CHARLES KITHOME\_Assignment 4

1. List and briefly describe the measures by which the success or otherwise of a public–private partnership providing water supply services can be assessed.

A Public Private Partnership (PPP) arrangement refers to cooperation between the public and private sectors in providing public goods. The functioning principles of private enterprise are in cooperation in public administration with a view to improving the quality and efficiency of public service delivery [(Tochitskaya, 2007)](about:reader?url=https%3A%2F%2Fm.scirp.org%2Fpapers%2F75384" \l "ref#r21" \t "_self)

The success or otherwise of a public–private partnership providing water supply services can be assessed through**-customer service**, **quality of water, affordability of water, accessibility to water, policy implications**

**Customer Service-**The fundamental question was whether the type of customer service provided varied with PPP arrangements of a WSP.

**The quality of water** is measured in terms of physical characteristics of water, colour and turbidity.

**Affordability** is measured in terms of cost of water and the consumers’ ability to pay.

**The accessibility to wate**r is measured using the distance from the water point, and the type of connectivity to water points.

**Policy Implications-**policy gaps in the regulation, management and operations as means to safe and reliable water provision to the people as a right. There was no clear policy governing public private partnership arrangements in Kenya.

2. Give six possible causes of water emergencies, three due to natural causes and three due to humans.

**Natural Causes**

**Drought-**A **drought** occurs when there is a deficiency in precipitation over an extended period of time, resulting in a water shortage. You are probably familiar with the consequences of a drought. The lack of rain means that the water flow in rivers is reduced, lakes and pools shrink in size or may dry up, groundwater and soil moisture are depleted, and crops are damaged. Prolonged drought can lead to a major national and regional food insecurity crisis. Domestic animals might also die

**Flooding** is an abnormal rise in the water level and may result in overflowing of streams or rivers.Flood waters can destroy infrastructure, including houses, roads and water supply systems, as well as agricultural crops, which ultimately causes a shortage of food supplies in the country. Besides the destruction of property, people and animals may be killed, especially when **flash floods** occur. (A flash flood happens when rain falls so fast that the underlying ground cannot drain the water away fast enough and rivers overflow their banks. Roads can then become like rivers and if there is a lot of water it can flood buildings and carry cars away.)

**Earthquakes-**An earthquake can cause serious damage to infrastructure on and in the ground (Figure 14.2). Pipes and treatment plants will be destroyed by a high-magnitude earthquake and the communication systems (such as road and rail networks) often become non-functional, making the delivery of emergency water supplies difficult. Destruction during an earthquake can also cause chemical spillage at manufacturing plants and warehouses, which can lead to widespread chemical contamination of drinking water.

**Artificial/Man-made Water Emergencies**

Deliberate poisoning of the water supply-chlorine overdosing, or discharge of chemicals into a water source will cause artificial Water emergent scenario

**Leachate and sludge discharge into a river-**uncontrolled or indiscriminate contamination of a river or fresh lake through bank cultivation may be injurious to the ecosystem

**Resource over-use**-strained water use from a water body due to increase agricultural activities and demographic influx to the water resource per capita utility can cause the resource to dry up thus emergency water responses like water bowsing or tankering may be used to serve the populace with water.

b. What are the options for safe water supply during a water emergency-water bowsing, drilling of boreholes, rain water harvesting

3. You are about to set off to conduct a sanitary inspection of an abstraction point at a river.

1. What would you take with you?
2. sanitary inspection forms
3. Pencils and rubbers
4. Measuring Tapes
5. Water Quality Testing Meters-EC, pH, Turbidity(PPM), coliforms
6. Explain four things you will be looking for during your inspection.

* Is there any human habitation upstream, polluting the source? Yes/No
* · Are there any farm animals upstream, polluting the source? Yes/No
* · Is there any crop production or industrial pollution upstream? Yes/No
* · Is there a risk of landslide or mudflow (caused by deforestation) in the catchment area? Yes/No

The speciﬁc functions of the sanitary inspection report are to: — identify potential sources and points of contamination of the water supply; — quantify the hazard (hazard score) attributable to the sources and supply; — provide a clear, graphical means of explaining the hazards to the operator/user; — provide clear guidance as to the remedial action required to protect and improve the supply; — provide the raw data for use in systematic, strategic planning for improvement.

1. Explain briefly why a Water Safety Plan is necessary

Water Safety Plans are an improved risk management tool designed to ensure the safety of drinking water through the use of a comprehensive risk assessment and risk management approach that encompasses all steps in water supply from catchment to consumer. The WSP approach has been developed to organize and systematize a long history of management practices applied to drinking water and to ensure the applicability of these practices to the management of drinking-water quality. It draws on many of the principles and concepts from other risk management approaches, in particular the multiple-barrier approach and the Hazard Analysis and Critical Control Points - HACCP (WHO 2008). WASP are necessary for the following reasons-

* Holistic approach to ensure safe drinking water from catchment to consumers
* Water Supply system managers and operators will be able to understand their system and the risks that must be managed
* Enables operators identifying and controlling risks rather than just analysing them
* Fosters team work, planning, coordination and documentation
* Increase reliance on actual field sanitary inspection rather than relying just on water quality testing at laboratory

1. Distinguish between the two types of maintenance at a water utility and give reasons why one of them is Better

There are two types of maintenance:

***Corrective or breakdown maintenance*:** this is carried out when components fail and stop working. Breakdown is common in many utilities in Kenya and occurs as a result of poor preventive maintenance (explained next).

***Preventive maintenance*:** this is a regular, planned activity that takes place so that breakdowns are avoided. Examples of preventive maintenance would include servicing of equipment, inspecting equipment for wear and tear and replacing as necessary, cleaning and greasing moving parts of equipment, and replacing items that have a limited lifespan. Preventive maintenance is important because it ensures that the asset fulfil its service life. It also prevents crises occurring and costly repairs (in terms of time and money) being needed and this is thd BEST option as it saves money, resources time and promotes efficiency of water supply delivery infrastructure.