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WORLD MARITIME UNIVERSITY
Malmö, Sweden

**ADEQUACY OF THE TANZANIAN LEGISLATIVE
SYSTEM TO ACHIEVE SUSTAINABLE
DEVELOPMENT : FOCUSING ON THE LAKE
VICTORIA REGION**

By

VERDIANA NKWABI MACHA
TANZANIA

A dissertation submitted to the World Maritime University in partial
fulfillment of the requirements for the award of the degree of

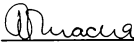
MASTER OF SCIENCE
in
**GENERAL MARITIME ADMINISTRATION AND ENVIRONMENT
PROTECTION**

1995

DECLARATION

I certify that all the material in this dissertation that is not my own work has been identified, and that no material is included for which a degree has previously been conferred on me.

The contents of this dissertation reflect my own personal views, and are not necessarily endorsed by the University.

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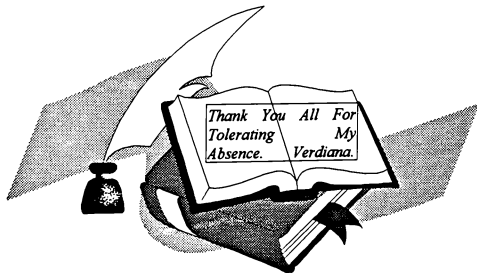
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*THIS DISSERTATION IS DEDICATED TO
JOHN PESA MY SUPPORTIVE HUSBAND
MY LOVE AND MY BEST FRIEND
MY TWIN DAUGHTERS
HAIKA-IDDA AND
HAIKA-BELINDA*



ACKNOWLEDGMENTS

I am indebted to many individuals and institutions in the completion of this dissertation.

I wish to express my gratitude to the International Maritime Organization for providing me with fellowship to attend this course.

Many thanks to the Ministry of Justice for granting me permission to pursue the two year course at the World Maritime University.

My sincere gratitude to Professor T. Sampson, for his support, encouragement and constructive criticisms which helped to shape this dissertation.

The management and staff of the International Joint Commission in Windsor, Ontario Canada and UNEP ELI/PAC offices in Nairobi Kenya with whom I did my specialized field training also deserve special thanks for facilitating my training.

My appreciations to the staff of the World Maritime University library especially Susan and Cecilia for their assistance and cooperation which made my research work in the library an easy task.

I wish to pay special tribute to my MOTHER, Elizabeth-Belinda who sacrificed two years of her life to take care of my children during my absence. MAMA, your unfailing support and insightful care have been the tower of strength in my life and in the development of my career. To you I have no proper words to express my appreciations. All I can say is 'ASANTE SANA'.

Lastly, to all my friends, especially my dear friends, Helen Bugaari, Devron Newman, Paulette Rasoazanaparany and Mario Bastian from whom I derived inspiration making my two years of stay in Malmo bearable.

ABSTRACT

Economic development and rapid population growth have had and continue to have great impacts on the natural resources in Tanzania. As a result there are visible strains on the environment.

This is apparent in the current development patterns which have resulted in the abuse and misuse of natural resources and degradation of the environment. Important functions of natural habitats such as retention of soil and water by watersheds have been impaired.

At present, some of these impacts manifest some of the worst areas of degradation and human impacts which include:

- soil erosion due to deforestation and poor soil conservation methods;
- reduced water quality resulting from pollution; and,
- destruction of coastal and marine habitats due to pollution resulting from untreated sewage and industrial disposals and agricultural run-offs.

A number of environmental legislation and institutional arrangements do exist in the country. Unfortunately gaps and overlaps exist between the institutions, with regard to their extent of resource use and management and pollution control. Thus, there is urgent need to coordinate the policies and activities of these institutions by creating a lead institution to coordinate and harmonize the activities of the different sectors.

However, it is worth noting that remarkable efforts have been employed so far to redress the situation but the desired goals have not been achieved. The question is where does the problem lie?

In light of the above this study examines a number of factors which have led to un-sustainable development patterns in Tanzania. In that context it examines policy considerations, the legislative framework and the organizational setup in relation to environment protection and resource use and conservation. The study then makes recommendations which might assist to reverse the situation and consequently attain sustainable development.

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ABBREVIATIONS

AOC	Area of Concern.
BOD	Biological Oxygen Demand.
DDD	District Development Director.
EIA	Environmental Impact Assessment.
EU	European Union.
FAO	Food and Agriculture Organization.
GDP	Gross Domestic Product.
GLWQA	Great Lakes Water Quality Agreement.
GNP	Gross National Product.
IJC	International Joint Commission.
LAVESO	Lake Victoria Ecological Society.
LVEMP	Lake Victoria Environment Management Program.
NCS	National Conservation Strategy.
NCSSD	National Conservation Strategy for Sustainable Development.
NEMC	National Management Council.
NGO	Non Governmental Organization.
RAP	Remedial Action Plan.
RDD	Regional Development Director.
SDM	Senior District Magistrate.
UNCED	United Nations Conference on Environment and Development.
UNDP	United Nations Development Program.
UNEP	United Nations Environment Program.
UNFPA	United Nations Population Fund.
UNIDO	United Nation Industrial Development Organization

CHAPTER ONE

INTRODUCTION

Today, the world is more aware than ever of the widespread effects of human activities on the environment. The most important indicator of this awareness is the recent United Nations Conference on the Environment and Development which was held in 1992 at Rio de Janeiro in Brazil. During this summit, a treaty was signed committing countries to observe basic principles of environmental protection while planning for development. To this end, the Earth's Action Plan or Agenda 21 as it is commonly known was put in place.

Agenda 21 presents a set of integrated strategies and detailed programs to halt and reverse the effects of the environmental degradation and to promote environmentally sound and sustainable development in all countries.

The challenge which is facing the countries is no longer **WHETHER** but **HOW** to conserve the environment. This is true particularly in poor developing countries that cannot afford to meet the costs associated with environmental conservation. To demonstrate this problem, the study attempts to discuss the problems which have contributed to un-sustainable development in Tanzania and what could be done to correct the mistakes.

GEOGRAPHY

Tanzania is located on the Eastern coast of Africa, bordering Kenya, Uganda, Rwanda, Burundi, Zaire, Zambia, Malawi, Mozambique and the Indian Ocean. It covers 945,087 sq. km (364,900 sq. miles). The total length of the Tanzanian coast is about 772 miles (1,235 km). The country includes the highest and lowest parts of Africa, the summit of Mt. Kilimanjaro which is 5895 meters above sea level and the floor of Lake Tanganyika which is 358 meters below sea level. The territory also includes 61,000 sq. km of water which is about 62 % of all the inland waters of the African continent. (It owns half or more of lakes Victoria, Tanganyika and Malawi).

POPULATION

According to the last census (1988) Tanzania had a population of 23.4 million increasing at an annual rate of 2.8%. On this basis the population in 1992 reached 27.1 million people. 80% of which live in the countryside deriving a livelihood from a combination of small holder farming, livestock keeping, fishing and in some isolated cases hunting. Over half of the population is concentrated on a little more than one sixth of the land area, mainly in the highlands.

Tanzania has no official population policy, but the government encourages the activities of the private Family Planning Association, known in Swahili as UMATI (for Chama cha Uzazi na Malezi Bora cha Tanzania), which has about 54 branches in different parts of the country.

ECONOMY

Tanzania is among the least developed countries of the world. 1991 estimates of the World Bank indicate that the domestic product (GDP) of mainland Tanzania was US dollars 2.223 million and the gross national product (GNP) per capita was US dollars 140, the inflation rate at 22.3%.

The Tanzanian economy is currently experiencing a period of significant change. Still many of the burdens of underdevelopment such as debt services, worsening terms of trade and domestic poverty persist. The rapidly expanding population is dependent on natural resources based economic activities for their survival and the socio economic development strategy calls for an intensification of these activities. As a result it is becoming increasingly difficult to meet development demands without compromising future resources availability. Increasing poverty, in the absence of viable development, also compels individuals to over-exploit natural resources for short term gain.

AGRICULTURE

Agriculture is the mainstay of the economy, it provides a livelihood for about 90% of the economically active population, contributes over 50% to the GDP and up to 84% of the export earnings. The main cash export crops include coffee, cotton, tobacco, tea, cashewnuts, sisal and cloves from Zanzibar.

The objectives and targets for agriculture call for substantial and rapid increases in production from more intensive cultivation of areas already under production as well as through the expansion of areas under cultivation. This puts pressure on the land resources and marginal or semi arid lands have to be utilized in some areas.

The potential impact of intensive cultivation on the environment and natural resources base include:

- insufficient restoration of soil fertility, increase soil degradation and erosion as a result of reduced fallow periods;
- increasing demands for water from both new and rehabilitated irrigation scheme; and.
- localized soil and water pollution resulting from a greater use of fertilizer and other agro chemicals.

The potential impact of expanding the area under cultivation includes:

- potential damage to forests, rangelands and wildlife reserves from encroaching cultivation. This could lead to major conflicts with regard to existing land use and land tenure patterns;
- increasing soil degradation and erosion as cultivation moves into more marginal lands; and,
- adverse impact on key watershed areas which affect water quality and supply.

EDUCATION

Most primary schools are government owned. Universal primary education was introduced in 1977 and was made compulsory by the Education Act of 1978. Primary education begins at seven years of age and lasts for seven years. Secondary education beginning at the age of 14, lasts for a further six years, comprising a first cycle of four years and a second of two years. The estimated rate of adult literacy rose from 33% in 1967 to 90.4% in 1986, as a result of the adult literacy campaigns. There is a university at Dar-es salaam, and an agricultural university at Morogoro plus a number of vocational training centres and technical colleges. In 1994 Tanzania established an open university which enrolled 766 students in its first intake.

NATURAL RESOURCE CONSERVATION.

The origins of conservation date back to pre- historical times in Tanzania. Traditionally, conservation measures were practised to protect wildlife, forests and fishing stocks. In several parts of the country, for instance, villagers on their own initiative identify certain forests as sacred areas and forbid tree cutting, grazing and even bush-fires in these areas. Similarly, it is common to hear of a season or an area which is forbidden to fish or to hunt. These beliefs, passed on from one generation to another, help to conserve the environment in the locality for many years, oftenly until someone comes to the area with modern ideas.

PRE-INDEPENDENCE CONSERVATION MEASURES

Soil and water conservation measures become an issue of concern since the 1920's. Action began with the organization of a conference on Soil Erosion in Dodoma in 1929. The conference led to the formation of an Advisory Committee on Terrain (NCSSD, 1992, 21). In 1937, the Soil and Conservation Ordinance was passed. It required all peasants to abide by a number of fairly strict soil conservation by-laws, and failure to do so was punishable by fines and even imprisonment . Although unpopular, this command approach was quite successful in protecting gazetted forest areas. It was however, less successful on the non gazetted areas because of a combination of cultural, social and economic factors. For example, some bush fires were started in the process of performing traditional religious caremonies, and on many peasants holdings recommendations on terraced farming could not be carried out owing to labour shortages. (Coulson, 1982, 72). It is therefore not suprising that after independence some of the protective and control measures which all along had been unpopular among the peasantry became political sacrifices and were expediently denounced as "colonial". Most by laws were either relaxed or abandoned altogether and those which remained could not be enforced easily. Coupled with the population pressure

this laissez faire atmosphere accelerated the pace of environmental deterioration with which we are now grappling.

POST INDEPENDENCE MEASURES

After independence in 1961, the overall aim of development planning was aimed at improving people's lives through socio economic growth. A number of planning activities and policies were promulgated. The Villages and Ujamaa Programme for instance, was an attempt to improve on the concept of village settlement schemes in the context of Ujamaa (socialist) policies. Implementation of the programme involved a large scale relocation of agricultural producers and pastoralists into villages with little regard for the existing customary land tenure systems. The program resulted in a wide spread confusion and land tenure pressure over land tenure in rural areas, greatly disturbing the security of customary rights.

Land pressure meant the reduction of periods of land fallow traditionally relied upon to maintain soil fertility. Extensive use of artificial fertilizers was made the main feasible extensive way to enrich the soil. However, fertilizer use has been used on blanket recommendations and introduced without specific scientific research to test and adopt dosages to local conditions which vary greatly both within and between regions.

Despite the existence of policies, planning activities, enactment of legislation, administrative and institutional mechanisms, environmental problems, including uncontrolled resource use have increased in Tanzania. This study therefore examines the causes which have led to environmental problems in Tanzania.

Chapter two examines the thinking of the world in general as to what is required in the form of national legislation to back up a national policy for sustainable development. The chapter also discusses the Earth's Action Plan crucial theme for the integration of environmental and socio-economic factors in sustainable development.

Chapter three addresses the different policies in Tanzania which in one way or the other have led to un-sustainable development. It also examines the existing Tanzania environment protection legislation, identifying its strengths and weaknesses and evaluates its effectiveness, with focus on the Lake Victoria region.

Chapter four highlights measures being undertaken to integrate environment and development aspects into sustainable development planning. Focus is again made on Lake Victoria on the measures being adopted to manage the shared water body, in line with the Earth's action plan for the integrated management of shared resources.

Chapter five consists of the authors conclusion and recommendations.

CHAPTER TWO

GLOBAL STRATEGIES FOR ENVIRONMENT PROTECTION

2.1 GLOBAL NEEDS TO SUPPORT SUSTAINABLE DEVELOPMENT

Economic development has received the world's major attention during the last two decades. There has been however, increasing concern about the widespread effects of economic development activities on the environment. The environment around us is changing as a result of economic development activities, from wasteful exploitation of natural resources, and from un-sustainable management patterns. Building and reshaping of landscapes, land degradation, forest damage, hazardous waste and loss of natural resources can clearly be seen as consequences of economic development.

To redress the situation, environmental policies and strategies have been formulated by the international community calling for sustainable development paths. The Earth's Action Plan (Agenda 21) which resulted from the United Nations Conference on Environment and Development (UNCED) held in Rio de Janeiro in June 1992 stands as a good example. Agenda 21 is a broad prescriptive document agreed by governments which outlines programs of actions covering in an integrated way, environment and development in the 21st century.

To enable the transition to sustainability, governments are urged to assist in integrating environment and development at the policy, planning and management levels. The process will require a fundamental change in the way decisions are currently made and most importantly it will require providing an effective and

enforceable national legal and regulatory framework to transform environment and sustainable development policies into action.

This chapter examines the major factors which contribute to un-sustainable development in the world in general and Tanzania in particular. It discusses what is required in so far as national legislation is concerned to back up a national policy for sustainable development. The chapter also highlights the situation in Tanzania and how Tanzania is adopting to the world needs.

Based on the factors discussed in this chapter, the following chapters will examine the existing Tanzania environment legislation and the organizational set up, identifying strengths, and weaknesses and will evaluate their effectiveness.

POPULATION

Among the many factors which have contributed to un-sustainable global development, rapid population growth seems to be the major one. Acceleration in the growth rate of the world population has been accompanied by an increase in resource consumption. While the number of human beings increases each year, the amount of natural resources with which to sustain the population to improve the quality of human lives and to eliminate mass poverty remains finite.

According to the 1992 revisions of the official UN population estimates and projections, the world population has more than doubled since 1950 and is currently (mid-1992) estimated to be 5.5 billion persons. It is currently growing at a rate of 1.7 per cent per year (Environmental Data Report 1993-94, 202).

The total world population is projected to reach 6.2 billion by the end of the century and by 8.5 billion by the year 2025. Ninety per cent of the net addition to the world's population is projected to occur in the developing countries.

Growing populations and material expectations inevitably place increasing demands on the environment, not only in terms of space and as a source of resources, but also as a sink for waste. In addition rapid population growth has exacerbated poverty, and the negative interaction between population and environment has tended to create social tensions.

The influence of population growth especially in the developing countries as a whole, was considered responsible for about 79 per cent of the recorded

deforestation, 72 per cent of arable land expansion and 69 per cent of the growth in livestock numbers between 1989 and 1991 (UNFPA 1992).

Tanzania is endowed with a number of resources on which its population relies on for survival. The resources include forests, agricultural land, wildlife, aquatic resources and minerals. The rapid population growth is causing increased pressure on the natural resources and is posing a considerable challenge to sustainable utilization. These resources are the base of the overall socio-economic development in the country, this dependence, aggravated by poverty, lack of appropriate management and technologies in exploiting the resources, and inappropriate and outdated laws, has resulted in a tendency towards irrational and inefficient utilization of resources. Hence, efforts are being made by the government to see to it that environmental considerations are incorporated into the development process. A clear example of these measures can be seen by the efforts being undertaken by government institutions such as NEMC which has prepared proposals for the national conservation strategy for sustainable development, revision of conservation policies and legislation being undertaken by different sectors as will be discussed further in chapter 4.

Population planning would assist to achieve equilibrium between population and environmental capacities. Countries have not yet related population planning to development planning nor have they linked population and environmental action for reinforcing improvements.

Development planning which takes into account environmental considerations should be an important instrument in achieving population goals.

Governments and NGO's need to increase public understanding, through formal and non formal education, of the significance of population planning for environmental improvement and the important role of local action.

Education should be geared towards making people more capable of dealing with problems of excessive population densities.

URBANIZATION

Urbanization is another problem directly related to population growth which is threatening to move completely beyond control.

Currently, more than two of every five persons (or 43 per cent of the world's population) are urban dwellers (Environmental Data Report 1993-94, 205). The combination of population growth and a transition from an agriculture based to a more industrialized economy are among the main factors responsible for the rural-urban migration of population in the majority of the world's nations.

The distribution of people between rural and urban area has important implications for the type of stress placed on the environment. Urban areas and cities concentrate human activity and as a result create relatively high demands for natural resources (e.g. energy, fresh water and land) basic services and infrastructure, e.g., sanitation and waste disposal services, education and health care, roads and public transport and the need for employment.

Furthermore, cities represent a disproportionate source of national pollutant emissions and wastes both in liquid and solid form. They are thus associated with high levels of air pollution and other forms of environmental contamination, and health problems, particularly in developing countries. In many cases governments have failed to ensure that rapid urban growth is accompanied by the investment needed to support infrastructure and services, especially in the poorer residential areas.

Rapid growth of urban areas in Tanzania (estimated to be two and a half times the population growth rate for rural areas or 6.8% per annum) (NCSSD, 1992) has put tremendous pressure on government to provide services and amenities. This rapid and largely uncontrolled urbanization process has had unexpected, far reaching and mostly negative results. Severe housing shortage is a major consequence of the high rate of urbanization in the nation. As a result, there has been a high degree of squatter settlements (it is estimated that about 60-70% of the urban population now lives in such areas) where living conditions adversely affect human health due to a lack of or inadequate facilities such as sewage and drainage systems. Furthermore, there is a trend for people to build

permanent structures on the right of way of power lines, major roads, water mains or telephone lines or in disaster prone area such as valleys which flood during the rainy seasons and near garbage dumping sites.

Countries need to identify urban areas with acute population pressures on the environment and provide more attention to population related programs aimed at improving environmental conditions at local level.

Land and water use and spatial planning should bring about a balanced distribution of population through, e.g., incentives for industrial location, for resettlement and development in intermediate sized towns, keeping in view the capacities of the environment.

Education should be geared towards making people more capable of dealing with problems of excessive population densities. Such education should help people to acquire practical and vocational skills to enable them to become more self reliant and enhance their participation on improvement of the environment at local level.

WASTES

The quantity of waste generated in different forms, solids, liquids and gaseous are generally considered to be growing across the world as a result of the increase in the world's population, increasing industrialization, increasing urbanization and rising standards of living. Furthermore, major advances in the development of new materials and chemicals have increased the diversity and complexity of waste handling and treatment.

Sources of waste can be grouped as municipal wastes which include household waste in liquid and solid form and industrial wastes which include a wide range of materials of varying environmental toxicity including general rubbish, packaging, food wastes, acids and alkalis, oils, solvents, resins, paint and sludge. In many countries exact amounts of industrial wastes are largely unknown impairing the formulation of appropriate waste management strategy and assessment of their effectiveness.

A proportion of wastes generated by industry are deemed to be hazardous wastes because they contain toxic substances dangerous to humans, plants, and animals, they are flammable, corrosive, explosive or have high chemical reactivity.

In addition, waste disposal has also become a major concern of public opinion as a result of the so called "not in my backyard" syndrome. Public authorities and private firms face increasing resistance to make disposal sites available to establish incineration plants, landfills, composting and recycling plants.

Local constraints on waste management have turned wastes and hazardous wastes into an import and export commodity. Such movement can be justified if there is need to find a site where the waste can be disposed of safely. However, that is not the case in most incidents.

Hazardous wastes have been and are being sent to developing countries, which is a very dangerous and risky undertaking because most developing countries have neither clear waste management policies nor the facilities for treating hazardous wastes. Which is contrary to the Basel Convention on the Transboundary Movement of Hazardous Wastes of 1989. The convention prohibits the import of hazardous wastes if there are reasons to believe that the importing country has no capabilities to manage the wastes in question in an environmentally sound manner.

On the other hand waste transfer to foreign countries may cause problems in respect of transport accidents in transit countries waters, the environment of the recipient countries, or the global commons as transport of waste cannot be controlled in a satisfactory manner.

Various methods have been adopted in the global efforts to dispose of waste which include incineration, physical/chemical treatment, composting, landfills, sea dumping and recycling.

However, waste treatment and disposal like any other human activity inevitably gives rise to some form of pollution. In most developing countries, the common method of municipal waste disposal is uncontrolled dumping or burning on open waste ground, or where no collection systems exist, in the city streets.

Landfills where they exist, are often poorly designed and controlled due to insufficient resources and lack of trained staff. Scavenging of reusables from the dump sites is widespread in some countries.

Frequent and heavy rains in the tropics for instance, leach the wastes into the soils and under landfills or even cause them to overflow. Little or no pre-treatment of waste that includes sewage, causes local people to be directly exposed to the waste and to contamination of water supplies.

Tanzania is not an exception to waste management problems that face the rest of world. Waste from industries, households and municipalities is becoming a matter of concern. Most industries do not treat emissions and effluents before discharges are made. (Further discussion follows in chapter 3). It is not uncommon to see piles of garbage in the streets. In urban areas problems are aggravated by poor management for handling wastes and inadequate implementation of existing physical plans and regulations. There is pollution resulting from municipal waste in some areas. In Tanzania there are only eight towns with sewage systems of any kind, Dar-es-salaam, Tanga, Mwanza, Tanga, Moshi, Dodoma, Arusha, Tabora and Mbeya. However, most of the treatment plants are in poor conditions or have completely broken down for instance in Mwanza region. (To be discussed further in chapter 3) There are no urban areas in Tanzania where sanitary landfilling is practiced.

Governments need to initiate a plan of action for coordinating and assisting the efforts of international agencies to identify and implement environmentally sound waste management options. The main goal should be to minimize, and where possible, avoid the generation of hazardous wastes to eliminate dumping of industrial wastes and hazardous wastes at sea and in developing countries.

INDUSTRY

Economic development and industrial growth are important goals for all countries. Industry is fundamental to the development of nations and provides an important source of national income through trade. The impact of industry on the environment is however, more closely linked to the nature of the resources used, products manufactured, the structure and location of the industry, the techniques employed and methods of treating residues than to the general level of economic activity.

It has been reported by the Environmental Data Report (1993-94, 296) that, global industrial production has been increasing steadily and at a faster rate in developing countries. Developing countries have shown rapid and greater growth in the manufacturing, electricity, gas and water sectors.

It has been further reported that, the growth is associated partly with the relocation of heavy industry to countries with low labor costs, rich energy or raw material resources. On the other hand it is a trend towards industrial specialization. For instance aluminum manufacture is becoming concentrated in Australia, Brazil, Canada and Venezuela because electricity is cheaper in these countries. Petrochemicals industry is concentrating in the oil producing countries.

In addition, the Report explains that in the developed countries, the decline in growth in heavy industry has been replaced by growth in electronics and electrical industries, telecommunications, and data processing. These changes are however not without adverse impacts on the environment and human health. The concentration of the heavy manufacturing industries in developing countries has potential implications for their environmental quality, since heavy industry is responsible for the major environmental emissions and is usually energy intensive.

A major problem associated with the new technologies and substitution of traditional materials by new ones, such as silicon and thermoplastics is the fact that the new products are not always easily biodegradable and present problems of waste disposal. Moreover, the new materials also present environmental and human health risks during the production process.

Furthermore, together with the industrial activities there are trade relationships which are an important aspect of industrial development. Current world trade relationships are such that the developing countries are net exporters of raw materials, minerals and fuel to industrial countries. Primary products usually dominate their total exports accounting to as much as 98 per cent of the total exports in some countries.

The need for foreign currency income and industry expansion encourages the exploitation of natural resources. In addition to the consumption of natural resources and associated environmental effects, industry is responsible for the generation of large quantities of waste in the form of emissions in the air, waste water discharges and solid and hazardous products.

The industrial development strategy in Tanzania was pursued without specific provisions for handling environmental pollution arising from industrial activities. The resulting pollution is primarily the result of inadequate treatment of waste and resource misuse rather than industrialization per se.

Most industries in the country do not have facilities for minimizing, recycling or treating the waste they generate. Most projects are planned and assessed according to technical, economic and, in some cases, political criteria. Pollution of natural water bodies (streams, rivers, lakes and the ocean) which receive liquid or solid waste from industries is often not considered when projects are proposed. The polluted water bodies are sources of water for drinking and other purposes, their pollution has a far-reaching impact on peoples health and the environment. In Dar-es-salaam for instance, waste water is discharged from several different factories (such as textiles, abattoirs, breweries and chemical plants) that ends up in the ocean (see appendices 1 and 2)

Governments need to implement policies to assist transition of economies away from wasteful use of natural resources and raw materials, and away from a primary dependence on the export of such resources. To assist in transition to environmentally sound development.

Governments should provide for environmental standards, and their enforcement; and fiscal and other incentives for industry to retro-fit equipment for pollution control.

Governments should also impose penalties for non compliance, with the laid down standards, rules and regulations in conformity with the "Polluter Pays Principle".

International organizations such as UNEP and UNIDO should cooperate with governments in establishing global or regional environmental emission and discharge standards.

Governments and industrial enterprises should be receptive to views of citizen groups, community associations, labor organizations and professional and scientific bodies in arriving at, and implementing the decisions for industrial activities, ensuring application of appropriate technologies to meet the environmental, economic and social needs of the people.

TRANSPORT

Transport systems are important to individuals and to the economic activities of nations and the world in general. Transport activities however, have a wide range of effects on the environment such as air pollution from exhaust from road traffic, oil pollution from marine shipping and from consumption of energy. Engine exhausts include air pollutants such as carbon monoxide, nitrogen oxides, aldehydes, ozone and sulfur dioxide. Raw materials, natural resources and land are consumed in the production of vehicles or construction of roads, railways and airports. Thus, different types of transport contribute in different ways to actual or potential environmental damage. The major environmental consequences of transport can be summarized as:

- (i) Contamination of surface and ground waters from surface run off and spillages of port activities and oil and transported substances;
- (ii) Modifications of the hydrological regimes during construction of roads, ports, canals and airports;
- (ii) Use and wastage of land and its associated ecosystems excavation and use of minerals and generation of solid waste as vehicles are withdrawn from use.

In Tanzania there has been a rapid increase in the volume of traffic in major towns such as Dar-es-salaam, Arusha, Mwanza, Moshi and Arusha. Engine

exhausts and noise have also increased accordingly. Traffic and traffic related activities such as workshops and garages have equally increased generating a variety of wastes such as waste oil, solvents and wrecks. Oil recycling plants do not exist thus waste oil and solvents find their way to water bodies. (NCSSD, 1992)

Tanzania has a number of ports and harbors along the ocean and lake shores. However, there is poor planning and design to accommodate special needs for the handling of liquid and solid wastes from anchored vessels, offices and commercial establishments and industries in the harbor and port complexes. This is due to the fact that no reception facilities are available in any of these ports/harbors.

ENERGY

The provision of energy is central to the development of national economies, both as an industrial sector by itself and as an essential input to almost all other economic activities.

However, the production, transportation, conversion and use of energy, particularly of that derived from fossil fuels, are responsible for some of the most serious environmental problems facing the world today. About three fourths of the world's energy consumption is in the form of fossil fuel (oil, coal and natural gas). (Environmental Data Report, 1993-94, 272). The remainder is supplied mainly by biomass, hydropower and nuclear power. The main problems caused by fossil fuel use include air pollution, acidification of soil, fresh water and forests and greenhouse effects that may be related to climatic change and global warming.

Though developing countries account for about one third of the world's energy consumption, many of them do not have adequate access to energy. Most of them depend on oil imports and on biomass and animal energy. Wood which provides energy to about half of the world is becoming scarce and overcutting has devastated the environment in some regions. With the needs of industrialization and the trends of population growth, energy needs will increase tremendously during the coming decades.

At present, the world's energy supply is not produced and used in a sustainable way. The needs of accelerated economic growth and growing

populations require a rapid expansion in energy production and consumption. Current predictions suggest that the total primary energy will increase by as much as 50 per cent from 1980 levels by the year 2000 (Data Report 1993-94, 271). Although energy is crucial to the development process, there has been little concerted action for balancing environmental imperatives and energy demands.

Tanzania's energy demand and end-use pattern is characteristic of a developing country. The energy policy of 1992 estimated that fuelwood, charcoal and agricultural residues account for 92% of final energy consumption. (NCSSD, 1992) The principal source of energy in Tanzania is fuelwood, followed by imported petroleum products, hydropower, coal, natural gas, solar and wind energy. The environmental impacts arising from the exploitation of fuelwoods include depletion of woodlands and can be noticed in some areas such as Shinyanga and Dodoma regions where the areas have been reduced to semi deserts.

Renewable energy sources should receive high priority and should be applied on a wider scale giving full consideration to their environmental impacts.

Technologies to develop renewable sources of energy such as wind and geothermal, should receive particular attention.

Information should be made available on the harmful environmental impacts of intensive use of fossil fuels.

Urban and industrial air pollution, accumulation of greenhouse gases and the attendant climatic change and transfrontier transport of air pollutants in all regions must receive urgent attention including monitoring by appropriate methods.

Standards must be set and enforced within and among countries and conventions and agreements should be concluded to deal with these problems. "The Polluter Pays Principle" should thus be accepted and enforced.

In view of the significance of fuel, national programs of afforestation and of environmental management of woodlands should receive increased attention. Agro-forestry programs, tree plantations and village wood-lots should receive special encouragement in countries experiencing fuelwood deficit.

2.2 FORM OF NATIONAL LEGISLATION TO SUPPORT A NATIONAL POLICY FOR SUSTAINABLE DEVELOPMENT

The period after the Stockholm conference (June, 1972) witnessed a considerable change in the public's attitude towards the environment. People were concerned about pollution, became more aware of the scarcity of some natural resources, the necessity for conservation and the relationship between environment and development

Public attitudes can affect the quality of the environment in at least two major ways. First, individuals can mobilize support for particular issues and exert political pressure that can cause changes in public environmental policies.

Second, public attitudes can affect the way individual members of society act in relation to the environment. The first is well explained by the number of pollution prevention and control legislation and regulations that have been formulated and implemented in many countries following that period. (UNEP/GC.14/6 1987, 65).

In addition, nearly all countries embarked on the task of establishing environmental machineries of some kind. Some countries established ministries for environment and or natural resources, others established environmental protection agencies and or departments either as independent bodies or affiliated to particular ministries. The responsibilities of the environmental bodies vary from one country to another. However, the general function is to design programs to protect the national environment through the enactment of legislation, the establishment of standards for levels of various emissions, the creation of monitoring programs to identify where problems are most serious and to measure the success of the control programs in dealing with them.

However, it is the author's opinion that, public awareness, establishment of environmental mechanisms such as ministries and enactment of several laws alone is not enough. More has to be done which in the authors view should include the following:

BILL OF RIGHTS

Many states have recognized that law can be used directly to protect the environment. This is a desirable development. The Economic Commission for Europe's Charter on Environmental Rights and Obligations for instance, provides for individual access to a comprehensive range of administrative and judicial remedies for the prevention and reinstatement of environmental damage and participation in decision making processes. It invites member states to reflect these rights in their national legislation. Some constitutions already do so.

In India, prompted by the Bophal chemical plant disaster, the Supreme Court has made particular use of new environmental provisions of the Indian Constitution in facilitating public interest litigation against state governments. Its decisions have included the explicit adoption of a right to life approach in cases concerning pollution and environmental harm, and the imposition of a rule of absolute liability for hazardous industrial activities which goes beyond the old common law rule derived from the case of *Ryland v. Fletcher*. (Birmie & Boyle, 1992, 195)

Public interest litigation in other jurisdictions can also be seen as part of the same trend towards enhancing the participation of individuals and NGO's in environmental decision making. Decisions of courts in the United States, The Netherlands, New Zeland, and Australia have granted "locus standi" in administrative review proceedings to environmental groups and NGO's on relatively liberal basis, although such groups must usually demonstrate some interest in the issues beyond a mere concern in environment. (Birmie et al, 1992, 195)

It is worth noting however that, the right to information is a prerequisite to the exercise of the right by which an individual and or a group of individuals can protect themselves against persons who pollute and against authorities which authorize or permit the environment to be polluted.

(McLoughlin et al 1993, 134) in support of the above philosophy state that, information is needed for the exercise of the following rights:

(a) Rights of objection.

When a person applies for a license, consent, permission or authorization for any kind of activity which may lead to pollution, other

persons may wish to object for the purpose of protecting their interests. Such a need arises when land use planning permission is given; when consents are given or deposits, whether to air, land or water including marine waters; when new developments such as roads and airports are planned; when any new industrial projects which involves dangerous processes or substances is proposed; and in many other cases.

(b) Complaints.

People affected by pollution from existing sources may wish to complain to the polluter; to the control authority; to their political representatives; or to the public generally through the press. All are legitimate forms of action to protect their interests. Without detailed knowledge of the substance discharged or deposited, the manner of discharge, quantities and times, dispersal and accumulation if known, and corresponding knowledge of discharges of energy such as noise, vibrations, and radioactivity, a person cannot submit a complaint with sufficient degree of particularity...

(c) Criminal and administrative proceedings.

Where private prosecutions are permitted, no person can be confident that he can meet the high standards of proof needed in criminal proceedings unless he has prior source of sound information... Likewise, prior information will be needed before a person can confidently embark on proceedings against a control authority, or any administrative proceedings.

(d) Civil actions.

The need to prior knowledge of the details of discharges or deposits is not so great for the purpose of civil actions, for usually such information can be gained in the proceedings preliminary to the hearing. It would be unwise for anyone, however, to embark on expensive civil proceedings without first being able to test the strength of his case.

Thus, freedom of information legislation may have an important effect in making it possible for individuals and groups to make use of these remedies and to mount campaigns.

Constitutions should, through an environmental Bill of Rights, clearly guarantee individuals a right to environmental quality. This will seek to remove the prevailing obstacles to court actions and ensure public participation in the environmental decision making process.

In most countries, individuals lack "standing" to sue neither as individuals nor as a group can to defend the environment for its own sake. Legal requirements require them to demonstrate they have or they will suffer some harm separate and distinct from the rest of the country.

Even if the victims did gain standing, in order to win they will still need to prove a direct link between the polluter and the harm. That can be an impossible task for instance in the case of acid rain which results from the accumulation of emissions from many diverse sources. Furthermore, a hearing on this type of case can be a long and expensive affair in view of a need for expert evidence.

An environmental Bill of Rights is first and foremost a statutory guarantee of the right of each person to a healthy environment and the duty of governments to ensure this healthy environment in their role as the trustee of all public lands, waters and resources for the benefit of present and future generations. To make this declaration meaningful, an Environmental Bill of Rights would vest each person with two substantive legal rights:

- the right to sue in civil courts concerning an activity that is causing significant environmental damage, without having to show any personal harm, and
- the right to participate in the environmental decision making process by allowing any person to request a public hearing to propose or to review the appropriateness of an application for an environmental permit.

History has demonstrated that governments trade off long term environmental benefits for short term economic gains. Governments may be reluctant to enforce existing laws or to enact stricter ones because of lack of resources, the risks of jobs being lost, or simply because of some previous arrangements with the potential polluter.

Groups and individuals armed with legal rights, therefore are needed to act as watchdogs for the trees, soil, and the waters of a country that would otherwise remain unrepresented.

Along with the right to a clean environment, constitutions should also confer a duty on each individual to protect and conserve the environment for the benefit of present and future generations. Such duties provide added incentives to reform from harmful conduct.

FRAMEWORK LAW

Countries need to have a single framework law. By "framework law" the author means a law which establishes the institutional framework for all or most forms of environmental management. It may also lay down permanent procedures to be followed, particularly those procedures designed to provide for decisions where there is conflict of interest to be resolved.

Thus an environmental framework legislation can be described as a law which outlines duties of cross-sectoral coordination, sets forth general environmental requirements based on the National Policy (for example the legal duty of all citizens to protect the environment, or the legal right of all citizens to a clean and healthy environment). The legislation could also establish management structures such as an Environmental Tribunal or Court. In addition the legislation gives general mandate to sectors for example to manage the environment and the resources on principles of sustained yield.

The principal advantage of such a law is that it puts on a statutory basis institutions such as Environment Management Agencies, the appointment of their members, their powers and duties and the procedures to be followed in their relationship with other sectoral institutions for example government departments.

The act of making the framework law ensures that attention is paid to forging an integrated and coordinated approach, among the different sectors and institutions dealing with environment protection.

The defect of many of the older bodies of environmental laws in a global sense is that they are ad hoc and piecemeal having been enacted over a long

period of time. Additional provisions were/are added as new dangers were appreciated, often without sufficient consideration given to the relationship between the individual pieces of legislation or the system as a whole.

LEGAL CONTROLS - CRIMINAL AND CIVIL

In most countries, environmental pollution is a criminal offense punishable under the criminal code.

In Tanzania for instance, the Penal Code (Cap 16 of the Laws) addresses water pollution indirectly by stipulating that "fouling of water is a misdemeanor", punishable with imprisonment or with fine or both. It addresses air and hazardous materials minimally. Furthermore, making offensive unwholesome smells is a common nuisance, as is the negligent spreading of diseases and engaging in offensive trades. Common nuisances are defined in the code and are punishable by up to one year imprisonment. Little use has been made of these provisions because of the stringent burden of proof requirement.

Private civil actions can be instituted by individual victims for injuries and property damage caused by environmental pollution. The traditional causes of action within which the plaintiff can bring his claim are nuisance, trespass, negligence, the strict liability rule of *Ryland v. Fletcher*, (1866) L.R. 1 Ex 265 (Exch. Ch.) riparian rights and breach of duty. In any particular case, it is very difficult to determine the appropriate "head" in which to place an action. For instance, private nuisance is actionable against noxious fumes, odors, dust and injury to property as it is against a defendant's unreasonable use of his property so as to unnecessarily interfere with adjoining property.

Negligence, on the other hand, is only actionable if the defendant owes a duty of care to the plaintiff.

In instances like the Bhopal tragedy the effects are acute and the damage immediate. However, a plaintiff who is a victim of the chronic long term effects of pollution caused by toxic substances with low level, continuous and cumulative exposure, faces serious obstacles of law, procedures and evidence, making such actions extremely expensive and of very limited utility.

Establishing causation is one of the main hurdles faced by the victim, especially in a case where the disease has been manifested many years after initial exposure and where several other substances and environmental causes can be implicated.

The plaintiff carries the burden of proof throughout and must persuade the court beyond reasonable doubt that the substance in question released by the defendant produced his injuries .

DECISION MAKING

Decision making in many countries tends to separate economic, social and environmental factors. This trend can no longer be afforded as environment and development are inseparable. There is therefore a need to incorporate environmental considerations in the developmental planning process (policies, plans, programs and projects) as well as a need to evolve strategies to achieve this objective.

Environmental Impact Assessment (EIA) can be considered to be a planning tool which assists planners in anticipating potential future impacts of alternative development activities, both beneficial or adverse, with a view to selecting the optimal alternative which maximizes beneficial effects and mitigates adverse impacts in the environment

The objectives for applying EIA are thus :

- to identify adverse environmental problems that may be expected to occur;
- to incorporate into the development action appropriate mitigation measures;
- to identify the environmental benefits as well as economic and environmental acceptability to the community;
- to identify critical environmental problems which require further studies and monitoring;
- to examine and select the optimal alternatives from the various relevant options available;

- to involve the public in the decision making process related to the environment;
- to assist all parties involved in development and environmental affairs to understand their roles, responsibilities and overall relationship with one another; and,
- to monitor environmental changes once a project is operational .

Most countries have now incorporated environmental consideration into the development process. This in itself is not conclusive evidence that EIA will actually be conducted, and if conducted it is properly carried out and used within the decision making framework.

To effect the above, EIA needs to be incorporated into the national laws of a country. Legal and institutional mechanisms need to be simultaneously developed in order that EIA procedures can be implemented effectively.

The interdisciplinary nature of environmental problems means that close cooperation and co-ordination are essential among the various governmental departments dealing with specific types of problems. Where expertise is not available within the government itself, it is necessary to consult with institutions of higher learning such as universities and other scientific establishments so that EIA can be properly conducted.

The interdisciplinary nature of environmental problems also means that the teams conducting an EIA should also be multi-disciplinary and interdisciplinary.

Tanzania is in the process of incorporating EIA in the development process. Part V of the proposed amendments to the National Environment Management Act provides the duty to undertake EIA, the right of people/public to comment on the draft EIA, the requirement for a comprehensive EIA and transparency in the EIA procedure.

LAND USE PLANNING

Land is a finite resource, while the natural resources it supports can vary over time and according to management conditions and uses. Expanding human requirements and economic activities place ever increasing pressure on land resources, creating competition and conflicts and resulting in suboptimal use of

both land and land resources. If human needs are to be met in a sustainable manner, it is essential to move towards more effective and efficient use of land and its natural resources.

Most countries have land use planning authorities and pollution control authorities both concerned with the protection of the environment. The land use planning authorities have wider interests and responsibilities. They are responsible for determining which zones should be delineated for industrial, residential, agricultural and other uses. They protect visual amenity, natural parks and areas of natural beauty and places of historic and archeological interests.

It is worth noting however, that there is a considerable overlap of powers between the two kinds of authorities. Even where the powers themselves do not overlap, a decision of a planning authority can have significant effect on the work of pollution control. For instance, when a hillside area is allocated for human settlement or agricultural purposes it may result in sewage, pesticides and fertilizer runoff to the valleys and water bodies in the basins. There is therefore a need for close consultation between the two bodies and close consultation in the exercise of their powers.

Tanzania has a number of legislation and institutions which deal with land use planning and management. However, as it will be further discussed in part 3.4, like in many other countries, the intended goals have not been met due to lack of enforcement procedures, consultation and co-ordination among the key players.

Countries need to have legislation concerning the management of the land, water and the resources therein, along with implementation regulations to clarify working directives. Town and country planning legislation can be the proper mechanism to require authorities to consult with other sectors likely to be affected by the planned activity before permission is granted for a specific development process.

However, the author is of the view that, granting of permission alone is not sufficient. A further precaution of requiring license to be obtained before certain operations can be commenced is necessary. The objectives of a licensing system ensures that the operations are placed in a suitable location and that they are, from

the outset, constructed and equipped in such a way that they can comply with the relevant pollution control laws.

2.3 UNCED RECOMMENDATION AND PLAN OF ACTION

Although many countries have given attention to environmental matters by defining environmental policies and enacting environmental protection laws, these have rarely been linked to economic policies.

Therefore, the crucial theme of the United Nations Conference on Environment and Development (UNCED) held in Rio de Janeiro in June 1992 was the integration of environmental and socio-economic factors into sustainable development.

Agenda 21 (the Earth's Action Plan) was adopted during the UNCED conference as a guideline for future national and international action in the field of environment and development.

Chapter 8 of Agenda 21 addresses the importance of integrating environmental factors into policy making, law, economic instruments and national accounting. The chapter consists of four program areas:

- (a) integrating environment and development at the policy, planning and management levels;
- (b) providing an effective legal and regulatory framework;
- (c) making effective use of economic instruments and market and other incentives;
- (d) establishing systems for integrated environment and economic accounting.

Each program area highlights the basis of action, objectives, activities and means of implementation.

Program (b) for instance which is aimed at providing an effective legal and regulatory framework (which is also the core of this study) provides that: "...To effectively integrate environment and development in the policies and practices of each country, it is essential to develop and implement integrated, enforceable and effective laws and regulations..."

8.17 requires that governments...should regularly assess the laws and regulations enacted and the related institutional/administrative machinery established at the national/state and local/municipal level in the field of environment and sustainable development...

These are essential guidelines since in most countries assessment of laws and institutional machineries is rarely done. As a result, tribunals and judicial bodies end up referring to outdated laws and regulations. On the institutional/administrative level authorities end up in conflicts.

Chapter 8 also recommends that:

- environmental impact analysis should extend beyond the project level to policies and programs (Para 8.5(b));
- governments should adopt a national strategy for sustainable development (Para 8.7); and,
- enactment and enforcement of laws and regulations is essential for the implementation of most international agreements in the field of environment and development (Para 8.15).

Chapter 10 deals with integrated approaches to the planning and management of land resources.

This program area aims at facilitating allocation of land to the uses that provide the greatest sustainable benefits and promoting the transition to a sustainable and integrated management of land resources. In more specific terms the objectives are:

- to review and develop policies to support the best possible use of land and the sustainable management of land resources by not later than 1996;
 - to improve and strengthen planning, management and evaluation systems for land and land resources, by not later than 2000;
 - to strengthen institutions and coordinating mechanisms for land and land resources, by not later than 1998; and,
 - to create mechanisms to facilitate the active involvement and participation of all concerned, particularly communities and people at the local level in decision making on land use and management, by not later then 1996.
- (Johnson 1993, 224)

To achieve the above objectives, the program calls for the review of the regulatory framework, including laws, regulations and enforcement procedures...(10.6(c))

10.9 Requires governments to promote awareness, alert and educate people on the importance of integrated land and land resources management... Governments should also establish innovative procedures...that facilitate and encourage the active participation of those affected in the decision making and implementation process...(10.10). However, the author is of the opinion that creating awareness in itself is not a solution to environmental problems. Individuals should be armed with specific rights to protect the environment in their constitutions as discussed in part 2.2

The chapter has examined the factors which have contributed to global unsustainable development patterns. It went further to highlight on measures which governments ought to take to halt and reverse the situation. It also discusses the type of legislation which is required to sustain a national policy for sustainable development. How is Tanzania adapting to the global requirements in so far as policies and legislation are concerned to achieve sustainable development? The next chapter examines the Tanzanian development policies and legislation in an effort to try and answer the above question.

CHAPTER THREE

THE TANZANIA ENVIRONMENT PROTECTION LEGISLATION

3.1 DEVELOPMENT POLICIES

This chapter examines the development policies which have led to negative impacts on the environment. Furthermore, it examines the existing environment protection legislation and how it has been able or failed to support the development policies. The chapter then discusses the organizational structure and its constraints.

Environmental problems and resource use conflicts are on the increase in Tanzania (NCSSD, 1992). Land degradation, pollution and degradation of the marine environment are examples of environmental problems which adversely affect the socio-economic well-being of the Tanzanian population.

The principal objective of Tanzania's development philosophy has always been to meet basic human needs and improve the quality of life. Where there is poverty and suffering, development must be extended and accelerated. The principal sounds good. However, some of the development processes chosen were inappropriate and have brought negative impacts on the environment and human welfare.

The agricultural sector for instance, on which Tanzania's economy depends, illustrates the negative impacts which have resulted. Agriculture is the single most significant sector of the economy and accounted for almost 46% of the GDP IN 1990, involving nearly 90% of the work force and provides 85% of the

exports which are basically cash crops including coffee, cotton, cashew nuts, tobacco, tea and sisal.

Over the years, the government has put particular emphasis on agricultural development on the premise that it offers significant potential for the majority of the people to improve their standard of living. The adverse environmental effects which resulted were massive clearing of forest land to expand agricultural cultivation. Farmers are paid more for producing more no matter how (un)sustainable the methods. Along with the massive clearing of forest land there has been increased use of organic fertilizers and pesticides. These have caused land degradation in some areas such as in Iringa and Ruvuma, where the agricultural outputs have been falling over the years. There are reported cases of diseases such as skin irritations and eyesight problems in the Mbeya and Kilimanjaro regions due to excessive and improper use and handling of pesticides on coffee plantations.

Since independence, industrialization has been viewed as one of the foundations of socio-economic development. However, as discussed in part 2.1, the industrial development strategy was pursued without specific provision for the handling of chemicals to be used by the industries and the wastes arising from the industrial activities. As a result, the location, choice of technology, and actual operation of industries in Tanzania have been implemented without consideration for environmental implications, but rather to achieve socio-economic development goals.

The liberalization policy has had noticeable impacts on the environment. The policy was accompanied with privatization and encouragement of foreign investors. Land is alienated and allocated to individuals, local and foreign companies. This has subjected land to intensive use for short term gain.

It is important to bear in mind that, natural resources are not well utilized due to the fact that, adequate scientific research on them has not been undertaken. This makes it difficult for any management and conservation regulations or rules to be enforced. For any measures to be effective, proper data to ascertain the behavioral patterns must be established. This has not been done due to various reasons ranging from lack of trained personnel, scientific equipment,

limited funds available in the country and the present organizational structure which will be discussed in the following part.

3.2 PRESENT ORGANIZATIONAL STRUCTURE AND ITS CONSTRAINTS

Administratively, Tanzania is divided into ministries, regions, districts, wards and villages. Within this set-up there are two types of administrations, the Central Government and the Local Government. The Central Government which comprises of the different sectoral ministries, is responsible for administration and maintenance of law and order at national, regional, district, ward and village level. The Central Government is represented at regional and district level by different sectoral officers who are identified as for instance, Regional/District Trade Officer.

The Local Government on the other hand is responsible for matters pertaining to production, economic, infrastructure and social services in the regions and in the districts. The Local Government which is answerable to the Prime Ministers Office is represented in the regions and the districts by Regional Development Directors and District Development Directors respectively.

The institutional structure is complex and creates an ambiguity in the division of roles and responsibilities concerning environmental management between the central and the local government. There is also lack of clarity of who should monitor the implementation of physical plans.

To demonstrate the complexity of the present setup and its constraints Manongi, (1992, 54) gives an example of the representation of the Ministry of Natural Resources, Tourism and Environment specifically the department of fisheries. He states that, the fisheries department in the Ministry of Natural Resources, Tourism and Environment, has the primary responsibility in advising the Government, the regional and district authorities on development, management and the execution of fisheries development policy.

The executory role of the Fisheries Division is hampered by the fact that at the regional and district level fisheries officers are answerable to the Regional/District Development Directors (RDD/DDD) who are themselves

answerable not to the Ministry responsible for Natural Resources but to the Ministry of Local Government.

He continues to state that, the rationality for this apparent anomaly is justified in the economies of scale provided by the RDD/DDD acting as multi-sectoral coordinators for the broad government interests in their respective regions. This has resulted in two shortcomings. The first... there has been no established mechanisms for coordination of the management efforts. As a result, it is not unusual to have different districts and regions acting differently.

The second disadvantage stems from the dominant and even deciding influence of the RDD's or DDD's in terms of channeling funds for development activities...This type of setup leaves a number of questions unanswered. For instance how can a single authority be able to advise and coordinate matters pertaining to different sectors? Does it mean that the RDD's and DDD's are multi-sectoral professionals with expertise in each sector?

This organizational structure has also contributed to a great extent to the current environmental problems. It is filled with gaps, overlaps and inadequate coordination. Causing resource use conflicts between the different sectors in the central government and the local administration. An example of conflicts of interest between sectors can be reflected in Gold mining activities which are carried out in the Geita forest reserve. In preparation for the mining activities, there is extensive tree felling and land stripping which has resulted in deforestation. The forest reserve also consists of mangrove resources which are important as fish breeding grounds. At the same time, the forests are a source of building materials. This brings fisheries, forestry and mining authorities in conflict over jurisdiction and priority over the natural resources. Environmental management is cross-sectoral in nature, thus, cross-sectoral coordination is important to support sustainable development goals. It is even more important in Tanzania where no environmental policy exists.

Management of resources is vested within different sectoral ministries. Matters pertaining to pollution control and management lie with the different sectoral ministries and different institutions and in a number of legislative Acts. The government's recognition of a need to coordinate and deal with environmental and

natural resource matters from a cross-sectoral perspective was followed by the establishment of the National Environment Management Council (NEMC) in 1983.

NEMC was established to undertake the following functions:

- formulate policy on environment management;
- coordinate activities of all bodies concerned with environment activities;
- evaluate existing and proposed policies of the government directed at the control of pollution;
- recommend measures to ensure that government policies, including development and conservation of natural resources, take adequate account of environmental effects;
- foster cooperation between government, local authorities, and other bodies engaged in environmental programs; and
- stimulate public and private participation in programs and activities for the national beneficial use of natural resources.

Since its establishment in 1983, NEMC has been able to formulate a proposal for a National Conservation Strategy for Sustainable Development (NCSSD), a proposal for an Environment Protection Bill, and it has prepared amendment proposals to the National Environment Management Act. (Kamukala)

In 1991, the Division of Environment was created within the Ministry of Tourism, National Resources and Environment. This government division is charged with addressing environmental issues. Since its creation the division has been instrumental in organizing a number of workshops on the environment including one on implementation of Agenda 21 and has drafted a proposal for the national environmental policy (Mugurusi).

The present organizational setup however, has the following constraints:

- The establishment of the Ministry of Environment did not clarify the Ministry's responsibilities vis a vis the responsibilities of other sectoral ministries and institutions, for instance NEMC and other sectoral bodies. As a result, relationships between the Ministry responsible for Environment and the other sectoral bodies and institutions which have responsibilities which impact on the environment have not been solidified.
- Lack of cross sectoral coordination, unspecified responsibilities

- and overlapping of functions has led to failure in ensuring that natural resources and the environment are managed sustainably.
- There is inadequate coordination among central government bodies and between departments of the central government ministries.
 - There is inadequate legal provision for an administrative mechanism to handle specific local matters for example catchment areas and wetlands leaving these ecosystems open for abuse.
 - Both NEMC and the Ministry responsible for Environment lack sufficient personnel to carry out comprehensive regulatory programs.

The following part illustrates how the above constraints have contributed to an un-sustainable development pattern along the Lake Victoria region.

3.3 FOCUS ON THE LAKE VICTORIA DEVELOPMENT PROCESS

The impact of development on the environment is manifested in agriculture, transportation, industries and human settlement development. To maintain growth in the agricultural sector, the use of pesticides and fertilizers has to increase, with the possible destruction of inland waters and coastal areas for other development such as fisheries.

Development of mining activities usually results in soil erosion and pollution to inland waters and coastal waters. In gold mining activities for example, water pollution results from the use of mercury a heavy metal used in gold processing. Use of forest land for mining purposes increase the incidence of floods and siltation of rivers and lakes.

Industrial development usually closely associated with urban development often produces wastes that pollute the environment. The main hazard being pollution of water bodies, and risk to human health.

The Lake Victoria region is not an exception to the above impacts. Lake Victoria is situated across the equator between Latitudes 0° 31' N and 3° 54' S and Longitude 31° 19' E to 34° 54' E. It is the largest lake in Africa and second largest

fresh water body in the world after Lake Superior in the USA. The lake is situated at 1124m above sea level. With a surface area of 68800 km² and an adjoining catchment of 1840000 km². The lake is rather shallow with a mean depth of 80 m.

The lake is shared between three countries namely Tanzania, Kenya and Uganda. Tanzania controls 51% of the total area of the lake. The watershed area on the Tanzania side can be roughly defined as being the three Regions of Mara, Mwanza and Kagera. Other major towns include Jinja and Entebe in Uganda and Kisumu in Kenya.

The natural resources in the area and its catchment are used to obtain food, shelter, and energy, to provide residential and industrial water supply, transportation, to irrigate land and to dispose of human, agricultural and industrial waste.

(For purposes of this study, focus will be on the Mwanza region which is an appropriate example of the developments and problems taking place in other towns along the shores of the lake in Tanzania and in the neighboring countries of Kenya and Uganda). The population of Mwanza region according to the 1988 census is 1,878,271 and the birth rate is 2.6% growing at an average of 7% per annum. This suggests a steadily increasing strain on natural resources and demand for fresh water as well as a need for pollution control from the produced domestic wastes.

The main sources of pollution in the region to the waters of Lake Victoria include: Industrial pollution, domestic pollution and non point sources from agriculture and mining.

INDUSTRIAL POLLUTION

The main industries deal with textile manufacturing, cooking oil, fish processing, leather and related industries, soft drinks, garages and oil jetties. All of them produce wastes with high BOD's and some release heavy metals in their effluents (Mashauri). At Lake Soap Industries LTD.; for instance, contaminated water produced during the refining process is led directly into the lake through a ditch without any treatment, together with cooling water. The same procedure

applies for Vegetable Oil Industries Ltd. (VOIL) and the fish Industries (see appendix 3).

Apart from the fish industries most of the industries were established more than 15 years ago. Which means the process of raw discharge of effluents has been going on for that period and continues today.

In a study conducted by Scheren P.A.G.M, Bosboom J.C and Njau K., 1994 it was revealed that there is a large pollution load emitted without treatment from industries directly or indirectly into the lake, as summarized below.

MWANZA TEXTILES LTD (MWATEX)

Raw Materials: Ginned cotton, maize starch, sodium peroxide, sodium hypochlorite, detergents, dyestuff and coloring agents.

Waste Produced: Waste water is characterized by a black color, caused by a thick layer of oil and grease. Waste water is treated in sedimentation ponds located 1.5 km away from the plant, and which is being shared with Nyanza Bottling LTD and The Tanzania Electric Supply Company (Tanesco). Apart from being unmaintained the capacity of the ponds is much too small, causing retention time to be negligible. Discharge occurs into Nyashiri or Mirongo rivers, near the lake entrance. Solid waste in the form of cotton waste, is dumped at a dumping site.

MWANZA TANNERIES LTD

Raw Materials: Wet salted dry suspension hides, chromium, sodium chloride, sodium formate, sodium sulfate, sulfuric acid, fat licol, mimosa, sodium carbonate, formaldehyde, organic and inorganic dyestuff.

Waste Produced: There is a waste treatment plant (several sedimentation ponds) which have not been used for years. Waste water enters into the lake directly or indirectly, by infiltration process through soil. Waste contains chromium and many hazardous chemicals. Solid waste is put directly outdoors.

LAKE SOAP INDUSTRIES LTD

Raw Materials : Indigenous fats and oils, tallow, caustic soda, sodium silicate perfumes and coloring agents.

Waste Produce: Contaminated water produced during the refining process is led directly into the lake through a ditch, without any treatment, together with cooling water.

VEGETABLE OIL INDUSTRIES LTD (VOIL)

Raw Materials : Cotton and sunflower seeds, palm oil caustic soda, bleaching agents and antioxidants.

Waste Produced: Waste is characterized by a yellow color, and comprises contaminated water from the refinery and cooling water. Water is being discharged into the lake without any treatment. Solid waste is mainly husks from oil seeds which is used as fuel in the boilers. The ashes are being put on a dumping site.

NYANZA BOTTLING LTD

Raw Materials : Water ferrous sulfate, caustic soda, sodium metasilicate, chlorine (65%), soda ash.

Waste Produced: Waste water is characterized by a black color, caused by activated carbon. Waste water is being discharged into the lake via the same treatment ponds that Mwatex and Tanesco are using, and which remain unmaintained.

In general, technology and machinery used in industries in the catchment area mostly dates from 15 years or more ago. Waste control and good housekeeping is hardly being regarded. The few waste water treatment sites are not operating properly. Waste water is either being dumped directly into the lake or at a short distance from the entrance of the lake.

DOMESTIC WASTE

The amount of organic waste generated in Mwanza township is estimated to be about 200 tons per day. The main sources being markets and households. Domestic solid waste generated is estimated to be around 110 tons per day. Waste

collection services are not adequate as most of the trucks are broken down. There is crude dumping of waste, garbage is not sorted out; and, there is no treatment plant. The waste enters the lake through run-offs via estuaries and through ground water movements. The extent of ground water pollution is however unknown because of the lack of ground water monitoring program. (Luboja).

MUNICIPAL WASTE.

The majority of Mwanza town is not provided with sewers. The central sewerage area hardly reaches 10% to 15% of the total estimated flows. As such, a lot of the domestic sewage either flows untreated into Lake Victoria or is lead into a number of rudimentary treatment systems such as pit latrines, septic tanks or and soakaways. In any case these systems are inadequate in terms of design and construction leading to groundwater and lake pollution. Even the sewage from the sewerage area is now flowing untreated into the Mirongo river due to the non-functioning of pumps which were supposed to lift the raw sewage to the Pansiani oxidation ponds. Due to pump failure the total amount of waste water (approximately 2900m³/day is being passed directly into Lake Victoria (Mashauri).

Domestic waste dumped into a body of water is a potential hazard to human health, owing to the fact that sewage contains pathogenic bacteria which are harmful to living organisms. Sewage dumped into a body of water adds to it large amounts of quantities of nutrients, unwanted bacteria and turbidity which produces basic changes in the ecological community concerned and results in eutrophication (John Clarke, 1983, 104).

There is evidence that chemicals from sewage are contributing heavily to mortality of aquatic life and decline in fish catch in the lake, as a result of raw discharge of sewage (Mulegi).

NON POINT SOURCES OF POLLUTION - AGRICULTURE AND MINING

Cotton being a main cash crop in Mwanza, pesticides and fertilizers wash down from the farms adding to the eutrophication of the shallow lake. A comprehensive study is yet to be conducted but it is certain that this is a source of pollution of the lake (Mashauri).

There is evidence that mining activities are increasing at a very high rate especially gold panning along the tributaries leading to the lake. In gold mining activities mercury is used to process the gold and the residue is left in the river valleys. The heavy metal ends up in the lake sediment to be taken by fish which is eventually consumed by humans.

ORGANIZATIONAL SETUP

The Mwanza region administrative and organizational setup takes its form from the setup discussed in part 3.1. As a result, resource management and environment protection responsibilities are scattered in different authorities.

In so far as environmental matters are concerned responsibilities are scattered in different municipal authorities, with water, health, agriculture, and natural resources each representing its own sector. There is clearly a lack of coordination among the different authorities. The author was informed by the Regional Health Officer that the health department, for instance, is not involved in the industrial licensing process. As a result, health matters especially those related to the effluents and emissions to be discharged are not considered.

The regional trade officer Mr. Mweisijo informed the author that, the regional trade office is not involved in the process of securing land for proposed industries in the region. As a result, industries are located at sites not suitable for environment protection purposes. This is evidenced by the way the industries are located, along the shores of the lake with no treatment plants, thus emitting untreated effluents into the lake.

Management of the lake and its resources is a major problem. The fish in the lake are under the management of the Ministry of Tourism, Natural Resources and Environment specifically under the department of fisheries. The industries along the lake shores which include the fish processing industries are under the Ministry of Industries and Trade. It is unclear whether the management of the waters of the lake is under the Ministry of water or the Ministry of Tourism, Natural Resources and Environment. This is a problem especially when it comes to cleanup issue. Who should be responsible, the industries interested in the

resources and the ones causing pollution or the Ministry of Water responsible for maintaining water quality?

In addition, the utilization of the resources in the region is distributed on the basis that whoever owns it can exploit it. As a result, neighbouring authorities can interfere with each other directly and indirectly as they pursue their independent course of action. For instance, some areas suitable for agriculture have been utilized for urbanization and industrial development, thereby pushing the farmers into the interior.

Clearly, the problems of administrative fragmentation and overlapping inevitably leads to the following:

- (i) Weaknesses in integration, coordination and administration in general;
- (ii) Lack of connections between research and exploitation of the natural resources;
- (iii) Competition for power as authorities want to extend the limits of their authorities.

Having reviewed the organizational setup and its constraints, the following part will analyze the present national legislation pertaining to environment protection. This analysis involves the perusal of the existing legislation with a view to identify its effectiveness and whether it can accommodate the development changes taking place in the country at present.

3.4 PRESENT NATIONAL LEGISLATION

Environmental legislation in Tanzania is comprised of about one hundred Acts, Ordinances and subsidiary legislation which in one way or the other deal with environment protection.

Since independence, Tanzania's environment has been managed in a similar way as it was in the colonial era. Most of the ordinances enacted during that time remain in force today.

The legislation might have been relevant for the prevailing conditions at the time of formulation, but it has become inadequate for the new conditions that have

been brought about by rapid development and the economic restructuring which Tanzania is currently undergoing. Therefore, environmental problems related to industrialization and urbanization need to be addressed more closely and carefully. The progress which has been achieved so far as a result of development efforts and economic restructuring, raises legal problems for the environment. The existing legislation does not cover all aspects of environmental concern. For example, air pollution and hazardous waste management, are basically user oriented. Standards on environmental quality and waste disposal are not stipulated.

Legislation amendment procedures require approval of the parliament, which meets four times in a year. At times long discussions are required before an amendment is approved making it difficult to cope with the development changes taking place in the country.

Environment management responsibilities are lodged in Ministries addressing different sectors such as those of Water, Lands, Natural Resources, Industries, Mining and Agriculture. Each ministry/sector devises its own strategies and structures for management. Few formal requirements for coordination with other relevant sectors exist. The level of communication is not clearly defined. It depends on the seriousness of the matter, but in most cases middle level officers with no decision powers are involved, making for a long process as they have to go back and report to their bosses on what transpired before a decision can be taken. This results in the management of resources in an un-sustainable manner especially in a situation where a decision is supposed to be taken immediately.

Enforcement mechanisms are weak and inefficient. Enforcement bodies lack trained personnel in the field of environment protection. When prosecutions occur, existing penalties are very low, encouraging industries to pay the fine rather than resort to application of anti pollution devices. Environmental Impact Assessment is not embodied in any of the legislation and is therefore not a legal requirement.

As mentioned above, there are many Acts, Ordinances and regulations that address the environment in Tanzania. Too many for all of them to be discussed in this study. Therefore, the study will only discuss legislation which the author

considers relevant to problems brought about by rapid development and the economic restructuring currently taking place.

WATER LEGISLATION

The Waterworks Ordinance, Cap 281, Urban Water Supply Act, NO. 7 of 1981 and Water Utilization and Control Act, NO. 42 of 1974 (as amended), addresses water pollution issues directly. Water pollution can be a result of wastes from industry, households, public facilities and other activities such as mining, when effluents are discharged directly into rivers and streams, into the lakes and into the ocean. Or, may be discharged on land finally finding their way into the water by runoff or underground water movement. The Waterworks Ordinance specifies that pollution of water supplies in certain instances are offenses under the Ordinance, punishable by penalty. The Urban Water Supply Act gives the National Urban Water Authority power to make rules regarding surface of ground water pollution and specifies that, it is an offense to pollute water supplies, in certain instances punishable by penalty. The Water Utilization and Control Act establishes temporary standards for receiving waters and effluent discharge standards in Schedules in the Act.

The above legislation does not however, stipulate what kinds of waste, whether solid or liquid could cause pollution to water supplies. Nor do they stipulate (apart from the temporary standards established in the schedules to the Water Utilization and Control Act) the environmental standards to be met.

These legislation might have been adequate to control water quality before pollution from current industries and activities became a major environmental problem. However, now they lack adequate definition of standards to become an effective control against pollution, in that they do not stipulate specific standards on environmental quality and waste disposal.

LAND USE

All land in Tanzania is public land and under the control of the state. Land rights and titles are governed by use and occupation. Much of the land in the rural areas is owned under customary land tenure while in urban areas there are

statutory rights of occupancy for a specific period of time. Currently, public land can be leased to villages, which in turn can lease it to individuals. This has resulted in insecurity in tenure. No new laws have been enacted to structure village demarcation and titling, resulting into conflicts between customary law and statutory titles. (NCSSD, 1992)

Several pieces of legislation deal with land use planning and management, they include:

The Land Ordinance, Cap 113, The Town and Country Planning Ordinance, Cap 378, The National Resources Ordinance, Cap 259, The National Land Use Planning Act, 3 of 1984, The Land Acquisition Act, NO. 47 of 1967, and the Regulation of Land Tenure Act.

Local authorities are given various powers under the Local (District and Urban) Authorities Act of 1982 to establish by-laws with regard to the protection of soil, agriculture, water supplies and other natural resources.

Numerous pieces of legislation were enacted in an attempt to control land use. However, there is no law which calls for sustainable land utilization and no penalties are available for misuse and degradation, resulting from for instance the excessive use of fertilizers.

Environmental restoration and reclamation after use is not a legal requirement. Coordination between the different authorities, ministries and local governments is only thinly provided for, resulting in conflict of interests and responsibilities.

The existing land legislation and the institutional set up for land tenure are inadequate to deal with dynamic changes such as the changeover to a market oriented economy, privatization, increased urbanization, and population growth. The insecurity of tenure which has resulted from the present tenure system results in a number of environmental problems such as the promotion of access in particular to forest and woodlands.

WASTE MANAGEMENT

There is no single legislative instrument which specifically deals with waste management. As a result solid waste is dumped on urban and rural areas haphazardly, due to insufficient disposal sites, weak local government enforcement capacity and inadequate collection mechanisms. Some legislation for instance the Local Government Authorities Act, the Natural Land Use Planning Act and the Town and Country Planning Ordinance in some way deal with wastes. But, they do not provide for location of dumping sites to be where the least environmental and health impacts will occur. Maintenance of standards at the disposal sites do not protect the public from public nuisance such as odor and smoke resulting from burning of waste.

Environmentally sound disposal methods such as sanitary landfills, composting or incineration are not practiced or required

HAZARDOUS SUBSTANCES

There is no legislation which deals with the generation, handling, use, storage and disposal of hazardous substances.

ENVIRONMENTAL POLLUTION (AIR)

The Penal Code, Cap 16 and the Merchant Act, Act 43 of 1967 are the only legislative instruments which deal with air pollution. They do not however set emission and air quality standards, neither do they specify a penalty for air pollution. Polluters emit anything at will and as much as they need.

INDUSTRIAL WASTES

There are no effective and enforceable legislative instruments governing the levels of industrial effluents in Tanzania. As mentioned before EIA is not a legal requirement, thus, industries have been established and remain with no treatment plants. Even the simplest forms of treatment such as sedimentation are lacking and there is continuation of heavy pollution of the water bodies and the environment in general (see appendices 1 and 2).

This has resulted in a high level of pollution in for example the Themí river in Arusha, the Rau river in Kilimanjaro, the Pangani river in Tanga and Lake Victoria in Mwanza region (NCSSD, 1992).

3.5 STRENGTHS, EFFECTIVENESS AND WEAKNESSES OF PRESENT LEGISLATION

With so many legal instruments related to the environment, management against pollution and conservation of environment quality should be a relatively easy effort from the legislative standpoint. Unfortunately, for various reasons enforcement of these legal instruments to prevent pollution has been ineffective and inefficient. It has become increasingly obvious that this legislation is inadequate for the management of the environment under the pressure of rapid national development.

The laws are piecemeal, each limited to a specific subject and collectively they are not able to bear effectively on environmental issues as a whole.

Some of the legislation lacks a clear definition of the enforcement agent, or a clear hierarchy of enforcement agencies, or is inadequate because it contains no specific principle or reference to a criterion upon which regulations or standards can be formulated as circumstances demand. Because of these weaknesses in the Tanzanian legal instruments for environmental control, a more comprehensive and specific environmental law is needed.

Penalties and incentives are weak or non existence. Most penalty provisions were established more than 20 years ago. With the high rate of inflation and the decreasing value of the shilling, these penalties have become meaningless. Law violators have no incentives to comply with the law. It is cheaper for them to pay the fines than comply with the requirements of the law.

EIA is not a legal requirement as a formal management tool. As a result environmental issues are often sacrificed in favour of short term development

objectives for instance the current decision to allow construction along the Oyster Bay beach (see appendix 4).

Enforcement personnel, Prosecutors, Judges and magistrates lack adequate training to deal with environment issues. A criminal case involving a person stabbed and wounded carries more weight than a prosecution involving toxic pollution from an industry which could wipe out a whole village. This was demonstrated in Criminal Case No. 110 of 1993 (unreported) in which the magistrate held that:

"...In sentencing the accused industry I take into consideration the fact that the industry has created employment to our people and a ready market for the fishermen. To stop its operation because of lack of electrical incinerator would be a luxury which our young nation can not afford. The nation has called upon foreign and local investors in industrial economic sectors to make our economy grow. To stop the operations of our young industries would mean to scare foreign investors. Our legal system must work hard to encourage the growth of our young industries..." (full text of the case see appendix 5).

There is no special tribunal and or special court to hear cases of an environmental nature. The few prosecutions brought in the regular court system are often delayed for years. If traffic offenses have special court sessions, why not cases related to the environment?

There is no legislative mechanism provided where two or more sectoral bodies can refer their opinions for decision making in case of conflicting opinions on an environmental matter.

The level of communication among the different sectoral bodies and between the local and central government is not clearly defined. That is, at which level should the bodies communicate at the lower level or at the top level in order to speed up implementation?

3.6 ISSUES AND IMPLICATIONS OF THE PRESENT LEGISLATION

With the present legislative framework, a number of implications can be observed for instance lack of environmentally sound technology. The existing legislation does not contain provisions for the development or importation of environmentally sound technology. In addition the National Investment (Promotion and Protection) Act, does not in any of its provisions require information about the type of technology to be used. Neither does it make it a legal requirement to have information about the past records of the technology with regard to its failures and or success. Furthermore, section 13 of the Act lists the items for consideration before an approval can be granted. These include:

- the maximization of foreign exchange earnings and savings;
- the expansion of food production;
- the achievement of a high degree of technology transfer;
- the creation of employment opportunities and development of human resources; and,
- the efficient utilization, expansion and diversification of the productive capacity of existing enterprises;

Environment matters are not included. The procedure with respect to applications provided for in Article 12 does not include submission of the applications to the Ministry of Environment for their comment and or recommendations.

During an interview with Mr. A.L.T. Asmani the author was informed that the investment application forms require the investor to list machinery and goods to be imported for tax and duties exemption purposes only not for environment protection purposes.

The author was also informed that, in considering the applications, prior activities of the intended investment are not taken into consideration. (Asmani). In brief, any type of technology can be transferred into Tanzania whether it is environmentally sound or not.

Industrial Licensing is governed by the National Industrial Licensing and Registration Act, (under the Ministry of Industries and Trade) which requires the National Industrial Licensing Board to review proposed activities of the applicant to

ensure that an adequate market exists for their products. Adequate protection and safety of the environment is not considered.

Inadequate pollution control and management has resulted in contamination of water sources (see appendices 1 and 2) and fish breeding grounds. Similarly, air pollution has increased. For example, emissions from the Wazo cement factory in Kunduchi which leaves brown dust on roof tops and throughout the area.

Lack of proper zoning, improper plot allocation mechanisms and industrial development have led to the problem of illegal residential occupants "squatters". They pose a big problem as they build in valleys or on hillsides with no proper toilet facilities. During the rainy seasons everything they produce in form of waste is deposited into the rivers, lakes and the ocean. Outbreaks of diseases such as cholera are a common phenomena.

Given the number of factors which have contributed to un-sustainable development in Tanzania as discussed above, Tanzania has undertaken a number of measures to correct the mistakes with a view to attain sustainable development. The measures are considered further in the next chapter.

CHAPTER FOUR

TANZANIA ENVIRONMENTAL PROTECTION EFFORTS AND ENVIRONMENTAL LEGISLATIVE NEEDS

4.1 WHAT IS BEING DONE

This chapter addresses the measures which Tanzania has taken to protect the environment and conserve the natural resources. The efforts include, the enactment and amendment of existing legislation. Review of existing policies and proposals to develop a national environment protection policy. Establishment of institutions such as NEMC and the Ministry of Environment and integrated management of shared resources with focus on Lake Victoria. Further, the chapter examines what should be done to meet the global strategies in relation to policy and legislative matters.

Traditionally, economic development policies have been developed to help the country make efficient use of the scarce resources whereby adverse effects on the environment were neglected in the past. Emphasis was placed on socio-economic planning whose indicators do not reflect the environmental costs of development to society.

Currently, local and international awareness is in place to support paying more attention to the environmental aspects of development and to integrate the two into sustainable development planning. The awareness of the harm to the environment caused by un-sustainable development activities, to as well as the degradation of natural resources, has led the political and legislative authorities in Tanzania to look for ways to protect the environment. These efforts can be traced

back to the 1980's where a number of institutions were established and legislation enacted, geared at controlling the use and conservation of natural resources. It is now evident that to alleviate poverty and at the same time achieve sustainable development, conservation of the environment is an un-avoidable pre-requisite.

Thus, the government in 1983 enacted the National Environment Management Act which established the National Environment Management Council (NEMC). The functions and the activities which have been carried out by the council since it was established have been discussed in part 3.1.

The National Land Use Planning Commission was established in 1984 to recommend measures to the government to ensure that government policies, including those for the development and conservation of land, take adequate account of effects on land use. The commission was also mandated to prepare regional physical land use plans, formulate land use policies for implementation by the government and specify standards, norms and criteria for protection of beneficial uses and maintenance of quality of land. In addition, the commission has authority to issue orders, notices, directions and other documents to regional and district land advisory committees. The commission also has the authority to carry out investigations into the problems of land use planning.

In 1988, NEMC carried out and co-ordinated the initial planning and discussions of methodologies to develop the National Conservation Strategy (NCS).

The NCS identified priority areas for action within the NCS which include:

- i) Planning
- ii) Legislation / Legal aspects
- iii) Administrative and institutional matters
- iv) Resource use patterns
- v) Policies
- vi) Education and information and public participation
- vii) Research and technology.

As a result of the UNCED Conference in 1992, which adopted Agenda 21, the NCS was reviewed and renamed the National Conservation Strategy for Sustainable Development (NCSSD) widening its scope to include a variety of

sectoral specific problems of sustainable development, along with possible solutions.

Realizing that environmental issues are multi-sectoral and cross institutional in nature, the strategy adopts a multi-sectoral approach. It seeks to involve government agencies, NGO's, the private sector and the community at large. The goals of the NCSSD process are among others:

- to assist the nation in achieving development with conservation by highlighting strategies which consider natural resources issues and priorities;
- to review environment and development related plans, policies and legislation with the ultimate aim of making recommendations to ensure that plans and policies become integrated and more effective, and legislation more enforceable;
- to make proposals to increase public awareness on issues related to environmental conservation, through promotion and strengthening of conservation related education, information and extension packages;
- to promote environment related research and adoption of environmentally sound technology; and,
- to generate the ability and commitment to implement the strategy through working methods which encourage multi-sectoral participation.

It is sufficient to mention that the NCSSD is still in the form of a proposal which was submitted to the government by NEMC in 1994 for consideration. The proposed strategy is in line with chapter 8.7 of Agenda 21 which recommends that governments should adopt a national strategy for sustainable development.

In 1991 the Ministry of Environment was formed. The department of environment is currently in the process of preparing a National Environment Policy for the country (Mugurusi). Working together with the NEMC the department is in the process of reviewing the existing legislation pertaining to environment protection. A draft proposal for the amendment of the National Environment Management Act and a draft proposal for the proposed Environment Protection Act exist. The amendments proposed in the National Environment Management Act

include provisions (in Part V) for conducting EIA's before a planned activity is approved.

Sectoral ministries such as the Ministry for Lands, Agriculture, Water, Energy and Natural Resources are entrusted with responsibilities to develop policies and legislation for the protection of resources under their respective jurisdictions. However, it has been realized with time that, most of these sectoral policies and the legislation have been outmoded.

As a result, most of the individual sectors are currently engaged in policy and legal revision exercises related to sustainable development and environment protection. For example, the Forestry Sector is implementing the Tropical Forestry Action Plan, with the aim towards review of the Forestry Policy and Forestry Ordinance. The Fisheries sector has engaged the Food and Agriculture Organization to evaluate and determine whether an integrated coastal zone management plan is required. The Wildlife sector is in the process of drafting new legislation (a draft exists), as are the Energy (electricity) and Fisheries sectors (drafts exist in these areas). The Agriculture, Livestock, Wildlife, Land Tenure and Science and Technology sectors are each in the process of updating their sectoral policies (Kamukala).

The revision process has been initiated and is being carried out by the relevant Ministries and/or departments as a result of the current awareness on the need to integrate environmental matters into the development planning process.

There are a number of NGO's in the country which have been working hard to promote environment protection through different ways. The Business Care Services for instance is a group of consultants based in Dar-es-salaam who aim at assisting the public in developing sustainable businesses. They approach industrialists, appealing to them to abide with environment protection legislation. They approach the financing institutions such as the Bank of Tanzania, the National Bank of Commerce and the National Insurance Company urging them to include sustainable development policies in their activities; e.g. requiring investors to conduct EIA's (Mbuguni).

Since 1987, Business Care Services has developed its own newsletter (Agenda) and newspapers which include the Business Times and Majira (published

in Kiswahili). The newspapers are famous in publishing articles related to environment issues aimed at creating public awareness on environment matters.

Another NGO worth mentioning is the Lake Victoria Ecological Society (LAVESO) which is based in Mwanza. It is an association of people from all walks of life. It is comprised of lawyers, engineers, business men and members of the public. LAVESO's objectives are protection of Lake Victoria to keep it free from any type of pollution or environmental degradation, to maintain the ecosystem and to create public awareness on key environmental issues. The association was formed after it was realised that lake pollution was growing unabated. The association is in touch with the public by way of posters and seminars. They act as a force to compel the government authorities to perform their duties (Mwenisongole).

On the international arena Tanzania has signed a number of international conventions pertaining to environment protection (see full list in appendix 6) However, most of these conventions have not been ratified for instance the Convention on Biological Diversity. The few which have been ratified such as the Basel Convention on the Control of Transboundary Movement of Hazardous Wastes have not been translated into national law hindering their implementation at national and local level.

4.2 WHAT SHOULD BE DONE TO MEET THE GLOBAL STRATEGY?

Having examined the measures which have been undertaken by Tanzania to protect the environment and conserve the natural resources by integrating environmental issues into the development process, it can be concluded that there is an urgent need for a policy framework to guide the governance and policy makers of Tanzania in the struggle towards sustainable development.

There are several actions to be taken in the attainment of this goal. The following are considered to be the main steps:

POLICY

A fundamental requirement for integrating environmental issues into the development process is a national policy for environment protection and resource conservation. Tanzania has not developed an environment protection and resource conservation policy.

In this regard, one of the first tasks of the Department of Environment would be to address the development of a comprehensive national policy, with the dual purpose of increasing public awareness of the benefits to be gained from sound environmental protection and resource conservation. Second, it should provide a framework for realizing sustainable development.

McLoughlin & Bellinger, (1993, 23) highlighting characteristics of a national environmental policy, observe that, the policy should be able to set the following:

- a pollution control system which is properly co-ordinated with other policies especially those related to development and utilization of natural resources;
- a control system which at least has a procedure for consultation with, within and between departments of government who stand to be affected, beneficially or adversely by the new or changed forms of control. In general it should establish mechanisms and procedures to facilitate inter-sectoral co-ordination of policies and unified directions of integration of environmental concerns in development plans, resource utilization and management planning;
- a procedure whereby unforeseen major emergencies and other matters of grave public concern can be referred to the highest authority for decision;
- an investment of necessary powers with relevant authorities to ensure the implementation of the agreed policies;
- a research program into matters such as population and its distribution, land use planning, developments and proposed developments in industry and agriculture, new forms of pollution, new sources of pollution and pollution trends; and,
- development of an adequate resource data base.

The overall objective of the environment protection policy should be to restructure the decision making process so that consideration of socio-economic and environment issues is fully integrated and a broader range of public participation assured.

LEGISLATION

Amendments and enactment of laws related to environment protection are underway in the country. The proposed amendments to the National Environment Management Act which seeks to incorporate EIA requirements into the Tanzanian legal system is to be commended.

However, to be able to meet the global environmental strategies the proposed amendments should be in line with UNEP guidelines which consist of a preliminary note, three goals and thirteen principles. The preliminary note indicates that environmental impact assessment of planned activities has the purpose of ensuring environmentally sound and sustainable development.

The first goal seeks to establish that before decisions are taken to undertake or to authorize activities that are likely to significantly affect the environment, the environmental effects should be taken fully into account;

The second promotes implementation of appropriate national procedures in order to implement EIA;

The third encourages countries to develop reciprocal procedures for notification, information exchange and consultation on activities that are likely to have significant transboundary environmental effects. (UNEP, 1991)

ENVIRONMENT PROTECTION ACT (THE UMBRELLA ACT)

As expressed in the previous chapter, Tanzania has not enacted an Environment Protection Act. It is the author's opinion that there is a pressing need to enact such a law to provide an adequate and coherent legal basis for the implementation of the policy objectives.

To meet the global strategy, the objectives of such a law should be to promote the integration of environmental and development policies through

appropriate legal and regulatory instruments and enforcement mechanisms at national and local levels.

In that respect, the proposed environmental legislation should provide a practical framework at the national level to implement environmental standards and regulate activities of enterprises and the people, with respect to environmental objectives.

The legislation and regulation resulting from it should, at all levels, be able to bind government agencies, the private sector and the community at large in the building of an integrated and co-ordinated administration.

It should specify measures to be taken by existing industries which are currently polluting the environment due to the lack of treatment plants and provide mechanisms for co-ordinating the activities of different sectors.

Establish an environmental court or tribunal to hear cases brought by the public of an environmental nature. In addition, the law should establish a system for public access to environmental information.

A provision in the law should provide for a general upgrading of penalties under various environmental related legislation. The penalties should be brought up to the current economic value of the affected environments. Penalties should be fixed in a stable hard currency to avoid erosion of penalty impact brought on by the depreciation of the Tanzanian Shilling.

The law should be able to define activities which are environmentally hazardous and subject their activities to governmental authorization through permits, certification and licenses. With regard to hazardous products such as industrial chemicals, pesticides or pharmaceuticals, authorization from the government should be required for the manufacture, use, marketing, importation or exportation of the products. And provide for mechanisms for the ultimate disposal of hazardous materials, wastes and by products.

LAND USE PLANNING AND ZONING

Land use controls play a major role in environmental law for both urban and rural areas. Thus, environmental matters must be considered when preparing zoning plan schemes for the country. Land use classifications specified in the plan should be sound for the life of the plan. Areas that are important for environmental purposes can be zoned for uses compatible with those purposes. Industrial activities (for instance industries which generate pollution and degrade resources) can be restricted to certain areas specified in the plan and can be required to meet certain design standards so that environmental threats to human health and water resources are avoided or minimized.

ORGANIZATIONAL SET UP

As it has been discussed above in the previous chapter, the current organizational framework has failed to effectively face the challenges of integrating environmental concerns into sustainable development activities. There is therefore an urgent need to bridge the gaps which exist between the central government and the local governments.

This can be achieved by:

- Identifying clearly divisions of responsibility between the central government and the local government;
- Clarifying who should monitor the implementation of physical plans;
- Establishing a mechanism which will allow the central government to operate in close collaboration with regional, district, and village authorities;
- Establishing environmental liaison units in all departments in central government ministries to ensure effective co-ordination and exchange of information between government institutions in implementing policies, plans and resource conservation. This could be accomplished by establishing a notification procedure by sectors of intent to pass subsidiary legislation under specific environmentally related Acts, and notification to undertake projects and activities which will affect other sectors.

Lastly, it is worth to underscore at this point that, the current policy and legal reforms should be directed at implementing Agenda 21 objectives at national and local levels. Thus, the reforms should be able to accomplish the following:

LOCAL AUTHORITIES

Local authorities have a major role to play in making sustainable development happen. Local authorities have responsibility over production, economic infrastructure such as roads, social services such as housing and industrial development. In addition, local authorities are responsible for the implementation of national policies. Being the level of government closest to the people, they should play a vital role in educating and mobilizing the public towards sustainable development.

This could be achieved by developing a local Agenda 21 for the community. Local officials should consult citizens and community businesses and industrial organizations to gather information and build a consensus in sustainable development strategies. This consensus would help them reshape local programmes, policies, laws and regulations to achieve Agenda 21 objectives. The process of consultation would increase people's awareness on sustainable development issues.

PUBLIC AWARENESS AND PUBLIC PARTICIPATION

Public participation in environmental matters and problem solving depends on the public understanding of environmental problems. At present there is an inadequate level of environmental education, public awareness and too few trained personnel in Tanzania to implement this. To improve the situation Tanzania should seek to:

- make environment and development education available to people of all ages, that is, through formal and non-formal education;
- work environment and development concepts, including those of population growth and its effects, into all educational programmes, with analyses of the causes of the major environmental issues (there should be a special emphasis on providing training of

- decision makers);
- involve school children in local and regional studies on environmental health, environmental and economic impacts of resource use; and,
 - the dissemination of law in simple language through radio programmes, press and booklets.

4.3 MANAGEMENT OF SHARED RESOURCES

LAKE VICTORIA RESOURCE MANAGEMENT INITIATIVES

As discussed in the previous chapters, environmental legislation, policies and plans have been employed at the national level to implement environmental standards and to regulate activities of enterprises and the people in the light of environment protection objectives.

At the international level, conventions, protocols and agreements have been providing a basis for co-operation among countries at bilateral, regional and global levels for the management of environmental risks, control of pollution and conservation of natural resources.

Tanzania shares a number of natural resources with neighbouring states which include:

A coastline which extends over 800 km from the border with Kenya to the border with Mozambique, and territorial water in the Indian Ocean bordering on the islands of Comoros and Seychelles;

Three large lakes : Lake Victoria which shares borders with Kenya and Uganda; (as discussed in part 3.2) Lake Tanganyika which shares borders with Burundi Zambia and Zaire; and, Lake Nyasa which shares borders with Malawi;

Rivers which comprise borders or flow between Tanzania and its neighbours; for example the Ruvuma with Mozambique, the Songwe river with Malawi, and the Kagera river with Burundi, Rwanda and Uganda; and,

National Parks such as Mkomazi bordering Tsavo in Kenya and Serengeti bordering Maasai game reserve in Kenya.

Realizing that environmental problems respect no boundary and that pollution generated in one country may impact seriously upon other countries, Tanzania has entered into several agreements with her neighbours for the management of the shared resources. The Kagera Basin Organization for instance is one of such arrangements aimed at joint management and use of the resources of the Kagera river. There is also an agreement with Malawi for the management and use of resources of river Songwe.

With regard to Lake Victoria, the bordering states of Kenya, Uganda and Tanzania, recognizing that they share an interest in the well being of the lake and its living resources, established the Lake Victoria Fisheries Organization in June 1994. The main objectives of the organization are to foster co-operation among the contracting parties, harmonize national measures for the sustainable utilization of the living resources of the lake, and to develop and adopt conservation and management measures. FAO is playing a major role in carrying out the programmes involved in the project. It is advising the three governments on what should be done. The EU, Netherlands, Japan and Germany have shown interest in funding the project (Norton).

Studies undertaken on Lake Victoria have indicated that there are changes in the limnology of the lake. Changes in the fish stock for instance have been observed over the years. Recent studies have shown that there has been increased turbidity in the offshore waters due to the increased phytoplankton biomass which could have started around 1970, and eutrophication around 1980 (UNDP/FAO, 1992) Causes of the changes have been attributed by development activities in the bordering states. These include urban and industrial developments, increasing agricultural and deforestation activities, soil erosion, introduction of exotic plants and fish species and population growth.

The need for effective management of water quality and reduction of the pollution levels within Lake Victoria has been repeatedly underlined as a serious problem by the three governments. Deteriorating water quality has reduced benefits to the bordering community and has become a health hazard to those

using the lake as a source of drinking water supply. In addition the deteriorating water quality presents a significant threat to fisheries and other living resources.

Wetland areas provide a natural filter for nutrients and silt from agricultural land and water bodies; but, the wetlands around Lake Victoria are increasingly unable to perform these functions as they are becoming converted to agricultural or other uses. Thus, land use in the basin is a major issue in the management of the lake.

In recognition of the existing problems the governments of the three bordering states on the 5th of August 1994, entered into an agreement on the preparation of a tripartite Environmental Management Program for Lake Victoria. The program is aimed at protecting the lake ecosystem and abating its pollution levels (Mbwana). To achieve the goals, task forces have been formed to focus on:

- i) monitoring water quality;
- ii) harmonization of regulatory and incentive frameworks;
- iii) objectives and target standards for the release of effluents;
- iv) management of pollution from agricultural (land use) runoff within the watershed area;
- v) management of pollution from urban areas; and,
- vii) management of wetland areas.

The project preparation activities involve efforts at the national and regional level to produce a set of proposals for regional action programmes for environmental management of Lake Victoria (LVEMP) including investment requirements related to:

- (i) fisheries management, including fisheries research and the strengthening capacities of national fisheries administration and research institutions;
- (ii) control of water hyacinth infestation;
- (iii) management of lake pollution and water quality, including strengthening and harmonization of national regulatory frameworks;
- (iv) wetland management, including co-ordination of national policies and institutions; and,
- (v) management of land use in the watershed areas, including co-ordinating planning for watershed area development and improving the

management of the information base. An essential aspect of the proposals in the above areas is the conservation of biodiversity including most importantly, the indigenous fish species of the lake (Mbwana).

In addition, UNEP and the UNDP have developed the "East African Sub-Project of the Environmental Law and Institutions in Africa" project which is intended to provide assistance to each participating country in designing comprehensive legal frameworks for environmental management. The frameworks are composed of two broad categories of legal instruments. The first category consists of general environmental laws that, is, overarching legislation and associated regulations designed to harmonize and co-ordinate environmental management across sectors. The second category consists of specific sectoral laws, dealing with different activities or resources that are relevant directly or indirectly to the environmental well being of the country or the management of its natural resources. Apparently each of the participating countries has begun the task of creating general environmental laws. In Uganda an Environmental bill has been drafted and debated upon, and attention is now turning to the drafting of implementing regulations. In Kenya preliminary legislative drafting is underway in the wake of the recently completed National Environmental Action Plan. In Tanzania a draft law has been prepared by NEMC and is under review by the government (Okidi)

Each of the countries has also undertaken some revision of relevant sectoral laws many of which are outdated and need re-evaluating in light of changing environmental objectives.

According to UNEP, (UNEP, 1994) the overall aim of the Sub-Project is to provide effective support for the ongoing efforts and to identify and address critical areas for legal reform. In 1994 the Co-ordinators of the Sub-Project held discussions with each of the countries where several broad needs were emphasised which include:

THE NEED TO FORMULATE AND IMPLEMENT GENERAL ENVIRONMENTAL LAWS

Although the three countries are at different stages in addressing this need, as discussed above, they each have expressed a desire to push the process forward. There is a need in each case to review and evaluate the progress that has been made, fill in the gaps that remain and fine-tune existing efforts where necessary. After finalizing the legislation there are critical and demanding tasks to be performed which include the drafting of implementing regulations, the establishment of environmental impact assessment guidelines and procedures, and the training of officials, judges and lawyers in the interpretation and administration of the law.

THE NEED TO DEVISE LEGAL STRATEGIES FOR THE PROTECTION OF BIODIVERSITY

Though East Africa is of great global significance for biodiversity conservation, biodiversity in the region is threatened due to a variety of factors, including land pressure, deforestation and un-sustainable agricultural techniques. The three states have recognized the need to examine the legal and institutional constraints which hinder the search for solutions, such as increasing conflicts among development, environmental protection and natural resource conservation objectives; multiple-agency authorities and jurisdictions, little or no co-ordination between the three governments and across departments within the same government; and limited or inadequate financial and human resources for management activities.

THE NEED TO HARMONIZE NATIONAL LAWS REGARDING THE MANAGEMENT OF LAKE VICTORIA

There is a great deal of international and regional attention being given to the various aspects of resource management in the Lake Victoria region. As noted above an agreement leading to the establishment of a Lake Victoria Fisheries Organization has been signed. Other efforts of co-operation between the three

states are evident by the signing of the Tripartite Agreement for the Preparation of Lake Victoria Environmental Management Program (LVEMP) discussed above .

THE NEED FOR TRAINING AND SUPPORT OF EDUCATIONAL PROGRAMS IN ENVIRONMENTAL LAW

There is a shortage of lawyers, judges and government officials adequately trained in the general principle of environmental law and the specific provisions of the laws adopted by countries in the region. There is therefore a need to emphasize training and education in environmental law, both in the short term, with respect to enhancing the practical knowledge of officials and interested members of the public and in the long term with respect to bolstering the establishment of environmental law programs within law faculties. (UNEP, 1994)

It is the author's view however, that to achieve the above objectives, strong commitment and political will is required on part of the governments. In addition the governments need to establish more co-operation inline with the general principles of pollution control and management of the resources of international watercourses.

4.4 LESSONS TO BE LEARNED

The initiatives undertaken by the three East African countries are not a new phenomena. Related initiatives have been applied by different states over the years and in some instances it has proved to be workable and positive results can be seen. An example worth citing is that of the efforts of the United States and Canada to try and restore and protect the Great Lakes ecosystem.

In 1909, Canada and the US signed the Boundary Waters Treaty over the Great Lakes. The principle objective of the Treaty is to provide the principles and mechanisms to help prevent and resolve disputes, primarily those concerning water quantity and quality along the boundary between the two states. The treaty established the International Joint Commission (IJC)

The responsibilities of the IJC are to issue Orders of Approval in response to Applications for the use, obstruction or diversion of waters that flow along and in certain cases across, the boundary if such uses affect the natural water levels or flows on the other side. The Commission also undertakes investigation of specific issues, or monitors situations, when requested by Governments. The Treaty also provides for Governments to refer matters to the Commission for binding decisions where there are different opinions on an issue by the two Governments.

It has to be appreciated however at the outset the Lake Victoria Basin and the Great Lakes Basin do not have similar problems as far as the degree of degradation and pollution is concerned; but, there are quite a number of lessons which need to be looked into and/or adopted for the effective implementation of the LVEMP.

In 1972 for instance, the US and Canada signed the Great Lakes Water Quality Agreement (GLWQA)(This was replaced in 1978 and amended in 1987) which expresses the commitment of each country to restore and maintain the chemical, physical and biological integrity of the Great Lakes Basin Ecosystem and includes a number of objectives and guidelines to achieve these goals. In addition, timetables are set for implementation of specific programs. The agreement reaffirms the rights and obligations of Canada and the United States under the 1909 Treaty and has become a major focus of IJC activity.

New annexes are added to address issues as the need arises. Annexes have been added addressing atmospheric deposition of toxic pollutants, contaminated sediments, ground water and non-point sources of pollution. The annexes also incorporate the development and implementation of Remedial Action Plans for Areas of Concern and Lakewide Management Plans to control critical pollutants. (John Hartig)

The GLWQA requires the parties to see to it that federal regulations were consistent with the achievement of the already noted general and specific water quality objectives and required that best efforts would be used to ensure that regulations at the state or provincial level were similarly consistent with the achievements of those objectives - article V (i).

Article VI of the Agreement prescribed programmes and other measures against pollution from municipal and industrial sources, measures against pollution arising from various land uses or shipping and dredging activities, measures against pollution from onshore and offshore facilities, measures to minimize or eliminate the release of hazardous polluting substances or to eliminate the discharge of persistent toxic substances into the Great Lakes system and programmes to identify sources of airborne substances which may have significant adverse effects on the environmental quality of the Great Lakes ecosystem.

Of significance which could be useful for the implementation of the LVEMP is how the public is involved in the IJC activities and the role of the public in implementation of the Remedial Action Plans for the Areas of Concerns.

The Boundary Waters Treaty requires that the Commission give all interested parties a "convenient opportunity to be heard" on matters under consideration; the Commission invites public participation and advice when it undertakes studies under references, when it deals with orders of approval and when it prepares reports to the Government. The Commission is specifically authorized to develop a public information program. Information materials are thus produced on various topics; these materials are available at IJC offices and are provided upon request free of charge.

The GLWQA requires that a Remedial Action Plan (RAP) be developed for each designated Area of Concern (AOC). AOC's have been defined by annex 2 to mean a geographical area that fails to meet the general or specific objectives of the Agreement where such failure has caused or is likely to cause impairment of beneficial use or of the area's ability to support aquatic life.

As of June 1994, 43 geographic AOC's had been identified in the Great Lakes Basin Ecosystem. Restoration of the beneficial uses within the AOC's is the primary purpose of RAP's and an essential step in restoring the integrity of the Basin as envisioned in the GLWQA (John Hartig)

The Agreement calls for the federal governments, in co-operation with state and provincial governments, to ensure that RAP's incorporate a systematic and comprehensive ecosystem approach to use restoration and to ensure that the public is consulted in all actions undertaken pursuant to RAP's. The ecosystem

approach holistically accounts for the interrelationships among land, air, water and all living things, including humans and involves all user groups in comprehensive management.

To achieve the RAP goals about 40 out of the 43 AOC's have established either a stakeholder group, co-ordinating committee, public advisory council, or comparable institutional structure broadly representative of societal, economic and environmental interest in the relevant areas.

Integrated management of the Great Lakes Basin has proved to be a success over the years. There is evidence that in some of the AOC's such as Collingwood Harbour on Lake Huron's Georgian Bay, beneficial use has been completely restored (Progress Report in the Great Lakes RAP's, 1994, 80). There has been restoration from degradation of fish and wildlife populations, eutrophication, undesirable algae and loss of fish and wildlife habitat. It has been reported that, public consultation and involvement have been integral to the RAP process in this area.

In this regard, it is the author's view that there is a great need to involve the public in the programs to be undertaken by LEVMP for the protection of the Lake Victoria Basin to achieve sustainable development. Public involvement and participation can be instrumental in helping governments to be more responsible to and responsible for resource management.

Public participation is also an underlying objective of Chapter 18.9 of Agenda 21 which stipulates that "integrated water resource management, including the integration of land and water related aspects should be carried out at the level of the basin or sub-basin."

This Chapter highlights how environmental protection objectives should be pursued which include public participation. The next and final chapter will describe my conclusions and recommendations for environment protection while pursuing economic development.

CONCLUSION AND RECOMMENDATIONS

5.1 SUMMARY

This study has reflected on a number of areas which include policy issues, organizational arrangements and the legislative framework which have contributed to the existing environmental degradation in Tanzania.

It has been argued that, while Tanzania is well endowed with a number of natural resources, the exploitation patterns have not been always prudent and there are visible strains on the environment.

It has become apparent that, viewing economic development, as the solution to meet human needs and improve the quality of life without considering natural resource conservation and environment protection is a misconception. This philosophical misconception as regards resource use and exploitation has resulted in the pollution of coastal and inland waters and degradation of land from agricultural runoff, sewage and garbage disposal and industrial effluents.

Industrial and agricultural activities have adversely affected the environment. In Mwanza region for instance, the industries which discharge effluents into Lake Victoria have contributed to loss of aquatic life, while agricultural runoff of agrochemicals are the cause of eutrophication, human health problems and fish kills.

Growing urbanization has caused excessive stress on the existing infrastructure and in some instances has produced overcrowding and establishment of squatter areas.

The author is of a strong view that another major cause for the existing degradation is the poor institutional arrangement and the weak legislative base governing resource management and conservation. Environmental protection and resource conservation of a nation is a process of reflecting interest in the environment and natural resources by incorporating them into the national development process and policy objectives. Thus, the government is the major player in the formulation and execution of a policy that is geared at environment protection and resource conservation. Similarly, the government has a major role to play as a co-ordinator between different sectoral interests, the public and the business enterprises in the country. It is the force behind the enactment of laws and the setting up of organizational structures.

Recognizing the need for the government to adopt, promote and implement new strategies for environment protection and resource conservation to achieve sustainable development, recommendations are offered in a number of areas:

5.2 POLICY

The fact that Tanzania does not have a national policy on resource conservation and environment protection is clear from the preceding chapters. What exists is a number of institutions each having their own policy.

The foregoing reflects a highly fragmented set up that can be expected to suffer from the dynamics of development and have negative effects on the natural resources and the environment.

The government should develop a comprehensive national policy on the protection of the environment and conservation of natural resources that links such protection to development planning. The policy should develop mechanisms for co-

ordination among the resource users for integrated management of natural resources. In addition, the policy should:

- Have a significant measure of political support. In the formulation stage, it should involve wide ranging consultations with the public, research institutions and institutions of higher learning, for instance, universities and business enterprises;
- Be stated in a clear and simple form. This is important to eliminate confusion, inadequacies and inconsistencies in implementation. Due to the urgent need to have the policy understood by the general public, it is recommended that it should be translated in Kiswahili.

Further, the policy making process should be developed in a systematic way. Thus, Tanzania must first decide what it wants with regard to environment protection and resource conservation. The following questions should therefore be addressed:

- Given the nature of the Tanzanian environment, what are the priority areas?
- Which resources are to be managed and what is their relevance in the overall national development plan?
- How does the government propose to achieve its objectives?

In this regard an inventory of what resources exist in Tanzania should be made. This should be followed by an attempt to define the objectives the policy is intended to achieve. A projected means of resources to be used should be borne in mind, this may be in terms of budget or human resources. The goals should be stipulated and ranked according to priority, and an emphasis on the specific course to be undertaken in their achievement. The policy should be easily stated for all those involved in the implementation to understand. This will increase efficiency, reduce conflicts and any duplication will be easily noticed at an early stage.

Resource management and conservation and environment protection should be developed as a social value. Currently, for instance, cutting of

woodlands in forestry reserves is prohibited without proper authorization from the relevant authorities. This prohibition has not received a lot of support because alternative means for obtaining fuel and building materials are not provided. While the rule is obeyed, strain exists among the wood users. If sustained use of the resources is to succeed in the forestry sector, the community must be educated first about the need to protect and conserve forestry reserve areas. Long term effects of continued uncontrolled harvests must be expounded to the user. Only then will the need to conserve resources be understood.

Planning should undertake to integrate environmental and development objectives. Adequate understanding of the consequences of unplanned industrial projects on the environment and the long term effects must be understood. Since resource use, management and environment protection cannot be compartmentalized, neither should the decision making framework. Proper planning is necessary to ensure a full integration of environment and development considerations.

There is need to involve the public and the industry in the decision making process. This process can earn the government credibility in that the policy will be seen as a decision coming from the users of the resources themselves.

Finally, it is emphasised that the sectoral policies which exist should not be eliminated altogether as they reflect each sector's line of development. However, these sectoral policies should be integrated and co-ordinated into one development policy encompassing all areas, reflecting the country's goal of sustainable development.

5.3 LEGISLATION

The current legal system appears to be inadequate regarding the need for rapid national development and economic restructuring. This situation warrants immediate remedial action to arrest the rapid decline in the quality of the environment and to ensure sustainable development.

While efforts are underway to amend the existing environment legislation, and to formulate a comprehensive Environment Protection Act, it is the author's view that the approach which has been adopted does not guarantee a permanent solution to the legislative needs. It is therefore recommended that;

- The legal review process undertaken by the different sectoral departments needs to be co-ordinated to ensure consistency and integration;
- Traditional and customary conservation methods which reflect conservation practices should be incorporated in the legal system. Where traditional systems do not reflect environmental sustainability as a norm for environmental management, education and awareness creation on environmental issues should be introduced;
- Drafting and amendment of legislation should be bottom up rather than top-down in the sense that legislation formulation should take into account local public concerns;
- Legislation should reflect the aims and objectives intended to be achieved by the environment protection and resource conservation policy ;
- Legislation should take into account possible multi-use conflicts and establish a framework for the resolution of conflicts;
- Legislation should specify means for compensation and mitigation

in case of damage of one resource in the development of another; and,

- Legislation should be in line with international guidelines such as those stipulated by UNEP in the UNEP program for the development and periodic review of environmental law for the 1990's (UNEP 1993), and Agenda 21 particularly chapter 8 paragraphs 8.13 to 8.21.

In addition it is recommended that, a new and distinct offence called "crimes against the environment" should be added to the Criminal Procedure Code, its objective being to repudiate and deter conduct which seriously compromises the fundamental value and right to a safe environment or a reasonable level of environmental quality. The new offence should address both (i) intentional, reckless or grossly negligent acts and omissions which, directly or in the course of manufacture, transportation, use, storage or disposal of hazardous substances, seriously damage or endanger the environment and which thereby seriously harm or endanger human life or health, such harmful or endangering effects either being immediate and known or likely to occur in the foreseeable future and (ii) intentional or reckless acts and omissions which seriously harm or endanger the environment but which are unaccompanied by harmful or endangering effects on human life or health for instance which will cause environmental degradation such as excessive use of agrochemicals which results in the degradation of water quality through runoff and degradation of land.

5.4 CONSTITUTION

Adequate protection of the environment depends on the interplay of national measures and the use of national legal systems by individuals or groups to create additional pressure for compliance by governments and industries with legal obligations for the protection of the environment. More generally, the existence of individual procedural rights can help shape national environmental policy, as it gives individuals and groups the opportunity to bring legal proceedings or challenge proposed developments on the basis of individual and public interest .

In light of the above, it is recommended that consideration be given to the amendment of the supreme legislation in the country the Constitution, to incorporate an environmental Bill of Rights that would guarantee individuals a right to environmental quality. However, in making the above recommendation, one should not ignore the political and economic realities faced by a developing country like Tanzania in regulating enterprises that provide employment to hundred of thousands of workers and economic development to the country. The above reality can be achieved by integrating environmental concerns into development planning and recognizing that the environment has an inherent and essential value that should not be sacrificed to development. Similarly, the law should be structured in such a way that it does not unnecessarily intrude upon the other individual liberties provided for under the same Constitution while dealing with environmental rights.

5.5 ORGANIZATIONAL SET-UP

It is evident that the current organizational set-up has failed to face the challenges of integrating environmental concerns into development activities to achieve sustainable development. There are certain weaknesses in the present organizational set up in Tanzania which surface continuously and these were discussed in chapter 3 of this study.

The lack of co-ordination and the fragmentation of responsibilities which are in existence is a reflection of these weaknesses which are embedded in the sectoral management approach of natural resources.

Having identified the weaknesses in the present organizational set-up, efforts must be made to increase co-ordination as a precondition for consistency and efficiency. The question this study seeks to address is how this can be done?

In this regard, the following recommendations are made for an organizational framework as a means to address the present weaknesses. The elements of the proposed organizational framework consist of measures for the

harmonization of existing organizational arrangements and the development of coordinating mechanisms.

HARMONIZATION OF EXISTING ORGANIZATIONAL ARRANGEMENTS

Effective government administration depends on the existence of a clear agency mandate and line of accountability of staff with capability to implement policies, design programs and evaluate performance. Thus, the current administrative practices need to be modified, where appropriate with a view to reducing the duplication of roles and introducing innovative and integrated management approaches. Institutional roles and objectives need to be reviewed to identify gaps and areas of overlapping interests or jurisdiction. The institutional mandates and relationships need to be modified as necessary to address these gaps and overlaps and facilitate multiple use inter sectoral resource use and conservation.

This integration process should be gradual and based on strengthening of existing institutional arrangements such as NEMC and the sectoral departments through exchange of information on sectoral development plans and review of such plans by other sectors as proposed below. It should be emphasised here that the main objective is improvement, by means of integration, rather than the replacement of the present administrative structures with a new one. An awareness program should be implemented and communications outlining the objectives of this measure should be disseminated within the various departments and institutions to ensure support and to remove any cynicism.

CO-ORDINATING MECHANISMS

Considering the need which exists in Tanzania for horizontal and vertical co-operation and consultation among government departments/institutions and between government and other organizations, efforts need to be made at a national level to synchronize the planning process and to evaluate policies, programs and projects involving resource use, management and conservation and pollution control.

To this end it is recommended that, an inter-ministerial/institutional co-ordination committee on resource use, management conservation and pollution control should be established answerable to the Prime Minister. The committee should co-ordinate and analyse project proposals before they are passed for approval. It should also facilitate and co-ordinate the implementation of policy objectives through programs and projects. The co-ordinating committee should be comprised of senior representatives (preferably at Principal Secretary level) from key ministries and institutions responsible in resource management and pollution control.

The committee should operate as a forum for discussion, integrated development planning and exchange of information. This body should not replace the existing government institutions but should work to harmonize and integrate their policies and operations.

NEMC should set up the mechanism, define its structure, its terms of reference, reporting procedures, relationships and responsibilities. This should be done in consultation with all responsible ministries/departments and institutions. The committee should serve as a vehicle for high level decisions on policy issues and strategies. At the same time, it could facilitate the assignment of responsibilities for the formulation and implementation of action programs to working groups and responsible institutions.

In addition, it is recommended that ,

- Sectoral representatives in the regional and district level should be accountable to their respective ministries;
- Representatives of the Ministry of Environment in the regions and districts should be the focal point for implementing the environment protection policy and co-ordinating development programs;
- environmental experts from the Ministry of Environment should be attached in all key departments and institutions responsible for environment management and pollution control. These experts will function as liaison officers between the Ministry of Environment, NEMC and between the relevant institutions who will oversee the implementation and enforcement of legislation in each sectoral department.
- An environmental law section should be established in the Attorney General's Chambers to provide environmental legal advice to the government. This section should also be responsible for the review and updating of legislation pertaining to resource management and conservation and pollution control.
- Furthermore, it should work in close consultation with the Ministry of Foreign Affairs to see to it that important International Conventions and agreements related to resource management and conservation and pollution control are signed, ratified and transformed into national law for ease of implementation.

An organizational set-up with the above components would provide a mechanism with a rationale for co-ordinated efforts by departments and institutions to maintain environmental quality in the development and use of natural resources. Industrial, municipal waste disposal, mining, fisheries management, shipping and port development as well as human settlements and recreational issues could be examined

thoroughly by an integrated body of experts for comprehensive policy implementation, and achievement of sustainable development goals.

PUBLIC PARTICIPATION

Environmental decisions often involve the determination of acceptable environmental risks, whether they involve setting exposure and emission limits, issuing pollution permits or negotiating abatement and pollution control orders. As a matter of fairness, those being asked to bear the risks should have a chance to indicate their views on the accountability of those risks. In light of the uncertainties and unknowns, the process really involves policy or political decisions, even though they might be based on scientific data and opinion. It is because of the risks involved in the process that those persons who must bear the ultimate risks associated with those decisions should be able to test the soundness of the data relied upon and the assumptions used, and make clear the environmental and social implications of such decisions.

Public participation can also be justified on the grounds that public resource allocation decisions ought to be made in light of the public interest. While the ultimate judgement is to be made by a particular agency or official, how better to make a sound determination than by allowing the testing of the information by the proponents? The "public interest" is not one unified, singular point of view. It is comprised of a diverse, sometimes complex, multi dimensional array of perspectives and interpretations. An open, participatory system would assure that these varied perspectives and different points of view are articulated and reviewed.

5.6 MANAGEMENT OF SHARED RESOURCES

Finally, bearing in mind that environmental hazards respect no boundary, integrated management of natural resources, especially those shared by neighbouring countries, should be enhanced. Where integrated measures do not exist, efforts should be undertaken to have them established. Where steps have

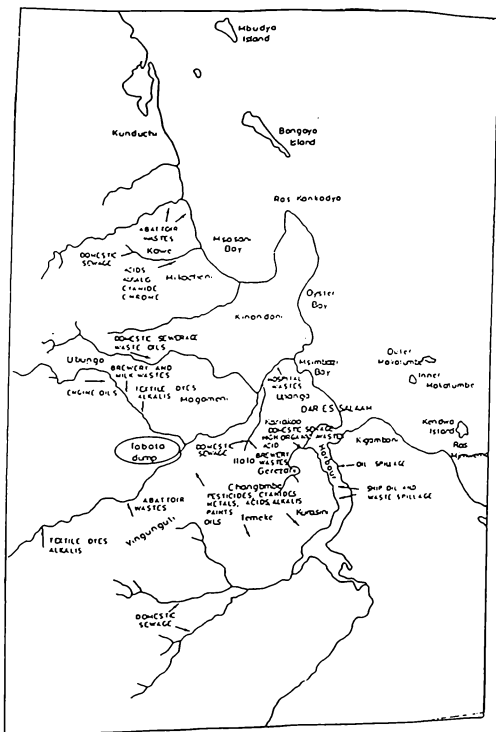
already been taken, like in the case of Lake Victoria, efforts should be made to have them enforced at the national and local levels. This can be achieved by transforming treaties which have been signed into national law, and by incorporating public participation in the development processes.

In conclusion, it should be noted that, the consequences of not adopting an integrated management approach for the natural resources will be at the economic and social peril of the country. This will result from the continuous degradation and finally irreparable damage to the environment as it is left to the forces of un-sustainable exploitation and pollution.

It is therefore now time for the government and people of Tanzania to rescue the natural resources from over exploitation and environmental degradation. The author is of a strong conviction that there are signs of hope and it can be done considering the co-operative and supportive spirit of the Tanzanian people.

The guiding principle to achieve the above should be the principle of sustainable development, which is development that meets the needs of the present without compromising the need of future generations to meet their own needs.

Appendix 1. Types of polluting effluents in Dar-es-salaam.



SOURCE: Ambio, Vol. XXI No. 6, September 1992.

Appendix 2. Water consumption, wastewater characteristics, treatment and disposal situation in some selected industries in Dar-es-salaam.

Factory products	Water consumption, wastewater characteristics, treatment and disposal.
Sunguralex (textiles)	<ul style="list-style-type: none"> - water consumption = 700 to 900 m³ per day - wastewater contains yeast, dyes, alkalis, salts, urea, detergents, bleaching agents, starch, enzymes, stabilizers, pigments such as kerosene and glycerine
Kiltex (textiles)	<ul style="list-style-type: none"> - water consumption = 300 to 400 m³ per day - chemicals discharged; see Sunguralex - effluent is discharged into Msimbazi river without treatment
Urafiki (textiles)	<ul style="list-style-type: none"> - water consumption = 3000 m³ per day - chemicals discharged; see Sunguralex - effluent contains about 300 mg L⁻¹ of suspended solids and 85 mg L⁻¹ of BOD₅ and is highly alkaline - wastewater is discharged to two settling tanks followed by four waste stabilization ponds
Tanzania Breweries (beer)	<ul style="list-style-type: none"> - water consumption unknown - wastewater contains used yeast, filtrates, malt and barley and coagulated proteins - discharges organic load of about 600 mg BOD₅ L⁻¹ - effluent drains directly into Msimbazi stream
Tanzania Dairies (milk, cream, yoghurt)	<ul style="list-style-type: none"> - water consumption = 200m³ per day - discharges chlorides, sodium hydroxide and acids which are usually used for cleaning purposes - heavy organic load of 1800 mg BOD₅ L⁻¹ and suspended solids of 300 mg L⁻¹ are discharged - no facilities for wastewater treatment
Vingunguti abattoir (fresh meat)	<ul style="list-style-type: none"> - water consumption not recorded - about 100 L of blood per day dried to blood meal for animal use
Ubungu power plant	<ul style="list-style-type: none"> - water consumption is about 1000 to 1500 m³ per month - industrial diesel and furnace oil pollution once the engines are switched on due to leaking pipes and old machines - spilled oil is drained directly into the river without any treatment - BOD₅ production is about 65 mg L⁻¹
Block yard (cement)	<ul style="list-style-type: none"> - produces about 500 mg L⁻¹ dissolved and suspended solids
Dar Brew (local beer)	<ul style="list-style-type: none"> - water consumption is about 200 m³ per day - wastewater contains yeast, starch, sugar and lactic acid - no treatment of wastes is done - BOD₅ production of 800 mg L⁻¹

SOURCE: Ambio, Vol. XXI No. 6, September 1992.

Appendix 3. Pollution load in effluents streams of major industries

In Mwanza, 1992

Parameter	Unit	Mwanza	Mwanza Tanneries Ltd	Lake Soap Industries Ltd	VOIL	Nyaza Boiling Lid	Victrib Ltd
Wastewater generation	10 ⁶ m ³ /year	550 ⁰⁰	11 ⁰⁰	5 ⁰⁰	3.75 ⁰⁰	187.5 ⁰⁰	1.5 ⁰⁰
pH		12.7 ⁰⁰ /9.4 ⁰⁰	13.0 ⁰⁰	6.4 ⁰⁰ /10.2 ⁰⁰	5.9 ⁰⁰ /7.2 ⁰⁰	8.3 ⁰⁰	7.9 ⁰⁰
Dissolved oxygen	g/m ³	4.3 ⁰⁰ /0.0 ⁰⁰	7.7 ⁰⁰	7.3 ⁰⁰ /1.8 ⁰⁰	3.1 ⁰⁰ /1.2 ⁰⁰	0.0 ⁰⁰	1.5 ⁰⁰
TDS	g/m ³ U/year	4.6 ⁰⁰ 2.5	9.9 ⁰⁰ 0.1	64.6 ⁰⁰ 0.3	89 ⁰⁰ 3.3		
BOD ₅	g/m ³ U/year	42 ⁰⁰ 16.5	26.4 ⁰⁰ 0.3	8.6 ⁰⁰ 0.04	66 ⁰⁰ 0.2	70 ⁰⁰	
COD	g/m ³ U/year	9.8 ⁰⁰ 5.4	15.5 ⁰⁰ 0.1	7.5 ⁰⁰ 0.04	5.9 ⁰⁰ 0.02		
Chromium	g/m ³ U/year		0.03 ⁰⁰				

(A) Calculated from the daily waste water generation figure (Mwanza Tanneries Ltd: 45 m³; Lake Soap Industries Ltd: 21 m³; Voil: 15 m³; Nyaza Boiling Company: 750 m³)⁰⁰ multiplied by 250 operating days per year.

(B) Calculated from the daily waste water generation figure (g m³)⁰⁰ multiplied by 250 operating days per year.

SOURCE: Report on Rapid Assessment of Pollution by Industrial,

Municipal, Agricultural and Mining activities around

Lake Victoria, March, 1994.

Oysterbay Beach under construction

BEHIND-the-scenes deals have resulted in businessmen—including a millionaire trader, a hotelier, four operators, and a prominent building contractor—starting to develop the Oysterbay Beach in Dar es Salaam for commercial purposes.

This allocation of plots for private development is a change of policy contrary to the original city development plan that proposed rehabilitation of the beach for public use.

Last month, this paper revealed that the proposed rehabilitation plans for the beach had been halted because of some mix-up in land-use plan and allocation.

But reliable sources within the city council had told the *Daily News* that businessmen had expressed their interest in develop-

By *DAILY NEWS* Reporter
9

ing the area for commercial purposes.

A fourth developer had already been contracted by the city fathers to operate a fast food joint at the beach's toilet site up to the year 1999.

Latest *Daily News* findings have it that the previous plot allocation wrangle that had stood on the way is over, and the businessmen have been given the go-ahead.

So far, the *Daily News* has identified only four of the six plots lining the beach.

Two of the plots are opposite the Oysterbay Hotel, where workers have dug trenches and some

were seen yesterday laying red soil and planting trees and flowers.

The other plot is opposite La Dolce Vita club, whose surface had already been levelled and planted with grass and trees. Sign boards, marked by the city council, warn motorists not to park their cars there.

Five petty traders, who have been selling food stuffs to beachgoers at one of the two plots opposite the Oysterbay Hotel, have been hired by one of the businessmen as manual workers on the plot.

"He has promised to give us a kiosk each when his project of setting up fast-food kiosk here has taken off," said one of the petty traders, Mr Eusebius Mlanga.

SOURCE: The Daily News (Tanzania Newspaper) of March 7, 1995.

IN THE DISTRICT COURT OF KWANZA
AT KWANZA.

CR. CASE NO. IIO/93

ACCUSED: THE MANAGER NILEPERCH LTD
P.O. BOX 1753
KWANZA.

CHARGE: Failure to abate the Nuisance
contrary to township rules made
u/s 3 of the township
ordinance read together with
rule I4 of the township rules.

16.4.1993

Coram: B.W. Kagabe - SIM

Pros: Daniel Batari - Health Officer.

Accused: Present

C.C. Kiss Prisca

J U D G M E N T

The Accused the Manager NILE PERCH Ltd. Kwanza, pleaded guilty to the offence of failure to Abate Nuisance c/s Township Rules made under section 3 (4) of the Township Ordinance as read together with Rule I4 of the Township Rules.

It was stated in the accepted particulars of the offence that the Manager of the Nile Perch Ltd, on 8.I.1993 at 5.30 p.m. at Nyakato area, within the Municipality, District and Region of Kwanza, the Manager having been duly served with a written Notice made under Rule I3 of the Township Rules with Ref. V.AK/2/II/203 requiring him to construct/Install the Electric Incenerator in order to dispose of waste products of Fish product from the Nile Perch Fish Industry, and to instal it within a period of 30 days, but he failed to comply with the said Notice hence continued to spoil the inviroment and caused discomfort to the General Public.

In alengthy plea of mitigation, Mr. Hamisi s/o Kidolomo, Manager of the Accused Nile Perch..... Fisheries Industry, stated inter alia:-

That, the Electric incoenerator plant needs a period of about 3 years to be installed. It is a plant which is to be imported from outside the country which will cost not below than 500,000 U.S.A. Dollars.

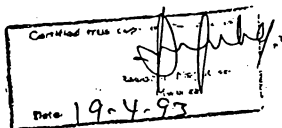
He stated his Industry had sent requests from Donors at Canada and plans are underway to get it. He said his Industry need is to develop the economy of our country and not to do harm to our people. He said there is a Dumping place Nyamongoro where all the waste of Fish produce products are buried.

In sentencing the Accused Industry I take into consideration the fact that the Industry has created employment to our people and a ready market for the Fishermen. To stop its operation because of lack of Electric incenerator would be a luxury which our young Nation cant afford. The Nation has called upon foreign and local investors in Industrial economic sectors to make our National economy grow. To stop the operations of our young Industries would mean to scare Foreign investors. Our legal system must work hard to encourage the growth of our young industries.

Herein I warn and discharge the Accused Industry absolutely under section 38 of the penal code on the following orders:-

- (i) That the Nile perch shall strictly bury the waste of fish products at Nyamongoro area.
- (ii) That for the Fisheries waste products which are clean and safe for human consumption the Factory should sell the same to our needy people upon approval of the Health officers that they are good and fit for human consumption.
- (iii) That the Nile perch shall install the Electric incenerator plant within a period of 3 years from today to avoid unnecessary future health hazards which are brought about by dumping of Fisheries waste products.

Sgd. B.W. KAGABE - SIM
16.4.93



**APPENDIX 6: INTERNATIONAL TREATY OBLIGATIONS OF TANZANIA
PERTAINING TO ENVIRONMENT**

1. CONVENTION RELATIVE TO THE PRESERVATION OF FAUNA AND FLORA IN THEIR NATURAL STATE, LONDON, 1993 Date of entry into force:
3-3 -1963.
2. TREATY BANNING NUCLEAR WEAPON TESTS IN THE ATMOSPHERE, IN OUTER SPACE AND UNDER WATER, MOSCOW, 1963, Date of entry into force: 6-2-1964.
3. AFRICAN CONVENTION ON THE CONSERVATION OF NATURE AND NAURAL RESOURCES, ALGIERS, 1968. Date of entry into force 15-12-74.
4. CONVENTION ON INTERNATIONAL TRADE IN ENDANGERED SPECIES OF WILD FAUNA AND FLORA, WASHINGTON, 1973. Date of entry into force:
27-2-80.
5. CONVENTION CONCERNING THE PROTECTION OF WORKERS AGAINST OCCUPATIONAL HAZARDS IN THE WORKING ENVIRONMENT DUE TO AIR POLLUTION, NOISE AND VIBRATION, GENEVA, 1977. Date of entry into force with regard to air pollution only 30-5-84.
6. UNITED NATIONS CONVENTION ON THE LAW OF THE SEA, MONTEGO BAY, 1982.
7. THE MONTREAL PROTOCOL, ratified February 1993.
8. VIENNA CONVENTION ON PROTECTION OF THE OZONE LAYER, ratified February 1993.
9. BAMAKO CONVENTION ON THE CONTROL OF TRANSBOUNDARY MOVEMENT OF HAZARDOUS WASTES AND THEIR DISPOSAL, ratified February 1993.
10. BASEL CONVENTION ON THE CONTROL OF TRANSBOUNDARY MOVEMENT OF HAZARDOUS WASTES AND THEIR DISPOSAL, ratified.

11.CONVENTION ON BIOLOGICAL DIVERSITY, signed but not ratified.

12.CONVENTION ON CLIMATIC CHANGE, signed but not ratified.

SOURCE: MINISTRY OF FOREIGN AFFAIRS REGISTER OF INTERNATIONAL
CONVENTIONS as of February 1995.

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