Diploma in water, hygiene and sanitation

Diploma in WASH assignment 3

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Question 1 why is community based managed essential in management of water resource?

Community based management of water resources has become essential in water resource management because the community is involved in decision making, implementation and evaluation of water management practices and is expected to increase efficiency and equity in water projects and resources. It is believed that this approach will increase sustainability of water resources. Sustainability is one of the major impediments in water supply and water resource management and it has been proven in some areas that community based management is the prescription to the sustainability issues. There are a number of distinct advantages of engaging in community-based water resource management (Bruns, 2008). These include the following:

* Local water users often possess detailed indigenous knowledge related to water resources, water needs and historical change that has occurred related to water use.
* 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.

Communities often have historical mechanisms for conflict and dispute resolution related to water resource management, which may require continued support and assistance to evolve and adapt to global challenges. Community management gives the community ownership and stewardship of water resource enabling the community to understand needs of portable water and polices that need to be put in place to manage the resource. Through community management the community becomes active participants, knowledgeable and accountable for their water resources.

Water resource management should not only focus exclusively on management of water assets include the management, operation and maintenance of infrastructure such as hand pumps, boreholes and water systems. They should also look at the management of financial assets that may be used to pay for a water supply system’s installation and operational costs. They should also look at the conserving and protecting the water resource itself. “Improved approaches towards community water management can be broken down into a number of components, the best of which will include (Wood, 1994): ensuring 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; assisting in setting appropriate tariff systems, as well as maintaining simple but effective financial records; ensuring water points are maintained and kept clean; providing communities with access to local NGOs or water authorities as a ‘back-stop’ during times of hardship.”(1994: Wood).

Question 2: With examples, discuss the difference between Community management and Community participation.

Community management and participation is acknowledged and has become the leading concept for implementation WASH projects especially in rural areas. This practice has enhanced the capacity of the community to manage their own resources, to be involved in decision making, type of technology that the community can maintain and manage. Communities own the process of change and no longer determined by a central level.

“Community water management is a new form of co-operation between support agencies in the water sector and communities.”1999(Marc P. Lammerink, Eveline Bolt, Dick de Jong and Ton Schouten).

Community participation is the involvement of the community in decision making, implementation and evaluation of management and resources. This includes beneficiaries taking the initiative to demand improved water services.” Participation has therefore become imperative word of development and that every development project embraces participatory approach”. Participation in development perspective requires all communities, organizations, stake holders and responsible bodies be involved in and have a stake in decision making related to development activities that will affect them in the short and long period.”(Justine Mokiwa; 2015). Community participation starts from the initiation of a project, this means the community is involved from the planning designing of a project. Community participation is when the community takes the leading role in project design, implementation, development and sustainability. Community participation involves prioritization and vocalization of the community, the community identifies their need, their resources and the remedy to the needs. Threw community participation the community is given a voice to speak and they are given the knowledge to act. Through this knowledge they select appropriate facilities, technologies and locations to have their projects. The community also provides labour for construction of systems and facilities; they raise and provide finical contribution to capital cost of the project this to empower the community on ownership of the project. The community oversee management of operations and maintenance; they put in place local regulation on tariffs and collection. Community participation may in some cases mean that they are involved in physical maintenance and repair of facilities

“Community management has become the leading concept for implementing water supply systems in rural areas in developing countries. It is seen as an answer to the large-scale break down of water supply systems and the failure of governments either to provide clean water themselves, or to devise a system where other agencies supply it reliably and consistently. The idea that communities should operate and maintain their own water supply systems came partly from an erosion of belief in the ability of central governments to supply services for their populations, and partly from the belief that communities have the skills and motivation to meet their own essential needs.”(2003: Ton Schouten and Patrick Moriarty). Community management is management of the water resource, finding a balance between consumption and conservation. The community needs to be aware of it water resources, it potential and sustainable rate of extraction and they community must manage all part so as to archive sustainability. The community manages the consumption, finds a balance between commercial water use and house hold water security. Basically community management is community ownership of resources, it is when they when the community with supporting partnership of government, NGO etc seek to make better use of their resources. The community should be able to make their decisions and take the responsibility to execute and follow-up such decisions this is the hallmark of community management. The community must take responsibility of their resource that is take ownership and management of the resource, the community must have the right to make decisions on the resource on behalf other others, having the authority, they must be able to control the resource.

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

The main five maintenance problems and difficulties related with water supply system management are funding, Infrastructure, spare part, mismanagement and lack of trained managers and community participation.

Funding: Main difficulties related with funding can be from the inception of the project, lack of adequate funding can leading to poor and badly designed infrastructure and poorly designed water resource management. Poor fund management during operation of the water resources can make or break a project, bad fund can be as result of inadequate water charges meaning that there are insufficient funds to manage the water resource. In many rural water management systems house hold are unable to contribute funds to the management of water resource, in some cases it may be seasonal contribution in line with their harvest seasons when they have extra agriculture produce that may be sold in order to raise funds. The mismanagement of funds by the water resource management body has a great impact on the failure to manage a water resource. Mismanagement of funds also contributed to low community participation in water resource management as it creates mistrust, conflicts in the community and abandonment and destruction of a water resource.

Infrastructure: Some of the maintenance problems and difficulties related with water supply system in when there is infrastructure failure due to lack of upkeep, failure to repair broken down infrastructure and inappropriate technology choices. If water resource infrastructure is not well maintained, repaired on time and with the right parts there will be a continual break down leading to both failure to utilize the water resource and also frustration in the community. If infrastructure is poorly designed it has a large likelihood of failing and cause difficulties in management of water resources. Lack of funds or technical knowledge to repair infrastructure is another problem and difficulty found in water system management.

Spare part: This can be due to lack of access to spare parts, lack of funds to acquire spare part and lack of technical knowledge to replace broken part. This problem can lead to frequent break downs of the water system leading to long periods without water supply. It also leads to massive loose of water due to leaks. These problems lead to frustration in the communities due to erratic water supply.

Mismanagement or lack trained managers: Lack trained person to manage the water supply system can have disastrous impact on the water supply system. When a water supply system is managed by people that do not have the necessary skills and know how it can lead to mismanagement of a water system. The lack of water supply system managers due to many reasons like mangers quite due to lack of motivation and incentives. Mismanagement may also be due to corruption and an I do not care attitude.

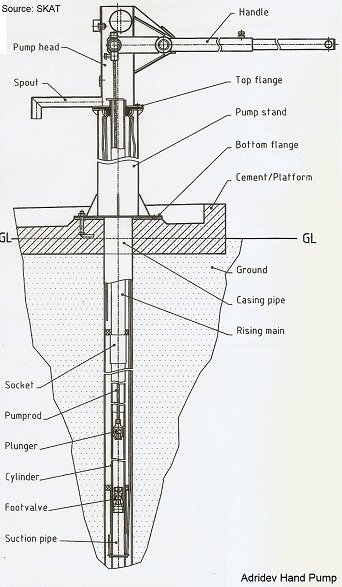
Community involvement: Lack of community participation can cause difficulties in a water supply system management. This may be due to ineffective community sensitisation, community not been fully aware of their right and how their contribution can improve and maintain a water supply system. The economical situation of the people can also have an effect on community involvement. Levels of user satisfaction contributes to community involvement, if a community is not satisfied with the water supply system it diminish their involvement. There is also the unwillingness to be involved in community participation and management of a water resource.

The key factor to overcome the difficulties and problem in water supply system management should be considers from the point of inception of the project, funding, available funding for the project. One should take into account when planning the capacity and willingness of the community to participate and manage the water system. The appropriate technology and infrastructure, training requirements, local manufacturing capacity, spare availability, participation of women, health education and the role and policy of government. Community managed systems depend for their success on an environment which enables the community to be effectively involved. Enabling factors include: joint planning, training, developing accountability mechanisms, and using participatory methods to ensure the full involvement of both men and women in the process. (O&M Working Group of the Water Supply and Sanitation Collaborative Council, 2003). Funding for water system construction should be sufficient and the technology should correspond to the needs and the available funding. This technology should be sustainable. Systems which are too expensive to be locally maintained should be disregarded from the start. Water-supply programs consist of three essential components: technology, people, and institutions. The interface of these facets determines whether a particular scheme is sustainable. (Betman Bhandari and Miriam Grant: 2017). The sustainability of water facilities is ensured when there is enough revenue to cover the costs. Many cases studies have shown that the sustainability of water supply system management is based on generated revenue and the revenue been able to cover existing costs. Management member of the water supply system should be train on proper accounting methods and basic business principals. Adequate charges for water should be maintained and a lot of energy should be put into making the community understand the benefits and the reasons why adequate charges should be applied. Community participation in water supply should be bolstered and continual support should be given. The role of government should be taken into account to ensure sustainability and success of a water supply system. Mangers should be involved in planning, design, and construction; so that they are able to understand fully the system they are going to have responsibility for operating and maintaining. This can also avoid inappropriate designs and bad technology choices. The water system should always be repaired on time and should not have long breaks with no water supply this is in order to maintain community interest in the project and also to ensure revenue collection. In conclusion enabling factors include: joint planning, training, developing accountability mechanisms, and using participatory methods to ensure the full involvement of both men and women in the process (Betman Bhandari and Miriam Grant, 2017) will help with over coming overcome maintenance difficulties in the water supply system management.

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

The main water technologies found in the area that I am in currently which is Macomia Sede in Mozambique are boreholes with hand pumps, boreholes with electrical and solar pumps, shallow wells, captured springs, rain harvesting and piped water. Some on these technologies are interlinked and work together to form the piped water supply network.

The most common water technology found here are boreholes with hand pumps. The two most common type of hand pumps are AFRIDEV and NIRA models. AFRIDEV hand pumps are deep well hand pumps used in boreholes up to 80 meters deep. This hand pump was developed in Malawi in the 80’s.



(A layman’s guide to clean water)

“The Afridev hand pump is a conventional lever action piston pump. It is of the open top cylinder design, allowing the pump piston, foot valve, and pump rod to be removed for maintenance without pulling the riser main” (http://www.clean-water-for-laymen.com/deep-well-hand-pumps.html). These hand pumps are usually managed by a water point committee, the water point committee manages the hours the pump is open, maintains of the pump since they also comprise of a trained pump mechanic. They collect water usage payment which varies from pump to pump. The water point committees also do health education and advantages of using clean water. The less common hand pumps are the NIRA and usually found on shallower wells as they have less lifting power.

There are also small water supply systems that consist of a borehole with an electrical pump powered by either city power or by solar power, a elevated water tower with a distribution point that consist of taps ranging from 6 to 12. These also consist of a water point committee that manage the water point and do health education on the benefits of using clean water.

Some locations have only shallow hand dug well. These do not go more than 16 meters in depth. The water from these wells is collected mainly by a buckets tied to a rope. Some of these wells have a sanitary seal constructed and a hand pump placed on them. The unprotected ones are not a very safe source of water. Some of the water samples collected from these well has been sent to the laboratory and have show trace elements of biological contamination.

Spring water collection systems are also a water technology found in this location. There are several springs that have been captured and the collected water is fed into the piped water network for the town. Spring water is ground water that reaches the surface appearing as a small water hole or spout. The springs found in this area are mainly depression springs. The main methods of spring capture used in this area are spring boxes. “A small area is dug out around the spring and lined with gravel. A concrete box with a removable cover is placed over the spring to collect and store the water.” (http://www.clean-water-for-laymen.com/deep-well-hand-pumps.html) This collected water is pumped to a main water reservoir and distributed by gravity to households. In some areas booster pumps are installed.

The last and not so common technology used in this area is rain harvesting. It is not so common because rainfall is seasonal. The main type of rain harvesting is roof rain harvesting basically rain water is collected from runoff from the roof into gutters into storage tanks.

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

Cost effectiveness is strongly related to suitability, supply management and efficiency of the supply system. Main issues related to cost of water is mined on the technology used for sourcing and supply. So to ensure the cost effectiveness of water supply one must balance the needs and the production. The cost effectiveness is ensured by reducing the cost of producing the water and cost of supplying the water to the final consumer. There must be a balanced achieved by balancing needs and water supply.

Infrastructure is the starting point on cost effectiveness, choosing and putting in place appropriate technologies which are relative to the context and sustainable ensure cost effectiveness. By reducing the cost of energy used for water production and supply achieved by using reusable energy such as solar and wind and by using gravity to feed the water supply network. Well maintained infrastructure reduces water loss also reducing cost, so timely service of equipment and replacing outdated and old equipment is essential to cost effectiveness

Building institutional capacity, which is capacity building to ensure locally available human resource and spare part. Equipping the community to undertake the necessary functions of governance and service provisions, developing of an appropriate operating environment. Appropriate technology and proper water resource management should be implemented so as to reduce water stressing of available resources because like any other commodity once it becomes scares the demand increases also increasing the cost, as cost is determined by demand. Once the community is equipped with the necessary knowledge of their water resource they are able to manage it better and this awareness ensures cost effectiveness of water supply. Water uses should be educated in the benefits of water saving and reduction of wastages in order to reduces production cost.

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