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**COURSE-WATER, HYGIENE AND SANITATION**

**WASH ASSIGNMENT-MODULE THREE**

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

* **Community based management**
* A strategy that enables local water users to be involved in and responsible for the management of their water resources**.**
* **Water resource**
* The wider body of water from which a water source draws its supply, including aquifers, rivers and reservoirs.
* Community Based Management may be a more realistic option for involving local water users.
* It aims to engage directly with community-based institutions and water user groups so that they may play an active role in water resource management from the beginning.
* The idea provides an opportunity for communities to engage in water resource management with roles and responsibilities clearly defined alongside those of regulating water authorities.
* It provides WASH organisations with a very practical approach for engaging in water resource management as part of their ongoing service delivery work, and it recognises the need to improve management of water resources at a local level.
* it provides tangible benefits for development organisations because it encourages agencies to consider aspects of water quantity and quality that sustain water supply systems.
* it encourages agencies to engage in hydrological monitoring and to undertake innovative water resource management work that can be replicated and scaled up by larger service providers.
* Communities play an important role in both water quantity and quality aspects.
* Communities monitor resources in order to establish appropriate management techniques and communities respond to changes in water availability through collective decisions bound by clear operating principles for water usage.
* Community based management is essential in management of water resource because it involves communities in activities such as water resource allocation, undertaking local level monitoring, implementing rules or operating principles for day to day water usage, and establishing a management system with clearly defined rules and regulations. .
* It gives local water users the opportunity and means to engage in water resource management, recognising the economic value of water and its role in sustaining people’s livelihoods.
* It engaged local institutions to put water resource management into practice using flexible, adaptive support mechanisms.
* It ensured democratically elected decision-making responsibility amongst the community for the day-to-day running of the water supply system.
* Providing training, operation and maintenance responsibility to the community, including purchasing spare parts.
* Providing communities with access to local NGOs or water authorities as a ‘back-stop’ during times of hardship.
* Water users recognize that water is a fundamental component of their subsistence-based livelihoods, which helps to weave relationships between water users.
* Communities are able to monitor agreed water usage on a daily basis, as part of their daily activities

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

* **Community Participation.**
* A process by which a community mobilizes its resources, initiates and takes responsibility for its own development activities and share in decision making for and implementation of all other development programmes.
* Involvement of people in a community in projects to solve their own problems.
* People cannot be force to participate in projects which affects their lives but should be given opportunity where possible.
* Example of community participation can be during need assesement, Planinning, mobilising,training,implementing,and motoring and evaluation.
* Types of community participation include Passive – (Manipulation), Active – (consultation), Involvement – (Community control).
* Community Participation creates an essential understanding of perceptions, needs, coping mechanisms, capacities, existing norms, leadership structures and priorities, as well as the appropriate actions to take.

Community management.

Unlike community participation, Community management is leading a community of practice so that it achieves its objectives, it remains active, its members benefit from participating in it, and its members adhere to its published code of conduct.

Community management consists of three basic components:

* 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 is able to carry out and determine the outcome of its decisions." An emphasis should be placed upon establishing good communications between professionals and communities facilitating closer dialogue and partnership, helping governments to move from being providers to becoming promoters and facilitators.
* Community management does not mean less work for agencies. It means a greater emphasis on the development of supporting and enabling skills and less on routine management and maintenance.
* Community Management involves a long-term and changing partnership between

communities and supporting agencies. It strengthens the capacity of each partner and enables their combined resources to be used more effectively.

* A community's partners in the management of its water supply system may include government agencies, NGOs, the private sector and crucially, other communities. Relationships change as the community develops greater capacity to manage its own affairs and to choose for itself where to acquire the support services it needs to keep its water system functioning reliably.
* Community managers do the following:
* Carefully choose the community’s topic and define its objectives.
* Publicize the community and increase its membership.
* Tell members [how they should participate](https://www.linkedin.com/pulse/100-questions-answers-collaboration-communities-stan-garfield/).
* Demonstrate, document, and train on the use of the community.
* Define, maintain, and execute the community plan.
* Help members share, innovate, reuse, collaborate, and learn in the community.
* Define [measurements](https://www.linkedin.com/pulse/community-goals-measurements-stan-garfield) for the community.
* Report regularly on the community's performance against goals.

Some critical features distinguish community management from community participation and are at the heart of successful community managed water systems.

* The community has legitimate authority and effective control over management of the Water supply system and over the use of the water.
* The community commits people and raises money toward the implementation and
* Upkeep of the water system. The link between the scale of community contribution and resulting sense of ownership is not yet well understood, but the need for a significant contribution is well established.
* Supporting agencies provide advice and technical support, but all key decisions are taken with the community. This means that real choices must be offered, backed by a full appraisal of all the resources needed for each.
* Development of people is a parallel goal with development of water. Community management is "people-centered". Its success depends on the user community and support agency staff acquiring new skills and confidence in applying them. Special capacity-building techniques are required.

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

## Problems

* **Massive unaccounted water losses**

In some cases, up to 50% of water capacity does not reach the end user. This represents not only a loss of scarce resources but also the loss of an income opportunity. This income, if collected, could be used to pay for running costs and to build new facilities to meet the needs of more people*.*

* **Frequent and long breaks in supply**

Users are unwilling to pay for poor service. This in turn causes further deterioration in services because finance is not available for repairs and maintenance.

* **High failure rates and the need for premature rehabilitation of systems**

Systems stop operating. These failures are most often caused by inappropriate technology choice. Constraints in the local environment, which have been overlooked in the planning phase, make it difficult for routine maintenance to be carried out. These problems, if left unattended, quickly lead to system failure and expensive rehabilitation, well before it should have been needed.

* **People suffering unnecessarily**

In the end, consumers suffer the most. They go without water and sanitation services; they are forced to accept poor quality and make do with less than they need.

In doing so, they are unnecessarily exposed to major health risks, including diarrhoea, intestinal worms, schistosomiasis, cholera, typhoid, and guinea-worm.

* **Difficulties**
* Inadequate data on operation and maintenance: There is an overall lack of data regarding operation and maintenance. Precise, accurate data on the number of systems which are not working are needed together with information on the main reasons why.
* Insufficient and inefficient use of funds: Insufficient funding has been identified as a major contributor to poor operation and maintenance performance. This lack of funds hampers the operating and maintaining of water supply facilities as money is not available to buy spare parts, properly train staff and provide competitive salaries to attract high calibre personnel.
* Poor management of water supply facilities: The operation and maintenance of water supply facilities throughout the world is undertaken by a wide range of differently structured agencies. However, no matter what the scale of the facility, the system will perform poorly if it is not managed efficiently and well. Typical management-problems include:
* Inappropriate system design: No matter how good the management of a water supply facility is, if it is not well designed technically, it will operate inefficiently. Many water supply facilities have been badly designed, poorly constructed and use technologies which are inappropriate
* Low profile of operation and maintenance: Operation and maintenance in water supply agencies has a low, and usually an inferior profile as compared to new construction and system extension. Thus for career minded engineers the route to top management positions is recognized to be through new construction and not operation and maintenance.
* **How to overcome maintenance difficulties in the water supply system management?**
* Water distribution system should be based on a pipe layout that is suitable and have no or less water stagnation within the pipe to avoid tuberculation, encrustation and sediment deposits
* Through a wealth of specialized publications and software development is now well understood that water distribution system management is technically difficult, but with current technologies, software systems, and highly specialized equipment (flushing and scraper), this is simply not the case anymore.
* Water utilities will also need to practice appropriate design of system expansions/distribution (e.g., new network parts already constructed as DMAs) and use higher quality works, materials, and equipment.
* In addition, regulators and policy makers should require water utilities to do periodic water audits and regularly publish detailed water distribution system data, which can then be independently audited.
* Again, water distribution system management should not be a one-time activity. Although an intense and comprehensive water distribution system reduction program is suitable to reduce the backlog of required water distribution system reduction measures.
* It should not lead to a sustainable low level of water distribution system unless water distribution system management becomes part of the normal day-to-day activities of the water utility.

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

* Water treatment and water treatment technologies are an essential line of defence to remove contaminants and bacteria before the delivery of clean, potable water supplies for consumption.
* Water sources can be subject to contamination and therefore require appropriate treatment to remove disease-causing agents.
* Public drinking water systems use a variety of methods to provide safe drinking water for their communities. Depending on the continent, country and region, different water treatment systems may be in operation depending on regional regulations and raw water input.

The most common water technologies available in my area are:

* Filtration Systems, Water Softeners, Distillation Systems, Disinfection and Sedimentation.
* Filtration Technology

A water filter is a device which removes impurities from water by means of a physical barrier, chemical, and/or biological process. The clear water on top will pass through filters of varying compositions (sand, gravel, and charcoal) and pore sizes, in order to remove dissolved particles, such as dust, parasites, bacteria, viruses, and chemicals

* Distillation Technology

Distillation is a process in which impure water is boiled and the steam is collected and condensed in a separate container, leaving many of the solid contaminants behind.

* Disinfection Technology

Disinfection is a physical or chemical process in which pathogenic microorganisms are deactivated or killed. Examples of physical disinfectants include ultraviolet light, electronic radiation, and heat. After the water has been filtered, a disinfectant (for example, chlorine, chloramine) may be added in order to kill any remaining parasites, bacteria, and viruses, and to protect the water from germs when it is piped to homes and businesses

* Sedimentation Technology

#### During sedimentation, floc settles to the bottom of the water supply, due to its weight. This settling process is called sedimentation.

#### Gravel filters

Turbidity and algae can be removed using gravel filters, which consist of a rectangular channel or a tank divided into several sections and filled with graded gravel (size range 4 to 30mm). An inlet distribution chamber allows the raw water to enter through and flow horizontally through the tank, encountering first the coarse and then the finer gravel. An outlet chamber collects the filtered water with solids being removed from the raw water accumulates on the floor of the filter.

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

**Cost-effectiveness analysis** (**CEA**)

* **Cost-effectiveness analysis** (**CEA**) is a form of [economic](https://en.wikipedia.org/wiki/Economic) [analysis](https://en.wikipedia.org/wiki/Financial_analysis) that compares the relative costs and outcomes (effects) of different courses of action. Cost-effectiveness analysis is distinct from [cost–benefit analysis](https://en.wikipedia.org/wiki/Cost%E2%80%93benefit_analysis), which assigns a monetary value to the measure of effect.[[](file:///C:\Users\Admin\Desktop\Cost-effectiveness%20analysis%20-%20Wikipedia.htm#cite_note-CEAvCBA-1)
* Interventions such as water education, social marketing of good water practices, regulation of drinking-water, and monitoring of water quality can ensure cost effectiveness in the supply of water.

* Community Management

When the community is involved at every stage from planning to operation and maintenance, and thus has a real sense of ownership of the system from the outset, many costs are minimized or eliminated.For example Cost savings can be direct such as when the community provides volunteer or low-cost labor during construction or contributes locally available materials.

* Also,when the community is involved in the planning stage of the project, it may provide the local knowledge necessary to avoid using a water source that would be inappropriate for cultural reasons or identifying a water source such as a spring which may have been overlooked by outsiders.
* Involvement of Women . Women are the primary stakeholders in the area of domestic water supply. They are responsible for water at the household level, and are traditionally influential in any decisions regarding communal water supplies. If women are fully involved at all stages of project implementation, the risk of costly errors in system design will be minimized.
* In addition, the active participation of women in community management bodies will ensure that these bodies are effective, and therefore cost efficient.
* Labor and Material Costs These costs are highly variable within and between countries and regions and have a major influence on the final cost of the system. The degree to which a project depends on highly skilled national or expatriate technicians influences the overall cost.
* Capacity Building: Long-term cost reduction and sustainability in the sector can only be achieved if national capacity for delivery of these services is enhanced through training, planning and organization. Capacity building should ideally be carried out at the community, technical and managerial levels.
* Technical and Logistical Considerations : Even when considering only one technical option that of the bore well hand pump, a variety of cost-saving measures can be applied. The largest single cost item in the hand pump option, and one which acts as a constraint to expansion, is the drilling operation and drilling success rate. Correct choice of drilling equipment, drilling area, and drilling rig movement can reduce overall costs.
* Ensuring Community Management and the Participation of Women.Ensuring that communities are the managers of their own water supply systems should be given high priority, as a means of reducing long-term costs. The formalization of the differing roles of government, the donor agency, private contractors and the community through contractual agreements is a good first step towards achieving true community management

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