Strategia Netherlands

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**Assignment**

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.**

The performance of a Public-Private Partnership success can be assessed especially that of a public water utility can be assessed through the following parameters (Athena Infonomics, 2012)

1. **Accessibility**

Is about questions like the proportion of the population that have access to water, whether the distance to the water point is less than 1 km or 30 minutes’ walking time. According to Pickering and Davis (2012), they used survey data from 26 sub-Saharan countries and found that the further away a water source was, the less water was used; when the distance was more than 30 minutes away, households collected less water than was necessary for basic needs.

1. **Affordability**

In affordability, it assesses whether the cost of the water needed is less than 5% of the household’s income.

1. **Cost recovery**

Whether the cost of providing the water being recovered

1. **Minimisation of non-revenue water**

Asks a question of whether it is being reduced to no more than most 15%.

1. **Water quality**

Assess to whether water quality is in line with the given national standards.

1. **Operational efficiency**

Assess to whether quantity of water is supplied per capita. The duration of water supply in given hours per day.

These parameters can be used to evaluate whether a PPP is beneficial, with data from before the partnership’s creation being compared with data after the PPP has been running for a given period of time, for instance, one year

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

**In study Session 14 (Water emergencies and emergency Water Supply), there are six causes, three being natural and three human made.**

***Three natural causes of water emergencies***

1. **Drought**

A drought occurs when there is a deficiency in precipitation over an extended period of time, resulting in a water shortage. Consequences of a drought are familiar to everybody. 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 due to no or water shortages. During a shortage of fresh water during a drought, people may be forced to use unprotected water supplies. Furthermore, people and animals may use the same water source, which increases the risk of contamination of that particular water source. This leads to increased exposure to waterborne diseases (such as diarrhoea and dysentery) and water-washed diseases (such as trachoma).

1. **Flooding**

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. Floods can cause widespread bacterial contamination of wells and surface water sources with faecal matter washed from the ground surface or from flooded latrines and sewers, resulting in the outbreak of disease. For example, cholera commonly occurs after flooding.

1. **Earthquake**

An earthquake can cause serious damage to infrastructure on and in the ground. 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.

***Human Causes of water emergencies***

1. **Human error or accidents**

There can be instances where the water supplied will be unfit for human consumption as a result of an accident.

1. **Microbial contamination of water sources due to human mismanagement**

Humans’ activities which are carried near the water supply points can contaminate the source.

1. **Deliberate poisoning of the water supply as an act of terrorism**

This deliberated contamination of water supply may be caused by Terrorists when targeting a certain population

**b. What are the options for safe water supply during a water emergency?**

**The options for safe water supply during a water emergency are as follows:**

1. **Delivery of water to consumers by water tanker and/or bottles.**

During emergencies water may be supplied via delivery by tankers, use of plastic bottles or treatment of available poor-quality water in the home using filtration and disinfection. Filtration at household level can be achieved by using cloth, sand or a ceramic pot whereas disinfection can be undertaken by boiling or solar methods, or by using chlorine or commercial water treatment products.

1. **Treatment of the water at the household to render it safe (e.g. by boiling).**

Emergency water treatment is needed when an internally displaced population or refugees have to be provided with water urgently. It is preferable to use groundwater as it is likely to be less polluted than surface water. Simple and complex systems for emergency water treatment are available. For sustainability, simple systems are preferable. The coagulant most commonly used in emergency water treatment is aluminium sulphate, as it is widely available. A simple emergency water treatment system comprises coagulation and flocculation, sedimentation, and chlorination, while a complex unit might incorporate coagulation and flocculation, sand filtration, microfiltration, and chlorination.

1. **You are about to set off to conduct a sanitary inspection of an abstraction point at a river.**
2. **What would you take with you?**

You can carry along with you a checklist that contains set of questions during inspection at a river point. The questions are set in a way that investigates practices that lead to pollution of the river. (WHO, 1997)

1. **Explain four things you will be looking for during your inspection.**
2. **Water source:**

Sanitary inspections begin at the source of the water. Preventing source water contamination is the most effective means of preventing contaminants from reaching consumers.

1. **Source water quality and conditions around the water source:**

Assessing quality of water source and conditions embodied are the key elements of a sanitary inspection.

1. **Risks associating with water collection and consumption**

Sanitary inspections include identifying and assessing the risks associated with collection and use of the water.

1. **Home water handling**

They also include assessment of water management in the home, and ensure that household practices do not allow contamination to occur.

1. **Explain briefly why a Water Safety Plan is necessary**

Water Safety Plans (WSPs) help improve water suppliers' knowledge and management of the entire water supply system, thereby enabling them, for example, to develop more efficient operating procedures and respond faster to potential incidents that may arise.

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 water facility maintenance:**

1. **Preventive maintenance:**

Preventive maintenance involves regular checks and ensures that everything is working properly. This avoids further huge costs that will be incurred when it is totally broken down.

1. **Breakdown maintenance**

Breakdown maintenance is needed when facility is broken down and this incurs huge cost to labour and spares.

While preventative maintenance is the most preferred approach, it avoids any break in supply, and is usually cheaper and affordable.

**References:**

1. Athena Infonomics, (2012)
2. Pickering and Davis (2012),
3. Study Session 14 (Water emergencies and emergency Water Supply)
4. 1997, World Health Organization
5. Study Session 6 Operation and Maintenance of Water Treatment and Supply Systems