COMMUNITY-BASED INCENTIVES FOR NATURE CONSERVATION

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1. The Aim of Designing and Implementing Economic Incentives for Community Nature Conservation

Economic incentive measures play a crucial role in nature conservation at all levels of society – local through to global. At the community level, though, it is particularly important to have appropriate incentive measures for nature conservation as natural resource use is so closely linked with livelihood issues at this level. This section give a bit of background of the linkages between economic activities and natural systems at the community level and then outlines the structure for the rest of the document and resource kit.

1.1 Links between community economic activities and natural systems

Community-level economic factors, and the status and integrity of natural systems, are closely interlinked. Rural communities typically depend on the continued maintenance of natural resources for their day-to-day survival. A good land base, fertile soils, regular water supply and protection against climatic extremes all enable human consumption, production and settlement to take place. Natural systems such as forests, woodlands, grasslands, rangelands, wetlands, and coastal and marine zones yield resources which are used directly to generate income and subsistence, sometimes as a community's sole livelihood source and often in combination with other production systems. These natural resources tend to be particularly important for poorer households and at times of stress, and often provide the ultimate safety-net when other sources of subsistence and income fail.

Community livelihood activities however sometimes contribute to the degradation of the very natural systems they depend on. Almost all forms of human production and consumption have the potential to deplete, convert, pollute or otherwise degrade natural systems. Activities such as over-grazing, over-fishing, conversion of forest and wetlands to agriculture and unsustainable wildlife utilisation all degrade and deplete natural systems directly. Other activities such as the use of destructive fishing or timber harvesting techniques, slash and burn agriculture, open pit mining and the disposal of untreated agricultural and domestic wastes degrade natural systems as secondary effects of the technologies and methods they employ.

As natural systems become degraded, livelihoods are progressively weakened and the economic welfare of communities suffers. Conversely, nature conservation can provide a means of sustaining and strengthening

community livelihoods. Recognising that local economies depend intimately on the availability and quality of natural resources, conservation has become an increasingly important component of rural development activities. Simultaneously there has been a growing recognition that local economic concerns play a central role in natural resource management, and most strategies for nature conservation now involve and benefit local communities in some way. Both development and conservation efforts aim to make it economically desirable for local communities to maintain the status and integrity of nature.

1.2 Economic incentives as a tool for nature conservation

Unless it makes tangible economic sense to them, rural communities are unlikely to be willing, and indeed are frequently unable, to conserve nature in the course of their production and consumption activities. Most programmes, projects and activities, whether they have rural development or nature conservation as their primary goal, aim to set in place the conditions under which local communities will be economically willing, and able, to conserve nature. In other words, they aim to provide economic incentives for community-based nature conservation.

Incentives can be defined as specific inducements designed and implemented to influence or motivate people to act in a certain way. In the context of nature conservation, economic incentives are concerned with making it more worthwhile in financial and livelihood terms for communities to maintain, rather than to degrade, natural resources in the course of their economic activity. They aim to set in place economic inducements, or positive incentives, for nature conservation, to discourage nature degradation through the use of penalties and disincentives, and to overcome the broader economic forces, or perverse incentives, which underlie biodiversity degradation. Economic incentives present a valuable tool for both nature conservation and sustainable livelihood development.

1.3 This resource kit

This resource kit describes practical steps and methods of identifying and using economic incentives for community-based nature conservation, and illustrates these with a set of real-world case studies from Eastern Africa. It is targeted primarily at conservation and development managers engaged in the design and implementation of field-level programmes and projects.

The resource kit:

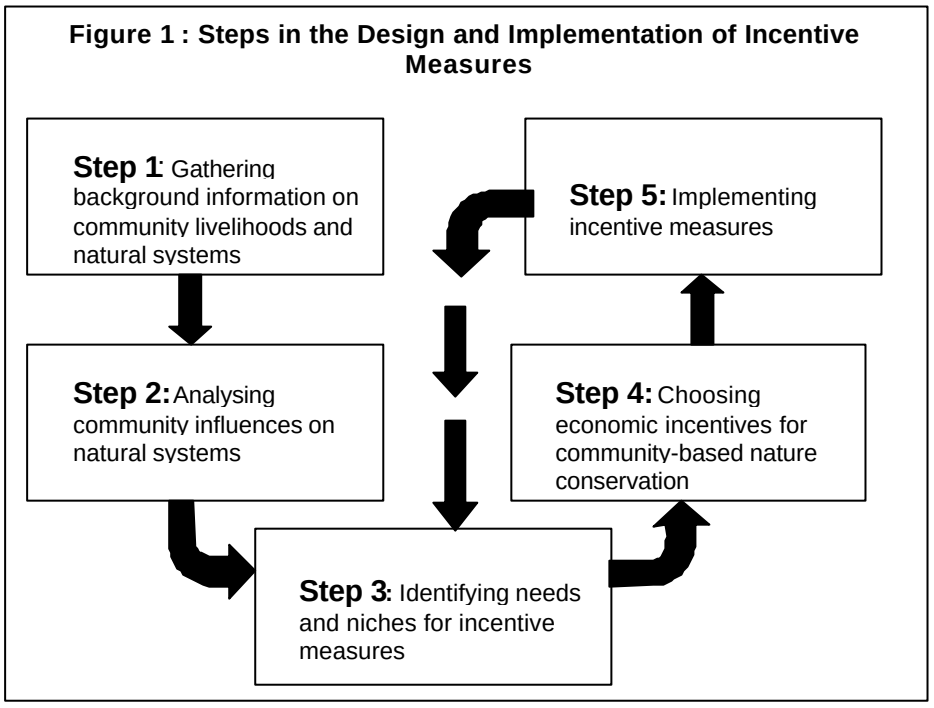
- Introduces the concept of economic incentives and describes this resource kit;
- Outlines steps in the design and implementation of economic incentives for community-based natural resource utilisation;
- Provides the background information about community livelihoods and natural systems which forms the basis of designing and implementing incentive measures;
- Describes the analysis of community economic influences on natural systems;
- Outlines methods for identifying needs and niches for incentive measures;
- Deals with the choice of economic incentives for community-based nature conservation;
- Highlights practical equity, sustainability and efficiency considerations in the implementation of incentive measures;
- Provides checklists and methods for designing and implementing economic incentives for conservation at the community level;
- Summarises four East African examples of the use of economic incentives for community-based nature conservation;
- Provides an overview of the role of economic incentives in global biodiversity policy; and
- Presents a list of reference materials on community economic incentives for nature conservation.

2. Steps in the Design and Implementation of Economic Incentives for Community-Based Nature Conservation

The process of designing and implementing economic incentives for community-based nature conservation involves a progression of logical steps and is based on a range of background information and analysis. Incentives respond both to local needs, circumstances and economic activities, and to the broader market, policy and institutional failures which make communities unwilling or economically unable to conserve nature in the course of their economic activity. Understanding the dynamics of these economic systems and identifying the needs and opportunities they present for natural resource conservation forms the basis of choosing incentives and setting them in place. This section describes the fundamental steps in designing and implementing economic incentives for community natural resource utilisation which are depicted in Figure 1 and include:

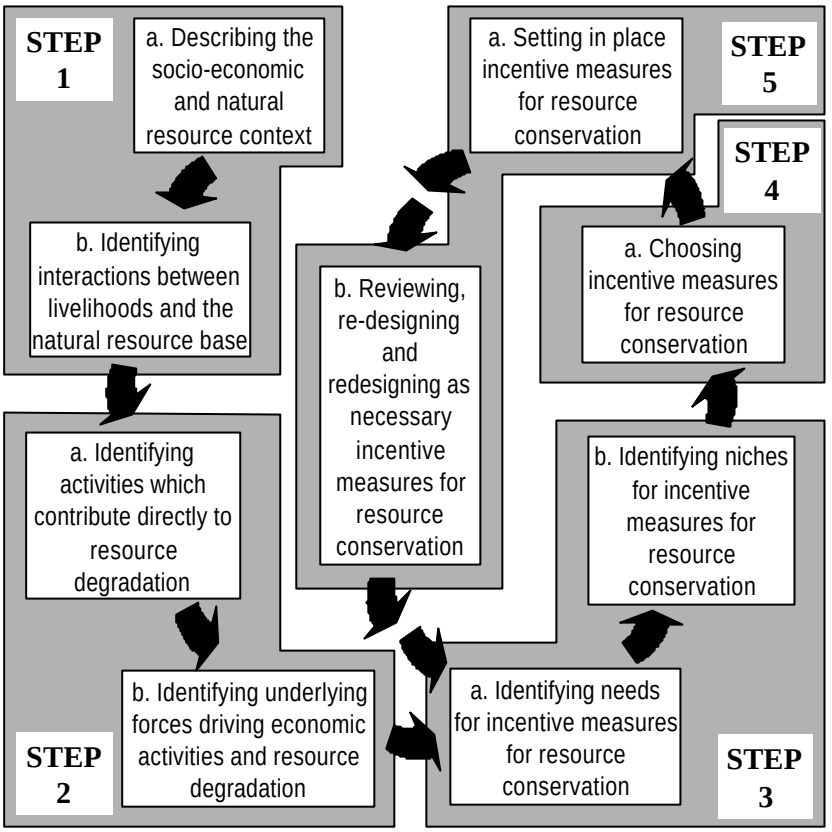
Step 1: Gathering background information on community livelihoods and natural systems
Step 2: Analysing community influences on natural systems
Step 3: Identifying needs and niches for incentive measures
Step 4: Choosing economic incentives for community-based nature conservation
Step 5: Implementing incentive measures

Figure 1 : Steps in the Design and Implementation of Incentive Measures



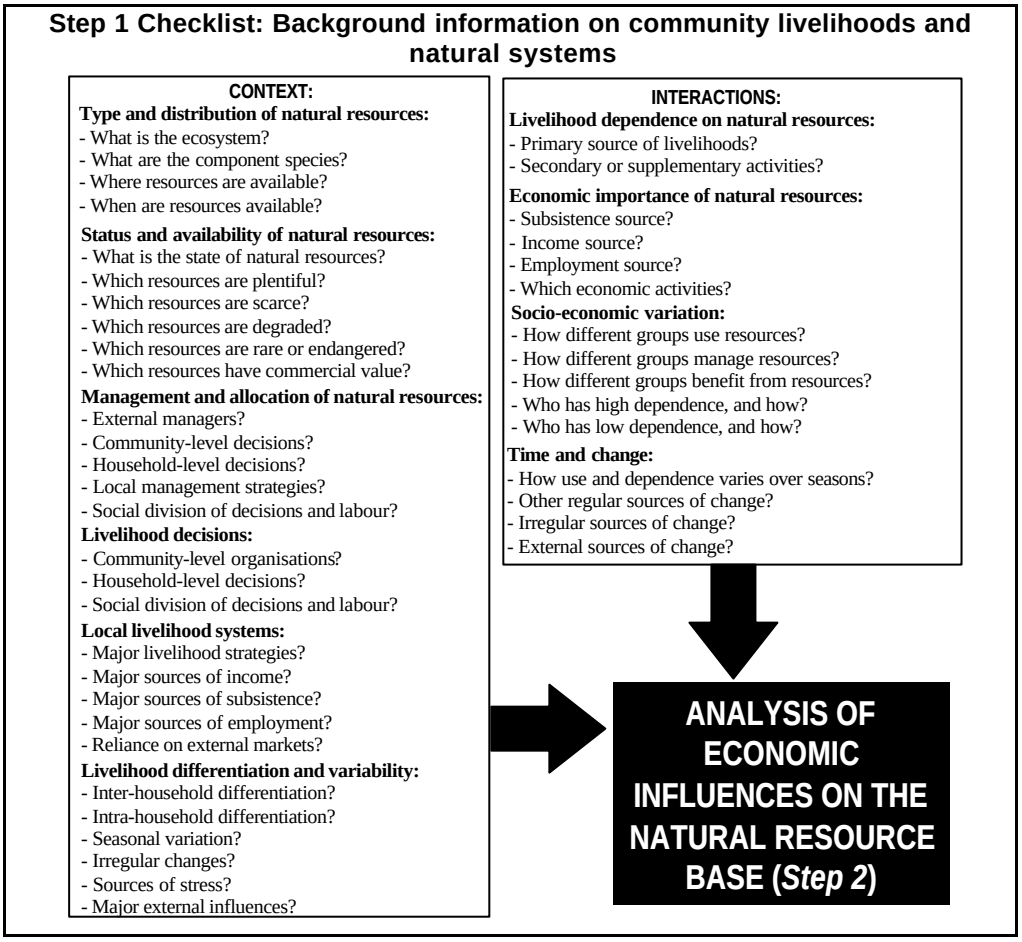
Completing each of these steps requires work on a number of specific issues. For instance, in gathering background information on community livelihoods and natural systems it is necessary both to describe the socio-economic and natural resource context and to identify the interactions between livelihoods and natural resources. The specific issues associated with each of the five steps are described in more detail in Figure 2.

Figure 2: Specific Issues to be Addressed in Each of the Five Steps



2.1 Background Information on Community Livelihoods and Natural Systems

The dynamics of local livelihood systems form the overriding focus of the design and implementation of economic incentives for community nature conservation. This section identifies the background information required for designing and implementing economic incentives.



2.1.1 Describing the socio-economic and natural resource context

How and where people live, what they depend on for their day-to-day survival and the livelihood constraints they face at different times all define the local context within which nature is conserved or degraded. Describing socio-economic and natural resource context is the first step in designing incentives for community-based nature conservation.

Six main elements of the socio-economic and natural resource context are especially important to the design of economic incentives for community-based nature conservation:

- ***The type and distribution of natural resources*** What type of natural resources are available to communities, what is their composition and spatial distribution;
- ***The existing status and availability of natural resources*** Whether natural resources are in a pristine or degraded state, which species or

ecosystems show particular signs of degradation, and which are in plentiful supply;

- ***The ways in which natural resources are allocated and managed*** The social organisations, relationships and institutions responsible for controlling natural resource use, within and between households;
- ***The way in which livelihood decisions are made*** The social organisations, relationships and institutions responsible for controlling livelihood activities, within and between households;
- ***The dominant mode of local livelihoods*** The major activities which contribute to local livelihoods and survival;
- ***The ways in which livelihood systems change at different times and for different people*** The social and economic differences, within and between households, in livelihood activities and decision making, and the ways livelihood activities vary between seasons, over time, or in response to stress and exogenous change.

2.1.2 Identifying interactions between livelihoods and natural systems

Economic incentives work by motivating people to act in particular ways or to modify their economic activities so as to conserve nature. This first requires a thorough understanding of interactions between livelihoods and natural systems. The second step in designing incentives for community nature conservation is to assess the extent to which livelihood activities depend and impact on natural systems.

Four major elements of the interaction between local livelihoods and natural systems are of particular relevance to the design of economic incentives for community-based nature conservation:

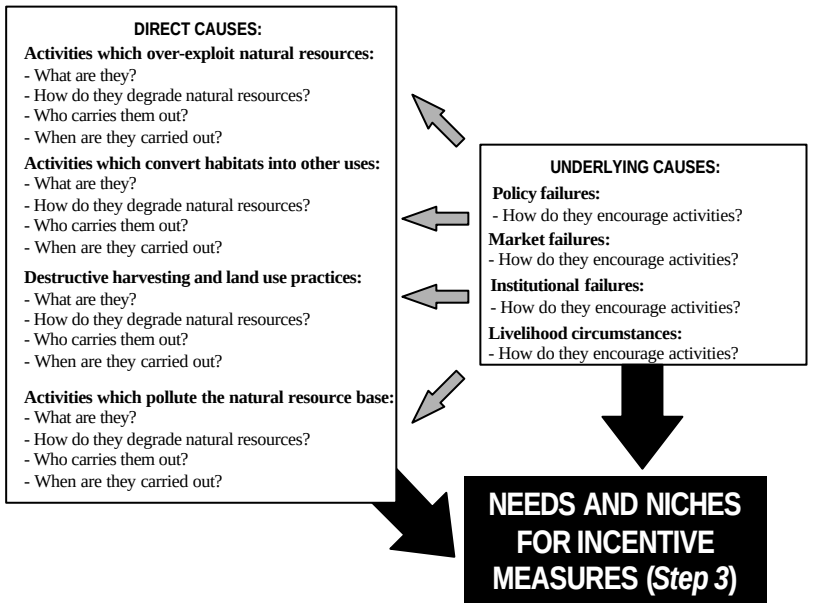
- ***The extent to which local livelihoods are based on natural resources*** Whether nature forms a primary source of livelihoods, or is used for supplementary activities or as secondary sources of inputs to another mode of production.;
- ***The nature of the contribution natural resources make to local livelihoods*** Whether natural resources contribute income, subsistence or employment benefits to local populations, and the type of economic activities they support;
- ***Variations in the contribution of natural resources to livelihoods of different people*** How natural resource use and dependence varies for different social and economic categories of people, differentiated according to factors such as wealth, gender, age or access to other resources;

- ***Variations in the contribution of natural resources to livelihoods at different times*** How natural resource use and dependence varies over seasons, over time, or in response to changes in local or external circumstances.

2.2 Analysis of Community Economic Influences on Natural Systems

Degradation occurs because livelihood needs place unsustainable demands on natural systems. It is important to know how and why local economic activities result in nature degradation. This section describes steps in the analysis of community economic influences on natural systems. Such analysis helps identify the needs and niches for economic incentives for community nature conservation (Section 5).

Step 2 Checklist: Analysis of community economic influences on natural systems



2.2.1 Identifying activities which contribute directly to nature degradation

Economic incentives are primarily used as a tool for overcoming community nature degradation. It is self-evident that identifying the nature and sources of local nature degradation forms an important stage in the design of incentives. There are four major categories of local economic activities which contribute directly to nature degradation:

- ***Activities which over-exploit natural resources*** Unsustainable resource utilisation activities either overall or in terms of the areas and species they harvest contributes to nature degradation. An unsustainable activity is any activity or combination of activities which harvests natural resources at a rate greater than that at which the resource naturally regenerates or is replaced, thereby leading over time to a decline in the quantity, quality or diversity of the resource. For example in Case Study 2 activities leading to the degradation of Mount Kenya Forest include charcoal burning and pitsawing of commercially valuable indigenous tree species.
- ***Activities which convert natural habitats into other uses*** Land uses which lead to permanent changes in habitats by destroying and replacing natural ecosystems and their component species are a major factor of nature degradation. Examples include the conversion of natural ecosystems to agriculture, settlement or mines. For example in Case Studies 1, 2 and 3 a major cause of nature degradation in Mount Kenya, Kibwezi and the Serengeti is the clearance of natural vegetation for conversion to arable agriculture, and in Case Study 4 reclamation for industrial and urban development poses a severe threat to Nakivubo wetland.
- ***Destructive harvesting techniques and land use practices*** Land and resource uses which destroy natural resources in the course of their activities lead to nature degradation. Examples include the use of destructive fishing or timber harvesting techniques, slash and burn agriculture or the unselective exploitation of wild species. For example, in Case Study 4, a possible cause of nature degradation in the future in Nakivubo wetland has been identified as the use of destructive resource harvesting techniques such as those employed by brick-makers and papyrus harvesters.
- ***Activities which pollute natural systems*** Production and consumption activities generating wastes or by-products which harm natural systems lead to nature degradation. Examples include untreated domestic waste, the use of hazardous or toxic chemicals or the disposal of industrial effluents or by-products into land, air and water. For example, in Case Study 4, urban and industrial pollution are major issues in wetlands management.

2.2.2 Identifying the underlying economic causes of nature degradation

People carry out economic activities in ways which degrade natural systems because wider forces permit, encourage or force them to do so. In addition to addressing the direct causes of degradation, economic incentives for community-based nature conservation aim to overcome these perverse incentives. Identifying perverse incentives and underlying economic forces

driving nature degradation provides extremely important information for the design of economic incentives. Perverse incentives can be grouped into four categories:

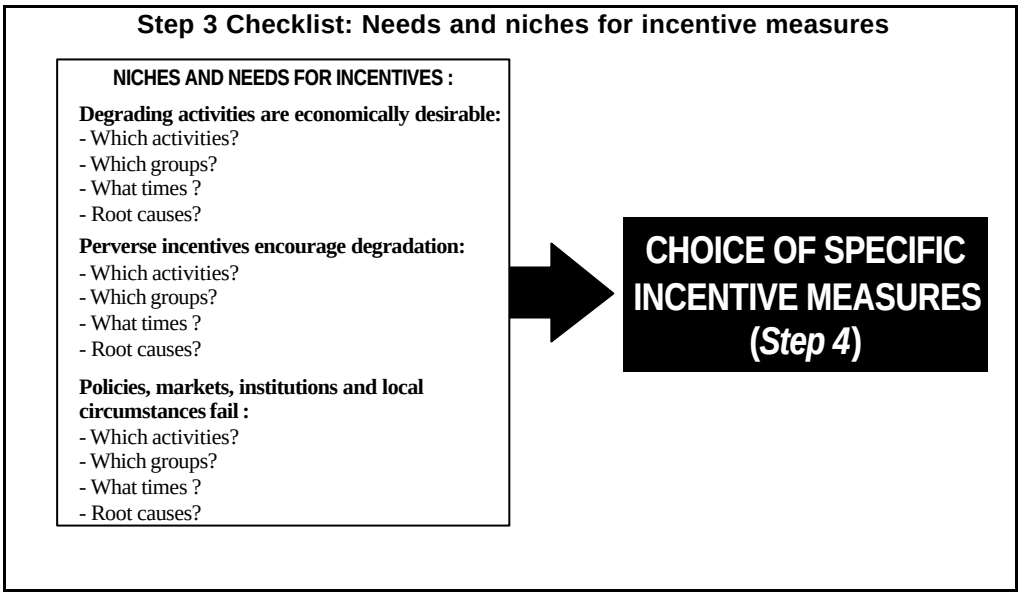
- ***Policy failures*** Governments set policies to stimulate economic activity and to meet particular national or sectoral development goals. These policies are usually accompanied by a range of supportive instruments such as subsidies, taxes, laws, education, research and extension. These policy instruments often encourage communities to degrade natural systems in the course of their economic activity. Examples include agricultural policies which encourage high-input arable production as the only legitimate use of land, industrial and urban policies which encourage development and settlement in ecologically sensitive areas or contain inadequate consideration of waste management and pollution control, and environmental sector policies which fail to consider issues of local resource management, use and tenure. Agricultural and land use policies are an important contributing factor to the degradation of Mount Kenya Forest in Case Study 2, because they promote agricultural land uses at the expense of forest conservation.
- ***Market failures*** Markets allocate resources and co-ordinate people's decisions about the quantity of goods that they produce and consume through the price mechanism. Community economic activities respond to the prices and markets that they face, because these influence the relative profitability and desirability of different production and consumption options. Price distortions and market inefficiencies can send the wrong signals to communities about the value of biodiversity based goods and services. This in turn encourages community members to over-consume and degrade nature. Examples include setting natural resource utilisation fees and royalties at zero or low prices, the monopolisation of local resource markets by parastatals or middlemen, artificially low prices for industrial and agricultural chemicals, low fines and penalties for environmental degradation or the complete absence of prices and markets for many environmental services and resource-conserving products. Market failures contribute to the degradation of natural woodlands in Kibwezi in Case Study 1. Because community members face low prices for woodlands products and participate in markets which are monopolised by a small number of middlemen, natural woodlands generate little financial gain.
- ***Institutional failures:*** Institutions set and control the terms and conditions under which natural resources are managed, allocated and used. Both local and national-level institutions impact on community natural resource use. Institutional arrangement frequently discourage conservation because they represent the interests of a particular group,

deny community members control over or benefit from natural resources or aim to encourage particular nature-degrading activities. Examples include the monopoly control of government over protected areas and exclusion of local residents, poor land and resource tenure arrangements and the establishment of natural resource management institutions which exclude key users or sectors of the population. Institutional failures are a key disincentive to forest conservation in Case Study 2 where the government's monopoly control over forest land and species in Mount Kenya denies communities any stake in or economic gain from forest management.

- ***Livelihood circumstances*** Bio-physical and demographic conditions, together with policy, market and institutional set-ups, all determine local livelihood activities, their needs, constraints and opportunities. The search for secure livelihoods frequently forces communities to degrade natural resources in the course of their economic activity. Where livelihood sources are limited and insecure, and there are few available sources of subsistence, income and employment, people often have little choice but to over-exploit, convert or otherwise destroy natural systems in order to generate these products. Examples include over-dependence on natural resource harvesting for income or subsistence, land and population pressure, seasonal stress, poor infrastructure and markets, and widespread poverty. Livelihood circumstances contribute to nature degradation in Case Study 1 where recurrent drought and agricultural uncertainty periodically force households in Kibwezi to use natural woodlands unsustainably in the search for subsistence, income and employment. In Case Study 4, unemployment and poverty among urban populations has led to a high dependence on wetland resource for food and income.

2.3 Identifying Needs and Niches for Incentive Measures

Incentives aim to address both the direct and underlying causes of nature degradation. Incentive measures are needed when nature conservation does not make economic sense to community members. To determine when and where incentives are needed it is necessary to identify and understand cases where it makes economic sense to degrade natural resources. This calls for the identification of the groups giving rise to environmental degradation, the activities causing it, and the times when it occurs highlights niches for setting in place targeted incentive measures. This section outlines methods for identifying needs and niches for incentive measures. Such information enables specific economic incentives for nature conservation to be chosen and established (Section 6).



2.3.1 Needs for economic incentives

Economic incentives are needed when nature is being degraded. People over-exploit resources, convert ecosystems and damage and pollute natural systems when it is economically desirable to do so – because they can gain from doing so, because they are encouraged to do so or because they have no alternative but to do so.

Analysis of the direct and underlying causes of nature degradation (Section 4) provide the means of identifying where and why nature conservation is not economically desirable for community members – where they gain net benefits from degrading nature, or incur net costs from conserving it. Economic incentives are needed in three types of instances.

- ***Economic activities which degrade natural systems are more desirable than those which conserve them.*** Positive incentives are needed to encourage people to modify or replace these activities, and disincentives needed to discourage them from taking place. For example incentives may be needed to modify agricultural, fishing, mining, hunting, forest utilisation or waste disposal activities. In Case Study 2 a clear need for economic incentives was identified for households living around Mount Kenya Forest to discourage them from over-exploiting forest species for subsistence, income and employment and encourage them to conserve the forest.
- ***Perverse incentives encourage people to carry out activities which lead to nature degradation*** These perverse incentives need to be redesigned, and positive incentives for conservation set in place to balance or replace them. For example incentives may be needed to address the effects of

seasonality, drought, market monopolies, agricultural policy or open access to resources. For example in Case Study 1 a clear need was identified for incentives which could overcome the effects of livelihood insecurity and seasonality in Kibwezi.

- ***Policies, markets, institutions and local circumstances fail, and distort the relative economic desirability of nature conservation and degradation*** The workings of these policies, markets, institutions and local circumstances need to be improved, and their failures with regard to natural resources resolved. For example incentives are needed to improve the workings of community-based forest management institutions, markets in raw materials or national conservation policies. In Case Study 3 a clear need is identified for incentives to improve the workings of local agricultural and wildlife product markets around the Serengeti National Park.

2.3.2 Niches for economic incentives

There is a niche to use economic incentives to solve particular problems, gaps and failures where clear reasons for nature degradation can be identified and linked to particular activities, causes, groups and circumstances. Analysis of the direct and underlying causes of nature degradation (Section 4) provide the means of identifying the reasons behind, and circumstances under which, nature conservation is not economically desirable for community members. Niches for economic incentives exist under four circumstances.

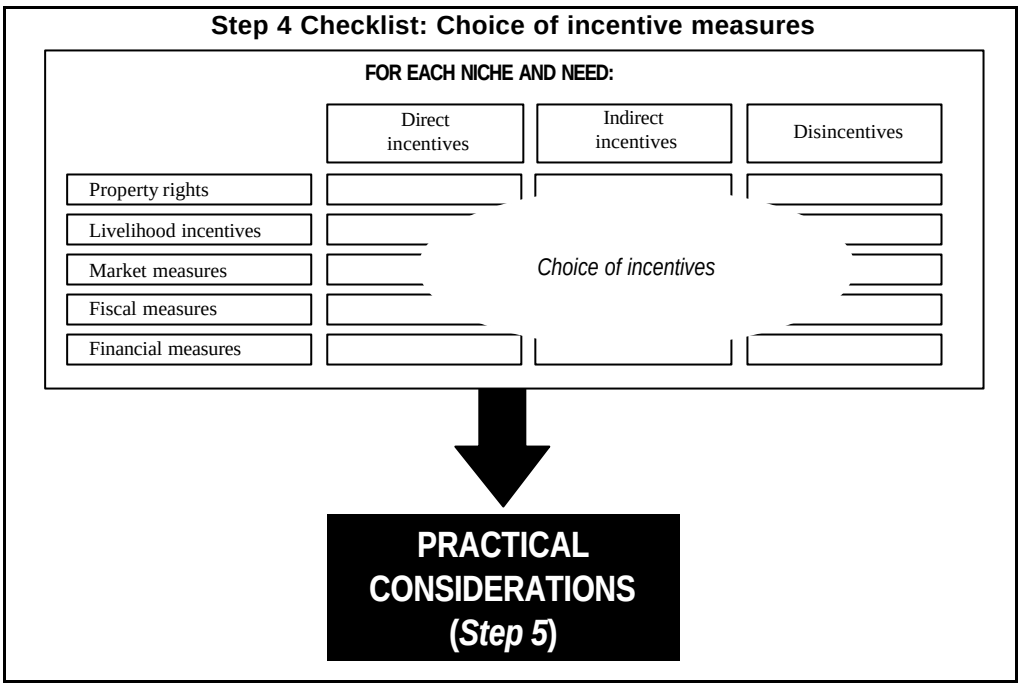
- ***There are particular economic activities which degrade natural systems*** There is a niche for incentive measures which are targeted at activities which degrade nature. For example there may be a niche for targeting incentives specifically at slash and burn agriculture, dynamite fishing activities, logging or wetlands conversion to rice patties. In Case Study 2 a particular niche was identified for incentives to target charcoal burners and pitsawyers operating in Mount Kenya Forest.
- ***There are particular groups for whom is nature conservation is economically undesirable*** Another niche for using incentive measures is targeted at groups who find nature conservation is economically undesirable. For example there may be a niche for targeting incentives specifically at women, poorer households, the landless or at key resource user groups. In Case Study 1 a particular niche was identified for working with poorer farmers in Kibwezi, who face the greatest land and livelihood pressures and are least able to afford to maintain natural woodlands on their farms.
- ***There are particular periods when nature conservation is economically undesirable*** There is a niche for using incentive measures which are

targeted at periods when nature conservation is economically undesirable, or aim to prevent particular situations from arising. For example there may be a niche for targeting incentives specifically at the low agricultural season, times of drought and food shortage or at the collapse of other markets and opportunities. In both Case Study 1 and 2 a particular niche was identified for incentive measures which could address seasonal shortages in subsistence, income and employment in Kibwezi and Mount Kenya Forest.

- ***There are particular policies, markets, institutions and local circumstances which make nature conservation economically undesirable*** There is a niche for using incentive measures to change or offset the effects of policies, markets, institutions and local circumstances which work against nature conservation. For example there may be a niche for targeting incentives specifically at joint wildlife management arrangements, forest product markets, agricultural extension information or local resource processing industries. In Case Study 2, a particular niche was identified to use joint forest management as an incentive for community conservation of Mount Kenya Forest.

2.4 Choosing Economic Incentives for Community-Based Nature Conservation

Once needs and niches for actions to address the economic causes of nature degradation have been identified (Section 5), specific incentives can be chosen to meet and fill them. This section outlines the main types of economic incentives available for community-based nature conservation.



2.4.1 Types of incentives

There are three broad categories of economic incentives can be defined which have relevance for community-based nature conservation:

- ***Direct incentives:*** mechanisms which are targeted to specific objectives and encourage people to conserve nature by providing conditional rewards for changed behaviour;
- ***Indirect incentives:*** mechanisms which encourage people to conserve nature by setting in place general enabling conditions;
- ***Disincentives:*** mechanisms which discourage people from degrading natural resources.

Within these broad categories, economic incentive measures can take a number of forms (Table 1), including:

- ***Property rights:*** measures which allocate rights to own, use or manage natural resources;
- ***Livelihood measures:*** measures which strengthen and diversify local livelihoods;
- ***Market measures:*** measures which rationalise prices and improve markets;

- ***Fiscal measures:*** budgetary measures which apply tax and subsidy systems;
- ***Financial measures:*** measures which mobilise and channel funds and finance.

Table 1: Categories of economic incentives for community-based nature conservation

	Direct incentives	Indirect incentives	Disincentives
Property rights	**Examples:** Ownership, management, access, use of land and resources. Joint, collaborative and co-management. Leases, concessions and franchises over land and natural resources.		**Examples:** Exclusion, alienation from land and resources. Enforcement and penalties for unsustainable or illegal resource use.
Livelihood measures	**Examples:** Improving efficiency, scope and sustainability of utilisation.	**Examples:** Rural development, livelihood diversification and improvement.	
Market measures	**Examples:** Improvement of existing natural resource markets and prices. Development of new natural resource markets and charges.	**Examples:** Development of alternatives to natural resource markets and products.	**Examples:** Bans on products or markets. Product quotas or limits.
Fiscal measures	**Examples:** Subsidies to resource conserving activities and products. Tax relief or differential taxes on land uses and products.		**Examples:** Natural resource taxes or surcharges. Differential land use and product taxes.
Financial measures	**Examples:** Targeted rewards for conservation activities. Compensation for curtailment of unsustainable activities. Provision of funds for alternative enterprise development.	**Examples:** Benefit-sharing. Provision of loans, grants and credit to development activities.	**Examples:** Fines and penalties for unsustainable or illegal resource use.

Property rights

Property rights aim to address failures in the institutions and policies which govern natural resources. They are based on the fact that the primary beneficiaries of natural resources are usually the individuals or groups who have recognised rights to own, manage, use and trade in them.

Even when community members have a major stake in, interest in or traditional rights over nature, they are often prevented from accessing them. There is little economic gain from conserving nature under these circumstances, because people have no right to benefit from them. Conversely, if they have no secure rights over nature, community members do not have to bear the on-site implications of degradation. Allocating

secure rights to own, manage and use nature can be used as an incentive to set in place the conditions under which communities can benefit economically from, and have a stake in, conservation. They can also address market failures by enabling markets and scarcity prices for nature to emerge. The use of property rights is identified as an important incentive for conservation in Case Study 2, where proposals are made for community members to become involved in the management and use of Mount Kenya Forest.

Various forms of property rights can be used as incentives for conservation. These include transferring the outright ownership of land or resources to communities through the allocation of leases, concessions or franchises manage or use particular resources, as well as community representation in natural resource management and decision-making bodies. Joint collaborative and co-management are all special forms of property rights which have been widely used as incentives for community-based nature conservation.

Property rights are also used as disincentives to nature degradation. Governments often assume monopoly control over the management, exploitation or marketing of particularly sensitive or valuable biological resources or lands such as endangered indigenous tree species, minerals, wildlife resources or protected areas, thereby rendering community utilisation illegal. Although this application of property rights can undoubtedly discourage nature degradation, it is worth noting that it has rarely been effective in practice due to enforcement costs and questions of their equity and ethical basis. In Case Study 2, for example, the denial of most community rights to use Mount Kenya Forest has largely failed to stop illegal forest utilisation.

Livelihood measures

Livelihood measures deal with the fact that the nature of livelihoods, and in particular their constraints and shortfalls, forces community members to degrade natural resources in the search for scarce subsistence, income and employment. By strengthening community livelihoods, diversifying them and making them more secure, livelihood measures aim to decrease reliance on natural resources and put people in a position where they will choose, and can afford, to curtail economic activities which degrade natural systems.

A range of livelihood measures can be used as incentives for community-based nature conservation. These can be broadly divided into direct incentives which encourage people to use and manage particular natural resources more sustainably and indirect incentives which, by strengthening

and diversifying rural livelihoods, make communities rely less or move away from exploiting natural resources.

Direct livelihood incentives are usually focused on enhancing the efficiency and scope of natural resource-based activities so as to increase their value and sustainability at the local level. Examples include interventions to promote efficient harvesting techniques, to train community members in processing skills or to investigate new products and technologies. Case Study 1 illustrates the use of direct livelihood incentives to increase the household value and utilisation efficiency of natural woodlands in Kibwezi.

Indirect livelihood incentives assume that by strengthening and diversifying community livelihoods, and making them more secure, people will rely less on natural resources. They include a wide range of rural development activities and support to social infrastructure and employment generation. Indirect livelihood incentives form a component of proposed conservation strategies in Case Study 2, in efforts to enable community members to move away from forest-based sources of subsistence, income and employment in Mount Kenya. Both direct and indirect livelihood incentives typically work to understand and account for livelihood differentiation and variability by targeting activities towards particular groups (for example natural resource harvesters) and circumstances (for example times when household income, employment and subsistence are scarce).

Market measures

Market measures aim to overcome the distortions and weaknesses in prices and markets which send the wrong signals to consumers and producers and encourage them to degrade natural resources because it is easier, more profitable, or cheaper to do so. Market incentives for community nature conservation take three basic forms – measures which improve prices and markets for natural resources themselves, measures which attempt to enhance the supply and affordability of alternatives to natural resources and measures to limit or control markets in natural resource products.

Measures to improve natural resource markets involve the rationalisation of existing resource prices, development of new natural resource uses and products and improvement of marketing channels and information. By raising the price of natural resources in line with their relative scarcity, they aim to encourage their wise use, increase value-added at the community level and limit consumption to sustainable levels. Examples include the development of new non-consumptive natural resource markets such as eco-tourism, the implementation of charges for environmental services, the rationalisation of timber royalties and forest user fees, and the development of local marketing groups and cottage industries in natural resources. In

Case Study 3 the development of new markets in wildlife products, in collaboration with commercial and private sector concerns, is identified as an important tool for nature conservation around the Serengeti National Park. Conversely, natural resource-based market measures can also be used to provide disincentives to degradation through banning particular products or markets, or introducing quotas and limits on trade. Examples include market bans on unprocessed indigenous timber, fishing quotas or strict conditions for entry into wildlife product markets. In Case Study 2, around Mount Kenya, bans on indigenous timber sales are used as a disincentive to forest degradation.

Measure acting on alternatives to natural resources include improving other product and employment markets at the community level. They have the aim of encouraging community members to move away from natural resource-based activities. Examples include the stimulation of agricultural markets, the provision of skills-training and micro-credit in alternatives to natural resource enterprises, the domestication of wild species and the development of alternatives to wild resources such as construction materials, fodder or fuel sources. In Case Study 2 the development of markets in alternatives to forest products provides a major indirect incentive for the conservation of Mount Kenya Forest.

Fiscal measures

Fiscal measures raise and spend budgetary revenues on raising or lowering the relative price of different products, thus aiming to discourage or encourage their consumption and production. They can be used to correct or counterbalance distorted prices in natural resource and other markets.

Fiscal incentives for nature conservation are usually targeted at specific products and markets, and can be used as either positive incentives for conservation or as disincentives to discourage degradation. Examples of fiscal incentives for nature conservation include subsidies to resource-conserving technologies or natural resource alternative products, and tax relief or relatively lower tax rates on sustainable land and resource uses. Fiscal disincentives to nature degradation take the opposite form and include relatively higher tax rates, or the dismantling of subsidies, on products and production processes which degrade natural systems. In Case Study 1 the provision of subsidies to sustainable utilisation and development of non-woodland-based activities is identified as a potentially important incentive for community natural woodland conservation in Kibwezi.

A number of limitation exist to the use of fiscal measures for community-based nature conservation. While the imposition of additional taxes at the community level is usually unpopular both with community members and

decision-makers because it raises the price of basic commodities, the use of subsidies often places strain on already limited government budgets. Additionally, as many markets and prices already function badly, the desirability of introducing additional distortions is increasingly questioned. Where fiscal measures are used as economic incentives for community-based nature conservation, they are usually applied as temporary or short-term measures.

Financial measures

Financial measures deal with the fact that communities typically benefit little in cash terms from natural resource conservation, and have poor access to funds with which to invest in sustainable utilisation activities or technologies or in alternative economic activities and products. They make funds available to communities and earmark them specifically for nature conservation activities.

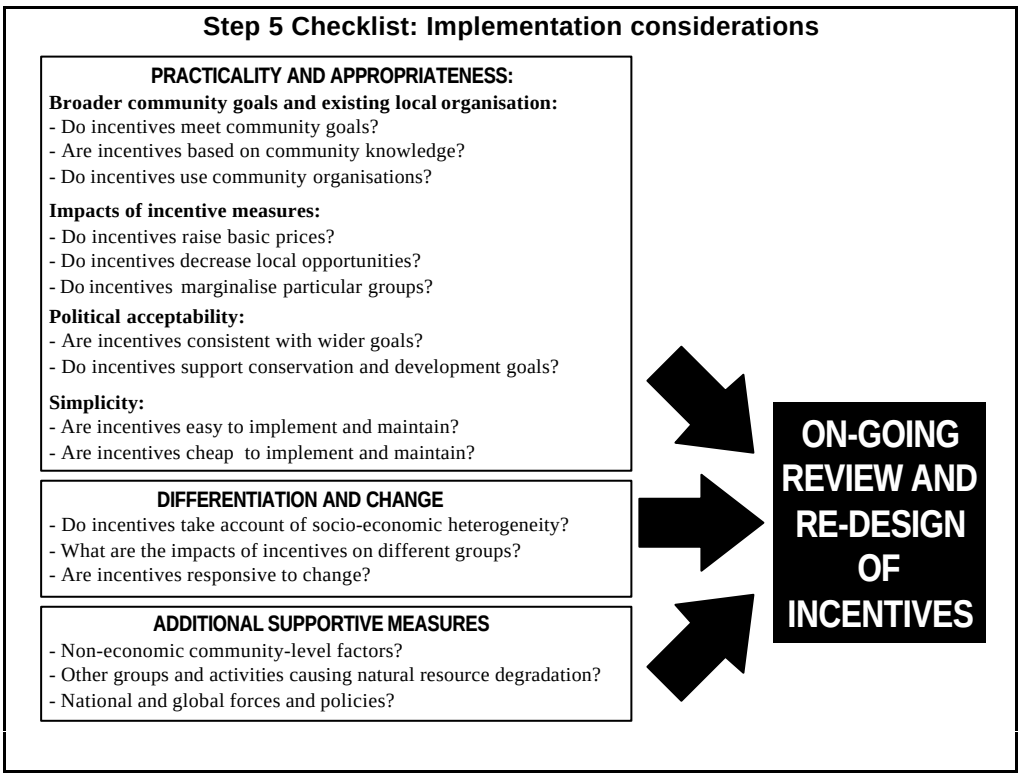
Financial measures take a wide variety of forms. Direct financial incentives include cash rewards or compensation for conservation activities, as well as the provision of grants, credit or loans targeted directly at the development of alternatives to natural resource products and enterprises. In Case Study 3 direct financial incentives such as loans and micro-credit provision are used as a means of community wildlife conservation around the Serengeti National Park. Financial measures are also widely used as indirect incentives through benefit or revenue-sharing mechanisms which allocate funds to broad community development activities. In Case Study 4 financial measures are proposed to generate funds for wetland management in Nakivubo. Financial measures can also be used to provide disincentives to nature degradation, for example through the imposition of fines and penalties for activities which damage or degrade natural systems. In Case Study 2, fines for illegal forest use provide a disincentive to degradation in Mount Kenya Forest.

Many countries have focused on benefit-sharing as a major economic incentive for natural resource conservation, most commonly through the allocation of a proportion of protected area fees to development activities in adjacent communities. These arrangements have in general had limited success, mainly because they provide only indirect, community level benefits such as support to schools, water supplies and other social infrastructure. Communities often prove unwilling, and economically unable, to support conservation unless they are provided with tangible, cash benefits at the individual or household level, which directly offset the financial costs and losses associated with limiting natural resource use or switching to other activities. Case Study 3 illustrates how community

benefit-sharing arrangements have had little overall impact on the economic viability of wildlife for landholders around the Serengeti National Park.

2.5 Implementing Incentive Measures

Economic incentive measures for community nature conservation must be practically implementable, acceptable and appropriate to their target groups. This requires careful consideration of their equity, efficiency and sustainability. As both local and external economic and natural resource circumstances change, incentives must also be reviewed and re-designed on an on-going basis if they are to continue to be an effective means of encouraging community-based nature conservation. This section describes practical considerations relating to the choice, implementation, and ultimate success of incentive measures.



2.5.1 Setting in place incentive measures

Translating incentives into on-the-ground activities

Identifying niches and needs for incentive measures for community nature conservation and actually setting them in place are two very different things. Chosen incentive measures must be translated into a series of concrete, practically implementable on-the-ground activities. Although the aim and

focus of economic incentive measures will, of course, vary depending on why and where they are being applied and to what ends, a number of common practical considerations arise in their implementation:

- ***Individual incentive measures only address a single problem, or aspect of community-based nature conservation.*** In reality, the reasons why communities degrade nature are multiple and complex, and simultaneously involve many different groups, activities and causes. There is usually a need to set in place a mix of compatible and mutually reinforcing incentives to reach a given nature conservation or livelihood development goal. In Case Study 1 a wide range of incentives are simultaneously proposed for community woodlands conservation in Kibwezi, including fiscal, financial and market measures.
- ***Most incentive packages combine a "carrot and stick" approach.*** If incentive measures focus only on providing disincentives to nature degradation, they run the risk of losing the support of local communities. Purely punitive or exclusionary measures are likely to prove unpopular, and may by themselves weaken community livelihoods. On the other hand, positive incentives for nature conservation commonly need some kind of reinforcement and enforcement. There is also a danger that incentive systems which only serve to add value to, or raise the relative profitability of, nature-based activities will have an opposite effect to that intended, because they will encourage a higher level of natural resource exploitation and greater livelihood dependence on nature. Most incentive packages thus contain a balanced combination of positive incentives which reward or induce conservation and disincentives which discourage or penalise nature degradation. In Case Study 2 it is clear that direct and enabling incentives for forest conservation must continued to be accompanied by restrictions on the use of Mount Kenya Forest.
- ***Incentive measures require partners in their implementation.*** Few incentive measures are cost-free to implement. Almost all require funding. They also rely on concrete decisions and actions at government, donor, private or community levels. Partners for implementing incentive measures must be defined, and their roles and responsibilities clearly agreed before the a final choice of incentive measures is made. All the Case Studies presented in this resource kit rely on partners and financiers for their implementation – for Case Study 1 the SIDA-funded Regional Land Management Unit is a major partner in the implementation of incentive measures in Kibwezi, in Case Study 2 the primary implementers of incentive measures are the Kenya Wildlife Service and Forest Department, in Case Study 3 private sector companies take responsibility for setting in place economic incentives around the Serengeti National Park, and in Case Study 4 the Uganda government

and private developers both play important roles in implementing community economic incentives.

Ensuring the acceptability and appropriateness of incentives

Incentive measures rely on the compliance of community members themselves, as well as on the support of various other groups who have the potential to influence community economic behaviour and impacts on natural systems. They are unlikely to be either successful or sustainable if they are considered to be inappropriate by, or unacceptable to, any of these groups. Of particular importance is consideration of:

- ***Broader community goals and existing local organisations.*** As far as possible, the design and choice of incentive measures for nature conservation should simultaneously meet community needs, aspirations and goals, strengthen livelihoods, and work through existing local institutions and knowledge to reach their aims. This will significantly enhance community compliance, local effectiveness and acceptability. In Case Study 3 incentives work primarily through existing village structures and local markets around the Serengeti National Park.
- ***Incentive measures should not make any community members worse off.*** Any incentive package which raises the price of basic subsistence items, decreases local employment or income opportunities or marginalises particular sectors of the community is unlikely to be acceptable or sustainable. In all the Case Studies incentives are targeted at diversifying, rather than reducing local subsistence income and employment opportunities.
- ***Incentive measures need to be acceptable to politicians and decision-makers, and consistent with wider development and conservation goals.*** Any measure which conflicts with broader political, social or economic goals is unlikely to be implementable in practice. The aim of using economic incentives for community-based nature conservation is to support conservation and development, not to contradict their aims and approaches. In all the Case Studies incentive measures form part of a broader strategy for rural development and nature conservation which community members and local leaders have already bought into.
- ***Incentive measures should be simple to implement, minimising transaction, enforcement and participation costs.*** Even if they are externally supported, incentive measures will ultimately be maintained through the actions of government and local communities. They should be easy and cheap to implement for all groups concerned if they are to be sustainable over the long-term.

2.5.2 Reviewing and re-designing incentive measures

Coping with change

Incentive measures for community nature conservation are never absolute. They are designed and applied under particular circumstances in order to reach particular goals. The economic circumstances which determine nature degradation and conservation vary between different groups and over time. The nature and goals of incentive measures must themselves be responsive to such changes. Incentive measures will only have limited effectiveness and are unlikely to be sustainable over the long-term if they do not take account of diversity and change in local livelihoods and the status and integrity of natural systems. Of particular importance is consideration of:

- ***Socio-economic heterogeneity.*** Different sectors of the community have varying livelihood strategies and needs, and different relationships to natural systems. The niches for, and effectiveness of, economic incentives for nature conservation will vary accordingly. No single measure will be applicable and effective for all groups.
- ***The varying impacts of incentive measures.*** Incentive measures have varying impacts on different sectors of communities. All incentives have the potential to change substantially existing roles, responsibilities, use of nature and access to income, subsistence and employment. Particular care must be taken that incentives do not marginalise any group, especially those who are already vulnerable.
- ***Regular change in community livelihoods.*** Community members face different livelihood constraints and opportunities at different times. Some aspects of change are regular, such as seasonality, while others are occasional and unpredictable, such as drought, the collapse of markets, war and civil unrest. Needs and niches for community-based nature conservation will vary at different times, and incentive systems must be adaptable and responsive to this.
- ***Permanent change in community livelihoods and opportunities.*** People's livelihoods change permanently as new needs and opportunities arise. For this reason, economic incentive measures can never present permanent solutions to nature degradation. They may also become inappropriate over time, either overall or for particular sectors of the community. For example, natural goods are often seen as inferior, and nature-based sources of income and employment as less desirable activities. Incentives which are based on enhancing and increasing resource-based activities may over time become unacceptable as community livelihoods undergo change, and may act to keep communities at low levels of development.

The need for additional supportive measures

Community incentive measures are partial solutions to problems of nature degradation. They act on community-level activities, and work through economic issues. The determinants of nature conservation and degradation, and needs for incentives, extend far beyond economic issues and local circumstances. Economic incentives for community nature conservation must always be accompanied by broader supportive measures which go beyond the local level and encompass more than economic concerns. Of particular importance is consideration of:

- ***Non-economic factors which encourage community-based nature degradation or discourage conservation.*** Although economic factors are an important determinant of community nature degradation, they are not the only cause. A range of other distortions, failures and gaps act against conservation at the local level. These forces, including issues relating to information, awareness and social organisation, must also be addressed in nature conservation strategies. In Case Study 1 a wide range of measures other than economic incentives, including forestry research, extension and grass-roots level development have simultaneously been proposed for Kibwezi.
- ***Other groups and activities which contribute directly to nature degradation.*** Communities are not the only groups whose production and consumption result in nature degradation. In particular commercial producers and urban consumers also degrade nature in the course of their economic activity. Action must be taken to modify and change these activities, on both demand and supply sides. In Case Study 2 the activities of large-scale commercial timber concerns and urban consumers are also having devastating impacts on the status and integrity of Mount Kenya Forest.
- ***National and global forces which encourage community nature degradation.*** Economic incentives attempt to overcome and counterbalance the effects of perverse incentives, but often cannot change the broader policies, institutions and markets which form their source. It is also important to modify the national and global policies, institutions and markets which underpin local-level resource degradation. Of particular importance are public sector, macroeconomic and sectoral policy reform, and careful consideration of the global agreements and donor arrangements which impose particular conditions on resource use and local livelihoods. In Case Study 3 national agricultural and land use policy have major impacts on the way in which lands in the north-west buffer of the Serengeti are used.

3. Case Studies from East Africa

This section summarises four East African case studies of economic incentives for community-based nature conservation.

3.1 Livelihood and market incentives for sustainable land use in natural woodland areas of Kibwezi, Kenya

Kibwezi Division lies in the arid and semi-arid agro-ecological zone of south-eastern Kenya. Although most of the 15,000 households in the division depend on mixed smallholder farming, Kibwezi is an agriculturally marginal area. Only a quarter of the Division has any secure potential for crops while the rest is comprised of low potential livestock-millet and ranching zones. Due to a combination of climatic factors and human influences, crop failure rates are high (between 25-75%), there is recurrent drought, and the incidence of rural poverty is high. Rural livelihoods are characterised by extreme uncertainty and seasonality.

Kibwezi was originally covered by extensive mixed *Acacia-Commiphora* wood-lands. Large patches of these open woodlands still remain, although today are found mainly within private farms. Natural woodlands form an important part of local farming systems. As well as providing soil and water conservation, and shelter and windbreak functions which all support crop production, they yield a range of basic subsistence products for home consumption. The majority of households in Kibwezi obtain the bulk of livestock grazing and fodder, and domestic energy and construction materials from on-farm natural woodland areas which also generate income through charcoal burning, brick making and honey production. As well as these regular direct and indirect economic benefits, the natural woodlands provide security in times of stress and drought because they yield fallback human and livestock foods when other sources fail.

Although the majority of households maintain natural woodlands on their farms, these are being rapidly degraded and cleared. Farm subdivision and the need for arable land result in the conversion of natural woodland areas to cropland. Although the perceive value of natural woodlands are high, land use decisions in Kibwezi are ultimately driven by crop production. This natural woodland degradation weakens farm livelihoods. As woodlands are cleared farmers come to rely more and more on uncertain crop production. At the same time vital sources of household products, indirect support to crop and livestock productivity and means of insurance against stress all disappear. Natural woodlands degradation in Kibwezi has resulted in a substantial decline in local economic welfare.

On-farm woodlands conservation provides an important tool for diversifying and strengthening household livelihoods. Reliance on a sole livelihood base, agriculture, is insecure for farmers in an agriculturally marginal and climatically uncertain area such as Kibwezi, where crops often fail and access to basic subsistence and income products is always limited. Natural woodlands contribute direct consumption and income-generating products to the household economy as well as provide other, less tangible, benefits which support farm production, buffer seasonal shortages in food and cash, and make livelihoods more sustainable and secure.

A major economic issue is the relative returns of cropland and woodland. Natural woodland areas have an alternative use as agricultural land. Although there are many components of woodlands' economic value at the household level, it is direct economic benefits and products which yield subsistence and income which are of greatest importance when land use decisions are made. When households are poor and livelihoods insecure, maintaining natural woodlands for their indirect, option and existence values is a luxury which many farmers cannot afford. To maintain natural woodlands farmers must be put in a position where they can afford to do so. This means ensuring that the woodlands contribute sufficient direct income and subsistence to the household farm-economy. A range of economic incentives were identified as tools for natural woodlands conservation and rural livelihood development in Kibwezi, including:

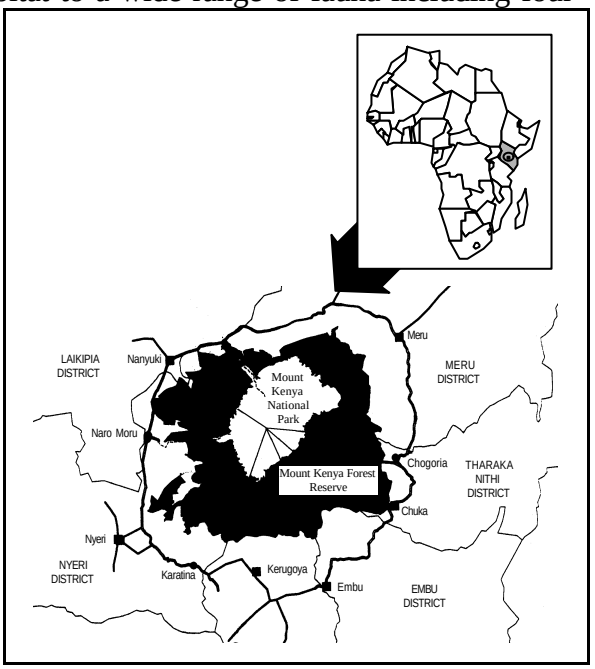
- ***Using fiscal instruments to add value to existing activities, promote multiple use and improve harvesting*** Existing use strategies do not always maximise sustainable values – the majority of farmers in Kibwezi utilise on-farm natural woodlands only for firewood collection and grazing. Income-generating activities, where they are carried out, tend to use low-output and inefficient harvesting techniques. Through the provision of subsidised training and equipment for improved woodland harvesting and multiple use, farmers can be encouraged to increase the diversity and efficiency of woodland utilisation. This can simultaneously decrease input and labour costs, increase production output and maximise and diversify woodland value.
- ***Increasing household value-added through improving prices and markets*** Marketing of natural woodland products is not well-organised in Kibwezi, and is very limited in scope. Primary producers fetch low prices because they rely on occasional purchases by middlemen and on roadside sales. By providing improved information and support to marketing activities, the value-added to households from sales of woodland products can be significantly raised. Simultaneously, by focusing on the promotion of income-generating activities at low agricultural seasons,

marketing can be used as a tool to generate cash at times when labour demand, cash and food availability are all low.

- ***Using financial instruments to encourage investment in improved harvesting, processing and entry into new product uses and markets*** Utilisation of natural woodlands tends to focus on low value products and species in Kibwezi. This is due to lack of information about available products and markets, inability to invest in new equipment, activities and markets and limited supplies of many of the more valuable commercial tree species. There is much potential for the production of new high value products such as refined honey, beeswax, carving wood and medicinal extracts and for the more efficient production of existing products such as honey, charcoal and bricks. Establishing a revolving fund to make low-cost credit available to woodland producers and entrepreneurs forms a means of targeting assistance to enrichment planting with high-value species, investment in improved equipment and entry into new markets.

3.2 Financial and policy instruments for the conservation of Mount Kenya Forest

Mount Kenya Forest is one of the largest, most ecologically significant and commercially valuable indigenous forests in Kenya. Lying in central Kenya, it comprises an area of some 2,000 km^2 of dry montane and montane rainforest and has exceptional value in biodiversity and ecological terms. The forest contains several endemic afro-alpine plant species as well as commercially valuable *Juniperus*, *Ocotea*, *Olea*, *Podocarpus* and *Vitex* timber species and provides habitat to a wide range of fauna including four threatened bird species and four threatened mammal species. It forms a major water catchment area from which two of the country's five river basins rise and supply water to more a quarter of Kenya's human population and more than half of its land area, including the five hydropower schemes which together provide nearly three quarters of national electricity requirements.



Mount Kenya Forest has been subject to various management regimes since it

was gazetted as a Forest Reserve in 1932. Although local populations were evicted from the forest in the early 1930s, they continued to be permitted to harvest products for subsistence purposes and formed the major users of the forest for the next three decades, co-existing with selective logging activities and commercial timber plantations. After Kenya's Independence in 1963 when former European-owned farms around the forest were allocated through resettlement schemes, small-holder agriculture spread and population grew rapidly. Throughout much of the 1970s and 1980s Mount Kenya forest was subject to intensive exploitation as both the level and the scope of local forest utilisation expanded, and as commercial logging activities grew. In response to rising land pressure and population growth in the forest-adjacent region, large areas of the forest were excised for agriculture and settlement and creeping encroachment around the forest boundary increased. By the late 1980s the forest showed signs of substantial degradation and a series of draconian measures were introduced banning most human use of forest species and lands, enforced through heavy policing and severe fines.

Mount Kenya Forest lies in one of the most agriculturally fertile and densely populated parts of the country. Today more than 200,000 people live within 1.5 km of the forest's edge in an area where levels of rural poverty are high and land is extremely scarce. These adjacent communities continue to exploit forest resources at high levels, albeit illegally, and there is great hostility towards the government managers of the forest, the Forest Department (FD) and Kenya Wildlife Service (KWS). Purely exclusionary forms of forest protection have proved to be ineffective in conservation terms, and have served to alienate local communities. A current challenge facing FD/KWS is to find new ways of controlling illegal forest encroachment and utilisation carried out by adjacent communities.

With an increasing realisation that as long as adjacent communities have no stake in or economic gain from the forest they will not support its conservation, local economic incentives have come to form a major component of FD/KWS's approach to forest management. Three major tools have been used to introduce positive incentives for conservation and to overcome the perverse incentives which encourage forest degradation and loss. These include:

- ***Property rights and policy change*** One of the strongest disincentives to community conservation is that policy and legislation have long denied any active local role or economic stake in forests. Existing legislation bans most extractive activities and vests monopoly control over Mount Kenya Forest in the government FD/KWS, explicitly stating that private and community interests in forest use and management will wherever

possible be limited and eradicated. This legislation, which has undergone little change since colonial times, is under review and a new forest policy has recently been adopted. Both permit a significantly greater degree of community control over forest resources, allowing forests to be put under local and joint management, containing as stated aims the development of forest utilisation for local economic gain and enabling the establishment of private and community rights over forest use and management.

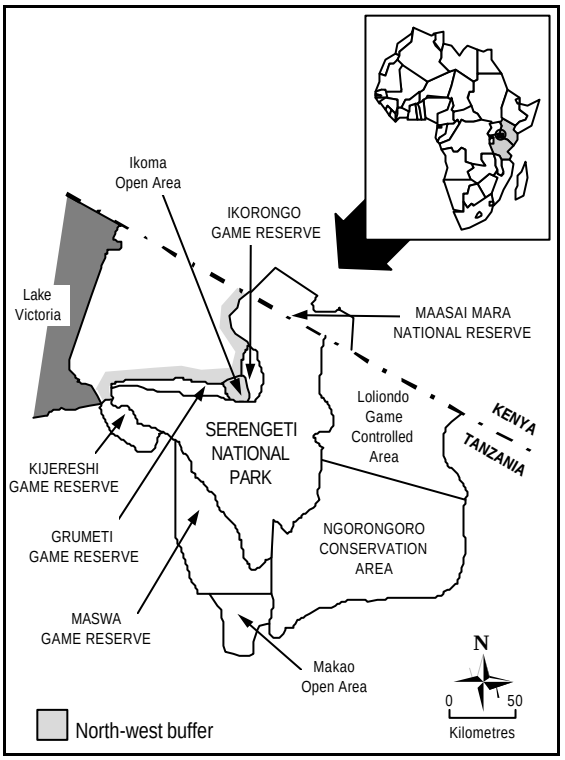
- ***Developing alternative products and markets*** Levels of rural poverty are high in the Mount Kenya area, and many households lack access to basic subsistence, employment and income. Although resources obtained from Mount Kenya Forest provide a major source of these items, forest products are largely seen as inferior goods. When households can afford to move away from forest utilisation, they do so. The development of non-forest alternative sources of subsistence, income and employment, from farm and off-farm sources, has provided important economic incentives for conservation by minimising local reliance on forest products. Activities such as on-farm woodlot development, promotion of fodder crops and development of alternative fuel and construction materials, and skills training and non-forest micro-enterprise development for pitsawyers and charcoal burners have all decreased the level and scope of unsustainable forest utilisation at the same time as strengthening and diversifying local livelihoods.
- ***Providing finance and funding*** Although Mount Kenya Forest generates high economic benefits, few of these are captured as real cash values and little or no income accrues locally. Finding ways of channelling funds to the community level has, by increasing the local value of the forest, provided important economic incentives for conservation. A first step in providing finance and funding was to identify ways of capturing forest benefits as cash income. Several ways of raising funds were identified including the rationalisation of commercial forest product royalties and forest-based tourism fees as more innovative arrangements for charging for forest catchment protection services through levies on urban water and hydropower consumers. Several instruments for making these funds available at the community level have been proposed, including investment in local development and infrastructure, and the establishment of loans, grants and credit for sustainable land use activities, development of forest-alternative and sustainable harvesting product and market enterprises.

All these measures have substantially improved community-level economic incentives for forest conservation. But the case of Mount Kenya Forest also illustrates the limitations of community incentives. Many of the economic

forces driving forest degradation and loss do not arise at the local level, and are not directly related to the forest sector. Perhaps the single most important perverse incentive encouraging local forest degradation and loss is policy in the land and agriculture sectors which is based on extending and intensifying arable production and which still promulgates subsidies and interventions aimed at achieving these goals. A major reason for the degradation of Mount Kenya Forest also arises from high levels of illegal commercial timber extraction. The establishment of community economic incentives for forest conservation, however effective, cannot act on national timber markets and large-scale logging operations.

3.3 Market arrangements between local communities and the private sector in the North-west Serengeti, Tanzania

The Serengeti ecosystem forms one of the most important wildlife areas in Eastern Africa, both in terms of conservation and tourism. Covering a land area of some 25,000 km^2 of north western Tanzania and south western Kenya, the Serengeti provides habitat to 30 species of ungulates, 13 species of large carnivores and more than 500 species of birds. Savannah areas alone are estimated to contain some 1.3 million wildebeest, 0.2 million zebra, 0.5 million gazelles, 7,500 hyena and 2,800 lion. If the status and integrity of the Serengeti is to be maintained there is a need to conserve wildlife in the north-west buffer zone, which provides a vital dispersal area for migratory wildlife herds. The survival of this wildlife depends to a large extent on the actions of the landholders who live around the Serengeti National Park.



Some 10,000 households or 75,000 people live in the rangelands and farmlands which directly border north-west parts of the Serengeti National Park. Agricultural land uses co-exist uneasily with wildlife. Over recent decades both wildlife numbers and diversity have declined dramatically in this north-west buffer zone due to poaching and loss of natural habitat arising from deforestation,

over-grazing and bush clearance for cultivation. The major reason for wildlife destruction is that while it incurs high livelihood costs to farming households by destroying crops and livestock and by competing for arable and grazing land, it generates few tangible benefits at the local level. In the face of pressing needs for subsistence, income and employment, local communities are both unwilling and unable to bear these costs.

After a history of park management based on the almost complete exclusion of local residents, there have been some attempts since the early 1990s by Tanzania National Parks (TANAPA) to engender community support for conservation. The Support to Community Initiated Projects (SCIP) Fund has since 1990 allocated a proportion of revenues generated from the National Park to the construction and maintenance of community infrastructure in the north-west buffer zone.

These benefit-sharing arrangements, although undoubtedly improving people-park relations, have largely failed to set in place community economic incentives for wildlife conservation, or to overcome the economic forces which cause landholders to destroy wildlife and wildlife habitat. The amounts of revenue allocated to the SCIP fund, spread throughout the areas around Serengeti National Park, equate a total expenditure of only just over US$ 15,000 a year in the north-west buffer zone, or approximately US$ 0.25 per capita. This in no way compensates for the economic costs wildlife incur to farming households nor does it provide a substantive contribution to local livelihoods. While the economic costs associated with wildlife are felt as real financial losses at the individual or household level, SCIP activities comprise small-scale and occasional support to village-level infrastructure such as schools, wells, dams and roads. Because none of these activities make people tangibly better off by providing subsistence, income or employment, they do not put people in a position where they are any more willing, or economically able, to conserve wildlife.

Despite the fact that government benefit-sharing mechanisms have done little to improve the local economic desirability of wildlife, the balance of wildlife economic costs and benefits has recently changed dramatically for local landholders in the north-west buffer zone of the Serengeti. A series of effective community economic incentives for wildlife conservation have resulted from the development of a new range of markets for wildlife products and services, largely driven by private-sector demand and the dependence of commercial tour operators on community compliance in wildlife conservation. These include:

- ***Revenue sharing by tourist hunters*** The most lucrative wildlife-based enterprise in the north-west buffer zone is tourist hunting. Hunting

outfitters and their clients are beginning to allocate revenues directly to the villages on whose land they operate. A voluntary levy of 10%, over and above trophy fees, has been recently imposed on all tourist hunting activities. This levy has the potential to generate up to US$ 12,500 a year for each of the four villages in the north-west buffer zone upon whose land hunting concessions lie.

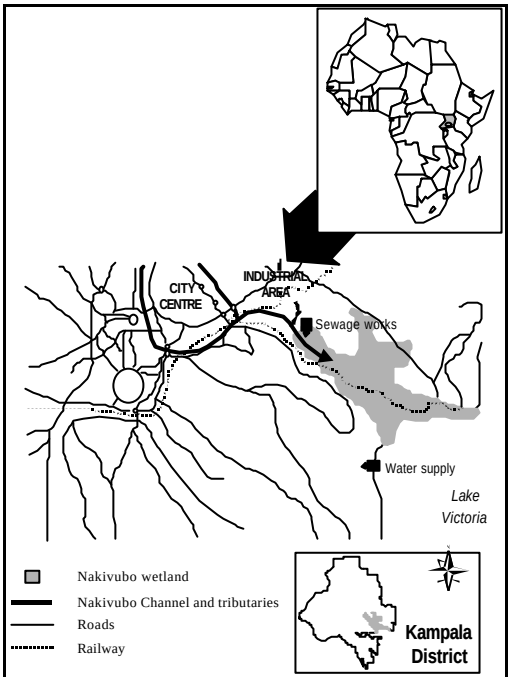
- ***Local sourcing of products*** Hotels, lodges and hunting camps are increasingly obtaining food products from local sources. It is estimated that sales of beef, chicken, fruit and vegetables are currently worth between US$ 10,000-15,000 a year to villages in the north-west buffer zone. As well as providing cash income, these arrangements have acted to stimulate and diversify farm production among local households.
- ***Community wildlife cropping*** For the first time, communities in the north-west buffer zone have been allocated their own wildlife cropping quotas, which has in turn introduced a number of new markets for wildlife products. One of the most important impacts of cropping quotas has been to legitimise the sale and consumption of game meat, leading both to a decrease in the local price of meat and a downsurge in poaching. It has simultaneously stimulated the market for other wildlife products, such as horns, hides and skins. Currently worth some US$ 3,500 a year it is estimated that the value of cropping could almost quadruple to US$ 13,500 if quotas were allocated to all villages in the north-west buffer zone.
- ***Land leases and joint tourism enterprises*** The greatest potential for local gain from wildlife lies in the direct participation of landholders in wildlife enterprise. Over recent years private sector tourist operators have started to work directly with villagers in the north-west buffer zone. Several joint private sector-community partnerships have been forged. These range from land lease and bednight levy arrangements worth up to US$ 10,000 per village per year, through to the development of a wildlife camp as a joint venture in which villagers hold equity, and supply labour and food products and from which a proportion of profits are ploughed back into the community as share dividends, development funds and micro-credit, potentially worth more than US$ 20,000 a year.

Together these arrangements have substantially increased the economic and livelihood gains accruing from wildlife to communities – at the household level wildlife now has the potential to directly generate more than 60 times as much local revenue as under government benefit-sharing arrangements, excluding employment and secondary income benefits. For the people who live around the north-west of the Serengeti National Park, and who bear high economic costs from conservation, economic incentives have ensured

that wildlife has started to be seen as an integrated and desirable part of local land use and livelihood systems.

3.4 Incentives for urban wetlands conservation in Nakivubo, Uganda

Over the last decade Uganda has entered a period of intense economic growth, infrastructural rehabilitation and urban development. Today nearly half of the country's urban dwellers live in Kampala, where population is estimated to be increasing at a rate of nearly 5% – almost double the national average. To cope with this rapidly rising population, settlement is expanding, construction is taking place and urban infrastructure is being improved throughout the city. Many of these developments have involved draining and reclaiming wetlands. Almost one sixth of Kampala District, or 31 km^2, is covered by wetlands ("wetlands" include permanent swamps and water bodies, as well as seasonally flooded areas), including some of the parts of the city that have been zoned as centres of development. These wetlands are, without exception, facing a serious threat of total destruction – it is estimated that about three quarters have been affected significantly by human activity and about 14% are seriously degraded. By far the greatest threat to wetlands is their reclamation for industrial and housing development.



One wetland area, in particular, has been severely encroached upon by settlement and industry. Nakivubo is one of the largest wetlands in Kampala, covering almost 6 km^2. It stretches from the central industrial district and passes through dense residential and commercial areas, before entering Lake Victoria at Murchison Bay. The areas around Nakivubo, including the wetland itself, are regarded as prime sites for urban development due to their proximity to the city centre and industrial district, as a result of land shortage in other areas, and because land prices are still relatively cheap as compared to other parts of the city.

There is a danger that Nakivubo may soon be modified and converted completely. Until recently, this has not been seen as a major problem by urban planners and civil engineers – wetlands are generally seen as having little value, especially in the face of pressing needs for land for construction, and in comparison to the large and immediate profits these developments yield. Slowly, this perception is changing. The National Wetlands Programme of the Ministry of Water, Lands and Environment – the national government agency mandated with wetlands management in Uganda – has however recently started to work closely with city planners in order to assess the economic and social impacts of wetlands conversion and degradation. For one of the first times in Eastern Africa, attempts have been made to use economic incentives for wetland management.

One of the most important values associated with Nakivubo is the role that it plays in assuring urban water quality in Kampala. Both the outflow of the only sewage treatment plant in the city, at Bugolobi, and – far more importantly, because over 90% of Kampala's population have no access to a piped sewage supply – the main drainage channel for the city, enter the top end of the wetland. Nakivubo functions as a buffer through which most of the city's industrial and urban wastewater passes before entering Murchison Bay. These wastewaters equate to the raw sewage from nearly half a million households (or half of the city's population). Close by, the domestic effluents of approximately 8,000 households who live in low cost settlements around the wetland and the largely untreated wastes of nearly a third of the enterprises in the city's industrial district are also discharged directly into Nakivubo. Nakivubo physically, chemically and biologically removes nutrients and pollution from these wastewaters. These functions are extremely important – the purified water flowing out of the wetland enters Murchison Bay only about 3 kilometres from the intake to Gaba Water Works, which supplies all of the city's piped water. The wetland ensures that a substantial proportion of pollutants have been removed from the water which enters this intake.

Another set of vital benefits are provided by the natural resources found in Nakivubo. About a third of the wetland – mainly in its northern or upper part – is used by up to 500 farmers for cultivating yams, sugarcane and other crops. The water, sediments and fertile soils retained in the wetland enable this cultivation. Several hundred people are also involved in harvesting wetlands resources – such as papyrus, grasses, reeds and clay. In total nearly a tenth of the residents of the low cost settlements which surround Nakivubo engage in wetland-based resource utilisation activities. Many of these people lack access to other employment opportunities, or engage in only occasional and low-paid casual work. The wetland provides

a significant supplement to local earnings, and forms the sole source of cash income for many of the poorest households.

The case of Nakivubo illustrates that environmental resources and natural ecosystems are not just places of scientific interest – they comprise a stock of natural capital which, if managed wisely, can generate substantial economic benefits, especially to the poorest and most vulnerable urban communities who lack other sources of basic goods and services. It is clear that, for sites such as Kampala, the issue is not ***whether*** processes of industrialisation and urbanisation should take place – of course they should, because they form a key part of most developing countries' future economic growth, and generate obvious social and economic benefits. Rather, it is becoming increasingly obvious that it necessary to question the ***ways*** in which these developments are carried out, and especially how they are conceptualised, planned and implemented with environmental concerns in mind. Economic incentives can be used to persuade urban planners and developers to take environmental concerns into account – and thus to safeguard sources of income, food and services for local communities. Three major sets of economic incentives are in the process of being set in place in order to safeguard Nakivubo's integrity:

- ***Financing wetlands management*** Without management interventions, Nakivubo will not be conserved or used to its maximum capacity. This intervention will require funding, as will any activities which are deemed necessary to cover the local opportunity costs of wetlands conservation. There is little or no possibility that these funds can be provided by the Uganda government. It has therefore been proposed that the recipients of wetland water treatment and purification services should be charged for the benefits they receive, and that fees can be raised from existing charges made for water purification and waste treatment in Kampala.
- ***Sustainable resource utilisation*** Although at existing levels many of the resource utilisation activities carried out in Nakivubo appear to be broadly sustainable, wetland conservation may in the future require that action be taken to prevent their further spread. If this is to be locally acceptable, and economically viable for communities, it is necessary to set in place alternative sources of income and employment so as to compensate for these losses. A series of activities are being set in place to improve the value-added from current levels of resource use – such as brick-making and papyrus mat production, at the same time take pressure off wetland natural resources – such as fish-farming and the planting of tree cash crops
- ***Internalising development costs*** Development pressures are likely to increase, rather than decrease, in the future. Of major concern are the

loads of untreated toxic pollutants in industrial wastewaters, and the reclamation of the wetland for construction. A range of economic instruments have been proposed, targeted at industrialists and developers, to discourage wetlands degradation and loss. These include the reduction of taxes and duties on clean production technologies and waste treatment equipment, the imposition of taxes and fines on pollution, and the imposition of bonds and deposits for new developments.

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