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Environmental Protection and Economic Development in Zambia

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ABSTRACT

The 1980s saw a revitalised global realisation of the crucial interrelationship between environmental protection and sustainable development. Such global awareness helped some African governments to take action towards the control of environmental degradation. It is acknowledged that Africa faces two types of crises: the crisis of development and the crisis of environment. The two crises mutually cause and reinforce each other.

However, in spite of the need for environmental protection, African governments are unable to commit adequate financial and human resources to control damage to the environment. The economic crisis in Africa, arising from declining export revenues and leading to structural adjustment programmes, has made both governments and the mass of population to concentrate more on economic survival than protection of the environment. This is the situation Zambia is faced with. Despite the government's efforts to control environmental degradation through enactment of a comprehensive environmental law and structures for that purpose, financial constraints and low priority accorded to this area in the face of an economic crisis makes it difficult to realise the goal of environmental protection.

Introduction

Environmental degradation, though a common characteristic of both developed and developing countries, has not received much attention by the governments of the latter. The initial assumption was that environmental problems were not prevalent in developing countries given the low levels of industrial growth. This, of course, has proved to be inaccurate. In actual fact, developing countries have been more preoccupied with promotion of industrialisation in order to catch up with the developed world, and to improve the livelihood of their people than with ensuring a habitable and healthy environment. This, coupled with inadequate resources at the disposal of developing countries, made it hard for them to commit themselves to environmental protection. Thus, the governments of the developing states did not see any linkage between economic development and a clean

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environment. However, the 1980s have seen remarkable appreciation of, and realisation for, environmental protection while simultaneously promoting economic development in Africa. It has been argued that sustainable economic development is intimately linked to the proper use of all natural resources without which prospects for a future development look bleak (Soussan, 1992). Increased global awareness of the linkage between environmental protection and sustainable development has prompted some African governments to take action towards control of environmental degradation.

The paper reviews Zambia's environmental policy through the examination of the legal provisions for environment, administrative structures, limitations of the legal framework and ways of making environmental protection more effective. The Zambian government is faced with a dilemma in terms of the priority accorded to rapid industrial development and Zambia's dependence on the copper industry for her economic livelihood on one hand, and the need for a clean, healthy environment suitable for human habitation and sustainable development on the other.

Development and Environment

It has been acknowledged by scholars that contemporary Africa experiences two types of crises which are in a way related: the crisis of development and the crisis of environment. The crisis of development simply portrays Africa as characterised by poverty, growing economic inequalities, huge external debts, decline in world prices of export commodities resulting in balance of payment problems and inability to repay debts, decline in food production, illiteracy, infant mortality and short life expectancy among adults, and political instability (Adams, 1990:6-7; Rodney, 1972).

According to Nyango'ro (1992), the current African environmental problems include:

(a) deforestation which is a result of felling down of trees in order to provide firewood and charcoal which are the source of energy for poor urban and rural households; timber for construction purposes; clearing of land for crop and food cultivation and grazing land for domestic animals. Of major concern is the practice of shifting cultivation by rural subsistence farmers in which land is cleared and burnt for crop production;

(b) desertification which is related to deforestation. It arises from extensive utilisation of the land through crop production, over-grazing and cutting down of forests. This causes the once productive land to become

bare, dry land unsuitable for human sustenance. Desertification has been more pronounced in the Sahel region; and

(c) soil erosion which is caused by felling of trees, over-grazing, shifting cultivation and burning of forests which deprive the soil of its nutrients. This results in soil infertility which contributes to decline in agricultural production. In cases where food production is considerably affected, starvation and famine are the end result.

Literature on development and environment is extensive. However, there are differences in the focus of scholars. Conservationists and environmentalists primarily concern themselves with environmental issues while social scientists pay considerable attention to development. However, there are those who link the two. In fact studies about development and environment are so complementary that they highlight the same issues.

The United Nations Conference on the Human Environment of 1972 highlighted global concern for environmental degradation, although the concern was for environmental problems of developed countries of the West, and the need for sustainable development there. The Conference emphasised the concept of sustainable development which establishes linkages between development and environment instead of analysing the two as distinct issues of human concern. Although the Conference did not specifically address the problems of environment and development of developing countries, it nonetheless created the United Nations Environment Programme (UNEP) and situated the offices of UNEP in Nairobi, Kenya. This move was not only meant to appease developing countries for neglecting consideration of their environmental problems at the Conference, but also to relegate environmental concerns to the bottom of UN priorities as Nairobi is far from the UN headquarters in New York (Adams, 1990).

The Brundtland Commission Report of 1987 (quoted in Adams, 1990 and De la Court, 1990) avoided the mistake of treating in isolation issues of environment, economic development and human needs. The Report argues that developmental and environmental issues cannot be separated as the process of development negatively impacts on environmental resources on which they must draw from and environmental degradation undermines economic development programmes. Similarly, the Report illustrates a reciprocal relationship between poverty and environmental degradation: poverty is a major cause of (global) environmental problems just as environmental deterioration perpetuates the dismal conditions of the poor. Henceforth, the Report views sustainable development in terms of meeting present needs without undermining the choice of future generations to meet their basic needs as well. Accordingly, what is needed are environmental

policies which facilitate the achievement of socioeconomic goals, especially the alleviation of poverty. The assumption here is that the eradication of poverty would in turn reduce environmental degradation. The Brundtland Report posits the viewpoint that poverty, high population growth rate and huge debt burdens prevent developing countries from adopting sound environmental policies designed to ensure a healthy environment. Therefore, the Report argues that there is need for increased flow of international financial assistance to developing countries for sustainable development projects, improved terms of international trade, as well as transfer of technology which is environmentally friendly to the developing world. Without such inflows, the poor who are in majority would have no alternative except to over-utilise the available resources, thereby endangering the environment.

Blaikie (quoted in Adams, 1990:87-88) lends credence to the views put forward by the Brundtland Commission. Blaikie illustrates a vicious circle of poverty and environmental degradation on the one hand, and environmental deterioration and economic development on the other. He highlights the social, political and economic issues arising from environmental degradation and development. For instance, environmental deterioration, in the form of soil erosion worsens the prospects of the poor for better conditions of a livelihood. Likewise, economic development causes environmental problems, just as maintaining the quality of environment undermines promotion of economic development. Similarly, land degradation frustrates efforts at development by making it difficult for the government to deliver public goods.

It has been widely acknowledged, even by the UN Conference of 1972, that environmental degradation is a product of the process of development. Development not only results in industrial pollution but also in unequal benefits to various individuals and groups within society. Developing countries, in general either lack environmental laws or have weak antipollution legislation which are commonly practised in the industrialised countries. This makes developing countries attractive investment areas for multinational corporations of the West anxious to avoid stronger pollution controls in their home countries (Adams, 1990:115). Most of the multinational corporations invest in mineral and manufacturing industries in the developing countries.

What is suggested is not only for developing countries to adopt effective antipollution provisions and action but that development planning should assess the effects of projects and programmes on natural resources and environment. This would entail quantification of damages and benefits of each project and technology. It is in this respect that international aid agencies could assist in monitoring the effects of projects on the environment. Developing countries depend on multilateral and bilateral aid organisations to finance and plan development

projects. At the identification and appraisal stage of development planning, international financial institutions could assist in environmental impact assessment of projects. Indeed, the World Bank has been identified as one of those institutions which take into account environmental impact of projects appraised and funded by it in developing countries. Although the World Bank environmental impact assessment of projects is not faultless, it has nevertheless encouraged governments of developing countries to adopt policies designed to protect the environment for sustainable development as part of its 'market friendly approach' to development (World Bank, 1991).

It is, however, acknowledged that it is difficult to assess the environmental impact of projects, especially in the developing countries due to a number of factors. These include the fact that it is difficult to identify the nature of impacts on the environment at any time and in any area. There is the likelihood that impacts would be delayed instead of manifesting themselves immediately at the time of assessment. More important, "*lack of environmental data*" due to "*lack of ecologists and other scientists*" compounds the problems of accurate assessment of environmental impacts of development projects (Adams, 1990:151).

Zambian Economy

A close examination of the Zambian economy gives sufficient background to environmental problems there. At Independence, Zambia inherited a 'dual' economy with a developed export enclave sector based on copper production and a backwards rural or agricultural sector. This made Zambia a mono-economy dependent on copper for export earnings and revenue for government public expenditure. This situation still prevails. Copper yields 90% of Zambia's export earnings. Thus, it is an engine of development. This makes it imperative for the government to retain and attract foreign investment in the copper industry through incentives and inducements, including legislation. Indeed some provisions of legislation make it less costly to invest in the Zambian copper mines. For example, the Mines and Mineral Act shielded the copper mining companies from any financial liabilities arising from health problems associated with industrial problems. Therefore, Zambia, compared to industrialised countries with provision for legal compensation for pollution-related sickness, spared companies enormous financial hardships.

Other minerals mined in Zambia include lead, zinc, bauxite, cobalt, and amethyst. The government draws financial resources from the mines through mineral taxes, mineral export taxes and income tax. The mineral tax is levied as follows: 51% for copper; 20% for lead, zinc, and cobalt; and 10% for amethyst, beryl silver, gold and bismuth. In 1987, the government imposed mineral export

tax on all exports for sale on the international market. Since 1987, the Mineral Export tax had been set at 11% of the Kwacha value of exports and sale of minerals. In the case of income tax, it is levied at 50% of assessible income after deduction of mineral and mineral export taxes, and financing of prospecting and explorations (Mutemerewa, 1991:13-14).

The Zambian government's task at Independence was to restructure the economy in order to end dependence on the copper mines, and to use the revenue from copper sales for diversification of the economy. Five year development plans and economic reforms adopted since then were designed for this purpose. The Matero Economic Reforms of 1969 resulted in the government purchasing 51% shares from the Anglo American Corporation (AAC) and Roan Selection Trust (RST) leading to partial nationalisation of the copper industry. The AAC and RST retained 49% of the shares. The AAC and RTS were renamed Nchanga Consolidated Copper Mines (NCCM) and Roan Consolidated Copper Mines (RCM) respectively. The NCCM and RCM were subsequently integrated into the Zambia Consolidated Copper Mines (ZCCM). These measures were directed at retaining within Zambia, revenue earned by the copper industry for the purpose of financing diversification of the economy and at reducing the outflow of funds overseas by the AAC and RST.

Agricultural development is undertaken through state farms, private commercial farms, and subsistence farming. The emphasis has been on modernisation of agriculture through mechanisation, improved seeds and chemical fertilizers. Agricultural development is seen as important for a number of reasons: as a means of improving the livelihood of the majority of the population who depend on agriculture, especially in rural areas; boosting food production; providing raw materials to local industries; and as an alternative source of foreign exchange.

Economic reforms initiated by President Kaunda further paved the way for diversification of the economy. The Mulungushi Economic Reforms of 1968 allowed the government to acquire 51% shares from private retail firms, transportation, industry and other manufacturing firms. The Industrial Development Corporation (INDECO), a semi-state company, was created by the government for this purpose. Zambia experienced rapid industrial growth through the establishment of manufacturing industries. This is especially true following the 1968 economic reforms which allowed for state participation in economic development. The state, through INDECO, set up many manufacturing industries mostly in urban areas with very few situated in peri-urban and rural areas. These include among others, Chilanga Cement, Zambia Clay, Zambia Sugar, Kafue Textiles, Nitrogen Chemicals, Maize Milling, Explosive Manufacturing and Battery Plant. However, neither the agricultural nor the manufacturing sector has been able to replace the mining industry as the lead sector in the economy because government still accords priority to the copper sector.

Up to the 1970s, the Zambian economy experienced growth. However, the fall in world copper prices since the mid-1970s has brought untold hardships in Zambia, resulting in reduced government expenditure in manufacturing and agricultural industries and social services, rising unemployment, balance of payment problems and external debts. The change of government and economic policy in 1991 to a liberalised market economy has not resolved Zambia's economic crisis. Rapid population growth and urbanisation have compounded Zambia's economic problems. Zambia has the highest rate of urbanisation in sub-Saharan Africa. In 1992, Zambia's urban population made up 42% of the total population compared to 29% in 1969 (Country Profile, Zambia, 1993/4). One consequence of a high rate of urbanisation is the growth of shanty townships due to shortage of housing. Thus, both industry and population exert tremendous pressure on the environment.

Environmental Problems in Zambia

Industrialisation, urbanisation and population growth have serious negative consequences on the environment as each makes demands on natural resources. Every sector of the economy causes some environmental problems. The mining sector and manufacturing industries cause serious pollution, with mines the biggest polluters of the environment. This is especially true in areas such as the Copperbelt, Central and Lusaka provinces where mining and manufacturing are concentrated. The operations of these enterprises cause environmental degradation through pollution of the atmosphere, water and land. Consequently the mining sector and manufacturing industries have been identified as the most important pollutants of the atmosphere and water, and land degradation in Zambia (Chipungu & Kunda, 1994:51).

Mining Sector

The mining industry pollutes the atmosphere by releasing sulphur dioxide (SO₂). The mining of copper, which contains sulphide, produces large amounts of sulphur dioxide into the atmosphere during the smelting of copper. According to Chipungu & Kunda (1994), the sulphur dioxide discharged by the ZCCM mines exceeds the WHO's acceptable standard. It is the threat posed by sulphur dioxide to human life which is of great concern. Sulphur dioxide is hazardous to people's health, damages the ecosystem, vegetation and infrastructure. Sulphur dioxide is responsible for bronchial, eye and skin diseases, especially for residents of the area where the mines are situated. Chipungu & Kunda (1994:52), cite Konkola township in Mufulira as the hardest hit by sulphur dioxide emissions, where residents are reported to suffer from respiratory diseases, are unable to grow vegetables in their backyards, and have paint peeling off from their houses.

In addition to air pollution, copper mines cause water pollution. The waste product produced during the mining process is disposed into rivers, especially the Kafue River and its tributaries on the Copperbelt. Such wastes include heavy chemical metals like mercury. The Kafue River, which stretches from the Copperbelt to the Central Province, is not only a dumping ground for waste products from the mines, but also a source of water and fish for households. It is argued that rivers on the Copperbelt have a high copper content which is 80 times higher than the accepted standard. This poses danger to both humans and animals. Mining also causes land deterioration. Not only is the waste dumped into rivers, it is also disposed of on land. Such solid wastes include waste rocks, tailings (slimes), slag and toxic hazardous chemical wastes. Waste causes land sterilisation, making land unproductive and creating ugly scenery of dumps in mining towns. In the rainy season, the dumps become muddy and sometimes are washed away by rain into surrounding water supplies and farmlands/gardens (Moyo, O'Keefe & Sills, 1993:281). Open pit mining at some Zambian mines, like at Mufulira, causes damage to the environment in the form of caving in of land. Holes excavated to mine copper permanently scar the landscape and make it unproductive. Additionally, it is argued that the 1970 Mufulira disaster in which 100 miners died due to the collapse of the mine was a result of, "...piling of excessive waste material over excavated areas" (Lewis & Berry, 1988:372).

Manufacturing Industries

Like copper mining, manufacturing industries also cause air, water and land pollution. The most important industries which cause environmental problems are those which produce fertilizers, clothing, shoes and cement. The Nitrogen Chemicals, located in Kafue, Central Province, is the major source of pollutants. It is common to see a brown smoke covering the town of Kafue. Moyo, O'Keefe & Sills (1993:282) argue that 40 tonnes of nitric oxide per day are discharged into the atmosphere. Regrettably, nothing much has been done to ameliorate the situation there.

Dust is another pollutant of the atmosphere. Operations of Chilanga Cement naturally discharge cement dust while Ndola Lime lets out lime dust, just as quarrying releases a lot of dust into the air as a result of crushing stones. And so do maize milling companies and road construction. Dust is not only an irritant but also causes health problems. Common ailments from dust are sneezing, coughing and bronchitis (Chipungu & Kunda, 1994:32).

Similarly, waste from industrial plants is thrown into the Kafue River endangering human and animal life through contamination of water and food (eg, fish). For example, Kafue Textiles dumps its chemical waste from dyeing cloth into the Kafue River. Bata Shoe Company also releases chromium waste from the tannery

into the Kafue River (Chipungu & Kunda, 1994:33-34). Different opinions have been advanced regarding pollution levels in the Kafue River. Although Moyo, O'Keefe & Sills (1993:282-83) state that the level of industrial pollutants in the Kafue River is "*within acceptable international standards*", the Sunday Times of Zambia (2 May, 1993:3) concludes that there is a high level of pollution in the river as a result of dumping of industrial waste and that there is no proper treatment of toxicity, while Chipungu & Kunda (1994:31) argue that industrial waste have made the river "*entrophised leaving it inaccessible to navigation.*"

Agricultural Sector

The primary source of pollution in agriculture is the use of chemical fertilizers and pesticides. Most food and cash crops grown in Zambia require fertilizers and pesticides to ensure a good harvest, especially of maize, cotton and tobacco. In the 1992/93 season, for example, Zambia used 450,000 metric tonnes of fertilizer compared to 150,000 metric tonnes, 20 years ago. Zambia's commercial farmers are reported to utilise the largest amount of fertilizers compared to other southern African farmers. Similarly, there has been an increase in the use of pesticides in agriculture and public health control programmes. In 1993, Zambia used 300 different pesticides compared to 200 in 1992 (Chipungu & Kunda, 1994:57-58). However, although chemical fertilizers, and pesticides result in increased national harvests, they pose a danger to the environment. In addition, the use of DDT, which is no longer used in developed countries, is detrimental to land as it kills soil nutrients and is likely to be washed into rivers thereby contaminating water (Moyo, O'Keefe & Sills, 1993:298).

Farming practices especially by subsistence farmers are not conducive to conservation of natural resources, and in most cases cause soil erosion, deforestation and loss of pasture land. According to Moyo, O'Keefe & Sills (1993:278), the most important damage to land is in the form of soil erosion. The Government of Zambia (1985:7) also notes that soil erosion is becoming commonplace throughout Zambia. The custom of burning trees and grass in preparation for planting of crops not only pollutes the air but also exposes the soil to the heat of the sun and rain. The *chitemene* system of cultivation commonly used in the Northern Province of Zambia is a good illustration. The *chitemene* system, which involves cutting down of trees and burning of trees and grass, has traditionally been a way of fertilizing the soil. However, cutting down of trees and burning them leaves the soil bare of grass or trees or any another vegetation making it vulnerable to caking from the sun's heat and erosion. Similarly, cutting down of trees in the *chitemene* agriculture causes deforestation. The Weekly Post (5 November, 1993:9) reports that *chitemene* is the major cause of deforestation in Zambia accounting for 97% of Zambia's annual deforestation and loss of 75,000 hectares of woodland annually.

Household needs for energy are another source of deforestation, soil erosion and air pollution. Trees are cut down for use as wood fuel or charcoal in poor rural and urban households. Use of firewood and charcoal as fuel is widespread among the low- and middle-income homesteads due to rising costs of electricity and decline in the purchasing power of the local currency, the Kwacha. It is reported that high demand for charcoal in urban Zambia causes deforestation as 43,000 hectares of forest were cut down in Lusaka in 1990 alone. The Copperbelt suffers the same high deforestation as Lusaka (*The Weekly Post*, 5 November, 1993:9).

Overgrazing also contributes to soil erosion and bare landscapes devoid of trees and grass. This problem is acute in cattle-keeping areas of Southern, Central and Eastern provinces, and especially in communal grazing areas. Overcrowding of cattle on grazing land destroys vegetation and soil. Such damage to the environment arises as a result of an increase in number of cattle grazing in a particular area eating vegetation, tree seedlings, grass, leaves, and stepping on them as they move about. Another reason for over-grazing stems from the fact that cattle owners seldom sell or consume cattle, hence an increase in cattle population. Scarcity of good pasture land exacerbates the problem of over-grazing (Government of Zambia, 1985; Moyo, O'Keefe & Sills, 1993; *The Weekly Post*, 5 November, 1993).

Legal and Institutional Framework

The promulgation of environmental laws is the initiative of the government. This initiative is influenced by three factors: the need to conserve natural resources through control of pollution; complaints from pollution sufferers in mining localities; and pressure from international aid donor agencies. However, it is not necessarily a result of interest group pressure on government policy makers to take action with respect to the environmental situation.

The Zambian government started late in its efforts to initiate national legislation to protect the environment. The emphasis was more on protection of mining companies and other foreign firms than the environment. As previously noted, the Mines and Mineral Act indemnifies the copper mining companies from prosecution for causing pollution-related health problems in order to safeguard their financial solvency by not compensating victims of its pollution (*Sunday Times of Zambia*, 2 May, 1993:3). Attempts are being made by the Ministry of Environment and Natural Resources to change the Act to make the copper mining companies liable for prosecution by any individual or group affected by pollution. Efforts by the Ministry to invalidate the law which grants immunity against prosecution for pollution problems were a result of complaints from victims in mining towns (*Sunday Times of Zambia*, 2 May, 1993:3).

Although Zambia has been independent since October 1964, it was only in the late 1980s that government put in motion efforts towards environmental protection. The United National Independence Party (UNIP) government of President Kaunda launched the National Conservation Strategy for Zambia in 1985. This was merely a preliminary step towards protection of the environment because the emphasis was on clarification of government intentions of conserving Zambia's natural resources; identification of the environmental problems; and commitment to control degradation of the environment. However, the 1985 Conservation Strategy for Zambia laid the groundwork for national legislation and administrative structures for dealing with environment-related issues. The passage of the Environmental Protection and Pollution Control Act No 12 of 1990 by the Zambian parliament provided a single and comprehensive national legislative and administrative structure for environmental protection. This Act made Zambia one of the few, in southern Africa, with a comprehensive environmental law, and institutional structures responsible for the environment.

The Act provides, among other things:

- regulations for protection of environment and control of pollution;
- establishment of structures to implement and enforce the provisions of the Act, functions and powers of such structures. The Environmental Council of Zambia (ECZ) is the most important organ responsible for all matters concerning the environment in the country, be it in the public or private sector; and
- offences and penalties of polluters outlined in sections dealing with water, air, noise or chemical pollution.

Hence, the Act's main objective is to harmonise the needs of human beings and the environment by reducing damage to the environment. Before the enactment of the Act, each industry or authority monitored pollution in respective areas of activity. Thus, the Mines and Mineral Act, Factories Act and Town and Country Planning Act were to guide respective organisations in the monitoring and control of levels of pollution. In reality they did not.

The Movement for Multi-party Democracy (MMD) government, which has been in power since 1991 under the leadership of President Chiluba, has continued with its predecessor's efforts at protection of environment. In particular, the MMD government formed the Ministry of Environment and Natural Resources in 1992. This in itself demonstrates the importance attached to the environment by the government and commitment to resolving environmental problems. In addition to

regulations, the MMD government formulated a National Environmental Action Plan which was approved by the Cabinet in December 1994. The main objectives of the National Environmental Action plan are to identify environmental problems and issues; analyse their causes and recommend appropriate action with a view to resolving environmental problems and issues. The National Environmental Action Plan aims at putting forward an implementation strategy for each sector of the economy, outlining specific action required in each sector, identifying priority sectors and time frame for implementation of strategy for dealing with environmental problems.

Functions and Structures of the ECZ

An examination of the functions and structures of the ECZ would illuminate the extent of its powers, functions and limitations in accomplishing its tasks. Section 6 of the Act empowers the ECZ to undertake several functions, including to: coordinate the activities of all ministries and other bodies concerned with the protection of the environment; advise the government on all matters relating to any environmental conservation, protection and pollution control including policies, research, investigations and training; undertake studies and make recommendations on the standards relating to the improvement of environment and maintenance of sound ecological systems; monitor trends in the use of natural resources and impact on the environment; undertake environmental educational programmes for the purpose of creating an enlightened public opinion regarding the environment, and making the public aware of their role in the protection of and improvement of the environment; and draw up and enforce regulations related to water pollution, air and noise pollution, pesticides and toxic substances, waste management and natural resources management (Chipungu & Kunda 1994).

The ECZ has made some accomplishments. To date the ECZ has already formulated regulations dealing with Waste Management, Water Pollution Control, and Pesticides and Toxic Substances. These regulations are dealt with separately in the Act. The activities which are currently being undertaken include the formulation of regulations on air pollution and noise abatement and natural resource use; enforcement of regulations; formulation of wetland development and management policy; preparation of sectoral land use guidelines; formulation of an environmental impact assessment policy; preparation of development projects screening guidelines; environmental data collection, documentation and publication; networking with national and international environmental protection organisations; and education and awareness campaigns (ECZ, Booklet, undated).

The composition of the ECZ is such that it facilitates consultation and cooperation between affected organisations and individuals. Membership to the ECZ is

drawn from representatives of institutions, both public and private, and any other persons whose activities impinge on protection of the environment and proper management of natural resources. Thus, government ministries, private companies or parastatals and individuals make up the ECZ. Ultimately the ECZ is accountable to the Ministry of Environment and Natural Resources. Day-to-day activities of the ECZ are carried out by the Directorate headed by the Director. The Directorate has four units under its command, namely, Environmental Inspectorate, Environmental Planning and Management, Legal Counsel, and Administration and Accounts. The Act empowers the Inspectorate to administer, enforce and monitor compliance with provisions for environmental protection and pollution control, and to undertake research (ECZ, Booklet, undated). The inspectors have the power of entry, search and examination of the premises; however, they do not possess the power of arrest and seizure of anything from any premises searched (Chipungu & Kunda, 1994:94).

Evaluation of the ECZ

Although the Act has noble intentions, successful administration, enforcement and monitoring of regulations, to ensure protection of the environment and pollution control might prove to be problematic. Admittedly the ECZ has been able to formulate regulations; however, its functions are too numerous while the resource base to support such functions is limited. Therefore, implementation of the provisions of the Act faces a number of difficulties. One of the primary obstacles to effective enforcement of the Act is resources, both financial and manpower. Like any public body in Zambia, the ECZ depends on government grants for financial resources. A government faced with financial constraints would not allocate substantial resources to environment at the expense of development projects. In view of the current economic crisis in Zambia arising from reduced revenue from copper which causes huge budget deficits, the government is unlikely to provide all the funds required by the ECZ. The IMF-induced reduction of government subsidies and government spending means that the service sector, like the ECZ, suffers the most. The ECZ concedes that the government grant is inadequate which in effect reduces its ability to fulfil its functions. As a result, the ECZ has currently imposed a freeze on manpower recruitment. Similarly, financial constraints also suggest that the ECZ may not be in a position to recruit and retain skilled, experienced manpower like ecologists, economists, scientists, and technologists on whom sound environmental administration depends.

Two alternative sources of funding exist for the ECZ: penalty fees paid by polluters and international aid agencies. The Act provides for fines ranging from K50,000 to K200,000, and imprisonment for a period of up to three years as well

as daily monetary penalties for continuing offences. In addition, heads of businesses are also liable to prosecution if proven guilty by a court of law. These penalties were intended to deter would-be polluters. However, while the fine might have been reasonable in 1990, they are too low to be effective given the continued devaluation of the Kwacha. This makes enforcement of the Act costly and deprives the ECZ an alternative source of funds. It is plausible that the government might have been reluctant then to impose stiffer penalties because the copper mines and manufacturing industries were mostly government-owned. This brings up the question of whether or not the ECZ can impartially and effectively monitor pollution levels in copper mines on which Zambia depends, and manufacturing industries. The situation is likely to change once privatisation of former state-owned industries and mines is complete.

International aid agencies like CIDA, NORAD, and western governments of Sweden and Netherlands which have provided grants in the past for preparation and publication of reports about the environment in Zambia, could be an alternative source of funds. This would require the Zambian government to negotiate such assistance for the ECZ.

Another problem lies with the requirement for public educational programmes to make people aware of environmental degradation and their role in protecting it. This in itself is commendable given the fact that the ECZ is still in its infancy and in the process of acquiring experience in dealing with environmental problems. Furthermore, this suggests that the ECZ would have to rely on the public attitudes towards proper land management, especially by peasants or subsistence farmers in the use of chemicals like pesticides and toxic substances. This is even more imperative given inadequate manpower at ECZ. Therefore, public education programmes are very important. Currently, the environmental educational programmes, both formal and informal, are undertaken by the ECZ and institutions of learning, ministries and non-governmental organizations. Each follows its own syllabus without much coordination. It is not clear whether or not such education reaches the mass of peasants or includes input from the public. Past experience suggests that ideas or programmes from above (government or otherwise), rarely succeed unless the grassroots are involved in initiation.

Ideally, educational campaigns would be more fruitful if they included policy makers involved in the planning of development projects. This is important in so far as determination of environmental impact of projects at initial planning stages is concerned. Currently, relatively little attention is paid by policy makers to actual and potential impacts on environment by development projects. Evaluations of development projects are guided mostly by economic criteria. The ECZ efforts are directed at making Environmental Impact Assessment part of development planning. However, at present, the ECZ is still in the process of formulating regulations

dealing with impact on environment to guide development planners. The proposed Batoka Hydroelectric Scheme is the only well-known project to have been subjected to extensive study about potential impacts on environment (Chipungu & Kunda, 1994:109).

The biggest drawback to public educational programmes is the economic condition. In view of the crippling economic situation prevailing in Zambia, the people and the government do not accord environmental issues a very high priority. Both are more preoccupied with economic survival, even to the extent of damaging the environment. Furthermore, as a corporate body accountable to the Ministry of Environment and Natural Resources, the ECZ is likely to be constrained in implementation of its functions. There is need to streamline the responsibilities of the ECZ and the Ministry to avoid duplication and conflict, especially interference from the Ministry. It is common in Zambia for ministries to interfere in operations of corporations or parastatal organizations under their jurisdiction.

A closer look at the Act suggests the need for amendment of those portions which limit effective implementation. For example, whereas inspectors have the power of entry, search and examination of premises, they do not possess the powers of arrest, prosecution, seizure and forfeiture from premises searched. However, efforts are currently under way to amend the Act for the purpose of according inspectors these powers (Chipungu & Kunda, 1994:94).

Finally, the Act would be more effective if amendment to it were made in conjunction with changes to other laws dealing with the use of natural resources. Such laws relating to landownership and use could provide incentives for proper use of farmland, pasture land and other natural resources and complement efforts of the ECZ to protect the environment and control land degradation.

Conclusion

Undoubtedly, sustainable development requires governments to intervene effectively to ensure proper use of natural resources to limit environmental degradation. This is no easy task and brings to the fore problems faced by poverty-stricken and resource-scarce countries like Zambia. Economic development and environmental protection are mutually inclusive goals of a good livelihood. However, tension arises when both compete for scarce natural resources and when survival takes precedence over environmental protection as is the case in Zambia currently. The acknowledgement and importance attached to control of deterioration of the environment is symbolised by the enactment of a national environmental law. The Act is comprehensive in that it covers all sectors of the economy and all types of environmental degradation, including water, air, land and noise pollution. However, implementation of the Act would be the biggest test of Zambia's commitment

to sustainable development. However the economic crisis in Zambia points to the likelihood that environmental issues would remain relegated into the background in spite of the declared policy of the government.

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