

Integrated Water Resource Management Practices to Alleviate Poverty – A Model of Desert Development in Tharparkar, Pakistan (#493)



Integrated Water Resource Management Practices to Alleviate Poverty – A Model of Desert Development in Tharparkar, Pakistan

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The views expressed in this case study do not necessarily represent the official views of GWP.

May 2018

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1. Background

The devastating Indus valley flooding in 2010 left one-fifth of Pakistan's land underwater and affected an estimated 20 million citizens. This extreme event proved very costly for Pakistan's economy (Khan et al. 2011). Geographically, Pakistan is prone to several disasters since it lies on the Indo-Australian plate, whose continuous movements have led to earthquakes in the region (National Disaster Management Practitioners, 2013). Exposed to erratic seasonal monsoons that are critical for agriculture, excessive rainfall can also cause violent flash floods inflicting heavy damages to property and land. The most recent German Watch Ranking places Pakistan seventh on the Long-Term Climate Risk Index (CRI) which ranks countries most affected from 1997 to 2016 (annual averages) because of climate change (Eckstein, Künzel, and Schäfer 2017).

Severe flooding in both 2010 and 2011 prompted the Government of Pakistan to mobilize resources for climate change catastrophes in the future. As a response, in 2012 the Pakistani Government approved its National Policy of Climate Change, in addition to setting up the world's first full-fledged National Ministry of Climate Change (Government of Pakistan 2012). Floods are a recurrent natural calamity in Pakistan, followed by earthquakes, cyclones, and drought. However, droughts are more damaging than floods in terms of food insecurity (Haider 2006).

Evidence of chronic water shortages have been painfully evident in some parts of Pakistan in recent years, due to low rainfall and extreme variations in temperature. The Baluchistan and Sindh provinces faced devastating drought from 1998-2002. The most susceptible regions experience drought for 2-3 years every decade. Poor government response to situations of chronic drought due to erratic and deficient rainfall in Tharparkar, a desert area in southern Sindh province, caused a humanitarian emergency in 2014-2015 (Masood 2015). Marginalized groups, women, and children were hit especially hard by lack of access to proper medical facilities, nutritious food, and potable water, resulting in mortality and malnourishment. Further, widespread livestock mortality occurred due to prevalent disease and the unavailability of fodder (Ahmed 2015).

The mounting challenges posed by drought are the focus areas for Pakistan Water Partnership's (PWP/GWP-Pakistan) work, particularly in desert areas, which have received minimal attention in the past. PWP's Desert Development model puts emphasis on livelihood creation, water security, hygiene, and environmental sustainability as means of improving the quality of life of desert dwellers and their livestock. Drought is an overwhelming concern, and Pakistan faces this stress in all three of its deserts, namely Tharparkar, Cholistan, and Thal.

As part of WACREP-funded PWP intervention, a wide range of activities were carried out under Desert Development, targeting two major desert regions of Pakistan, the **Greater and Lesser Cholistan Desert** and the **Tharparkar Desert** from **September 2014 to November 2015 (14 months)**. Both of these areas are geographically an extension of the Great Indian Thar Desert in Pakistan. Harsh living conditions in the region have led to aggravating social disintegration of the region, and PWP's interventions aimed to reverse this trend in a significant way.

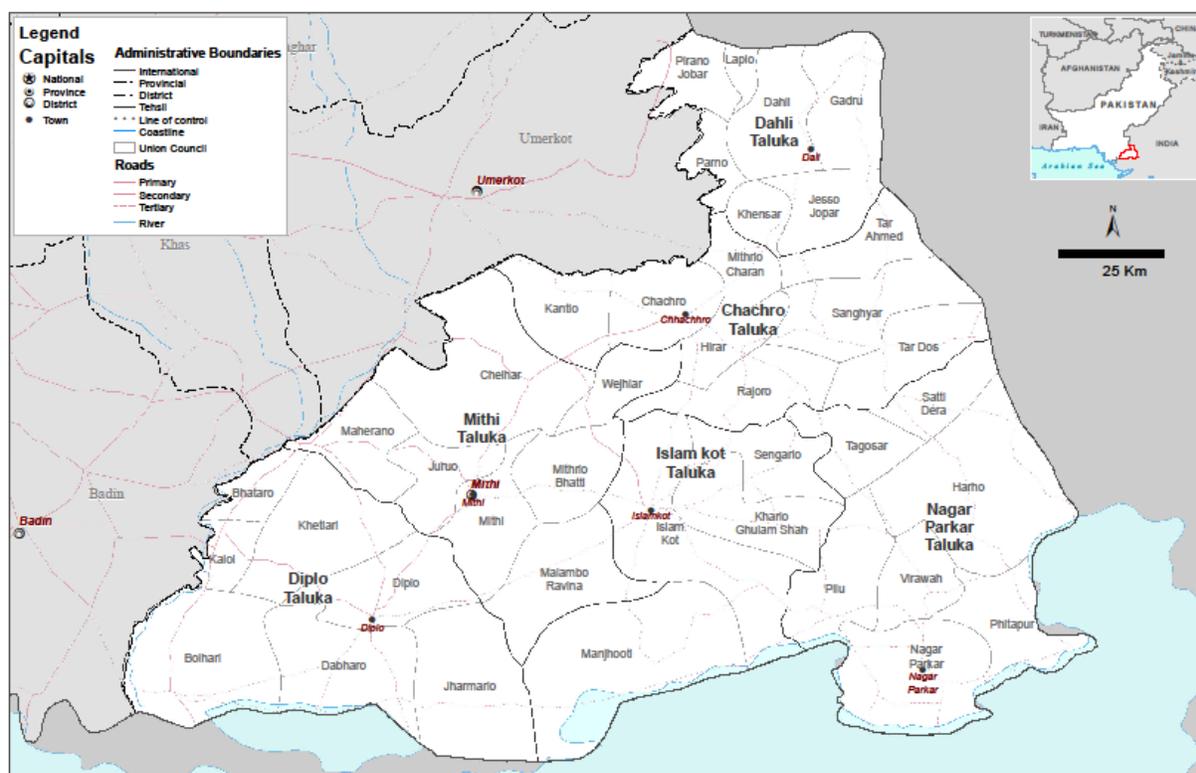
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2. Introduction

2.1 Case Study Area

The Tharparkar District is the largest (by land area) of twenty-nine districts of the Sindh province in Pakistan. An extension of the Thar Desert in Rajasthan, India, the Tharparkar district is situated to the west of India. 15% of the Thar Desert is located in Pakistan over Punjab and Sindh, starting from the Tharparkar District up towards the Cholistan Desert: this part of the desert is referred to as Tharparkar Desert. Divided into 7 *tehsils*, an administrative division used in various South Asian countries, the Tharparkar District is headquartered at Mithi.

Map 1: Tharparkar District with tehsils (UN-OCHA, 2014)



As of the 2012 census, Tharparkar houses over 1.6 million people, with majority of the population living in rural settings. The largest tribe in the Tharparkar district is the Meghwar Scheduled Castes. The population is divided into three main classes: Rajputs, which include Muslim, Hindu, and aboriginal tribes; a large number of aboriginal Bhils; and many nomadic Sindhi tribes. Most Thakurs left Tharparkar and migrated to India after Pakistan's independence (HANDS Pakistan and UN-OCHA 2014).

Housing many downtrodden communities living in isolation from other communities and city centres, Tharparkar's population suffer from lack of access to nutritional food, potable water, and proper sanitation. The United Nations Development Programme's (UNDP) Human Development

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Index (HDI) is a composite index that measures the average achievements in a country/region in three basic dimensions: a long and healthy life, knowledge, and a decent standard of living. Tharparkar District in Sindh emerges in the category of ‘low human development’ (Jamal and Khan 2007).

Thar has the only fertile desert in the world, and the livelihood of Thari people depends on rainfall agriculture and livestock rearing, which is critical to household food security. If a family requires cash for essential commodities or services, they trade-in or sell their animals to fulfil their requirements. The veterinary epidemic that wiped out most of the region’s livestock and negatively affected people’s ability to sustain their livelihoods was caused by chronic drought (HANDS Pakistan and UN-OCHA 2014).

3. Description of the Problem

3.1. Issues Faced in Tharparkar

During drought-like conditions, there is scarcity of nutritional food and potable water, which leads to the spread of disease. Given the low human development, education has not been a high priority and low rates of literacy in the region contribute to the communities depending on physical labour jobs to make ends meet. Under ideal conditions, rainfall occurs from mid-June to mid-August annually and average annual rainfall rarely ever exceeds 250-300 millimetres (mm). Recent drought, caused by less than average and erratic rainfall, led to out-migration of rural population to barrage areas to seek food, water, and gainful employment. In the face of no feasible alternatives, communities resort to drinking saline or unfit water and suffer from abdominal diseases and discoloration of teeth over time. Thar migrant workers provide much labour in the irrigated tracts of Sindh: the so-called pond area.

Prior to the drought, animals like sheep were facing problems such as disease, which were exacerbated by rough weather conditions. Sheep are standard livestock for Thari people, and many of them were highly affected by disease in the district. Furthermore, camels serve as the engine of growth and are an integral part of Thari culture. According to a HANDS and United Nations Office for the Coordination of Humanitarian Affairs (UN-OCHA) assessment, the livestock mortality rate due to the 2014 drought reached 70%. More than 300,000 animals died from different diseases caused by the unavailability of fodder, the quasi-inexistent water supply, and sheep pox (HANDS Pakistan and UN-OCHA 2014). Most people in Tharparkar tried to escape to save their livestock, but a few did not because they did not want to leave their lands (JAGGARTA Organization 2014).

Given the severity of the crisis, three priority sectors were identified by PWP/GWP-Pakistan for immediate and long-term improvements in the lives of Thari people, which are highlighted below:

1. **Water, Sanitation and Hygiene (WASH):** Access to safe drinking water for human and livestock consumption needed improvement, since people were relying on unsafe sources of water, which was causing detrimental impacts on their health. Bio sand filters were

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identified as a cost-effective and durable method for purifying water. The creation of ponds was identified as an intervention that could improve water security for the village dwellers.

2. **Health and Hygiene:** Due to various waterborne diseases and malnutrition, children and marginalised groups were suffering from disease and dying. Medicines, nutritional food, and trained health staff were lacking. Since health facilities are often far away and transportation costs are high, it became necessary to provide point-to-point access to medicines and food (ACAPS, 2016). Furthermore, the need for raising access to soap-making technologies was crucial, since health and hygiene were not priorities for the villagers.
3. **Nutrition:** There was a dire need for food supplements, especially for children, who were malnourished due to food insecurity. The issue was exacerbated by low or improper intake of nutritional food. Therefore, immediate support with nutritional supplements together with sensitization was recommended (Human Appeal International - Pakistan 2016).

4. Decisions and Actions Taken

The Planning Commission of Pakistan requested the Chair, Pakistan Water Partnership to field a mission to take stock of the actual situation of the Tharparkar drought and help the federal government conceptualise a response from a sustainable development perspective in line with the emerging development strategy. A survey was then carried out in Tharparkar's impacted *tehlukas* (Diplo, Mithi, Chachro, Nagarparkar and pockets adjoining Umerkot) from **16-21 April 2014** for fact-finding and for establishing drought master planning to prevent future calamities.

Ocular observations of the water situation, visits to small dam sites, water sampling, livestock assessment (health and recent state), state of vegetation, livelihood opportunities, viewpoints of directly affected communities, government officials, rangers, and NGOs, and discussions with relief agencies were carried out and assessed by PWP's ground team. Findings helped create immediate, medium-term, and long-term solution strategies for water resource management.

An in-depth survey into the pressing needs of the affected communities revealed a need for low-cost filtration methods for improving quality of water and conservation of water through rainwater harvesting techniques. Given the arid conditions of the region, the majority of the population rely on livestock as a medium of employment and nutrition. Therefore, to ensure the health of livestock in the challenging conditions, drenching of livestock was required. In addition, raising small village-level nurseries was identified as an intervention that could supplement income and contribute to villagers' health by providing nutritional food to community members. The necessity of promotion of hygiene and sanitation awareness was noticed, since most diseases in the study area were caused due to poor sanitary habits and lack of safe and sufficient water.

The Desert Development approach consisted of a wide range of activities, carried out in **45 villages of the Tharparkar District, housing more than 128,000 people**. By improving access to potable water, distributing food and medicines for people and livestock, and building capacity in traditional soap making techniques and in the operation of bio sand filters, entire communities benefited in

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various ways. Local village leaders were trained in soap making and provided bio sand filters. Their increased capacity in these realms allowed them to educate the rest of the community members.

Table 1: Demographics of the Target Villages in 2014-2015 (Union Council, Tehsil Office)

Month	#	District	Name	Caste	Religion	Distance from HQ (km)	Population
23-26 September 2014	1	Mithi	Basti Barach	Bheel	Hindu	-	-
	2		Basti Subaro Shah	Bheel	Hindu	-	-
10-13 December 2014	1	Mithi	Baroch Ghot	Bheel	Hindu	35	250
	2		Molay Ji Wand	Bheel	Hindu	40	2000
	3		Basti Winghar	Bheel	Hindu	42	2000
	4		Sahu Para	Bheel	Hindu	41	1000
	5		Baroch Ghot	Bheel	Hindu	35	250
2-9 March 2015	1	Mithi	Kamro Thakur	Thakur	Hindu	33	650
	2		Bheel Paro Kamro	Bheel	Hindu	32	460
	3		Loondhar Bharoo Bheel	Bheel	Hindu	39	440
	4		Mithrau Dal Sameja	Sameja	Muslim	47	4000
	5		Meenghwarparo	Bheel	Hindu	49	400
14-22 April 2015	1	Mithi	Soorayjotar	Bheel	Muslim	63	5500
	2		Arniaro	-	Hindu/Muslim	50	7000
	3		Banbhinojatar	-	Hindu/Muslim	55	8000
	4		Maghojatar	Menghwar	Hindu	50	4000
	5		Khanji Nanger	Thakur	Hindu	40	3000
	6		Maokhairaj	-	Hindu/Muslim	45	4000
	7		Bhopayjotar	-	Hindu/Muslim	53	4000
	8		Sajwani	-	Hindu/Muslim	60	5000
	9		Moolejiwandh	Bheel	Hindu	50	500
	10		Wanger	Bheel	Hindu	46	1800
	11		Magho Bheel	Bheel	Hindu	60	4500
	12		Maroo Paro	Meghwar	Hindu	39	3000
	13		Banbhino Bheel	Bheel	Hindu	51	7000
	14		Sahuparo	Bheel	Hindu	33	2000
	15		Amro Nanjani Paro	Bheel	Hindu	67	6000
	16		Bughar	-	Hindu/Muslim	20	6000
	17		Maou Thakur	Thakur/ Menghwar	Hindu	41	1500
	18		Ramchand	Bheel	Hindu	10	500
	19		Skiryo Old	Bheel	Hindu	30	3000
	20		Skrio Bheel	Bheel	Hindu	35	2500
	21		Jagsi Jidhani	Kolhi	Hindu	45	250
	22		Kamro Thakur	Bheel	Hindu	70	2500
	23		Ambo Jiwandh	Bheel	Hindu	16	1500
	24		Banibhinio	Bheel	Hindu	70	10000
10-18 November 2015	1	Chahro	Bhadari	-	Muslim	75	3500
	2		Phangario	-	Hindu/Muslim	65	900
	3		Tightiyo	-	Hindu/Muslim	55	4000
	4		Jhamrisar	-	Hindu	45	1300

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	5		Patejotar	-	Hindu	40	350
	6	Diplo	Vee	-	Hindu/Muslim	80	11000
	7		Kolijidhani	-	Hindu	90	600
	8		Bhapuiar	-	Hindu/Muslim	75	750
	9		Sheiar	-	Muslim	60	500
	10		Ranijithari	-	Hindu	65	950
Total Number of Beneficiaries							128350

Note: Due to rough conditions at some sites, demographic information was challenging to monitor, but efforts have been made to report accurate information as much as possible.

The following activities were carried out across the region:

4.1. Promotion of Low Cost Filtration Methods by Demonstration of Bio Sand Water Filters (BSF) in Target Areas

PWP demonstrated the use of BSFs in isolated areas of the Tharparkar district, covering **29 villages across the districts of Mithi, Chahro, and Diplo over 14 months**. These target areas were chosen on the basis of advice provided by the local government; they highlighted the areas that were most affected by drought, suffered from the most notable water issues, and represented the most economically backward sections of Tharparkar.

Prior to this intervention by PWP, community dwellings in isolated areas of Tharparkar were compelled to drink water of deteriorated quality from old wells, since there were no provisions for safe and reliable sources of water.

An adaptation of the traditional slow sand filter better suited to household water treatment, the bio sand filter (BSF), can be constructed usually locally with available material (pitchers, PVC pipe, tape & graded filter) in a low-cost manner (under \$10 per filter). The filter can be used intermittently and removes pathogens from drinking water. As a secondary benefit, the BSF can also reduce turbidity, bad odour, and taste from water, in addition to removing iron, manganese, and arsenic (Cawst 2009). Due to non-availability of laboratory equipment in the remote village areas, testing could not be carried out at the sites to accurately measure efficiency.

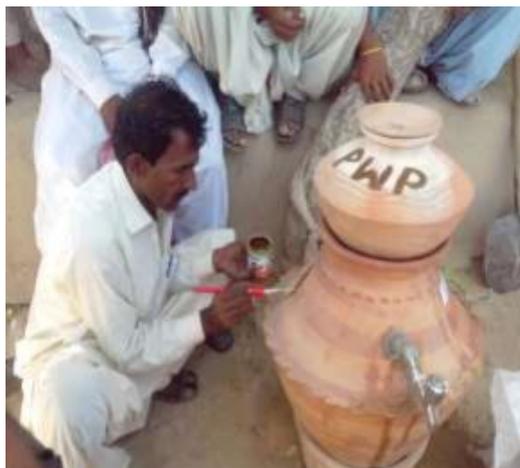


Image 1. Demonstration of bio sand water filter in Basti Barach

The filter container can be made of concrete, plastic, or locally available alternatives and it is filled with layers of specially selected and prepared sand and gravel. Physical straining processes and biological action of micro-organisms help treat water in the BSF. Only minimal maintenance costs (no running costs) are required to operate BSFs.

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4.2. Promotion of Rainwater Harvesting Techniques by Excavation of Ponds in Target Areas in Partnership with Local Communities

17 ponds were constructed to cater to the human and animal populations in the **Mithi, Chahro, and Diplo tehsils**. The standard approach of community appraisal of the water requirements was followed by a joint selection of the pond site, construction plan, and execution. The PWP team closely monitored the situation and provided required supervision. On completion, agreed compensation was paid and the pond was handed over to the local community for future security and maintenance.



Image 2. Excavation of village pond at Sahu Para village by community members.



Any accumulation or deposition of rainwater for reuse presents a valuable opportunity in arid areas with low rainfall, like Tharparkar. Water that is prevented from becoming run-off can be used in gardens, for livestock, irrigation and domestic use with proper pre-treatment. Rainwater can also be redirected to a deep pit with percolation for recharging groundwater.

PWP implemented rainwater-harvesting interventions among local communities in Tharparkar, by excavating ponds in areas where natural depressions already existed. The runoff was collected for drinking, livestock, and supporting agricultural activity, which was entirely dependent on rain-fed irrigation prior to this intervention. PWP's focus on fortifying livelihoods which rely on social mobilization and on making stakeholders self-sufficient and assuring access to water (Salam 2015).

- **Well Restoration**



Image 3. Well restoration in progress

PWP identified and restored damaged wells in continuation of WACREP activities in different villages where natural depressions existed. A common complaint in brackish water zones of Tharparkar is that there are no provisions for recharging wells with fresh rainwater. In order to utilize rainwater to improve water quality and raise the water table in the wells, small catchment ponds were dug with gravel, stone, and sand filtration.

A polythene sheet was placed after compaction of the floor to reduce run-off, and selective outlets using PVC pipes were provided that would feed into the wells. The small recharge structure was located away from the well to prevent damage to the well structures. Several flow inlets fed from channels were made of PVC pipes. Both sides of the inlets were fitted with mesh wired strainers, to stop debris from entering the water. Instructions were

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given on how stored water would seep into the water wells and direct channels with pipe outlet that were designed to feed the wells in event of heavy rainfall.

Since lower-zone water is extremely brackish, the community felt that feeding rain water from the nearby pond structure and the dug well structure in the upper catchment would improve water quality and benefit five wells from which both humans and livestock take water.

4.3. Training of Local Community Members in Traditional Soap-Making Techniques

Existing in isolation from local markets and limited by economic realities, purchasing soap was not considered a priority in Tharparkar, an action that worsened the hygiene of community members. To promote the concept of hygiene, PWP initiated the concept of making soap by demonstrating soap-making techniques among community members as part of a series of Training of Trainers (ToT), where focal persons were trained to make soap at home for further propagation of this techniques in target areas. PWP expanded this activity to **25 villages**.

In total, **over 650 soap cakes** were made and distributed among the project beneficiaries. In addition, **150 nail cutters and 200 pieces of alum** were handed out and **100 villagers were trained on personal hygiene**. The training involved demonstration of proper hand-washing techniques and hands-on preparation of soap in the village.

This activity has gained acceptance in many areas of Tharparkar and communities claim that household costs for soap reduced significantly **from Rs. 1500 to Rs. 280, registering a 5x reduction in cost for procuring soap from the market for washing and bathing each month**. Such savings were highly appreciated by communities where this activity was demonstrated. Several families in Mithi reported that after this activity they started to make their own soap and no longer relied on markets for their daily use of detergents and body soap.



Image 4. Demonstration of Soap Making Methods in Basti Barach

4.4. Distribution of Nutrition Food to Women and Children

Prolonged periods of drought badly affected food production systems hence the health of community members, especially women and children. To counteract this, PWP distributed essential nutrition food among pregnant women to provide immediate relief to the community.

Assisted by project partners Green Media and Farozan, PWP distributed food items to the beneficiaries of the project, including **more than 270 milk packets and medicines (2,400 ORS packets, 9,600 Blood Max Tablets, and 1,000 Haemotyl-F Tablets)**. PWP and Farozan maintain a close working partnership, where the latter provides print media coverage to field

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activities and raises awareness amongst civil society and the public sector. This intervention was carried out in **7 villages** across Tharparkar.

4.5. Promotion of Kitchen Gardens Using Household Wastewater and Distribution of Vegetable Seeds and Mineral Mix for Improvement of Livestock Health

Residents of the district were mostly underfed due to chronic food shortage. Therefore, to augment food security, PWP distributed over **15-20 kg of vegetable seeds packets per village to address malnutrition, improve women's household income and to promote kitchen gardening techniques by utilizing kitchen residue water.** This intervention raised the resilience of the communities and increased their food security. Only salt tolerant and drought-resisting varieties of vegetable seeds were distributed in **23 villages**. Villagers were advised to build garden plots near household kitchens.



Image 6. Demonstration of sowing Hybrid Napier

Hybrid Napier is the most suitable solution to overcome fodder shortage during drought. The plant can grow to 10 feet and one plant is enough for one goat/sheep for its lifetime since the grass grows as long as it is watered regularly. PWP distributed **300 Hybrid Napier grass cuttings to communities** at their doorsteps, to popularise the growth of Hybrid Napier in Tharparkar. This activity was carried out in **two villages in Mithi** and it was further distributed in agriculture departments in Khoski to spread the positive effects across Sindh.

4.6. Distribution of Medicines

The team provided mineral mix to **70 goats, 137 cattle, 39 camels and 51 cows.** Deworming medicines were distributed amongst **150 farmers** and farmers were trained on administering deworming medicines through PWP project assistants.

Prolonged periods of drought exacerbated the poor health of community dwellers in Tharparkar. PWP distributed first aid medicines among local communities of **21 villages.**



Image 7. Distribution of medicines among community members

Anti-thelmic/deworming medication, purchased in bulk, was also provided for livestock.

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4.7. Establishment & Handing Over Nurseries to Village Communities

Village nurseries were donated to **21 villages**. The team distributed **20 kilos of acacia seed** for establishing village nurseries, to be used as saplings and direct sowing during monsoon months. Acacia has no natural pests and it is used for threat plantation to increase green cover.

The seeds were provided free of cost. Forest nurseries were completed with the technical assistance of Mithi's Forest Department. The PWP team was also briefed about rangeland issues, like land degradation due to overgrazing, prolonged drought and use of deep aquifer water.



Image 8. Plants for village nurseries

5. Outcomes

PWP introduced the Integrated Water Resources Management concept in the Tharparkar district of Sindh, Pakistan, in the hopes of mobilising community action to tackle the negative effects of chronic drought. Major contributions of this project were:

1. WASH:
 - Bio sand filters were demonstrated and distributed in 29 villages
 - Ponds were created in 17 villages.
2. Health and Hygiene:
 - Soap making techniques were demonstrated in 25 villages.
 - Medicines were distributed to villages.
 - Seeds and mineral mix were distributed to 23 villages.
3. Nutrition:
 - Food packets were distributed in 7 villages.
 - Medicines were handed out in 21 villages.
4. Village nurseries were set up in 21 villages.

Table 2: Details of Villages Positively Affected by Desert Development Initiatives (2014-2015)
(next page)

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Month	No	Name	1. Bio Sand Filter	2. Pond Creatio n	3. Soap Makin g	Distribution of			7. Nurseries
						4. Food (Packets)	5. Seeds + Mineral Mix	6. Medicine	
23-26 September 2014	1	Basti Barach	√		√		Hybrid Napier	√	
	2	Basti Subaro Shah	√		√			√	
	Total Villages Covered		2	0	2	0	2	2	0
10-13 December 2014	1	Baroch Ghot	√	√	√	√	√		√
	2	Molay Ji Wand	√	√	√	√	√		
	3	Basti Winghar	√	√	√	√	√		
	4	Sahu Para	√	√	√	√	√		
	Total Villages Covered		4	4	4	4	4	0	1
2-9 March 2015	1	Kamro Thakur	√	√	√	√	√		
	2	Bheel Paro Kamro	√	√	√	√	√		
	3	Loondhar Bharoo Bheel		√			√		√
	4	Mithrau Dal Sameja	√	√			√		
	5	Meenghwarparo	√	√			√		
	Total Villages Covered		4	5	2	2	5	0	1
14-22 April 2015	1	Soorayjotar	√		√		√	√	√
	2	Arniaro	√		√				
	3	Banbhinojatar	√		√				√
	4	Maghojatar	√		√		√		√
	5	Khanji Nanger	√		√		√	√	
	6	Maokhairaj	√		√				√
	7	Bhopayjotar	√		√		√	√	√
	8	Sajwani	√		√		√		√
	9	Moolejiwandh	√				√	√	√
	10	Wanger					√	√	√
	11	Magho Bheel					√	√	√
	12	Maroo Paro					√	√	√
	13	Banbhino Bheel					√	√	√
	14	Sahuparo					√	√	
	15	Amro Nanjani Paro					√	√	√
	16	Bughar		√√					
	17	Maou Thakur						√	√
	18	Ramchand Ji Dhani						√	√
	19	Sakiryo Old						√	√
	20	Sakrio Bheel						√	√
	21	Jagsi Ji Dhani						√	√
	22	Kamro Thakur						√	√
	23	Ambo Jiwandh						√	√
	24	Banibhinio				√			
Total Villages Covered		9	2	8	1	12	19	19	
10-18 November 2015	1	Bhadari	√	√	√				
	2	Phangario	√	√	√				
	3	Tightiyo	√		√				
	4	Jhamrisar	√	√	√				
	5	Patejotar	√	√	√				
	6	Vee	√	√	√				

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7	Kolijidhani	√		√				
8	Bhapuiar	√		√				
9	Sheiar	√		√				
10	Ranijithari	√	√	√				
Total Villages Covered		10	6	10	0	0	0	0
Total Number of Villages Affected		29	17	25	7	23	21	21

5.1. Formation of Tharparkar Water Partnership and Journalist Trainings

PWP, in partnership with their local partners, organised a stakeholder meeting on **13 December 2014** to discuss the formation of the Tharparkar Area Water Partnership at the Mithi Press Club at the behest of PWP. Stakeholders from non-political parties, NGOs, civil society members, lawyers, and media people from Karachi attended the event. In particular, Muslim Aid showed tremendous interest to work in Tharparkar and committed to carrying out PWP's mission. Post-completion, Muslim Aid has been conducting follow-up work in Mithi focusing on water and health. PWP provided logistical support, prepared invitations, recruited experts and speakers, involved media, and jointly conducted events.

In order to ensure long-term sustainability of these interventions, the Tharparkar Area Partnership was launched on **6 March 2015** at Karoonjhar Hall, Mithi. A dialogue on 'Journalistic Approaches to Address Climate Change and Environmental Issues of Tharparkar', in collaboration with Monthly Farozan, Green Media Initiatives, and Muslims Aid Exploration was held to mark the event. Financial partners were explored, and funds were identified to further extend the project area to a 100 km radius.

PWP supported, financed, and facilitated a media training organized by Media Forum of Karachi that exposed 40 journalists to the core issues of climate change prevalent in Tharparkar, especially drought and environmental reporting. Held on **22 April 2015** at Bhitai Hall, Mithi, the workshop was supported by PWP, Farozan, and Green Media.

Five intensive fieldwork sessions were carried out from September 2014 - November 2015. During this time, the team travelled frequently to the sites where field activities were carried out based on earlier appraisals. Appraisals of new work areas were done by visiting the drought prone areas to identify specific areas that were amenable to drought adaptation interventions based on local situation analysis as a result of stakeholder consultations.

6. Lessons Learned

Following heavy rains that broke the spell of long drawn drought in Tharparkar, a meeting was held to plan for development of a long-term 25-year vision for Tharparkar Water Partnership and activities in the region. Detailed discussions were held, and it was decided that the Area Water Partnership (AWP) would carry forward initiatives as its flagship project and collaborate with NGOs and the local government. This has been possible due engagement of the key stakeholders right from the beginning.

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Compared to the full-blown drought in 2014-2015, currently Tharparkar only faces a mild drought in select patches. Following this activity, the district administration initiated further activities in some of the targeted regions as recently as March 2018. In this manner the 14-month long intervention provided key insights on how to develop and implement such interventions on the ground.

Recommendations:

- In order to ensure water security in drought-affected areas, widespread support by governmental/local agencies should be provided to communities to rehabilitate village ponds through community cooperative efforts.
- Large scale and widespread capacity building in livestock, forestry, fodder, women rights and health is needed on a fast-track basis for self-reliance and sustainable development.
- Training village-level male and female para-veterinary assistants for simple treatment can aid in ensuring livestock health and create a new source of income.
- Focusing on home garden and village plant nurseries can augment food security and improve the health of community members.
- Training sessions, which provide marketing information and educate village dwellers about how to sell products, will help reduce exploitation and ensure that dwellers receive fair price for their products in the market.
- Extra salts and minerals in the ground make 80 percent of Tharparkar's water unfit for human consumption, according to standards set by the World Health Organization (Tanzeem 2016). Introducing small-scale portable solar units to convert brackish water to sweet water can provide an alternative source of potable water and help communities prevent diseases like stomach problems, which are a result of drinking brackish water.
- Local donkeys could be revived as they are a source of power and can thrive very well on scant vegetation. Since these animals carry much of the rural burden, they can provide energy for water lifting in water scarce situations. Such animals can play a positive role, and hence a small equine research centre could be created to further research on improvement of this species.
- The government should commission water interventions like RWH systems, emergency ponds, and small dams to provide safe drinking water. It could further facilitate a focused response from NGOs working in THAR and conduct M&E so activities can be scaled up.

7. Conclusion

In Tharparkar drought has been a regular disaster, but has not received sufficient action or recognition from governmental agencies, thereby making GWP's interventions timely and crucial.

Guided by national policies pertaining to climate change adaptation (GWP Tool A1.03), PWP's interventions aimed to bridge the gap in practical application of existing policies. Using both a top-down and bottom-up approach by enabling Training of Trainers (ToTs) at the village level,

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community participation was encouraged. IWRM was used as a guiding policy and local authorities were involved in decision-making and project implementation (GWP Tool B1.02).

The desert development approach eventually relied on community-based water supply and management, and community members were handed the management of village ponds, nurseries, and wells (GWP Tool B2.03). This approach ensures sustainability and regular training sessions that help raise public awareness (GWP Tool C8.02), enabling social change to occur in Tharparkar, Pakistan.

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9. Contact Details

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