

A decorative graphic on the right side of the page. It features three sets of concentric circles in shades of blue. The top set is a large circle with a medium blue center and a light blue outer ring. Below it is a smaller circle with a similar color scheme. At the bottom right is a very large circle, partially cut off by the edge of the page, also with a medium blue center and a light blue outer ring. Thin blue lines intersect the circles and extend across the page.

Diploma course in Water Sanitation and Hygiene

Strategia Netherland (NS)

Module (3) : Assignment number (3)

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ASSIGNMENTS:

1. Why is community based managed essential in management of water resource?

No doubt that community engagement in decision making, implementation and evaluation of water management practices will lead to enhance the efficiency and equity in water projects. Community participation is essential for an absolute imperative for success of integrated water resource management initiatives. The benefit from community involvement in decision making step results in the improvement of people's quality of life. Community participation will develop the sense of ownership and encourage them to be part of making decision on their natural resources including land, water, livestock and forest (Coward, 1990; Diane, 1994; Adam, 2006). In order to insure sustainable development there is need to manage all the natural resources effectively taking into consideration involvement of the ownership and public people and without community involvement the issue of sustainable development and poverty will not be achieved (World Bank, 1995). Besides, community participation improves the issue of water security in households and in case the agencies developed strategies for sustainable water resources without community consultation the agencies will found difficulties during implementation and will not satisfy the community needs. Remarkably, it has been recognized that public participation is one of the basic concept in integrated water resource management.

In summary, communities are more aware about their problems, constraints and solutions. Therefore, it is necessary to take their lessons at micro-level in order to develop effective strategies for sustainable water resources.

2. With examples, discuss the difference between Community management and Community Participation.

Community participation: it's a process of involvement of people in a community in projects in order to solve their own problems. It's a process by which community mobilizes its initiatives, resources and takes responsibility for its own development activities and share in decision making in order to implement development program that aims to improve the overall health status. This issue is not means that to force people to participate in projects but it should give them a chance for decision making where possible. In 1981 a classification of different kinds of community participation were listed as follows:

- **Consultation:** The action of involving communities in decision making and getting advice from communities in order to meet their needs and improve the process of planning, implementation and monitoring.

- **A financial contribution by the community:** The action of collecting money within the community in order to contribute positively in project implementation usually a contribution for large scale construction project.
- **Self-help projects by groups of beneficiaries:** A specific group of local inhabitants contribute their labor to its implementation, while there is also the assistance of an external agency. Those who contribute will be recompensed by reduced fees for the services they receive while non-members pay more.
- **Self-help projects involving the whole community:** Projects that includes all part of the family in the community
- **Community specialized workers:** The idea is to train any part of community members on a voluntary basis in order to establish particular tasks
- **Mass action:** Collective work in the absence of a major input from an external agency.
- **Collective commitment to behavior change:** This is where a community makes a collective decision to change customs and collective social pressure is exercised for the realization of such changes.
- **Endogenous development:** The community developed their own criteria for changing behavior in dynamic and constant interface with support from external actors and the world around them.
- **Autonomous community projects:** This is where the external resources paid by the community with fund raised internally.
- **Approaches to self-sufficiency:** This is where all the resources and local needs are used by local material and manpower.

An example of community participation using top-down approach is a health care planning in the decisions are made by expert and research can be conducted in form of survey in order to study the perspective of the community to specific problem but the final decision will be made by the expert and health care workers.

Community management: this is an approach that aims to manage the use of natural resources more efficiently and effectively within community. The approach can be achieved with support of external agencies, government, private sectors and NGOs. Community management contains of three main factors which are as follows:

- **Responsibility:** the community takes on the ownership of and attendant obligations to the system
- **Authority:** the community has the legitimate right to make decisions regarding the system on behalf of the users.
- **Control:** the community can determine all the results from decision.

The main characteristics for community management can be described as follows:

- Community management provides the community a legal authority in order to insure an effective control in water supply and sanitation system.

- With community management the possibilities for financial contribution of the community to implement capital project will increase.
- With community management all key decisions will be made by community members with support of external actors.
- Special capacity building techniques are required for effective community management

An example of community management is a health care expert work in a project and he is sharing his ideas with his community in the planning, implementation and monitoring and control stages in order to maximize the benefits from all natural resources in the area more efficiently and effectively. The decisions are made by all members including the community and training can be conducted to all community members in order to make constructive contribution in the project.

3. Give five maintenance problems and difficulties. How can you overcome maintenance difficulties in the water supply system management?

Maintenance problems	How to overcome the maintenance problems
Identification the defect or damage in the water supply system	The most effective way to identify the problem is to identify the cause of the problem and determine its affect.
In most cases in water supply system the cost of maintenance is greater than capital cost particularly over the long term	An effective planning will contribute positively in making balance between the capital and maintenance problems.
No sustainable methodology for drilling equipment, materials and hand pump models increases the spare parts requirements which can lead to increase maintenance and operation cost.	Providing standardized methodology for drilling equipments, materials and hand pump models will lead to reduce maintenance and operation cost.
Long duration for responding to the maintenance issues with long waiting for importing spares.	Increase the productivity rate in water supply system by using advance technologies and expert technicians. .

High tariff during importing materials and Spare Parts from other countries increase the maintenance costs

Providing local materials and spare parts will reduce the cost of maintenance effectively and in case the country cannot offer the spare providing special tariff for maintenance materials

Difficulties could face the water supply system	How to overcome these difficulties issue
Technology change affects the way the service are provided and managed particularly service that connected with information technology.	Updating the use of technology will enhance the management of water supply system
Stakeholder diversity	Stakeholders need to be engaged through various means
Poor legalization process in maintenance and operation of water supply system	Legalization need to be compiled including technical standard, equity environment, health and safety with financial management
Complexity of the services	A wide range of services need to be provided with growing and diverse in population
Poor protection and prevention from misuse of installations and equipments in water supply system	Providing an ongoing training for workers in water supply system to use the installations and equipments efficiently and effectively.

4. What are Water technologies available in your area? Explain five

Low cost point of use water treatment technologies used in rural communities in west Sudan (Darfur) these technologies are an onsite water treatment systems aims to minimize the volume of pathogens and reduce contamination from the water source point. The overall goal from low-cost point of use water treatment system is to protect consumers from water borne disease. The available technologies in Alfasher city for instance are as following:

- **Flocculation and coagulation technology**

The process of flocculation and coagulation aims to remove the turbidity from raw water. The coagulation destabilized the small particles to be in larger size while flocculation is the process of formation flocs from destabilized particles. The flocs particles removed by settler and in some places it removes through filtration process. Although this technology can improve the removal of colloidal particles, it can not be standalone because it is not effective in removing microorganism.

- **Sand Filtration technology**

In the process of filtration removes microorganism using specific size of sand and granular material. A well designed filtration process will be able to generate clean water supply in low cost point of use technology, the most effective way in filtration process is to use biosand filtration technology. This process is easy to construct. The concept is same as slow sand filtration but biosand filtration has different flow rate and intermittent filtration through the sand layer. The outlet of the point of use is higher which allow the development of biofilm in the media filter and surround the particles. Developing biofilms lead to form the Schmutzdecke which can improve the process of removing microorganism.

- **Chlorination Disinfection technology**

Chlorination disinfection process works to inactivate and destruct the microorganism to the safe level in order to insure safe drinking water supply. The use of chlorine as a disinfection agent is used widely due to its effectiveness in killing pathogens and microorganisms.

- **Solar disinfection technology**

Solar disinfection process is a low cost disinfection process in point of use water system that involves the exposure of water to sunlight and high temperature aiming to allow UV to transmit to water. UV and high temperature can inactivate pathogens very effectively.

In large cities more advance technologies are used, for instance in East Sudan the technologies are used are as follows:

- **Membrane technology**

This process is one of the effective methods for drinking water supply. Some filtration has high initial cost. This process capable of removing colloidal particles and pathogens. For instance Ultrafiltration can reach more the 6 log bacteria removal

5. How do you ensure cost effectiveness in supply of water?

In order to ensure cost effectiveness in water supply, its necessary to concentrate on the issue of running cost from maintenance and operation problems. The following

steps explain the steps for more cost effective water supply system which are as follows:

- It is important to engage the community in the process of maintenance and operations of water supply system in order to improve the quality of maintenance and operation and reduce the chances of maintenance problem such as long system down times due to the long waits of the machines to arrive.
- Training of communities, technicians and workers at all levels should involve training for maintenance and operations. Technicians should be specifically trained in these techniques and selected community members trained to undertake specific tasks within their capabilities.
- In order to guarantee long lifetime for water supply system there is demand for development of local government and community capacity to operate and maintain the system and design the institutional arrangements.
- Regarding some technician issues, there is needed to develop a national quality assurance and inspection system that can lead to use international standards and quality control procedures. .
- All necessary tools for routine maintenance and simple repairs should be available immediately. This in order to ensure speed and quality of repairs in water supply system.

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