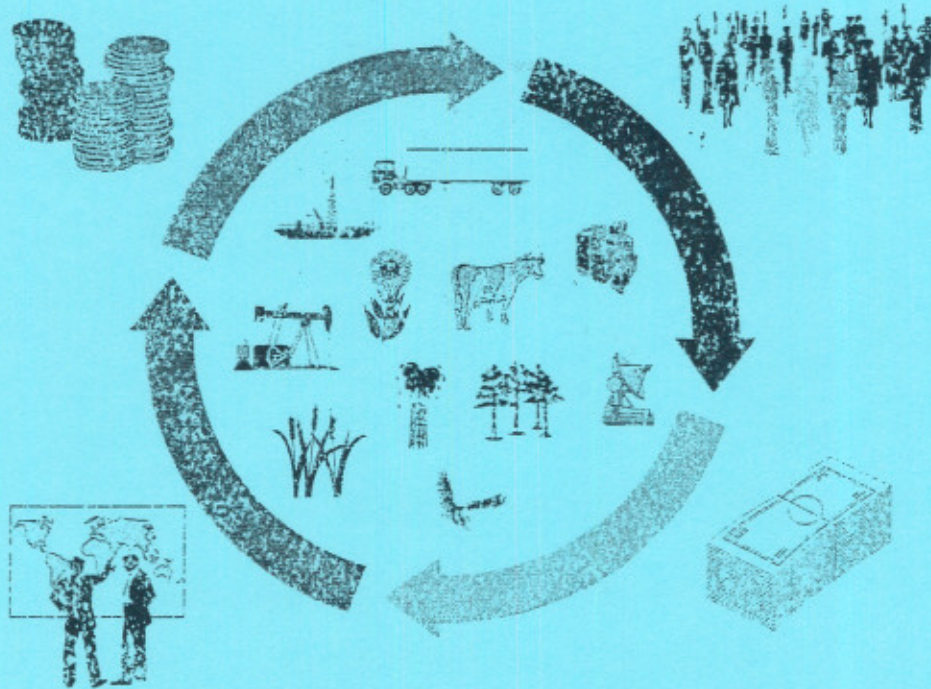




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# The National Economy and Environmental Degradation in Kenya

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# THE NATIONAL ECONOMY AND ENVIRONMENTAL DEGRADATION IN KENYA

## Introduction

During 1995 the Kenyan domestic economy experienced a growth rate of 4.9%, nearly one and two thirds that of the year before and ten times that of 1992 (Republic of Kenya 1996 *Economic Survey*). Especially, there were substantial real increases in GDP in both the agricultural and manufacturing sectors. Interest rates fell, exchange rates remained stable and inflation held down, while private sector investment and employment grew. Overall, the national economy performed well and gave a positive picture of economic growth prospects for the country.

When we look more closely at this encouraging economic picture, we can however see some causes for concern. While Kenya's economy is undoubtedly growing, we can at the same time see signs of environmental degradation and pollution. Forest area has declined, wetlands have decreased and wildlife numbers have fallen. Water and land shortage are widespread, other renewable and non-renewable natural resources are being rapidly depleted. We also see a growing use of toxic chemicals, and discharge of waste and effluent into the soil, water and air. These changes all send signals that Kenya's natural resource base is slowly being depleted and degraded. Resource depletion and degradation are not just environmental issues, they are also economic issues. Environmental degradation is largely caused by economic activities, it also gives rise to economic costs which may prejudice future growth, income and equity in Kenya.

Kenya is responding to these danger signals. There has been in recent years a process of national environmental reform, as outlined in the recent Policy Framework Paper which aims to tighten environmental management, policy and legislation within the country. At the international level, Kenya is also signatory to a range of international conventions to protect the environment, such as the Convention on Climate Change, the Convention on Biodiversity and the RAMSAR Convention on Wetlands.

The future challenge for Kenya is to continue to achieve economic growth and to generate employment and income at the same time as conserving her natural resource base. As we will describe below, it makes good economic sense to do this, and will give rise to widescale economic costs if not. Although environmental conservation involves action in, and implications for, a range of domains, economic issues and aspects form a key part of this process.

## **Environmental benefits and economic values**

The starting point for looking at the economic costs of environmental degradation in Kenya is to recognise that environmental resources give basic support to human economic activities by:

- Providing the raw materials such as land, water, minerals and timber for economic production and consumption;
- Generating ecological services such as pollution regulation, climate control and water catchment protection which protect natural and human resources through providing a sink for wastes and residues and maintaining essential life support functions;
- Giving aesthetic pleasure and holding cultural significance for many different people.

If Kenya's environment is conserved it will continue to provide these economic benefits and support human production and consumption in the future. If it is destroyed or environmental quality declines, such goods and services will decrease and the Kenyan economy will suffer as a result.

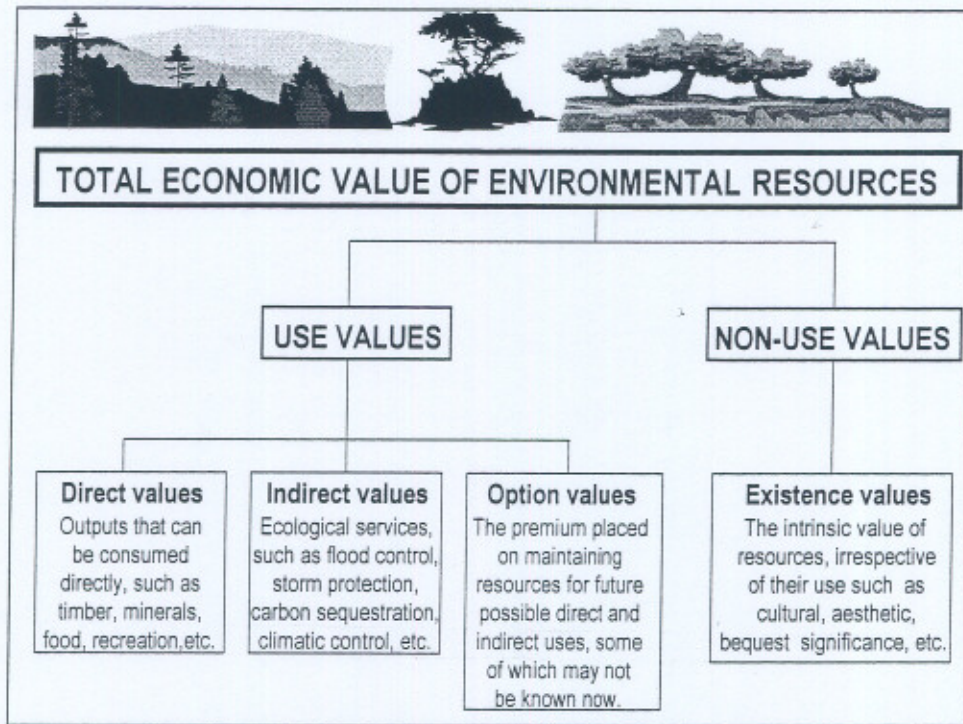
A major problem in conventional definitions of economic costs and benefits is that the link between the environment and economic activity is not recognised. Because many environmental goods and services are free, or underpriced, their exploitation is not considered to constitute an economic or social cost which must be weighed against the economic benefits of the production and consumption goods they generate.

There has been a tendency to consider only the direct benefits of environmental resources, without looking at their wider values. By doing this, a large part of the value of environmental resources has been omitted, and a large part of the economic costs of environmental degradation ignored.

The total economic value of an environmental resource, as outlined in Figure 1, is much more than the direct outputs (such as timber, minerals, water or food) it generates for production and consumption. Environmental resources also provide ecological goods and services (such as flood control, carbon sequestration or climate control), maintain the option of carrying out multiple economic activities in the future and hold intrinsic cultural and aesthetic value to human beings. Environmental depletion and degradation destroy

these wider use and non-use values as well as prejudicing future direct sources of production and consumption.

Figure 1: The total economic value of environmental resources



Slowly we are seeing in economics a broader conceptualisation of costs and benefits which takes into account these wider environmental values, and recognises the costs of environmental degradation as economic costs.

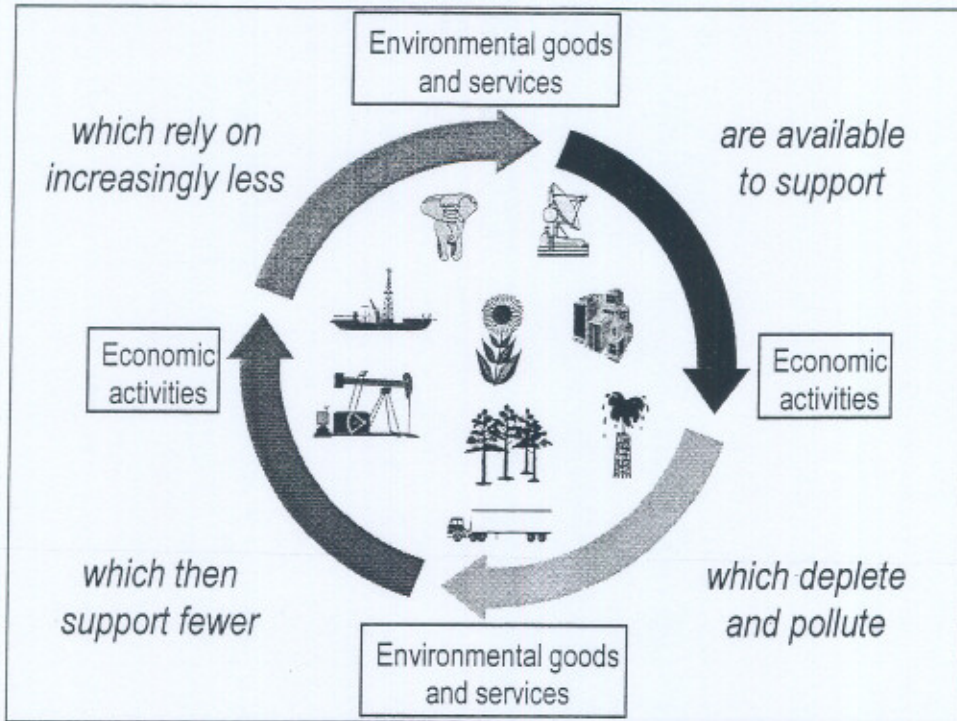
### The costs of environmental degradation

We have described how the environment, by producing a range of goods (raw materials) and services (ecological support functions), supports economic activities. These economic activities often impact back on the environment through using up non-renewable environmental goods and services, by converting environmental resources to other uses and by adding waste and effluent to the environment.

In turn, a decline in environmental quality and resources impacts on economic activities by diminishing the amount of goods and services available for future production and consumption, and by progressively precluding economic activities. We see a downward spiral of economic opportunities as the environment becomes more and more degraded, as outlined in Figure 2. This downward spiral has implications for both economic efficiency

– the sound use and management of scarce resources to generate output, and equity – the access of different groups and individuals to secure livelihoods and economic opportunities.

Figure 2: A downward spiral of environmental degradation and economic loss



If this downward spiral is indeed taking place in Kenya, and we want to take action to reverse or halt it, we first need to assess the economic costs of environmental degradation, and pinpoint the conditions under which production and consumption activities are causing these costs.

Environmental degradation leads to economic costs, both now and in the future. These include:

- **Direct economic costs in terms of production and consumption opportunities foregone**

As environmental resources decline in quantity and quality, especially if they are non-renewable or the rate at which they are used exceeds natural regeneration, the amount of raw materials available to generate output grows less, and the amount of output itself declines. An example of this is over-fishing, and the consequent – and growing – decline in fish catches and fisheries income.

- **Direct economic costs in terms of preventive or avertive expenditure**

As environmental resources decline in quantity and quality, so does the level of ecological services they support. A direct cost is implied in terms of the expenditure necessary to prevent environmental degradation occurring. An example of this is the cost involved in installing soil and water conservation structures to prevent on-farm soil erosion.

- **Direct economic costs in terms of replacement cost**

As environmental resources decline in quantity and quality, so does the level of goods and ecological services they support. A direct cost is implied in terms of the expenditure necessary to replace these products as they are lost. An example of this is deforestation, which makes it necessary to produce alternative, non-wood sources of fuel and construction materials and at the same time to replace some of the environmental functions of forests, for example instituting downstream flood control infrastructure to replace the watershed catchment protection once provided by forests.

- **Indirect economic costs to other production and consumption activities through knock on effects and externalities**

As environmental resources decline in quantity or quality they have wide effects on other production and consumption activities, even when these activities do not depend directly on a particular environmental resource. An example of this is agro-chemical pollution which affects people's health through contaminating foodstuffs, water and soils; which may destroy fisheries by leaching into surface water; and which may harm livestock through soil and water pollution.

- **Costs in terms of future economic options foregone**

We have not yet the scientific and technical knowledge to know the full range of production and consumption possibilities which may eventually be obtained from many environmental resources. We also cannot fully predict human and economic needs for goods and services in the future. As environmental resources decline in quantity and quality, a range of possible raw materials for pharmaceutical, industrial and agricultural applications may be lost for ever.

We must also look at who bears the costs of environmental degradation, now and in the future. The people who bear the costs of environmental degradation are not necessarily those who are causing degradation, spatially or temporally. For example, many of the indirect or knock-on effects of environmental degradation such as bad health, loss of productive opportunities and ecological disaster are felt by poorer people who lack the resources to cope with these costs, or will be felt by future generations as a result of activities carried out today.


Many of the long-term production and consumption losses incurred by environmental degradation will be reflected in a decline in national indicators such as falling employment, decreased foreign exchange earnings and worsened food security. The state is directly responsible for making much of the expenditure necessary to reverse, mitigate or replace lost or depleted environmental goods and services.

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It is clear that environmental degradation gives rise to widespread economic costs. Neither the people of Kenya nor the Government can afford to cover these increasing costs over the long-term. Environmental degradation has implications for Kenya's national budget, welfare and expenditure.

We can illustrate in Figure 3 the high economic costs of environmental degradation by looking at two specific examples of the links between economic activities, environmental degradation and economic loss in Kenya: the case of forest degradation in Rift Valley and Nyanza Provinces, and power generation in Eastern, Coast and North Eastern Provinces. We see how activities which undoubtedly generate a wide range of economic benefits, can also give rise to environmental degradation and incur broader costs to the government budget and to the people of Kenya. We will also illustrate that lessons learned from environmental economic analysis point not to the need to forego economic growth or productive activities, but rather to set in place measures which will prevent environmental degradation from occurring in the first place.

Figure 3: Case studies of environmental degradation and economic loss from production activities



## Deforestation

**Activity:**  
Intensive logging of natural forest area and conversion to agricultural land.


**Economic benefits:**  
Timber, charcoal, fuelwood and poles for local, regional and national domestic and industrial consumers. Increased crop and livestock production for domestic use and export.

**Environmental impacts:**  
Deforestation, loss of protection of major watershed catchment, loss of biodiversity, loss of rare and endangered plant, bird and mammal species.

**Economic costs of environmental impacts:**  
Loss of sustainable local livelihoods for hunter-gatherers, rural and urban households. Loss of tourist values. Downstream impacts on fisheries, dams, subsistence and cash crop/export agriculture, pastoralism, tourist areas, flooding and siltation.

**TOTAL NET PRESENT ENVIRONMENTAL COST**  
*US\$ 10 million*

(Example adapted and used with author's permission)



## Energy

**Activity:**  
To construct a hydroelectric scheme in order to generate power.

**Economic benefits:**  
Increased supply of electricity on the national grid for domestic and industrial consumption, dam supporting fisheries, leisure and tourism.

**Environmental impacts:**  
Daming of major river, loss of flooding regime, fall in local water table resulting in loss of lakes and wetlands, loss of grasslands, loss of floodplain, forest senescence, degradation of coastal resources and mangroves, loss of wildlife habitat.

**Economic costs of environmental impacts:**  
Loss of dry season pasture and grazing, loss of freshwater and marine fisheries, loss of floodplain agriculture, loss of forest and wildlife utilisation, decrease in wildlife tourism, loss of mangrove utilisation and flood protection, decline in rare and endangered plant, bird and mammal species.

**TOTAL NET PRESENT ENVIRONMENTAL COST**  
*US\$ 50 million.*

(Example adapted and used with author's permission)



### **Wider economic influences on environmental degradation**

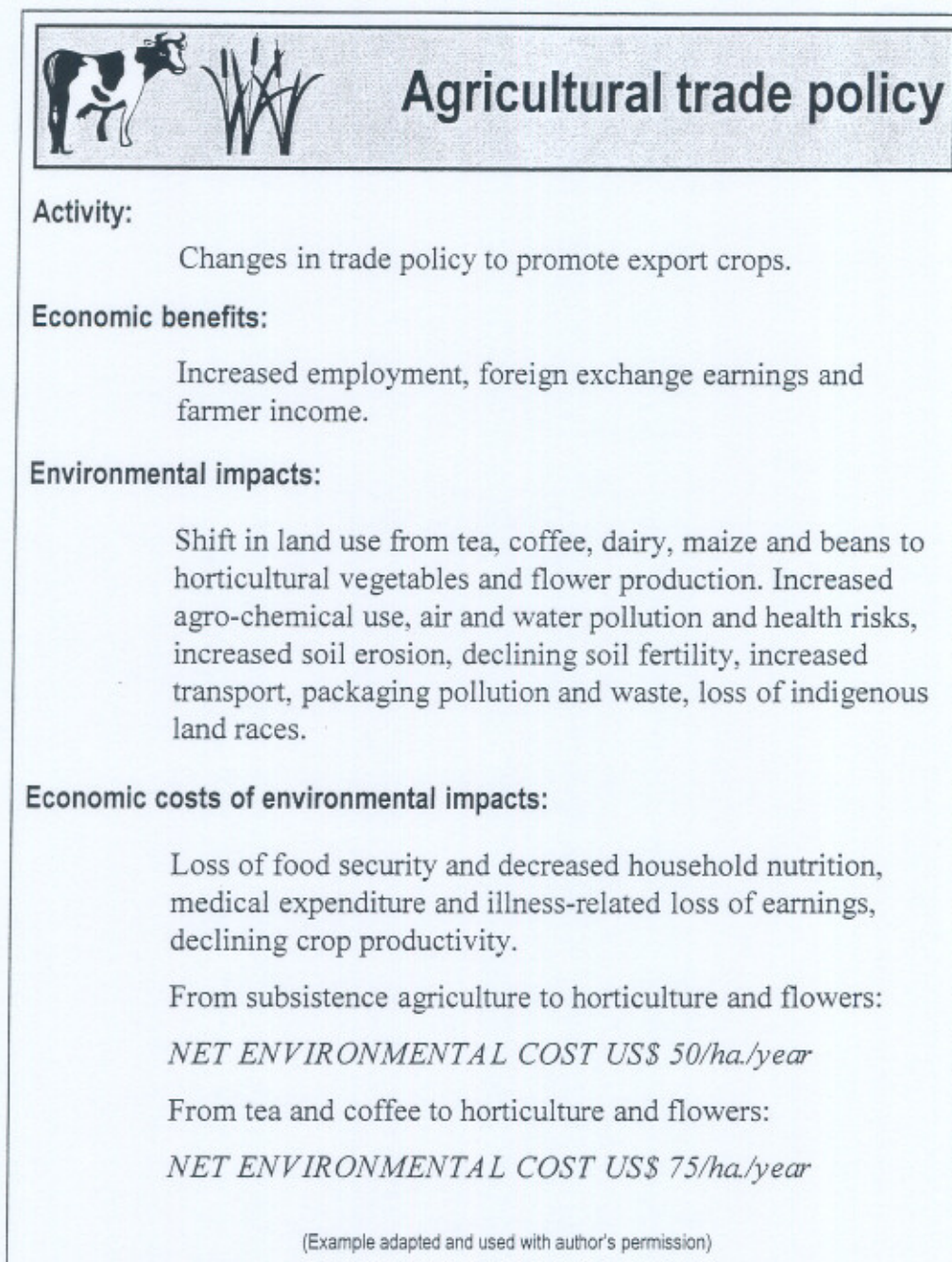
We have seen how economic activities, by depleting or degrading environmental resources, incur a series of economic costs to society which in turn prejudice other production and consumption activities. The root causes of environmental degradation are multiple, and extend into national law, institutions and social equity.

However wider economic strategies at the national and sectoral level have an important influence on people's choice of production and consumption because they define the framework within which economic activities are carried out. National economic policies can and do, implicitly or explicitly, encourage environmental conservation or depletion. While they can provide a series of perverse incentives which encourage environmentally degrading activities, they can also offer tools for achieving both environmental conservation and economic growth.

Macroeconomic and sectoral policies have an impact on the environment because they change economic signals, encourage particular activities and influence decisions about how resources are used. For example, subsidies to consumers through low timber prices or water charges can encourage economic growth, but also lead to the over-exploitation of natural resources. Heavy protection of the agricultural sector and promotion of export crops generates food security, income and employment, but it may also lead to the conversion of forests, wildlife areas and wetlands into agricultural land, increase pollution from agro-chemicals and give rise to soil erosion in agriculturally marginal areas..

We can illustrate in Figure 4 the high economic costs of environmental degradation by looking at a specific example of the links between macro-economic and sectoral policy, economic activities, environmental degradation and economic loss in Kenya: changes in trade policy and cash-crop promotion in Central and Western Provinces.

Figure 4: Case study of environmental degradation and economic loss from changes in macroeconomic policy



## **Using economics for environmental conservation**

It is clear that production and consumption activities can lead to a downward spiral of environmental degradation, economic costs and loss of productive opportunities.

Conversely, environmental conservation can lead to an upward spiral of economic growth and benefits. A major challenge is to ensure that sound environmental management systems are set in place which will enhance current opportunities for production and consumption at the same time as sustaining economic growth in the future. A broad range of actions will support sound environmental management, including appropriate policy, legal, institutional and social instruments. It also requires appropriate economic, financial and fiscal incentives for the people who engage in economic production and consumption to act in a way which will not damage or deplete the environment.

Economic instruments such as property rights, market creation, fiscal instruments, financial instruments, liability instruments, charge systems, performance bonds and deposit systems can all encourage agents to conserve the environment in the course of their economic activity, as illustrated in Figure 5. All these economic instruments aim to institute 'full-cost pricing' – to make the prices people pay for goods and services reflect the environmental value of resources used or degraded in their production and consumption. Economic instruments make sure that producers and consumers take into account the real value of the environment and the real cost of environmental damage when they make decisions.

Figure 5: Economic instruments for environmental protection

	Property Rights	Market Creation	Fiscal Instruments	Charges and Fees	Financial Instruments	Liability Systems	Bonds & Deposit Refunds
<b>Land and soils</b>	Land rights Use rights		Property taxes Land use taxes		Soil conservation loans	Land degradation liability	Land reclamation bonds
<b>Water resources</b>	Water rights	Water shares	Capital gains tax	Water pricing Water protection fees			
<b>Oceans and seas</b>	Fishing rights	Licensing Tradeable catch quotas					Oil spill bonds
<b>Forests</b>	Communal and private rights Concessions Leases	Concession bidding	Royalties		Reforestation subsidies	Natural resource liability	Reforestation bonds Forest management bonds
<b>Minerals</b>	Mining rights	Tradeable shares	Use taxes		Infill subsidies Betterment subsidies		Land reclamation bonds
<b>Wildlife</b>	Management and use rights	Park entry fees				Natural resource liability	
<b>Biodiversity</b>	Patents Prospecting rights Development rights	Transferable development rights		Charges for scientific tourism		Natural resource liability	
<b>Pollution</b>		Tradeable pollution permits	Pollution taxes	Treatment fees Technology subsidies	Low interest loans Relocation incentives	Pollution liability	Waste delivery bonds Environmental accident bonds
<b>Wastes</b>				Collection charges			Deposit refund systems
<b>Climate</b>	Tradeable emissions permits	Carbon offsets Carbon credits Tradeable CFC quotas	Carbon taxes BFU taxes		CFC replacement incentives		

(Adapted from Panayotou, T., 1994, *Economic Instruments for Environmental Management and Sustainable Development*, UNEP, Nairobi)