Strategia Netherlands

Course; Post graduate diploma in Water Hygiene and sanitation (WASH)

Assignment 2

Admission Number; PGD002

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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.

Public Private Partnerships (PPP) is the term used for a broad range of ways of the public and private sectors co-operating together to provide any service, including water supply. The key word is "partnership" as this infers some mutual sharing or distribution of risks and benefits. The main categories of PPP are

- ✓ Those that improve service delivery by better operations, possibly at lower cost'
- ✓ Those in which the private sector provides significant funds for capital investment.

Successful PPP in water supply requires both good practice in water supply and good practice in PPP. This report sets out the key issues that will affect PPP for provision of water supply. Most of the good practice is equally applicable to water supply schemes that are run entirely by government. The water sector is being stimulated

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The term "Public Private Partnership" (PPP) has developed as short hand for forms of agreement or partnership between the government (Public Sector) and other organization that are not government (Private Sector) to carry out a project or provide a service. Civil society has a direct role as a beneficiary, expressing the price the community would pay for an acceptable level of service, and an indirect role in shaping policy for water supply. In small PPP the community and Community Based Organization (CBO) can be the private partner. 36 The most important feature of the concept is the "Partnership". It infers:

- ✓ joint commitment
- ✓ sharing of risks
- ✓ mutual benefits
- ✓ partnership agreement

To be successful, both the public and private sectors need to compromise in order to develop workable forms of PPP. Both require safeguards on the performance of the other, especially to accommodate changed circumstances. A sympathetic approach to PPP improves the chances of sustainability, but one essential element is clearly that the funds available to the PPP cover full costs. Unless this is achieved the partnership project will not be sustainable. Funds can come from direct payment by consumers for a service or through a fee paid by the public sector to the Private Operator (PO) for providing the service or a combination of both. The main stakeholders in PPP for water supply, together with the benefits offered to them through PPP, are as follows:

- ✓ Government (primarily municipalities): access to additional private funds over and above public money, and/or improvements in operating standards and efficiency.
- ✓ Consumers: better services at prices that can be afforded.
- ✓ Community based organizations (CBO): improvement in services and safeguard of the poor. Implementers and operators of local development projects
- ✓ Private companies: use of their resources and skills to provide services through partnership. Establish reputation.
- ✓ Financiers (banks): creation of sound investments, compatible with risks
- ✓ Employees (trade unions): improved job opportunities and terms of employment, but PPP to safeguard jobs or compensate for retrenchment or early retirement.

Characteristics of the Water Supply Sector

The International Community recognizes the importance of safe water supply in the alleviation of poverty. The United Nations Millennium Declaration resolved "by the year 2015….. to halve the proportion of people who are unable to reach or to afford safe drinking water" (clause 19). This statement of intent is interpreted locally:

- ✓ "Reach" is often set at a distance from dwellings, say less than 500m on the flat or 100m vertically.
- ✓ Afford" is often taken as a percentage of house hold income, say not more than 5% for water supply and sanitation.
- ✓ "Safe" is often taken as the World Health Organization Guidelines, but these are not all health related and may not be significant in the local context. The resolution does not

include any target for quantity. Clearly, water that is not used for drinking does not need to meet these standards. Particularly in rural areas, people may tap a number of different water sources depending on what the water is to be used for and its availability, which may be seasonal. There are many challenges in meeting these targets. However, the overriding objective is sustainability for which the three parameters of a water supply system must be in balance. Levels of service should be chosen that:

- ✓ Will generate adequate income to provide and operate infrastructure.
- ✓ Can be provided by the infrastructure.
- ✓ Consumers are prepared to pay for and will be supported by others if loans, subsidies or grants are requiring

Infrastructure and operational resources should be provided that:

- ✓ Will deliver the chosen level of service'
- ✓ Can generate enough income.
- ✓ Can be paid for by consumers and will be supported by others if loans, subsidies or grants are required.

Income levels should be achieved that:

- ✓ Will pay for provision and operation of infrastructure.
- ✓ Provide the chosen level of service.
- ✓ Can be paid by consumers and will be supported by others if loans, subsidies or grants are required.

There are a number of PPP for water supply that has been shown to provide sound mechanisms for developing a partnership between the public and private sectors. In summary, there are well-tried mechanisms that use the skills of the private sector in operation, namely:

- ✓ Out sourcing or service contracts for particular services
- ✓ Management contracts to boost senior capability and introduce new concepts;
- ✓ Lease contracts to pass commercial and technical responsibility and risks to the private sector; and risks to the private sector and, in addition, the responsibility for obtaining

capital funds. Capital funds for infrastructure components (such as water treatment works or pumping stations and pipe lines) can also be obtained under arrangements, such as:

- ✓ Build Own Operate and Transfer (BOOT), assets transfer to the public sector at the end of the operating period;
- ✓ Build Operate and Transfer (BOT) used for BOOT;
- ✓ Build Own Operate (BOO), assets remain with the private sector indefinitely.

Sustainability

the basic concept of sustainability is essential to have a balanced sustainability triangle for any water supply scheme to continue to provide the desired levels of service. This covers some of the aspects that can contribute to sustainability and some that are most likely to contribute to deteriorating services.

Factors contributing to sustainability

a) Consumer support. This is essential to keep water supply systems operating. These include such factors as:

- ✓ Regular payment in full against bills. Bills should be monthly in developing countries. A discount for early payment is more effective than a penalty for late payment. Experience in Kathmandu is that most consumers paying time to claim a modest rebate. Consumers should be able to pay bills easily, near where they live, at convenient times. Low value coupons for water payments, which are purchased when money is available, can be a way of spreading payment especially for poor consumers who have difficulty in saving.
- ✓ Encouraging consumers to report deteriorating services by responding quickly and efficiently to complaints.
- ✓ Explaining the operational process and reasons for tariff increases.
- ✓ Good public relations and transparency

b) Adequate funds and income. Water supply schemes are high capital cost and relatively low running costs. However, cash flow is critical to any business and if consumers are charged on the basis of measured consumption it is inevitable that billing and payment will follow on after expenditures have been made on supplying water. This is not the case if charges are based on

indirect measures of consumption such as property size or value when bills can be sent out ahead of costs being incurred. Operators must be credit worthy if they are to be able to fund their working capital by borrowing

- ✓ *Appropriate development strategy and designs.* The public sector and private sector have different priorities in the design and operation of water supply schemes
- ✓ A development strategy that would be acceptable to the public sector using government and donor funds for capital works would not necessarily be the most effective for the private sector, especially if the private sector is to provide finance.
- ✓ Sound construction. This will minimize later difficulties and costs. The private sector will ensure that construction standards will achieve the design life, especially for underground infrastructure where poor construction can lead to high leakage from pipes. The operators can also check that operations will be efficient.
- ✓ Operational skills. These are generally enhanced by the private sector which will introduce equipment which may reduce staff levels but will train staff to run them. This will increase staff skills and lead to higher wages so that the private sector has fewer staff but with higher wages, including performance bonuses.
- ✓ Regular and preventative maintenance. This will prolong the life of both fixed and moveable assets. In many public water supply systems, maintenance is neglected because of lack of funds. The impact of lack of maintenance is noticed only after a number of years during which systems will continue to run but less and less efficiently. This progressive deterioration in performance then requires a major rehabilitation project to restore the facility. The overall cost is higher than prolonging

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

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

Three possible natural causes of water emergencies: drought; flooding and Earthquake

- ✓ 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.)
  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.
- ✓ 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.

Three possible causes of water emergencies due to humans:

- ✓ accidental contamination of the water supply (as in the Camelford incident);
- ✓ microbial contamination of water sources due to human mismanagement (such as the cholera outbreak in Haiti);
- ✓ Deliberate poisoning of the water supply as an act of terrorism.

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

(a) What would you take with you?

- ✓ recording data and, importantly, any follow-up with further analysis.

(b) Explain four things you will be looking for during your inspection.

- ✓ carrying out routine (for instance, weekly) monitoring of water sources and distribution systems
- ✓ checking and recordingϖ transporting samples to the appropriate laboratory

- ✓ entering analytical results in surveillance reports and submitting weekly reports to the District Water Surveillance Coordinator informing the Water Surveillance Coordinator of high-risk zones – such as those where water pressure is low, leakage high, the results of bacteriological tests bad or standpipes are used – as soon as they are identified, and indicating by appropriate means any advice to be given to the community in an emergency
- ✓ intensifying the monitoring of high-risk water supply zones

4. 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).

Advantages

- ✓ 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 analyzing 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

Disadvantages

- ✓ Needs technical expertise in the WSP team which may not be available in all water supply systems particularly in rural areas
- ✓ Requires additional training and capacity building initiatives
- ✓ May require huge capital investment for large water supply systems
- ✓ Need thorough and systematic monitoring, supervision and validation process which may be time consuming and tedious

The water safety plans are as follows

- ✓ A system assessment to determine whether the water supply chain as a whole can deliver water of a quality that meets health-based targets. This system assessment identifies the potential hazards in each part of the water supply chain, the level of risk presented by each identified hazard and the appropriate measures to control the identified risks to ensure that the water supply is safe, the standards and targets are met and human health is protected;
- ✓ Operational monitoring of an appropriate nature and frequency at an appropriate point in the water supply chain is defined for each control measure identified and implemented from the system assessment to ensure that any deviation from the required performance is rapidly detected; and
- ✓ Documentation of management arrangements including details of the system assessment, operational monitoring and validation monitoring together with a description of the actions to be taken in normal operation and incident conditions when there is, or there is a risk of, non-compliance with a standard or target value or failure to meet an operational control, or there is a potential risk to human health. These actions should include appropriate investigations, remedial action in the form of improvement programmes, reporting and communication.

The Objectives water safety plans

The primary objectives of a water safety plan in protecting human health and ensuring good water supply practice are the minimization of contamination of source waters, the reduction or removal of contamination through appropriate treatment processes and the prevention of contamination in the distribution network and the domestic distribution system. These objectives are applicable to all water supply chains, irrespective of their size or complexity and are achieved through:

- ✓ development of an understanding of the specific system and its capability to supply water that meets health-based targets;
- ✓ identification of potential sources of contamination and how they can be controlled;
- ✓ validation of control measures employed to control hazards;
- ✓ implementation of a system for monitoring the control measures within the water system;
- ✓ timely corrective actions to ensure that safe water is consistently supplied; and
- ✓ Undertaking verification of drinking-water quality to ensure that the WSP is being implemented correctly and is achieving the performance required to meet relevant national, regional and local water quality standards or objectives.

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

Maintenance refers to planned technical activities or activities carried out in response to a breakdown, to ensure that assets are functioning effectively, and requires skills, tools and spare parts (Carter, 2009). 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 Ethiopia and occurs as a result of poor preventive maintenance.
- ✓ *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 fulfils its service life. It also prevents crises occurring and costly repairs (in terms of time and money) being needed.

The reason is that, Preventive maintenance is better because it helps prevent breakdowns and ensures that the assets can be used until the end of their service life. By undertaking preventive maintenance, crises – which are costly – can be avoided.

References

1 . Study Session 6 Operation and Maintenance of Water Treatment and Supply Systems; 2019

2. WRJ December 2004 Front cover Pub.

3. Davis, J. and Lambert, R. (1995). Engineering in emergencies: a practical guide for relief workers. London, UK , ITDG Publishing.

4. Sphere Project (2000). The Sphere project: humanitarian charter and minimum standards in disaster response. Geneva, Switzerland, The Sphere Project.
http://www.sphereproject.org/handbook_index.htm