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**IDENTIFYING COMPLEMENTARY MEASURES TO ENSURE THE MAXIMUM REALISATION OF
BENEFITS FROM THE LIBERALISATION OF TRADE IN ENVIRONMENTAL GOODS AND
SERVICES**

CASE STUDY: KENYA

OECD Trade and Environment Working Paper No. 2004-02

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ABSTRACT

This study discusses the evolving demand for and supply of environmental goods and services in Kenya. Kenya's import liberalization has accelerated since the early to mid-1990s, which allowed increased access to alternative and superior goods and technologies that are not locally produced. Trade liberalization within regional blocs has facilitated Kenya's exports of environmental goods, although exporters still face various barriers such as high tariffs, poor information on environmental goods and services markets, weak national supply capacity, high transport costs and insufficient accommodation of traditional or indigenous knowledge. Experience with Kenya also reveals that complementary measures need to be put in place for the country to truly maximize the benefits of liberalizing trade in environmental goods and services.

Key words: environmental goods and services, environmental technologies, trade liberalization, trade and environment, water and wastewater management, ecotourism, Kenya

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EXECUTIVE SUMMARY

This paper discusses the evolving demand for and supply of environmental goods and services (EG&S) in Kenya, with particular emphasis on potable water and waste management. Kenya is host to the United Nations Environment Programme and has ratified many multilateral environmental agreements. While these factors have influenced the level of priority accorded to environmental protection, the country is still suffering from multiple assaults on its environment. Many natural resources are under severe stress, and few poor households have access to safe drinking water, modern sanitation or waste management.

The main reasons for this apparent contradiction include weak implementation of laws and regulations, inadequate financial and institutional capacity, officially maintained low tariffs for water and for waste management and the country's overall economic performance, particularly since the early 1990s. The Environmental Management and Co-ordination Act (1999) and the Water Act (2002), which have recently begun to be implemented, are expected to start turning the situation around. For the first time, the government has been given the power to apply economic instruments to the management of the environment and natural resources.

Kenya's import liberalisation of the early to mid-1990s saw tariffication of quantitative restrictions and a reduction in tariffs for almost all imports, except those deemed dangerous for health and the environment. Besides increasing imports generally, liberalisation increased access to alternative and superior goods and technology. Today, Kenya imports considerable quantities of the capital goods used for environmental protection, such as machinery, vehicles used to collect waste or deliver water, meters for water, gas and electricity, and alternative energy materials. These imports have generally been appropriate to the country's needs. As most of the goods are not produced locally, local producers have not been adversely affected. In some instances, imports have facilitated technology transfer. Imports of environmental services are minimal.

The country exports environmental services, mainly ecotourism, and goods such as mineral water and wildlife products. Goods exports have been facilitated by trade liberalisation within regional blocs, notably the East African Community and the Common Market for Eastern and Southern Africa. Exporters still face substantial barriers, however, in the form of high tariffs, unilateral travel advisories, poor information on EG&S markets, weak national supply capacity, high transport costs and insufficient accommodation of traditional or indigenous knowledge.

The World Trade Organization negotiations on liberalisation of trade in EG&S are likely to have a major impact on Kenya's EG&S trade. Foreign firms have shown interest in providing environmental services in water supply and waste management, though the government is reluctant to commercialise water services because of inequity concerns. Inadequate understanding of the country's EG&S industry, and thus of the likely implications of liberalisation (notably on service equity and integrity), has made Kenya reluctant to offer concessions on environmental services in negotiations on the General Agreement on Trade in Services.

The substantial legal, regulatory and policy reforms undertaken recently will create the conditions for improving environmental and natural resource management, but only if they are speedily and fully implemented. For the country to truly maximise its benefits from EG&S trade liberalisation, however, complementary measures will be necessary. Involving the private sector and local communities in decision making and operations could be facilitated by:

- Developing a clear framework for involvement by the private sector and other stakeholders.

- Improving the business climate, a step particularly important for attracting foreign investment, such as within the Clean Development Mechanism.
- Encouraging transfers of environmentally sound technology and the forging of genuine partnerships.
- Promoting the public capital investment necessary to make concessions feasible in water supply and other services. Donor support in this regard is crucial.

In addition, changes in legislation may be needed to avoid premature liberalisation. Where liberalisation takes place before a country's laws and institutions can support it, incumbents tend to take advantage of the situation by introducing barriers to the entry of competitors.

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CASE STUDY: KENYA

Introduction

This paper discusses the evolving demand for and supply of environmental goods and services in Kenya. It views EG&S not only in the narrower sense as capital goods or technologies required for “end-of-pipe” pollution abatement, but also more broadly as goods and services whose production or consumption are environmentally preferable.

The study examines the national policy, institutional mechanisms, commitments to international (including regional) environmental agreements, and other factors that determine EG&S demand shifts. It reviews the extent to which EG&S demand has been met by local production, the determinants of supply in general and of imports in particular, and the effect that imports have had on local suppliers and consumers. After examining Kenya's export performance and the determinants of the country's EG&S industry, including barriers, the report discusses complementary measures needed to maximise the benefits of liberalising EG&S.

Determinants of demand for EG&S

Rapid population growth and weak economic performance

An important determinant of both environmental pressure and demand for EG&S in Kenya is high population growth. Annual population growth, 3.4% in 1989, has slowed recently, but still measured 2.4% in 2002.¹ Contributing to this growth has been an influx of refugees fleeing fighting in neighbouring countries. Declines in per-capita arable land and water supply, and degradation of soil, forests, grasslands and water quality, make rural life increasingly challenging and accelerate migration to cities (Republic of Kenya, 2002). With net rural-urban migration overwhelming Kenya's cities, over half the urban population lives in informal settlements with no direct connection to municipal water or sewage service. About 60% of the urban population has access to safe drinking water, and the corresponding figure for rural Kenya is 34%. Access and cost of access to piped drinking water are tilted against the poor, who must buy their water from vendors at very high prices.

The supply of and demand for EG&S are hampered by lacklustre economic growth, weak institutional co-ordination, inadequate incentives for private-sector investment, and high taxes and duties on equipment. GDP growth slowed from an annual average of 6.6% in the 1960s to 5.2% in the 1970s, 4.1% in the 1980s and 2.5% in the 1990s, and was 0.8% between 2000 and 2002.² The share of the population living in

¹ The rate is expected to slow further because of strong population control policies and the HIV/AIDS pandemic.

² The current government's economic blueprint is expected to spur economic growth in coming years. Investor confidence has increased since the government took power in January 2003, as a rapid rise in the Nairobi Stock Exchange index shows.

poverty rose from 48% in 1982 to 56% in 2002. Expenditure on debt servicing exceeds expenditure on such social services as education, health, housing and community welfare, pollution abatement, water supply, sanitation and waste collection (Republic of Kenya, 2002). Declines in official development assistance (ODA) and difficulties in raising domestic revenue have impeded efforts to build institutional capacity, reduce poverty and protect the environment (Republic of Kenya, 2002). Over 1990-98, ODA fell by 68%, from USD 50 to USD 16 per capita, making it difficult to attract foreign direct investment.

A deteriorating environment

Kenya boasts a rich biodiversity: scientists have identified over 35 000 species of animals, plants and micro-organisms (Republic of Kenya, 2002). This biodiversity, however, is rapidly being lost to overexploitation, ecosystem conversion and invasive species.

Coastal and marine resources, including coral reefs, seagrass meadows, mangrove forests, estuaries and salt marshes, support tourism, fisheries and salt production, which contribute significantly to the national economy and provide livelihoods for coastal communities. Inadequate planning and high population growth, however, have put these resources under immense pressure, and conflict over their use often arises.

Wood accounts for 70% of Kenya's primary energy supply.³ This heavy dependence on wood for fuel exerts tremendous pressure on forest resources and results in much unsustainable harvesting.⁴ Legal and illegal logging, conversion of forest for agriculture, inappropriate institutional arrangements, corruption and overall poor governance have led to the loss of most of Kenya's indigenous forest. Protected forests cover only about 2.5% of the total land area, against a widely accepted benchmark of 10%. Between 1995 and 2001 the private forest plantation area in the country declined from 160 000 hectares to about 135 000 hectares (Republic of Kenya, 2002).

Urban authorities have been unable to manage the increasing amounts of municipal solid waste (MSW). The capital, Nairobi, collects and disposes of only about 25% of its MSW at approved dumps (Ikiara, 2002); the country has no sanitary landfills. Less than 30% of the urban population is served by a waterborne-sewage system. The rest depends on septic tanks or pit latrines (the latter also being the main form of sanitation in rural areas). Thus, considerable amounts of raw sewage enter rivers, lakes and coastal waters.

Air pollution is another growing problem. Acute respiratory infections account for about 50% of hospital visits and 22% of medical cases (Republic of Kenya, 2002). High concentrations of oxides of sulphur and nitrogen, carbon monoxide, hydrogen sulphide, other gaseous pollutants and particulate matter are common in urban areas. The contribution of vehicular emissions is increasing, and transport accounts for 56% of fossil fuel consumption in Kenya. The threat of problems related to climate change, climate variability and ozone layer depletion is also rising.

Hydropower accounts for about 72% of Kenya's electricity. Droughts, together with breakdowns attributable to ageing and poor maintenance of equipment, have often led to power outages and brownouts. Users requiring uninterrupted power must buy expensive back-up generators. System losses rose from 16.4% in 1997 to 21.3% in 2001. Unpaid bills increased from 79 days of sales in 1999 to 148 in 2001. Industrial and commercial electricity consumers face high tariffs and poor services as a result. The average

3 Petroleum (21%) and electricity (9%) make up the balance.

4 The use of renewable energy sources, such as solar energy, hydroelectric power and biomass, is increasing, however. Kenya is Africa's leader in geothermal-based electricity generation (EAA, 2003).

industrial price for electricity in 2003 was around 6.8 US cents/kWh, compared with 2.5 cents in Egypt and 2.3 cents in South Africa (but down from 13 cents in 2000).

Pressure from stakeholders, civil society and consumers

Pressure from individuals and segments of society with a stake in conservation and improved environmental services have significantly influenced the demand for and supply of EG&S in Kenya. For example, when the government wanted to allow construction of a 60-storey building in Nairobi's Uhuru Park in 1989, civil society, particularly Professor Wangari Maathai of the Green Belt Movement,⁵ lobbied strongly for donors to apply pressure on the government. Many did so, and the plan was shelved. Similarly, after the government announced in the official *Kenya Gazette* in 2001 that it intended to reduce the area of public forest by nearly 67 000 hectares (around 10% of the country's forested area) the media, non-governmental organisations,⁶ local communities and other stakeholders mounted a major campaign for the decision to be rescinded. Their main concern was the impact of deforestation on water catchments. The new government is considering ways of reversing the move.

Neighbourhood associations have influenced waste management and other services in Nairobi by putting pressure on the Nairobi City Council, including via lawsuits (Ikiara, 2002). The success of this suit, the first suit lodged by a residential association, emboldened like-minded groups.

Kenya's tourism industry, especially the larger hotels, has been another force for change. Responding to the preference of overseas tour operators and tourists for environment-friendly facilities, the industry has made large investments in environmental protection and rehabilitation. Among other initiatives, it has purchased energy- and water-saving technology, reducing water consumption by 10% in some hotels; switched to eco-friendly detergents and shampoos; reduced its use of unsustainable firewood; improved its waste-management systems; and constructed wetlands for sewage treatment (Ikiara and Okech, 2002). A notable constraint in these efforts is that investment in energy saving and improved waste disposal costs as much as KES 5-6 million per hotel, requiring four to five years to recoup. Tree planting has become popular in the industry. For example, the Serena Hotel had planted half a million trees by 2002, and the Kilimanjaro Safari Club has been planting at least 2000 seedlings a year, at a cost of KES 100 000 (USD 1 300), at the lodges and camps it operates (Ikiara and Okech, 2002).

Multilateral environmental agreements and related mechanisms

International organisations — notably the United Nations Environment Programme (UNEP), the International Monetary Fund and the World Bank — and international donors have had an important influence on Kenya's environmental policies and demand for EG&S. Nairobi is home to UNEP headquarters, a fact that has increased international attention on Kenya's management of its environment, creating pressure on the government to participate in a large number of multilateral environmental agreements (MEAs).⁷ These pacts have had a positive influence on environmental management and, indirectly, on EG&S demand and supply in the country. Examples include:

-
- 5 Professor Maathai, the assistant minister in the Ministry of Environment, Natural Resources and Wildlife, won the Nobel Peace Prize in 2004. In October 2003, the ministry suspended all Forest Department staff because of corruption and illegal logging.
 - 6 NGOs involved included the East African Wild Life Society, the Kenya Forests Working Group, the Green Belt Movement, the Kenya Human Rights Commission, the Mazingira Institute, the Kenya Action Network and the National Council of Churches of Kenya.
 - 7 Annex 1 lists many of these.

- *United Nations Framework Convention on Climate Change (UNFCCC)*. Kenya signed the UNFCCC on 12 June 1992 and ratified it on 30 August 1994. It has also signed the Kyoto Protocol. A Joint Implementation initiative introduced under the protocol's Clean Development Mechanism is the Community Development Carbon Fund, which supports CO₂-reduction projects involving areas such as renewable energy sources, energy efficiency, waste management and energy conversion. One such project involves substituting wood fuel for the 80 000 cubic metres of fuel oil that tea farmers consume annually, thereby reducing their energy bills by 66% and avoiding 240 000 tonnes of CO₂-equivalent emissions.⁸
- *Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES)*. Kenya ratified CITES in December 1978 and the convention entered into force in March 1979. Kenya has listed hundreds of animal and plant species under CITES. The convention has had a profound impact on attitudes towards the elephant and the rhino. A living elephant in Kenya is estimated to be worth USD 14 375 per year in tourism income,⁹ while ivory from an average elephant is worth around USD 1 000 (TED Kenya Case Study, quoted in Ikiara and Okech, 2002). Kenya has used the CITES framework to oppose efforts by southern African states to have ivory trade relaxed. It destroyed its 12-tonne ivory stockpile — worth USD 3 million in July 1989 — to emphasise its position. Before the CITES ivory trade ban took effect in 1990,¹⁰ Kenya had lost up to 85% of its elephant population to poachers. Between 1990 and 1997 (when relaxations of the ban started, aimed at disposal of stockpiles), the country's elephant population rose from 19 000 to 26 800. Since 1997, the occasional permission granted to southern African countries for one-off sales from stockpiles has led to increased poaching and illegal ivory trade in Kenya, whose surveillance and monitoring capacity is overstretched.
- *Ramsar Convention*. The 1971 Convention on Wetlands of International Importance came into force in Kenya on 5 October 1990. Kenya has designated four Ramsar sites, covering a total of 90 969 hectares: lakes Baringo, Bogoria, Naivasha and Nakuru. This designation has improved the supply of EG&S through enhanced biodiversity conservation.

In addition, the country has benefited from bilateral and multilateral funds aimed at financing programmes under global conventions on biodiversity, climate change, the ozone layer and persistent organic pollutants, as well as CITES and the Regional Seas Programme (Republic of Kenya, 2002). Examples are the Global Environment Facility, the Multilateral Fund for the Implementation of the Montreal Protocol (ozone layer) and various technical co-operation trust funds.

The activities of lenders and donors are crucial. The World Bank has supported studies in the energy sector and used loan conditions to push for reforms in the sector, including privatisation. The Japan International Cooperation Agency provided technical assistance for a study of waste management in Nairobi that led the City Council to issue a management contract to a private company.

8 World Bank research shows that the market for carbon emission reductions doubled in 2002, but only 13% of related direct private-sector investment went to developing countries and none to the least developed countries.

9 Elephant-related tourism earns Kenya about USD 200 million annually (TED Kenya Case Study, quoted in Ikiara and Okech, 2002).

10 In 1989, the parties to CITES declared the African elephant as threatened with extinction and listed it in Appendix I of the convention, effectively outlawing international trade in its products.

Domestic policy responses

Some serious lapses notwithstanding, especially in the last two decades, Kenya has generally given environmental issues high priority. It was the first country in Africa to experiment with ecotourism in its national parks and reserves, for instance (Honey, 1999). The country nevertheless faces serious environmental and natural resource management challenges.

The Environmental Management and Co-ordination Act (EMCA) of 1999 promises to affect EG&S supply and demand significantly. This integrated package of environmental legislation is the culmination of a long process of policy, legal and institutional strengthening. Milestones in the process included:

- Development of the National Environment Action Plan and formulation and adoption of the Environment and Development Policy.
- Establishment of an Environmental Monitoring Unit in the Ministry of Lands and Settlement and similar local units, a National Oil Spill Response Public-Private Committee, a National Cleaner Production Centre, a National Coordinating Climate Change Committee and a national ozone office.
- Preparation of a National Biodiversity Strategy and Action Plan.
- Establishment of marine parks and reserves for the protection of endangered coastal and marine resources.
- Commencement of the phasing out of banned chemicals, such as the pesticides dieldrin and aldrin, and reductions in imports of methyl bromide and other ozone-depleting substances, as well as restrictions on DDT use.
- An invitation to indigenous people to participate in environmental-resource management.
- Permission for the private sector to participate in the management of municipal and radioactive waste and in electricity generation (where government policy is focused on reducing the 21% of electricity lost during transmission and distribution, expanding rural electrification and reducing the cost of liquefied petroleum gas as a means of protecting the environment and preserving rivers for more power generation¹¹);
- Creation of incentives for the adoption of energy-saving technology and other environmentally friendly technology.
- Development and enforcement of a vehicle inspection manual and a code of practice for road vehicle inspection.
- Promotion of environmental education in workplaces, schools and communities.

While poor implementation and enforcement has generally reduced the effectiveness of these initiatives, the EMCA brings the principles they embody into an integrated institutional framework. The National Environmental Management Authority (NEMA), established as the main implementation agency, is up and running, and an environmental standards committee is setting new standards. Other bodies established to implement the EMCA include the National Environment Council and the NEMA Technical

11 The policy goals were outlined in a ministerial statement to the National Assembly in October 2003.

Advisory Committee. As the EMCA requires, NEMA prepared its first annual state of the environment report for 2003 and is working on the 2004 report.¹²

For the first time, the law gives Kenya's citizens the right to a clean environment and allows individuals and firms to sue polluters. The latter provision alone could stimulate demand for EG&S. The Act also provides for application of economic instruments and incentives in environmental management, including:

- A customs and excise duty waiver for imported environmental capital goods and other forms of fiscal incentives for environment-friendly technology.
- Tax rebates on plant, equipment and machinery investments for pollution control, waste recycling, water harvesting and conservation, flood prevention and use of non-hydrocarbon energy resources.
- Fees or user charges that are proportional to the environmental damage an activity causes or that reflect true opportunity costs, along with additional taxes, fees or both, and other disincentives or sanctions for use of technologies or practices that injure the environment.

Trade-policy reforms

Kenya began serious trade liberalisation in the early 1990s, thus stimulating imports, including EG&S imports, and improving access to alternative and superior technologies. By 1991, quantitative restrictions affected only 5% of imports, compared with 12% in 1987. Between 1987 and 1992, the number of tariff categories was reduced from 25 to 11 and maximum tariff rates were decreased from 170% to 70% (Mwega, 2002). By 1997/98, the simple average tariff had been reduced from 25.6% to 12.8% (Glenday and Ndi, 2000). The most significant shift in Kenya's trade policy regime came in May 1993 with the abolition of trade licensing requirements and, more importantly, foreign exchange controls (Ndung'u, 2000; Were, 2001).

Through trade liberalisation in the East African Community (EAC) and the Common Market for Eastern and Southern Africa (COMESA), the region overtook the European Union as the leading destination for Kenya's exports. The economic recovery and momentum for trade liberalisation in the region, particularly in Uganda, provided an impetus to trade and thus facilitated exports of EG&S, though significant tariff barriers remain. The average share of recorded exports going to COMESA increased from 15% in 1990-92 to 34% in 1996-98 (Glenday and Ndi, 2000) while the EU share showed a downward trend in the late 1990s, especially from 1997. Kenya's exports to EU countries are mainly tea, coffee and horticultural products.

Tariffs are an important source of government revenue for Kenya. The Kenya Revenue Authority works closely with NEMA when setting tariffs for goods such as waste-management equipment, used motor vehicles, water-harvesting tanks, oil products and metals. In general, while taxes and duties on equipment were high, the clear trend now is towards a gradual reduction of them for capital goods.

Taxes and duties are increasingly being used for environmental protection purposes. To promote rainwater harvesting by the relatively poor, the duty on such tanks and similar containers of between 136 and 300 litres is 15%, compared with 25% for bigger containers (Table 1). The duty on chlorine,

12 For further information, see www.nema.go.ke.

which is mainly used to treat water, is also 15%. Wind turbines attract a 15% duty but a zero value-added tax (VAT).¹³ A duty of only 5% is imposed on polyethylene, an important material for waste disposal.

Table 1. Tariffs on selected environmental goods in Kenya, 2004

HS	Item	SITC	Import duty (%)
7310.10	Tanks, vats and similar vessels, capacity of 136 to 300 litres	22	15
2801.10	Chlorine	22	15
7309.00	Reservoirs, tanks, vats and similar containers of plastics, capacity exceeding 300 litres	62	35
8405.10	Producer gas generators, water gas generators, and acetylene gas generators and similar water-process gas generators, with or without their purifiers	41	0
8409.91	Parts suitable for use solely or principally with spark-ignition internal-combustion piston engines for road vehicles	53	15
8410.11	Hydraulic turbines and water wheels, power not exceeding 1 000 kW	41	3

Source: Kenya Revenue Authority (2003).

The duty on general rubber waste, parings and scrap is 0%, while that on hard rubber waste and scrap, which is more polluting and costs more to dispose of, is 15%. An extra 10% duty is charged on imported used motor vehicles that are eight or more years old. To protect flora and fauna, the government imposes high taxes on exports of live wildlife: in 1994/95 these taxes were as high as 40% (plus 30% VAT in most cases) but they are now 25% (plus 18% VAT).

As of November 2004, Kenya had not listed any environmental services in its schedule of commitments in the General Agreement on Trade in Services (GATS), despite considerable pressure from developed countries to do so. Deliberations within the Kenyan national committee on the World Trade Organization (WTO) to consider such requests have concluded that understanding in Kenya of the environmental services sector, especially the likely impact of liberalisation commitments, is not yet sufficient for such decisions to be made. It is clear, however, that the WTO and GATS will have considerable implications for Kenya's EG&S demand and supply in the foreseeable future and that the country needs to start making the necessary adjustments.

The market for EG&S: overview

Kenya's domestic market for EG&S

A survey conducted towards the end of 2003 by the Kenya Institute for Public Policy Research and Analysis (KIPPRA) revealed a fairly vibrant trade in EG&S in urban areas, largely in goods and services

¹³ The import duty and VAT rates cited here come from Kenya Revenue Authority data.

such as charcoal,¹⁴ waste management services, solar energy materials, water tanks and improved cooking stoves of the Kenya Ceramic Jiko (KCJ) type (Table 2).

Table 2. Extent of trade in EG&S in some Kenyan towns: survey findings

Good or service	Sample size	Average quantity or value
Garbage recycling, kilograms per week	2	751 000
Charcoal, kilograms sold per week	62	387
Charcoal, sales per week (KES)	69	4 380
Panels/tanks, sales per week (KES)	14	16 768
Solar batteries, number sold per week	1	6
Solar electric materials, number sold per week	4	3
Solar electric materials, sales per week (KES)	4	17 743
Improved cooking stoves (KCJ), number sold per week	18	33
Improved cooking stoves (KCJ), sales per week (KES)	18	10 962
Water harvesting tanks, number sold per week	9	8
Water harvesting tanks, sales per week (KES)	10	89 798
Water supply, litres sold per week	136	207 683
Water supply, sales per week (KES)	143	168 102
Waste management or recycling, kilograms sold per week	24	228
Waste management or recycling, sales per week (KES)	27	67 978
Sewage management, weekly revenue (KES)	19	66 721

Source: KIPPRA (2003).

Biomass (firewood, charcoal and crop waste) accounts for 70% of final energy demand, according to the Ministry of Energy. Almost 90% of the rural population depends on firewood for cooking and heating, compared with about 10% of the urban population (Ministry of Energy, 2002). About 34% of the rural population uses charcoal, while 82% of the urban population make it part of their energy mix (with electricity and Liquefied Petroleum Gas (LPG)). While about 84% of the firewood used is produced sustainably on individual farms, facilitated by land tenure policy (Holmgren *et al.*, 1994), most of the charcoal production exerts considerable pressure on forest resources. Charcoal-making was banned in 1977 in reaction to a marked increase in production in national parks and game reserves, primarily for export to Gulf countries (ESD Ltd, 2003). The ban, still in force, hurt sustainable charcoal producers, however, and many small charcoal burners, primarily in the densely populated Central Province, started operating clandestinely. The East African Tanning Company, which produced over 40 000 tonnes of sustainable charcoal annually from Australian black wattle (*Acacia mearnsii*) as a by-product of tannin extraction, ceased production (ESD Ltd, 2003). Another reason charcoal production from Australian black wattle can be regarded as sustainable is that Restoring the Earth, a British NGO, is sponsoring a project to reduce the numbers in Kenya of this exotic plantation tree species.¹⁵ During the 1960s Kenya exported 35 000 tonnes

14 Charcoal can be viewed as an environmental good or “bad” depending on how it is produced. Charcoal produced from mature trees that are replaced by one or more seedling plantings, for example, could be treated as an environmentally sound product. Charcoal and firewood are also produced sustainably on tree farms, but data on the extent are unavailable. Charcoal produced from illegal, indiscriminate tree felling is more prevalent in Kenya, however.

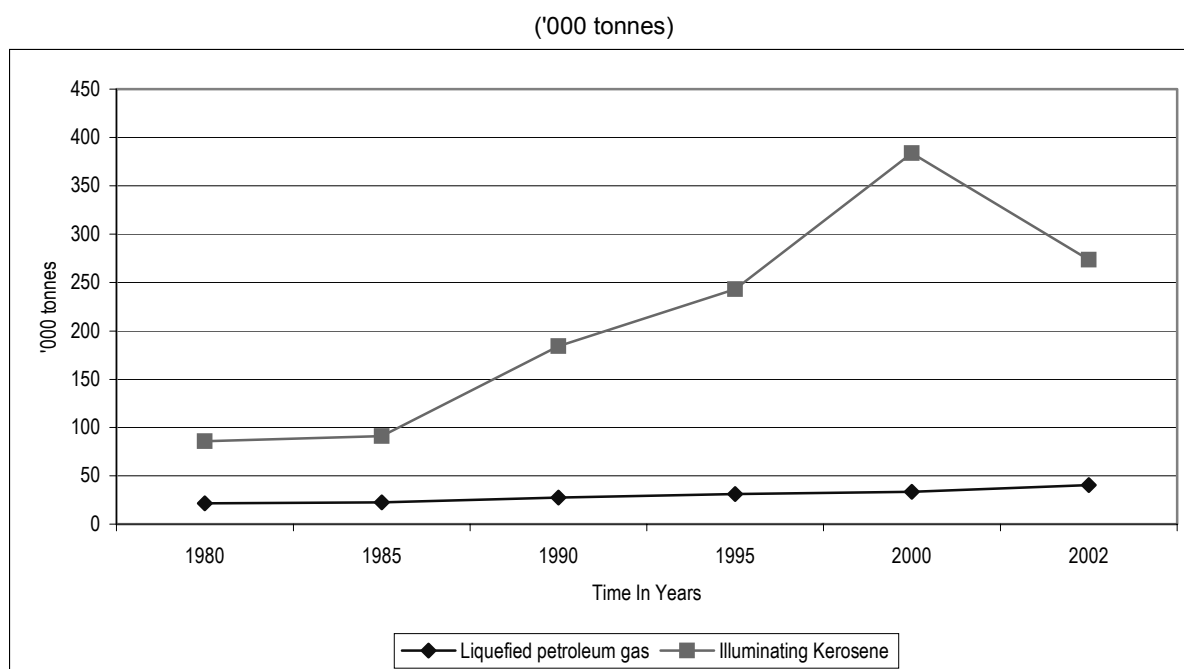
15 See www.restore-earth.org/restearth.samproj02.html.

a year of sustainably produced charcoal to Uganda, and smallholders produced over 50 000 tonnes of such charcoal annually (EAA, 2003). Illegal charcoal production continues, and some charcoal is imported from Uganda and Tanzania. Tea producers in Kenya, which now burn wood for tea leaf curing, developed eucalyptus plantations to enable them to switch from the more expensive and carbon-intensive petroleum products (EAA, 2003).

Development of the KCJ stove in 1983 also helped moderate pressure on Kenya's forests. This energy-efficient stove, produced in Kenya, combines Asian ceramic with locally worked metal. Around half of the country's urban households own and use a KCJ. The introduction of improved stoves in schools, hospitals and businesses since the mid-1980s has led to job creation and savings of resources and money (EAA, 2003).

The country produces small quantities of useful products from waste and invasive species. Examples include metal boxes, cooking pots and furniture from scrap metal; compost and charcoal briquettes from organic waste; and furniture, souvenirs and charcoal briquettes from water hyacinth (*Eichornia crassipes*), an alien weed that began invading Lake Victoria in the late 1980s, disrupting fishing and water transport and clogging water-supply systems.

Figure 1. Demand for liquefied petroleum gas and illuminating kerosene in Kenya



Source: KIPPRA (2002)

Imports of LPG and kerosene help to moderate consumption of unsustainably produced fuel wood and charcoal. Consumption of these fuels has grown — substantially, in the case of kerosene (Figure 1) — as have retail prices. The market for illuminating kerosene peaked in 2000 when drought led to a major shortage of hydroelectric power. As kerosene is widely used by poor households for lighting and cooking, the upward trend in the retail price is worrisome. LPG is often in short supply in major urban areas, but plans to establish LPG storage around the country, if implemented, are expected to ease the shortages and

lead to increased LPG consumption. Standardisation of the regulators used on gas cylinders by different companies is also being considered, to increase competition.

Kenya relies on imports for most large or technologically sophisticated capital goods, including environmental goods. Thus, the trucks, tippers and other machinery used in water supply and waste management are all imported. Consumables like chlorine and water-softening chemicals are imported as well. The local authorities and other buyers purchase these goods either from the local subsidiaries of multinational suppliers, such as General Motors, or from importers. These imports would appear to be appropriate to the country's needs, judging from the lack of complaints about them. The possible exception is waste compactors, which often are poorly suited to Kenya's MSW which has a higher organic content is denser than that of waste typically generated in developed countries.

Kenya has a large potential for renewable energy resources (Box 1), and the market for technology based on renewable forms of energy is developing rapidly despite lack of government and donor support. Solar photovoltaic (PV) modules with a total power rating of 646 kilowatt-peak (kWp) are imported annually into Kenya. Less than 10% are re-exported to Uganda and Tanzania by the larger PV businesses. Some 150 000 PV solar home systems operate in rural and peri-urban areas, providing some 1.3 MW of power, mainly for lighting and to run radios and televisions. Solar water heaters, introduced 20 years ago, are also imported, along with a small but growing number of wind turbines (EAA, 2003).

Box 1. The potential for renewable energy in Kenya

Kenya is estimated to receive 4-6 kW/m²/day of solar energy, on average, which translates into about 1.5 billion tonnes of oil equivalent. Areas such as the Aberdares, Mt. Elgon, Nyambene, the Mau ranges, the Kisii highlands and the slopes of Mt. Kenya hold considerable potential for small-scale hydroelectricity production. The overall commercially exploitable hydropower potential of the country is estimated at 2 300 MW. Untapped geothermal potential could supply 170-2 000 MW, estimates indicate. As Kenya lacks the technology and financial resources to exploit its renewables potential fully, most associated technologies will have to be imported.

Most environmental goods imported by Kenya are not produced domestically, and thus impacts on local manufacturers have been minimal. Occasionally technology has been transferred through imports, stimulating domestic production. Solar water heaters, for instance, are now made locally on a commercial scale.

Adaptation to imports has not been always smooth, however. For instance, independent power producers (IPPs), using imported technology, have had an impact on electricity tariffs. IPPs render an important service during electricity shortages. Under an agreement between the IPPs and the Kenya Power & Lighting Company (KPLC), the IPPs sell power to KPLC at KES 14 (USD 0.18) per unit, and KPLC then sells the electricity to its customers at half that price. Some members of the National Assembly have pushed for the cancellation of the agreements, but for the moment they remain in force.

Kenyan exports of EG&S

Kenya's main service export is tourism. It is the country's second-largest foreign-exchange earner, after agriculture, bringing in more than KES 20 billion (USD 260 million) in foreign currency annually. Large numbers of tourists come from the United Kingdom and Germany, with smaller but still significant numbers from other European countries, the United States and other African countries. Tourism exports are largely driven by the country's rich wildlife and coastal beach resources. Thus much of it could be regarded as ecotourism.

Foreign tourists eat a considerable amount of meat from game in Kenya. The Carnivore Restaurant in Nairobi, for instance, is a popular destination for tourists and expatriate foreigners. It serves meat from zebra, wildebeest, buffalo, oryx, kongoni, impala, Thompson gazelle, ostrich, giraffe and crocodile. Many Kenyans consider such meat an environmental good because it is obtained from licensed wildlife ranches that harvest animals according to strict quotas set by the Kenya Wildlife Service.

The country exports few environmental goods, mostly bottled water to neighbouring countries. Other exports that could be considered as environmental goods include chlorine and base-metal waste and scrap.

Tariff barriers remain high. Kenyan exports of mineral water to Uganda, for example, face a tariff of 40%. High regional transport costs seriously reduce the competitiveness of environmental goods. Lack of market information on EG&S is a further barrier keeping Kenyan exporters from exploiting the potential that exists in the country. The national capacity to develop local products for export — i.e. its technology, marketing skills and knowledge in general — is weak. Insufficient foreign appreciation of Kenya's traditional and indigenous knowledge in areas such as environmental management and conservation has also restrained potential environmental-service exports. Foreign travel advisories, which affect ecotourism, are increasingly a problem.

The market for EG&S: selected sectors

This section examines two segments of the EG&S market in Kenya: potable water and municipal solid waste management. They were selected because of their relative importance to the national economy, the magnitude of the problems they face and the role trade liberalisation could play in improving the supply of related goods and services.

The United Nations classifies Kenya as chronically water-scarce. Water supply constraints seriously limit the country's economic growth prospects (World Bank, 2003). Water is a fundamental input for agriculture, energy production, manufacturing and tourism, and vital for achieving public-health goals. The population growth rate means pressure on resources will continue to increase unless urgent measures are taken to boost supply and rationalise demand, which by 2010 is projected to be almost triple its 1990 level. Disputes over water access are emerging: in November 2002, for example, a conflict between farmers and pastoralists led to the deaths of over 100 people in the Tana River district.

As Bartone (1991) notes, MSW services in developing countries are characterised by low coverage, uncontrolled dumping and inefficiency, and Kenya is no exception. Most local authorities cannot adequately collect, treat and dispose of MSW because of the large volumes generated, inadequate capacity and financial constraints. The consequences include soil and water pollution, greenhouse gas emissions, and risks to public health and safety. The disposal of MSW in the same dumps as hazardous and medical waste, in particular, has enormous health implications.

Case 1: Potable water

Kenya's potential annual freshwater resources are quite small, with surface water estimated at 19 590 million cubic metres (m³) and groundwater at 619 million m³. Per capita availability is 647 m³, compared with 2 940 m³ in Tanzania and 2 696 m³ in Uganda. Moreover, the available resources are unevenly distributed both geographically and seasonally: over 60% of the country is arid or semi-arid, and rainfall is highly variable.

Human activity further affects the supply of clean water. Poor management of forest resources has resulted in the loss of 6 000 to 9 000 hectares of forest cover annually, accelerating degradation of water catchments. Cities continue to discharge raw or only partly treated sewage into water bodies. Controls on industrial effluents are inadequately enforced. Pollution not only affects the use of available water but also

causes often irreversible damage to already scarce resources, undermines investment in urban water supply and related areas and affects downstream resources and users.

Water tariffs are an important determinant of demand. The average tariff is about 40 US cents per cubic metre, compared with 27 cents in Ghana, 56 cents in Senegal and 73 cents in Uganda (World Bank, 2003, Table 3). The tariffs in Kenya range from KES 20 (26 US cents) to KES 100 (130 cents) per cubic metre. On average, however, households with private connections actually spend about KES 240 (USD 3.15) per cubic metre because the irregularity of the piped water supply necessitates supplementary purchase from kiosks or tankers. Water tariffs in Kenya are very low for a water-scarce country, and consumption and wastage are accordingly high — comparable to the averages in water-rich Canada (before adjustment for purchasing power differences), which has the lowest water tariffs in the OECD.

Table 3. Comparing Kenya's performance of WSS Services with other countries

Indicator	Kenya		Cote d'Ivoire	Senegal	Ghana	Uganda
	NWCPC	Nairobi				
1999 GNP per Capita	360	360	710	510	390	320
Unaccounted for water, %	40	50	18	25	55	47
Staff/1000 connections	6.2	16.2	3.3	5	17.7	30
Average tariff (USD/m ³)	0.40	0.40	0.50	0.56	0.27	0.73
% Contribution to Capex	N/A	N/A	N/A	44	36	16

Source: Allen *et al.* (2003).

The poor, who have to rely on kiosk vendors for treated water, pay an average of KES 845 (USD 11) per cubic metre; in effect, the government is subsidising mainly consumers who can afford an economic tariff. The relative tariff figures show, moreover, that the more consumers consume, the more the government subsidises them, leaving fewer resources available for subsidising those who need it. As poorer communities are not supplied at all by publicly run systems, no or little subsidy reaches them. The notion that the poor cannot afford commercial water tariffs is a commonly cited obstacle to increased private-sector participation in the sector, yet in fact the poor often pay above their means and a restructuring of tariffs would enable the subsidy to be transferred from those who do not need it to those who do (Allen *et al.*, 2003).

Water supply in Kenya

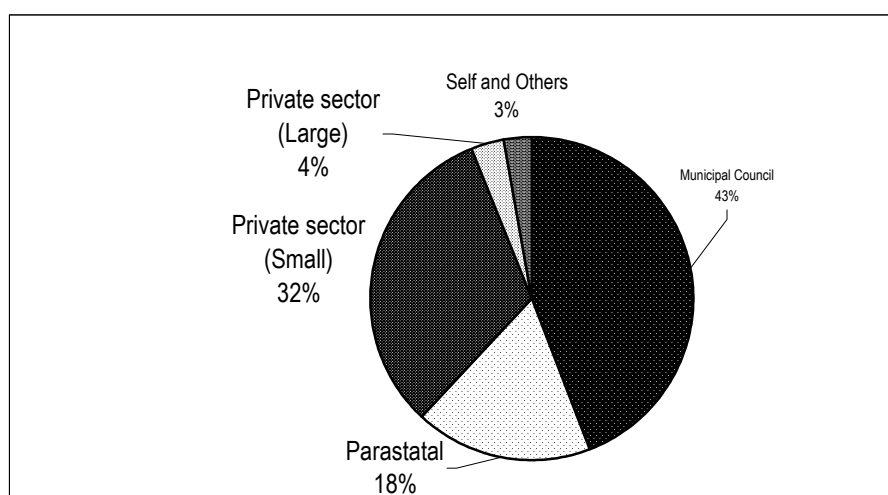
In the 1980s, the International Decade for Drinking Water Supply and Sanitation, the government invested heavily in the water sector in an effort to provide potable water at close proximity to every Kenyan by 2000. Expenditure in recent years, however, has been declining — it fell by 46% between 1996 and 2000. The World Bank (2003) estimates that Kenya now allocates USD 48 million, or 0.6% of GDP, to water resource management annually. The decline is attributable to low productivity, financial mismanagement (including poor economic governance), low cost recovery and the use of the revenue for unrelated activities, especially by local authorities. The cost-recovery problem is due not only to the tariff structure but also to a collection rate estimated to be as low as 50-60% of billings (Allen *et al.*, 2003).

About 60% of the urban population has access to safe piped drinking water. In rural areas 34% of the population has access to potable water from various sources, including direct withdrawals from watercourses, piped systems, rainwater harvesting, shallow wells and boreholes, and dams and pans. Only 15% of the yield of renewable freshwater resources has been developed, and the development of new sources is not keeping up with growth in demand. Meanwhile, water storage per capita declined from 11.3 m³ in 1969 to 4.5 m³ in 1999.

The World Bank (2001) estimated that there are some 742 000 water connections in about 680 piped systems in Kenya, though poor maintenance has rendered many connections inactive. The low and declining expenditure level has resulted in considerable deterioration of a distribution system in which some networks are more than 70 years old. Distribution and transmission losses are as high as 50%.

The public sector is the main water provider in urban areas, serving about 62% of households (Figure 2). The Ministry of Water Resources and Irrigation, which is responsible for overall policy formulation and performs the main regulatory roles, runs about 630 piped systems with 280 000 connections. The local authorities of Nairobi, Nakuru, Kisumu, Eldoret, Kericho, Nanyuki, Nyeri, Kitale, Thika and Nyahururu are responsible for a further 230 000 connections, of which 160 000 are in Nairobi.

Figure 2. Water Services Provision in Urban Kenya



Source: KIPPRA (2003).

The private sector and community groups are also significant providers, however. The largest private company, the National Water Conservation and Pipeline Company (NWPC), was established in 1998 to take over from the ministry the management of water systems that could be run on a commercial basis. It operates 40 piped systems with about 230 000 connections. Small self-help groups operate 355 piped water supply systems and around 10 000 point sources.¹⁶

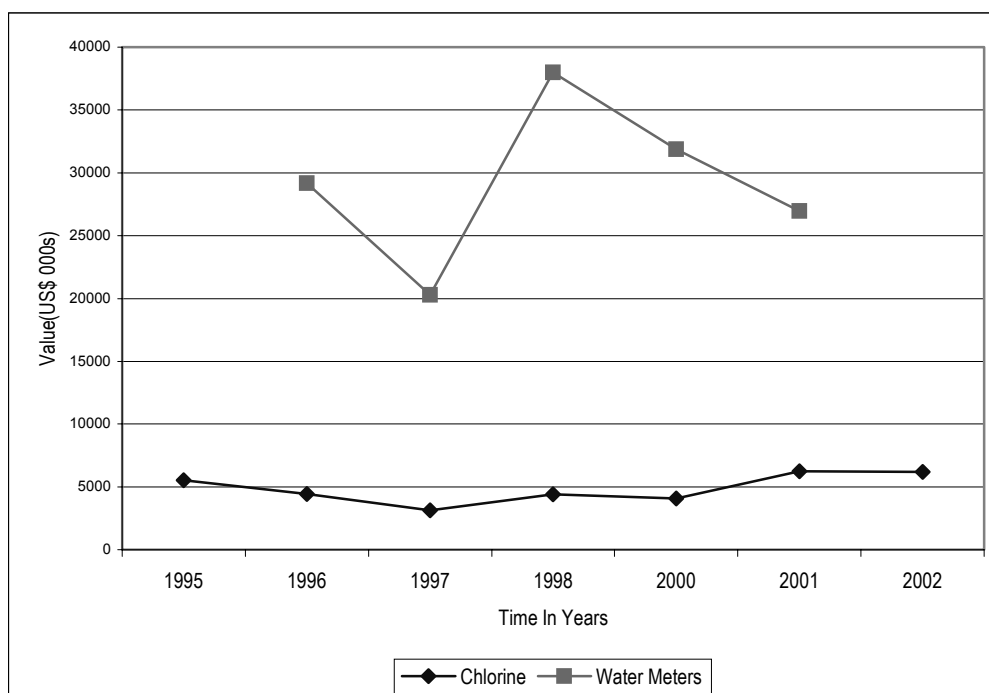
Trade in water-related goods and services

Kenya imports considerable amounts of goods involved in the supply of water, including tanks, distribution tankers, chlorine, pumps, meters and other distribution equipment and materials. Up-to-date

16 These mainly informal groups, sometimes registered with the ministry in charge of culture and social services, raise funds for their own water supply projects. Politicians often support such groups to cultivate votes. Donors and NGOs also provide support.

data on this trade are difficult to obtain because definitions are inconsistent. Figure 3 shows trends in imports of water meters and chlorine. To encourage imports of meters, the import duty was eliminated. The country imports some water-related services through local subsidiaries of foreign consultancy firms, particularly in engineering, but no data are available on the extent of this form of trade.

Figure 3. Imports of Water meters and Chlorine(US\$) in Kenya (1995-2002)



Source: KRA (2003)

Kenya exports no water-related services to speak of. Its exports of water-related goods are limited to high-value water products, worth around USD 4 million annually.¹⁷ Mineral water is shipped to countries in the EAC and COMESA areas and to Europe and Asia, mostly for use on outward-bound journeys of aircraft and ships, though significant amounts are exported to the Democratic Republic of the Congo, Tanzania and Uganda for retail sale. Exports of mineral water have been increasing, especially in the EAC market. Exporters interviewed for this study said the major obstacle to increased foreign sales was the rate of tariffs used to protect local producers — reportedly as high as 40% in some cases. The high cost of transport, occasioned by poor roads and frequent stops, is another major constraint.

Recent institutional, policy and regulatory reforms

Recent institutional, policy and regulatory reforms are likely to change the water supply situation in Kenya dramatically.¹⁸ The Water Act (2002) contains some of the boldest reforms seen to date in the sector. It separates water-resource management from water supply and assigns it to a central water resource

17 Mineral water could be viewed as an environmental good in the sense that its increasing value offers an economic incentive to protect the ecosystem from which it is withdrawn.

18 Policy and legal documents include Sessional Paper No. 1 of 1999 on the National Policy on Water Resources, Management, and Development, and the Country Strategy Paper for the Water Sector.

management authority.¹⁹ To facilitate decentralised water resource planning and management and involve water users in decision making, public-private partnerships known as water service boards have been established under the central management authority. Water service operations and assets will be transferred from the ministry to these boards, which cover catchments and sub-catchments. Private provision of water and sewage services will be allowed under a regulatory board that will license area boards charged with assuring service delivery by competitively contracting out supply to service providers.

In early 2003, under direction from an interministerial water reform steering committee, local authorities ceased direct control of water service management and began forming commercial companies to supply water and sanitation services. Such companies, autonomous albeit wholly owned by the local authorities, have so far been established in Nyeri, Eldoret and Kericho. An improvement in service delivery is already noticeable. With a grant of KES 1.8 billion (USD 24 million), the French Government is helping Kisumu privatise its water and sewerage services. The Kenyan Government is committed to private-sector involvement in water provision but not in the commercialisation of water services, for fear that the latter could lead to prices rising beyond the reach of the poor. While this concern is understandable, considering the necessity of water and the government's commitment to poverty reduction, a better approach would be commercialisation accompanied by targeted subsidies.

Case 2: Waste management

Local authorities have primary responsibility for management of MSW. Their delivery of this service is extremely poor: coverage is low and scheduling non-existent, the human and institutional capacity is weak and the technology inadequate. Underlying these shortcomings are financial mismanagement, poor governance, political squabbling, weak revenue collection, low and rigid service charges that barely cover marginal costs (which were inflated by the padding of staffs), insufficient autonomy granted by the central government, poor management of dumps and a lack of waste-transfer facilities (Ikiara, 2002).

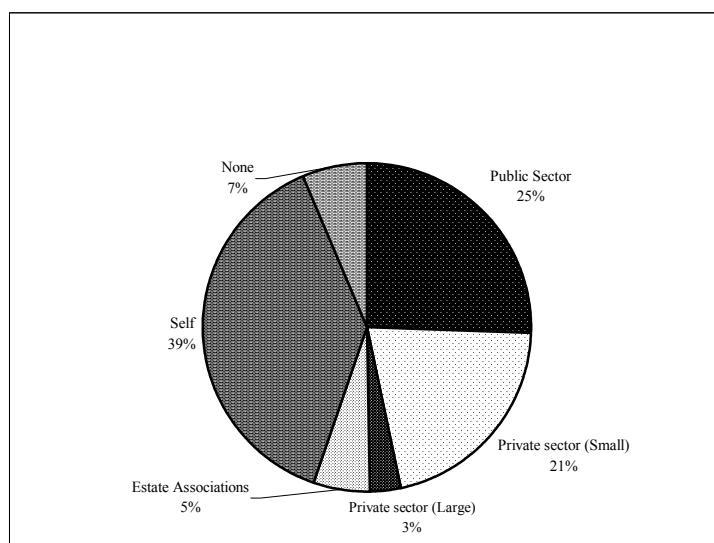
The government has tried to improve local authorities' financial and general performance through such instruments as the Local Authority Transfer Fund and the Local Authority Service Delivery Action Plan, but poor governance has neutralised the reforms. With the Local Authorities Act and the constitution under review, more power may be devolved to local government and the heads of local authorities made directly accountable to the electorate. Pressure from the electorate for improved services is thus likely to bear more fruit in the future.

Demand for and supply of waste-management services²⁰

Problems with MSW are worsening with escalating poverty and rapid urbanisation. In Nairobi, with a population of about 3 million people, some 1 500 tonnes of MSW is generated daily and 75% goes uncollected (Ikiara, 2002). More than 40% of Kenya's urban households have no access to waste-management services other than those they provide themselves (Figure 4). Plastic products and packaging materials, which resist degradation, make up a growing portion of the waste stream and often block sewers and cause livestock deaths. Plastics account for 28% of the cadmium and some 32% of the lead found in MSW; both are toxic.

19 The permit system previously used to allocate the resource was rendered ineffective by rampant corruption, poor enforcement, and inadequate hydrological information.

20 Most of this subsection is based on evidence from Nairobi. Waste management issues have been little studied in other Kenyan cities.

Figure 4. Solid Waste Management in Urban Kenya

Source: KIPPRA (2003).

The Nairobi City Council (NCC), which has a social responsibility to provide waste management services to all residents, concentrates its efforts on residential areas and institutions that can afford private services, at the expense of low-income neighbourhoods (Table 4). As early as the mid-1980s, the NCC's extremely poor performance in this area began to attract private service providers. About 70 private companies, all owned by Kenyans, now carry out waste collection in the city.

Table 4. Waste management providers and consumer categories in Nairobi

Collection agency	Activity area			
	Residential	Institution	Industrial	Commercial
NCC	4 (3%)	4 (21%)	—	3 (16.7%)
Private companies	58 (45%)	6 (32%)	10 (50%)	3 (16.7%)
CBOs	5 (4%)	—	—	—
Personal Initiative	61 (48%)	9 (47%)	10 (50%)	12 (66%)
Total	128 (100%)	19 (100%)	20 (100%)	18 (100%)

Source: Esho (1997), cited in Ikiara (2002).

NB: The absolute numbers refers to the number of respondents visited in the survey.

By 1998, the NCC accounted for 22% of waste collected and a private firm for 46% (JICA, 1998); the NCC had contracted with the firm to offer waste management services in the central business district. Other private companies, community-based organizations (CBOs) and informal recyclers accounted for the balance.

CBOs grew out of residents' frustration with Nairobi's poor and deteriorating waste management. In richer neighbourhoods, residents have formed neighbourhood associations to organise their own service provision or to contract with private firms. These residential associations play a key role in pushing the NCC and private providers to improve service quality (Box 2).

Box 2. Residential associations

Neighbourhood groups known as residential associations have emerged in many middle- and high-income neighbourhoods in Kenya to organise service provision where the public services are inadequate. Nairobi is estimated to count over 200 registered residential associations working to improve security, road maintenance, sanitation and waste management. They are keeping the NCC on its toes with activities such as contracting, organising and monitoring a private waste collection service. The pioneering association is the Karen and Langata District Association, known as Karengata. It obtained a court order stopping the NCC from collecting service charges until the service quality improved, an action which emboldened similar associations.

The Nairobi Central Business District Association (NCBDA), for instance, is highly organised, resourceful and influential. Set up by private businesses operating in the central business district, it advocates the election of effective municipal leaders and stakeholder participation in city governance. Through a memorandum of understanding with the NCC, NCBDA has donated garbage bins for the district, engaged in policing (providing patrol vehicles and police kiosks) and rehabilitated roads and public toilets. Security has visibly improved, as have the availability and cleanliness of public toilets and waste containers. The success of this partnership is reflected in the appointment of the NCBDA chairperson to the NCC Interim Oversight Board.

Residential associations in Nairobi have formed an umbrella movement called We Can Do It, which lobbies for improved services, facilitates the formation of new associations and provides technical assistance to potential ones. It advocates the inclusion of stakeholders in city governance. Through this movement, about 130 associations signed a memorandum to the Kenyan Government over the decay of city services in 2001. The more recently formed Kenya Alliance of Residential Associations appears to have emerged as a rival of We Can Do It.

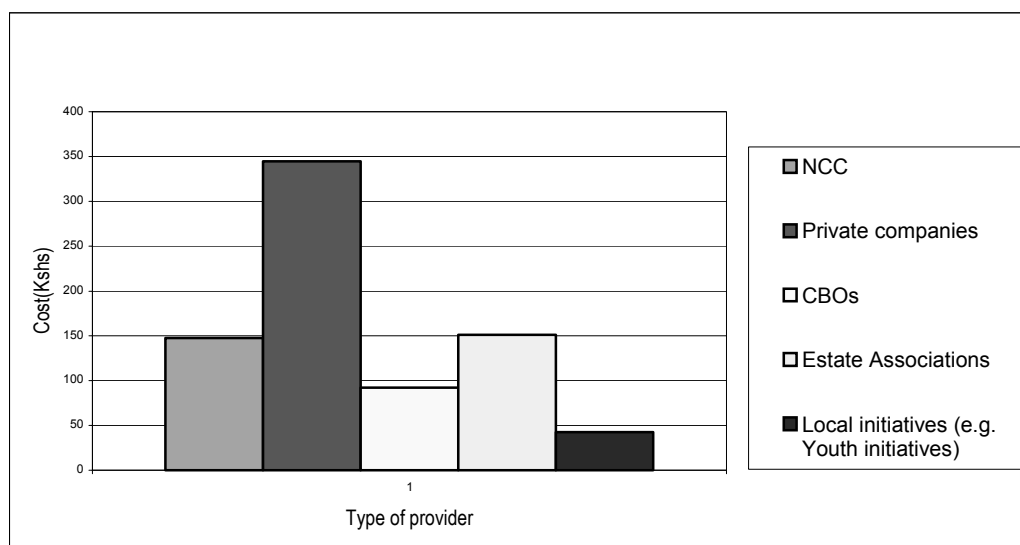
Source: Ikiara (2002).

Informal recyclers operate in open competition without regulation or guidance. Thus, waste pickers litter the city with materials they have no use for, and most of them dispose of waste in illegal dumps (Ikiara, 2002). Moreover, waste pickers and dealers²¹ effectively control the only official dump in the city, forcing the NCC and private companies to pay for access even though the NCC owns and operates the dump. Some of them are armed and dangerous, and many operate in gangs. The dump is often used as a hideout for criminals masquerading as waste pickers or dealers (Ikiara, 2002).

Waste-management fees vary by provider and the consumer's income category, with richer consumers charged more. But they do not cover the cost of the service. Moreover, they are flat fees, providing no incentive for waste reduction or recycling. While the larger private waste-collection firms charge more than twice as much as the municipal provider, many alternative providers charge less (Figure 5).

Industrial waste. Industrial enterprises are responsible for managing and disposing of the waste they generate. They either do it themselves or contract with the NCC or private companies. Industrial firms have to pay a fee for each load disposed of at the NCC dump, so companies let waste build up before disposal to reduce expenses.

21 The informal waste pickers and dealers are street boys/urchins who derive their livelihood from scavenging in the waste dump areas. Some of them are criminals who use the site as hideout from the security system.

Figure 5. Relative Cost of SWM in Kenya by Provider

Source: KIPPRA (2003).

Trade in goods and services associated with waste management

Trade in environmental goods associated with waste management is significant because all the vehicles and other equipment are imported, usually at very low tariff levels and with few non-tariff barriers. Private service providers account for most of this trade, as local authorities generally receive much equipment from donors. Another major import is waste associated with imported materials. Many firms repackage, formulate and distribute pesticides and pharmaceuticals, for example, a process that generates a substantial amount of waste.

Kenya imports hardly any waste management services, though the NCC is considering a proposal by the Italian firm Jacorossi, which provides such services in Cairo, to manage the entire process in Nairobi. While exports of waste-related goods and services are equally insignificant, some of the local private providers have proved resilient and could extend their services to neighbouring countries.

Legislative and policy reforms

Kenya's lack of a national policy or operational legislation on waste management has strongly affected service provision. This is because only municipal or county councils' by laws govern waste management and due to their weakness, participants in the sector are ignorant about them. Private providers operate without a proper regulatory framework to ensure that performance is monitored. Formal and informal recyclers, including community initiatives, are not officially recognised or supported. To improve the situation, central and local government needs to address key weaknesses in the system:

- Laxity and corruption, which translate into low revenue collection and financial mismanagement.
- A scarcity of land, which affects the operations of community composting groups and other informal operators.
- Limited monitoring and enforcement capacity.

- Inadequate information on abatement costs and technological options.
- Poor location of disposal facilities.

Implementation of the EMCA is expected to deal with many of these weaknesses via institutional reforms that will allow, among other provisions, the use of economic incentives and disincentives to influence waste management. NEMA is carrying out a study, in a UNEP-supported project, on appropriate economic instruments for waste management. The EMCA also includes provisions on the polluter-pays principle and the precautionary principle; taking these into consideration, NEMA is responding to public concern over plastic waste and has prepared an action plan to deal with such material (Table 5).

Table 5. NEMA action plan on plastic materials

Activity	Immediate action to kick start and timing	Expected completion date	Targets
Recycling	Directive of NEMA immediately to all stakeholders	By July 2006	15% recycling by manufacturers by 2005 75% recovered by retail and restaurant outlets
Introduction of standard thickness	Finalize the standard on thickness immediately	By July 2005	All manufacturing concerns
Phasing out currently flimsy plastics	Phase out purchase and production immediately	By July 2005	All users and manufacturers
Economic measures	Drafting to start immediately	By July 2006	Finance Bill of 2005
Reduced tariff on electricity	KAM to draft them immediately	By July 2005	Finance bill of 2005
Recovery by retailers	Cooperative awareness and directives	By July 2005	Adopt recovery and re-use strategy
Enforcement of thickness standards	Publication of draft standards	July 2004	Full-scale enforcement within one year
Collection of plastics already in the environment.	Instructions to local authorities, retail chains, etc	Immediately and continuous	No plastics in Kenya major cities by 2005
Legal measures on littering	Local and corporate regulations formulated,	By July 2005	Each city and municipality to have a bye-law on plastics
Selection of disposal methods	Development of proposal guidelines.	By July 2004	Disposal guidelines for plastics by 2005

Source: NEMA, September 2003.

Conclusions and recommendations

Conclusions

This paper has shown that Kenya needs a wide range of EG&S and recent changes to environmental legislation are only likely to increase consumption of EG&S. For example, the NEMA action plan on plastic waste is apt to stimulate enormous demand for alternative products and waste management services. Other potential areas for trade and investment include technology for the management of toxic and

radioactive waste, water resource development and management, and development of alternatives to ozone-depleting substances.

Kenya already participates actively in international trade in EG&S, especially through imports of capital goods such as garbage trucks and water supply tankers; water, gas and electric meters; and alternative energy materials. Fiscal incentives encourage the importation of environmentally sound technology. Membership or involvement in preferential trade agreements and regional integration groups, such as COMESA, EAC, the U.S. African Growth and Opportunity Act, the Cotonou Agreement and the New Partnership for Africa's Development helps create the conditions for expanded trade.

Importation of environmental services is minimal as yet, but foreign firms are clearly interested in furnishing them. In light of the legacy of poor governance in public services and the lack of information on which to base judgement of the country's own supply potential, however, the government is exercising caution about opening its market to foreign suppliers of environmental services.

Recommendations

For Kenya to maximise its benefits from EG&S trade liberalisation, complementary measures are necessary. Some are suggested here.

Involve the private sector and local communities in decision making and operations

This step, which can improve management of the environment and natural resources, could be facilitated by:

- Developing a clear framework for the involvement of the private sector and other stakeholders.
- Improving the investment climate, especially by stabilising macroeconomic variables, increasing transparency and accountability, reducing the regulatory burden and making financial services more efficient and competitive. This point is particularly important for attracting emerging investment opportunities offered by the Clean Development Mechanism of the Kyoto Protocol.
- Encouraging the transfer of environmentally sound technology and forging genuine partnerships.
- Investing sufficient public capital for concessions in water supply and other services to become feasible. Donor support in this area will be crucial.

Rapidly implement policy and legislative reforms

The substantial legal, regulatory and policy reforms that Kenya has undertaken have the potential to improve environmental and natural resource management — *if* they are speedily and fully implemented. Key among the laws that should be implemented quickly are the Water Act and EMCA. The country should seek technical and financial assistance to assist in the process.

Beyond implementation, legal and regulatory revisions should accompany liberalisation to ensure that local authorities can protect the public interest. Without adequate regulatory capacity, incumbent firms tend to take advantage of the situation by introducing barriers to the entry of competitors.

Improve understanding of the domestic EG&S industry and the international market

Kenya cannot benefit from EG&S trade liberalisation without a good understanding of the international market for EG&S, the comparative and competitive advantages of the domestic sector and the

likely effects of liberalisation on the supply and prices of environmental goods and services. In order to evaluate these effects, capacity building for impact studies is needed, followed by a major effort in data collection on production, consumption, prices, trade and other aspects of EG&S. Capacity building related to the multilateral trading system is also critical. Kenya should not only approach development partners for assistance with this process but also provide its own national resources.

REFERENCES

- Allen N. and J. Ngonga., (2003), “Building Kenya Together — Conference on Private Sector participation in Kenya’s Infrastructure”, Background Paper on Water and Sanitation, PricewaterhouseCoopers, Nairobi, Kenya.
- Araya, M. (2003), “WTO Negotiations on Environmental Goods and Services: Maximizing Opportunities?”, Global Environment and Trade Study (GETS), Yale Center for Environmental Law and Policy, New Haven, Connecticut, USA.
- Bartone, C.R. (1991), “Keys to Success: Private Delivery of Municipal Solid Waste Services”. *Infrastructure Notes*, Urban No. UE-3, Transportation, Water and Urban Development Department, World Bank, Washington, DC.
- Butkeviciene, Jolita (2003), “GATS negotiations and issues for consideration in the area of environmental services from a development perspective”, Workshop on Post Doha Negotiating Issues on Trade and Environment in Paragraph 31, Singapore.
- Electricity Regulatory Board (2002), *Annual Report*, 2001/2002.
- Energy Alternatives Africa, EAA (2003), “Sustainable Energy in Kenya Series”, Policy Brief No. 2: Sustaining Woodfuel Supply.
- ESD Ltd (2003), “Fuel Substitution: Poverty Impact on Biomass Fuel Suppliers”, DFID Contract No. R8019, Final Technical Report, Energy for Sustainable Development Limited, Neston, UK.
- Esho (1997), “Access of Developing Country Urban Poor to Solid waste Management (SWM) Services: Role and Potential of Public Private Partnerships (PPPs)”, MIP Project Background Paper quoted in Ikiara (2002).
- Glenday, G. and D. Ndi (2000), “Export Platforms in Kenya”, African Economic Policy Discussion Paper Number 23.
- Government of Kenya, *Statistical Abstracts*, Various Issues, Government Printer, Nairobi
- Holmgren, P., E.J. Masakha and H. Sjoeholm (1994), “Not all African land is being degraded: a recent survey of trees on farms in kenya reveals rapidly increasing forest resources”, *Ambio* 23, 390-395.
- Honey, M. (1999), “Ecotourism in the shadow of Mt. Kilimanjaro: lessons from Kenya and Tanzania”, *Contours* 9(1): 8-13.
- Ikiara, M. (2002), Access of developing country urban poor to solid waste management (SWM) services: role and potential of public private partnerships”, MIP Project Background Paper, KIPPRA, Nairobi, Kenya.

- Ikiara, M. and C. Okech (2002), "Impact of Tourism on Environment in Kenya: Status and Policy". KIPPRA Discussion Paper No. DP/19/2002, Nairobi.
- Japan International Cooperation Agency (JICA) (1998), "The Study on Solid Waste Management in Nairobi City in the Republic of Kenya", March 1998. Done together with CTI Engineering Co. Ltd. and Environmental technology Consultants Co. Ltd.
- Kang'ethe Gitu *et al.* (2003), "The need for and operationalisation of a transitional fund to address imbalances that may arise in the economies of the partner states of the EAC as a result of the intensified process of regional integration", Draft Paper prepared for EAC, Arusha, Tanzania
- Kenya Revenue Authority (2003), Trade data base for Kenya.
- KIPPRA (2003), Micro-Infrastructure Project, Infrastructure Service entitlements And Urban Poverty In Kenya, Nairobi.
- KIPPRA (2002), Policy time line and time series data for Kenya, an analytical data compendium, Special Report No.3, Nairobi.
- Maureen Were, S.N. Njuguna, Alemayehu Geda and S.N. Karingi (2002), "Analysis of Kenya's Export Performance: An Empirical Evaluation", KIPPRA Discussion Paper, No.22, 2002.
- Ministry of Energy (2002), "Study on Kenya's Energy Demand, Supply and Pricing Policy Strategy for Households, Small Scale Industries and Service Establishments", Final Report, May 2002, Kamfor Company Ltd.
- Mogaka H., S. Gichere and Rafik. H (2002), "Macro-economic impacts of climate viability and water Resources Degradation in Kenya: Rationale for Public Action", World Bank Report, Washington, DC.
- Mwangi, P.N. (2001), "Water Vending in Nairobi: A Case Study of Ngando in Riruta Location", Research Paper, Department of Economics, University of Nairobi, Nairobi, Kenya.
- Mwega M. F. (2003), Manufacturing in Kenya: Imperatives in the New World Trade Order, Paper Prepared for the AERC Collaborative Research Project, African Imperatives in the New Trade Order.
- Ndung'u, N.S. (2000), "The exchange rate and interest rate differential in Kenya: a monetary and fiscal dilemma". KIPPRA Discussion Paper No.2. Nairobi: Kenya Institute for Public Policy Research and Analysis.
- OECD (2001), *The Benefits of Further Liberalization, Environmental Goods and Services*, OECD Publications, Paris.
- Republic of Kenya (2002), "National Assessment Report for the World Summit on Sustainable Development (RIO+10)", Johannesburg (South Africa). Ministry of Environment and Natural Resources, August/September 2002.
- Charnovitz, Steve (2003), Expanding the MEA mandate in the Doha Agenda, Global Environment & Trade Study (gets)

Vaughan Scott (2003), "Trade Preferences and Environmental Goods", *Trade Equity and Development*, Issue 5, February 2003.

World Bank (2003), *Kenya: A Policy Agenda to Restore Growth, Poverty Reduction and Economic Management 2*, Country Department AFC05, Africa Region.

**ANNEX 1. SOME OF THE MULTILATERAL ENVIRONMENTAL AGREEMENTS (MEAS)
AND ENVIRONMENTAL PROGRAMMES AND CODES SIGNED BY KENYA**

- Agenda 21.
- Basel Convention on the Trans-boundary Movement of Hazardous Chemicals and their disposal.
- Rotterdam Convention on the Prior Informed Consent Procedure on Pesticides and Industrial Chemicals in International Trade.
- Stockholm Convention on Persistent Organic Pollutants.
- Vienna Convention on the Protection of the Ozone layer.
- Montreal Protocol on Substances that Deplete the Ozone Layer.
- United Nations Convention on the Law of the Sea (UNCLOS).
- International Maritime Organization (IMO).
- Convention of the Prevention of Marine Pollution by Dumping Wastes and other matter.
- International Convention for the Prevention of Pollution from Ships
- Global Programme of Action for Protection of Marine Environment from Land based sources of Pollution (GPA).
- FAO Code of Conduct for Responsible Fisheries (CCRF).
- Convention on Biological Diversity (CBD).
- Cartagena Biosafety Protocol.
- African Convention on the Conservation of Nature and Natural Resources.
- Convention for the Protection, Management and Development of the Marine and Coastal Environment of the East African Region (Nairobi Convention).
- United Nations Framework Convention on Climate Change (UNFCCC) and the Kyoto Protocol.
- Convention on Wetlands of International Importance Especially as Waterfowl Habitat (Ramsar Convention).
- Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES).
- Convention on the Conservation of Migratory Species of Wild Animals (Bonn Convention or CMS).
- Lusaka Agreement on Cooperative Enforcement Operations Directed at Illegal Trade in Wild Fauna and Flora (Lusaka Agreement).
- United Nations Convention to Combat Desertification in those Countries Experiencing Serious Drought and/or Desertification, particularly in Africa.
- Convention Concerning the Protection of the World Cultural and Natural Heritage.
- Convention for the Establishment of the Lake Victoria Fisheries Organization.