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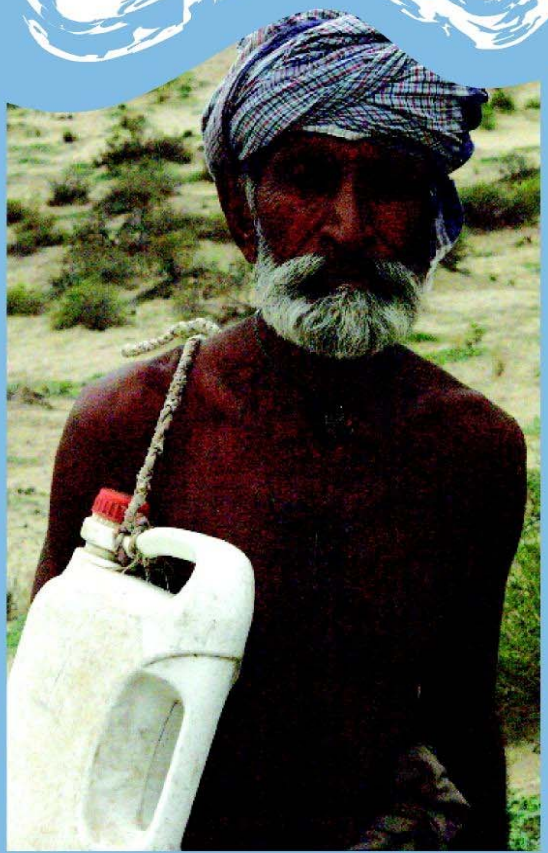
Indus FOREVER

WATER & SANITATION ACTION PLANS

for the

Programme Sites of Indus for All Programme



Indus for All Programme, WWF - Pakistan

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Context

Access to potable water and proper sanitation facilities is a great challenge for Pakistan in the current century. Surface and ground water pollution is a major environmental concern posing serious threat to human development. The costs related to unsafe water and poor sanitation are huge and could hamper long term economic growth. Pakistan under Millennium Development Goal (MDG) 7 on environmental sustainability, have committed to halve the proportion of people without sustainable access to safe drinking water and basic sanitation. The United Nations declared water as a human right through its general comment No. 15 in 2002, which mentions:

"The human right to water entitles everyone to sufficient, safe, acceptable, physically accessible and affordable water for personal and domestic use."[1]

The importance of safe drinking water and sanitation facilities has gained global and national recognition in the last decade generating a political momentum and an opportunity to address this fundamental aspect of human development. Overcoming this crisis of water and sanitation through a concerted local and national response would act as a catalyst in public health, education, environmental betterment and poverty reduction by tapping into human potential that would have been lost due to water borne diseases.

Deprivation of water and sanitation produces multiple effects on children's health such as loss of school days due to illness; thousands of women spend several hours to collect water and lifecycles of disadvantages affecting hundreds of thousands of people in Pakistan. These human costs and economic waste is associated with the water and sanitation deficit. Measuring the costs associated with water and sanitation are difficult, but some costs are visible such as health spending of poor households, productivity losses etc. The Human Development Report 2006 estimates that every $1 spent in the sector creates on an average another $ 8 in costs averted and productivity gained.

The water and sanitation problem is above all a problem of the poor. Majority of the people in Pakistan are living in rural areas lacking access to clean water and basic sanitation. Similarly the urban poor living in slums face duel problems of water and sanitation facilities. This is indicative of inadequate social welfare policies and requires proactive public actions.

The Government of Pakistan being part of the MDGs and other international commitments realized the current situation of water and sanitation in the country and has initiated several policies as well as programmes to develop the coverage of improved water source as well as sanitation. Among the policies adopted are national environmental policy, national drinking water policy (not approved yet) and sanitation policy. The following section will discuss these policies, review progress on MDGs and current coverage of water and sanitation.

Background

At the dawn of the new century the momentum generated by the Millennium summit and other related United Nations conferences brought the water and sanitation issue into the mainstream. The Government of Pakistan realizing the situation adopted several policies and programmes to tackle this human crisis tried proactively to avert future problems of human development caused due to unsafe water and poor sanitation.

By adopting the Mellenium Developnment Goal, the indicator of drinking water is defined as the proportion of the population with sustainable access to improved water source i.e. Pipe and Hand Pump water.

1 Human Development Report 2006.

National Drinking Water Policy (Draft)[2]:

The National drinking water policy recognizes the constitutional responsibility of provincial governments to provide drinking water to citizens. The policy provides broader goals and objectives which clearly indicate the commitment of the government to ensure safe drinking water to the entire population at an affordable cost in an equitable, efficient and sustainable manner. The key policy principles are reproduced below:

- To recognize that access to safe drinking water is the basic human right of every citizen and that it is the responsibility of the state to ensure its provision to all the citizens.
- The right to water for drinking takes precedence over rights for water for all other uses such as environment, agriculture, industry etc.
- To ensure that the existing inequalities in the provision of safe drinking water are removed and the needs of the more vulnerable and poor are effectively addressed through adequate financial allocations and provisions of suitable technological options
- To recognize the provision of safe water should be undertaken through a community centered demand driven approach in which the community members are given a key role.

The policy also sets time bound targets. According to this 93% of the population should be provided safe drinking water by 2015.

National Sanitation Policy[3]

The Government of Pakistan also devised a National Sanitation Policy, a draft policy document prepared in March 2006 outlines the broader context and objectives of the policy to support provincial and district governments in preparing their sanitation strategies and plans. The National Sanitation Policy recognizes the poor coverage of sanitation in the country, especially in rural areas and inadequate government spending on water and sanitation which is 0.10% of GDP in year 2004-5.

The broader policy objective focuses on improvement of quality of life and physical environment with the sub-objectives of safe disposal of solid and liquid waste, promotion of health and hygiene practices and to link sanitation programmes with environment, housing, water and city and regional planning policies.

Policy Principles:

- Mobilization of local resources and accept and support the role that communities, NGOs, formal and informal sector are playing in sanitation provision
- Develop and use cost effective technologies
- Health is a fundamental human right and health targets can not be achieved without sanitation. Therefore, this policy considers sanitation to be a fundamental human right
- There will be an equitable distribution of resources between the richer and poorer sections of human settlements.

The Policy identifies minimum sanitation options which include flush latrines/ or pour flush latrines in homes for urban areas and high density rural settlement connected to an underground sewage system terminating in a sewage treatment facility. Similarly at inserviced urban areas and low density rural settlements minimum options are ventilated pit privies/ pour flush latrines connected to a septic tank linked to a waste water disposal and/ or collection system. The policy follows the targets set in Medium Term Development Framework (2005-10) which result in the extension of present coverage from 42% to 50% of the population by 2010.

UN Agencies suggested definition of sanitation:

Facilities such as sewers or septic tanks, poor-flush latrines and simple pit or ventilated improved pit latrines are assumed to be adequate, provided they are not public.

2 National Drinking water policy. http://www.environment.gov.pk/act-rules/D_NATIONAL_DRINKING_WATER_POLICY.pdf
3 National Sanitation Policy. http://www.asb.org.pk/sanitationpolicy.pdf

National Environmental Policy-2005[4]

The National Environmental Policy 2005 under section of sectoral guidelines mentions in detail the provision for water supply and management, which include:

- Develop legal and policy framework for promotion of safe drinking water in Pakistan
- Increase coverage of water supply and water treatment facilities
- Establish water quality monitoring and surveillance system
- Devise and implement national sanitation policy

In addition to the above policies, the Government of Pakistan has made several international commitments to address the issue of water and sanitation which demonstrate the willingness and committment of the Government of Pakistan to focus on such a vital issue. Despite these efforts a lot has to be done.

Statistics reveal a very dismal picture of the overall coverage in Pakistan which are further segregated and compared to the four Indus for All Programme sites in the Sindh province. The table below depicts the comparison between the programme villages/districts and aggregated figures at country level.

The World Bank estimates Rs. 112 billion mean annual average cost of inadequate water supply, sanitation and hygiene. This is the highest among the seven environmental costs measured by the bank.[5] According to a World Bank report, over 60% of the population obtains drinking water from hand or motor pumps.

Link of Water and Sanitation to MDG-7: Environmental Sustainability

Environmental Sustainability	Link with water & sanitation
To stop the unsustainable exploitation of natural resources; to halve the proportion of people without water and sanitation; to improve the lives of 100 million slum dwellers	• Adequate treatment and disposal of excreta and wastewater contributes to better ecosystem management and less pressure on freshwater resources. • Improved sanitation reduces flows of human excreta into waterways, helping to protect human and environmental health. • Inadequate access to safe water and inadequate access to sanitation and other infrastructure are two of the five defining characteristics of slum

Source: UN Millennium project, task force report on water and sanitation 2005.

The World Health Organization estimates that 1 $ invested in water and sanitation would yield an economic return between 3 $ and 34 $ depending on the region. The benefit would include an average global reduction of 10 per cent in diarrhoeal incidents; health related costs avoided would be 7.3 billion $ per year.

4 National Environmental Policy.
http://www.google.com.pk/search?hl=en&q=environment+policy&btnG=Search&meta=
5 http://siteresources.worldbank.org/SOUTHASIAEXT/Resources/Publications/448813-1188777211460/pakceavolume1.pdf

Water and Sanitation Coverage

Location		1998 Census	2004-05	MTDF Target 2009-10	MDG Target 2015
Pakistan	Percentage of population with access to improved water source in year 2004-5[6]		66	76	93
	Percentage of population with access to sanitation[7]		54	70	90
Indus for All Programme area Districts					
Thatta	Percentage of housing units with access to drinking water[8]	33.05	This information has been collected from district census reports of 1998.		
	Percentage of housing units with access to sanitation[9]	52.02			
Sanghar	Percentage of housing units with access to drinking water	57.77			
	Percentage of housing units with access to sanitation	43.71			
Nawabshah	Percentage of housing units with access to drinking water	81.99			
	Percentage of housing units with access to sanitation	50.8			
The Indus for All Programme sites information obtained from socio-economic baseline assessment 2007					
Chotiari Reservoir, Sanghar	Percentage of housing units with access to potable water	60.8	Programme sites specific information has been extracted from socio-economic baseline assessment conducted in the last quarter of year 2007. In the survey, access to water is defined if household has access to piped water or hand pump and sanitation is defined as non-flush WC and pit latrines. The quality of ground water is not known		
	Percentage of housing units with access to sanitation	22.8			
Keenjhar,Thatta	Percentage of housing units with access to potable water	13.6			
	Percentage of housing units with access to sanitation	33			
Keti Bunder, Thatta	Percentage of housing units with access to potable water	4.1			
	Percentage of housing units with access to sanitation	20.1			
Pai Forest, Nawabshah	Percentage of housing units with access to potable water	84.7			
	Percentage of housing units with access to sanitation	53			

The MDG progress report 2006 compares districts in Pakistan and assigns ranks according to water and sanitation coverage. The Programme area districts (Thatta, Sanghar and Nawabshah) are neither in the bottom ten districts nor in the top ten districts. They are located in between. The table above reveals that access to drinking water in Keti Bunder, Thatta district is worse than other areas, while sanitation coverage at all programme areas except Pai forest Nawabshah district ranges between 20-33%, which is way below the national average of 54%.

6 Pakistan Millenium Development Goal report 2006. http://www.crprid.org/Publications/GoalWise2006/Goal%207.pdf
7 Ibid
8 Access to drinking water in this table refers to the availability of water sources which include pipe, hand pump and well inside the house.
9 Sanitation in this table refers to the availability of latrine either shared or separate in the household.

The Indus for All Programme

Indus for All Programme is a major conservation initiative in the Indus ecoregion which focuses on environmental protection, biodiversity conservation and sustainable livelihood of communities dependent on natural resources. Among other thematic areas, the Indus for All Programme also envisages activities to improve drinking water and sanitation conditions.

These activities under the Indus for All Programme are intended to support existing efforts by the District Government and the Government of Sindh and Pakistan to achieve water and sanitation related Millennium Development Goals and overall improvement in human condition. The Programme team in collaboration with local communities have developed initial water and sanitation action plans for all four Programme sites in which major areas for interventions have been identified. These plans will be implemented during the Programme period from year 2008 to 2010 in partnership with local communities, district government and all other relevant stakeholders to generate synergies.

Water and Sanitation Action Plan for Chotiari Reservoir

Chotiari reservoir rich in its biodiversity with complex terrestrial and aquatic ecosystems of deep water, shallow marshes, riverine forest, ephemeral channels, agriculture land and sand dunes, is located in district Sanghar, Sindh. The reservoir is spread over 13 km wide and 16 km long and occupies an area of about 25,900ha. There are about 30 large or small settlements in and around the reservoir. The majority of villages depend on fishing. However, livestock rearing is another major profession in the area. The local economy of the area relies largely on fishing, agriculture, and livestock. Most of the people in the area live below the poverty line on account of erratic climate, persistent drought, and lack of basic amenities.

Water and Sanitation Situation Analysis

WWF-P field team conducted a survey to assess the water and sanitation situation. This survey has been used a basis for the preparation of action plan. Survey was conducted in all 30 villages in which community members participated. The survey inquired existing source of water, distance from source, responsibility of fetching water and availability of sanitation facilities. Survey result is produced in table below.

According to survey majority of villages, 22 out of 30 are using hand pump as a drinking water source, 7 are using both hand pump and reservoir water and one is using Nara canal water. Almost all the villages have hand pump installed in the villages except two. Mostly women and children are responsible for collection of drinking water. There is no proper ground water quality analysis of water in the area; however it is assumed that the pumped water is shallow ground water which is either seepage of Nara Canal or the Reservoir.

The water is available year round in the reservoir and Nara canal, so visibly there is no inadequacy of water for human consumption in any season or month. The local population has a desire to increase density of hand pumps because every body could not afford to have a pump in their house. The increasing number of pumps would facilitate women and children in saving their time and efforts.

The recently conducted socio-economic survey also endorses the water and sanitation assessment. Out of the 273 respondents, 60 per cent were using hand pump as a drinking water source, only one was using water supply scheme and 39 per cent responded in the other category. In contrast to the water supply situation at Chotiari, sanitation assessment reveals a very dejected situation. All 30 Programme villages have no sanitation facility using open space for release. A similar situation is also endorsed by the socio-economic survey. The survey asked the question about toilet facility in the household, out of 271 households surveyed 77 percent were using open space, and 16 percent of the households have pit latrines and 7 percent with non-flush toilet.

Water Sanitation Assessment of Programme area Chotiari

Sr #	Name of village	No. of H.H	Population	Existing water sources	Distance from source	Responsibility	Time to collect water	Sanitation	No. HH with access to sanitation
1	Bakar	50	500	Hand /water pump	Nil	Women / Children	Nil	Open Area	1
2	Haji Islam Larik	30	200	Hand Pump	Nil	Women / Children	Nil	Open Area	0
3	Abdul Qadir Mallah	25	180	Hand Pump	Nil	Women / Children	Nil	Open Area	0
4	Phulail	160	1120	Hand Pump	Nil	Women / Children	Nil	Open Area	0
5	Padhriyo	20	120	Hand Pump	Nil	Women / Children	Nil	Open Area	0
6	Rano Junejo	15	100	Hand Pump	Nil	Women / Children	Nil	Open Area	0
7	Lalo Mangrio	10	70	Hand Pump	Nil	Women / Children	Nil	Open Area	0
8	Panehal	250	2000	Hand /water pump	Nil	Women / Children	Nil	Open Area	20
9	Abdul Kareem	50	350	Hand Pump + Reservoir water	Nil	Women / Children	Nil	Open Area	0
10	Sobharo	35	250	Hand Pump + Reservoir	Nil	Women / Children	Nil	Open Area	0
11	Allah Box Junio	30	200	Hand Pump	Nil	Women / Children	Nil	Open Area	2
12	Allah dino Behan	10	80	Hand Pump	Nil	Women / Children	Nil	Open Area	2
13	Peer Box Behan	20	140	Hand Pump + Reservoir	Nil	Women / Children	Nil	Open Area	0
14	Haji Khan Mallah	17	100	Hand Pump + Reservoir	Nil	Women / Children	Nil	Open Area	0
15	Wali Muhammad	70	450	Hand Pump + Reservoir	Nil	Women / Children	Nil	Open Area	0
16	Imam Din Kariro	50	300	Hand Pump + Reservoir	Nil	Women / Children	Nil	Open Area	0
17	Muhammad Usman	55	550	Hand Pump	Nil	Women / Children	Nil	Open Area	1
18	Ghulam Hussain	25	175	Hand Pump + Reservoir	Nil	Women / Children	Nil	Open Area	0
19	Achar Jamali	20	120	Hand Pump	Nil	Women / Children	Nil	Open Area	0
20	Soomar Mallah	110	770	Hand Pump	Nil	Women / Children	Nil	Open Area	5
21	Meer Muhammad	40	280	Hand Pump	Nil	Women / Children	Nil	Open Area	1
22	Muhammad Hassan	12	72	Hand Pump	Nil	Women / Children	Nil	Open Area	0
23	Sunheno Umrani	65	700	Hand Pump	1 K.m	Women / Children	2.00Hr	Open Area	0
24	Haji Khan laghari	60	750	Hand Pump	Nil	Women / Children	Nil	Open Area	0
25	Dur Muhammad	25	250	Hand Pump	Nil	Women / Children	Nil	Open Area	0
26	Abdullah Lajhari	100	750	Hand Pump	Nil	Women / Children	Nil	Open Area	10
27	Haji Malahar	25	200	Hand /water pump	Nil	Women / Children	Nil	Open Area	10
28	Chotiari Town	950	8000	Hand /water pump	Nil	Women / Children	Nil	Open Area	100
29	Dogaryoon	105	1000	Hand /water pump and Nara canal	2 Km	Men	3.00 hours	Open Area	35
30	Lal bux Unar	20	150	Hand Pump	Nil	Women/ Children	Nil	Open Area	0

Note: 187 household are having some kind of sanitation facilities.

Improving access to water

Several actions are required to improve access to drinking water in the 30 Programme area villages at Chotiari reservoir. Few of the actions are mentioned below:

1. **Water quality testing**: Majority of villages and households are using hand pumps as their main source for drinking water. It is highly desirable to get the ground water tested before installation of further hand pumps. Water samples should be collected from sample hand pumps and their chemical testing will be obtained from a recognized institutions. The test result will be shared with local communities. In case if water is not fit for drinking, alternate drinking water programmes will be initiated.

2. **Construction of water pond in village Sunheno Umrani and Dogaryoon:** Ground water in these two villages is brackish and unfit for drinking. People are collecting water from the distance of 1 and 2 km respectively. The population of village Sunheno and Dogaryoon is 700 (65 households) and 1000 (105 house holds) respectively, which puts these villages into large rural settlements. It takes two hours for the people of village Sunheno and three hours for the people of village Dogaryoon to collect water. Already mentioned earlier, women and children are responsible for fetching the water. Looking into the gender imbalances, it is evident that girl child are going to collect water. This of course has a cost; they may not be able to attend school. If two individuals spend two hours each to collect water for a household, it would be 260 hours per day for the village Sunheno to just collect water. Similarly it would take 420 hours per day for village Dogaryoon. In total both villages are spending 680 hours per day and 20,400 hours per month (2550 person days/month) for just collection of water.

   The discussion with the community during the assessment identified the construction of a small water pond. The water pond/reservoir in the two above villages will be built with the assistance of community, district government and other stakeholders. This will increase the access of water of more than 1,700 people, release of labor previously used for water collection, reduce work load for women and free girls to attend school. The detailed feasibility, costing and management of the pond will be discussed with relevant village committee of the community based organization involved in the construction of water pond.

3. **Installation of Hand/motor pumps**: Ninety three per cent of villages are using hand pump for drinking water. But not every household has an access to hand pump or are able to afford installation of a pump in the vicinity of their house. In case of unavailability of hand pump in a house, the women walk to nearby houses to collect water, which in some cases is friendly and in some cases unacceptable. Also it puts women in a more vulnerable condition as they walk to bring water. The local Community Based Organizations (CBO) will identify the appropriate public places or houses of poor households where hand/motor pumps will be installed to increase the access of those household to water. The common problem observed in these types of programmes is long term maintenance of installed pumps. The local CBO will be responsible for monitoring and maintaining the performance of the hand pumps.

4. **Distribution of BioSand filter units**: The second major problem after increasing access is quality of water. The communities usually rely on the seepage water of Chotiari Reservoir which takes water from Nara Canal. Due to the pollution in canal water, eutrophication in the lake and increased use of pesticide and agriculture inputs ultimately seep into ground water, making the quality of ground water questionable. Also, few villages use direct canal water. The BioSand filter is an appropriate technology to purify the water to some extent. The BioSand filters will be introduced in the villages which are using canal water.[10]

10 WWF-Pakistan is represented on the Advisory Board of the Karachi Water Partnership (KWP), an association that brings together non-governmental organizations and local government, and works closely with the Canadian "Centre for Affordable Water and Sanitation Technology" (CAWST). KWP plans to have 20,000 BioSand filters installed in 40

5. **Piped water supply schemes**: There are four locations where the population exceeds one thousand people. The organized piped schemes would be feasible to increase the access of water in these settlements. These settlements will be connected with the major federal government initiatives for drinking water in which filter plants are being installed through districts governments.

Improving access to Sanitation

Unlike drinking water, sanitation conditions are worse in Chotiari area. Mostly open space releasing is common. This puts children at risk of diarrheal diseases as well as creating unease for women. Also, in rural settings, cultural taboos create major bottlenecks for improving sanitation. However, this barrier will be removed by the effective mobilization and improvement in communication through various modes. The following actions are suggested for improving access to sanitation. However, feasibility and proper disposal will be looked before implementation of any scheme.

1. **Public toilets:** It will be feasible to construct public toilets in all the villages. These toilets will be constructed at common places where every body has an access especially around mosque, schools or meeting places. For the female households, the toilets will be constructed in common places identified by women themselves in the villages. This is not a complete solution but serve the portion of the population in villages. The village committees will be responsible for maintenance.

2. **Pit Latrines:** Pit latrines are commonly used and suggested sanitation technique for rural areas. The pit latrines will be constructed on cost sharing basis. The resources of local government at union council level and district government will be mobilized to supplement the programme activities. Initially the focus will be to improve the access of women to sanitation facilities, thus the schemes will be identified and installed according to their demand and requirements.

3. **Construction of sewage line:** Similar to the water supply, the larger settlement requires proper sewage lines. Usually better income household install the flush-latrines and dispose the waste in open streets or ponds. In this case a proper one time investment is needed to connect these places with sewage lines. The main issue for the lines is proper disposal. This will be implemented after an in-depth discussion with communities during the feasibility of such schemes. Though the Programme does not have financing for these schemes, linkages will be made to mobilize the additional resources to address the issue in large settlements.

4. **Health and Hygiene awareness:** The Indus for All Programme has already developed health and hygiene training modules and an awareness programme will be designed to sensitize women and children regarding the importance of health and hygiene and tools to improve it.

5. **Flush Latrines:** The villages which are connected with some kind of drainage or disposal system, flush latrines will be introduced.

Prior to devolution, responsibility for the provision of water supply and sanitation services rested with Provincial governments, and was exercised through Development Authorities (DAs) or Water and Sanitation Authorities (WASAs) in urban areas. As part of the devolution process, water and sanitation is now at tehsils, except in the case of city districts where they are district responsibilities. The strong local dimension of this livelihoods interventions, its requirement for streamlined collaboration through strong partnerships, and the post-devolution institutional set-up are reflected in the “who” column of the action plan below.

sites in Karachi by 2009. These have a flow rate of 60 liters per hour, a lifetime of 2 years, and the cost of a concrete filter varies from USD 10-30 depending on the local material and labor cost (see www.cawst.org).

Action plan for improving water and sanitation access at Chotiari reservoir area

Action	When	Where	Who	How/why	Comments
Improving access to water					
Water quality testing					
Collection of water samples from Hand pumps.	April-June 2008	Sample hand pumps at least one from village	• Community and local CBO • Field staff	• Collection of sample in sealed bottled	
Water quality testing		University of Sindh	• WWF staff will facilitate	• Transport samples to designed lab. • Chemical examination	
Sharing water quality results with communities		Village level	• Field staff	• Community meetings	
Construction of Water Ponds					
Feasibility and costing for the construction of water pond in two villages	April-June 2008	Two villages 1. Sunheno 2. Dogaryoon	• CBO • District Government • Taluka Nazim • Field Staff	• Site visit • Actual measurement and costing • Identification of location, water sources and availability • Calculation of water requirement and pond design	Engineering staff of district government can help to prepare feasibility
Construction of water ponds	July-Dec 2008	Two villages	• CBOs • District government and Taluka Nazim	• Seeking services of engineering staff of district Govt. • Local CBO will execute the work • Seeking permission from irrigation for water	Potential donors will be identified and contacted for financing.
Installation of Hand/Motor Pumps					
List of households where hand/motor pumps are required	April-June 2008	Village/hamlet level	Relevant CBOs to be identified by field office	Community consultation meetings	Field staff will monitor the process
Costing of hand/motor pumps and feasibility		Appropriate market	Relevant CBOs to be identified by field office	• Pump cost • Transport cost • Installation cost • Community share	Field staff will monitor the process
Installation of hand/motor pumps	July-Sept. 2008	Identified locations	• CBOs • District government and Taluka Nazim	• Hiring technical persons • Community involvement • CBO will	Field staff will monitor the process of installation to avoid any

Action	When	Where	Who	How/why	Comments
				implement	local conflict
Piped water Supply Scheme					
Feasibility of piped water supply for large settlements (Listing of village and prioritization)	April-Sept. 2008	Select villages having more than 700 population and then prioritization	• CBO • Union Council office • Taluka nazim office	• Mapping the village • Actual measurement • Costing • Cost sharing arrangements • Institutional mechanism and sustainability	Financing will be explored together with nazim and CBOs for collaboration. Engineering assistance from DCO will be obtained
Negotiations for piped water supply	Oct-Dec 2008	District government and other relevant agencies	• CBOs • Site office and PMU	• Seeking appointments • Sharing proposed feasibility of scheme • Sharing cost	Potential partners will be identified and meetings arranged with them.
Implementation of piped water supply scheme	Jan-Dec 2009	Identified locations	• CBOs • District government and Taluka Nazim • NGOs or other institution	• Seeking services of engineering staff of district Govt. • Community participation during work • Seeking permission from irrigation for water	
Distribution of Bio-Sand filter					
List of households/settlements where bio-sand filter will be introduced	April-June 2008	Villages settlements	• CBO • Field staff	• Community meetings	
Geo reference of all the proposed schemes		GIS Site maps	GIS staff with the help of communities	• Taking proper coordinates • Super imposing data on maps	
Improving access to sanitation					
Public Toilets					
Identification and prioritization of villages for public toilets	April-June 2008	Among 30 programme area villages	Field staff and local CBOs	• Field visit • Community meetings • Meetings with CBOs	Feasibility and future management will be discussed with community
Finalization of locations in prioritized villages		About 20 locations in ten villages with priority to places where women have an access	Field staff and local CBOs and community	• Field visit • Community meetings • Meetings with CBOs	
Construction of public	July-Dec	Identified	CBO	• Provision of	

Action	When	Where	Who	How/why	Comments
toilets	2008	locations in selected settlements	Community District Govt.	material • Technical assistance • Sharing design • Supervision of work	
Pit Latrines					
Feasibility of household pit latrines	April-June 2008	All 30 programme area villages, prioritize about 5 for first phase implementation	Field staff and local CBOs and community Collaborating NGO District Govt. officials	• Field visit • Community meetings • Meetings with CBOs	
Construction of household pit-latrines	July-Dec 2008	In five prioritized villages	CBO Community District Govt.	• Provision of material • Technical assistance • Sharing design • Supervision of work	
Construction of Sewage lines					
Feasibility for sewage lines	April-Sept 2008	About 4-5 large settlements	Field staff and local CBOs and community Collaborating NGO District Govt. officials Orangi Pilot Project	• Site visit • Actual measurements • Community participation • Appropriate engineering design	
Negotiations for collaboration for sewage scheme	Sept 08 to March 09	District Govt. NGOs Relevant agencies	CBO Field staff and PMU	• Sharing feasibility study and need • Arrange site visit • Meetings	
Implementation of sewage scheme	April-Dec 2009	Identified locations having population 1000 and above	CBO Community District Govt Collaborating NGO/agency	• Provision of material • Technical assistance • Sharing design • Supervision of work	
Flush Latrines					
Feasibility for flush-latrines	April-Sept. 2008	Villages having access to drains or disposal system	CBO Community Field staff	• Site visit • Community consultations	
Provision of flush latrines	Oct-Dec. 2008	Identified locations	CBO Community District Govt. Collaborating NGO/agency	• Provision of material • Technical assistance • Sharing design • Actual supervision of work	Flush latrines will be installed on cost sharing basis and looking into the proper disposal

Water and Sanitation Action Plan for Keenjhar Lake

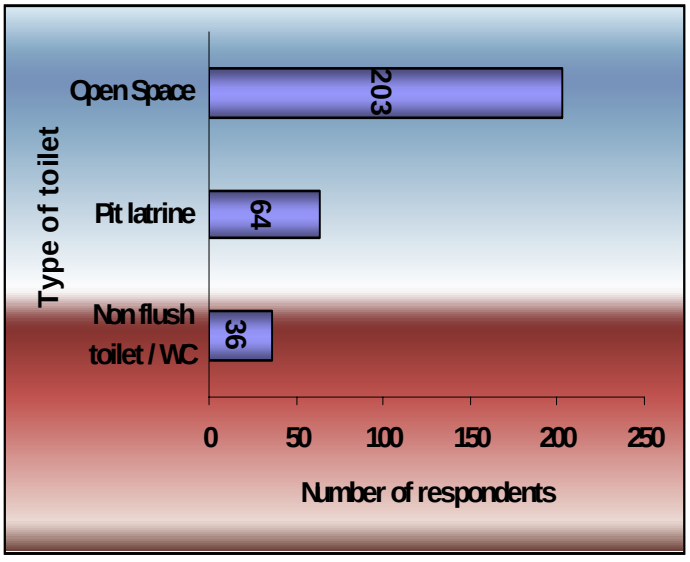
Keenjhar Lake located in Thatta District is a freshwater lake covering an area of about is about 14,000 ha. It is a wildlife sanctuary and a Ramsar site. The Lake is rich in fish fauna and supports the livelihood of about 50, 000 local people. There are about 39 large or small settlements in and around lake which have been identified for programme interventions. Majority of villages depends on fishing.

Water and Sanitation Situation Analysis

WWF-Pakistan field team conducted a survey to assess the water and sanitation situation. This survey has been used as a basis for the preparation of the action plan. The survey was conducted in all 39 villages in which community members participated. The survey inquired about the existing source of water, distance from source, responsibility of fetching water and availability of sanitation facilities. The survey result is depicted in following table.

According to the survey majority of villages, 30 out of 39 are using lake water for drinking purposes, 5 having water supply scheme as well as use of lake water and the remaining are using the KB feeder as their drinking water source. The distance from source is measured as a few meters except 5 villages which are 0.5 km away from water source. Mostly women and children are responsible for collection of drinking water. The lake water samples have been taken for detailed analysis and results will be available in early next year. The water is available year round in the Lake and KB feeder therefore there is no inadequacy of water for human consumption in any season or month.

The recently conducted socio-economic survey also endorses the water and sanitation assessment. Out of 308 respondent 266 (86%) said they are using Lake as a drinking water source, 41 responded in using water supply scheme and 1responded in using pump.



In contrast to the water supply situation at the villages in Keenjhar Lake, sanitation coverage is very low. All 39 Programme villages have no sanitation facility and use open space or pit latrines (in some cases). A similar situation is also endorsed by the socio-economic survey. A question about toilet facility in the household was asked in the survey, out of 303 households surveyed 203 (67%) were using open space, 64 household have pit latrines and 36 households with non-flush toilet.

Water Sanitation Assessment of Programme area Keenjhar Lake

S.No	Name of the village	No. H.H	Population	Existing Water Sources	Distance From the source	Responsibility of water collection	Existing sanitation system	No. of H.H having access to safe sanitation
1	Vill: Hameed Manchri	80	*	Lake	Few meters	Women/ Children	Open/Pit	0
2	Vill: Sukhio Autho	35	*	Lake	0.5 KM	Women/ Children	Open/Pit	0
3	Vill: Adam Katiyar	75	*	WS	In House	Women/ Children	Open/ Pit, Latrine	3
4	Vill: Shokat Gandhro	20	*	Lake	Few meters	Male/ Children	Open/ Pit, Latrine	2
5	Ali Mohammad Soomro	15	*	Lake	0.5 KM	Women/ Children	Open	0
6	Jaffar Hilayo	50	*	WS	In House	Women/ Children	Open/ Pit, Latrine	10
7	Soomar Solangi/ Mirbhar	100	*	WS & K.B Feeder	Few meters	Women/ Children	Open/ Pit	0
8	Khudaiyo	85	*	Lake & WS	Few meters	Women/ Children	Open/ Pit Latrine	6
9	Mubarik Palari	15	*	Lake	0.5 KM	Women/ Children	Open/ Pit	0
10	Photo Khan Dars	42	*	Lake	0.5 KM	Women/ Children	Open/ Pit, Latrine	5
11	Khambho	600	*	Lake	Few meters	Women/ Children	Open/ Pit,Latrine	3
12	Lal Bux Manchri	90	*	Lake	Few meters	Women/ Children	Open/ Pit	0
13	Bakhir Machhi	150	*	Lake	Few meters	Women/ Children	Open/ Pit	0
14	Dodo Bambhro	22	*	Lake	Few meters	Women/ Children	Open/ Pit	0
15	Vill: Autha	93	*	Lake	Few meters	Women/ Children	Open/ Pit Latrine	3
16	Yousif Hilaya	90	*	Lake/WS	Few meters	Women/ Children	Open/ Pit Latrine	4
17	Nai Gandhri	28	*	Lake	Few meters	Women/ Children	Open/ Pit Latrine	3
18	Mumtaz Dandhail	43	*	Lake	Few meters	Women/ Children	Open/ Pit	0
19	Ali Bux Manchri	90	*	Lake	Few meters	Women/ Children	Open/ Pit	0
20	Sonehri	415	*	WS & Lake	Few meters	Women/ Children	Open/ Pit Latrine	30
21	Syed Bachal Shah	11	*	Lake	Few meters	Male/ Children	Open/ Pit Latrine	6
22	Khipri	28	*	Lake	Few meters	Women/ Children	Open/ Pit	0
23	Nabi Bux Palari	44	*	Lake	Few meters	Women/ Children	Open/ Pit, Latrine	3
24	Jumo/Mosso Jakhro	31	*	Lake	0.5 KM	Women/ Children	Open/ Pit	0
25	Wali Mohammad Palari	7	*	Lake	Few meters	Women/ Children	Open/ Pit	0
26	Rasool Bux Manchri	16	*	Lake	Few meters	Women/ Children	Open/ Pit	0
27	Mevo Manchri	48	*	Lake	Few meters	Women/ Children	Open/ Pit	0
28	Mohammad Raheem Machhi	20	*	Lake	Few meters	Women/ Children	Open/ Pit	0
29	Kareemdad Manchri	90	*	Lake	Few meters	Women/ Children	Open/ Pit	1
30	Essa Manchri	25	*	Lake	Few meters	Women/ Children	Open/ Pit	0
31	Umer Manchri	20	*	Lake	Few meters	Women/ Children	Open/ Pit	0
32	Yaroo Manchri (Dhore)	20	*	Lake	Few meters	Women/ Children	Open/ Pit	0
33	Dolatpur	30	*	Lake	Few meters	Women/ Children	Open/ Pit	0
34	Adam Bambhro	90	*	Lake	Few meters	Women/ Children	Open/ Pit	0
35	Ramzan Mallah (Chilya)	127	*	Lake	Few meters	Women/ Children	Open/ Pit	0

36	Juman Dars	15	*	WS & Lake	In House	Women/ Children	Open/ Pit Latrine	10
37	Jhampir/ Hashim Solangi	500	*	WS & Lake	In House	Women/ Children	Open/ Pit Latrine	425
38	Siddique Manchri	20	*	Lake	Few meters	Women/ Children	Open/ Pit	0
39	Yaar Mohd Jakhro (Chul)	115	*	K.B Feeder	Few meters	Women/ Children	Open/ Pit	0

Improving access to water

Several actions are required to improve access to drinking water in 39 Programme area villages. Few of the actions are mentioned below:

1. **Lake water quality testing**: Majority of villages and households are using lake water for drinking purposes. There is no water quality survey available; however the complete water assessment has been outsourced under a programme with Mehran University of Engineering and Technology. The results are expected to be available in early year 2008.

2. **Installation of motor pumps**: Individuals from five villages have to walk 0.5 km to fetch water. The desirable intervention in these villages will be construction of common water tanks in the villages and those tanks are connected to the lake. The motor pumps are installed to pump water and fill tanks. This will reduce the burden of fetching water however intervention depends on the availability of electricity in these villages. The local community based organizations will identify the appropriate public places to construct water tanks and install motors. The local CBO/village organization will be responsible for monitoring and maintaining motor pumps and tanks performance.

3. **Distribution of BioSand filter units**: For the two villages that use drinking water from KB feeder, it would be more feasible to introduce BioSand filter which to some extent will reduce the quantity of silt in drinking water.

4. **Piped water supply schemes**: There are four to five large settlements where the population ranges between 800-3000. The organized piped schemes are more feasible to increase the access of water in these settlements as it is more cost effective. These settlements will be connected with the major federal government initiatives for drinking water in which filter plants are being installed. These villages will be connected to these programmes through districts governments.

Improving access to Sanitation

Unlike drinking water, sanitation conditions require more attention at Keenjhar. Mostly open space defecation is common. This puts children at risk of diarrhoeal diseases as well as makes women uneasy. Following action are suggested for improving access to sanitation:

1. **Public toilets:** It will be feasible to construct public toilets in all the villages. These toilets will be constructed at common places where every body has an access especially around mosque, schools or meeting places. For the female households, the toilets will be constructed in common places identified by women themselves in the villages. This is not a complete solution but serve the portion of the population in villages.

2. **Pit Latrines:** Pit latrines are commonly used and suggested sanitation technique for rural areas. The pit latrines will be constructed on cost sharing basis. The resources of local government at union council level and district government will be mobilized to supplement the programme activities. Initially the focus will be to improve the access of women to sanitation facilities, thus the schemes will be identified and installed according to their demand and requirements.

3. **Flush toilets:** At small scale level flush toilets will be constructed on cost sharing basis.

4. **Installation of sewage line:** Similar to the water supply, the larger settlement requires proper sewage lines. Usually better income household install the flush-latrines and dispose the waste in open streets or ponds. In this case a proper one time investment is needed to connect these places with sewage lines. The main issue for the lines is proper disposal. This will be implemented after an in-depth discussion with communities during the feasibility of such schemes. Though the Programme does not have financing for these schemes, linkages will be made to mobilize the additional resources to address the issue in large settlements.

Action plan for improving water and sanitation access at Keenjhar Lake area

Action	When	Where	Who	How/why	Comments
Improving access to water					
Installation of water pumps and construction of water tanks					
Feasibility for water pumping and construction of tanks	April-June 2008	Five villages	Relevant CBOs to be identified by field office	• Community consultation meetings • Pump and pipe cost • Transport cost • Installation cost • Community share and complete business plan	Field staff will monitor the process The availability of electricity will be prerequisite for this initiative.
Installation of motor pumps, pipeline and construction of tanks	July-Dec 2008	Identified locations	• CBOs • District government and Taluka Nazim	• Hiring technical persons • Community involvement	Field staff will monitor the process of installation to avoid any local conflict
Piped water supply					
Feasibility of piped water supply for large settlements (Listing of village and prioritization)	April-Sept 2008	Selected villages having more than 1000 population and then prioritization	• CBO • Union Council office • Taluka nazim office	• Mapping the village • Actual measurement • Costing • Cost sharing arrangements • Institutional mechanism and sustainability	Financing will be explored together with nazim and CBOs for collaboration. Engineering assistance from DCO will be obtained
Negotiations for piped water supply	Oct 08-March-09	District government and other relevant agencies	• CBOs • Site office and PMU	• Seeking appointments • Sharing proposed feasibility of scheme • Sharing cost	
Implementation of piped water supply scheme	April-Dec 2009	Identified locations	• CBOs • District government and Taluka Nazim • NGOs or other institution	• Seeking services of engineering staff of district Govt. • Community participation during work • Seeking permission	

Action	When	Where	Who	How/why	Comments
				from irrigation for water	
BioSand Filters					
List of households/settlements where bio-sand filter will be introduced	April-June 2008	Villages/settlements	• CBO • Field staff	• Community meetings	
Geo reference of all the proposed schemes		GIS Site maps	GIS staff with the help of communities	• Taking proper coordinates • Super imposing data on maps	
Improving access to sanitation					
Public Toilets					
Identification and prioritization of villages for public toilets	April-June 2008	Among 39 programme area villages	Field staff and local CBOs	• Field visit • Community meetings • Meetings with CBOs	
Finalization of locations in prioritized villages		About 20 locations in ten villages with priority to places where women have an access	Field staff and local CBOs and community	• Field visit • Community meetings • Meetings with CBOs	
Construction of public toilets	July-Dec. 2008	Identified locations in selected settlements	CBO Community District Govt.	• Provision of material • Technical assistance • Sharing design • Supervision of work	
Household Pit Latrines					
Feasibility of household pit latrines	April-June 2008	All 39 programme area villages, prioritize about 5 for first phase implementation	Field staff and local CBOs and community Collaborating NGO District Govt. officials	• Field visit • Community meetings • Meetings with CBOs	
Construction of household pit-latrines	July-Dec 2008	In five prioritized villages	CBO Community District Govt.	• Provision of material • Technical assistance • Sharing design • Supervision of work	
Construction of sewage lines					
Feasibility for sewage lines	April-Sept. 2008	About 4-5 large settlements	Field staff and local CBOs and	• Site visit • Actual measurements	

Action	When	Where	Who	How/why	Comments
			community Collaborating NGO District Govt. officials Orangi Pilot Project	• Community participation • Appropriate engineering design	
Negotiations for collaboration for sewage scheme	Oct 08-March 09	District Govt. NGOs Relevant agencies	CBO Field staff and PMU	• Sharing feasibility study and need • Arrange site visit • Meetings	
Implementation of sewage scheme	April – Dec 09	Identified locations having population 1000 and above	CBO Community District Govt Collaborating NGO/agency	• Provision of material • Technical assistance • Sharing design • Supervision of work	
Flush Latrines					
Feasibility for flush-latrines	April-June 2008	Villages having access to drains or disposal system	CBO Community Field staff	• Site visit • Community consultations	
Provision of flush latrines	July-Dec. 2008	Identified locations	CBO Community District Govt. Collaborating NGO/agency	• Provision of material • Technical assistance • Sharing design • Supervision of work	

Water and Sanitation Action Plan for Keti Bunder

Keti Bunder, a historical coastal town located in district Thatta. Historically Keti Bunder was use to be a busy port and harbouring huge human population. However, today city gives desolate scene. The previous agriculture fields and human settlements have been submerged in sea water causing migration. The remaining population is living in very miserable conditions, especially fishermen who live in coastal creeks. The socio-economic profile of the area depicts the tales of misery and human sufferings. The majority of the poor population is compelled to buy drinking water from water tankers which are then transported by boat to creek villages. The increasing cost of drinking water has a tradeoff with food and other social expenditures.

The Programme area consists of 31 villages, out of which 19 are located in four major creeks around Keti Bunder. Fishing is the main and old age profession however surrounding villages are also engaged in agriculture and livestock. The area has been worst hit by environmental degradation.

Water and Sanitation Situation Analysis

WWF-Pakistan field team conducted a survey to assess the water and sanitation situation. This survey has been used as a basis for the preparation of this action plan. The survey was conducted in all 31 villages in which community members participated. The survey inquired about the existing source of water, distance from source, responsibility of fetching water and availability of sanitation facilities. Survey result is presented in table below.

According to the survey the majority of villages, 30 out of 31 villages are buying water from water tankers and only one have a hand pump source. All the creek villages buy water from Keti Bunder town which takes minimum 0.5 hour to 3.0 hours depending on the location of the village in and around the creek. Similarly the distance of inland villages from water sources ranges between 8 -10 km. Mostly men are responsible for collection of drinking water. The tankers use near by irrigation channels to fill tankers to later sell the water in Keti Bunder town.

The area recently has been hit by severe weather conditions, which badly affected this single source of water. At the times of water shortage in irrigation channels increases the distance of tanker and consequently increases the water charges. The quality of water in irrigation channels is not fit but with no other options this is the only source of water for the villagers. The inequity in water availability can be judged from this area that poor fishing household with 5-6 family members spends Rs. 1200-1500 on water while rich households in Urban areas pay less.

According to recently concluded socio-economic assessment, only ten households out of 246 were using hand pumps while all others were buying and transporting water to their villages. The rapid assessment and consultation with communities revealed that they have reduced the use of sweet water which is usually used for drinking and cooking.

Similar to other sites, there is no safe sanitation system. Few households in three villages have pit latrines, while others are using open space. The women face hardships to maintain privacy in these conditions. Usually women use thatched huts to relieve themselves. The proper sanitation in Keti Bunder, especially in creek villages is a distant dream. Multiple problems arise due to poor sanitation facilities, but the area is so neglected that there is no data available to compare and contrast results. A question regarding in house toilet facilities was asked in the Socio-economic survey. A total of 240 households were interviewed, out of these only 3 have non-flush toilets, 45 were using pit latrines and rests were either using thatched huts or open space. Half of the people were using open space while only 0.2 per cent has a pit latrines facility.

This is very alarming situation at Keti Bunder and need to be addressed on priority basis.

Water Sanitation Assessment of Programme area Keti Bunder

S. No	Village Name	No. of H.H	Population	Existing water sources	Distance from the source	Responsibility of water collection	Time required for water collection	Existing Sanitation system	No. of HH having access to safe sanitation
1	Berim	16	104	Water tanker	3 hours boat riding	Male	3 hours	Nil	Nil
2	M Yousif Dablo	13	85	do	3-half hour boat riding	Male	3.5 hours	Nil	Nil
3	Khariyoon	35	227	do	Half hour boat riding	Male	Half hour	Nil	Nil
4	Phirt	40	260	do	2 hours boat riding	Male	2 hours	Nil	Nil
5	Siddique Dablo	30	195	do	Half hour boat riding	Male	Half hour	Nil	Nil
6	Tippun	100	650	do	2 hours boat riding	Male	2 hours	Nil	Nil
7	Haji Sheedi Dablo	10	65	do	3 hours boat riding	Male	3 hours	Nil	Nil
8	Haji Mamoo Dablo	25	162	do	3.5 hours boat riding	Male	3.5 hours	Nil	Nil
9	Missri Rajero	12	78	do	1 hour boat riding	Male	Half hour	Nil	Nil
10	Bhoori	400	2600	Hand Pumps	Available at the village	Male and Female	Available in village	Nil	Nil
11	Meerano Jat	30	195	Water tanker	2 hours boat riding	Male	2 hours	Nil	Nil
12	Cheerh Dablo	30	195	do	2 hours boat riding	Male	2 hours	Nil	Nil
13	Guli Sholani	5	32	do	2 hours boat riding	Male	2 hours	Nil	Nil
14	Haji Ali Khan Jat	30	195	do	2.5 hours boat riding	Male	2 hours	Nil	Nil
15	Ramzan Lakhio	10	65	do	3 hours boat riding	Male	Half hour	Nil	Nil
16	Haroon Lakhio	6	39	do	3 hours boat riding	Male	Half hour	Nil	Nil
17	Gul Hassan Jat	10	65	do	2 hours boat riding	Male	2 hours	Nil	Nil
18	Ali Dablo	12	78	do	2 hours boat riding	Male	2 hours	Nil	Nil
19	Jarhho Dablo	10	65	do	1.5 hours boat riding	Male	2 hours	Nil	Nil
20	Hassan Jat	35	227	water tanker	8 km	Tanker is available	1 Hour	Nil	Nil
21	Haji Mohd Siddique Faqeerani Jat	200	1300	do	10 km	Tanker is available	15 minutes	Nil	Nil
22	Haji Ismail Jat Dabai	60	390	do	8 km	Tanker is available	20 minutes	Nil	Nil
23	Haji Abu Jat	144	36	do	8 km	Tanker is available	30 minutes	Nil	Nil
24	Beer Jat	25	163	do	8 km	Tanker is available	20 minutes	Nil	Nil
25	Haji Moosa Jat	40	260	do	8 km	Tanker is available	30 minutes	Nil	Nil
26	Khuda Bux Jat	25	163	do	8 km	Tanker is available	30 minutes	Nil	Nil
27	Haji Hashim Jat	15	97	do	8 km	Tanker is available	25 minutes	Nil	Nil
28	Ali Bux Jat	20	130	do	8 km	Tanker is available	30 minutes	Nil	5
29	Gurb	90	585	do	8 km	Tanker is available	30 mints	Some soft pit latrine	5
30	Meeroo Dablo	56	364	do	8 km	Tanker is available	30 mints	Some soft pit latrine	5
31	Keti Bunder	310	2015	do	10 km	Tanker is available	45 mints	Some soft pit latrine	80

Improving access to water

Several actions are required to improve access to drinking water in 31 Programme area villages. Few of the actions are mentioned below:

1. **Provision of Boat-water tanker in Hajamro Creek**: Looking into the severe drinking water crisis the Programme has already intervened and provided one boat water tanker with a capacity of 16,000 liters. The boat water tanker will supply drinking water to four villages of Hajamro creek and will be managed by Hajamro Mahool Dost Committee. There will be four 4000 liter water tanks fixed, one in each village and twice a week or as required, a water tanker will fill these tanks. The village committee will collect the fee which will be utilized for the maintenance of the boat water tanker and its routine cost.

2. **Construction of water storage tank in Keti Bunder**: There is no water available in Keti Bunder town, usually water tankers are providing water to Keti Bunder. The water tank will be constructed near the site of a Jetty to store water, which will be then transported to creek by boat water tanker.
3. **Provision of hand pumps**: Few villages have ground water fit for drinking. In such cases more hand pumps will be provided to increase the access of water.
4. **Distribution of Bio-Sand filter plants**: The WWF-Pakistan has already introduced Bio-Sand filter in creek villages. This coverage of Bio-Sand filter will be increased.
5. **Installation of solar sweet water panel**: The solar panels will be installed for water purification. These are used in coastal areas to dissolve the salt from sea water and make it drinkable. The experimental panels will be installed at two places and if succeeded, these panels will be scaled up.
6. **Availability of water at Keti Bunder town**: District government is providing piped water supply to Keti Bunder, which is essential for creek villages. Continuous relationships will be built with district government to expedite the work.

Improving access to Sanitation

Similar to drinking water, sanitation conditions require more attention at Keti Bunder area. Open space defecation is common. This puts children at risk of diarrhoeal diseases as well as makes women uneasy. Following action are suggested for improving access to sanitation:

1. **Public toilets:** It will be feasible to construct public toilets in all the villages. These toilets will be constructed at common places where every body has an access especially around mosque, schools or meeting places. For the female households, the toilets will be constructed in common places identified by women themselves in the villages. This is not a complete solution but serve the portion of the population in villages.
2. **Pit Latrines:** Pit latrines are commonly used and suggested sanitation technique for rural areas. The pit latrines will be constructed on cost sharing basis. The resources of local government at union council level and district government will be mobilized to supplement the programme activities. Initially the focus will be to improve the access of women to sanitation facilities, thus the schemes will be identified and installed according to their demand and requirements.

Action plan for improving drinking water and sanitation access at Keti Bunder

Action	When	Where	Who	How/why	Comments
Improving access to water					
Provision of Boat Water Tanker					
Fixing 4 water tanks in four villages of Hajamro creek	Jan-Feb 08	Villages Phirt, Tippin, Kharyoon and Siddique Dablo	Hajamro Mahool Dost Committee (HMDC) WWF Field Staff		
Buying of Boat water tanker of 16000 liter capacity	Feb. 08	-	HMDC and WWF field staff	New boat will be bought	
Operation of Boat water tanker	March on ward	Provision of water to four villages	HMDC	Boat will fill the fixed tanks after two days Boat water tanker will buy water from commercial tankers Each village committee will collect the fee to cover the operation cost	WWF field staff will monitor the operation
Construction of water tank in Keti Bunder town	April-June 2008	Keti Bunder town	Relevant CBOs to be identified	• Construction of the water tank • This will be used by boat tanker	Field staff will monitor the process
Hand Pumps					
Provision of Hand Pumps	April-June 2008	Villages where ground water is fit for drinking- There are just few villages	Partner CBO and field staff	• Provision of Hand Pumps • Supervision of installation	
BioSand Filters					
List of households/settlements where bio-sand filter will be introduced	July-Dec 2008	Villages/settlements	CBO Field staff	• Community meetings	
Distribution of BioSand filters		Villages/settlements	CBOs Field staff	Community meetings	
Geo reference of all the proposed schemes		GIS Site maps	GIS staff with the help of communities	• Taking coordinates • Super imposing data on maps	
Monitoring and lobbying for early of piped water supply for	Jan-Dec 2008	Follow up with district government Follow up with	• CBOs • District governm	• Regular meeting with district	IESC and sub-committee

Action	When	Where	Who	How/why	Comments
Keti Bunder town		Sindh government	ent and Taluka Nazim • NGOs or other institution	government • Follow up with Sindh government	will be requested for recommending Sindh and district Govt.
Water Desalinization unit					
Feasibility for water desalinization unit	April-June 2008	Selected village(s) in creeks	• Field team, CBO and PMU	• Costing • Technical training	
Installation of desalinization unit	July-Sept. 2008	Surveyed village(s)	• Technical experts	• Physical installation • Monitoring of Plants for efficacy and efficiency	Field team will monitor the functioning regularly with CBO
Improving access to sanitation					
Public Toilets					
Identification and prioritization of villages for public toilets	April-June 2008	Among 31 programme area villages	Field staff and local CBOs	• Field visit • Community meetings • Meetings with CBOs	
Finalization of locations in prioritized villages		About 20 locations in ten villages with priority to places where women have an access	Field staff and local CBOs and community	• Field visit • Community meetings • Meetings with CBOs	
Construction of public toilets	July-Dec 2008	Identified locations in selected settlements	CBO Community District Govt.	• Provision of material • Technical assistance • Sharing design • Actual supervision of work	
House Hold Pit Latrines					
Feasibility of household pit latrines	April-June 2008	All 31 programme area villages, prioritize about 5 for first phase implementation	Field staff and local CBOs and community Collaborating NGO District Govt. officials	• Field visit • Community meetings • Meetings with CBOs	
Construction of household pit-latrines	July-Dec 2008	In five prioritized villages	CBO Community District Govt.	• Provision of material • Technical assistance • Sharing design • supervision of work	

Water and Sanitation Action Plan for Pai forest

The area surrounded by Pai forest, Nawabshah is a comparatively more developed area than the other three sites. Mostly the area consists on settled villages, connected by good road network as well as irrigation network of Rohri canal system. This area also possesses fertile agriculture land. The socio-economic profile of the area demonstrates better quality of life however the living condition of sharecroppers and landless people is not different from other areas. The Programme area has identified 22 villages for interventions which are settled in close proximity of Pai forest and people are dependent on the resources of forest and agriculture.

Water and Sanitation Situation Analysis

WWF-Pakistan field team conducted a survey to assess the water and sanitation situation. This survey has been used a basis for the preparation of action plan. Survey was conducted in all 22 villages in which community members participated. The survey inquired existing source of water, distance from source, responsibility of fetching water and availability of sanitation facilities. Survey result is presented in table below.

According to the survey all the villages were using ground water for drinking purposes. The area is bestowed with sweet ground water, which is fit for drinking. According to recently concluded socio-economic assessment, 200 (85%) household out of 236 were using hand pump for drinking water, which endorses the rapid assessment above.

The sanitation situation of this site is also better than others, however it still requires improvement. Socio-economic survey data shows that out of 232 respondents 109 were still using open space which is a huge number. However some households have none-flush toilets and pit latrines too.

Improving access to water

Fewer actions are required to improve access to drinking water in 22 programme area villages. Few of the actions are mentioned below:

1. **Water quality testing**: Majority of villages and households are using hand pumps as their main source for drinking water. It is highly desirable to get the ground water tested before installation of further hand pumps. Water sample should be collected from sample hand pumps and their chemical testing will be obtained from a recognized institutions. The test result will be shared with local communities. In case if water is not fit for drinking, alternate drinking water programmes will be initiated.

2. **Provision of hand pumps**: Few villages have ground water fit for drinking. In such cases more hand pumps will be provided to increase the access of water.

3. **Piped water supply schemes**: There are about 12 large settlements where population exceeds 800 people. The organized piped schemes are more feasible to increase the access of water in these settlements as it is more cost effective. These settlements will be connected with the major federal government initiatives for drinking water in which filter plants are being installed. These villages will be connected to these programmes through districts governments.

Improving access to Sanitation

Comparatively sanitation situation is better but still requires certain actions to improve it. Following action are suggested for improving access to sanitation:

1. **Public toilets:** It will be feasible to construct public toilets in all the villages. These toilets will be constructed at common places where every body has an access especially around mosque, schools or meeting places. For the female households, the toilets will be constructed in common places identified by women themselves in the villages. This is not a complete solution but serve the portion of the population in villages.

2. **Pit Latrines:** Pit latrines are commonly used and suggested sanitation technique for rural areas. The pit latrines will be constructed on cost sharing basis according to the situation. The resources of local government at union council level and district government will be mobilized to supplement the programme activities. Initially the focus will be to improve the access of women to sanitation facilities, thus the schemes will be identified and installed according to their demand and requirements.

3. **Flush toilets:** At small scale level flush toilets will be constructed on cost sharing basis. These will be disposed into sewage lines.

4. **Installation of sewage line:** Similar to the water supply, the larger settlement requires proper sewage lines. Usually better income household install the flush-latrines and dispose the waste in open streets or ponds. In this case a proper one time investment is needed to connect these places with sewage lines. The main issue for the lines is proper disposal. This will be implemented after an in-depth discussion with communities during the feasibility of such schemes. Though the Programme does not have financing for these schemes, linkages will be made to mobilize the additional resources to address the issue in large settlements.

Drinking water and Sanitation Assessment of Programme area of Pai Forest Nawabshah

SR #	Village Name	No. of H.H	Population	Existing water sources	Distance from Source	Responsibility of water collection	Existing Sanitation system	No. of HH having access to safe sanitation
1	Nazar Mohammad Bhatti	40	400	Hand/motor Pump	-	-	No	-
2	Murad Keryo	55	450	Hand/motor Pump	-	-	No	-
3	Palyo Bhutto	25	600	Hand/motor Pump	-	-	Open drain system	10 H.H
4	Nangar Chandio	70	700	Hand/motor Pump	-	-	No	-
5	Morio Lakho	77	1200	Hand/motor Pump	-	-	Open drain system	54 H.H
6	Punhon Gudaro	53	1500	Hand/motor Pump	-	-	Open drain system (Repaireable)	21 H.H
7	Gh: Qader Jatoi	175	850	Hand/motor Pump	-	-	No	-
8	Khan Mohammad Chohan	70	800	Hand/motor Pump	-	-	No	-
9	Haji Keryo	84	1000	Hand/motor Pump	-	-	Open drain system	84
10	Jaffar Jamali	60	700	Hand/motor Pump	-	-	No	-
11	Rahmo Keryo	315	4500	Hand/motor Pump	-	-	Open drain system	63 H.H
12	Mari Jalbani	1100	8000	Hand/motor Pump	-	-	Open drain system (Repairable)	440 H.H
13	Mari Sabki	110	1000	Hand/motor Pump	-	-	Open drain system(Not Functional)	110
14	Mari Allam	150	1500	Hand/motor Pump	-	-	Open drain system(Not Functional)	150
15	Majeed Keryo	360	3000	Hand/motor Pump	-	-	Open drain system (Major Repairable)	252 H.H
16	Mehmood Keeryo	76	400	Hand/motor Pump	-	-	No	-
17	Daud Gudaro	15	125	Hand/motor Pump	-	-	No	-
18	Gulsheer Machi	42	200	Hand/motor Pump	-	-	No	-
19	Rasool Abad	10	50	Hand/motor Pump	-	-	No	-
20	Ghullam Hyder Bhutto	161	1850	Hand/motor Pump	-	-	Open drain system (Repairable)	145 H.H
21	Talli	102	2500	Hand/motor Pump	-	-	Open drain system	82 H.H
22	Guhram Faqeer Zardari	12	200	Hand/motor Pump	-	-	No	-

Action plan for improving drinking water and sanitation access at Pai Forest area

Action	When	Where	Who	How/why	Comments
Improving access to water					
Water quality testing					
Collection of water samples and quality testing	April-June 2008 March 08	Selected hand pumps	Relevant CBOs to be identified by field office	• Chemical testing of water samples from a recognized institutions	Field staff will monitor the process
Sharing of testing results		villages	Field staff of WWF-P	Community meetings	
Provision of Hand Pumps					
Identification of location for hand pumps	April-June 2008	Selected locations	Relevant CBO and WWF-P field staff	Community meetings	
Provision of Hand Pumps	July-Sept 2008 Feb-April 08	Identified villages	Partner CBO and field staff	• Provision of Hand Pumps • Supervision of installation	
Geo reference of all the proposed schemes		GIS Site maps	GIS staff with the help of communities	• Taking proper coordinates • Super imposing data on maps	
Piped water supply					
Feasibility for piped water supply schemes	July-Dec 2008	Large settlement on priority basis	• District government • Communities • CBO	• Engineering design and levels • Costing of schemes	
Implementation of piped water supply scheme	Jan-Dec 2009	Large settlement on priority basis	District government CBO	• Physical implementation of schemes	
Identification, assessment and negotiation for maintenance of existing water facilities if any	July-Dec 2008	Existing water supply schemes	CBO along with Field office staff and concerned department	• Assessment of maintenance work • Costing • Collaboration	
Improving access to sanitation					
Public Toilets					
Identification and prioritization of villages for public toilets	April-June 2008	Among 22 programme area villages	Field staff and local CBOs	• Field visit • Community meetings • Meetings with CBOs	
Finalization of locations in prioritized villages		About 20 locations in ten villages with priority to places where women have an access	Field staff and local CBOs and community	• Field visit • Community meetings • Meetings with CBOs	
Construction of public toilets	July-Dec 2008	Identified locations in selected settlements	CBO Community District Govt.	• Provision of material • Technical assistance • Sharing design • Supervision of work	

Action	When	Where	Who	How/why	Comments
Pit Latrines					
Feasibility of household pit latrines	April-June 2008	All 22 programme area villages, prioritize about 5 for first phase implementation	Field staff and local CBOs and community Collaborating NGO District Govt. officials	• Field visit • Community meetings • Meetings with CBOs • Consultation on cost sharing	
Construction of household pit-latrines	July-Dec 2008	In five prioritized villages	CBO Community District Govt.	• Provision of material • Technical assistance • Sharing design • Supervision of work	
Sewage Lines					
Feasibility for sewage lines	July-Dec 2008	About 10 large settlements	Field staff and local CBOs and community Collaborating NGO District Govt. officials Orangi Pilot Project	• Site visit • Actual measurements • Community participation • Appropriate engineering design	
Negotiations for collaboration for sewage scheme	Jan-March 2009	District Govt. NGOs Relevant agencies	CBO Field staff and PMU	• Sharing feasibility study • Arrange site visit • Meetings	
Implementation of sewage scheme	April –Dec 2009	Identified locations having population 1000 and above	CBO, Community District Govt Collaborating NGO/agency	• Provision of material • Technical assistance • Sharing design • Supervision of work	
Flush Latrines					
Feasibility for flush-latrines	July-Sep. 2008	Villages having access to drains or disposal system	CBO Community Field staff	• Site visit • Community consultations	
Construction of flush latrines	Oct-Dec 2008	Identified locations	CBO, Community District Govt. Collaborating NGO/agency	• Provision of material • Technical assistance • Sharing design • Supervision of work	