The Urban Newsletter

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Transforming cities in Punjab

October 2010

FLOOD 2010
STRATEGIES FOR PROVISION OF SAFE DRINKING WATER IN PUNJAB

What were the initial safe drinking water issues after floods?

- 202 water supply schemes were destroyed.
- Shallow ground water which was mostly used for drinking was polluted.
- In 7 districts, 658 relief camps were located far from a safe drinking source of water.

Punjab Government went for two kinds of processes for provision of safe drinking water after flood 2010. While providing safe drinking water at relief camps, Punjab Government was also looking into long term solutions. Therefore, strategies for provision of safe drinking water were implemented in various relief camps and villages of Punjab simultaneously.

Total number of population at camps

Sr. No.	District	No. of Camps	Population (Persons)
1	D.G. Khan	126	30804
2	Rajanpur	298	78421
3	Muzaffargarh	137	107964
4	Layyah	64	18951
5	Rahim Yar Khan	25	24004
6	Bhakkar	5	348
7	Mianwali	3	644
	Grand Total	**658**	**261136**

Many villages with water supply hand pumps prior to the floods were located, their damage evaluation was assessed and introduction of water schemes was planned by the Punjab Government and UNICEF. Out of 202, 122 schemes were made functional on adhoc basis till the camps existed. These water schemes included provision of 589 water tanks, 743 hand pumps and 9 water bouzers in 11 affected districts of Punjab. 25 filtration plants were arranged to be installed whereas 14 generators were made available within the same area. One of the achievements of these schemes is that out of approximately 10,000 hand pumps 4000 have been already disinfected.

Children suffering from water borne diseases at various hospitals and camps

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Strategies at Relief Camps

Provision of water bottles

- Initially 700,000 bottled water was supplied to the relief camps. This proved to be an expensive and difficult exercise making it a non-sustainable solution.

Installation of hand pumps

- Ground water samples were evaluated for their contamination level in laboratories established in each district by the department.
- Ground water in most of these areas was sweet so hand pumps were installed to cater the immediate need of safe drinking water supply.

Provision of safe drinking water through water tanks

- Where brackish water was found or safe drinking water source was at a distance, 589 water tanks were placed at the camps.
- Water bouzers were provided to the administrative department for provision of safe drinking water to the camps. In this regard water filling stations were identified in near by town where water was filled in the water bouzers after chlorination. Each bouzers made almost three rounds daily of the nearby relief camps to fill in the water tanks.

Chlorination Process

- Teams of research officers have been deputed in each district to efficiently carry the process of chlorination at the filling stations. Liquid chlorine of 60000 ppm (60-80 g/1) concentration was used for this purpose with optimizing the residual chlorine concentration upto 0.5 mg/1 to make water fit for the drinking purpose.
- Active chlorine concentrate was provided by the Swiss Government which could convert Sodium Chloride into liquid chlorine through the process of electrolysis. However the draw back of this instrument is that it provides 2 liter chlorine with only 6-8 ppm concentration in 2 hours. Due to less concentration, more amount of chlorine is required for proper chlorination of water.

Bottled water - a non sustainable option

Safe drinking water tanks in the camps

Woman using disinfected water from hand pump

THE URBAN UNIT
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Strategies at flood affected villages

Installation of Filtration Plants

- Filtration and Reverse Osmosis (RO) Plants have been installed in the flood affected towns for removing suspended solids and dissolved salts respectively from the water.
- Population living in the respective towns and near by relief camps can obtain drinking water from these plants. Water bouzers can also be filled from these filtration plants to supply water in camps as required.

Disinfection of existing Hand Pumps through chlorination

- The upper strata of soil and internal structure of hand pumps was likely to be contaminated by the floods. For this purpose, disinfection through chlorination of these hand pumps were carried out so that internal surface and water polluted with in the pipe structure can be made free from chlorination.

Installation of Generators

- 14 generators were provided for various rehabilitated schemes to make them functional with in the flood affected areas.

Water Quality Monitoring

- More than 700 ground water samples were tested in the laboratories established in various districts of Punjab by HUD & PHED and 95% of them proved to be portable.
- Water blue kits have been provided to the team for on the spot checking of chlorine concentration in the water samples.

Performance

Sr. No.	Name of District	Hand Pump Intalled	Water Tanks Installed	Filtration Plants Installed / Arranged	Generator Installed / Arranged	Water Bouzers provided	Total Schemes Affected	Schemes Made Functional on Adhoc Basis
1	D.G. Khan	215	80			1	79	53
2	M. Garh	285	191	10	4	4	18	13
3	Layyah	28	78					
4	Rajanpur	162	206	14	10	4	57	43
5	R.Y. Khan	53	30	1				
6	Mianwali						36	12
7	Khushab						2	
8	Sargodha						1	1
9	Attock						4	
10	Chakwal						4	
11	Jhelum						1	
	Total:	743	589	25	14	9	202	122

- Chlorination being ensured at the source.
- 41 Active chlorine concentrate units have been provided by Swiss Govt.

Hand Pump disinfected by the Punjab Government

Secretary (HUD & PHED) Mr. Irfan Ali supervising provision of safe drinking water

Cross Cutting Themes

- Continuous inter departmental brainstorming sessions
- Quick decision making
- Implementation of plan

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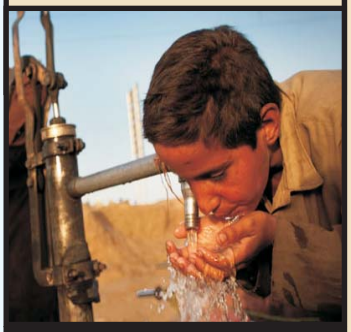
Rehabilitation Processes



Villagers enjoying safe drinking water

Safe water availability ensures people coming back to their respective habitats therefore, the above mentioned safe water schemes were vigilantly pursued in order to accelerate rehabilitation processes. The following practical steps were taken by the Punjab Government for speeding up this process:

- Disinfection of existing hand pumps with the support of water quality testing was carried out by the department.
- Existing water tanks provided by the Public Health Engineering Department were handed over to the communities for storage. Additional 1500 water tanks provided by PAIMAN (NGO) were also placed in the affected villages.
- Water tanks of 200 to 250 gallons were placed in 1500 villages and appropriate dosages of chlorine was supplied through laboratory staff.
- In order to keep the displaced people healthy, safe chlorinated water was supplied as long as the camps existed.

A Partnership between UNICEF and HUD & PHED

According to the memorandum UNICEF will provide support to HUD & PHED for ensuring provision of safe drinking water.

- Relief Phase will include the steps of installation of shallow hand pumps, water trucking in camps, installation of water tanks in camps, Operation and maintenance of water purification units.
- Installation of deep bore hand pumps.
- Provision of diesel generators (45 KVA).
- Rehabilitation of water supply schemes in the flood affected areas.

POSITIVE IMPACTS

- Provision of safe drinking water and ensuring the general health of the affected people in camps.
- Preventing water borne diseases especially amongst children.
- Decreasing the number of casualties.
- Decreasing the workload of women in getting water from water sources.

UNICEF reported 8 million children have been affected by the flooding in Pakistan and 3.5 million children at risk of disease in those areas where the flood waters have gone back, diseases are now the most imminent threat.

WHO projects that up to 1.5 million cases of diarrhoeal diseases: Including up to 140,000 cases of cholera, 150,000 cases of measles, 350,000 cases of acute respiratory infections, and up to 100,000 cases of malaria after the flood in Pakistan.

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