

Ensuring Water and Sanitation Services Against Disasters

Providers of water and sanitation services have the direct responsibility for the public health of their users and the population in general, which should be maintained and reinforced when a disaster affects the population they serve. Ensuring access to safe water (with the quality and sufficient quantities for consumption and hygiene) and providing adequate sanitation facilities during emergency situations is part of this responsibility. The provider and the systems administered should be capable of responding in these situations and reduce the possible effects of interruption and deterioration of the services.

The availability of safe water and basic sanitation conditions are fundamental for protecting the health of the population, particularly during emergencies when people are displaced and vulnerable.

In this regard, proper operation of the water and sanitation systems and the ability to maintain this operation in the aftermath of a disaster are fundamental for the protection and recovery of health of the affected population. Control of environmental hazards that may lead to outbreaks (leptospirosis, cholera, acute gastrointestinal illness) is fundamental, as these illnesses have a greater impact on the health of a population than the event itself. In addition, ensuring the continuity of services in health facilities is essential if they are to provide adequate medical care for the affected population.

The continuity of water and sanitation services (although in suboptimal conditions) should be seen as a public health intervention and a priority for political and health authorities.

During the emergency water and sanitation services are especially important for the following activities:

- **Medical attention for victims.** In hospitals and health centers, the continuity of a safe water supply is essential to providing medical care to the victims of a disaster. Even when a health facility has taken protective measures for the impact of a disaster, the quality of care it can provide will be limited if the public services of water and sewerage are interrupted.
- **Search and rescue activities.** The search and rescue teams need water not only for their own consumption, but sufficient quantities for the consumption and hygiene of the people they rescue.
- **Human consumption (drink and hygiene).** The services must ensure that there is safe and sufficient water for human consumption and personal hygiene, particularly for persons directly affected by the disaster.
- **Attention to populations in shelters.** Especially for victims who have lost their homes and are in overcrowded shelters, the provision of enough safe water for consumption and adequate sanitation facilities are fundamental for safeguarding their health.
- **Fire fighting during earthquakes.** Fires that occur after earthquakes can not be extinguished without a reliable water source.
- **Cleaning.** Essential facilities such as hospitals and schools need to be cleaned before routine activities can resume, for which water is essential. Water is needed to clean houses and public spaces in general if they are to be fit for use.
- **Well-being.** The interruption of services has adverse effects on well-being, quality of life, and development of affected populations as well as those who are not directly affected. As mentioned earlier, lack of accessible water forces the population (especially women and children) to carry water. Many industries require continuous supplies of water to operate and produce goods and services.

Ensuring the operation of water and sanitation in the case of natural disasters requires the inclusion of safety measures at various stages of service implementation, as well as emergency preparedness and plans to deal with disasters. Postponing such activities contributes to the chaos, and prolongs and increases the impact of the disaster as well as putting the health of the population at risk.

Fires caused by earthquakes

Earthquakes in San Francisco, U.S.A., in 1906 and Kobe, Japan, in 1995 caused numerous fires throughout the cities that could not be extinguished because the water systems were damaged. Although both cities are on the coast, the collapse of road networks prevented fire fighters from reaching the sea to fill their tankers.

These two earthquakes show that fires caused by earthquakes can cause greater damage and loss than the earthquake alone.



The aim of political benefit and social stability

Water is an economic good and most activities need water. In the case of a natural disaster the interruption or damage to services for an extended period limit the recovery of normal development activities for the population. For example, school attendance, especially among girls, is limited due to the lack of adequate water and sanitation. Reestablishing the operation of water and sanitation services goes a long way toward restoring activities in a community impacted by a natural disaster.

The higher costs associated with using alternative means of supplying water mean greater expense for businesses, and can reduce and even halt production. This in turn can aggravate social problems such as unemployment, poverty, migration to other areas, etc.

The suspension of these services places an additional burden on the political authorities charged with managing the disaster. They are forced to divert limited resources to make up for shortages caused by damage to the systems.

The longer the time needed to restore services, the more activities are affected and resulting social problems will intensify and become more difficult to resolve. To the degree that services continue to be interrupted or are not restored to their pre-disaster conditions, the process of economic, commercial, and social recovery of the affected population will be protracted.

A concrete and basic step toward sustainability of services

Sustainable water and sanitation systems implies that they are capable of providing services throughout their serviceable life which results in improved health conditions and quality of life. However, especially in the most vulnerable areas, the occurrence of one or more phenomena during the life of these systems threatens such sustainability. In this regard, risk management is a contribution to sustainable water supply and sanitation systems.

In populations settled in peri-urban and rural areas, the delivery of services has a social character and in many cases the services are managed by the com-

munity itself. Especially in peri-urban areas, vulnerability is high, which results in greater frequency of disasters (many of which are recurrent and to a certain extent identifiable and predictable) affecting not only the continuity of services but the lives and well-being of the population.

Experience from previous disasters indicates that damage to water and sanitation systems may exceed the technical capacity and the financial resources of the service providers. There is the risk (especially where systems are administered by the community) that these systems will be abandoned, that there will be a significant reduction in the quality of services, or that they will be repaired with temporary measures that are inadequate for permanent facilities, increasing their vulnerability to phenomena of similar or lesser magnitude.



Identifying hazards and applying measures to reduce vulnerability in water and sanitation systems are tools that protect the investment made in installing infrastructure and the financial viability of service providers following a disaster.

It is critical for risk management to be adapted to the environment where projects are carried out. The work should be done with a multi-disciplinary approach and coordinated with other sectors to identify hazards in the services. In cities where the systems cover large areas and are the responsibility

El Niño (1997–1998) and its Impact on the Water and Sanitation Infrastructure in Peru

Recurrent phenomena such as El Niño in certain areas of Peru give rise to discouraging figures, as in the case of the impact on the water and sanitation systems during 1997–1998. According to information gathered by the Peruvian Ministry of Health and PAHO/WHO, rural areas reported the collapse of 199 water supply systems that served a population of 156,000.

The deterioration of health conditions, aggravated by shortages or worsening of the water and sanitation services were made evident by a 3.2% increase in cases of acute gastrointestinal illnesses in the first months of El Niño.



EPS - GRAU - Perú

As a result of damage to sewage systems and latrines in the area affected by El Niño, the Ministry of Health reported the installation of 3,532 latrines to serve a population of 17,600.

of provider companies, specific studies that identify the most vulnerable areas and the major hazards should be carried out. In the rural and peri-urban environments where systems are smaller and resources limited, the involvement of the community is essential, especially in identifying hazards in a particular area.

In rural areas where information is limited, the community's knowledge about its own environment is an important source of information about hazards. It is both feasible and desirable to make use of this knowledge in phases of the project, thereby fostering the active participation of the community by involving it in the conception and decision-making about a project, and promoting the community's control of the project and or/system.

Water and sanitation projects become a platform for the identification of hazards and risks in a community's environment and allow risk management to develop in an integral way. Community participation is central to this process.

The use of appropriate materials and technology for the existing risk and a dynamic process for updating design standards are indispensable for effective vulnerability reduction in the systems. To this end, it is necessary to have participation of actors who can contribute to the ongoing development of technologies and adaptation of design criteria, taking into account that vulnerability reduction is an important factor in achieving sustainable water and sanitation systems.

