



## Measures to alleviate sanitation and health problems

*Mesfin Shenkut, Ethiopia*

THE MAJORITY OF the people living in developing countries are suffering from disease, hunger and ignorance. In most cases these problems are inter linked. Due to lack of know how, the people are exposed to hunger while having enormous resources around them. Over half of the total population suffers from diseases caused by poor sanitation when simple sanitary measures can make big differences.

To support the above facts, one case in example could be Ethiopia, one of the least developed countries in the world. Ethiopia has the largest inland water in Africa together with over 350 million hectares of irrigable land, with only 2 per cent utilized so far. Though this country has a capacity of feeding many more times its present population with these resources, quite a large number of the people die from hunger and it depends on foreign relief assistance from year to year. Of its abundant water resources, it is only 25 per cent of the population who have access to poorly maintained water supply systems. The sanitation coverage stands at only 7 per cent. The combined effect of poor water supply systems and the virtually nonexistent sanitation facilities account for over 70 per cent of the communicable diseases in the country.

### Sanitation situation

According to a report on Water Supply and Sanitation in Africa, (Regional Consultation, Watsan 1996), the sanitation coverage for African countries is estimated to be 55 per cent for urban centers and 24 per cent for rural areas.

Pit latrines are the most commonly used facilities for disposing human wastes in developing countries. Studies indicate that the percentage of people using latrines as a means of sanitation in some parts of East Africa is the following, Kenya 30 per cent, Uganda 60 per cent, Tanzania 77 per cent and Ethiopia 7 per cent. It may be noted that Ethiopia's 7 per cent sanitation service is much lower when compared with the corresponding coverage on other African countries, which ranges between 30-50 per cent.

Though the industrial sector in Ethiopia is not fully developed, it is causing the other major waste problem. It is estimated that about 70 per cent of all industrial establishments, especially those involved in food, textile, beverage and leather production and processing are located around Addis Ababa. Almost all the industries discharge their liquid waste in to near by river courses without treatment of any kind. It has been observed that most industries have treatment systems, nevertheless, these units are kept idle in order not to incur additional costs.

The solid waste management system is also at a dangerous stage. In the city of Addis Ababa, for example it is only about 60 per cent of the solid waste generated that are actually collected. The remaining 40 per cent are dumped in open sites, streets, ditches and drainage channels until it is eventually washed away by floods during the rainy seasons into near by rivers and streams. Until this happens, the garbage is left to rot attracting pests, which spread disease and bad smell, and during the rains it clogs drainage channels and fills up potholes and latrines.

### The health dimension

Fecal born diseases are the prime causes of death in Ethiopia. According to Ministry of Health, the top five common diseases in the order of importance are dysentery of all forms, parasitic of all forms, eye diseases (trachoma being the most common), skin disease and acute respiratory infection. Diarrheal disease alone kills more than a quarter million children each year, that is approximately 700 children every day (UNICEF, 1995). This is on top of the children disabled for life by parasitic infections and repeated diarrheas aggravating the disabling effects of malnutrition and the many people living with anaemia because of hookworms infection.

### What are the constraints?

#### Low awareness of the people

According to Ministry of Education, the illiteracy rate in Ethiopia was 97 per cent in 1979. However, through a National Literacy Campaign conducted between 1979 – 1990, this figure has gone down to 65 per cent. In 1993/94 out of 9.3 children of primary school age, only 2.3 million were able to attend school. Apart from the very low rate of literacy, the curriculum in schools does not address the basic knowledge and skills relevant to life and does not take into consideration the social and cultural realities. Due to this fact, many that have attended formal education and completed even high schools and colleges, have very little opportunity of using their school education to assist them in their day to day living. This is one of the main factors that account for the unemployment rate in the urban centers of developing countries making it as high as 63 per cent of the working force in urban areas (UNDP, 1995).

In the same token, people are poorly informed about the causes and consequences of poor sanitation systems. Even if they have general perception on this issue, they have limited knowledge of alleviating the situation using re-

sources bound around them. Moreover, it is a common practice to find people not using or misusing such facilities even when provided free.

### **Poor economy**

The per capita income of Ethiopia is \$ 120 and the foreign aid for water supply and sanitation is declining by more than 20 per cent when compared with that of 1986. Like wise the official development assistance is nose diving to only 9 per cent, one of the lowest in the world. According to AWTI the cost a house hold pit latrine is \$7.1/Person. It may be noted from the facts outlined above that most people live below the poverty line. Pit latrines, though seem to be the cheapest option, it is evident that a householder not only unwilling but can not spend his scarce resources unless fully convinced that it is an absolute necessity.

According to a study conducted in Indonesia (WEDC 1997), it has been proven that there is a direct relationship between poverty level and environmental health status as well as hygienic living attitude and concludes by disclosing that the level of poverty will get better result by improving environmental sanitation.

### **Inappropriate technology**

The technologies used in the existing sanitation systems are not indigenous in most cases. Due to the general tendency of engineers to exercise their academic competence, technologies used tend to be more or less copies of what are available in textbooks and most practised in developed nations. The available technical and material resources bound around the target beneficiaries are not often given adequate attention.

Even with pit latrines the following drawbacks are observed due to inappropriate constructions and low attention to the geology of the ground and social factors: Collapsing pit, splashing, bad smell, fly breeding, dirty squatting plates, mosquitoes breeding, collapse of pit cover, latrine feeling quick, space for construction etc.

The solid waste are not collected and treated at all the rural areas. In Addis Ababa, about 40 per cent of the solid wastes are collected and loaded on dump trucks to a disposal site. The dump trucks are frequently out of action due to inadequate maintenance support. They are not also able to reach most of the people living in crowded areas due to inaccessibility. The same thing holds true for the vacuum trucks transporting sludge from septic tanks and latrines. These systems are managed by institutions, which do not involve the beneficiaries in decision making. They address mainly the urban rich, and are high tech compared to the local conditions as well as very expensive making them inappropriate in general.

The entire set up is geared towards taking away the wastes from the sites of the producers and dumping it, which results in exposing others, particularly the poor to a great health hazard by the waste produced by the cities. No proper mechanism of resource recovery exists.

### **Lack of policy and legislation**

There exists a government regulation for the Addis Ababa water supply and sewerage services. This guideline prohibits open field defecation and discharge of sewage to natural watercourses. However, the law has not been enforced due to absence of alternative means and incapacity of the enforcing body, i.e. sanitary officers and the police force. A national policy did not exist until some months ago.

### **Recommended measures**

The sanitation and health problem is acute. The issue needs a coordinated effort of all the stakeholders. Some of the steps towards alleviating this harsh situation are outlined as follows:

#### **Awareness creation**

Despite its adverse effect to the health of the people, the economy of the country as well as the threat it is posing to the general environment, sanitation is hardly a felt need by most of the population. This is mainly due to peoples' low level of understanding of the effects of proper sanitation. The inclusion of sanitation education in the school and adult literacy program is a good tool of addressing the issue to the young generation and quite a good number of the public. This should be supported by demonstration sanitary systems, drawings, posters, dramas, songs etc. There is already a health program in the national radio broadcasting system. This program may be strengthened with sanitation education.

The best venues for victims of poor sanitation systems are health centers. This opportunity may be used to educate them about the ways of transmission of diseases and the means to stop it. The old saying of "prevention is better than cure" can be emphasized here.

Community awareness and acceptance is vital. How much self evident the improvement may seem communities or groups within them may not see it in the same light. Their participation at all stages of such program does not only save money and ensure maintenance but also stimulates feeling of local pride and commitment. As women are the prime victims of the problem through their closest contact with children, their awareness of this fact and participation is vital.

#### **Appropriate technology and resource recovery**

An appropriate technology is one that has been chosen within the full context of the environment in which it is to be placed, (Jackson B.1986). In this understanding, the technology aspect needs to address the social, economic and environmental issues. The level of technology has also to take into account local resources including skills and labour. Such approach leads to affordability, replicability, sustainability and acceptance. For instance, donkeys are the commonly used transportation means in Ethiopia including the capital Addis Ababa. Nevertheless, these animals are not being used for the purposes of loading solid or liquid wastes, which could have been appropriate.

Resource recovery is another important issue which often due attention is not given. This is due to the fact that waste is considered as end product that needs to be disposed off. This is not always true. It is rather a resource, which can be used to make products through recycling. Some, which need immediate attention, include:

- The huge sludge collected from septic tanks and pit latrines and dumped into rivers could rather be dried in beds during the dry seasons and used as fertilizers. African climate is just ideal.
- Adopting a recent ecosan method, which separately stores urine and faeces, has a potential advantage of using the solid matter as fertilizer.
- Energy can also be produced through bio-gas.
- Paper, plastic and glass recycling in towns
- Solid wastes composed of metal products can be used to make buckets, stoves, cans etc and those collected from restaurants and bakeries are good animal feed

Ecosan that is known as ecological and economical sanitation system is a source recovery way, which is being introduced, in Ethiopia and showing good progress (SUDEA, 1997). It is based on separation of urine and faeces and storing them in different containers to be used as fertilizers. This system has the following advantages:

- The faeces is the one carrying almost all the pathogenic substances, it is kept separately to compose for about 9 months, mixed with soil, leaves, grass, sawdust or any other suitable material available and used as fertilizer and does not cause harm.
- It is mainly the liquid matter that fills pits latrines. As the liquid is collected in a separate jar to be used in agricultural farms, the system requires smaller pit and plot for construction.
- When faeces and urine mix, it produces bad smell and attracts flies; the separation helps to stop this.
- The waste when used as fertilizers improve horticultural farms
- Sludge is not transported.

Apart from the direct economic benefit such practice renders, it also generates jobs as well as reduces importation to some extent. The difficulty and the cost of transporting wastes to disposal sites can also be reduced.

### Policy issue

The existence of policies is vital guidance addressing issues such as technology, resource utilization, sustainability, networking among all working in the field, pricing, resource recovery, roles of institutions the public and the private sector, etc. As mentioned above the waste hazard being caused by industries can only be mitigated through

proper policies. It is therefore recommended that all effort be exerted to enforce the recently issued National Policy.

### Conclusion

It should be understood that any sector involved in the provision of sanitation facilities ensures that available finance is expended to give the greatest good. It is not sufficient for the engineers to exercise their technical competence and skills. Their efficiency is rather measured by their ability to understand and interpret the physical, political and cultural situations in which they are operating to suit the social, economic and ecological requirements.

“... No matter how much we have learnt about engineering detailed alternative systems and the related health aspects, unless these findings can be translated to the target population in a way they understand and accept it, it is mostly academic exercise...” William J. (1980).

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MESFIN SHENKUT, Norwegian Church Aid Ethiopia, Deputy Country Director.

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