Strategia Netherlands

Course; Post graduate diploma in Water Hygiene and sanitation

Assignment 5

Admission Number; PGD002

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## Assignments

1. Paul, a resident in the outskirts of your town, consults you about building a latrine in the compound of his house. He is an open-minded man who is keen to improve life for his family. He has a wife and three young children, and his elderly mother also lives with them. He doesn't have a tap in his house and gets water from a nearby well. The area has heavy soil and the rock below is impermeable.

Which types of latrine are possible choices for him?

Which types of latrine would you recommend, and why?

What other advice would you give him about the location, design and construction of the latrine?

Answers.

Paul cannot install a water carriage system because he does not have a piped water supply; therefore, he has to install a pit latrine of some sort. The possible choices are a single pit latrine, a pit latrine with slab, a VIP latrine with slab and a double pit latrine.

I should not recommend a pit latrine without a slab because this does not provide adequate sanitation. The VIP latrine is preferable to a simple latrine, but an ecosan system would be better because this would produce a useful product as well as protecting the health of the family and the environment. I would need to ask Paul about his attitude to using an ecological sanitation system and whether he would be willing to make use of the composted waste material. He is a farmer so he may be able to use it on his fields and he is open-minded so this system may be attractive to him. If he was reluctant to dig out the compost you could recommend the Arborloo system because that does not require handling; the tree is planted on top of the filled pit.

I should advise him to consider the location of the pit. It must be at least 15 m away from his well and preferably a greater distance. It must also be at a lower level according to the slope of the land. He should also consider the wind direction and place the latrine downwind and at a convenient distance from the house. He would need to consider the design of the squat hole to ensure it is safe for his children and comfortable for his elderly mother. You could advise him about possible materials to be used for the superstructure and recommend what is available locally. You should also advise him to install a handwashing facility next to the latrine.

2. Nancy is a laboratory technician. She is analysing a sample of wastewater collected from a pipe that discharges effluent into a river. Name two tests Worknesh could perform to assess the physical characteristics of the effluent.

(a)As part of the analysis she also does a BOD test on the sample and gets an unusually high result. What does the high BOD tell her about the wastewater? What effect could it have on the river?

To assess the physical characteristics, Worknesh could perform a suspended solids test. She could also measure the temperature of the sample and assess the odour. (Note that if she was measuring temperature she would have to do this at the point of origin because the temperature could change within a short time.)

BA high BOD test result would tell Worknesh that there was a lot of organic matter in the sample. If this was discharged into the river it would remove oxygen from the water, which would harm fish and other organisms living in the river.

3. What is the purpose of the report of a rapid assessment and who should receive copies of the report? Explain the contents of Rapid Assessment Report

Rapid assessment of urban sanitation and waste management is the process of collecting information from households and institutions to get a quick overview of the situation in an urban community. The results can then be used to identify the areas that need to be improved and suggestions of possible solutions. The assessment involves observations of the community and discussions and meetings with target households and other community members. Some examples of the type of question that could be asked are:

How many households and schools have sanitary facilities (including handwashing provision) and how are these facilities being used?

How convenient are the facilities?

Do they provide the necessary access and privacy and preserve dignity?

What is the current level of sanitation and waste management knowledge among the community?

The purpose of the report is to summarize the results from the assessment and indicate how well it aims have been achieved. After permission from the funders has been obtained, it should be sent to all those who had an interest in its findings. Apart from the funders, recipients could include:

Administrators of payams, counties and others

community representatives

the local Health Extension Workers team

any non-governmental organizations (NGOs) or funding organizations who might be willing to finance or support a follow-on programme

local WASH programmes.

Explain five ways in which urbanisation creates challenges for effective sanitation and solid waste management.

There are several possible answers to this question, but the main challenges from urbanization are caused by many people living very close together which puts pressure on all urban services. The rate of increase in population is very fast and the development of infrastructure for water supply and sanitation services cannot maintain the same pace of change. People arriving in cities often live in informal settlements which are developed without planning or control and lack essential facilities for the people who live there.

**Better holistic solid waste management systems.** The Maldives is known for its coral reefs, blue lagoons, and beaches. Facing increasing amounts of waste and litter in its ecosystems, the Maldives has looked to improve its waste management system overall. The country is investing in sustainable disposal

infrastructure, improving waste collection systems, and splitting the islands into zones to make the most efficient use of shared resources. By improving its core waste management system, Maldives will control plastic waste at the source.

**Recycling in manufacturing.** Plastic waste is being put to productive use in both local and global capacities. Simple solutions that local communities are pursuing include using recycled plastic as filler for cement blocks, ropes, and household goods such as baskets and mats. At a larger scale, manufacturers are using recycled plastic and textiles to make clothing and furniture. By using waste materials for products with monetary value such as clothing, shoes, or road construction, society is incentivized to collect plastic and capture its full value.

**Informal sector partnerships**. Informal waste collectors are the powerhouse of recycling efforts in many countries, and bolstering their capacity can increase plastic recycling.

**Community campaigns**. Management of solid waste management often starts at the household and individual levels , and effective strategies to educate and motivate citizens can dramatically change behavior. to sell to a recycler and removing them from littering or clogging their communities.

**Policy and planning**. Once adequate collection and disposal systems are in place – which are necessary for cities to ensure all waste is managed in an environmentally sound manner – cities can pursue focused interventions, such as bans on certain types of plastic.

5. How do good sanitation and waste management practices bring a positive effect to urban inhabitants? Give examples for effects on:

health b h

education

economic conditions

the environment

Diseases linked to poor sanitation and hygiene have a significant impact on children's health and education. 38% of Ethiopian school children are infected with parasitic worms (Mahmud et al. 2015). These infections contribute to malnutrition because the parasites prevent the child's body from absorbing nutrients from the food that they eat. Long-term malnutrition retards children's physical and intellectual development. The Young Lives survey (2014) reported that around 30% of Ethiopian children are stunted, which is a sign of long-term malnutrition. (Stunted means that a child's height is less than expected for their age.)

Improving solid waste management has economic advantages in addition to the health advantages discussed above. Consider the following example.

It is said that a firm that throws something away pays towards it three times over. Imagine a firm that uses raw materials and puts them through a manufacturing process to make a final product. First, the firm has to pay its suppliers for the raw materials. Secondly, it pays its staff to transform the raw materials into products, and pays for the water and energy that it uses. Finally, the firm has to pay for disposal of what it throws away. So a firm that reduces the amount of waste it produces makes savings in all three areas.

A firm that uses basic materials such as glass or metal faces large energy bills for the processes required in converting these materials into products. But if they follow the principles of the 3 Rs (reduce, reuse and recycle) and substitute some of their input raw material with scrap glass or metal, they can reduce their energy bills and buy less raw materials. These materials are often imported, so using recycled scrap reduces Ethiopia's expenditure abroad, which benefits the national economy as well as individual firms.

There are further benefits from recycling. The initial stages in the recycling process (collecting material from households and businesses) is labour-intensive and provides employment for the poorest people in society. Giving them an income improves their health, which, in turn, reduces the country's healthcare expenditure.

What do we mean by 'the environment'? You may think of it as your immediate surroundings in the town or kebele where you live or work. However, it can also mean the wider natural world on a much larger, even global, scale. Poor sanitation and waste management have direct impacts on the local environment, but human practices can also have broader consequences.

There are obvious local environmental benefits from improved sanitation. This means that defecation only takes place in properly constructed latrines, areas of land are not contaminated with faeces and watercourses no longer act as sewers. This in turn allows plant life, fish and other aquatic organisms to flourish.

Improving waste management improves the local environment and also benefits the national and even the global environment. Good waste management means less litter in the streets and in the neighborhood of waste disposal sites. It also reduces the smell in the streets from decomposing wastes.

Effects on health: Good sanitation and waste management help to keep people separate from potential sources of pathogens. They reduce the risk of contaminating water supplies with pathogens and discourage the transmission of disease.

Effects on education: Healthy children have fewer days off school through illness. When they are at school, healthy children learn better than sick children. Providing good sanitation facilities encourages children to attend school, particularly girls during their menstrual periods. Children are frequently ill as a result of parasites and other infections, which leads to poor school attendance and performance. Furthermore, if the school attended by an infected child does not have good sanitation and handwashing

Effects on economic conditions: The health benefits promoted by good sanitation and waste make for a more productive community. Less money is spent on healthcare and people lose fewer days off work

through caring for the sick. Effects on the environment: Good sanitation and waste management means that there will be less faeces and waste deposited in public places and less pollution of the water and soil

# References

Desta, H., Worku, H. and Fetene, A. (2014) 'Assessment of the contemporary municipal solid waste management in urban environment: the case of Addis Ababa, Ethiopia', *Journal of Environmental Science and Technology*, vol. 7, pp. 107–22, [Online]. Available at **http://www.scialert.net/ fulltext/ ?doi=jest.2014.107.122&org=11** (Accessed 5 December 2015).

World Health Organization (WHO) (2001) *Water Fluoridation* [Online]. Available at **http://www.who.int/ water_sanitation_health/ oralhealth/ en/ index2.html** (Accessed 29 June 2015).

Africa Infrastructure Country Diagnostic (AICD) (2008) *Cost Recovery, Equity, and Efficiency in Water Tariffs: Evidence from African Utilities*, AICD Working Paper 7, Washington DC, World Bank.

Alemseged, T. (2015) Personal communication, 27 March (Ethiopian Institute of Water Resources, Addis Ababa University).