THE UNITED REPUBLIC OF TANZANIA

PRIME MINISTER'S OFFICE
(REGIONA ADMINISTRATION AND LOCAL GOVERNMENT)

THE SUMBAWANGA MUNICIPAL ENVIRONMENTAL ACTION PLAN 2014-2019.

JUNE, 2014

Vision

Sumbawanga Municipal Council aspires to be highly competent Local Authority in terms of its ability to provide quality socio-economic services sustainably.

Mission

Sumbawanga Municipal Council is committed to utilize effectively and efficiently available potential resources to continuously provide quality socio-economic services maintenance of peace, and order through participation of different stakeholders in order improve living standard of its community and bring about sustainable development.

The survival of the society depends directly or indirectly on environmental resources. However, one key environmental challenge facing the world today is the rapid rate of urbanization that threatens urban environment. Among the environmental outcomes resulted from urbanization experienced in Sumbawanga Municipal Council are;- Increased atmospheric temperature, changed rain patterns, toxic wastes generations, water and air pollution, land degradation and biodiversity loss to mention few. These challenges need to be addressed wisely to place future human development in sustainable path. In order to address them, there is a salient need to investigate the linkage between Population growth and Environmental resources consumption, and link the State of the environment in general Urban Development and Environmental Management framework (UDEM) resulting from the Sustainable City Programmme (SCP, 2006/7), followed by the Urban Local Government Strengthening Programme (ULGSP, 2011/19). Both programmes focus development paradigm fundamentally from the technology drivers and resource utilization for human development as outlined here in after.

- Sustainable cities are fundamental to social and economic development and they are engines of growth.
- Environmental degradations adversely effects economic efficiency and equity and hence obstruct the development contribution of cities.
- Environmental degradation is not inevitable. A proactive management approach is therefore required to be built on the understanding of the complex interactions between development and environment.

From this fact the development systems are therefore required to prepare a comprehensive focus on Urban Development and Environmental Management as two sides of the same coin.

CHAPTER ONE

INTRODUCTION

Sumbawanga Municipal Council was established in 1984 after a series of landmarks that led to the enacting of Local government Act. No. 8 of 1982 on Urban Authorities establishments. It is one of the four councils comprising the Rukwa region. Others are Sumbawanga DC, Nkasi DC and Kalambo DC.

The Sumbawanga Municipal Council is among the 52 councils under phase two of the Local Government Reform Programme (LGRP), which started in 2002. The major goal of the programme is to enhance the level of performance of Local Government and improving social services delivery in five sectors including Education, Health, Water, Agriculture and Works. Among these sectors, environmental care being a cross cutting agenda was put in enforcement to promote sustainable development. Sumbawanga Municipal Council profile is hence providing basic environmental information available in the Municipality jurisdiction.

1.1 Geography of the Municipal

1.1.1 Location and size

Sumbawanga Municipal Council is one of the four councils forming Rukwa Region. Others include Sumbawanga District Council, Kalambo District Council and Nkasi District Council. The Sumbawanga Municipality lies between latitude $07^{0}48'$ to $08^{0}31'$ South of Equator and longitude $30^{0}29'$ to $31^{0}49'$ East. is found in South- West Tanzania, in Southern Highlands of Ufipa, (figure 1). The Municipal covers an area of 1329 Km^{2}.

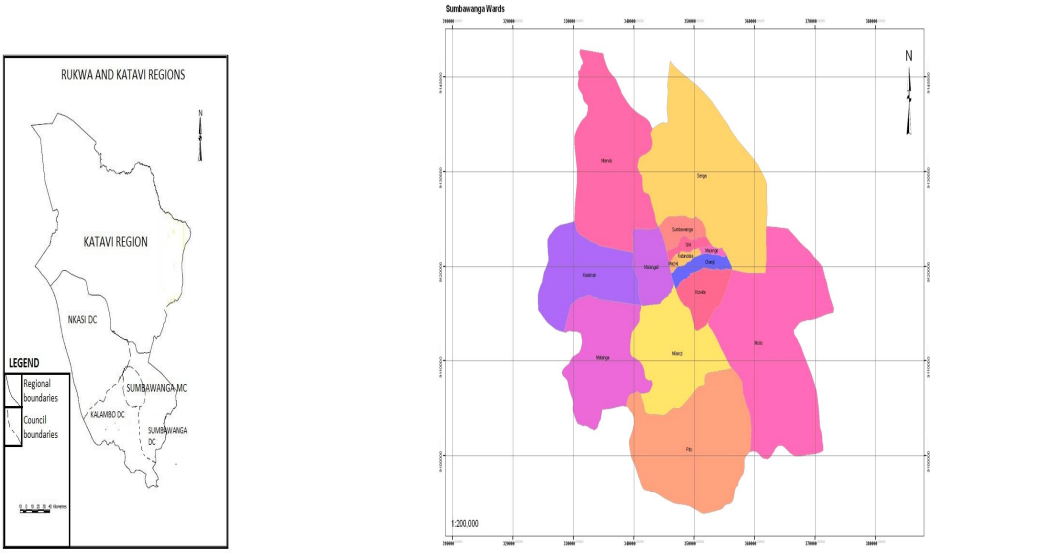


Figure 1: Sumbawanga Municipal Administrative boundaries. (Source: Sumbawanga Municipal Council, 2012)

1.1.2 Geology

The granite intrusion and volcanic extrusion are widespread on the Western part of the Municipality. Karoo rocks are found to the West of River Lwiche, they contain small quantity of low graze coal. These rock outcrops tend to flow a south West North West course like that of the flow of river Lwiche and that of Rift Valley.

1.1.3 Topography and soil

Sumbawanga Municipality lies on the western arm of the Great East African Rift Valley. It has an average altitude of 1700 metres above sea level. The highest altitude of 2461 metres is Malonje, 24 km southeast of Sumbawanga Municipality. The area is also characterized by prominent hills. On the northern part is Ufipa plateau with an average height of 1700 meters. The escarpment of *Lyamba lya Mfipa* lies to the north of the Municipality, and forms the northern boundary of Sumbawanga Municipality with the Sumbawanga District Council and Nkasi District. There are landforms such as plains, hills, swamps, and extensive lowlands. The later, are drained by surface water for at least half part of the year. Areas are of gently undulating terrain with average slopes of less than 7.1%, rock outcrop may also occur.

A basic subdivision can be made between erosion and deposition plains, while the former have been developed from a wearing away of the land, the later have been built up through the deposition of weathered material eroded from the former. There are also dominants of ant hills commonly used for brick-making and building soils. There are hilly mountains with steep slopes reaching as high as 31%, sparsely distributed in various parts within the municipality. These include Nyengele, Kapata, and Milanzi, measuring at a height of 2299m above sea level, located in the western part of the municipality, Fala Hill, located close to the Mtimbwa Village, Kalangasa near Milanzi, Malonje near Ulinji Village, Mzimwe and Namchinga adjacent to Tamasenga Village. The rest of the municipality is flat grassland normaly known as 'mbuga'.

The Municipal is traversed by a number of rivers and streams, some are permanent and others are seasonal. These include Lwiche, Chanji, Manzitiswe and Kaswepepe. The municipal and its surroundings are characterized by sesquioxide keolinoid, which are highly leached old soils resembling the later zed red soils. Where the ground water table is low, the parent rock gives rise to freely drained sandy textured soils. Generally, the soils are of well drained and sandy in texture in most areas. Clay soils are associated with anthills. Loam soils are found along the valleys, rivers and streams.

1.1.4 Climate

The municipal is characterised by dry sub-humid climate for most part of the year. The average temperature is 27 ^{0} C. It is cool, dry, and often windy from May to October, the coolest months are June and July when the temperature is as low as 16^{0}C and even 5^{0}C. The municipality gets moderate rainfall; 900 mm to 1000 mm per year, (an average of 946.8 mm), beginning in early November to approximately late April. The rains are usually accompanied with lightning and thunderstorm

1.1.5 Vegetation

The vegetation in the Municipal mostly comprises of grassland and bushes. Woodlands occupy on hill slopes and tops.

CHAPTER TWO

NATIONAL ENVIRONMENTAL MANAGEMENT INITIATIVES

The environmental management at National level is guided by the National Environmental Policy (1997) and the Environmental Management Act (2004) complemented by sectoral policies and legislations, as well as Multilateral Environmental Agreements (MEAs). These Policies, Legal and Institutional frameworks provide directives for various development opportunities and challenges to the Rural and Urban Local Government Authorities.

2.1 Policies

2.1.1 National Environmental Policy, 1997

The Policy seeks to provide the framework for making fundamental changes of mainstreaming environmental considerations into f decision making in Tanzania. It calls for a coherent policy where priorities can be defined for the promotion of long-term economic growth, creating incentives for sustainable utilization of natural resources, disincentives for environment.

2.1.2 Agricultural and Livestock Policy, 1997

The Policy emphasizes that for long term future of the country, the natural resources (land, soil, water and forests) must be managed so that agriculture is sustained. To achieve this, the policy outlines how agriculture policy statements be formulated with respect to environmental management. Some of the agricultural policy statements that have relevance to sustainable development are guided to:

i) Promote intensification and diversification of agriculture production;
ii) Improve crop husbandry through soil erosion control and soil fertility improvement;
iii) Implement measures that will minimize encroachment in public lands including forests, woodlands, wetlands, and pasture;
iv) Strengthen agrochemical monitoring and registration;
v) Promote agro-forestry and organic farming;
vi) Encourage control of agricultural run-offs of agrochemicals to minimize pollution of both surface and ground water;
vii) Introduce mechanisms to improve water use efficiency in irrigation including control of water logging and salinization; and
viii) Intensify plant genetic conservation programmes.

2.1.3 Livestock Development Policy,2006

One of the objectives of the Policy is to promote integrated and sustainable use and management of natural resources related to livestock production in order to achieve environmental sustainability. To ensure sustainable livestock production, the livestock policy outlines the following policy statements:

i) Strengthen technical support services on environmental issues;
ii) Promote proper land use planning for livestock production; and

iii) Strengthen inter - sectoral coordination on environmental issues.

2.1.4 National Fisheries Sector Policy and Strategy Statement, 1997

The policy focuses on the promotion of sustainable exploitation, utilization and marketing of fish resources to provide food, income, employment and foreign exchange earnings and effective protection of the aquatic environment to sustain development.

2.1.5 National Forest Policy, 1998

The overall goal of the Policy (1998) is to enhance the contribution of the forest sector to the sustainable development of Tanzania and the conservation and management of her natural resources for the benefit of present and future generations. The Policy, among other aspects, recognizes the high value of forests due to the high potential for royalty collection, export and tourism earnings as well as the recycling and sequestering of carbon and conservation of globally important biodiversity. Furthermore, the policy emphasizes on biodiversity conservation; describes the importance of forest ecosystems for maintaining biodiversity and the threats to biodiversity. One of the main objectives envisaged in the policy focuses on ensured ecosystem stability through conservation of forest biodiversity, water catchments, and soil fertility.

2.1.6 Beekeeping Policy, (2008)

The objective of the policy is to improve biodiversity, increase employment, and foreign exchange earnings through sustainable bee products based, industrial development and trade. It also ensures ecosystem stability by practicing Integrated Pest Management and carrying out Environmental Impact Assessment (EIA) for investments inside or around bee reserves.

2.1.7 Wildlife Policy, 2007

The policy focuses on wildlife protection and conservation in order to ensure sustainability of wildlife ecosystems. Some of the objectives of the objectives of the policy include establishment of Protected Areas (PA); maintenance and development of a PA network in order to enhance biological diversity; conservation of wildlife and its habitats outside the core areas by establishing Wildlife Management Areas (WMAs); and conservation of wetlands.

2.1.8 National Tourism Policy, 1999

The Policy acknowledges the relationship between the environment and development of sustainable tourism. Thus, it aims to ensure that development of tourism is based on careful assessment of carrying capacities of tourism products and ensure enhancement and improvement of special environment features so that tourism development does not conflict with indigenous features so that tourism development does not conflict with indigenous forests, beaches, mountains and other important types of vegetation.

2.1.9 National Land Policy, 1995

The Policy aims at developing a coherent and comprehensive framework that defines land tenure and enables proper management and allocation of land in urban and rural areas. Among other things, the policy advocates the protection of land resources from degradation for sustainable development. The policy addresses several environmental issues such as land use planning which takes into consideration the land

capability ensures proper management of land resources promotes resource sharing and multiple land use and conflicts resolution.

2.1.10 National Population Policy, 2006

The policy aim at coordinating and influencing other policies, strategies and programmes to ensure sustainable development as well as promoting gender equality and the empowerment of women. The policy recognizes, among other things, the impact of population growth on natural resources and environment. One of the goals of the policy is to prepare and rapid development in the country and to reduce the rate of rural- urban migration.

2.1.11 National Human Settlements Development Policy, 2000

The policy stresses the need to ensure that human settlements are kept clean and pollution effects of solid and liquid wastes do not endager the health of residents. It also advocates on environmental quality standards of gaseous emissions from sources such as industries and vehicles.

2.1.12 Sustainable Industrial Development Policy, 1996

The policy promotes environmentally friendly and ecologically sustainable industrial development. In addition, the policy targets to institute incentive mechanism on investments that promotes environment conservation; requires undertaking EIA and appropriate mitigation measures for all industrial projects; and promotion of application of an integrated preventive environmental strategy.

2.1.13 National Water Policy, 2002

The main objectives of the policy are to develop a comprehensive framework for sustainable development and management of water resources. The policy aims at ensuring that communities are fully involved in the management of water supply scheme. It addresses cross-sectoral interests in water, water shed management and integrated and participatory approaches for water resources planning, development and management. The policy advocates for undertaking EIA and Environment Audit [EA] in all water related projects. It also supports the application of the 'polluter pays principle' and has a specific objective of having in place a water management system which protects the environment, ecological system and biodiversity.

2.1.14 National Irrigation Policy, 2010

Some of objectives of the policy includes promotion of efficient water use in irrigation systems; and ensure that irrigation development is technically feasible, economically viable, socially desirable and environmentally sustainable. The policy aims to have irrigation systems which are environmentally sound by ensuring compliance to relevant legislation; protecting and conserving water and land sources; pollution control in irrigated agriculture; and promotion of proper land use practices.

2.1.16 National Health Policy, 2007

The objective of the policy towards environmental health is to protect community health by enhancing sustainable environmental health. To achieve this objective, some of the policy statements are to;

i) Ensure that the community adhere to environmental health standards;
ii) Improve waste management systems including disposal of hospital wastes;
iii) Continue to educate health services providers on the importance of environmental health in their working areas;
iv) Review and enact laws and procedures for conservation and protection of the environment; and
v) Continue to involve stakeholders in protecting natural resources.

2.1.17 National Energy Policy, 2003

The policy, among others, focuses on utilization of various energy resources in a sustainable and environmentally friendly manner. The policy recognizes that, energy is prerequisite for the proper function of all subs – sectors of the economy. It is an essential service whose availability, quantity and quality determine the success or failure of development endeavours. The Policy stressed the use of renewable and alternative energy sources such as wind, wind, solar, hydro, liquefied petroleum Gas (LPG) and natural gas. The use of alternative energy sources such as biogas briquettes both for domestic and industrial uses are encouraged to minimize the use of charcoal and firewood to protect massive deforestation

2.1.18 Mineral Policy of Tanzania, 2009

One of the objectives of the policy is to reduce or eliminate adverse environmental effects of mining by promoting health and safety conditions in mining areas and addressing social issues affecting local communities. It requires mining operations to carry out EIA and directs mining companies to set aside funds for environmental rehabilitation and mine closure obligations.

2.1.19 National Investment Promotion Policy, 1996

The policy seeks to promote the growth of exports by strategically utilizing the scarce natural, social and capital resources to accomplish it. It also stresses the need for modernizing of equipment and technological upgrading so as to enable optimal use of available sources, improved efficiency operation, improvement in the quality of products and co-products.

2.1.20 Education and Training Policy, 2005

One of the aims of the policy is to promote the acquisition and appropriate use of literary, social, scientific, vocational, technological, professional and other forms of knowledge, skills and understanding for the development and improvement of the condition of man and society. The Policy provides platform for integrating environmental educational curricula

2.1.21 National Transport Policy, 2003

One of the objectives of the policy is to develop safe, reliable, effective, efficient and fully integrated transport infrastructure. The policy emphasizes on the need to facilitate sustainable development by ensuring that all aspects of environment protection and management are given sufficient emphasis at the design and development stages of transport infrastructure and when providing service.

2.1.22 National Research and Development Policy, 2010

The objective of the policy is to provide guidance in addressing present and future national research challenges for socioeconomic development. Environment is one of the focal areas of the Policy whose objectives are to minimize the effects of research undertaking on the environment; and promoting research that is beneficial to the environment.

2.1.23 Women and Gender Development Policy, 2000

The policy aims to facilitate realization of gender equality for the purpose of speeding up sustainable development in Tanzania. The policy emphasizes, among others, mainstreaming of gender issues in environmental protection and conservation.

2.1.24 Community Development Policy, 1996

One of the objectives of the Policy is to educate communities on the importance of environmental conservation in pursuing social and economic development. Some of the areas of emphasis of the Policy include health and sanitation in rural and urban areas; water and environmental sanitation; appropriate technology for domestic energy use, in particular improved cook stoves; and improving rural and urban environment through programmes such as planting trees and forests in households, villages and ward.

2.1.25 Disaster Management Policy, 1990

One of the objectives of the Policy is to mainstream disaster management issues into development plans and other sectoral policies policies, plans and strategies and programmes at all levels to enhance mitigation and prevention measures. Specifically, the Policy emphasizes on protecting the environment from disasters through undertaking Environment Impact Assessment (EIA) after disasters strike and prior to commencement of projects.

2.1.26 National Information and Communication Technology (ICT) Policy, 2003

The objectives of the Policy are to provide a national framework that will enable ICT contribute towards achieving national development goals; and transform Tanzania into a knowledge-based society through the application of ICT. One of the policy statements is to monitor and respond to environmental disasters and to collect and disseminate information on environmental problems

2.1.27 National Policy on Non-Governmental Organizations (NGOs), 2001

Some of the objectives of the Policy are to facilitate mechanisms for supporting NGOs; and strengthen the relationship between Government and NGOs. The policy recognizes the significant role and contribution of NGOs in the society and considers them as important partners in the development process. The policy supports NGOs in all sectors including environmental management.

2.1.28 National Biotechnology Policy, 2010

The policy promotes development and application of biotechnology to foster social economic development. The objective of the Policy is to ensure that the country has the capacity and capability to capture the proven benefits arising from health, agriculture, industry and environmental applications of biotechnology while protecting and sustaining the safety of the community and the environment.

2.1.30 Construction Industry Policy, 2003

The objective of the Policy is to develop competitive construction industry with consideration of environmental responsibility in the implementation of construction projects. The aims are to promote the application of sustainable construction practices that are environmentally friendly. This includes application of technologies, products and practices which are not harmful to the environment, human health and safety; promoting education and training; and undertaking Environmental Impact Assessment (EIA) of projects.

2.1.31 Tanzania Development Vision, 2025

The Vision has three objectives which are; achieving quality and good life for all; good governance and the rule of law; and building a strong and resilient economy that can effectively withstand global competition. It is envisioned that Tanzania will achieve sustainable semi-industrialized middle market economy by 2025

2.2 Legislations

2.2.1The Environmental Management Act No. 20 of 2004

The Act provide s both a legal and institutional framework for the sustainable management of the environment of the environment, prevention and control of pollution , waste management, environmental quality standards, public participation, environmental compliance and enforcement. It also requires the undertaking of Environmental Impact Assessments (EIA) for investment projects. It further recognizes the need for research, public participation in environmental decision making, environmental awareness rising, and dissemination of environmental information. The Act gives the Local Government Authorities mandate to ensure environmental compliance in their areas of jurisdiction.

2.2.2The Wildlife Conservation Act No. 5 of 2009

The Act provides for the conservation of wildlife and ensures protection, management and sustainable utilization of wildlife resources, habitats, ecosystems and the non-living environment supporting such resources, habitats or ecosystems with actual or potential use of value.

2.2.3 The Marine Parks and Reserves Act No. 29 of 1994

The Act aims at protecting, conserving, and restoring the species and genetic diversity of living and non-living marine resources and the ecosystem processes of marine and coastal areas. It provides for management of marine and coastal areas so as to promote sustainability of existing resource use, and the recovery of areas and resources that have been over exploited or otherwise damaged.

2.2.4 The Fisheries Act No. 22 of 2003

The Act regulates fishing activities in both fresh and marine waters. Among others, it emphasizes on the conservation of fisheries in particular critical habitats or endangered species, and restricts the issuance of fishing licences for fishing in any conserved areas. The Act further requires formation of community management units for the purpose of protecting and conserving fishery resources.

2.2.5 The Forest Act No. 14 of 2002

The Act provides for management of forests and requires carrying out EIA of certain development projects. The Act obliges establishment of forest management plan for all types of forests to ensure sustainable management in the long-term. The Act designates Community Forests Reserves and encourages community-based management.

2.2.6 Grazing-land and Animal feed Resources Act No. 13 of 2010

The Act provides for the management and control of grazing-lands, animal feed resource and trade as well as provision for other related matters. The Act further gives mandate to the Local Government Authority in relation to soil conservation, prevention, of adverse effects to soil erosion in a grazing-land, rehabilitation, protection or improvement of the grazing-land, make by-laws on clearing of land for the purpose of cultivation of crops other than animal feed; use of implements or machinery; introduction or other.

2.2.7 The Fertilizer Act No. 9 of 2009

The act provides for regulation of manufacturing, importation, exportation, sale and use of agricultural fertilizers. It requires adherence to environmental legal requirements prior to issuance of permit for importation and exportation of fertilizers. Furthermore, the Act obligates owner, occupier or any person entrusted with the charge of the premises where undesired fertilizers, package or article is found, to cover cost for removal, reshipment or destruction.

2.2.8 The Industrial and Consumer Chemicals (Management and Control) Act No. 3 of 2003

The Act provides for the management and control of the production, import, transport, export, storage, dealing and disposal of industrial and consumer chemicals in the country. The Act provides for the registration, restrictions, prohibition and inspection of chemicals. Furthermore it has provisions for safe handling, chemical wastes, accidents; management of spills and contaminated sites and decommissioning of plants.

2.2.9 The Water Resource Management Act No. 11 of 2009

The Act provides for pollution control and issues discharge permits of influents to water bodies, including the underground strata. The Act also provides measures for flood mitigation and control for the purpose of preventing or minimizing the construction on submersible lands of dikes levees or other structures which will likely hinder the runoff of flood water.

2.2.10 The water Supply and Sanitation Act No. 12 of 2009

The Act aims at ensuring the quality of water by protecting water works and storage facilities against pollution. The Act also provides powers to Local Government Authorities to mobilize community water supply organizations to take over water supply schemes and get technical and financial support. The Act further gives mandate to the Local Government Authorities to make by-laws in relation to water supply and sanitation for the efficient and sustainable provision of these services in their areas of jurisdiction by water authorities or community organizations.

2.2.11 The Tourism Act No. 29 of 2008

The Act provides for institutional framework, administration, regulation, registration and licensing of tourism facilities and activities. It promotes eco-tourism, cultural tourism and other forms of tourism that provides better sectoral linkages create employment and foster sustainable development furthermore; the Act requires undertaking EIA prior to implementation of tourism projects/activities.

2.2.12 The Beekeeping Act No. 15 of 2002

The Act provide for conduct of beekeeping, improvement of the products of beekeeping and for the prevention and eradication of diseases and pests amongst bees. It requires undertaking of Environmental Impact Assessment, set out an environmental management plan and integrated pest management for eliminating and minimizing the impacts on the beekeeping environment.

2.2.13 The Mining Act No 14, 2010

The Act provides for regulation of prospecting for minerals, mining, processing and dealing in minerals. The Act requires all holders of mining licenses to take appropriate measures for the protection of the environment in accordance with the Environmental Management Act including undertaking EIA in mining activities.

2.2.14 The Land Act No. 4 of 1999

The Act provides areas of critical environmental importance. One of the important fundamental principles of the Act is to ensure that land is used productively and that any such use complies with the principles of sustainable development. Among others, the **Act prohibits any development activities within 60m** of the high tide water mark of the shoreline as well as in environmentally sensitive areas such as wetlands and swamps.

2.2.15 The Village Land Act No. 5 of 1999

The Act empowers the village Governments to have legal control on village land and its uses. This also includes prohibiting or minimizing land problems like bush fires as well as land use related conflicts between farmers and livestock keepers/pastoralists.

2.2.16 The Public Health Act No. 1of 2009

The Act provides for the promotion, conservation and maintenance of public health with a view of ensuring comprehensive functional and sustainable public health services. The Act also prohibits discharges into a sewer or into drain that may cause malfunctioning of the drainage systems.

- The Act deals with the protection of human health from occupational hazards.
- The Act provides for the protection of persons other than those at work against hazards to health and safety arising out of or in connection with activities of persons at work.
- The Act further requires companies or institutions safety gears to those working at risk areas

2.2.17 The Plant Protection Act No. 13 of 1997

The Act provides for prevention of the introduction and spread of harmful organisms, to ensure sustainable plant and environmental protection, to control the importation and use of plant protection substances, to regulate exports of plants and plant product.

2.2.18 The merchant shipping Act No. 21 of 2003

The Act, among others, provides for the prevention of marine pollution by oil, hazardous waste, noxious liquid, sewage, toxic waste, garbage and other substances and the protection of the marine environment.

2.2.19 The Rural Energy Act No. 8 of 2005

The Act establishes the Rural Energy Board, Fund and Agency responsible for promotion of improved access to modern energy services in the rural areas. It further prescribes principles of rural energy development including achievement of sustainable development when modern energy services in rural areas are promoted, facilitated and supported.

2.2.2 0The Urban Planning Act No. 8 of 2007

The Act provides for procedures for the preparation, administration and enforcement of land plans. One of the fundamental principles of land use includes protection of environment of human settlements and of ecosystems from pollution, degradation and destruction in order to attain sustainable development.

2.2.21 The Road Act No. 13 of 2007

The Act, among others, provides for protection of environment. It states that the road authority entrusted with the duties of developing, managing and maintaining public roads under its jurisdiction, shall comply with the prescribed guidelines, regulations relating to environmental protection and waste disposal.

2.2.22 The Local Government (Urban Authorities) Act No. 8 of 1982

The Act assigns responsibility to Urban Authorities the administration of taking measures for conservation of natural resources, safeguard and promote public health. Urban authorities are further required to take all necessary, reasonable and practicable measures for maintaining the area of their authority in clean and

sanitary condition and for preventing the occurrence of or for remedying or causing to be remedied any nuisance or condition likely to be injurious or dangerous to health.

2.2.23 The Local Government (District Authorities) Act No. 7 of 1982

The Act provide for measures to address some of the environmental concerns, among others, to curb land degradation caused by human activities such as overgrazing, development of human settlements and use of fuel-wood. Furthermore, the District Authorities have the following functions; and prevention of pollution of water in any river, stream, water course, well or other water supply in the area, and for this purpose prohibit, regulate or control the use of such water supply.

2.3 Regional Cooperation

2.3.1 The Southern Africa Development Community (SADC)

Tanzania is a member of Southern Africa Development Community (SADC). The objectives of SADC, are to achieve development and economic growth, alleviate poverty, enhance the standard and quality of life of the people of Southern Africa and support the socially disadvantaged through regional integration; and achieve sustainable utilization of natural resources and effective protection of the environment.

2.3.2 The East African Community (EAC)

Tanzania is a member of East African Community (EAC) OF 1999, which is the regional intergovernmental organization of Kenya, Uganda, Tanzania, Rwanda and Burundi. The regional co-operation and integration envisaged in the EAC is broad based, covering environment and natural resources management, trade, investments and industrial development, monetary and fiscal affairs, infrastructure and services, human resources, science and technology, agriculture and food security, tourism and wildlife management, and health, social and cultural activities.

2.3.3 Africa Union (AU)

Tanzania is one of the 54 members of the African Union (AU) which was established in July 9, 2002. The AU was formed as a successor to the Organization of African Union (OAU). The main objectives of the AU are to: accelerate the political and social-economic integration of the continent; promote and defend African common position on issues of interest to the continent and its people; achieve peace and security in Africa; and to promote democratic institutions, good governance and human rights.

2.3.4 Indian Ocean Rim-Association for Regional Cooperation (IOR-ARC)

Tanzania is one of the 19 members of the Indian Ocean Rim-Association for Regional Cooperation (IOR-ARC) which was initially known as the Indian Ocean Rim initiative that was include in March 1997. The priority areas identified for the IOR-ARC in medium and long-term include protection of environment;

poverty alleviation; research and management; energy; information technology; health; agriculture; maritime transport; fisheries; and disaster management.

2.4 Multilateral Environmental Agreements (MEAs) and Regional Cooperation

Tanzania has ratified various Multilateral Environmental Agreements (MEAs) in order to join the National Environmental concerns with International Community Efforts in addressing global environmental issues. The government has further domesticated most of these agreements. Multilateral Environmental Agreements to which Tanzania is part of include;

SN	Conventions/Treaty	Year of ratification
1	The Convention on Biological Diversity ,1992	1996
2	The United Nations Convention to Combat Desertification,1994	1997
3	The Basel Convention on the Control of Trans Boundary Movement of Hazardous Wastes and Their Disposal, 1989	1993
4	BAMAKO Convention on the Ban of the Import into Africa and the control Transboundary Movement of Hazardous within Africa,1991	1993
5	The United National Framework Convention to Climate Change (UNFCCC),1992	1996
6	The Convention on International trade in Endangered Species of Wild Flora and Fauna (CITES),1973	1979
7	The Kyoto Protocol to united National Framework to Climate Change,1997	2003
8	The Vienna Convention of the Protection of the Ozone Layer,1985	1993
9	T he Montreal Protocol on Substance Deplete the Ozone Layer,1987	1993
10	The SADC Protocol on Wild Conservation and Law Enforcement,1999	2003
11	The world Heritage Convetion,1972	1977
12	The Lusaka Agreement on Cooperative Enforcement Operations Directed at Illegal Trade in Wild Faun and Flora,1994	1994
13	The Convention for the Protection ,Management and development of the marine and coastal Environment of the Eastern African Region(Nairobi convention),1985	1996
14	The Convention on Migratory Species (CMS) (Bonn),1979	1999
15	The Convention on Wetland of International Importance(Ramsar convention),1971	1999
16	The Agreement of the Conservation of African Eurasian Migratory Water Birds (AEWA),1999	1999
17	The convention of sustainable management of Lake Tanganyika,2003	2004
18	The Rotterdam Convention on the Prior Informent Consent Procedure for Certain Hazardous Chemical and Pesticides in International trade,1998	2002
19	The Stockholm Convention on Persistent Organic Pollutants (POPs),2001	2004
20	The Cartagena Protocol on Biosafety,2000	2003
21	African Convention and Conservation of Nature and Natural Resources,1968	1974
22	The United Nations Convention on the law of the sea ,1958	1985

CHAPTER THREE
ENVIRONMENTAL ACTION PLAN

Environmental Action Plan is put forward as an implementation tool for the above mentioned Polici`es and Legislations. The National Environmental Action Plan focusing environmental management at National level, and the Sumbawanga Municipal Action Plan focusing environmental management at the Municipal level, each with several strategic actions for its implementation.

3.1 National Environmental Action Plan (NEAP)

This was firstly prepared in the year 2002. Since then, some of the major milestones were achieved to date including; preparation and implementation of National Environmental Policy (1997), the Environmental Management Act No. 20 of 2004 and other sectoral policies and legislations. These policies and legislations provide basis and guiding frameworks for environmental management in the country. The institutional framework for effective environmental management has been established to include sector ministries and Local Government Authorities.

In addition, Non-Governmental Organizations (NGOs), Community Based Organizations (CBOs), Private sector and individuals are actively participating in the environmental management initiatives. Furthermore, numerous national programmes, strategies and plans, have been developed and implanted to address key environmental challenges such as land degradation, water supply, waste management, water catchments conservation, deforestation, loss of biodiversity, costal and marine environment conservation and other emerging issues.

A number of initiatives have been undertaken in addressing land degradation. This includes national tree planting campaign which has increased rate of tree planting due to increased awareness. For instance, a total 629,641,817 trees were planted nationally between 2005/06-2010/11 covering a total land of 572,401.7 hectares in five years equals to average of 114,480.3 hectares per year. Through this compaign, Sumbawanga Muncipal Council has planted a total of 4,789,245 trees in this period of implementation. Between 2006 and 2010, the National Land Use Planning Commission (NLUPC) has prepared land use plans for 800 villages.

Forest and wildlife conservation has improved and the Government has successfully established 33 Wildlife Management Areas (WMAs). In addition, 2328 villages, equal to 22% of all villages in the country are engaged in Participatory Forest Management programme. Through this, 4,122,500 hectares which is about 12% of all forests in the country have been managed. The Sumbawanga Municipal has successfully managed about 2,468 hactares. Furthermore, the Government has established 1687 “Malihai” clubs in environmental conservation and awareness creation on the importance of conservation to the community. Among these 22 clubs exist in the Sumbawanga Municipality including; Chanji Secondary School, St Kagwa S.S, Rainbow S.S, Kizwite S.S, Itwelele S.S, Kalangasa S.S, Kichema S.S, Mtipe S.S, Lukangao

S.S, Muhama S.S, Katuma S.S, Mbizi S.S., Mafulala S.S, Kilimani S.S, Ojack S.S, Mazwi S.S, Sumbawanga S.S, Kanda S.S, St Agrey S.S, and Kantalamba S.S,.

Efforts to enable citizens to access clean and safe water have been undertaken by the government and hence increased the number of people with access to clean and safe water. In rural areas, proportion of people with access to clean and safe water increased from 6 percent to 57.8 percent in 2011, whereas in urban areas it increased from 25 percent in 1961 to 86 percent in 2011. In Sumbawanga Municipality, the access to clean water in rural areas is 40% percent while 78% percent is found in urban areas by the year 2014. Furthermore, the construction of dams has increased nearly 20 times more, from dams that could store 255.1 million cubic meters before independence to 5.2 billion cubic meters in 2011.

Achievements have been also made in waste management in the country. Some of these achievements include improved collection of solid waste in urban areas from an average of about 5% in 1990s to date, (Sumbawanga Municipality being raised her collection capacity from 35% in 2013 to 70% of solid waste collection in 2014 in the urban proper municipal areas). Provision of sewerage systems covers about 10% to 15% of the urban population (Sumbawanga Muncipal expecting to rise from 0 to 50% percent of sewerage services after the completion of the under construction sludge digester at Makutano area). In addition more than 69 industries have been involved in cleaner technology assessments and implemented different options contributing to reduction in emissions and waste as well as rational utilization of resources in term of utilities and raw materials.

Alternative sources of energy have been promoted including solar, wind and natural gas. The estimated current installed Photovoltaic (PV) capacity is about 550 kWp with an annual growth rate of about 20%. Currently, a total of 122 MW are being generated in the country using natural gas from Songosongo and Mnazi Bay, accounting for 45% of total thermal power generation connected to the national electricity grid. More than 25 industries have switched to natural gas instead of fuel oil which has contributed in reducing indirectly the amount of otherwise undesirable gaseous emissions. There are initiatives in cities to produce electricity from closed dump sites. For example the Mtoni dump site in Dar es Salaam is generating about 2.5 MW of electricity. These initiatives will further reduce greenhouse gas emissions.

Despite of these achievements, effective environment management in the country is still a challenge, due to the fact that many environmental challenges have emerged. For example climate change, modern biotechnology, biofuel, and Invasive Alien Species.

Institutional Framework

The Environmental Management Act, No. 20 of 2004 sets up the Institutional Framework for environmental management in the country. It confers the task of overall coordination and policy articulation of environmental management in the country and provision of the central support functions to the Minister Responsible for Environment, which is the Vice-President's Office.

The Act establishes the National Environmental Advisory Committee (NEAC) with the role of advising the Minister responsible for environment. It confers the role of enforcement of the National Environmental Management Council (NEMC). The Act directs the establishment of Sector Environment Sections with the role of overseeing environmental management to such respective sectors. It also gives power to the Regional Secretariats to designate Regional Environmental Management Expert (REME) charged with responsibility to advice and oversee implementation and enforcement of EMA in the region.

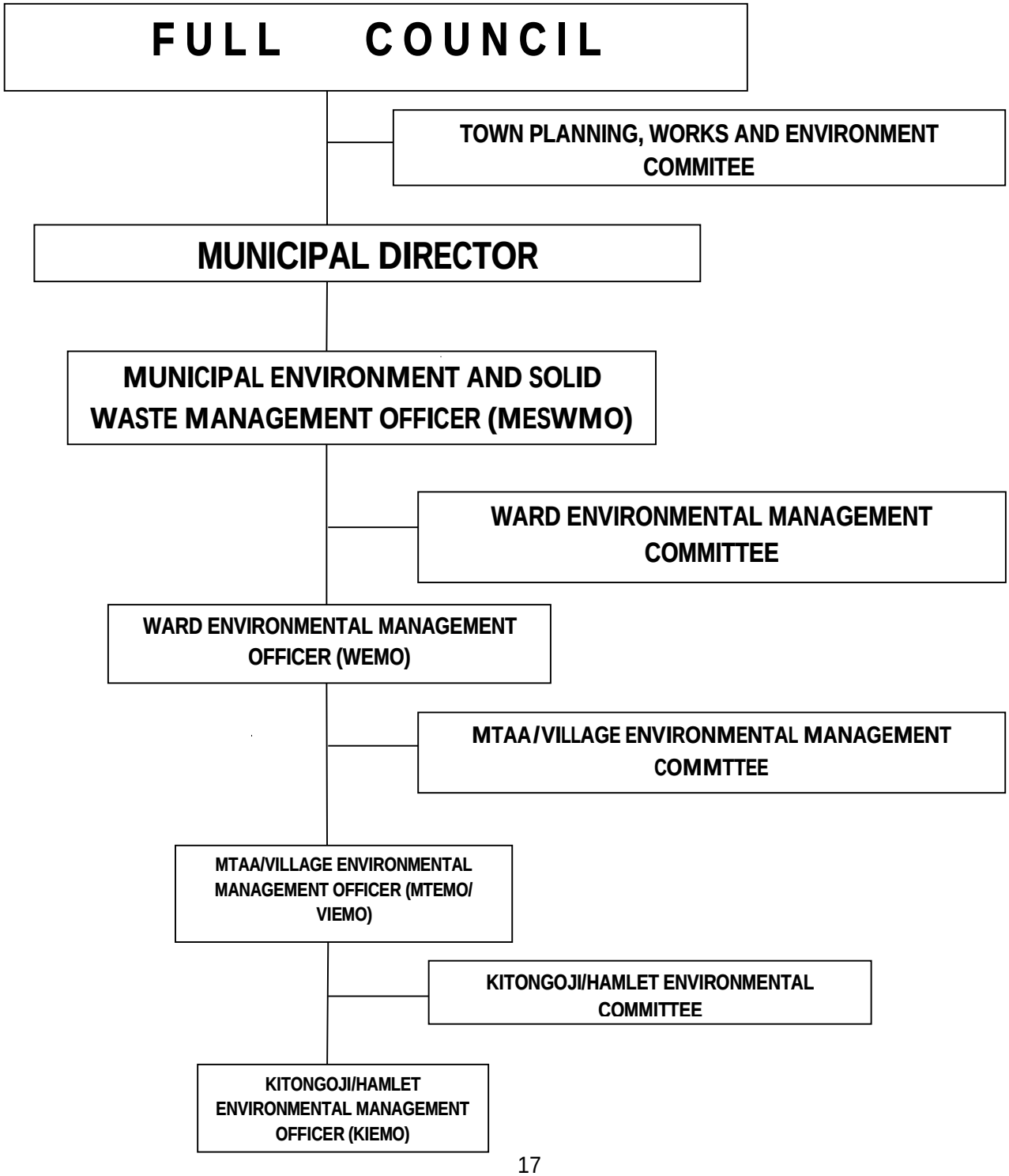
3.2 The Sumbawanga Municipal Environmental Action Plan (SMEAP)

The Environmental Management Act, 2004 empowers the LGAs (City, Municipal, Township and District Councils) to designate or appoint Environmental Management Officers all over their administrative levels, (Council, Ward, Village/Mtaa and Kitongoji). The Act also, establishes Environmental Committees at their respective levels to advice and oversees the implementation of EMA within their respective areas of jurisdiction. Being among the LGAs, the Sumbawanga Municipal Environmental Action Plan needs also to implement the requirements of EMA by establishing structural set of implementation organs.

3.2.1 Organization Structure for SMEAP Implementation

The SMEAP is an implementation plan of the NEAP in the Sumbawanga Muncicipal jurisdiction. It consists of clear and defined organization structure as directed by the EMA, 2004. The top council's decision making organ is the Full Council which sometimes delegates its powers to the Economics, Health, Education and Environment Committee. The Municipal Director is an overall in charge of the day to day EMA implementation activities in the Municipal assisted by the Muncipal Environmental Management Officer (MEMO). At Ward level, the Municipal has appointed the Ward Environmental Management Officers (WEMO) assisted by the Mtaa/Village Environmental Management Officers (MTEM/VIEMO) with their respective committee at their levels respectively. Figure 1, describes the organization setup for implementation of EMA, 2004 in the Sumbawanga Municipal Council.

Figure 1: Organization Structure for implementation of EMA, 2004 in the Sumbawanga Municipal Council.



3.2.2 The State of Environment in the Sumbawanga Municipal Council.

This Chapter highlights on the state of the environment in the context of the land, forest, water, biodiversity, urban environment, energy and atmosphere. Environment and natural resources are increasingly under pressure as a result unsustainable utilization. This is exacerbating by emerging issues such as Climate Change, Invasive, Alien Species Bio fuels, solid and liquid wastes and Electronic wastes.

3.2.2.1 Land Resources

The present land use is categorized into seven major land types namely; forest, woodland, grassland, cultivated land, open land and water features, forest and woodland. These occupy 1329 Km^2 percent of the Municipal land while 23,679 acres (95.8 Km^2) equal to 7.2% percent of the Municipal land is occupied by the Mbizi Forest protected area.

Despite the existing policies strategies and legislation the land resource is still affected by unsustainable farming and mining, wetland degradation, overgrazing, tree and bush clearing and wild fires. The rate of the land degradation is also accelerated by some social-economic factors including insufficient awareness and knowledge on relevant land policies and laws, and proper management of land and water resources. Inadequate alternative resources for energy and construction materials, insufficient number of Financial Institutions that support farmer in terms of credit to acquire or develop land in proper farming practices, insufficient institutions to provide information on availability for credits in need, guidelines/arrangements on how to access them are also challenges that are easily accommodated at the expenses of the environment. The lack of proper procedural systems on how to acquire land to landless groups like the youths in villages, do also increase pressure on sensitive areas. Furthermore, the rapid population growth and inadequate land use plans at various administrative levels accelerates land and resources degradation and land conflicts within the Municipality.

3.2.2.2 Forest and Woodlands

Apart from Mbizi Forest Reserve 234.67 Km2 (23,467 ha) equals to 16.8%, the Municipal also possesses 22 Km2 (2,200 ha) of natural community forests equivalent to 1.6% and planted forests 18.6 Km2 (1859 ha) 1.3% of the total Municipal area. Forests and woodlands are the sources for the most wood and non wood products. Wood products include timber, firewood, poles and charcoal. Non wood products include ropes, resins, tie and dye, game, meat, fruits, traditional and natural medicines, natural vegetables, palm leaves for making basket/mats, honey, beeswax and mushrooms. Furthermore, forest and woodland do provide other goods and services to people such as food, natural herbs for medicine, water catchment reserves and a number of intangible benefits to exist as outcomes of the presence of the forest and woodlands. Such benefits include depository of biodiversity, amelioration of climate (microclimate) carbon sequestration, habitat to wildlife, and cultural and religious values. The forest resources are facing a number of environmental challenges including over exploitation; bush fire and encroachments for various human activates.

3.2.2.3 Water Resources

Sumbawanga Municipal has no major surface water bodies except the few rivers and water streams. Among the few definable river streams include Lwiche, Kanantumbi, Mzika, Muva, Ndua, Momoka and Mwambazi. Groundwater play a major role in maintaining the sustainability of these surface water resources and are found mainly in rural areas. The main environmental challenges confronting the water resources in the Sumbawanga Municipality area is sedimentation in reservoirs and waterways, pollutions, encroachment of water resources and droughts. Human activities such as unsustainable fishing, agriculture and grazing in catchment areas and mining have been observed as major sources of pollution of many water sources.

3.2.2.4 Biodiversity

Tanzania is the one of the twelve mega diversity countries of the world and the nation's biological diversity as important economic technological and social implications. It is the fourth country in Africa with the largest number of mammals (at least 310 mammal species) and a number of highest species richness of birds, plants, amphibians and reptiles.

In the Sumbawanga Municipality, two vegetation types are commonly identified; The grassland vegetation type, where 175 species distributed in 37 families are identified. Among these, four large families contribute 48% of the total species. These include *Composite* (24 pp.), *Gamine* (24 spp.), *Papilionaceae* (19 spp.) and *Rubiaceae* (17 spp.). In forest plants, there are 56 families but none of them contain more than 7 species each. The flora has only one endemic family of *Oliniaceae* and one endemic genus of *Ficalhoa.* Most of these species diversity are commonly found in Mbizi Forest Reserve (White 1983). Major threats confronting these biodiversity include encroachment bushfire, pollution of river, lake, ocean over-exportation invasive alien species and climatic change impacts.

3.2.2.5 Genetically Modified Organisms (GMOs)

Modern biotechnology is increasingly gaining popularity as an important tool for technological advancement in medicine, agriculture, environment and industry sectors. Commercial introduction of GMOs in the country is yet to take place apart from few research activities. Tanzania has also been handling shipments of GMOs to neighboring country. In view of health, environmental, socio place legal and administrative framework to regulate GMOs. Challenges facing the safe use of modern biotechnology in the country include inadequate public awareness; funding; human and infrastructural capacities. Sumbawanga Municipal is also facing these challenges in the sectors practicing this new technology.

3.2.2.6 Urban Environment

The rapid growth of urban population is a challenge due to the fact that the population growth is not proportion provision of services such as water supply and sewerage facilities, housing, road infrastructure and Municipal waste management. The inadequate services have resulted in emergence and growth of informal settlements occupying about 60% of housing in urban areas. National wise, it is estimated that about 70% of the urban population live in unplanned settlements. In Sumbawanga Municipality, it is estimated that 45% of proper urban population live in unplanned settlements. Such settlements accelerate potential public health and environmental risks as a result of inadequate urban planning and settlement managenent.

3.2.2.7 Electronic Waste (E-Waste)

The fast growing use of Information and Communication Technology (ICT) and rapid turn-over in technology is creating a growing e-waste stream in Tanzania. The challenge of e-waste is even of greater concern in the country because of inadequate capacity to handle and recycle the hazardous materials contained in e-waste. These lead to disposal of these wastes together with normal municipal wastes in dumpsites hence increasing environmental and health risks to the nearby community.

3.2.2.8 Municipal Waste

Municipal waste consists of wastes collected by or on behalf of Municipal Authorities and disposed off through their waste management systems. These include solid and liquid waste. Increasing urbanization, rising standards of living and rapid development associated with population growth have resulted in increased solid and liquid waste generation mainly by industrial and domestic activities. It is estimated that more than 70 tones of municipal solid waste are generated per day in Sumbawanga Municipal Council. The increase in waste generation is not equivalent to increase in the capacity of the relevant urban authorities to deal with this problem. In average, about 60% of solid wastes generated in Sumbawanga Municipal proper urban areas are collected and disposed at dumpsite daily. Some solid wastes are disposed of by burning and others may end up in drains or burial sites.

The proper management of liquid waste has become one of the most pressing and challenging environmental problems in the country. Currently, the Sumbawanga Muncipal Council has no formal sewerage systems that provide services to the population, however, the under construction sludge digester at Makutano area under SUWASA is expected to reduce this challenge after completion. However from existing literatures, most of the pond systems are not working properly which means that raw sewerage is discharged to the surface and ground water resources. Inadequate coverage of sewerage system in the municipal areas contributes to incidence of water borne disease in different parts of the urban areas.

3.2.2.9 Traffic Congestion

The fast growing development, population density, insufficient public transport systems and inadequate road and heavy trucks packing infrastructures in Sumbawanga Muncipal urban areas has caused the existence of higher traffic jam and frequent street road damages. Existing literatures express that traffic congestion has been causing air pollution from *sulpher dioxide, carbon monoxide, nitrogen oxides* and *particulate matters*. Moreover, noise pollution from imported second hand vehicles with poor fuel combustion efficiency do affect human health apart from contributing to increased green house gases to global atmosphere.

3.2.2.10 Air, Water and Noise Pollution

The air pollution problem is more acute in urban areas principally due to concentration of social economic activities. The major source of air pollution include transportation, industrial processes, mining, domestic biomass burning, energy production, uncontrolled waste disposal, chemical management, agriculture and animal husbandry. In general, the pollutant density level in the air around the urban and industrial areas in the municipal is relatively higher than that found in rural areas. Although no quantitative data exists in the municipal, but existing studies do emphasize that the major source of ambient air pollution is from vehicle emissions, the largest emitters being order vehicles and diesel powered vehicles in urban areas.

In rural areas the principle sources of air pollution are kerosene and biomass burning which are responsible mainly for indoor pollutions. The presence of noise pollution in different municipal areas is growing up due to social activities (bars, night club, and social halls), small scale service industries, use of generators in residential areas, motor vehicles, and open area vehicle maintenance activities. Open disposal of used oils from engines, domestic sewerages ends up in running street waters to water streams and rivers as well as ground water dependable by most of low land population.

3.2.2.11 Energy Resources

Sumbawanga Municipality is endowed with diverse energy sources including biomass (wood and charcoal), electric power from diesel engine and hydropower from Zambia are available as the municipal major energy sources. Solar power and biogas sources are also used especially in rural municipal areas, and few municipal populations do also use natural gas for domestic energy. Other existing dormant energy sources are also defined in the municipal areas; for example, coal reserves have been identified at Namwere area in Ntendo ward. Another energy source opportunity in the municipal exists in solid wastes which might be utilized as the Mbalika landfill become full completed and utilized as an alternative source of energy through Methane gas production. Challenges facing energy sector include climate change, high initial cost of environmentally and socially sound energy technology and inadequate human skills and institutional capacities.

3.2.2.12 Climate Change

The impacts of global warming are already evident in almost all sectors of the economy throughout the municipality and country as a whole. For example, there are several droughts and excessive rains in the past few years triggered devastating power crisis in recent years. All major river streams which are the main sources of water for domestic, agriculture, livestock farming are coming to the lowest levels in recent years. Several challenges are being experienced including inadequate capacity to fund adaptation and mitigation activities, low public awareness, inadequate institutional and human resource capacities to address climate issues, and inadequate national specific adaptation capacities including national research based adaptation technologies.

3.2.2.13 Environmental Disasters

Environmental disasters in the Sumbawanga Municipality are aggravated by some natural actions including flood, drought, storms, wind and human induced disasters for example settlement in hazardous prone areas. Droughts have major impacts on the environment and do affect lives of both human and other living organisms. For instance, the droughts have greater impacts in crop yields and livestock development hence society economical deterioration. Floods also contribute significantly to the destructions of the natural resources resulting into social economic losses and environmental degradation.

CHAPTER FOUR

IMPLEMENTATION PLAN OF SUMBAWANGA MUNICIPAL ENVIRONMENTAL ACTION PLAN (SMEAP)

4.1 Introduction

This chapter sets up a plan of action to address environmental challenges/issues by providing priority actions, expected outputs, timeframe, key actors and indicators for tracking progress. The implementation approach takes into account the institutional arrangements as stipulated under EMA, 2004. The frame for implementation is categorized as short term [0-2 years] and long term [5years and above]. The environmental challenges/issues addressed in this chapter include; Land degradation, water resources degradation and pollution, degradation of aquatic resources, loss of wildlife habitats and biodiversity, deforestation, urban pollution and municipal waste management, climate change, modern biotechnology, electric and electronic equipment wastes, Invasive Alien Species and bio fuels.

4.2 Implementation Strategies

4.2.1 Stakeholder Involvement

Environmental concerns are cross cutting in nature and their impacts are obviously felt at various levels. Integration of environmental plans in development process at all levels is an important tool in ensuring Sustainable Development. Stakeholder's involvement in environmental action planning is a legal requirement. Environmental Management Act No. 20 of 2004 provides for environmental planning in the country and obliges each Sector Ministry, and Local Government Authorities to develop their Environmental Action plans based on the NEAP.

The Sumbawanga Municipal Council has therefore prepared this SMEAP to address management of environmental resources available in the municipality. This SMEAP directs each sector department in the municipal to maintain friendly environmental sustainability and are required to address this in their project implementation plans and budgets. The existing environmental strategies, programmes and projects set the framework for stakeholder's involvement in environmental protection and management in the country as well as in the Sumbawanga Municipal Council.

The implementation, monitoring and evaluation of SMEAP will involve Municipal working departments, local communities, civil societies, private sectors, academic institutions, Ward and Village/Mtaa Government Authorities, and individual area decision makers. The key stakeholders in the implementation of this SMEAP are presented above and will be under the coordination of the Municipal Director's Office, Environmental Management Unit. Stakeholders are obliged to prepare and submit (within their quotary reports), their actions to address environmental resource sustainability.

4.2.2 Resource Requirements

Effective environmental protection and management through appropriate implementation of the Environmental Action Plans requires a deliberate allocation of both financial and human resources. The benefits from various interventions in integration of environmental concerns depend on planning processes. Therefore, there is a need for prioritization of environmental issue in the budget allocation process. Potential sources of funding include:

- ✓ National Environmental Trust Fund.
- ✓ Constituency Development Fund
- ✓ Central Government and Municipal Budgetary allocations;
- ✓ Global Environment Facility;
- ✓ Support from NGOs; CBOs; FBOs and
- ✓ Contributions from private sector and individuals.

In addition there is a need for carrying out a needs assessment to each Municipal department to identify resource requirements for effective implementation of the SMEAP. This will enable formulation of a Departmental mini-strategy for resource mobilization and advise means to facilitate accessibility of these resources by stakeholders.

4.2.3 Monitoring and Evaluation

The purpose of monitoring and evaluation of the SMEAP is to ensure effective and efficient implementation of various priority actions in addressing environmental challenges. The monitoring and evaluation of the Sumbawanga Municipal Environmental Action Plan will be carried out using participatory approaches. Monitoring will be undertaken on continuous basis. Evaluation of the implementation of the SMEAP will be done annually and at the end of the duration of the SMEAP. Annual evaluations are meant to assess performance and provide opportunity to reflect on the gaps and devise remedial measures. The terminal evaluation will provide inputs in reviewing the SMEAP.

4.3 Implementation Plan of SMEAP, 2014-2019

Environmental challenge/issue		Priority Actions	Expected output	Indicators	Time frame	Implementers.
1	Land degradation	Strengthen enforcement of legislation related to land use.	Land use management improved	Number of land use plans	Medium term	Departments related to Land use planning, Environment and Cleansing, Livestock, Agriculture, Water, Works, Forestry and Natural Resources, NGOs and CBOs.
		Carryout environmental mapping to identify the highly degraded/fragile areas.	Environmental maps in place	Number of environmental maps	Medium term	Departments related to Land use planning, Environment, Natural Resource Management, Water, SUWASA and TFS.
		Promote preventive measures against wild fires	Integrated fire management plans developed and implemented	Incidences of bush fires	Short term	Departments related to Forestry and Natural Resource management, Livestock, Agriculture, Environment, TFS, WDCs and VCs.
		Enhance implementation of the SMEAP to Combat Desertification.	• SMEAP on Desertification implemented. • Reduced Desertification	Rate of Desertification	Medium term	Departments related to Forestry and Natural Resource management, Livestock, Agriculture, Environment and TFS, WDCs and VCs.
		Prepare and implement reclamation plans in highly degraded areas	Reclamation plans in place and implemented	Areas of reclaimed land.	Long term	Departments related to Land use planning, Environment, Natural Resource Management.
		Promote sustainable agricultural practices	Sustainable agricultural practices implemented	Number of best practices	Long term	Departments related to Livestock, Agriculture, Environment, WDCs and VCs.
		Promote use of traditional	Traditional knowledge	Number of farmers engaged in the use of traditional	Long term	Departments related to Land use planning, Environment and Natural

		knowledge in land management	promoted and implemented	knowledge		Resource Management.
		Promote rangeland resources management.	Rangeland resources management plans, programmes and strategies in place	Number of plans, programmes and strategies	Long term	Departments related to Land use planning, Environment and Natural Resource Management.
		Strengthen research extension services and farmer organizations in land use and information sharing.	• Research capacity improved in municipal areas. • Extension services to farmers strengthened.	• Number of Researches performed • Ratio of extension staff to farmers.	Long term	Departments related to Livestock, Agriculture, Environment and Research Institutions.
		Strengthen Implementation of the Strategy for Urgent Action on Land Degradation and Water Catchment	The Strategy implemented effectively	Rate of degradation of land and water catchments	Long term	Departments related to Land use planning, Environment, Natural Resource Management, Water and Law.
2.	Water Resources Degradation and Pollution	Strengthen enforcement of legislation related to water resources management and Water Supply and sanitation	Compliance to relevant legislation	• Number of water catchments identified and conserve • Level of compliance	Long term	Departments related to Land use planning, Environment, Natural Resource Management, Water, Livestock, Agriculture, Law, WDCs and VCs.
		Promote local communities participation in the enforcement of water abstraction	Local communities participation in the enforcement of abstraction of water from the authorized agencies	Incidences of un authorized water abstraction	Long term	Departments related to Land use planning, Environment, Natural Resource Management, Water, Livestock, Agriculture, Law, WDCs and VCs.
		Strengthen implementation of integrated water resources management plans	Water resources management plans implemented	• Quantity and quality of water • Areas of water catchments conserved.	Long term	Departments related to Environment, Natural Resource Management, Water, Livestock, Agriculture, Law, WDCs and VCs.
		Establish/Improve wastewater management systems in urban	Wastewater management systems in urban areas	• Number of clients	Long term	Departments related to Land use planning, Health, Environment and

		areas of the Municipal.	established/improved	connected to the Sewerage systems • Storm water drainage network • Number of on-site facility		Sanitation, Water, Law, WDCs and SUWASA.
		Strengthen integrated solid waste management system	Improved solid waste management	• Amount of solid waste collected and disposed • Amount of solid waste recovery and recycled/reuse	Long term	Departments related to Land use planning, Health, Environment and Sanitation, Planning, Procurement, Treasury, Law and WDCs.
		Promote wastewater treatment, recycling and reuse	Reduced environmental pollution and water demand	• Pollution level • Amount of water consumed	Long term	Departments related to Land use planning, Health, Environment and Sanitation, Planning, Procurement, Treasury, Law and WDCs.
3.	Degradation of Aquatic Resources	Strengthen implementation of the Strategies and programmes related to Aquatic resources including the National Strategy for Urgent Action to Conserve Costal and Marine Environment, Lakes, River and Dams.	The strategies and programmes implemented	Rate of degradation of aquatic resources	Long term	Departments related to Land use planning, Environment, Natural Resource Management, Water, Livestock and fisheries, Agriculture, Law, WDCs and VCs, CBOs, NGOs.
		Promote sustainable utilization of aquatic resources	Aquatic resources utilized sustainably	Rate of utilization of aquatic resources	Long term	Departments related to Land use planning, Environment, Natural Resource Management, Water, Livestock and fisheries, Agriculture, Law, WDCs and VCs, CBOs, NGOs.
		Prevent and control pollution in aquatic systems	Quality of aquatic systems improved	Quality of aquatic systems	Long term	Departments related to Land use planning, Environment, Natural Resource Management, Water, Livestock and fisheries, Agriculture, Law, WDCs and VCs, CBOs, NGOs.

		Strengthen Enforcement of legislation related to investment and utilization of aquatic resources	Compliance to legislation related to investment and utilization of aquatic resources	• Incidences of violation of legislation • Number of investments with environmental clearance	Long term	Departments related to Land use planning, Environment, Natural Resource Management, Water, Livestock and fisheries, Agriculture, Law, WDCs and VCs, CBOs, NGOs.
		Promote ecosystem approach in aquatic protected areas	Ecosystem approach in aquatic protected areas adopted and implemented	Number of Protected Areas practicing Ecosystem Approach	Long term	Departments related to Land use planning, Environment, Natural Resource Management, Water, Livestock and fisheries, Agriculture, Law, WDCs and VCs, CBOs, NGOs.
		Promote participatory fishery management and raise awareness on sustainable fisheries	• Increased participation in fishery management • Awareness raised	• Number of BMUs and involved • Level of awareness	Long term	Departments related to Planning, Environment, Natural Resource Management, Water, Livestock and fisheries, Law, WDCs and VCs, CBOs, NGOs.
		Promote regional cooperation on management of trans-boundary water resources	Regional agreements, plans, programmes, projects in place	Number of agreements, programmes, plans, project in place	Long term	Departments related to Project planning, Environment, Natural Resource Management, Water, Livestock and fisheries, Agriculture and Co operation, Law, WDCs and VCs, CBOs, NGOs.
		Strengthen institutional and human capacity in management of aquatic resources	Institutional and human capacity improved/enhanced	Number of facilities and trained personnel	Long term	Departments related to Project planning, Environment, Natural Resource Management, Water, Livestock and fisheries, Agriculture and Co operation, Law, Treasury, WDCs and VCs, CBOs, NGOs.
		Improve data collection and information management on aquatic resources/environment	Up-to-date data and information in place	Data and information	Long term	Departments related to Environment, Natural Resource Management, Water, Livestock and fisheries, WDCs and VCs, CBOs, NGOs.

		Promote research and dissemination of findings on aquatic management	Identification of best management practices and priority areas	Number research reports Number of best practices and priority areas	Long term	Departments related to Environment, Natural Resource Management, Water, Livestock and fisheries, WDCs and VCs, CBOs, NGOs.
4.	Loss of Wildlife Habitats and Biodiversity	Review implement the National Biodiversity strategy and Action Plan	National Biodiversity Strategy and Action Plan reviewed and implemented	Number of biodiversity	Long term	Departments related to Environment, Natural Resource Management, Land Use planning, Livestock and fisheries, Agriculture, WDCs and VCs, CBOs, NGOs.
		Strengthen implementation of National Strategy on Wetlands	National strategy on Wetlands implanted	Rate of wetlands degradation	Long term	Departments related to Environment, Natural Resource Management, Water, Livestock and fisheries, WDCs and VCs, CBOs, NGOs.
		Re-examine the entire protected area network in the Municipal areas for long term sustainability.	Protected areas network report in place	Number of reports	Medium term	Departments related to Environment, Natural Resource Management, Water, Livestock and fisheries, WDCs and VCs, CBOs, NGOs.
		Promote the International, National and Regional cooperation to ensure that the Municipal benefits from transfer of its genetic resources	Agreements and protocols in place	Number of benefits from transfer of genetic resources	Long term	Departments related to Environment, Natural Resource Management, Livestock and fisheries, CBOs, NGOs.
		Strengthen Capacity Building and awareness on the management of terrestrial ecosystems within the Municipality.	Capacity Building and awareness enhanced in Municipal areas.	Number of awareness programmes and staff trained in the Municipal.	Long term	Departments related to Environment, Natural Resource Management, Water, Livestock and fisheries, CBOs, NGOs.
		Implement measures to control deforestation, overgrazing and pollution	Deforestation, overgrazing and pollution controlled	• Rate of deforestation, degradation and pollution • Number of	Long term	Departments related to Land use planning, Environment, Natural Resource Management, Water, Livestock and fisheries, CBOs, NGOs.

				livestock units per area		
		Promote and strengthen Wildlife Management Areas	Programmes on Wildlife Management Areas implanted.	Number of wildlife management areas	Long term	Departments related to Environment, Natural Resource Management, Water, Agriculture, Livestock and fisheries, CBOs, NGOs.
		Strengthen implementation of measures to control wildlife poaching and illegal harvesting of forestry products	Illegal harvest of wildlife and forest products controlled	Incidence of illegal taking of wildlife and forest products from protected areas reduced	Long term	Departments related to Environment, Natural Resource Management, Water, Livestock and fisheries, CBOs, NGOs.
		Promote monitoring and conservation of endangered and threatened species	Endangered and threatened species conserved	Number of endangered and treated species	Long term	Departments related to Environment, Natural Resource Management, Water, Livestock and fisheries, CBOs, NGOs.
		Promote research and dissemination of findings on wildlife and biodiversity	Identification of priority areas and best practiced for conservation	Number of research reports and best practices	Long term	Departments related to Environment, Natural Resource Management, CBO,s and NGOs.
5	Deforestation	Strengthen enforcement of forest related legislations.	• Improved forest patrol and surveillance • Forest legislation compliance	• Number of forests conserved • Level of compliance	Long term	Departments related to Environment, Natural Resource Management, Water, Agriculture, Livestock and fisheries, CBOs, NGOs, WDCs and VCs and TFS, .
		Promote establishment of wood lots	Woodlots established	Area of woodlots	Long term	Departments related to Environment, Natural Resource Management, TFS, CBOs, NGOs.
		Control and promote sustainable production of charcoal	Charcoal business managed	• Tones/ bags of charcoal • Percentage produced from sustainable manage forest/ woodlands.	Long term	Departments related to Environment, Natural Resource Management, TFS, CBOs, NGOs, WDCs and VCs.
		Strengthen energy conservation	Energy efficiency	Number of energy efficient	Long term	Departments related to Environment, Natural Resource Management, TFS,

		programmes	programmes implemented	technologies		CBOs, NGOs.
		Promote use of alternative energy sources such as solar natural gas and wind	Alternative source of energy used	Number of alternative source and users	Long term	Departments related to Environment, Natural Resource Management, TFS, CBOs, NGOs.
		Promote use of traditional knowledge that enhance environmental conservation	Traditional knowledge practiced	Number of traditional knowledge practiced	Long term	Departments related to Environment, Natural Resource Management, Water, TFS, CBOs, NGOs, WDCs and VCs.
		Strength tree planting and conservation campaign	Tree planting and conservation campaigns strengthened	Number of trees planted and survived	Long term	Departments related to Environment, Natural Resource Management, TFS, CBOs, NGOs, WDCs and VCs.
		Prepare and disseminate awareness programmes on sustainable forest management	Awareness programmes prepared and implemented	• Number of programmes on sustainable forest management • Level of awareness	Long term	Departments related to Environment, Natural Resource Management, TFS, CBOs and NGOs.
6.	Urban Pollution	Strengthen enforcement of legislation related to urban pollution prevention and control.	Enforcement of legislation implemented	Level of compliance	Long term	Departments related to Environment, Health Management, CBOs, NGOs, WDCs and MCs.
		Establishment/ strengthen integrated waste management system.	Integrated waste management in the Sumbawanga Municipality and towns established	Area and population serviced	Long term	Departments related to Environment, Health Management, CBOs, NGOs, WDCs and MCs.
		Strengthen data base and reporting system on municipal waste management.	Data base in place	Availability of up dated data	Long term	Departments related to Environmental Management and Cleansing.
		Develop and implement national waste management strategy and action plan.	Municipal waste management and action plan in place and implemented.	• Amount of waste collected, treated and disposed • Amount of waste put under 4Rs, (recovered/	Long term	Departments related to Environmental Management and Cleansing.

				recycled and re- use)		
		Promote use of excreta and other organic waste as sources of energy	Excreta and other organic waste used as sources of energy.	Number of technologies and users	Long term	Departments related to Environmental Management and Cleansing, Livestock and Agriculture, WDCs and VCs/MCs, CBOs and NGOs.
		Strengthen implementation of programmes on up grading of infrastructures for un planned settlements	Programmes on up grading of infrastructure for unplanned settlement implemented	Area upgraded	Long term	Departments related to Environmental Management and Cleansing and Urban Planning and Development.
7.	Climate Change	Undertake comprehensive vulnerability assessment on climate change impacts	Vulnerability assessment reports in place	Number of Reports	Medium term	Departments related to Environmental Management and Cleansing and Urban Planning, Health and Development and Community Development.
		Implement the national climate change strategy and action plan of 2009	Implementation reports on the strategy and action plan including national action plans [NAPs] and nationally appropriate mitigation actions [NAMAs]	Number of reports	Long term	Departments related to Environmental Management and Cleansing, and Natural Resources Management.
		Mainstream climate change adaptation into sectoral policies, strategies, programmes, plans and budgets	• Climate change adaptation issues mainstreamed • Mitigation programmes and projects prepared and implemented.	Number of policies, strategies and programmes	Long term	Departments related to Environmental Management and Cleansing, and Natural Resources Management and Community Development.
		Enhance public awareness and understanding on climate change	Awareness programmes implemented	• Number of awareness programmes	Long term	Departments related to Environmental Management and Cleansing, and Natural Resources Management and Community

		adaptation and mitigation		• Level of awareness and understanding		Development.
		Design and implement programmes and projects at LGAs level to address adaptation	Programmes and projects prepared and implemented	Number of programmes and projects	Long term	Departments related to Environmental Management and Cleansing, and Natural Resources Management and Community Development, MECon.
		Promote/ strengthen modern and traditional early warning systems	Functional early warning systems in place	• Up to date information • Number of indigenous knowledge used	Long term	Departments related to Environmental Management and Cleansing, and Natural Resources Management and Community Development, MECon.