

Rivers network and pollution abatement (DRNPA) project - a case study

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Abstract

The land disposal of solid wastes creates an important source of groundwater pollution. A land fill may be defined as any land area serving as a depository of urban, or municipal, solid waste. Leachate from a landfill can pollute groundwater if water moves through the fill material. Polluted surface water bodies that contribute to groundwater recharge become source of groundwater pollution. Both Hydrogeological and Ecological factors considered by HESO - Tanzania, revealed that, marine ecology of the Indian ocean as well as groundwater recharging aquifers, are both more likely to be affected by pollution in Dar Es salaam. Some of development activities were noted by HESO - Tanzania to have high negative impact on environment e.g. riverbanks have been destructed by sand vendors etc. HESO - Tanzania recommends that the time to act against all possible causes of the problem should be now. To act immediately upon the situation, HESO - Tanzania has begun to undertake conservation initiative. For example, soil-conserving trees has been planted along Sinza river basin, also environmental awareness to the community regarding Rivers management in Dar Es salaam is under way with collaboration of the Local government authority. In order to bring the sustainability and put forward the agenda "Think globally, act locally", HESO - Tanzania has proposed to set-up a project to be known as "Dar Es salaam Rivers Network and Pollution Abatement" (D.R.N.P.A.). Apart from aforementioned activities, D.R.N.P.A.-project will also promote nutrition and poverty alleviation through sustainable Dar Es salaam rivers use in micro agricultural activities and other income generating activities.

INTRODUCTION

In many cities, towns, and rural areas of the World today people live and raise their Children in highly polluted environment. Urban and Peri-urban areas in developing countries are among the worst polluted and disease ridden habitats of the World. Much of the pollution, which lead to high rates of disease, malnutrition death, is caused by lack of toilets and inadequate sanitation services. The lack of sufficient or inadequate services is a result of many factors, including: inadequate financial resources, insufficient water supply, lack of space, difficult soil conditions and limited institutional capabilities as well as social economical reasons. As cities expand and populations increase, the sanitation will grow worse and the need for safe, sustainable and affordable sanitation system will be even more critical in future than at present.

CAUSES OF POLLUTION

Domestic sources of pollution

Pollution incidents may be caused by individuals, although some of these are the result of accident, many can be prevented. There are several causes: Oil, household rubbish, effluent, household and garden chemicals.

Pollution from industry

All Industries produce waste products, which may contribute to pollution if they are not properly dealt with or disposed of. Pollutants from industry include: - Chemical spillage, Oil, Radioactive waste, Hot water, Toxic smoke and air pollution.

Pollution from farming

The number of major water pollution incidents related to farming is not a major problem at the moment in Tanzania. this can be a particular problem in near future as the country encourages agricultural activities as the major poverty alleviation initiatives for Tanzanians. Pollution incidents from farms usually result from runoff, which can occur during heavy rain, when the water washes loose materials, such as chemicals or manure, off the fields and into the rivers. Possible farm pollutants can be :- Slurry, silage, pesticides and fertilizers. Pollution caused by runoff (when products that are spread on fields are washed off by the rain and into the river systems) can be caused when any of the above products are applied incorrectly such as: - at the wrong time of year, in wrong place and at the wrong rate.

EXISTING SITUATION IN URBAN SANITATION

Waste water

The urban poor has an uphill task in financing any form of collection and removal of waste water which includes sludge and excreta which is the cause of over 15% of all diseases. The national outlook on sanitation is very disturbing and budgetary allocations do not give any comfort. A ten (10) years (1990/91-1999/2000) survey on budgetary allocations showed a dismal average of 1.9% of the total national development budget was allocated to urban water and sewerage sub-sector.

There are only 7 Municipalities with some form of sewerage system covering about 5% of the population, which include Dar Es salaam. The proportions in Dar Es salaam are as shown in pie chart below.

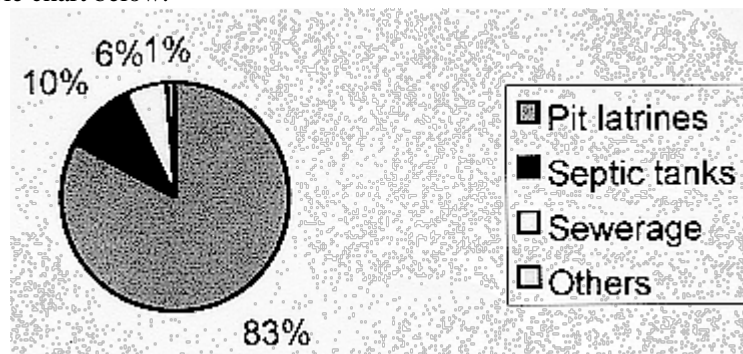


Figure 1. Dar Es Salaam sanitation.

Industrial waste

Industrial liquid and solid waste form are a big burden to the urban poor sanitation due to the toxicity and non-biodegradable qualities of the wastes produced. In the process of

cutting down costs most official and illegal dumping is done in the localities of the urban poor communities. this seriously effects the children.

Solid waste management

Domestic and industrial solid wastes are major sanitation problems in urban centers, which adversely affect the poor. Solid waste management requires the public involvement and accountability to the highest degree because in whatever form it is collected, transported and disposed for economic, health and hygiene purposes. Some aspects like inhaling poisonous gases and fumes from burning solid waste and groundwater pollution through leaching has a long-time (generations) effects on the population.

(D.R.N.P.A.) PROJECT - A CASE STUDY

Objective (general)

General objective of the project is to promote sustainable water and environmental management as well as proper utilization of natural resources in poverty alleviation.

Objective (specific)

Specifically, the objective of the project includes :-

To promote sustainable management of the Indian Ocean (marine ecology) by alleviating pollution facilitated by mismanagement of Dar Es Salaam rivers.

To alleviate any destruction source of Dar Es Salaam rivers

To alleviate possible source of both surface and groundwater pollution.

To promote sustainable use of Dar Es Salaam rivers into poverty alleviation.



Figure 2. Conservation initiative should involve any body including NGOs, institutions etc. Photo: trees along Sinza river basin, planted by HESO-Tanzania to prevent soil erosion.

Planning

The project is proposed to have 4 phases. Phase one is for research and feasibility study, and is including :-

Geographical study and mapping.
Boreholes identification and mapping.
Industries identification.
Community Rivers based activities identification.
Chemical based analysis.
Waste sites identification.
Pollution-health based statistical study.

Phase two and three are for implementation and evaluation respectively.



Figure 3. Some of activities if not well controlled, have high negative impact on our environment. Photo: destruction of Sinza river banks- Dar Es Salaam by sand vendors.



Figure 4. Surface water being polluted can be the cause of problem regarding the quality of groundwater as well as marine ecology. Photo: water passing through solid waste stockpile along Sinza river.



Figure 5. Managed micro-irrigation contributes substantially in promoting poverty alleviation. Photo: small scale farming along Sinza river in Dar Es Salaam.

CONCLUSION

Understanding how water moves; its quantity is vital to sustaining and improving both the natural and man-made environments. While the route every drop of rain will take, from falling on land to entering the sea, is predictable, there is a risk of having too much or too little and its benefits can be eroded along the way. The quality of water is affected by many factors, for example sewage discharges, still the single biggest cause of poor water quality, plus agricultural run-off, urban drainage and industrial discharges. Clearly, managing river catchment is a complex challenge.

References

AWEC - Tanzania (1999), Environment Agency-UK, Todd-Groundwater Hydrology.