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ADDRESSING LAND BASED ACTIVITIES IN THE WESTERN INDIAN OCEAN

DRAFT REGIONAL 'STATE-OF-THE-ART' REPORT ON
MUNICIPAL WASTEWATER MANAGEMENT IN THE WIO –
Lab REGION

By: Sixtus Kayombo

FINAL DRAFT

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LIST OF ACRONYMS AND ABBREVIATIONS

MWW	Municipal Wastewater
WIO	Western Indian Ocean
EMCA	Environmental Management and Coordination Act
PUC	Public Utilities Corporation
WMA	Wastewater Management Authority
NGO	None Governmental Organization
WHO	World Health Organization
GPA	Global Programme of Action
SBR	Sequencing Batch Reactor
WSP	Waste Stabilization Pond
TF	Trickling Filter
RBC	Rotating Biological Contactors
GVSP	Greater Victoria Sewerage Project
MLVSS	Mixed Liquor Volatile Suspended Solids
NYS	National Youth Service
EPA	Environmental Protection Agency
OAS	Organization of American States
MDG	Millennium Development Goals
UWASA	Urban Water and Sanitation Authorities
IWRM	Integrated Water Resources Management
WSS	Water Supply and Sanitation
NEMA	National Environment Management Authority
GVSP	Greater Victoria Sewerage Project
BVSP	Beau Vallon Sewerage Project
LBA	Land-based Activities
WSSD	World Summit for Sustainable Development
GNP	Gross National Product
MPA	Marie Protected Areas
EACC	East African Coastal Current
WIOMSA	Western Indian Ocean Marine Science Association
NEAP	National Environmental Action Plan
EMPS	Environmental Management Plans of Seychelles
EIA	Environmental Impact Assessment
MEA	Multilateral Environmental Agreements
O&M	operation & maintenance
CBO	Community Based Organizations

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Executive summary

The marine and coastal environment of the countries of the Western Indian is rich in biodiversity and associated natural resources that in some hotspot areas are already been stressed by discharge of wastewater from urban areas. The need for action to reduce stress on ecosystems by strengthening the regional legal basis for preventing land based sources of pollution, partly through development of capacity for sustainable development cannot be under emphasized. The Regional status report presents the findings of the review of municipal wastewater management approaches in the WIO Region. The report also examines the GPA Municipal wastewater management guideline and establishes their applicability in the WIO Region.

The existing wastewater management policies and strategies in the WIO Region countries have been potential of resulting into significant changes in the way wastewater is managed and thus enhance public health and the integrity of the environment. The major problem, however, is the enforcement of policies, regulations and legislations. Wastewater management in the region is also hampered by weak institutional capacity, inadequate coordination and collaboration, unclear demarcation of responsibilities among various actors and low public awareness among the targeted communities. There is also a problem on the implementation and dissemination of policy and regulatory frameworks at all levels, particularly at the lower level close to beneficiaries (local communities, private sector, etc). Training and capacity building in local authorities with respect to attribution of ownership would considerably contribute to effective implementation of water and sanitation policies and associated legislation/regulations. Capacity building in the region is required for proper management of municipal wastewater.

The urban areas located along the coast are the major sources of contamination of the ocean due to disposal of raw industrial and domestic wastewater. Some of the sewerage systems installed in the region have no connection to wastewater treatment plants. Lack of technical manpower for operation and maintenance of sewerage systems in WIO Region has resulted in many installed sewerage systems and treatment plants not to function according to design. Sewage treatment technologies vary considerably among the WIO countries. South Africa, Seychelles and Mauritius use non conventional and conventional wastewater treatment technologies for domestic and industrial wastewater treatment. The application of conventional wastewater treatment technology in South Africa, Seychelles and Mauritius has been successful mainly due to good economy and reliable energy supply.

The most commonly used sanitary facility in the region is traditional pit latrine (78%), followed by septic tank (13%). The population served by sewerage system is only 3%. Six percent (6%) of the population in the region have no facilities, less than 1% of the population in the region use ventilated improved pit latrines and different sanitary facilities such as Ecosan toilets and others. This data indicates population in most of the coastal areas in the WIO Region do not have adequate and appropriate sanitary facilities. The pollution loading due to usage of septic tanks in the region was estimated to be

21,739 tonnes per year BOD₅, 5041 tonnes year Suspended solids, 10397 tonnes per year nitrogen and 1260 tonnes year phosphorous.

Overall, control of pollution from sewage and industrial wastewater is a major challenge for most countries in the WIO region. The total volume of industrial wastewater discharged into the ocean (some partially treated and untreated) was found to be 1,515,762m³ per day (discharged from Tanzania, Madagascar, Mauritius and South Africa). The expansions of the wastewater treatment facilities and infrastructure have not kept pace with population growth and the proportion of the population without wastewater treatment facilities is increasing.

The Existing constraints in MWW management practices and methods in the region are numerous. These constraints range from inadequate financial capacity, human resources, lack of capacity within the institutional arrangements; poor organisation structures, lack of clear allocation of responsibilities and political interference of supposedly autonomous institutions by other arms of governments. Capacity for the selection of appropriate technology in the region is also one of the constraints due to the fact that experts in the field of MWW management are limited.

The review of the GPA MWW Guidelines indicate that the guideline and principles are relevant to most of the countries in the WIO Region and if adopted could lead to a major improvement in the way wastewater is managed. Opportunities for domestication of the GPA Guidelines for Wastewater management exist in all countries in the region. The level of domestication might, however, differ from one country to another due to availability of resources, urban setup and technological selections. Devolution of responsibilities for the MWW sector requires an enabling environment both at national and local levels in the region.

Sustainable utilization of the coastal environment and its resources in the Western Indian Ocean (WIO) region is paramount importance considering the ecological, social economic and cultural importance of the coastal and marine ecosystems to the to the local communities and countries economies. There will be more challenges as a result of increasing population including the increasing dependency on coastal and marine ecosystem.

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