

## 4. THE IMPORTANCE OF APICULTURE FOR RURAL LIVELIHOODS

Beekeeping tends to be perceived as 'a hobby', or as 'a sideline activity'. These descriptions may often be true, but a resilient livelihood – one that keeps people out of poverty – is one that has access to range of options. In this case, apiculture and related trades can be sources of valuable strength to countless numbers of rural people's livelihoods. Rather than just a 'hobby', beekeeping may be seen as an important occupation and part of rural life worldwide. In rural communities where access to income is limited, small-scale beekeeping can contribute significantly to livelihood security. Apiculture and related trades tends to be underplayed in both policy and planning. One reason may be the focus of rural development, wherein crop production and livestock rearing are taken to be dominant activities in rural areas. This perspective can render invisible the part beekeeping occupies in social life, culture, and local economies.

Beekeeping does not fit easily into the sectoral divides of rural development: as an activity, it spans forestry, horticulture, agriculture, the natural environment, animal husbandry and entomology without fitting precisely into any one of these sectors. Likewise, pollination is an important part of horticulture, yet the management of bees is often considered part of animal production. Similar problems confront the classification of bee products because honey is a food, yet beeswax is listed amongst non-food waxes and oils. Beekeepers have been categorised in different times and places as farmers, hunters and gatherers, cattle-keepers, or rural dwellers – with beekeeping remaining hidden as an important skill and part of their lives. These ambiguities present complications for development policy-makers, practitioners and researchers, even though such complexity is in keeping with the way people themselves link different activities, resources and products together in their daily lives.

This very complexity explains the attraction of sustainable livelihoods approaches for securing a more visible position for beekeeping within rural development (Carney, 1998). Beekeeping fits well into the people-centred perspectives of sustainable livelihoods approaches. Such approaches have contributed towards moving rural development away from economic and resource-based interventions, towards people and their rights and obligations to the resources on which their livelihoods are based.

Beekeeping is a small-scale but very widespread activity. Unless you are aware of it, it is easy to visit villages and not see beekeeping. It does not attract much attention.

### CREATING A LIVELIHOOD FROM BEEKEEPING

According to the accepted definition originally developed by Chambers and Conway (1992): "A livelihood comprises the capabilities, assets and activities required for a means of living. A livelihood is sustainable when it can cope with, and recover from, stresses and shocks and maintain or enhance its capabilities and assets, both now and in the future, while not undermining the natural resource base.

Everybody's livelihood depends upon access to many different types of assets. In order to make it possible to think about people's differing livelihoods, and to allow analysis, all assets may be allocated into one of five fundamental categories: human, physical, financial, social and natural. To understand this well, think about your own livelihood and all the diverse assets it depends upon: your skills; access to transport; equipment; telecommunications; the social networks you have been born into or have created yourself. No single category of capital asset – for example finance – is on its own a sufficient basis for creating a livelihood.

Beekeeping is a useful means for strengthening and creating people's livelihoods because it both uses and creates a range of different capital assets. Successful beekeeping can be achieved by drawing upon all of the five categories of capital asset shown above, although financial capital need not be essential for productive beekeeping. (Although of course financial capital assets may be essential for family and household well being, without which beekeeping may not be possible.) The five types of capital assets are a fundamental part of the framework used to explain the Sustainable Livelihoods Approach (see Figure 1 on page 20).

**BOX 5**  
**The five types of capital assets**

**Natural capital**

*Needed for beekeeping:* bees, a place to keep them, water, sunshine, biodiversity, environmental resources.

**Social capital**

*Needed for beekeeping:* help from families, friends, networks. Membership of groups, access to wider society, market information, research findings.

**Human capital**

*Needed for beekeeping:* skills, knowledge, personal attributes like good health and strength, marketing expertise.

**Physical capital**

*Needed for beekeeping:* tools, equipment, transport, roads, clean water, energy, buildings.

**Financial capital**

*Needed for beekeeping:* cash, savings, access to credit or grants.

***Concerning natural capital for beekeeping***

Livelihoods depend upon natural resource stocks: in the case of beekeeping, these are bees, flowering plants and water. Bees feed on the nectar and pollen from flowers: the nectar is eventually converted into honey. Bees also collect gums and resins from plants, and use plants and trees as habitat for nesting places.

Bees are a natural resource, freely available in the wild. Bees collect where they can, so wild, cultivated, wasteland and even land-mined areas all have value for beekeeping. Beekeeping is possible in arid areas and places where other crops have failed: the roots of nectar-bearing trees may still be able to reach the water table far below the surface. Beekeeping is therefore feasible in marginal conditions: just the sort of activity that is needed where people have to restore their livelihoods, or to create new ones.

Beekeeping provides an excellent bonus crop in addition to, but not instead of, other crops. Bees are the only livestock capable of harvesting nectar and pollen: there is no competition with other animals, and without bees, these valuable resources would not be harvested. The extra-remarkable aspect of beekeeping is that it ensures the continuation of natural assets: by the pollination of wild and cultivated plants, as explained in Chapter 3. As bees visit flowers, they are not only collecting food for today, but by their pollinatory activities are ensuring future generations of food plants, available for future generations of bees, and for us too; the perfect self-sustaining activity.

Beekeeping fits well alongside many other livelihood activities and the natural resources used by them (for example, forestry, agriculture, conservation activities). Although impossible to quantify, pollination is the most economically significant value of beekeeping. Flowering plants and their associated bees are interdependent: you cannot have one without the other. Referring to the definition of a livelihood, that it can enhance its capabilities '*while not undermining the natural resource base*', it is clear that beekeeping actually helps to sustain the natural resource base. How many other income-creating activities can be said to restore natural resources? Beekeeping has been in the past a regular part of village agriculture worldwide, and we need to ensure that it is retained as farming practices change.

***Concerning human capital for beekeeping***

Traditionally many societies have good skills relating to bees, honey and in making other products. Often the products of beekeeping are used by women in making secondary products: for example the important industry of *Tej* (honey wine) making in Ethiopia is run by women, and elsewhere in Africa it is often women who brew and sell honey beer. These are the types of human skills needed to create livelihoods within a society. Too many beekeeping projects have ignored existing skills, or worse, implied that they are wrong or out of date. The best projects recognise existing skills and build on them for greater income generation and ensured sustainability.

### **Concerning physical capital for beekeeping**

These include the infrastructure (transport, water, energy, communications, buildings) and the production equipment that enable people to make their livelihoods from beekeeping. Frame hive beekeeping (see Chapter 5) is used in all industrialized countries and many beekeeping projects have tried to introduce this type of beekeeping. However, where a society does not have the physical, human or financial assets to support this type of beekeeping, the project is likely to fail. There continue to be projects introducing beekeeping technology that cannot be sustained. Yet, there are many ways of managing bees and obtaining a crop from them: a hive is just a container for bees to live inside and there are many types of such containers. To achieve sustainable beekeeping projects, all equipment must be made and mended locally, and in the process, equipment manufacture contributes to the livelihoods of other local people. Indeed, beekeeping can stimulate many different sectors within a society: village traders; carpenters (making hives and stands); tailors (making veils, clothing, gloves); container-makers and sellers. The equipment needed for beekeeping can be very simple: for example, the humble plastic bucket is one of the most useful items. For the beekeeping expert it may not bring great professional kudos, simply to recommend the provision of good quality, lidded, stackable plastic buckets. Yet these are essential items for beekeepers living in remote places that need to keep their honey clean until they are able to sell it. Excellent quality honey can be harvested as long as clean buckets are available, along with cotton or baskets for sieving honey, and containers for melting wax and for selling the honey and other products. Infrastructure such as transport and roads can be critical for beekeepers in remote places: access to transport brings access to marketing possibilities and better prices (see Chapter 13).

### **Concerning social capital for beekeeping**

Social resources such as networks, producer and marketing associations, are of great significance for beekeeping development. Such associations provide the means for beekeepers to advance their craft, ensure protection of their bees, processing for honey and wax, access to markets, and marketing support. Access to a network at a wider level, as provided by Bees for Development, assists beekeepers to make contact with national and international networks, to find out about sources of training, markets, research findings, and raises their awareness of the industry and available opportunities.

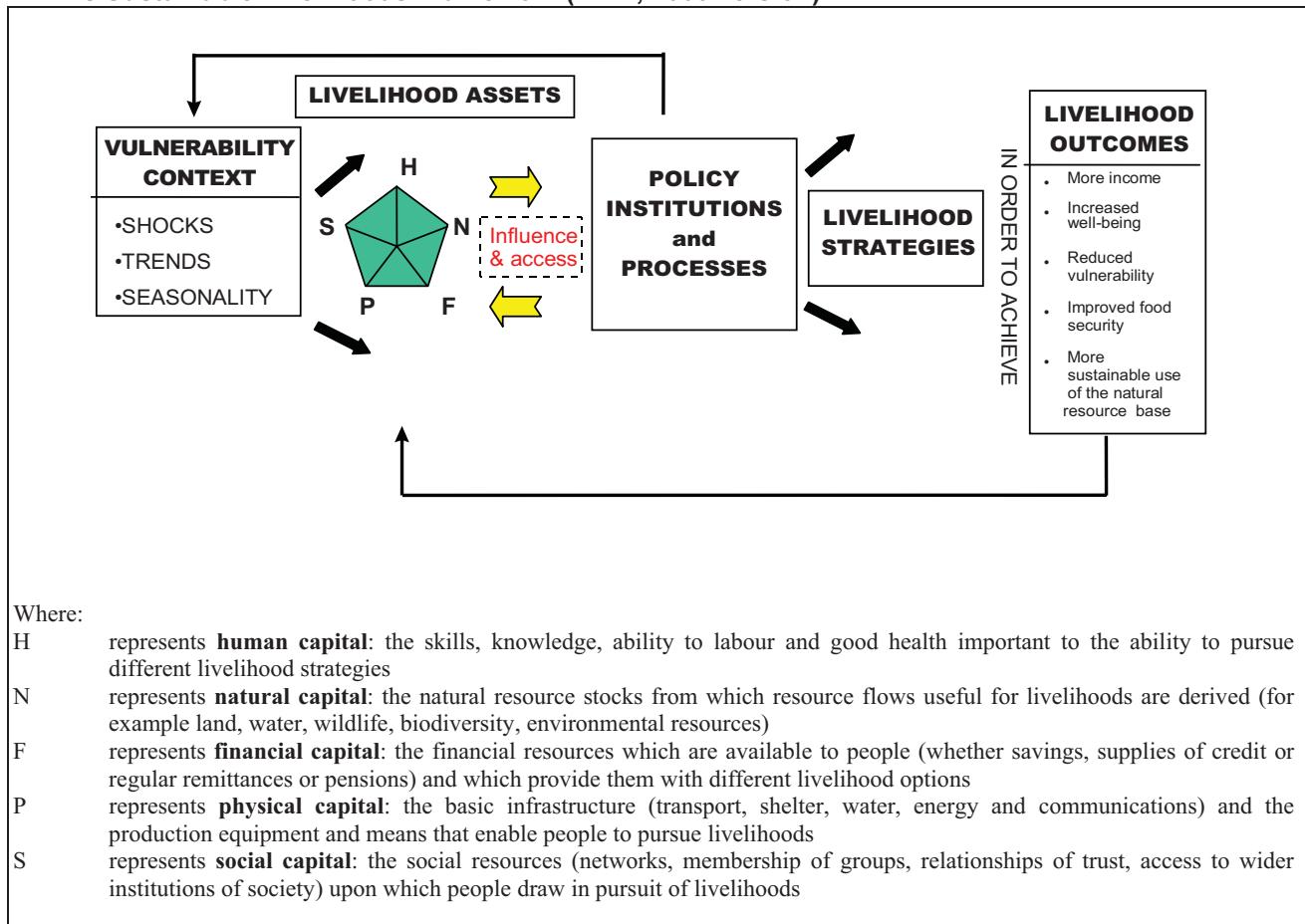
### **Concerning financial capital for beekeeping**

Access to finance is essential for the further development of beekeeping enterprises: for example, successful marketing depends upon the purchase of containers for processing and packaging of products. Credit is necessary for beekeeping associations running collection centres, buying products from producers and selling on in bulk. However, significant financial assets are not essential for beekeeping at subsistence level (although having access to financial resources may be important for a family). A good beekeeping project will work to ensure that all available capital assets are taken into consideration, without dependence on any that are not. For example, too many projects have depended on the importation of the beeswax foundation used in frame hives: this is impossible for beekeepers without financial assets.

## **THE SUSTAINABLE LIVELIHOODS APPROACH**

The Sustainable Livelihoods Approach allows appreciation of how these capital assets fit into the Sustainable Livelihoods Framework. The Framework assists with consideration of the various factors that constrain or enhance the livelihood of a beekeeper and his or her family. In the Framework shown below, the understanding of sustainable livelihoods is separated into five parts: the vulnerability context; people's livelihood assets; policies, institutions and processes; livelihood strategies, and livelihood outcomes.

**FIGURE 1**  
DFID's Sustainable Livelihoods Framework (DFID, 2000 version)<sup>2</sup>



### Vulnerability

The Framework considers people living and working within a context of vulnerability. Analysis of vulnerability means we have to identify the risks beekeepers are under and the resilience they have to cope with negative change in their environment, both short and long-term. Vulnerability includes shocks, trends and seasonality. Shocks could be hurricanes damaging agriculture and destroying honey harvests, or the arrival of a new bee disease. Trends may be the gradual decline in the quantity of flowering plants due to habitat loss, or gradual increase in demand for honey. Vulnerability may be also seasonal: for example, a beekeeper's family may have less food at the beginning of the rainy season, making them more vulnerable to illness, and with less time for beekeeping. People's access to assets, and their capacity to utilise them, is shaped by their resilience to negative shocks, trends and seasonality.

According to the definition: *A livelihood is sustainable when it can cope with, and recover from, stresses and shocks*, we see situations worldwide where beekeeping can be especially valuable, as it remains an activity possible for people living in even the most difficult of circumstances, isolated by war or sanctions. This is because bees are nearly always available in the wild and equipment can be made from whatever is to hand.

For rural development projects, use of the Sustainable Livelihoods Framework can help to identify the ways in which people are most vulnerable, and how they are strongest. This may lead to suggestions of how to make them stronger, for example by helping them to diversify into beekeeping activities. It may also help a beekeeping project to identify ways for government and donors to reduce vulnerability, for instance, by providing training to cope with the effects of a disease of honeybees, or to prevent the use of insecticides.

<sup>2</sup> See [www.livelihoods.org](http://www.livelihoods.org) for updates.

### **Livelihood assets**

Analysis of people's access to assets is based on the idea that they require a range of assets to achieve positive Livelihood Outcomes: this part of the Framework has been already discussed above, in relation to the assets needed for beekeeping.

### **Policy, institutions and processes**

The Policy, Institutions and Processes part of the Framework includes organizations large and small, institutions, legislation and the processes which link organizations, institutions and policies to people's lives: these have a profound influence on people's access to assets. They shape people's livelihoods and effectively influence:

- Access to various types of capital assets, to livelihood activities (such as beekeeping), and to decision-making bodies and sources of influence.
- The terms of exchange between different types of assets (for example making it difficult to market honey because traders lack access to credit).
- The returns (economic or otherwise) achievable from any given livelihood strategy.

Policy, Institutions and Processes also have a direct impact upon whether people are able to achieve a feeling of inclusion and well-being. Looking at the Framework it can be seen that there is feedback from Policy, Institutions and Processes to the Vulnerability Context. This is because policies established and implemented by organizations affect trends directly and indirectly (for example by the protection of habitats). They can also help cushion the impact of external shocks, for example, a change in legislation affecting world trade in honey. Institutions influence people's choices of livelihood strategy, and policies and regulations often affect the attractiveness of particular livelihood choices (for example, legislation concerning honey marketing or making export difficult).

## **LIVELIHOOD STRATEGIES INVOLVING BEES**

People's capacity to make a livelihood, and their resilience to negative change, is shaped by their *livelihood strategies*. These strategies are the combination of people's activities and the choices they make in order to achieve their livelihood goals. They depend on the opportunities and access individuals, households and communities have to exploit different levels and combinations of assets, and are probably the major influence on people's choice of Livelihood Strategy. For example, in a household that depends on farming for most of its food and income, one person may decide to take up beekeeping, and in time, this may provide the capital for another to start a small shop. The beekeeper's success will depend on the available opportunities: maybe there will be a friend who keeps bees. If the friend encourages the beekeeper to join an association, this may be a good opportunity (an example of how social capital works). The possibility to start depends also upon the beekeeper having access to suitable capital assets (human, social, natural and physical), such as tools and equipment, a safe place to keep the hives, and a means of learning (from the friend) how to keep bees.

## **APICULTURE'S ROLE IN POVERTY ALLEVIATION**

When apiculture forms part of people's livelihood strategies there are various possible outcomes. Some of these outcomes will include income and material goods, but also non-material outcomes such as well-being and contentment. In terms of apiculture, the least visible livelihood outcome is the pollination of flowering plants, both wild and cultivated: this is an outcome impossible to quantify. Honey is a traditional medicine or food in nearly all societies and whether sold in a simple way at village level or packaged more sophisticatedly, honey generates income and can create livelihoods for several sectors within a society. Beeswax is also a valuable product from beekeeping, although in some places its value is not appreciated. Industrialized countries are net importers of beeswax, and the supply comes from developing countries. The beekeepers and other people in a community can create further assets by using honey and beeswax to make secondary products, such as candles, beauty creams or beer. Selling a secondary product brings a far better return for the producer than selling the raw commodity. Bees also generate other products (pollen, propolis and royal jelly) that can in some situations be harvested, marketed and made into secondary products: all of this work effectively strengthening people's livelihoods.

Another crucial livelihood outcome is where, through strengthening people's livelihoods, beekeeping has managed to help a family become less vulnerable, strengthening their ability to look into the future, and reducing the chance that they will slip into poverty if a member of the family becomes ill or if a season is bad for farming or other activities.

In addition to their financial value, honey and beeswax have many cultural values and form part of ceremonies for birth, marriages, funerals, Christmas and other religious celebrations in many societies. Beekeepers are generally respected for their craft. All of these aspects are Livelihood Outcomes from the activity of beekeeping. While some may be difficult or impossible to quantify, they are real outcomes that strengthen people's livelihoods and therefore should be acknowledged by a beekeeping intervention.

## BEEKEEPING PROJECTS

In financially poor societies, small-scale beekeeping interventions are valuable. However, development is business. Aid agencies and NGOs depend upon the margins they earn from projects: the larger the project, the higher the budget and the greater the overheads available to those involved. The work involved in starting and running a small project is much the same as for a larger project. For these reasons, small interventions like beekeeping projects have not always been popular with donors, nor with those charged with submitting proposals for donor support. Yet, in poor societies, large beekeeping projects with high capital input seem doomed to non-sustainability and failure. This has happened in far too many beekeeping projects where a well-meaning donor has allocated a significant budget to a project, much of which is inevitably spent on equipment. This leads to equipment being introduced that is not appropriate, and to the machinery (for hive making) that becomes obsolete as soon as a spare part is needed. Training is often provided that is irrelevant to people's available resources. The many continuing examples of beekeeping project failure (see Svensson, 2002 and Lohr, 1998) raise the question of how to make beekeeping projects more successful.



### CASE STUDY 1 - BEEKEEPING AND AIDS

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The global HIV/AIDS pandemic continues to grow beyond levels previous thought possible in Africa, is expanding rapidly in Asia and Eastern Europe, and has a firm hold in Latin America (particularly among Caribbean countries). In sub-Saharan Africa, adult HIV prevalence exceeds 25 percent in several countries and is approaching nearly 40 percent in Botswana and Swaziland. With mortality rates not expected to peak in some countries for at least another five years, the worst still lies ahead (UNAIDS, 2003).

Development strategies to support rural livelihoods can no longer be designed, planned, or implemented outside the context of HIV/AIDS, nor can a response to the HIV/AIDS crisis afford to exclude synergistic inter-sectoral partnerships. Livelihoods and related development strategies now have to be viewed through the lens of HIV/AIDS. This means mainstreaming HIV/AIDS interventions in non-health related programming (e.g. AIDS awareness and education), but it also means synchronizing livelihood development programmes and activities with local and national HIV/AIDS programmes. The process of identifying such opportunities and transforming them into integrated interventions begins with an assessment of: 1) the impacts of HIV/AIDS; 2) interactions between the impacts HIV/AIDS, livelihoods, and social institutions/structures (e.g. markets); and 3) existing programmes to reduce HIV transmission and the impacts of HIV/AIDS. Following a review of the impacts of HIV/AIDS on rural livelihoods and markets, a summation of potential interactions between HIV/AIDS, beekeeping, and markets for bee products is provided with implications for the development of an expanded and comprehensive response to HIV/AIDS.

It is important to note that the understanding of HIV/AIDS, as it relates to rural non-agricultural livelihoods, is in its infant stages and continually evolving. This section is intended to canvas the complex nature of the epidemic; highlight relevant issues as they pertain to beekeeping; and facilitate

awareness and dialogue in regards to the immense challenge of HIV/AIDS. There is still a lot to be learned from households, practitioners, and empirical analysis; nevertheless, the issue warrants immediate attention.

### ***The impacts of HIV/AIDS***

Household-level HIV/AIDS impacts and subsequent coping strategies are shaped by a complex dynamic of endogenous and exogenous factors including (but not limited to) the stage of the disease, household composition and socio-economic status, the capacity of community social safety nets, and agro-ecological variables. Though such factors may result in considerable inter- and intra-household variation, some generalizations can be made about the process through which HIV/AIDS impacts afflicted households. First, recurrent illness and eventual death of an infected household member result in a drastic reduction of household labour. At the same time that household production capacities are constrained, expenditures increase (e.g. travel to health centres, cost of the visits, medicines, and funerals). Household responses to these immediate impacts (e.g. the sale of land, livestock, and agricultural equipment) accompanied by disabling external responses (e.g. land grabbing) and socio-cultural structures (e.g. customary land inheritance laws), further erode the households productive assets, ultimately undermining the long-term sustainability of the household and making it more vulnerable to poverty and food insecurity.

Additionally, the widespread demographic and economic changes resulting from the epidemic, undoubtedly are having, and will continue to have, significant effects on society's broader institutions and structures. Markets, at local, regional and national levels, are one of the institutions affected. Though much less is understood regarding the effects of HIV/AIDS on markets in sub-Saharan Africa (Barnett and Whiteside, 2003) some assumptions can be made. An assumption of particular relevance here is that while HIV/AIDS slows, and in some cases, may reverse growth of national economies (Forsythe, 2002), certain markets – particularly those for inferior goods and those associated with healthcare – will likely be reinforced by the epidemic. This assumption is supported by two key trends. First, the rate of HIV infection continues to exceed the rate of mortality from HIV/AIDS<sup>3</sup> warranting that, in the short-term, the immense volume of people in need of medical care will continue to rise. Second, as the productivity and incomes of households afflicted by HIV/AIDS fall<sup>4</sup>, purchasing power not only decreases within these households but also has a spillover effect into the broader economy dependent on consumer spending. Thus, informal markets for inferior products which are more affordable than their substitutes are likely to remain strong, if not grow in relation to the epidemic. How might these impacts interact with the livelihood strategies associated with beekeeping and the marketing of bee products?

### ***Interactions between the impacts of HIV/AIDS and beekeeping as a livelihood/coping strategy***

Potential interactions between the impacts of HIV/AIDS and the household livelihood strategies of beekeeping and honey hunting can be broadly represented in two hypothetical scenarios<sup>5</sup>. The first scenario represents the effect of HIV/AIDS on a household engaged in commercial beekeeping prior to the onset of AIDS while the second scenario represents the effect of HIV/AIDS on a household in which agriculture is the primary source of income and honey collection is occasionally engaged in for home consumption and sale. These two scenarios represent different aspects of the multiple livelihood continuum that is characteristic of rural households in sub-Saharan Africa.

**Scenario 1:** The household uses industrially manufactured hives to produce honey that is marketed through a cooperative. Income generated from honey production and marketing is the household's primary source of income after agriculture. The capital out-lays are relatively high. In addition to the hives, physical capital inputs include materials to maintain the health of the colonies and consumables

<sup>3</sup> An estimated 3.2 million newly infected in 2003, while 2.3 died (UNAIDS, 2003).

<sup>4</sup> In Botswana where the national adult HIV prevalence is approaching 40 percent, per capita household income for the poorest quarter is expected to fall by 13 percent between the years 2000 and 2015.

<sup>5</sup> These scenarios are drawn from discussions with technical specialists and extrapolated from literature.

required for frame hive beekeeping. Investments in human capital through technical training are necessary for harvesting honey of the quality demanded by the cooperative. A level of social capital is pre-requisite in garnering the trust of the cooperative to extend membership to the household.

The actual responsibilities of beekeeping and marketing are primarily the domain of the male household head, who has been unknowingly HIV-positive for several years. As the disease progresses into the symptomatic stage, income from the sale of honey provides an important source of cash for clinic visits and medicine. However, this leaves less money for inputs, and the inability to make payments on the start-up loan. Recurrent illnesses make it difficult for the young man to stick to maintenance and production schedules, and the quality and quantity of honey production decrease. After the young man dies, the hives are no longer productive. Without technical training in beekeeping and fearing that the hives will be stolen, the wife decides to sell the hives to help pay for a proper funeral. In addition to the traumatic emotional loss, the remaining household members are left without a main source of income and an unpaid loan. As a significant number of members of the marketing cooperative have also died in recent years, the cooperative is faced with difficulty in meeting the quotas.

**Scenario 2:** The household's only major livelihood activity is agriculture. During the dry season, honey is occasionally collected by the male household head for home consumption and sale. Both the male and female household heads are HIV-positive. The overall share of this activity to household subsistence and income increases in response to shortfalls in agricultural production resulting from labour constraints (e.g. sickness, care giving) during peak times (e.g. planting, weeding, etc.). However, as is normally the case, the young man is first to die from the disease, and because most wild honey collection and beekeeping duties (and associated woodland resources) are traditionally a male's domain, the household's access to consumption and supplemental income from honey is reduced. Several years pass and eventually the female household head also dies of AIDS-related illnesses.

Due to the process of capital erosion associated with the impacts of HIV/AIDS their adolescent children are left with very little in terms of productive assets. The orphans are unable to meet consumption needs through cultivation, and income is desperately needed to purchase food. Having learned the skills of traditional beekeeping and honey hunting from experience with his father, honey production and collection by the eldest son offers a supplemental seasonal source of food and income at minimal costs. The materials for constructing hives are obtained at little cost from nearby woodlands that also provide the habitat for wild bee colonies producing honey. Labour is the main input required for hive production, hive-siting, and collection of honey and is concentrated during the season when agricultural labour is not in high demand. (At this stage of HIV/AIDS in the household, labour is not constrained as before by illness or caring for ill household members.) The honey obtained from these activities is consumed, but more importantly, sold informally to provide much needed income.

These hypothetical scenarios reflect the potential effects of HIV/AIDS on beekeeping and honey collection livelihoods strategies. Despite the complexity involved in these interactions, the key points are:

- Commercial beekeeping, as a form of livelihood diversification, can provide an important source of income that can help buffer against the immediate costs of HIV/AIDS.
- The precise effect of HIV/AIDS on household livelihood strategies depends on household demographics; who and how many are chronically ill and die; the stage of the disease; and the resources available to household prior to the event(s) (FAO-ICRAF, 2004).
- HIV/AIDS erodes household capital, and thus capital-intensive beekeeping, as a mitigating strategy after the impact of HIV/AIDS may not be appropriate without support. Households afflicted by HIV/AIDS may be inclined to rely more heavily on rudimentary beekeeping and honey collection due to the low capital requirements of such activities.
- Gender of the deceased and remaining household members has a significant effect on how the impacts of HIV/AIDS affect livelihood strategies related to beekeeping.

### Markets for bee products

Inferior goods are those goods that are consumed in place of higher quality goods because of their relative availability and/or affordability. Many non-wood forest products, such as low-grade honey, can be considered inferior goods. In households in sub-Saharan Africa, sugar is consumed directly, used as a sweetener, and as a fermentation agent for brewing alcoholic beverages. Sources of sugar include refined sugar processed from sugar cane or other sugar crops. Low-grade honey is considered an inferior substitute for refined sugar and in rural areas is often used instead of refined sugar (EC-FAO, 1999). As incomes rise, inferior goods tend to be replaced with products of superior quality and the reverse occurs with a decrease in incomes. According to this economic principle, it can be expected that the negative effect of HIV/AIDS on wealth and purchasing power at the micro and macro levels may have a positive effect on markets for non-wood forest products (Barany *et al*, 2003), including low-grade honey<sup>6</sup>.

In addition, the nutritional and medicinal benefits of honey and other bee products may also lead to an increase in their demand in association with the epidemic. Honey, as a source of energy, has been advocated in the diets of people living with HIV/AIDS (PLWHA) (FAO, 2002). Bee products are also widely used in Africa's traditional healthcare system. Roughly 80 percent of Africans rely on traditional medicine to some extent. Though traditional medicines definitely cannot replace the antiretrovirals that are urgently needed in the region<sup>7</sup>; traditional medicines do however, effectively treat opportunistic infections (e.g. *candidiasis*; *herpes simplex*, and *zoster*) and symptoms (i.e. appetite loss, nausea, fever, diarrhoea and coughing) associated with HIV/AIDS. These medicines are affordable and easily accessible; thus, it has been extensively observed that, to varying degrees, many, if not the majority of people living with HIV/AIDS on the sub-continent rely on traditional medicine for quality-of-life improvements and for treatment of HIV/AIDS-related illnesses.

Honey, royal jelly, beeswax and bee venom are used in both modern and traditional health clinics. Honey has antiseptic properties and is used as a medium for the topical and internal delivery of herbal remedies used in treating illnesses such as those described above. Where HIV is increasing demand for healthcare and reducing household incomes, markets for bee products used medicinally and for subsistence can be expected to remain strong, if not grow in relation to the epidemic. What implications do these interactions between HIV/AIDS, livelihood strategies and markets have for the expanded and comprehensive response to HIV/AIDS?

### Implications for integrated interventions of the expanded and comprehensive response to HIV/AIDS

Strategies to reduce the transmission of HIV and the impacts of HIV/AIDS can be grouped into the three main components: prevention, treatment and care, and mitigation.

#### Prevention

HIV/AIDS prevention interventions target factors directly related to HIV transmission (i.e. risk-taking behaviour), but also social factors associated with HIV transmission such as poverty and mobility. Because poverty increases vulnerability to HIV, rural development through support for livelihoods can be seen as part of the comprehensive approach to HIV/AIDS prevention. At the same time, activities such as commercial beekeeping and marketing may also bring increased mobility and cash to spend on leisure. Thus, such programmes have the responsibility to include preventative interventions such as behaviour change communication and condom promotion. Forgoing such interventions misses the opportunity to reduce transmission, but also fails to prevent the potential impacts of HIV/AIDS on programmes as demonstrated in Scenario 1.

<sup>6</sup> A decline in demand for luxury items has been observed in South Africa (Forsythe, 2002). Growth in the informal sector is expected to result in an HIV/AIDS, structurally changed economy (Waal, 2003).

<sup>7</sup> Only 2 percent of those in need are receiving anti-retroviral medicine.

### **Treatment and care**

In sub-Saharan Africa, where nutrient deficiencies are common and access to healthcare is limited, early and adequate nutrition interventions (e.g. education, counselling, etc.) are considered one of the most important interventions for PLWHA. Given the adverse impacts of HIV/AIDS on household food security, effective nutrition interventions need to account for the adaptation of household food strategies. Where households afflicted by HIV/AIDS have access to, and/or consume honey either because it is available locally or it is more affordable than other forms of dietary sugar, nutrition interventions need to include information regarding the benefits and disadvantages of honey consumption for PLWHA. For example, elevated intakes of carbohydrates, including honey, are recommended for PLWHA because HIV/AIDS increases energy requirements (FAO, 2002). However, excessive sugar intake may be detrimental under certain circumstances. For example, the sugar in honey can aggravate opportunistic infections such as *candidiasis* (i.e. sores in the mouth or throat).

### **Mitigation**

There is a need for mitigation, or, the creation of policies and strategies that build on the capacities of afflicted households to facilitate a rehabilitation process. Key components of such efforts include support for the improvement and diversification of livelihoods including income-generating activities (IGAs) (FAO, 2003). Due to the low-capital requirements, and ease at which households can enter and exit natural resource-based activities, these activities have long served as safety-nets during periods of food insecurity and tend to form a more consistent component of livelihood strategies for the rural poor. As described in scenario two, traditional beekeeping and honey collection offer low-input supplemental IGAs potentially suitable to the capacities of HIV/AIDS-afflicted households at the same time that markets for bee products may be reinforced by the epidemic.

Current apiculture programmes should be considered in efforts to mitigate the impacts of HIV/AIDS on afflicted households, particularly in those regions heavily affected by the epidemic, which are part of ecological zones conducive to honey production (e.g. miombo woodlands of southern Africa). Commercial beekeeping using modern hives located near dwellings can be a low-labour intensive remunerative IGA. However, the capital erosion associated with the impact of HIV/AIDS and the potential for indebtedness, would require that equipment is granted, which calls into question the sustainability of such an approach. Programmes oriented towards supplying high-end honey markets and requiring substantial inputs may not be suitable for such households. Instead, low-input technology transfers necessary for low to middle grade honey may be more appropriate. These may include transferring production skills (i.e. hive designs from local materials, sustainable harvesting of wild honey, knowledge of forage resources and qualities, hive siting, collection and related temporal factors), knowledge of processing and storage, and marketing skills (i.e. market information – prices, diversification, products for medicines, quality preferences, seasonal price fluctuations). Market development in general can improve the profitability of such activities, while ensuring that goods flow to where they are needed when they are needed.

### **Targeting and prioritizing interventions**

A multisectoral response to reduce the transmission of HIV and the impacts of HIV/AIDS is imperative. Designing integrated interventions requires an understanding of the impacts of HIV/AIDS; the interactions between these impacts, livelihood strategies and related structures (markets); and existing HIV/AIDS programme priorities. Specific interventions and combinations of interventions are many, while resources necessary for their implementation are severely inadequate. Prioritizing is necessary to determine which interventions are optimal, when, where and for whom. As illustrated in the scenarios presented above, the types of interventions that are needed (and likely to have the greatest impact) depend on a complex dynamic of factors. In short, certain interventions are relevant to certain target populations at certain times.

The phase of the epidemic in a given region or community is useful in deciding which interventions are appropriate. The progression of HIV/AIDS in a given community or region can be separated into four phases (Villarreal, 2003). In areas that can be classified in phase I (i.e. prevalence rates are low – 1 percent, but where HIV is a threat) and phase II (i.e. prevalence is around five percent – the turning

point for a rapid and exponential increase in prevalence) priority should be given to the mainstreaming of HIV/AIDS *prevention* interventions. Opportunities to invest in interventions that may buffer the impact of HIV/AIDS (e.g. income diversification) also exist in these early phases. Mitigation interventions become an important component in areas where the epidemic has progressed beyond phase II to phases III and IV in which morbidity, mortality, and the socio-economic impacts of HIV/AIDS manifest.

Targeting specific households afflicted by HIV/AIDS is not necessarily feasible, or wise (can aggravate stigma, etc.), but initiatives should make a conscious effort to include these households (they may have prohibitive time constraints or be alienated so that they are not part of meetings, etc.). As households within communities experience HIV/AIDS differently and at different times: consideration should be given to how these households are impacted, how they cope, and their needs and capacities. For example, traditional collection and beekeeping practices are often the domain of men, and women may perceive working alone in woodlands potentially dangerous. Thus, support for traditional honey production may not be an appropriate mitigation strategy for female widowed household heads.

Understanding of the impacts of HIV/AIDS and the interactions with livelihoods and markets continues to evolve. This section demonstrates the relevance and potential of integrated interventions that involve apiculture in multi-sectoral, livelihoods-based, comprehensive responses to HIV/AIDS.

