a conduit through which the beekeeping project can be introduced to a community. The NGO or CBO (having community development as its goal) can play the role of the primary arbitrator and mediator in this system to ensure that an exploitative relationship does not develop between the private sector (HCA) and the farmers. The development organization may also be the initial financier of the project, providing loans to farmers so they can purchase hives, bee keeping equipment, and receive training. The third partner in this model are rural communities and small-scale / subsistence farmers who are the honey producers (beekeepers).

Beekeeping helps to diversify the economic options open to rural people providing them with improved security of income. HCA enters into agreements with an NGO or CBO whereby the NGO or CBO purchase the hives from HCA and then sell them to farmers who receive low-to-zero interest loans from the NGO or CBO to purchase the hives, the training provided to farmers is also financed by the NGO or CBO. HCA strongly encourages their partner organizations to sell the hives to the farmers rather than giving them to the farmers so that only those people who are truly interested in participating in beekeeping become involved and so those individuals develop a feeling of ownership for their hives. This is also of practical benefit to HCA, as hand-outs or community owned hives are unlikely be as well managed or cared for as privately owned hives, and therefore not produce as much honey as the individually owned hives. Most importantly, HCA provides a guaranteed market for all the honey produced. HCA guarantees to purchase all the honey produced by participating households with cash payments at a competitive price made 'on-the-spot' for all honey produced (Jiwa 2002). By making honey a high value product and by paying farmers a fair price for their honey HCA has started a system that in some respects parallels 'fair-trade' in coffee. This represents a significant improvement on the portion of the final value of the product that is returned to the producers (farmers) compared to other honey production systems in Kenya, especially when honey is harvested from the wild (Koziell 2001).

The Langstroth hive (the technology used in nearly all commercial beekeeping) allows for a more efficient production of honey compared to other hive designs that are in use in Kenya: The Kenya Top-Bar Hive, Traditional Log Hives (Box 1). The honey produced by HCA farmers using the Langstroth hive also tends to be of a higher quality than honey produced by traditional methods in Kenya, and as such it is able to command a higher price. The Langstroth hive is significantly more expensive than either the log hive or the KTBH and as it is more complex in construction it would be very difficult for them to be made locally by villagers unlike the log hive and the KTBH.

Traditionally beekeeping in Kenya was an activity practiced primarily by men. The change of technology has allowed more women to become involved in beekeeping as the Langstroth hive is kept at ground level (the KTBH shares this characteristic) instead of atop a tree as traditional log hives are. HCA also actively encourages women to become involved in beekeeping through getting them to attend demonstrations and by providing additional incentives for women beekeepers (Jiwa 2002). Considering the economic marginalization of women in Kenya it is encouraging to see HCA make efforts to include women in an income generating activity.

### **Box 1. Beehive Technology**

Modern hives are based on the discovery by Lorenzo Lorraine Langstroth that when bees build their combs they always leave exactly the same amount of space (the bee space) between them. Modern (Langstroth) hives have frames separated by this bee space, in which bees can build their combs. The frames are arranged so that they can be removed individually without disturbing the other combs or crushing bees. This design also allows for several contiguous hive boxes to be stacked one atop another, with the queen confined to the lowest (brood) chamber by means of a small doorway called a 'queen excluder' that is too small for the queen to pass through though all other bees are able to use it. Because of this the upper boxes (supers) can only be reached by workers and therefore contain only honeycomb. The supers are removed at the time of harvest and the frames inside are then put into a centrifuge that is used to extract the honey leaving the wax honeycombs intact. The traditional method of extracting honey from the combs (used both in log hives and KTBH) involves cutting the combs from the walls of the hives and then melting them down so that the wax and honey are collected in a single container, as there is no queen excluder there is the potential for combs containing brood to be included – especially for less experienced beekeepers. This is then left to cool with the beeswax hardening on top of the honey. The beeswax is then removed (and typically discarded thus potentially valuable commodity is lost) so that the honey can be collected. This method often results in low quality honey as the honey loses nutritional value and is of poor quality when exposed to high temperatures. Additionally the honey becomes contaminated by smoke, ash, and dirt from the fire causing the honey to have a smoky and bitter flavour. Because the brood combs are often included the water they contain can contaminate the honey, such honey cannot be stored for long and is of too poor quality to enter international markets. Another problem with the traditional methods of honey harvesting is that the queen is sometimes killed which dooms the colony, even if the queen survives the honeycomb has been removed requiring the bees to expend time, energy, and resources rebuilding the honeycombs before they can begin to produce honey again.

Beekeeping is often cited as an example of environmentally benign agriculture as bees provide general biodiversity benefits through pollination of flowering plants helping them to complete their reproductive cycle. However, like most other agricultural practises beekeeping is usually conducted using a monoculture model. Typically specific species of honey-bees are used to produce the highest yield of honey, these bees displace native bees much in the same way that agricultural crops displace natural vegetation, thus reducing the overall level of biodiversity in the area. This is not the case with the HCA's beekeeping, instead local bees are allowed to colonize the hives, though in truth this is really the only option as the cost of importing queen bees would likely be prohibitive for many beekeepers, as well it would be logistically very difficult to distribute new queens amongst the scattered hives throughout the country. Though this may not lead to honey yields as great as could be achieved if other species were imported, this method helps to prevent problems with the introduction of invasive alien species.

HCA and NGO staff involved in the training of farmers in beekeeping stress the connection between the protection of the local environment and long-term honey-yields (though how much of an impact this has so far had on actual behaviour is questionable). This is crucial because the community level is the most important for conservation, as conservation objectives will not likely succeed without local cooperation (Agrawal and Gibson 1999; Berkes 2003). The income earned through the production of honey can have a strong impact on the adoption of a conservation agenda as programs that rely on a valuable natural resource provide a motivating factor to further conservation and at the local level, communities will not likely protect biodiversity for its own sake without suitable incentives (Koziell 2001).

### 3.2 Community Organization

#### 3.2.a. *Origins of the project*

CARD was formed in 1998; the beekeeping with HCA began in 2000 with the purchase of their first Langstroth hives, which has subsequently been followed by a steady increase in the number of HCA hives in Kakamega district to a point where by the end of 2003 there were more than 600 HCA hives in the district under CARD's supervision.

KRSP (Kwale Rural Support Programme) was initiated by the AKF in 1997. Later it was renamed CRSP (Coastal Rural Support Programme) and includes some small areas from the Kilifi district as well as the Kwale district. CRSP became involved with HCA in 2000 with over 200 hives in 12 villages by the end of 2000, they have recently increased the number of HCA hives in the district to over 600.

#### 3.2.b. *Sources of project inspiration*

Honey is a culturally important product in Kenya and there is a long history of beekeeping and harvesting wild honey in the country. There have been several government initiated beekeeping projects in the country utilizing the KTBH most often. These projects have typically not been successful for a variety of reasons, most importantly there has been a lack of extension support to the beekeepers and the hives were usually communally owned and received at no cost resulting in poor motivation for the beekeepers. HCA saw an opportunity to develop a high-end honey supply to serve

the domestic market in larger centers that has been served by foreign honey producers. As well the production of honey is an activity that can provide environmental benefits through the pollination of plants and it is something that can easily be learned by farmers and does not hinder them from engaging in their primary activities.

The trigger event was the development of HCA as a private company that was interested in promoting beekeeping using Langstroth beehives in Kenya. HCA held a series of public demonstrations on the Langstroth technology in rural communities throughout Kenya including in Kakamega and Kwale to initially promote the project. Now in both areas the project relies on word-of-mouth for promotion.

*i. Catalytic element*

In Kakamega the project faltered under a period of poor management when CARD lost two foreign volunteers and use of their pick-up truck. CARD was forced to alter its management structure, which has been continually adapted to improve performance. Strong leadership at various levels and the ability of these leaders to adapt sustained the project during this rough period.

The beekeeping project in Kwale has not been as productive as the one in Kakamega, in part at least due to the drought conditions that had persisted in the area. In Kwale it has been the individual nature of the project and profits that has worked as an incentive to individual beekeepers to continue the project in some cases even where there was very weak involvement and oversight from the CRSP. The guaranteed market also helped beekeepers stay committed to the project because they knew that when they did produce honey that they would be able to sell it easily due to the contract with HCA, as well they were in debt from the purchase of the hives and as such had an incentive to keep with the beekeeping (though this factor may not have been that great as the loans are only repaid from honey sales and there is a culture of handouts from NGO's in Kenya therefore some beekeepers may have regarded this project in much the same way even though they had to put up an investment). Those beekeepers with previous experience in keeping bees in the area were aware of the migratory habits of the local bees and were not so easily discouraged when their colonies absconded when drought conditions prevailed.

*ii. Other*

The individual nature of the profits from the project were less of a factor in keeping the project going in the Kakamega, as while the hives are privately owned for the most part the management of hives is collective.

In Kwale CRSP could have done more to ensure that the project was maintained, there were a number of less successful and less experienced beekeepers who basically gave up on the project when the weather became unfavorable (low precipitation) and the bees absconded. If these farmers had received some interaction or advice from CRSP they may have been able to maintain their bee colonies during this difficult period so that when the rains again came their hives would not be empty.

### 3.2.c. Knowledge

#### *i. Sources of knowledge: local/TEK and/or outside knowledge.*

The project was introduced by HCA to the community based-organization (CBO) CARD. Along with the overall project structure HCA also introduced the technology (Langstroth hives). In the communities there already existed extensive knowledge about bees and beekeeping using traditional log hives and to a lesser extent using the KTBH (especially in communities bordering the forest). This traditional knowledge has allowed those people who have adopted the Langstroth hives to manage them very well and live without conflict with the bees (a potential problem).

The Langstroth technology and management techniques were introduced to the Kwale area by HCA. The level of local knowledge on the subject of beekeeping amongst project participants was in general low with few of the HCA beekeepers having kept bees previously. There are not as many traditional beekeepers in Kwale as in Kakamega, and traditional beekeepers are usually not amongst the wealthier members of the community, and therefore are less likely to have the capital necessary to invest in HCA hives, though they would probably be the most productive beekeepers due to their experience.

#### *ii. Holders of relevant local knowledge.*

The knowledge of traditional beekeeping including the harvesting techniques and which trees to use for fashioning the hives is mostly held by men, who dominated traditional beekeeping, as for coexisting in close proximity to the bees this knowledge is often shared by both men and women. The project to some degree is reliant on this locally held knowledge as the training received in beekeeping is brief, therefore those people who already possess knowledge and experience in beekeeping have an advantage as they only need to learn is how to use a different hive than they are accustomed to, though in the Kakamega case individual beekeepers are not actually much involved in hive management (Box 2). Traditional beekeeping knowledge does exist in both areas studied but those individuals who hold this knowledge have mostly not become involved with the

#### **Box 2. Problems with apiary management in Kakamega**

In the Kakamega case the hives owned by several farmers are grouped together in apiaries for ease of management. The hives are inspected regularly by the HCA Project Officer and a CARD volunteer. Due to the large number of hives that the HCA Project Officer must inspect he is only able to inspect each apiary 2-3 times per month; the owners of the lands where the apiaries are sited see the hives every day and are therefore in the best position to notice any disturbances to the apiaries. CARD has tried to encourage such compound-owners to attend beekeeping training courses for free but have not had much success. Many of the compound owners are wealthier members of the community who hire others to manage their farms and may feel that beekeeping training is below their social status, some seconded a worker to go for training with some success, but in many cases they have not showed for training either. Trust is also a bit of a problem as compound owners who have their own hives plus those of others on their land may be tempted to switch frames around to benefit themselves at the expense of others.

projects due to the expense of the hives, which is beyond their means. Such knowledge includes aspects of hive handling and placement, harvesting and attracting swarms, which trees to build log hives from, and dealing with pests and predators such as the honey badger. This knowledge is held mainly by men. However there are also a few women who have knowledge of beekeeping with KTBH technology that they gained from government supported projects in the past. These women have been able to apply this knowledge to the use of Langstroth hives and often act as mentors for other HCA beekeepers in their villages.

*iii. Outside knowledge and capacity building*

HCA has imported the knowledge about the Langstroth hive from outside through their partner institution CARD. There has been capacity building in that local people have been trained in the proper management of this technology and the siting of apiaries, as well as the extraction methods. While a limited number of people have received training in beekeeping (less than ¼ of hive owners) those that have received the training are able to pass on some knowledge to others. The training was provided by HCA and CARD. The government has trained some beekeepers but only in the use of the KTBH, though much of this knowledge is applicable to the Langstroth hives. There was no involvement from any government ministry in the training of HCA beekeepers in Kakamega.

HCA has imported the knowledge about Langstroth hives to the Kwale area and brought in trainers to teach the farmers how to use the technology these trainings were one type of capacity building that was utilized. Other examples of capacity building in the project would be the formation of the VDOs (though this was done to facilitate a variety of AKF projects not just beekeeping). The VDOs were established to play a role in managing the projects at the local level as well as empowering the villagers by giving them some responsibility and an opportunity to develop their management skills. There were also beekeepers who have received training from the government for the management of KTBHs that the ministry was distributing in the past to interested groups. Presently CRSP is training ‘para-professionals’ (HCA beekeepers 1/village) to act as the lead beekeeper in the village and to provide support to their fellow beekeepers.

*3.2.d.. Leadership and Key People*

HCA was brought to Kakamega through the efforts of two Voluntary Service Overseas (VSO) personnel stationed with CARD. The VSO’s promoted project in early days, through interaction with local authorities who became incorporated into the management committees of CARD. The current CARD program manager has been important in the continued success of the project, he is the one who runs the project in Kakamega and has been instrumental in keeping the project going during a difficult period after the VSO’s left. The current HCA Project Officer (PO) who was previously just an individual beekeeper was important in forming the Ivihiga Beehive Group (IBG), a village level beekeeping group and promoting the project in his community. His role changed during the course of the project as he formed the IBG and became chairman and later was given the job of HCA PO for the division, due to the leadership potential he demonstrated and his knowledge of beekeeping (Table 3).



There is a lack of local beekeeping leadership in many of the villages in Kwale. The VDO system does not seem to be working effectively to communicate the concerns of the beekeepers to CRSP or to distribute info from CRSP to the beekeepers. The leadership that does exist has tended to come mostly from CRSP and the government staff stationed at the CRSP office. The lack of beekeeping leadership at the village level is likely contributing to the poor management of hives in the area and their subsequent poor performance.

The chiefs who are the local authority in the villages were important only in that they needed to be informed of the establishment of a group in their areas and the chief's signature is needed to fill out the necessary registration paperwork. CARD has been important in the promotion of the project, as well as the implementation and management. IBG has been important in promoting the project in its area and has helped to provide loans to its members who wish to purchase HCA hives. The government Ministry of Livestock and Fisheries Development (MLFD) – formerly the Ministry of Livestock and Agricultural Development - is responsible for the government's involvement with beekeeping in Kenya and has just recently been introduced to the project but they are not yet contributing in a meaningful manner.

The chiefs and others in the local authority structure were included in the project in the early stages to get their approval for the formation of the VDOs and the organization of the barazas to introduce the hives and HCA but that was the extent of their involvement. The MLFD is much more involved in the beekeeping project in Kwale than in Kakamega, with several ministry field staff stationed at the CRSP office. This is a beneficial arrangement for both parties as CRSP provides office space and transportation (motor-bikes) to the Ministry staff that the government is unable to provide, and in turn CRSP gets several field staff who have close relationships with the farmers to help promote and support CRSP's projects.

### *3.2.e. Learning*

#### *i. Learning processes*

In the Kakamega project there has been evidence of learning at various lower level scales in the project but not necessarily at higher level vertical scales (with the exception of HCA which is the only organization involved in the Kakamega project that has an efficient means of transferring knowledge up from the village level to its national office in Nairobi. At the local level there has been learning of beekeeping skills by individuals, for some this was a wholly new skill and for others who already were beekeepers they learned how to use a new technology in beekeeping (the Langstroth hive). Similarly, due to the formation of beekeeping groups there has been learning related to the organization and operation of such self-help groups, additionally these groups allow for the exchange of info between beekeepers.

In Kwale there is a good exchange of learning between the CRSP staff and the GoK staff, but there is little indication that there is learning transferred up the hierarchies of either organization. At the village level the learning that occurred in the project has to do mostly with aspects of beekeeping. At the village level there is an exchange of

knowledge on beekeeping between individuals, but there is no exchange of knowledge from one village to the next. The development of the VDOs was not prompted by the beekeeping project specifically though there is supposed to be link between the VDO and the all development projects in the village (in practice these links have not been functional, though some members of the VDOs are also beekeepers). Through their participation in the VDOs there has been some learning by villagers about how to organize self-help groups, though most VDOs are not functioning well so there is some to be learned by the villagers in this area.

*ii. Adaptive management*

One area that CARD has displayed adapted its approach was in the sites chosen for the apiaries, the initial HCA hives that CARD received they placed very near the forest, but these hives had poor rates of colonization. More successful colonization of hives farther away prompted their movement to new sites a little farther from the forest edge.

The structure of CARD's beekeeping staff changed in response to a period during which the project displayed poor performance, this also resulted in the job description of the Honey Care PO being changed. Initially most inspections were done by VSO and a few people from office with a truck, then before he left and realizing that the truck would be gone the VSO fundraised to train more young people as beekeeping officers about 18 in total, beekeepers and assistant beekeepers under them (beekeepers were getting a commission of 10 ksh/month for every hive and 10ksh for each super harvested, assistant beekeepers were not paid but actually did the work), the structure then changed so that there would be collection points in each area that these people could easily transport the supers by bicycle or on foot and they would be picked up by HCA.

The beekeepers were expecting to be paid but the project did not have the money to pay (300ksh/month) so they were to be paid 1 hive at the start of the year for 12 months work instead, at the end of the year most beekeepers wanted to be paid for the next year rather than get another hive as they had not seen any harvests yet. Some people had not worked and their hives were repossessed (2-3). As the project was not earning enough money to pay them the management of the hives had to be centralized so as to cut down on the number of people, as well many of the beekeepers were not working very hard, and were taking advantage of the CARD bicycles especially when costs were incurred to repair them. Beekeepers were not carrying out much oversight of assistants so there was no verification of records, thus there was a lack of accountability and much work was not done. The individual who became the HCA PO was a lazy and irresponsible worker so HCA fired him and replaced him with the present PO. The current management structure that CARD is using has been much more successful; it was formed through a process of adaptive management and is constantly being altered to make it more effective depending on how circumstances change.

In Kwale the project initially started with placing the hives on stands but due to problems with pests and predators they switched to the method of hanging the hives from cross-beams supported by two posts (much like a soccer goal). The development of 'para-

professionals' (which has just recently begun by selecting the best/most knowledgeable beekeepers from each village and providing them with additional training) is an effort to overcome some of the management problems that exist within the project especially the lack of leadership and extension services, however this is still in the development stage.

There were also examples of adaptive management on an individual level as farmers have experimented with different apiary set-ups and honey badger countering methods (Box 3).

*iii. Learning networks*

No learning networks established, though there has been collaboration between HCA and CARD, one organization providing expertise on the technology the other of the locality. As well info was transferred from one locality where there was a very experienced beekeeper who was in charge of those apiaries to the entire district as he was

given the job of being the HCA PO for the district. And info that was collected from the field staff was disseminated through the CARD hierarchy down to the other field staff.

There has been no establishment of learning networks to share knowledge between beekeepers in different villages in Kwale, there is likely some knowledge shared between neighbours but not in an organized manner. The methods for controlling honey badgers for example have not been shared between beekeepers in different villages nor has this info been transferred by CRSP effectively if at all. Due to the individual level of hive management in Kwale learning networks could greatly help the beekeepers, but as there is no effective communication between VDOs of different villages or between the VDOs and CRSP no such learning networks have emerged.

**Box 3. Adaptation in the face of adversity/adversary**

The Honey badger (*Mellivora capensis*) is one of the most difficult pests that beekeepers in Kwale district have to deal with. They are found in a variety of habitats throughout most of sub-Saharan Africa, the Middle East and even in India and Nepal. Males can reach as much as 1 meter in length and 14kg in weight, with females being somewhat smaller. As their name suggests they prey on bee colonies, though it is the brood rather than the honey they crave. While they are carnivores with a wide range of prey included in their diet their favorite food is the bee brood and they will put great effort into obtaining it if available. Honey badgers have long claws and are powerful diggers, capable of tearing apart wooden beehives to get at the brood (there were numerous HCA hives destroyed by honey badgers in Kwale). Traditional beekeepers often hang their hives from the branches tall trees to deter honey badgers and fashion their hives from tough wood to prevent the honey badger from breaking the hives open. Unfortunately these methods are not always successful as the honey badger is adapt at climbing and is quite strong. In Kwale, there is a lack of tall trees and good wood for making log hives due to the degree of deforestation so beekeepers have adopted different methods of deterring honey badgers. One such method utilized against the honey badger was to attach sheets of tin to the trunk of the tree that the hives are hanging from so that the honey badger cannot grip the tree's bark with its claws to climb, thus preventing it from ascending the tree where it could reach the hive.

3.2.f. *Funding*

i. *Funding for initial community organization and training*

The formation of the beekeeping groups such as IBG was typically self-funded from within the community, as was the formation of CARD. CARD is now helping community groups to try and get funding from the ministry of livestock for more beehives.

Original training workshops (beekeeping) were paid for by the donors, the trainers were Honey Care staff who were paid by Honey Care. More recent training workshops have been conducted by the project manager at CARD who has been contracted to do beekeeping training for the MLFD and some private companies (Mumias Sugar) he has taken a training of trainers courses paid for by USIAD. Donor agencies give money to buy hives and part of the package is training and equipment.

The funding for the HCA project in Kwale has primarily come from CRSP, though for the purchase of the hives the VDO under the initial financing agreement had to come up with some of the money as well, through membership fees and contributions from members, this arrangement has changed more recently (Box 4). The training courses on beekeeping were paid for by CRSP.

ii. *Initial investments and office funding*  
CARD while receiving funding from various donors for various projects was initially self-funded in its formation, as was IBG. The initial funding for CARD's beekeeping came from SIDA and Assets (parent organization to CARD) and VSO. While CARD used these funds to purchase hives from HCA on behalf of farmers, it was still necessary for the individual farmers to come up with some of the capital in order to make a down-payment for the hives previous to their being ordered from HCA.

**Box 4. CRSP - changes in project funding structure**

In Kwale the project has undergone some changes since 2000. The price of the honey was renegotiated with HCA and was raised from 80ksh/kg to 100ksh/kg. As well the method of financing the hives has changed. Initially the hives were bought on a loan system where the VDO had to raise 25% of the value and CRSP provided the other 75%, the loans were to be repaid with the profits of the honey sold (initially 40% of sales went to loan repayment when the price was renegotiated the ratio changed to 50% of profits going to loan repayment). Recently CRSP has changed the financing arrangement greatly; being aware that the large loans were a deterrent to the poorer members of the communities from becoming involved in the HCA project CRSP altered the system so that they now provide a subsidy to the farmers of 85% of the hive value so the farmers only have to come up with the other 15% up front then they own the hive wholly. While this method has certainly increased the number of HCA hives purchased by farmers in the district, changing the financing system so radically is likely to build animosity amongst those people who bought their hives under the previous system and are still trying to pay off their loans. Furthermore such a large subsidy seriously undermines the sustainability of the project in Kwale as such subsidies may not always be available to the beekeepers.

The CARD office is the only one used for the beekeeping project, it was already in place as CARD had existed since 1998 and has inhabited the same office since. Funding for CARD has come from various donors including: Australian High Commission, United States Embassy, and The European Union. As well there have been four volunteers from VSO (Voluntary Service Overseas) that have worked in project manager capacity in groups of two until 2002. When the VSO's were there they bought a second hand pick-up truck but when they left they were unable to donate it to CARD and so CARD now has 1 motorbike bought by the European Union for the forest conservation program (beekeeping is part of this). As well CARD receives money from the members annual fees of 300ksh, though payment of these is not always forthcoming. The beekeeping project also contributes some monies to CARD as they get a commission of 20ksh/kg harvested and there is also a small operation of one or two women who make bee-suits for sale to Honey Care and other interested parties (agricultural colleges), which CARD receives a commission from. However only the project manager and the secretary are paid employees of CARD (and they have low pay) the others are volunteers, but if the beekeeping project improves and expands then it has the potential to provide CARD with adequate funding to pay its employees and its rent (which has not been paid in 2 years – though the office building is owned by one of the founding members of CARD so they will not likely be evicted)

In Kwale there exist no offices, vehicles, etc, for the beekeepers other than those belonging to CRSP, which has an office and personnel, and vehicles some of which are tasked with supporting the beekeeping project. The VDOs do not possess any offices or other facilities or vehicles, so they are limited in their ability to support the beekeeping project.

CRSP funded the bulk of the initial investments with the remainder of the money coming from the VDOs. The VDOs received this money from their members through membership fees and member contributions to the VDO for development projects.

### *3.2.g. Human Resources and In-Kind Support*

The CBO CARD is a partner institution with HCA and is managing the project in Kakamega. The only support project has received from the local institutions was the promotion of the project through the church and local authorities (chiefs and assistant chiefs) at barazas (public meetings). CARD has an agreement in principal with the Ministry of Livestock and Fisheries Development to receive help with some of the activities including inspection of hives (CARD donated some beekeeping equipment to the ministry) but as of yet there has been no cooperation in the field such as using a government truck to transport supers from the apiaries to the office and back to again (CARD only has 1 motor bike and 2 bicycles, and HCA supplies their project officer in Kakamega with 1 motor bike). HCA comes to Kakamega monthly and picks up and delivers some supers from the field with their truck, however the driver who must also service other HCA projects in western Kenya is usually pressed for time and cannot lend full support to CARD in this task.

The Kwale project received little assistance from pre-existing organizations with the only assistance from the authorities being the chiefs giving permission to form the VDOs. CRSP helped in the formation of the VDOs and aided the members in the writing of documents for the establishment of the VDOs as institutions within the villages. CRSP and HCA organized the project with various interested individuals in different villages throughout the district.

The NGO CRSP provided their services for free to the communities as that is their mandate and they are the organizers of the project. The MLFD also has provided their services to the beekeepers though again this is their mandate. The Ministry lacking funding has not been able to support the beekeeping project as much as they might wish, and have entered an arrangement with CRSP where several Ministry staff are stationed at the CRSP office so that the two organizations can combine their strengths.

### 3.3 Cross-Scale Linkages

The HCA beekeeping projects in Kenya are built upon a three-way partnership (section 3.1) that in practice is usually a four-way partnership with the government being the fourth partner. As HCA is based out of Nairobi it is important that there are strong linkages between the head office and their partners in the field. Cross-scale linkages are therefore especially pertinent to the functioning of the HCA projects, as how the various stakeholders operating at different scales (Table 1 & Table 2) interact with each other substantially contributes to the success or failure of the project.

#### 3.3.a. *Institutional Linkages Related to Project Facilitation*

The link between CARD and the communities was crucial to the success of the project as this provided a vehicle through which HCA was able to introduce their technology and business plan to communities. Further to this CARD had previously been able to convince a number of village chiefs to become CARD members, this allowed CARD the opportunity to gather people together in the communities to promote the project and for the establishment of groups in the communities related to beekeeping. CARD is represented on the district development committee and district environment committee, unfortunately this relationship has not helped CARD with the beekeeping as these committees do not meet regularly and just expect reports on CARD's activities. Similarly CARD established linkages with the relevant government ministries and departments (Figure 2) such as the Ministry of Livestock and Fisheries Development (which has beekeeping in its portfolio), the Forest Department in the Ministry of Environment and Natural Resources and the Kenya Wildlife Service in the Ministry of Tourism and Wildlife the later two are responsible for managing the Kakamega forest and are therefore concerned with the livelihood activities of the farmers surrounding the forest (There has recently been a reorganization of the portfolios of many Kenyan Ministries – previously KWS and the FD were both in the same Ministry).

The pre-existing linkage between CRSP and the villages enabled the introduction of HCA to the farmers and the establishment of VDOs to facilitate this and other development projects. The collaboration between CRSP and the government has been to the benefit of the project as officers from the Ministry of Livestock and Fisheries Development were

able to use their connections with farmers to promote the project (Figure 3). A potential problem for the establishment of the project existed as the MLFD has an interest in beekeeping and had previously established a number of its own beekeeping projects in the district using the KTBH (most of which seems to have failed after a few seasons). The MLFD could have felt threatened by the HCA project and tried to dissuade farmers from becoming involved, but they did quite the opposite, with the MLFD embracing the project and offering what assistance it can to the HCA beekeepers.

### *3.3.b. Key Horizontal Institutional Linkages*

The most important horizontal linkage that exists in the Kakamega case is the close and strong link between CARD and the HCA PO (Figure 2). The HCA PO (a resident of the district) is based out of the CARD office, and while he currently works for HCA he was previously a CARD employee and received his current job on the recommendation of CARD. This close relationship between the HCA PO and CARD has contributed to the success of the project as the vertical linkages connecting the beekeepers with CARD and HCA rely heavily on the HCA PO (Figure 2) since CARD is unable to employ anyone full-time to inspect the apiaries and must rely on volunteers instead. CARD's links to the MLFD offers a potential benefit to the project as the MLFD is interested in beekeeping and may in the future be able to provide CARD with some assistance in managing the project, though to date this has not occurred.

The key horizontal linkage in the Kwale case is the one between CRSP and the district level staff of the MLFD (Figure 3). The close and strong relationship that has been fostered between CRSP and the government officers (who are based out of the CRSP office) has allowed CRSP to utilize the connections that the government staff have with the farmers in the district to support the beekeeping and other projects. The Ministry benefits from the arrangement as they have funding problems and are not able to provide their staff with vehicles so that they can perform their duties, CRSP provides the ministry staff with motor-bikes so that they can get out to the field and do their job, as well as promote their projects and provide assistance and instruction to farmers participating in the CRSP projects including the beekeeping. As the government officers spend a great deal more time in the field talking to farmers (some of whom are HCA beekeepers) than CRSP staff do their contribution is important for CRSP to monitor the project. This linkage is made all the more important as the system that CRSP has developed for information to be transferred from the beekeepers to the CRSP office is not properly functioning. The system of VDOs and VDCs that CRSP has established is supposed to include horizontal links between neighboring VDCs so that information can be transferred from one village to the next, however this has not happened in practice (Figure 3).

### *3.3.c. Key Vertical Institutional Linkages*

The project in Kakamega is linked vertically to community groups throughout three divisions in the district, and with the HCA beekeepers. While CARD enjoys good linkages with its beekeepers the strongest vertical linkage between the beekeepers and CARD is actually through the HCA PO (Figure 2).

The links to the HCA head office in Nairobi are also solid, the PO makes regular reports to the head office, and CARD has frequent communication with the HCA head office as well (Figure 2). This linkage is important for the timely extraction of honey from the full supers that are taken from the field and stored at the CARD office. As CARD does not own a centrifuge machine they are reliant on HCA sending one out with a truck to transport the honey back to Nairobi. Thus a good linkage between CARD and HCA allows for the honey to be harvested in timely manner so that the farmers can be paid and the supers returned to the hives quickly so that production does not suffer.

In Kwale the system vertically linking beekeepers through the VDO and VDC to the CRSP is not functioning properly (Figure 3); this has resulted in a lack of timely communication between the beekeepers and CRSP. This lack of communication has meant that CRSP is often not aware of the concerns of beekeepers, nor is CRSP able to efficiently disseminate information to the beekeepers in Kwale or pick up full supers in a timely fashion. The vertical linkage that exists between the farmers and the MLFD is functioning more effectively (Figure 3), this has been important for the project as without this linkage there would be very little information being passed between CRSP and the HCA beekeepers in the area.

One strong vertical linkage in the project exists between CRSP and the AKF office in Nairobi (Figure 3), this linkage seems to have hampered the project to some degree as the head office has not devolved much authority down to CRSP resulting in a situation where many decisions affecting CRSP's projects are made in Nairobi rather than in Mariakani. While the AKF office must retain a certain amount of control over the CRSP office projects in Kwale cannot be effectively managed from Nairobi (especially due to the poor condition of the communication networks in Kenya), therefore it would likely benefit the project if CRSP enjoyed more freedom from the AKF than is currently the case.

#### *3.3.d. Impact of the Policy Environment the Project*

The policy of the government as concerning the Kakamega forest impacts the project in several ways: it potentially drives some people to the project as one of their primary sources of income is taken away from them, as well the ban on activity in the forest means that traditional beekeepers who kept their hives in the forest are no longer allowed to do so and have difficulty in obtaining the wood to make the hives, so if they want to continue beekeeping the HCA project offers them a method of doing so. However it is not clear if the project would be allowed to keep hives in the forest itself. The FD and KWS are involved in BCP (Biodiversity Conservation Project), an organ of CDTF (Community Development Trust Fund), which is an NGO that manages EU funds the Kenyan government receives for community development. BCP has bought 50 hives + training/equipment, the hives have been given to groups and individuals. Hives are placed near the forest but not in it. The Forest Department and KWS are not involved in the beekeeping aspect of BCP. BCP felt that the beekeeping activities near the forest should be included as one aspect of a larger forest management plan as a way of involving the government and because beekeeping has benefits through pollination for forest health as well as the potential to displace other livelihood activities that negatively impact on the forest.



Government policy affects the project rather minimally in Kwale. The MLFD has in the past promoted beekeeping in the area with the KTBH and has targeted women's groups in particular, however these projects have mostly ceased to function for a variety of reasons. This previous government investment in training and awareness of beekeeping has likely made the adoption of HCA technology easier and more attractive for some especially women. There have been no changes in government policy as a result of the HCA project, though the MLFD is now beginning to work with this technology, which they had not in the past, instead focusing on the KTBH, but with the expansion of HCA they are training some of their officers to use the Langstroth (in areas where HCA operates) (Box 5).

**Box 5. Government reaction to HCA**

In both Kakamega and Kwale the introduction and promotion of Langstroth hives on a relatively large scale by HCA (over 600 hives in both districts) as well as other beekeeping groups such as ICIPE has prompted a reaction from the government. Due to HCA's impact on the beekeeping sector in Kenya the Ministry of Livestock and Fisheries Development has begun training some of its field officers on the Langstroth hive so that they can assist farmers who are now using this technology.

*3.3.e. Unusual Interactions or Relationships Among Actors*

KWS and the FD jointly administer the forest each with their own section and different policies, but the Forest Department has been temporarily relieved of many of these duties by the national government due to corruption within the FD. They have been replaced by the GSU, this has not been particularly successful as the GSU according to anecdotal sources is similarly corrupt and lacks the concern for the forest or training in ecology and biology that FD personnel have. KWS is continuing to play the same role in managing the forest that they have since 1985. There has been some conflict between the two agencies that stems from an atmosphere of low-key quiet distrust between some members of the respective agencies. As these agencies work in the forest and the project is outside the forest their activities do not have a serious impact on the project.

The interaction between the MLFD and the CRSP in Kwale is a bit unusual but it is beneficial to both parties. With government staff stationed at the CRSP office CRSP gets more trained staff to help in their projects and the ministry gets resources that they lack. As well this arrangement makes closer coordination between the two institutions easier at least at lower levels in the command structure. Due to this close interaction there is an opportunity for learning between the staff of the two institutions, but it is unclear if any learning takes place at higher levels in the commands structure as this interaction takes place between field staff not those higher up.

**3.4 Biodiversity Conservation and Environmental Improvements**

*3.4.a. Conservation/Improvement of Target Resources*

The forest should benefit from the beekeeping project as the bees go to the forest to forage thus performing pollination services, and the income source can potentially help to alleviate pressure on the forest, but as it takes some time for the hives to start producing and because loan payments are deducted and most people only own 1-2 hives they do not

receive a large amount of income from the hives (especially not for the first several years until the hives are paid off). As well the people living around the forest are mostly poor and as such the project will not likely discourage them from going to the forest to obtain resources. The government policy, despite the corruption is much more effective in this regard and the beekeeping can help to cushion the blow to the farmers but in of itself it has not been a catalyst for changing behavior in this regard.

In Kwale as in Kakamega the bees provide a pollination service to both the natural and the cultivated vegetation in the area, in this sense there is a benefit to conservation objectives. As well, the HCA hives are made from wood that is not procured locally unlike log hives, this is a benefit to the local resources as the area is severely deforested to the point where it is actually difficult for the traditional beekeepers to procure the desirable species of tree or sufficient size to make log hives, forcing them to use less suitable species that result in hives with shorter life-spans.

#### *3.4.b. Changes in Resource State.*

In Kakamega the pollination services provided by the bees has been increasing yields of fruit crops in particular, and has prompted a few people to plant more flowers or fruits. Beekeeping has encouraged people to not burn the stubble from maize or sugar cane, though those who are not involved in the beekeeping project are not so concerned about the effects of burning stubble and the practice is still relatively common.

The beekeeping project has not resulted in any noticeable changes in the resource state in Kwale though pollination services provided by the bees should help flora to reproduce and spread. As well the use of Langstroth technology may also increase the bee population in the area as there is significantly lower bee mortality compared to harvesting with log hive technology thus removing one check on the bee population growth. While the harvesting of trees for log hives in Kwale is an activity that happens on a very small scale the district is in a state of sever deforestation making suitable trees for log hives are difficult to find, thus any reduction in the number of trees harvested in the area is beneficial to the resource state of Kwale.

There have been no studies in either Kakamega or Kwale that have focused on the improvement of environmental conditions in relation to beekeeping activities and with no baseline data it is difficult to make any conclusions about the environmental impacts at such an early stage of the project.

### 3.5 Poverty Alleviation

#### *3.5.a. Indicators of Poverty Alleviation*

The project has benefited some people in the communities but due to the cost of the hives and the length of time needed to pay off the loans there has not yet been significant increased income though in those cases where the hives have been paid off there has been a clear benefit. There have been few jobs created as a result of the project, there are 2 women who make beesuits, and a few staff who work on the project, 1 full time HCA employee, and a few part-time CARD staff, however due to the poor performance of many of these staff most have been let go and the work is now being done primarily by

the HCA PO and volunteers at CARD. Beekeepers who have been involved with the project for a few years now and have realized more than one harvest from their hives are generally of the opinion that it is a worthwhile investment for them and many are using some of their honey profits to buy more hives.

The indications of poverty alleviation are mixed in the Kwale case. There are a few beekeepers who have benefited from their activities but the vast majority of beekeepers have paid off very little of the loans they obtained for the purchase of the hives. The project has not been particularly successful in Kwale, this is due to poor weather conditions on one hand, but more importantly it is due to poor management of the hives by both the farmers and CRSP which in part at least stems from a lack of leadership at the local level. The subsidy system has greater potential to create economic benefits for beekeepers but it also has serious problems in that it is really a hand-out and not at all sustainable, as well it may potentially undermine the idea of ownership amongst beekeepers and could create problems in communities where there are beekeepers who are still paying off loans for hives and have neighbours who just received hives at an 85% subsidy.

### *3.5.b. Improvements in Community Well-Being*

In both the Kakamega and Kwale cases the HCA beekeeping projects benefit specific individuals and groups more than the community as a whole as the direct benefits from the project accrue only to those individuals or groups that have purchased HCA hives and have harvested from these hives. In that individuals and groups living in the community have benefited from the project, it may be said that the community is better off as these individuals are members of the community. In one case such a group is a girls secondary school that has 12 hives which have been performing well and the school has benefited as a result through the income and a ready example to show the students about agriculture, 3 of the hives have been specifically used to aid 3 promising students who come from poorer families so that by receiving the income from these hives they would have a better environment to study in at home and have more time to study as they would have to spend less time working.

In Kwale as in Kakamega the beekeeping benefits individuals more than the community. The pollination services may benefit a greater sector of the community as most people in the area are farmers and some have crops that the bees will pollinate. The beekeeping within each village is organized in such a way that the beekeepers share the harvesting equipment between each other and help each other in the harvesting of the supers; this has helped to nurture an ethic of reciprocity in helping each other for each individuals personal gain that could be supplanted to some other development project.

## 3.6 Analysis of Community-Based Conservation (CBC)

### *3.6.a. Mechanisms, Dynamics, Drivers*

#### *i. Analysis of catalytic element that made the initiative work.*

The need for simple income generating activities that could utilize existing resources and not impact the environment negatively was recognized in Kenya. Beekeeping seems an

ideal match for this purpose and thus HCA was welcomed into a number of communities throughout Kenya including in Kakamega and Kwale districts.

In Kakamega it was the leadership of a few key individuals and the ability of CARD to manage in an adaptive manner that sustained the project through some difficult times. In Kwale where there has not been strong leadership the project has been less successful and while a number of people have become discouraged and quit the project those individuals who kept with it are now seeing some benefit. The individual nature of the profits likely was a factor that encouraged the self-motivated to continue while others quit.

*ii. Decision-making process*

The decision making process varies depending on the organizational structure of the different stakeholders. CARD makes decisions based on the info it gets from its staff and from other organizations (particularly HCA), day-to-day decisions are made by the programme manager, more important decisions are made by the executive committee of CARD. Beekeeping groups such as IBG usually have a chairperson who is responsible for making many of the decisions, but the decisions must be voted on by the members, and suggestions come from members, thus the process is participatory.

CRSP has a programme manager who makes many of the decisions, though his authority is tempered by the AKF office in Nairobi which holds the final say for much of what CRSP does. The VDOs have an executive committee the VDC (Village Development Committee) that is elected by the members (In practice the term lengths for committee members do not correspond with those decided upon by the VDO as elections for these positions are not held as regularly as supposed to be – this may have something to do with the lack of familiarity with democratic institutions in Kenya, especially rural areas). This committee makes most of the decisions for the VDO with guidance from CRSP.

*iii. Conflict-management mechanisms.*

In both Kakamega and Kwale, most conflicts are dealt with internally at the village level. Beekeeping groups such as IBG in Kakamega and the VDOs in Kwale handle disputes involving their members in two ways: the first and most common method is for the chairperson to deal privately with the individuals involved; the second and less often used method is for the executive committee or the entire group to vote on the matter. In situations where there were conflicts between livestock and bees the issues are dealt with inside the village usually privately between the beekeeper and the owner of the livestock.

*iv. Horizontal and vertical institutional linkages in the development and success of the project.*

Both vertical and horizontal linkages between the various stakeholders were important for the formation and sustaining of the projects in Kakamega and Kwale.

The most significant horizontal linkage in the Kakamega case is the main link between CARD and HCA, which is necessary for the project as HCA provides technical support and buys the honey putting money into the project. Vertical linkages were important as in order to establish the project in the villages the chiefs needed to be informed, and they

also allowed the project to be promoted through community meetings (barazas). The links between CARD and the government are as yet weak, though there are potential benefits to be gained by strengthening these links.

In the Kwale case the only strong vertical linkage is that between CRSP and the head office of AKF in Nairobi. The vertical linkage between CRSP and the VDOs and the VDOs and the beekeepers are weak – to – nonfunctional, these linkages are important and need to be improved if the beekeeping project is to be run efficiently and in order for the beekeepers to benefit from the leadership of CRSP. There is a strong horizontal linkage between CRSP and the Ministry of Livestock and Fisheries Development that has benefited both organizations and the beekeeping project.

### *3.6.b. Learning and Adaptive Management*

#### *i. How previous observations led to project formation and development*

Due to an experience with an unsuccessful poultry project in the past IBG realized the need to have additional finances to support the upkeep of the project rather than just having the start-up capital, the beekeeping project was therefore attractive because it requires little in the way of up-keep capital from the community. The guaranteed market for the honey also was an important part of adopting the project as there were a number of farmers in Kakamega who got involved in an unsuccessful soybean growing project that failed due to a lack of a market.

Previous experiences of community members did not play much of a role in the development of the project as it was brought in from outside and used the same basic form in each area with the same number of hives per village and farmer within these villages. Where community experience did come in to play was with the actual management of the hives, which is the responsibility of each individual farmer. As the harvesting/inspection equipment had to be shared between the farmers of 1 village they were forced to cooperate at least in the sharing of equipment and as there were usually 2 bee-suits per village this promoted cooperation between beekeepers in harvesting and inspections, but how this was organized was different in different villages and was influenced by their previous experiences, especially if the HCA beekeepers had previously been participants in a previous government sponsored beekeeping project.

#### *ii. How experience was incorporated into subsequent steps of the project*

The beekeepers doing the inspection of the hives of course learned from doing and came to be more effective at this job. CARD was able to establish a schedule for doing inspections that was designed to optimize their limited personnel who have to cover a large area and great number of hives each month. CARD has also attempted to have farmers who have apiaries on their lands come in for training for free as they have realized this is important (it has not yet been successful).

In Kwale because the central leadership for the Kwale project has been weak experience has only been utilized on an individual level and not effectively disseminated to other areas of the project. Initially the hives were mostly kept on stands but after problems

with insects they adopted the goal-post system, but this has not been universally adopted in the area due to the poor information dissemination.

*iii. How monitoring informs the project.*

The performance of individual beehives is monitored for production, pests, colony strength, and debt remaining on hive. This is important for several reasons: it allows the CARD office to determine which hives are most likely to be ready for harvesting thus allowing the staff to collect supers in an efficient manner, as well it is important in order to determine when a farmer clears the loan on the hive so that they then begin to receive 100% of the profits from the honey sold. There has been no monitoring of rare species as related to the project.

There has been a serious lack on any effective monitoring of the project at all by CRSP which has contributed to the problems of poor hive management and has made it difficult for CRSP to assess the success or failure of the project or even to collect the supers from the farmers in a timely manner. There has been no monitoring of any species associated with the project in Kwale.

*iv. Barriers to CBC, and how the barriers were overcome.*

The most significant barrier to be overcome was the introduction of new technology to the communities, many of which already kept bees using other technologies. This was overcome through demonstrations that showcased the advantages of the new technology. As beekeeping does not require much time investment and was already an activity that was widely practiced in the area there were not many major obstacles to the project other than getting people in the community interested. This previous experience made it difficult especially to begin with for CARD to convince many farmers that the beekeeping was a worthwhile investment. The failed soybean growing project has made many farmers wary of development projects in the Kakamega area. The cost of the hives has also been a barrier, as the poorest members of the community cannot raise the necessary capital that they can use to invest in hives, the project is really only accessible to the middle and upper income members of the community, with the exception of a few cases where there are beekeeping groups that collectively own hives.

In Kwale as in Kakamega the introduction of the Langstroth hive was a barrier to be overcome as there already existed beekeepers in the area, but they were familiar with other hive technologies (KTBH or traditional log hives). The climatic conditions were a major problem to getting people interested in the project, due to the semi-arid nature of the climate there is a limited supply of flowering vegetation for the bees to forage from. Related to the dry climate there are fewer traditional beekeepers in Kwale than in Kakamega, thus there was not the same cultural interest in beekeeping in Kwale as in Kakamega.

*v. Combining knowledge systems to solve problems.*

There has been a combination of traditional beekeeping knowledge (the area around the forest has a long history of traditional beekeeping) with a more modern technology for

this activity. However much of the knowledge that the traditional beekeepers hold has been used to improve the project, especially in the area of co-habitation with bees on small shambas in a densely populated area, and the management of apiaries as the people employed to do this already were familiar with beekeeping (though using a different technology)

Those HCA beekeepers in Kwale who had kept bees in the past have been able to use their experiences to help them better manage their hives. Those who have kept bees in the traditional manner (log hives) often have a great deal of knowledge concerning bee forage, harvesting, and dealing with pests and predators especially the honey badger.

### *3.6.c. Community Benefits from Biodiversity Conservation*

#### *i. Direct benefits observed (e.g., improvement in resource base to be further exploited; alternative income sources (e.g., tourism)).*

The direct environmental benefits of the project have to do with the pollination services from the bees which have likely resulted in higher yields of fruits and other crops, as well the Kakamega forest should likewise benefit from the pollination resulting in an improved resource base for the community (this is a very important resource for the community). There has been no indication of beekeeping acting as a replacement activity for other less environmentally benign livelihood pursuits such as charcoal production. As there has been no monitoring of the resource state in relation to this project it is difficult to attribute any environmental improvements (if in fact there have been any) to the HCA project.

In Kwale there have been for a small number of beekeepers an economic benefit from the project, but for most the rate at which they have been earning income is so low as to make paying off the loan within the life of the hive unlikely, thus making for a poor investment. As the hives are not produced with locally harvested wood and there may be some displacement of traditional hives with the project there is potentially a benefit to certain tree species, but due to the small scale of traditional beekeeping in the area this is likely of small significance.

#### *ii. Indirect benefits observed (e.g., awards and recognition; publicity; increased funding opportunities for conservation).*

Indirect benefits include better relationships with some government Ministries and departments (ie MLFD and the potential to improve relationships with KWS and Forest dept.) As well the project may help CARD attract additional funding from donors. For Honey Care there is a significant promotional benefit for their product that can help them obtain eco-friendly labeling that should benefit their expansion to international markets.

With more individuals involved in beekeeping and becoming aware of how bees interact in the local environment there is a potential for greater environmental awareness and an increased incentive to alter activities so as to reduce stubble burning and deforestation, or increase aforestation (at least of bee forage species)

### *3.6.d. Livelihood Strategies, Coping and Adapting*

#### *i. How involvement in the project affect other livelihood pursuits.*

The project requires very little time commitment from most participants, only compound owners who are hosting apiaries have to spend any time on the project (most spend little time maintaining apiaries). Similarly only those hosts are affected by the bees in the project as far as losing land for housing the hives, however the land used is usually unsuitable for agriculture (rocky, treed etc.). The cost of the hives is quite high at 3000-3550ksh (depending on when in the project they bought them, though with the loan scheme they only pay 700ksh up front but even this amount can mean a lot to farmers) so they lose capital until the hives start producing honey (1-2 years). After this time the profits from the hives allow them to invest in other pursuits. There are as well synergies with the principal economic activity in the area which is farming as bees pollinate crops (though the 2 most important cash crops (sugar and tea do not benefit much from this pollination, coffee does but is less important a cash crop in the area), other crops such as fruits and vegetables mostly for subsistence though some for sale do benefit from the bees.

Even though the farmers in Kwale manage their own hives beekeeping does not require much time so the farmers are not hindered in this sense from their other activities, however the land adjacent to the apiaries is more difficult to work due to the fear of disturbing the bees. On the positive side the bees pollinate certain crops (especially trees crops) and the money that some farmers have earned has allowed them to invest in animals or pay for a major expense that they may have.

#### *ii. How the project affects the ability of households and the community to adapt to changes (e.g., markets)?*

The project has helped households to adapt to changes by providing them with greater income to weather bad times and also experience in an economic activity, as for accessing markets many people previously sold honey but usually for less than they are getting from HCA, this experience has helped certain individuals to better understand the value of their product.

Those who are better off economically should be better able to adapt to changes as their greater wealth should insulate them somewhat from any changes. The experience of becoming involved in the project has allowed some to gain experience that may make them better able to deal with changes in the honey market.

### *3.6.e. Resilience of Communities, Livelihoods and Management Systems*

#### *i. Options (e.g., livelihoods, alternative management possibilities, new coping and adapting strategies)?*

The project has provided a higher yielding technology to an area that already was engaged in beekeeping, as well there were individuals who previously were not keeping bees and for whom beekeeping has become an alternative source of supplementary income. The beekeeping may also be a source of confidence for the communities (more so in Kakamega than Kwale due to the relative success) that may allow them to pursue other development projects, both by providing capital to invest and experience.



*ii. Learning opportunities*

Several individuals were given the opportunity to attend beekeeping training courses free of charge and with transportation being paid for, and several others have been given such opportunities but have declined to attend. There was also learning having to do with the organization of self-help groups at the village level in both cases.

*iii. Self-organization opportunities*

The project encouraged the formation of self-help groups related to beekeeping and then even inspired other resource users to form similar groups to manage their activities, in Kakamega at least.

*3.6.f. Transferability of the lessons from this EI case*

There a number of lessons from the two HCA beekeeping projects that are potentially transferable to other CBC initiatives in similar socio-economic circumstances.

*i. Market*

The importance of establishing a market for the product of the CBC project previous to the project going forward is vital, as individuals will not be wiling to invest in a CBC project that will produce a commodity they will find difficult to sell. Thus it is advantageous to start by conducting market research to determine market potential for a given product and then determining if it is possible to produce such a product at the village level. In the case of the HCA projects this problem has been overcome by HCA guaranteeing to purchase all the honey produced by beekeepers using their hives at a set price negotiated between the partners (usually between HCA and the NGO or CBO on behalf of the beekeepers), thus reducing the risk to the farmers. In other CBC projects it may not always be possible to have such an agreement but efforts should be made to ensure that there is a sufficient market to support the endeavor profitably without long-term subsidies.

*ii. Private Ownership of Beehives*

Private ownership of the beehives is the norm in the HCA projects but this is a significant change from the typical manner of beekeeping and many other types of development projects in Kenya. There are both advantages and disadvantages of private ownership of the hives. One of the advantages is that privately owned hives are more likely to be effectively managed than group-owned hives, resulting in greater yields of honey and therefore more income for the beekeepers. There are many examples of failed beekeeping projects in Kenya that have collectively owned hives which have not been properly managed, one of the factors contributing to the failure of these projects has been a lack of motivation to manage the hives by individuals who only own receive a small portion of the proceeds. One disadvantage to private ownership of the hives is that access to the project is limited to those individuals who have the disposable income to risk on such a venture, these a generally the wealthier members of the village, as the poorest villagers do not have the capital to invest in hives of their own.

A point related to private ownership is that the hives in HCA projects are sold to the farmers rather than gifted to them as has often been the case with beekeeping and other types of development projects in the past. Selling the hives to the farmers has the advantage of only including in the project those individuals who are seriously interested in beekeeping and are therefore likely to manage their hives in a productive manner, besides benefiting the farmers this is of course also beneficial to HCA as the seller of the honey.

*iii. Private Sector Involvement*

The partnership between a Kenyan owned private company (HCA), development organizations, and rural communities is an interesting example of development in a non-typical manner for Kenya at least, where development has been primarily the domain of government ministries and international NGO's. HCA being a private company that must generate a profit brings a different set of expectations to the project compared to those of a government ministry or an NGO that typically do not have a profit motive. As a private company HCA ensures that the project operates under realistic market conditions, and is economically sustainable, something often lacking in government or NGO driven projects. Of course there is a potential downside to private companies starting development projects, as there may be an opportunity for such a company to establish an exploitive relationship with the community members. In the HCA projects this danger is tempered by the NGO's or CBO's that are to act on behalf of the communities to ensure that they are not being unfairly exploited.

*iv. Institutional Partnerships*

In the Kwale case there is an interesting partnership between the CRSP and the government of Kenya, where CRSP provides office space (in Mariakani) and motor-bikes to government officers from the Ministry of Livestock and Fisheries Development that the government is unable to provide. This allows for the government staff to do their jobs more effectively and also promote and provide assistance to the CRSP projects in their area. The arrangement also ensures a close working relationship between the government and the NGO that has built trust between the two institutions to the benefit of both.

*v. Inclusion of Traditional Knowledge*

The inclusion of traditional knowledge in the project is an example that can be learned from for other development projects (especially beekeeping projects) One of the difficulties encountered by the HCA projects is the level of beekeeping knowledge and skill possessed by the participants. In the Kakamega case there is a long history of traditional beekeeping in the area and while the technology used by HCA is different from that traditionally used in the area the bees are the same. The case in Kwale was different in this regard with a much smaller number of traditional beekeepers in the area and involved with the project. In both cases those HCA beekeepers who had kept bees in the past were amongst the most successful and had the least difficulty in living in close proximity with bees. The knowledge and skills of the traditional beekeepers have been recognized by CARD and CRSP and both organizations have made efforts to include

traditional beekeepers in the project so that novice beekeepers can learn from this wealth of experience.

*vi. Capacity Building*

Sufficient capacity building is another lesson that can be realized from an examination of the HCA cases. The poor performance of the project in Kwale can be attributed in part to insufficient capacity building. Most of the HCA beekeepers had limited or no experience with beekeeping previous to becoming involved with the project and were therefore relying on their initial training to teach them all the skills necessary to manage their hives. Unfortunately this training was brief (due to the expense involved and the time that participants could spare as the training was mostly not held in their home villages). This level of training may have been sufficient if there had been effective extension support provided to the beekeepers, but there was little support provided. CRSP has recently tried to remedy this situation by selecting one beekeeper from each village (para-professional) and providing this individual with additional training so that they can then provide assistance to the other beekeepers in their village. This is very important as this para-professional being a member of the village will be much more accessible to the other beekeepers than are CRSP or government staff.

*vii. Leadership*

Leadership at the local level has been important to the success of HCA's projects. In the Kakamega case there are some very committed leaders at the local level, with one in particular standing out: the HCA PO in Kakamega. He had been keeping bees for over 20 years before HCA came to his village and possesses a great store of knowledge about bees and beekeeping. This individual who is also the chairperson of IBG, has been very successful in promoting the project as well as managing it. He does in fact keep two KTBHs inside his house, and this has been a great example to others in his village who are interested in beekeeping but fear the bees. Those people who feared to keep bees are reassured by the fact that the HCA PO can live with two hives inside his house.


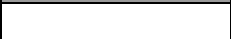
*viii. Institutional Commitment*

At an institutional level commitment to the project is also important and has impacted on the relative success of the projects. CRSP has a variety of development projects underway and must divide its resources amongst them, and as a result the beekeeping project has in the past not received the level of attention that it required (though this seems to have recently changed). CARD, a much smaller institution with significantly less capital and resources is almost entirely focused on the beekeeping project. This has impacted on the relative success of the project in Kakamega (though there are of course many other factors that have also been important to the project's success).

#### 4.0 Tables and Figures


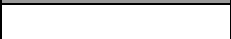
**Table 1:** Cross-Scale representation of stakeholders in Kakamega HCA project

	Local	Division	District	Province	National	International
Honey Care					X	
HCA PO			X			
CARD			X			
Local Groups	X					
Forest Dept					X	
KWS					X	
Livestock/Agr					X	

X Level at which institution is based  
 Level at which institution is active in relation to the HCA project  
 Level at which institution is not active in relation to the HCA project

**Table 2:** Cross-Scale representation of stakeholders in Kwale HCA project

	Local	Division	District	Province	National	International
Honey Care					X	
CRSP			X			
AKF					X	
VDC	X					
VDO	X					
Livestock/Agr					X	

X Level at which institution is based  
 Level at which institution is active in relation to the HCA project  
 Level at which institution is not active in relation to the HCA project

**Table 3:** Role of Key Individuals: Honey Care Project Officer – Kakamega

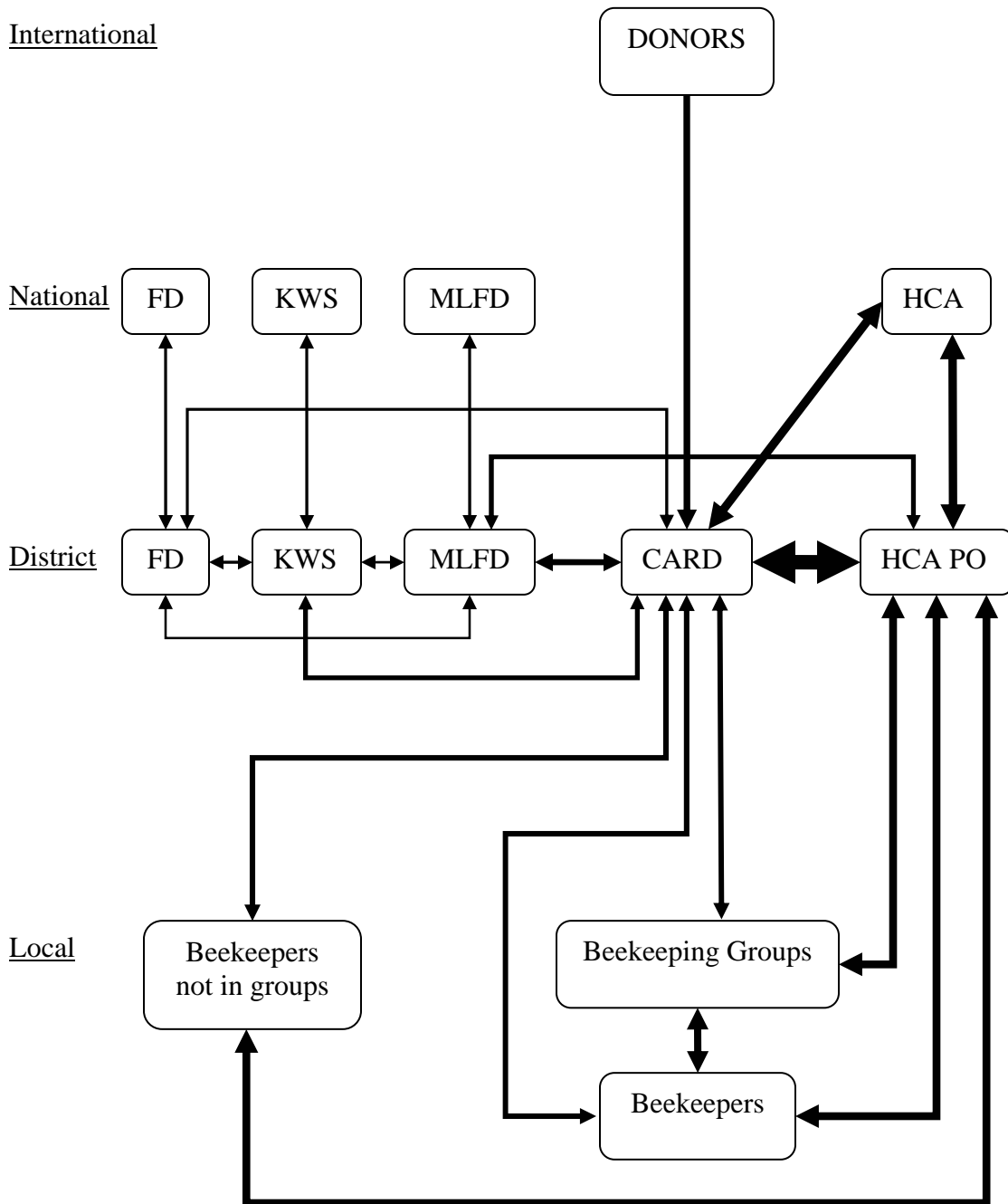
	Phase I	Phase II	Phase III
Organization Affiliation	CARD	CARD IBG	HCA CARD IBG
Role in Organization	Individual Beekeeper	CARD Beekeeping Officer; IBG Chairperson	HCA Project Officer; IBG Chairperson
Connections - Contacts		Beekeepers (village level); MLFD Divisional Officer	Beekeepers (District level); MLFD Divisional Officer, MLFD District Officer

Figure 1: Map of Kenya showing the location of the two research sites



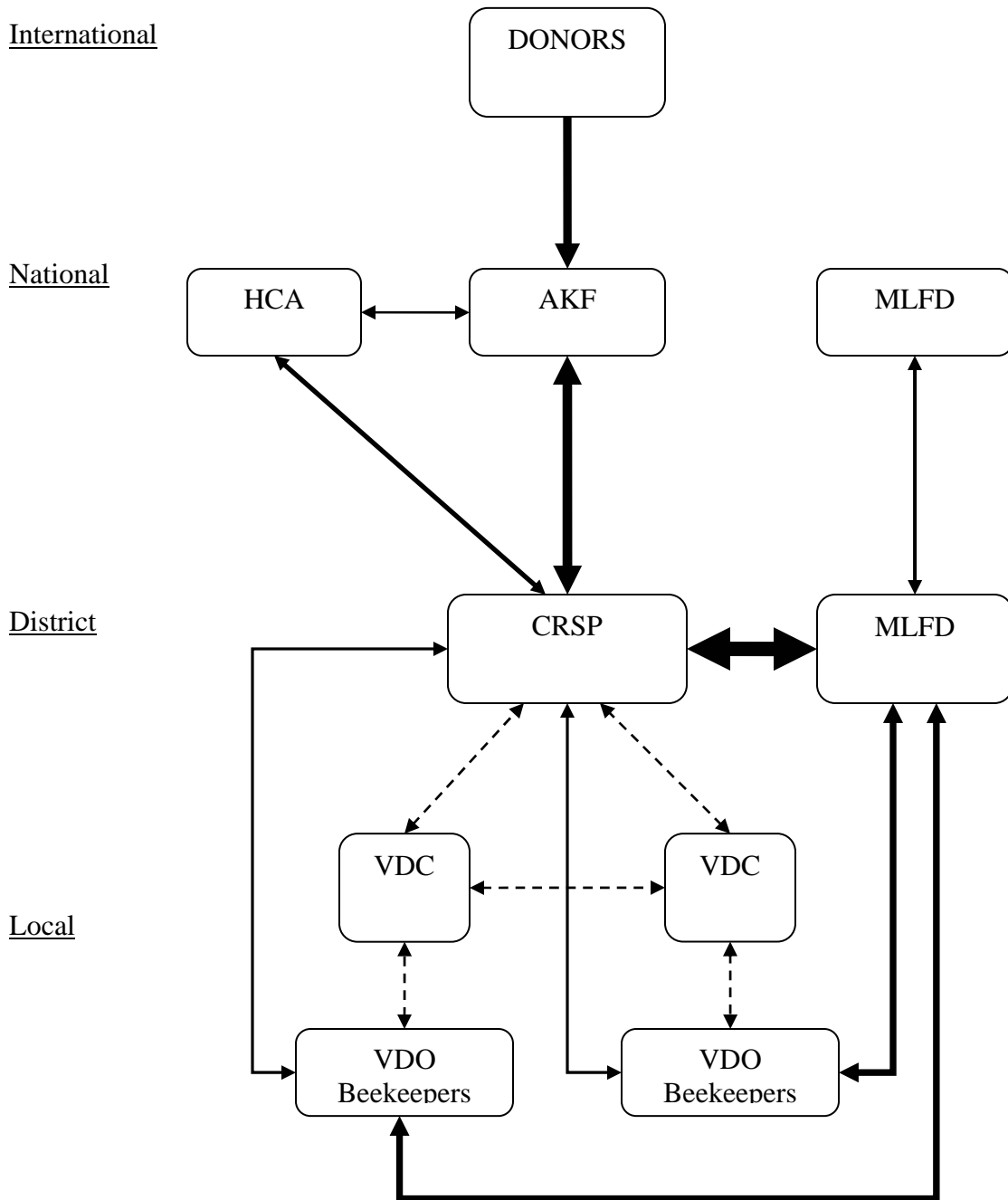
Source: <http://www.lib.utexas.edu/maps/cia98.html>, August 2004.

Figure 2: Cross-Scale interactions of stakeholders in Kakamega HCA project



- Non-functional (or nearly non-functional) linkage      ← - - - - - →
- Weak linkage      ← = = = = = →
- Strong linkage      ← = = = = = →

Figure 3: Cross-Scale interactions of stakeholders in Kwale HCA project



Non-functional (or nearly non-functional) linkage      ← - - - - - →

Weak linkage      ← ———— →

Strong linkage      ← ———— ———— →

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## 6.0 Appendixes

### 6.1 List of Acronyms & Abbreviations

AKF	Aga Khan Foundation
BCP	Biodiversity Conservation Project
CARD	Community Action for Rural Development
CBC	Community-Based Conservation
CBO	Community-Based Organization
CDTF	Community Development Trust Fund
CRSP	Coastal Rural Support Programme
EI	Equator Initiative
EU	European Union
FD	Forest Department
GSU	General Service Unit
HCA	Honey Care Africa
HCA PO	Honey Care Africa Project Officer
IBG	Ivihiga Beehive Group
ICIPE	International Centre of Insect Physiology and Ecology
KRSP	Kwale Rural Support Program
ksh	Kenyan Shillings
KTBH	Kenya Top-Bar Hive
KWS	Kenya Wildlife Service
MLFD	Ministry of Livestock and Fisheries Development
NGO	Non-Governmental Organization
SIDA	Swedish International Development Agency
VDC	Village Development Committee
VDO	Village Development Organization
VSO	Voluntary Service Overseas
UNDP	United Nations Development Programme

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