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SUSTAINABLE DEVELOPMENT OF WATER RESOURCES, WATER SUPPLY AND ENVIRONMENTAL SANITATION

WATSAN Response to Earthquake in Pakistan

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This paper summarizes the experiences of WatSan emergency response to the devastating earthquake which struck Pakistan on 08 October 2005. The response entailed distribution of pre-positioned supplies, establishing coordination mechanism, rehabilitation of major water supply systems, water trucking, promotion of household water treatment options, effective water quality surveillance, support to solid waste management, construction of sanitation facilities and most importantly hygiene promotion. Over 700,000 people received safe water and sanitation facilities through UNICEF assistance. There was no major outbreak of diseases reported in the earthquake affected areas while morbidity and mortality indicators remained more or less similar to the rest of country not affected by the earthquake, indicating the effectiveness of water, sanitation and hygiene services.

Background

The devastating earthquake of 8th October 2005, measuring 7.6 on the Richter scale, caused massive damages and destruction in Pakistan Administered Kashamir known as Azad and Jammu Kashmir (AJK) and the North West Frontier Province (NWFP) of Pakistan directly affecting about 4 million people, with over 73,000 dead, 120,000 injured while over 3 million were rendered homeless. Some 8,000 schools collapsed while 17,000 students and 900 teachers were killed (UNICEF, 2006a). The earthquake caused severe damages and destruction to the existing water supply and sanitation systems in both urban and rural areas including hospitals and schools. Over 3,800 rural and urban water supply schemes were fully or partially damaged thus forcing the affected people to use water from polluted water sources such as rivers, unprotected springs and ponds and to use open spaces for defecation. This paper aims at sharing the experiences and lessons learned from the emergency response in water and sanitation sector with particular focus on interventions in AJK.

Pre-earthquake situation

About 65% of people in AJK had access to improved source of drinking water while 25% to basic sanitation facilities. The Local Government and Rural Development Department (LG&RDD) is responsible for water and sanitation in rural areas where about 88% of total population lives. The responsibility of water and sanitation in urban areas lies with the Public Health Engineering Department (PHED). The head offices of both LG&RDD and PHED are located at Muzaffarabad, the capital city of AJK, with sub-offices in all the eight districts. Most of the water supply systems in AJK are gravity based capturing water from spring sources and streams flowing down the mountains. In urban areas, however, the systems are mainly based on treatment plants and pumping stations using streams or rivers as the raw water source. Overall, the population is scattered around rugged mountainous terrains which makes fetching water even from a nearby source difficult job particularly in very steep slopes. Usually fetching water is the responsibility of women especially young girls and the same is true for maintaining hygiene at household level.

Emergency response

Emergency response in the earthquake affected areas was provided by government, UN agencies, national and international NGOs in a well co-ordinated way. UNICEF's major implementing partners were LG&RDD, PHED, Pakistan Council of Research in Water Resources (PCRWR), Ministry of Environment, district governments, Islamic Relief, Concern, IRC, OXFAM and DACAAR, amongst others. What follows is the summary of the major actions taken and processes adopted in the emergency response.

Co-ordination mechanism established

Within the first few days of the earthquake, the Water, Environment and Sanitation (WES) Clusters were established at different humanitarian hubs located at Muzaffarabad and Bagh in AJK and Mansehra, Battagram and Shangla in NWFP. WES cluster established at Islamabad was responsible for co-ordination at the federal level as well as overall policy and strategy guidance and co-ordination with WES

clusters at hub levels. Following were the major features of the coordination mechanism:

- UNICEF Pakistan was given the mandate to lead the WES cluster. To fullfill this role effectively, UNICEF made the services of international WATSAN experts available for leading the clusters at country level as well as hub levels.
- The major responsibilities of the WES cluster were to bring all stakeholders in WES sector including Government, UN Agencies, Donors, International and National NGOs and partners together for an effective emergency response through sharing of information and resources, harmonization and standardization of WES interventions, assigning roles and responsibilities, providing technical solutions to emerging problems and policy support to the implementers through a participatory consultative process.
- Daily meetings of the clusters were held in the initial phase of the emergency, and then gradually reduced to once a week.

Establishing sub-offices

UNICEF assigned a number of its regular staff from the country office and provincial offices to the affected areas within 24 hours and in short period of time placed a sizable number of internationals staff and consultants from other countries especially those who had reasonably good experience in emergency response. In order to accelerate emergency response, UNICE immediately established five new field offices at hub level. These offices were established in tents in the UN camps as most of the buildings were fully or partially destroyed by the earthquake. Wireless communication system established by UN enabled access to Internet. Similarly, other organizations including OXFAM, MSF, Islamic Relief, Concern etc. also opened their offices in the affected areas.

Distribution of pre-positioned supplies

Following the initial assessment, UNICEF pre-positioned supplies from its main warehouses located in Karachi and Peshawar reached the earthquake affected area within 48 hours and distributed to the affected families especially those who were moved to camps by NGOs and volunteers. The pre-positioned supplies included water emergency kit (known as Nerox Filter), PUR water purification sachet, Aquatab water purification tablets, chlorine based chemicals (HTH), water containers, storage tanks, and soaps etc. Locally hired female staff of the partner NGOs played a key role in effectively distributing the supplies to the families through hygiene promotion with practical demonstration on the use of products.

Ensuring provision of safe water

UNICEF Pakistan gave priority to the provision of safe water and basic sanitation facilities to the affected people to prevent outbreak of diseases. Safe drinking water was provided to about 700,000 affected people in urban and rural areas and camps through rehabilitation of existing water supply systems especially in major cities and towns including regular water trucking to over 136,000 displaced people in camps, hospitals and schools. The major strategies and actions taken are described in the following sub-sections:

Focus on operationalization/rehabilitation of major urban water supply system

Keeping in view the huge concentration of affected people in the urban centres and in the camps established for the displaced persons in the cities, urban centres, and big towns, greater focus was given to immediately operationalize and rehabilitate the damaged water supply systems. Required supplies, cash and technical assistance were made available to the implementing partners for immediate rehabilitation of the damaged water supply systems.

Strengthening existing government structure/capacity

The government agencies responsible for water and sanitation services were in a very bad shape due to collapse of basic infrastructures including water supply systems, collapse of office buildings, loss of office equipment, records and above all causalities to the staff and their families. Despite this, these agencies, with the support of UNICEF, led restoration and operationalization of the water supply systems especially in AJK. To this affect, formal agreements were made with LG&RDD, PHED, and Municipal Corporation of Muzaffarabad based on rapid assessment on the ground.

Bringing mobile repair and maintenance teams/firms from outside

UNICEF brought mobile repair and maintenance teams from outside the earthquake affected areas to expedite the repair work on the damaged water supply systems. A typical mobile unit comprised of a well equipped truck mounted with welding machine, generators, plumbing kits and other accessories with a technical team of welders, electricians, plumbers, helpers, driver, and cook etc. Similarly, UNICEF engaged special firms/consultancy services from outside to carry out specialized rehabilitation work. One such example was the repair of two damaged clarifiers of the Makri Water Treatment Plant, which supplies water to over 125,000 inhabitants of Muzaffarabad City, in a record time of one week. The technical team of the firm assessed the situation, prepared drawings and then manufactured fiber glass components in the factory at Lahore and installed the same at the treatment plant. Similarly repair of leakage and seepage due to cracks developed by earthquake in the sedimentation tanks and storage reservoirs was a very specialized job that was completed by engaging a private firm.

Focus on effective chlorination and water quality surveillance

Immediately after the earthquake, PCRWR of the Ministry of Science and Technology (based in Islamabad), with

UNICEF assistance, deployed technical teams in the earthquake affected areas with responsibilities to assess the water quality situation and take remedial actions to improve the water quality. The teams provided an exemplary technical assistance to PHED, especially in AJK, in repairing the chlorination system at water treatment plant, installing new chlorinators, ensuring effective chlorination at the points and frequent water quality monitoring for residual chlorine from main sources to points of ingestion. Results of the joint water quality monitoring by WHO, OXFAM, Austrian Army and PCRWR showed that water quality of Muzaffarabad water supply system was in conformity with WHO guideline values.

Promotion of household level water treatment technologies in rural areas

In areas where rehabilitation of existing water supply system was not possible and where access to treated water was not possible, family level treatment options such as chlorine tablets, PUR Sachets, and Nerox filters were extensively promoted. Over 50,000 families received Nerox filters while 7 million water purification tablets and 6 million PUR sachets were distributed among the affected population through CBOs, NGOs and LG&RDD. In order to ensure transparency and accountability of the supply distribution, supply tracking system was put in place by LG&RDD with assistance from UNICEF

Ensuring access to basic sanitation services

Ensuring access to basic sanitation facilities to the affected population in camps was a major challenge. The salient features of the sanitation interventions are listed below:

- The nature of emergency required construction of pit latrines. Ready made slabs for pit latrines, however, were not available immediately in the country at the beginning of the emergency because pit latrines are not used in Pakistan as people are used to pour flush latrines.
- In view of the urgent needs, a number of simple options such as table tops (plastic with reinforcement), timber slabs and iron slabs were produced locally and made available along with bamboos and tarpaulin sheets. Subsequently, UNICEF managed to get locally manufactured fibre glass slabs in the country. The process proved to be very successful in fulfilling the demand (though resulted in delay of supply) as well as building the capacity of local manufactures.
- Partner NGOs, with assistance from UNICEF, were responsible for providing basic sanitation services in the camps while the LG&RDD in AJK, through its field offices, relied on community based organization and water and sanitation committees to distribute latrine slabs along with other supplies (family hygiene kit, water treatment option etc) in the rural areas. Altogether, about 32,000 latrines were constructed with UNICEF assistance of which over 26,000 were built in rural areas by LG&RDD, showing that the government played a bigger role in promoting sanitation in rural areas. In addition to UNICEF assistance, other partners also constructed over 7,000 latrines in the camps (UNICEF, 2006a).
- Initially the focus of sanitation interventions was on sanitary latrines to control open defaecation in the camps but sooner it was found that due to lack of bathing facilities people started using pit latrines for bathing/washing as well. This necessitated provision of bathing facilities/ washing platforms on a priority basis.
- Shared latrines by two or three families proved to be more successful than communal ones because of sense of ownership by families who kept them clean and tidy.
- Some agencies went for improved options of latrines such as pour flush latrines which were not successful due to non-availability of adequate quantity of water.
- Gradual improvement in the superstructure design was found to be an effective approach in balancing quantity vs quality. Some agencies tried to make the superstructure an impressive one, but that de-accelerated the process. One of the key lessons learned was that focus should be given to elimination/minimizing open defecation (i.e., safe disposal of human faeces with minimum level of privacy and security) not on superstructure quality. Unfortunately, there was unnecessary debate on whether to use bamboos or deodar wood, whether to use tarpaulin or canvass cloth or GI sheets for superstructure.
- In UNICEF-assisted sanitation promotion, families, camp dwellers and communities participated in latrine construction in site selection and pit digging. However, some of the international NGOs provided significant amount of cash for digging of latrine pits which created confusion among the camp dwellers.
- The provision of pit latrines during the emergency provided tremendous opportunity for promoting simple latrine options even for the longer term. Huge demand has been created for simple pit latrines in the rural areas where people never thought of having a pit latrine at their houses.
- Effective solid waste management mechanism was established in the city of Muzaffarabad through support to the Municipality (LG&RDD). UNICEF provided required equipment and human resource as well as cash which included a dozen dumpers, four tractors, 100 sanitary workers and 3 monitoring officers. UNICEF also supported solid waste management in camps.

WES communication

Following the earthquake, an inter-sectoral Emergency Relief and Rehabilitation Communication Committee was formed to plan and execute programme communication support. The salient features of the UNICEF-supported hygiene promotion/communication process, which was led by the Ministry of Environment at the Federal level, included preparation, printing and distribution of simple communication materials (posters, leaflets, banners etc.) on key areas (hand-washing, latrine use, water handling and storage etc); establishment

of an FM radio channel for disseminating key messages; mobilization of Boys Scouts for dissemination of hygiene messages/communication materials as well as distribution of essential supplies; promotion of interpersonal hygiene in camps through female hygiene promoters engaged by partner NGOs; regular telecasting of special programmes on field based experiences, issues and solutions on TV with support from UNICEF and WHO (UNICEF, 2006b); and establishment of a unique structure (at camp, sub-district and district levels) of hygiene educators called 'Rahbar" (guide or leader in Urdu). UNICEF-supported hygiene promotion messages reached an estimated 423,112 people (UNICEF, 2006a)

In order to promote safe hygiene practices, key supplies were provided to one million affected people (UNICEF, 2006a). These supplies included 150,000 family hygiene kits (consisting of washing and bathing soaps, tooth brushes, tooth paste, nail cutter, sanitary cloth, towels., combs, small water container, mug etc.), 3.5 million of bathing and washing soaps and about 450,000 jerry cans and buckets

Major constraints

- Delay in delivery of supply materials e.g. latrine slabs, tarpulin and pipes seriously affected the pace of emergency response. For instance, only 40% of the first six months sanitation target could be achieved in the rural areas due to delay in the supplies of latrine slabs. It also slowed down the progress towards achieving Sphere Standards in the camps.
- Keeping in view the nature of the catastrophe, there were limited local partners from the civil societies available to carry out the emergency response.
- Frequent transfer/movement/deployment of WES team leaders/cluster heads at the hub level severely affected the continuity and pace of work and sometime there was no overlap of the staff for proper handover.
- Inaccessibility (e.g., road blockage) hampered the response in the isolated mountainous areas, where the only option left was provision of response through helicopter missions.

Major lesson learned

- Propositioning of essential supplies played a critical role in rapid and effective emergency response. In order to avoid delays, long term agreements (LTAs) should be put in place for procurement and delivery of supplies as part of emergency response strategy.
- Cluster approach, which was introduced during this emergency for the first time, provided a critical forum for pooling resources – knowledge, skills, human resource, supplies and logistics; improved coordination and harmonization of response.
- Directory of all WES stakeholders including Governments, UN Agencies, NGOs, Private Sector, Consultancy Services/firms and manufactures with their contact addresses, expertise and nature of services etc. should be available as part of emergency response strategy.
- Action oriented professionals with high sense of commitment and quick decisional abilities are more valuable than high level process-oriented technical experts.
- Communities and families proved to be very resourceful and played vital role in the emergency response.
- Ownership of latrine is a key factor for proper usage and hence response process must ensure the same. Bathing and washing facilities should be given the same priority as provision of sanitary latrines.
- Resorting to multiple options for ensuring safe drinking water (like piped water, water trucking, packaged treatment plants, family level treatments etc.) was found to be very effective as it helped to make the best use of existing water sources..

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