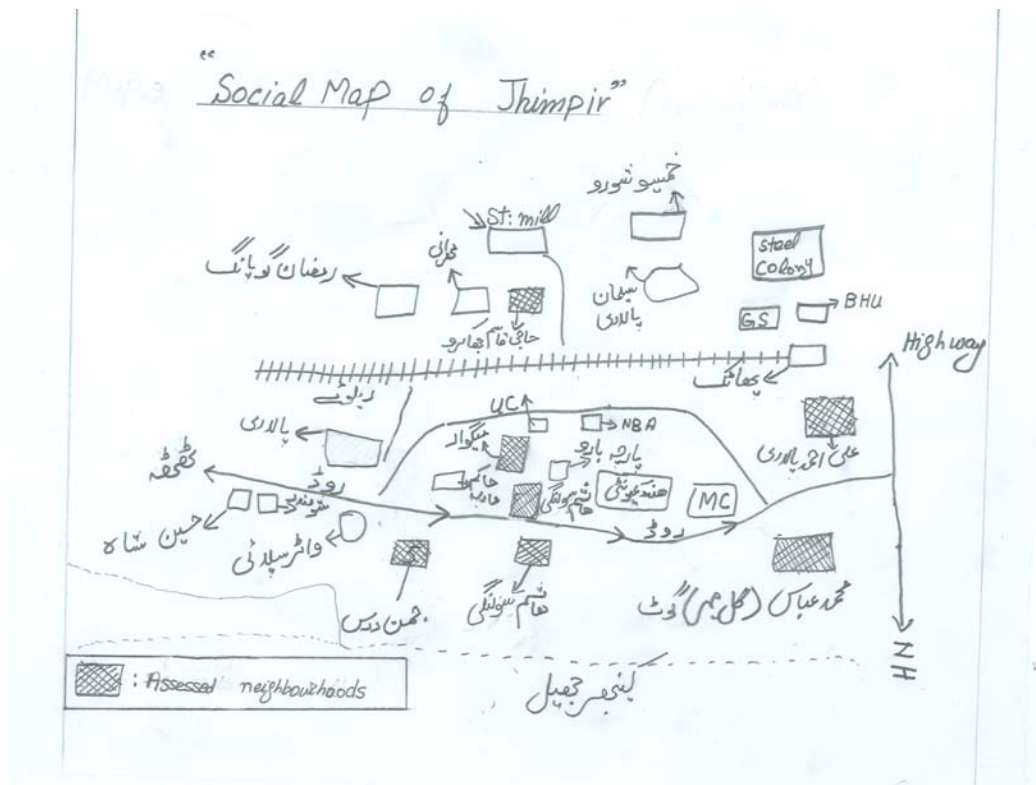


Preliminary Socio-Economic Baseline Study Report



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Indus for All Programme
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Indus for All Programme

Preliminary Socio-Economic Baseline Assessment

1. Introduction

WWF- Pakistan's recently initiated 6-year project titled "Indus for All Programme" stems out of the poverty-environment linkages present in the Lower Indus River Basin, as identified in the Indus Eco-region Programme. The Indus Eco-region is one of the most prioritized eco-regions within the Asia-Pacific. The aim of establishing an eco-region programme by WWF-Pakistan is to facilitate articulation of a 50-year vision for the eco-region. The beneficiaries of the program are the communities dependent upon natural resources. While implementing the proposed activities it is envisaged that partners' capacity will be built and they will ultimately benefit from the programme.

The programme objectives are:

- Community-based NRM in four (Keti Bunder, Kinjhar, Pai forest and Chotiari) priority areas contributes to improved livelihoods;
- improved natural resources and livelihoods through mainstreaming of poverty-environment linkages at policy, planning and decision-making levels;
- Improved institutional capacity and awareness for sustainable environmental management at various levels;
- Improved alignment and collaboration for stakeholder interventions.

Towards developing the programme for achieving the above Shirkat Gah was commissioned to carry out the first level scoping study to establish an initial socio-economic baseline by carrying out a situation analysis in and around the four project eco-zones (Keti Bunder, Kinjhar, Pai Forest and Chotiari). The exercise would enable the selection of appropriate villages within the sites for project implementation. A central concern of the study is the extent of dependence of local populations on the natural resources of the areas.¹

Among the variables to be covered were:

- Number of households
- Incomes
- Land ownership and other assets
- Dependency on natural resources
- Relationship with natural resources including management of NR by sex, assessment of customary practices, religion and NR
- Vulnerabilities and risks including the implications of inter and intra-communal and other conflicts on livelihoods and NR
- Social organisations in the area.

¹ See Annex 1 for TORs.

1.1. Methodology

A two pronged methodology was employed for the assessment: one of collecting data and information from available secondary sources like official reports and surveys, NGO and newspaper reports; interviews with relevant departments at the provincial level and the three districts (Nawabshah, Sanghar and Thatta) covered in the assessment, and with NGOs working in these areas. The other component of the study was a field-based study of 22 selected villages identified by WWF in the four project areas.

The methodology of the assessment in the field is PRA (Participatory Reflection and Action) and the framework of analysis is the Livelihoods Framework. The central concept of the Livelihoods Framework is that critical for people's well-being is a set of basic resources/capitals/assets which are the principal means of generating income, and coping with natural disasters or economic shocks. This scoping study focuses on these assets/capitals i.e. *Natural, Produced, Social/Political, and Human* capitals.

- **Natural** capital includes land, forests, water, marine and wild resources (trees, land, clean air, coastal resources). The benefits of these can be both direct and indirect.
- **Produced** capital includes physical infrastructure and credit. It comprises the basic infrastructure and physical goods that support livelihoods. Key components include power supplies, roads, water and sanitation systems, school and health systems, buildings, productive equipment, and agricultural stores. It also includes monetary wealth and credit.
- **Human** capital includes nutrition, health, education and local knowledge. This represents the skills, knowledge, capacity to work, and good health that together enable people to pursue different livelihood strategies, and achieve their livelihood outcomes. At a household level human capital is a factor of the amount and quality of labour available.
- **Social/Political** capital focuses on the benefits of patterns of association. It relates to the formal and informal social relationships from which various opportunities and benefits can be drawn by people in their pursuit of livelihoods. The critical benefits of social/political capital are access to information, to influence or power, to claims or obligation for support from others, and leverage used in influencing decisions. It encompasses the power relations between and within state and society.

As a first step a field team was put together and trained with reference to the specific focus of this study. Fluency in Sindhi and experience of PRA were the two criteria for selecting the team. Two teams of two males and two females each were put together by Shirkat Gah, one to cover the Kinjhar Lake and Keti Bundar sites and the other to cover Pai Forest and Chotiari Reservoir sites. The former team had a resident of Keti Bundar and the latter one from Chotiari area which helped in making possible quick local arrangements for stay, transport and access. Three of the team members had been involved in the PPPA exercise in Sindh with Shirkat Gah and were therefore familiar with the process of documentation. Three staff members from WWF also participated in the training and one of them accompanied the field team in Pai Forest. There was a debriefing session after completing each site in Shirkat Gah office in Karachi.

Three-day training was organised at the WWF centre in Karachi and conducted by Pakistan's leading PRA trainer, Rashida Dohad with Shirkat Gah trainers. A field guide was developed to facilitate the fieldwork and given to each member of the team (Annex III in hard copy of this Report). Given the limited time available, PRA tools that the team was trained and tested in and then employed in the field were: social mapping, well-being

ranking, transect walks, pie charts, Venn diagrams, seasonal calendars and focus group discussions across different age, ethnic, and gender groupings in each site. In addition the teams also took some in-depth interviews with key informants. Due to the time constraint only selected villages in each site were covered.

1.2. Problems in the field

The nature of problems faced varied from site to site. Where a local contact was identified beforehand the process went more smoothly, otherwise the teams had to spend time breaking the ice and building rapport. Accessing villages was not always easy especially of those located in the creeks of Keti Bundar and in Keenjhar Lake. In both sites boats were the mode of transport and took more time than planned. In the creeks access was dependent on the tide and necessitated coming back to Keti Bundar for the night. In the absence of a rest house or hotel the team in Keti Bundar had not only to arrange accommodation but also water for personal use and drinking, and gas lights. The household sizes as indicated by WWF were at variance with the situation on the ground in some instances requiring longer stay in some locations and shorter ones in others which posed problems of coordination. At least one village in one of the creeks was not there physically, there were a few abandoned huts. In another the population moved seasonally to Rehri Goth on the mainland and since most people were not in the village at the time of the assessment, Lakhio village in Rehri was visited to get the migrant community's perspective.

Both teams had to adjust timing of the assessment according to the availability of local people. Men engaged in fishing were not available during the day; women's availability was determined by their household or other activities. Ideally more time should have been available for a more in-depth investigation. But given the constraints the teams managed to draw insightful information. The team in Pai and Chotiari finished their work early and joined the other team in Keti Bundar to share in the assessment there. Since a good proportion of documentation (activity sheets) in the field was in Sindhi more time was consumed to get them translated into Urdu and then use for the report in English.

Secondary data was also not consistently found in each district especially for Taluka and UC levels. The quality and extent of information became scant as one went down the administrative tiers. Similarly data sets did not always match e.g. the data provided by the EDO, Education for 2004-05 did not seem to match the SEMIS data for 2002-03. There are also data gaps, for instance out-migration data is not available.

It is important to point out the limitations of PRA. The methodology essentially captures people's perceptions and experiential realities and not necessarily exact data. The quantitative information when given by local people/analysts often represents estimations based on that particular group's knowledge and information, often coloured by their history, culture and their local pressing priorities. Information is triangulated after getting the perspective from different groups in the same village and cannot be seen as statistically exact. PRA enables insights and captures change particularly well. Ranking too is challenging as variables identified by local people are often nuanced and not always similar or comparable.

1.3. The Report

The Report is in four sections. Besides the Introduction (Section 1), Section 2 gives an overview of the three districts where the four sites are located based on available official and other data/information and provides the broader context for the findings from the field. The Section gives the profiles of the three districts (Sanghar, Nawabshah and Thatta) and the Taluka level information of the four sites based on the 1998 census. Union Council level information was not available in District offices. Development projects underway in the three Districts by sector and NGOs operating in them is also provided in the section.

Section 3 pulls together the village wise field assessment by site with secondary data providing the backdrop. A comparison of villages in each site is presented to facilitate selection for programme implementation. Ranking of villages in each site has been attempted wherever possible; diversity of variables makes ranking across sites difficult. Vulnerabilities are also discussed in this section.

Section 4 is the concluding section that brings the salient features of the study together and makes suggestions for village selection and further specific investigation/research to be included as part of programme implementation. Annexes and References are at the end of the Report.

2. Overview

Whereas Sindh has the highest per capita income among the four provinces in Pakistan, it is the second least developed province in terms of human and social development.

In a ranking of the 100 districts of Pakistan—with Karachi being counted as 1—according to 11 social and 16 economic development indicators, of the three districts under review, Nawabshah was relatively better off with Sanghar in the middle and Thatta at the bottom of the scale.²

Within Sindh, Nawabshah was classified as medium deprived, Sanghar and Thatta emerged among the 8 most deprived districts in the province with Thatta almost at the end at 94.7 points out of 100. If the same districts are ranked by their rural areas, then an even poorer situation emerges. All three rank higher on the deprivation scale, with rural Thatta at 98.5 points even though it improves slightly in the national ranking.

Table 1: Districts & their Rural Areas

Districts Provincial Rank Order	National Rank Order	Deprivation scale
1 = Least Deprived 16 = Most Deprived	1 = Least Deprived 100 = Most Deprived	[1- 100]
Medium Deprivation		
Nawabshah 6	29	70.5
Rural Nawabshah 8	50	78.9
High Deprivation		
Sanghar 10	47	78.8
Rural Sanghar 10	59	85.9
Thatta 15	78	94.7
Rural Thatta 15	76	98.5

Source: adapted from SPDC, 2001 (reference below)

2.1. Population

The three districts, Nawabshah, Sanghar and Thatta that form the universe of IFAP are primarily rural with Thatta district least urbanised with only 11% of the district population living in urban areas (Census1998) and Nawabshah most urbanised with a quarter (26%) of its population urban (See Table 2 below).

² Social Policy and Development Center. 2001. *Social Development in Pakistan: Growth, Inequality and Poverty*. Oxford University Press. Karachi.

Table 2. Area, Population by Sex, Density, Urban Proportion, Average Household Size & Average Annual Growth Rate, 1998 by Talukas of IFAP Sites

Admin Unit	Area (sq km)	Population 1998						1981-98 Average Annual Growth Rate (%)
		Total Population	Male	Female	Population Density (per sq. km)	Urban Proportion	Average Household Size	
Nawabshah Distt	4,502	1,071,533	555,677	515,856	238.0	26	6.0	1.63
Sakrand	1,394	269,860	137,919	131,941	193.6	10	5.6	0.90
Sanghar Distt	10,728	1,453,028	762,284	690,744	135.4	22.8	5.8	2.74
Sanghar	2,118	264,882	138,931	125,951	125.1	23	5.9	3.16
Thatta District	17,355	1,113,194	589,341	523,853	64.1	11.2	5.1	2.26
Keti Bunder	771	25,700	13,553	12,147	33.3	9.8	4.9	1.14
Thatta	3,823	253,748	134,200	119,548	66.4	14.8	5.6	2.36

Source: District Census Report of Nawabshah, Sanghar, Thatta. 1998.

Examination at *taluka* level in the three districts reveals that Sakrand in Nawabshah and Keti Bunder in Thatta are the least urbanised *talukas* with up to 90% of the population rural. Population density in Keti Bunder is the lowest (33.3% per sq. km) and highest in Sakrand reflecting the district density pattern. In keeping with the national demographic pattern all three districts and *talukas* showed a negative sex ratio at the time of the last census. Males in 1998 were 108% of females in Nawabshah, 110.3% in Sanghar and 113% in Thatta Districts. Similarly a high proportion of the population in all three districts was young and below 18 years of age – 48% in Thatta and almost 50% in both Nawabshah and Sanghar Districts.

If the population of each district is extrapolated on the basis of the 1981-1998 annual growth rates of 2.26%, the 2005 population of district Thatta is estimated to be around 1.331 million (an increase of 19.5%). The draft Census 2005-2006 quoted by SPO in its *District Profile of Nawabshah* shows that the district population here has increased from 1.071 million of 1998 to 1.259 million – i.e. 17.5% in the intervening years. In District Sanghar on the basis of an average annual growth rate of 2.74%, the population is projected to double in the next 25 years. This increase in the population in the three districts (with implications on densities and dependence on resources) seems to be in accordance with the trend in other parts of the districts. For instance figures for 2006 put together from existing official data and reports and interviews with relevant officials by SAFWCO, a local NGO, in Taluka Sanghar and its two Union Councils indicate an increase of 24 % in the population (Table 3 below). However it would be important to keep in mind the fact that the population growth rate in 1998 had revealed a declining decennial trend and if that trend has continued then the population configuration would be very different from that calculated on the basis of the growth rates of 1998.

Table 3: Population figures Taluka and UC Sanghar - 2006

	Census 1998	Total Pop. 2006	0-11 months	< 5 years	Pregnant Women	CBA's
Taluka Sanghar	272,032	337,592	11,927	57,391	13,504	60,767
UC Shah Sikandar	25,299	31,396	1,109	5,337	1,256	5,651
UC Khadwari	27,180	33,730	1,192	5,734	1,349	6,071

Source: SAFWCO, *District Profile, Sanghar*. 2006

2.2. Other Socio-economic Indicators

Comparable *literacy rates* for the three Districts are from the 1998 Census, whereby the total literacy rates stood at 34.1%, 30.8% and 22% in Nawabshah, Sanghar and Thatta Districts respectively. There were marked urban-rural and male-female differentials. In Nawabshah the urban literacy rate was almost twice that of rural areas (54.3% urban vs 26.5 % rural); the ratio in Sanghar District was wider (53% urban; 23.9% rural) and was the widest in Thatta District at almost two and a half times in urban areas (46% urban; 19% rural). Female literacy was particularly low in rural Thatta at 8% and rural Nawabshah at 10.9% Sanghar. Overall the gap between male-female literacy was 21% (Thatta), 25.45% (Sanghar) and 28% (Nawabshah). In terms of ranking Thatta was ranked 20, Sanghar 15 and Nawabshah 13 out of the 21 districts of Sindh.³

In the *health* sector, according to the SPO's profile of Nawabshah⁴ the Total Fertility Rate is 5.4—with persistent maternal morbidity; a low contraceptive prevalence rate (22%); at least one health facility in each UC of the District: only two Mother and Child care centres in the entire District; and 70% of births not attended by skilled birth attendant. In Sanghar District the Total Fertility Rate is 4.9% and the contraceptive prevalence rate 15.1%. It has 88 health institutions and 64 District Council government dispensaries. The LHW programme started in Sanghar in 1995; currently 1,027 LHWs cover 52.59% of the current population with 810 in the rural areas and 217 in the urban centres. The health infrastructure in Thatta is scant. In the six coastal Talukas, three do not have any Rural Health Centre or any veterinary dispensary. The BHUs and dispensaries are also in small number.

As far as *potable water* is concerned Nawabshah District is without access to safe drinking water as the District has arsenic in its ground water. In a study commissioned by UNICEF two focal blanket surveys were conducted in three talukas each of Khairpur Mir, Dadu and Nawabshah districts in 2002-2003 and 2003-04. The surveys were carried out in the two former districts by SAFWCO and in Nawabshah by SHEDS. The final report was compiled by SAFWCO (2005). Water samples were collected from hand pumps, tube wells, wells and water supply schemes (94% of the samples were from hand pumps). In the three Talukas of Nawabshah, 16890 samples confirmed 9% (1,472) carried arsenic at different levels ranging from 10-500 parts per billion (upto 10 ppb is the acceptable WHO guideline value). About 3% (465) samples were in the 50-500 ppb range and these were mostly in Sakrand Taluka where 99.6% of samples were from hand pumps. In all 4,602 samples were collected from 12 Union Councils of Taluka Sakrand. The survey revealed that

³ "Facts and Figures Pakistan 2002," Ministry of Education, GoP. Available: <http://www.moe.gov.pk>.

⁴ SPO, "District Profile Nawabshah". (n.d.) The brief profile consists of information from secondary data. As the Report quotes the draft Census 2005-2006 one can presume it was put together in 2006.

arsenic was found in water pumped from a depth of 50-100 ft and that most of the water sources were installed in the last decade. One water filtration plant was installed in a school in Mari Jalbani after the survey.

Table 4. Presence of Arsenic in District Nawabshah

Taluka	00	10	25 ppb	50 ppb	100 ppb	500 ppb	Total
Nawabshah							
1. Nawabshah	7,899	210	54	41	2	1	8,207
2. Sakrand	3,901	206	222	163	107	3	4,602
3. Daulatpur	3,618	221	94	77	50	21	4,081
Total	15,418	637	370	281	159	25	16,890
%	91.28	3.77	2.19	1.66	0.94	0.15	100.00

Source: SAFWCO, "Arsenic Contamination in Drinking Water in Sindh Province of Pakistan." 2004

The Thatta District is also very poor in terms of the indicator of piped water, which is available to only about 14% of the housing units. About 13% of rural households have hand pumps inside the housing units, while 16% use outside ponds for fetching water and 6% of housing units use dug wells.⁵ Not much information on Sanghar District potable water could be found

2.3. On-going Development Initiatives

While the link between the Millennium Development Goals, the Medium-Term Development Framework, national policies and plans, and the Public Sector Development Plans / Annual Plans are quite clear, this is less apparent in the Annual Development Plans at the provincial level and even less so at the district level, with the exception of foreign project assistance.

GoP clearly states that the MTDf (2005-10) has given priority to the Environment Sector with an outlay of Rs. 28.3 billion. The allocations have been increasing every year from 743.0 million in 2004-05, to a four-fold increase to Rs. 3,075.0 million during 2005-06, to Rs. 5,756.0 million in 2006-07. Such figures are not easily extrapolated for the Sindh ADP 2006-07 though a figure of Rs.1 billion for the environment sector has been cited.⁶

NRM-related projects are funded through the PSDP, the Sindh ADP and through foreign assisted funding. There are some national or provincial NRM-related projects in Sindh such as the World Bank-funded On-Farm Water Management or the Clean Drinking Water for All Project. The drinking water project is aimed at installing one water purification plant in each UC by end 2007 at an overall cost of Rs. 8.0 billion. In its first year, it was implemented by the Federal EPA; in October/November 2006, it was shifted to the Ministry of Industries, Production and Special Initiatives.

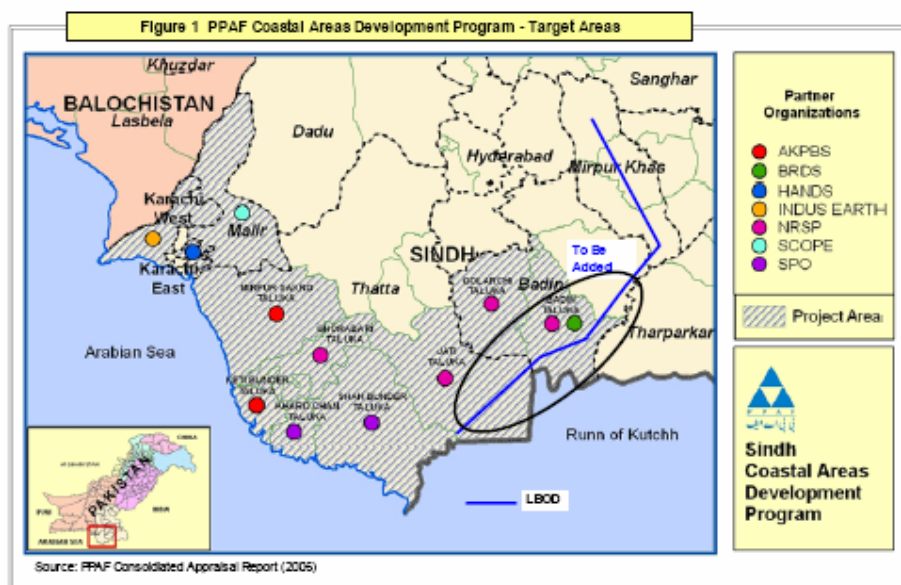
There is also the ADB-funded 7-year Sindh Rural Support Project 2003–09 under the Local Government Department. The Project will reduce poverty in the canal-irrigated areas of Badin, Mirpurkhas, Sanghar and Thatta districts in southern Sindh through increasing empowerment and improving governance, improving access of the rural poor to public services, transferring technology for improved livelihoods, and providing essential infrastructure. The Project will focus on (i) tenants and agricultural labourers, (ii) marginal owners-cum tenants, and (iii) small village-based artisans. One 'lead' NGO per district will

⁵ Figures based on the 1998 Housing Census in World Bank study, "Socioeconomic Study and proposal for Livelihood Improvements: Badin and Thatta Districts, Sindh, Pakistan." Mimeo. 2005. p.16

⁶ Dawn, editorial, June 17, 2006.

be selected to support the CBOs in their community interventions. HANDS and NRSP were mentioned among the possible choices of NGOs.

The Bank developed Sindh Coastal Areas Development Program (Phase I: 2006-2008, US\$ 6 million) to be implemented by the Bank-funded Pakistan Poverty Alleviation Fund is a significant programme in the coastal area. PPAF's partners NGOs include, AKPBS, BRDS, HANDS, Indus Earth, NRSP, SCOPE and SPO. It will cover Keti Bunder Taluka among others. Phase II will be for a period of three years (2008-2011) with planned funding of US\$12 million.



There are a number of other *province wide projects* operating or approved in the three districts (Nawabshah, Sanghar and Thatta). These include:

- The National Programme of Improvement of 29,000 Watercourses in Sindh (2004-2008)
- The Indus Dairy Development Project in Sindh (ADP, approved with PC-1 under revision);
- Training of Rural Women for Increasing Livestock Production & Conversion into By-products in each Taluka (ADP, approved, Rs 35.247 million);
- Control of Ecto and Ecto Parasites in Livestock (ADP, Rs. 39.999 million);
- Establishment of Research and Breeding Farm of Pateri Goat Breed (unapproved, Rs. 95 million);
- The Awareness of Farmers through Transfer of Appropriate Technology regarding Livestock Nutrition, Breeding, Management, Disease Control and marketing.
- Phase II Crop Maximization Programme, 2006-07 to 2011-12 (PSDP, total Rs. 500 million)
- The Decentralized Elementary Education Project and the USAID Education Sector Reform Assistance;
- The Women's Health Project (ADP, funded by ADB);
- The National Programme for Family Planning and Health Care (PSDP funded);
- The Sindh Devolved Social Services Program;

A sector-wise list of area specific programmes in the three districts is in Box 1 below.

A number of them have provisions for involving NGOs in implementation, and many projects have an infrastructural focus.

Box 1: Major Development Projects by IFAP Districts

District	Projects
Nawabshah	<p><u>Forest:</u></p> <ol style="list-style-type: none"> 1. The 5 year Afforestation of New Area and Rehabilitation of Existing Irrigation Plantation (2003-2007) 2. The Afforestation in Riverine Forests through Participatory Forestry 3. Combating Desertification and Conservation of Riverine Forests of Sindh <p><u>Agriculture:</u></p> <ol style="list-style-type: none"> 1. The National IPM Project (PSDP-funded, Rs. 197.433 million)⁷ 2. The National Programme of Improvement of 29,000 Watercourses in Sindh (2004-2008) 3. Inclusion of Malhi Training Course at ATI Sakrand for Horticulture Development (2006-2007) 4. Phase II Crop Maximization Programme, 2006-07 to 2011-12 (PSDP, total Rs. 500 million) <p><u>Livestock:</u></p> <ol style="list-style-type: none"> 1. Indus Dairy Development Project in Sindh 2. Training of Rural Women for Increasing Livestock Production & Conversion into By-Products for each Taluka 3. The Awareness of Farmers through Transfer of Appropriate Technology regarding Livestock Nutrition, Breeding, Management, Disease Control and marketing.
Sanghar	<p><u>Fisheries:</u></p> <ol style="list-style-type: none"> 1. Establishment of Carp Fish Hatchery <p><u>Irrigation: (Project Planned)</u></p> <ol style="list-style-type: none"> 1. Earth Work and Stone Pitching along Chotiari Reservoir 2. Installation of 100 Tubewells of Saline Water (Chotiari) 3. Makhi-Farash Link Canal Project to Remodel Existing Channels 4. National Programme for Improvement of 29,000 Watercourses in Sindh (2004-2008) <p><u>Health:</u></p> <ol style="list-style-type: none"> 1. Women's Health Project

⁷ The DDO, Agriculture, Nawabshah mentioned the FAO-EU IPM Program for Cotton in Asia that ran from 2001-04 with WWF Pakistan as a public-private partnership in IPM-Farmers Field Schools. FFS are accepted in Sindh and Punjab as dominant interface between government and farmers for filling the need that regular extension had not been able to satisfy. While the programme ended the Sindh Agriculture Development Organization (SADO) was formed in 2005 to work as an IPM network of all district and village organizations in Sindh.

	2. National Programme for Family Planning and Health Care (LHWS Programme)
Thatta	<p><u>Coastal Development Authority:</u></p> <ol style="list-style-type: none"> 1. Rehabilitation and Propagation of Drought Affected Coastal Mangroves of Thatta District (2003-2007) in Chan Creek 2. Conservation and Rehabilitation of Indus Delta Mangroves for Sustainable Management (2005-2007) in Buri and Turshian Creeks. 3. Indus Delta Mangroves Phase II (FY2003-FY2007, ADP, total cost Rs. 35.20 million) in Prar Creek in Keti Bunder. 4. Coastal Area Development Program (CADP) of World Bank to be implemented by PPAF 5. Improvement of Livestock in the Coastal Areas of Thatta and Badin FY2003-FY2007 (Rs. 39.990 million) <p><u>Irrigation:</u></p> <ol style="list-style-type: none"> 1. Electrification of Four Coastal Settlements through Wind-Solar Hybrid Power Generation System in District Thatta (2 in Keti Bunder; 2 in Shah Bunder) FY2005-FY2006 <p><u>Urban water supply:</u></p> <ol style="list-style-type: none"> 1. Upgrading Kinjhar Lake System (for improved water supply to Karachi) <p><u>Fisheries:</u></p> <ol style="list-style-type: none"> 1. Introduction of Integrated Fish Farming, (ending 2007) including Livestock-Fish, Duck-Fish, Poultry-fish and Crop Fish Farming 2. Improvement and Restoration of Lake Ecosystem (ending 2007) 3. Control of Eutrophication and Vegetation in Keenjhar Lake (ending 2007) 4. Establishment of Prawn Hatchery, Disease Diagnostic Centre and Research Unit (under review) in Chilya. 5. Introduction of Modern Technology for the Welfare of Fisherman Community of Keenjhar Lake 6. Marine Fisheries Surveillance in the Coastal Areas of Sindh (2003-2007) 7. Pen culture Demonstration in the Coastal Creeks and Backwaters of Sindh (2003-2005) 8. Aquaculture Development in the Coastal Areas of Sindh FY2003-FY2007 (Rs. 32.958 million)-research study

Source: Various official documents.

2.4. NGOs Working in IFAP Districts

Most of the more prominent NGOs in the three districts appear to be involved in health and education. There seem to be no environment-related NGOs in Nawabshah. SPO is the major NGO working in the Nawabshah District and has led 40 CBOs through 2-year DPM training. It is now supporting the Nawabshah Social Development Coalition (coalition of CBOs) in agriculture-related work.

WWF – Pakistan: Indus for All Programme

There are a number of NGOs operating in Sanghar but only two in the environment sector: Sustainable Development Foundation (SDF) and Sindh Agricultural & Forestry Workers Coordination Organisation (SAFWCO). Pakistan Fisher Folk Forum (PFFF) also has a chapter here. Shirkat Gah has worked here in the past on the issue of Chotiari Reservoir and networks with local organisations. There are several NGOs in the health sector according to the Health Department. Among the more prominent ones are: Marie Stopes Society and HANDS.

NGOs working in Thatta District range from relief and rehabilitation, social welfare, livelihoods improvement, development of community infrastructure, provision of micro-finance, to advocacy and awareness raising. It does seem that to work in Thatta District the main stakeholders will be the NGOs funded either through the WB CADP programme and/or the ADB Sindh Coastal Community Development Project. Some of the key agencies here include the NRSP, PPAF, Aga Khan Planning and Building Services (AKPBS), IUCN, WWF, SPO and Pakistan Fisherfolk Forum. Given below is a comprehensive list of major NGOs (Box 2). There are a number of smaller organisations also working in the districts.

Some larger organisations working in Sindh may not be operating in the three districts but work on themes that would be relevant to IFAP e.g. Indus Earth, a potential partner in CADP works in coastal areas on environment, potable water supply, wind and solar energy. Shirkat Gah’s work in the coastal areas has been with fishing communities on rehabilitation of mangroves, fuel saving stoves, mobilisation of women, and on advocacy issues (deep sea fishing, illegal nets, sale of islands to developers, etc.). Shirkat Gah has worked in the past in Chotiari with local CBOs and is presently working in other districts of Sindh on women’s legal rights and reproductive health and rights. SCOPE works on water conservation; Indus Resource Centre on female education; etc., etc.

Box 2. Major NGOs working in IFAP Districts

District	NGOs
Nawabshah	<ol style="list-style-type: none">1. Sindh Health and Education Development Society (SHED)2. Rotary Club3. Marie Stopes Society,4. HANDS5. VWA6. National Rural Support Programme (NRSP)7. Strengthening Participatory Organization (SPO)
Sanghar	<ol style="list-style-type: none">1. Sustainable Development Foundation2. Sindh Agricultural & Forestry Workers Coordinating Organization (SAFWCO)3. Pakistan Fisherfolk Forum4. Marie Stopes Society5. SEDA6. Women Welfare Association (WWA)7. Thardeep8. Shirkat Gah

District	NGOs
Thatta	<ol style="list-style-type: none"> 1. National Rural Support Program (NRSP), 2. Aga Khan Planning and Building Services 3. IUCN 4. WWF 5. Strengthening Participatory Organization (SPO) 6. HANDS 7. Pakistan Fisherfolk Forum 8. Adventure Foundation of Pakistan 9. Indus Earth 10. SCOPE

3. Findings from the Field

Altogether 22 villages in the four IFAP sites were visited (See Box 3 below). The participatory analysis was carried out with men and women ensuring the inclusion of different age, caste/ethnic and professional groups to assess the status of the various assets/capitals (natural, produced, social/political) in each site and thereby determine the:

- key natural resources that people’s livelihoods are dependent upon,
- threats and sources of threats to natural resources,
- basic means and levels of income of men and women,
- available and operational services and institutions,
- the nature of social/political capital available to people, and
- their risks and vulnerabilities

Box 3: IFAP Sites and Villages by District

Pai Forest - District Nawabshah
<ol style="list-style-type: none"> 1. Village Nangar Chandio 2. Village Jafar Jamali 3. Village Mari Jalbani
Chotiari Reservoir - District Sanghar
<ol style="list-style-type: none"> 1. Village Pholel 2. Village Padrio 3. Village Aud 4. Dubi-Khamiso Gaho 5. Village Haji Ghulam Hussain Leghari
Keenjhar Lake - District Thatta
1. Jhumpir
2. Sonehri
3. Haji Ali Bux Manchari
4. Haji Jafer Hillaya
5. Shaukat Gandhro
6. Abdullah Gandhro Khanbo
7. Daulatpur

Keti Bundar - District Thatta
1. Keti Bundar
2. Hamza Dablo (Kharion)
3. Yousuf Dablo
4. Siddique Dablo
5. Goth Mohammad Lakhio
6. Meero Dablo
7. Ayub Dablo

3.1. Pai Forest

3.1.1 Background ⁸

On February 12, 1883, under Government Notification No. 1337, an area of 5,982 acres in Dehs 18-Sakrand (456.60 ha), Morio Lakho (260.30 ha), 6-Marvi (364 ha), Tali (1,306.50 ha) and 25-Butho (33.48 ha) of Taluka Sakrand were declared 'reserved' for forests. Of the area notified as a reserve forest of 5,982 acres (see Map 1):

- 1,154.40 acres was transferred to the Agriculture Department in 1959.
- 140 acres was transferred to the Pakistan Army in 1992.
- 5 acres was used by the National Highway to construct the Sakrand Bypass.

This has left 4,726.60 acres under the control of the Forest Department. Under the ADB-funded 10-year Sindh Forestry Development Project 1991-2002, 1,240 acres were replanted in Pai. Currently 229 acres are under encroachment: 178 acres forcibly encroached, 35 acres under a boundary dispute, 16 acres under illegal allotment. Hence of the original 5,982 acres, only 75% of the land is now left under the Forest Department's *active* management.

Pai was sanctioned 30 cusecs of irrigation water from the Rahib Shah Minor canal, sufficient to water 2,000 acres: 10 cusec from W.C. IL, 15 from W.C. IIL and 5 from W.C. IIIL. This allowed an irrigated plantation to be maintained supplemented by canal water for 2 months in the agricultural off-season period. However, in the last 5 years, both the sanctioned supply and the off-season water are not available as it is being drawn off by influential locals for agriculture. The forest is now dependant on tube-well water through 12 electrified tube-wells. Pai is staffed by two Range Forest Officers, two Foresters and four guards.

Pai Forest was officially declared a game reserve in 1972, and is famous as a hunting ground for black and grey partridge (*titter*). The current situation is that a special hunting license has to be sought from the Conservator, Wildlife at Karachi and approved by the Minister for Forests and Wildlife. The fee is Rs. 1,000 for 1 gun under which 10 partridge can be shot; however, there is no real accountability for this. The Game Reserve is managed by 1 Game Inspector and 4 Game Watchers.

⁸ Forest Department, n.d. "Brief for Secretary to Government of Sindh for Forest and Wildlife Department Regarding Pai Irrigated Plantation."

3.2.2. Local People’s Analysis

The three villages (Nangar Chandio, Jaffar Jamali and Mari Jalbani) lying close to Pai Forest and included in the assessment fall in three different Union Councils of Taluka Sakrand.

Village Nangar Chandio lies in the 32 km strip of land between Pai forest and Indus River at a distance of 16 km from Sakrand. It is one km from Pai forest and about 5 km from the river. Nangar Chandio is made up of 60-70 households. The dominant tribe in the village is Chandio though there are other groups/tribes (Oudhes, Khumbar, etc.) also living there but are fewer in number.

Village Jaffar Jamali is a relatively new (established 11 years ago) and small village with about 40 households and located on either side of the National Highway and closer to Sakrand town (8 km). It is one km away from the Pai forest. As indicated by its name Jamali is the dominant tribe in the village.

Village Mari Jablani, is a 200-250 year old village and the largest of the three villages with over 1000 households. It is also farthest from Sakrand town (16-20 km). The dominant tribe/ethnic group is Jablani, the others being Summa and Mallah. The three big neighbourhoods of the village are inhabited by these dominant tribes. Among other tribes/*biraderis* are Sehr, Wada, Kanbhar and Raho.

Table 6: Village Profile – Pai Forest (Findings from the field)

Village	Household	Pop.	School				Electri	Health		Road	Water
			Male		Female			Pub	Pvt.		
			P / M	High	P / M	High					
Nangar Chandio	65	800	1*/-	-	1*/-	-	Yes		1	Yes	65 Hand pumps
J. Jamali	40	500	1 / -	-	-	-	Yes	-	-	Yes	10-12 Hand pumps
M. Jalbani	1140	8000	2 / -	1	- / 1*		Yes	1		Yes	1140 Hand pumps

* Not functional
 Pop. Population
 P / M Primary/Middle
 Pub. Public
 Pvt. Private

Natural Capital: In all three villages **water** was the main natural resource that local people’s livelihoods depended upon historically and was mentioned as a capital that used to be available free of cost and now expensive and in decline but still very critical. According to local people water from the Indus and the fertile soil it brought were the backbone of their livelihoods. However with the building of the “*bacaho bund*” near village Nagar Chandio the nutrient rich flood waters of the River Indus no longer reach the lands in the area. They mentioned the flood of 1993 (the last one experienced) as the beginning of the decline in the volume of water. The residents of Jaffar Jamali dated the scarcity of water to the last 10 years i.e. to the time they came and settled here about 11 years ago. While those of Mari Jalbani dated the shortage to 16 years or so when the Rihab canal that brought water to this village dried up, located at the tail end of the canal made the situation worse for the villages. In their view the stoppage of water in natural tributaries coming from Punjab combined with the illegal occupation of land by two powerful persons, Syed Shabbir Shah and Bashir Shahid, and diverting water to their banana farms (1000

acres) were responsible for current shortages. On the other side other influential landlords have occupied the land near the mouth of the Rihab Canal and use up the water.

Villagers from Mari Jalbani and Nangar Chandio spoke of the time when the flood water would come to the bund about 5 km from the river and inundate 2 km of the “survey lands” as well as the forest on its banks, and create ponds of water in the *katcha* area. One of the biggest lakes so formed was the Khauf Jheel. Similarly the water from Rihab Canal would accumulate in Jhakli Jheel. “*At that time there was greenery all round and now its only dust.*” The area was green and its people were prosperous. The Mallah (fishing) community of Mari Jalbani used to fish in the ponds and are now forced to abandon their ancestral occupation. In Jaffar Jamali water shortage has affected pastures and grazing lands and poses a major a threat to cattle farming, the principal occupation of local people. Water in the area has to be drawn from tube wells and a free commodity now involves costs of installing tube wells and then running them on electricity or diesel. According to the locals 300 tube wells have been installed to tap sub-soil water [the figure needs to be cross checked]. With the water table falling, from 10 feet to below 80 feet according to Nangar Chandio residents, these have often to be re-bored. The rains are irregular and usually scarce but sometimes untimely, destroying crops.

Forest: According to villagers (male and female) of Nangar Chandio, Pai and *katcha* forests have been the next most significant natural asset. However the forests and their resources have drastically shrunk. The *katcha* forest that used to be south of the village is now substantially depleted principally because of lack of water. The residents of Mari Jalbani and Nangar Chandio said that the *katcha* riverine forests used to have *keekar*, *lai*, *karar*, *tali*, *kamoon*, etc. apart from wood for furniture they provided fire wood, fodder, *lakh* (lacquer) and honey, all free of cost. The latter was available in huge quantities and was sold by locals. Even now villagers manage to forage for some fuel wood and fodder from trees according to women of Mari Jalbani but have to purchase firewood at Rs. 50-100 a *maund* which usually lasts for about a fortnight.

In their view Pai forest, called “Government farms” by the Jalbanis, used to provide fuel and fodder to their community. Women said that the stronger wood in Pai forest was good for making furniture and doors, the wood of *beri*, *kundi* and *devi* as fire wood. The forest reportedly also had wild herbs like *kanni booti* (used for as painkiller), *aryal* (for bone fractures), *kamo* (for hair care), *charya dhatoora* (for healing early wounds), and *ik* (for treating burns and toothache). These medical herbs are now no longer abundantly found and are not accessible due to restrictions on entry. Entry of the villagers is possible if they pay the officials and Rangers Rs.1000-5000 to cut wood or collect honey. People from Jaffar Jamali shared that besides the bribes there was the fear of being beaten or taking away of their crops. Pai Forest used to be irrigated by the Rihab branch canal but now is dependent on tube wells and has just enough water to maintain the rest house and surrounding garden which are used by VIPs for hunting parties. Local people felt that the Forest Department officials, responsible for the maintenance and protection of the Forest, keep the villagers out and collude with influential people in illegal cutting and resultant depletion. Women liked *keekar* for its usefulness as fodder and lamented the loss of honey. They said that *devi* and *bed-i-mushk* introduced by the government “*are of no use to us.*”

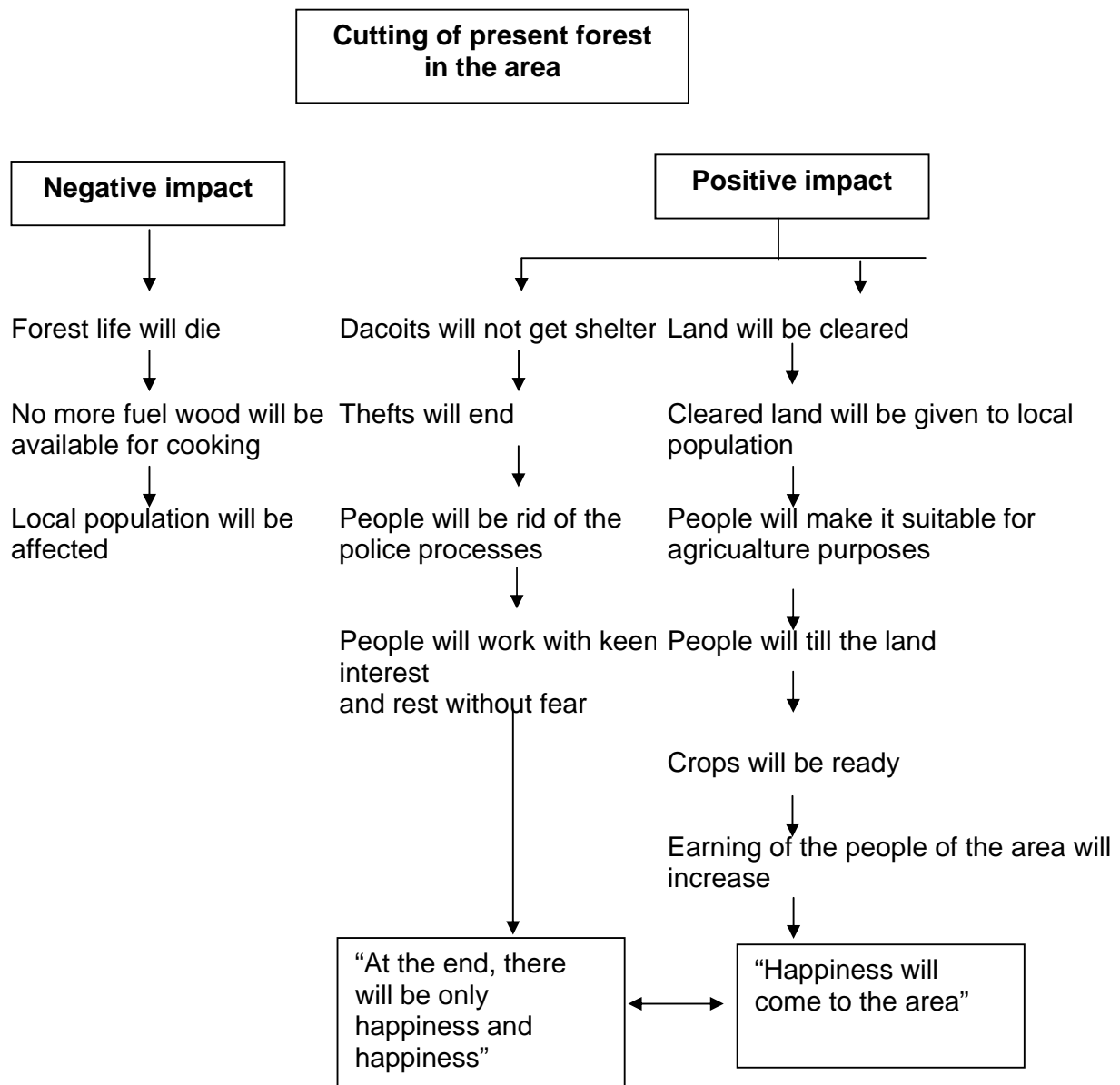
The residents of Jaffar Jamali were in fact of the opinion that Pai Forest was only beneficial to influential people and officials of the Forest Department (though some felt that locals also harmed it by using its resources), was a hideout for dacoits that resulted in exposing people to police harassment. Since some of the forest land is under litigation

and some has been taken on lease by the local influential landlords for cultivation, the local poor were of the opinion that the forest land ought to be cleared and distributed among the poor. They also did an impact assessment of clearing the Forest (Fig. 1). On the other hand residents of Mari Jalbani were not in favour of clearing the forest or distribution of land which in their view would go into the hands of the powerful Jamali landlords. They felt the Forest could be re-generated if water supply was restored.

Fish, as a natural resource was mentioned by people of Mari Jalbani where there is a sizable community of Mallahs. It is however a dwindling resource as a result of water scarcity and the consequential shrinking and drying of wetlands of the area. Fishing was the main source of earning for the Mallah community up to 13 years ago; its members now work in construction work and other menial labour. Now with fewer fish there is conflict over contracts; one such feud a month ago resulted in 22 people being wounded.

Produced Capital: Nangar Chandio has tube wells for irrigation and hand pumps in all homes, a metalled road, electricity, a mosque, one flour mill, two government primary schools one each for girls and boys (both non-functional), a private clinic, three shops and an old well. Livestock, (buffaloes, cows and goats) that used to be the mainstay of people's livelihoods is still a secondary source of livelihood (agriculture is the primary occupation). Buffaloes are preferred because of their better market value. Goats are second in the order of preference as they reproduce twice a year. Children take the cattle for grazing and women look after them as well as milk and milk products, both are mainly for domestic use. Collectively the village owns 260 buffaloes, 100 cows, 200 goats and 10 oxen.

Fig. 1. Impact Diagram Pai-Forest: Jaffar Jamali (males)



Jaffar Jamali comprises of a few cemented houses, some semi-*pucca* and some mud huts. It has electricity, a mosque, a government boy’s primary school and 10-12 hand pumps (one hand pump for four households) as its produced capital. The National Highway running through Village Jaffar Jamali makes it accessible from outside. The village has no healthcare facility. However livestock, mainly 14-15 buffaloes and goats, is the principal produced capital on which their livelihood depends. Women look after the livestock. Buffaloes are fed by fodder that is grown by local people and are not free grazed.

Mari Jalbani, the largest of the three villages has *pucca* and semi-*pucca* houses and a few huts. There is a small market in the centre of the village with 10-12 shops. It has a mosque, a BHU, a police station, primary schools for girls and boys, a boy’s high school

and a girl's middle school that remains closed. The primary school here was established as far back as 1883. The roads are metalled and there is electricity in the village. As mentioned earlier there are 300 tube wells in the area and hand pumps in all households. People are also aware that there is arsenic in water which otherwise is sweet. The *bund* and canals now seem redundant. There is a Forest rest house that is in the custody of villagers and an old bungalow of the irrigation department constructed to keep an eye on River Indus during storms. Livestock is important here too however due to declining water, forests, and pastures, livestock farming has suffered. Because of the reduction in livestock numbers there has been a shift from livestock farming to agriculture as also from cows to goats that are easier to feed and care and reproduce rapidly (twice a year). Where once each family could keep 500-600 cows, 100-150 buffaloes and an equal number of goats there are now a total of 1000 each of cows and buffaloes in the village and 5000 goats and sheep.

Social Capital: Social capital basically is defined by the skill/educational levels of people and/or their political or social standing. Nangar Chandio has among its male population one graduate, three intermediate and four matric pass individuals. Only one female has completed intermediate level education. Given the fact that the two primary schools in the village are shut this is not surprising. The marketable skill in the village is with women – that of making *rallis*, stitching and embroidery. The formal institution that people have to directly contend with is the Forest Department and its officials. The village itself is quite cohesive as the majority belongs to the same *biraderi* which prevents internal conflicts. Local landlords who have political connections wield the most power. None of the NGOs working in the District has come to it.

In Jaffar Jamali the Jamali *biraderi* is seen as the most important capital by the villagers. Its leader is affiliated with the Pakistan People's Party and politically influential. While the majority of the village is illiterate and female education is not approved of there are 10 intermediate, 12 matriculate and 50 primary educated individuals. The village also has three government servants. Women here too are proficient in *ralli* making, stitching and embroidery.

Mari Jalbani, the largest of the three villages boasts of 10 post graduate males and 2 post graduate females besides 20 graduate men and 5 graduate women. There are also 40 men and 10 women who have passed intermediate; and 400 boys and 50 girls who have done their matriculation. The reason for low literacy was given as poverty. One young man has succeeded in getting a job as lecturer (Computer Science) and was going abroad on scholarship.

The village takes pride in its unity. Internal differences take a back seat in face of disputes with outsiders. Most disputes among them are over land. Conflicts are resolved through mediation of Muneer Shah, a local influential. Major decisions are taken by Bashir Shah. If the dispute is intense then the issue is solved through the Quran. The people are politically aware and affiliated with the People's Party and the majority vote for it. Disputes among women are of minor nature and resolved by them.

Males reported two social welfare organisations working in the village (women did not know their names). One was Village Welfare Organisation (VWO) and another Sufi Shah Inayat Development Organisation. Both are not very active. SAFWCO an NGO has installed an arsenic removal plant in the boy's primary school in collaboration with the district government.

Livelihoods/Income: The depletion of natural resources particularly the availability of water, that used to sustain people's livelihoods, has resulted in major changes in people's occupations and livelihood patterns. That the newer sources of income are inadequate is evident from widespread indebtedness of almost all the people in these villages.

In Nangar Chandio, traditionally dependent on livestock and herding, there has been a shift to agriculture as sharecroppers and farm labour. Currently 75% of the people rely on agriculture. There is seasonal variation in income with greater earnings during August-November from summer cash crops of cotton and vegetable harvested between these months. This is the period when they make their principal earning. December to January, are acute water shortage months and the winter crops of wheat, maize and onions are inadequate to meet livelihood needs. For sharecroppers and small farmers agriculture entails higher levels of expenditure as input costs have gone up. The use of chemicals and cost of seeds means that the farmers rely on loans usually from the local money lender at 25% interest rate (the big landlords take bank loans).. Total household expenditures were said to range from Rs. 2000-10000 a month and the income fell far short of requisite expenses. Livestock is local people's insurance in lean times as these can be sold. About 15% of the population are cattle herders.

In Jaffar Jamali, farming is not the main source of livelihood and only 8 households are engaged in it, livestock (mainly buffaloes and goats) being the principal occupation here. However during the cotton season all men work on the lands of the local powerful landlord who has leased land from Pai Forest for cultivation -- as wage labourers and women as cotton pickers.

About 15% of the people go to cities in search of construction or other work on daily wage basis. According to men those involved in agriculture related work earn about Rs.20,000-30,000 biannually. Livestock is kept on a sharing basis. These are owned by the Magsis (a tribe/caste) and looked after by villagers. In the case of buffaloes (14-15 in the village) there is an equal share in the milk which they use as well as sell. For goats the caretaker gets one kid each time the goat gives birth (which is twice a year). The dung is made into cakes and used as fuel. Livestock provides cash income not only through the sale of milk but also meat and the animals. The share if a buffalo is sold ranges between Rs.35,000-50,000.

In Mari Jalbani according to the assessment of local people only 10-15% of the Jalbani tribe were prosperous the rest were poor (in the observation of the field team however people generally appeared to be comparatively more prosperous than those of Jaffar Jamali and Nangar Chandio). It was said that about 90% of the people were indebted. Currently the majority of the population is engaged in agriculture, others are in livestock and the Mallah who have been economically completely displaced because of the drying up of water bodies work as wage labourers. Up until 20-30 years ago cattle farming used to be the main source of income of almost 75% of the population (Fig. 2) However due to declining water, forests, and pastures, livestock farming has suffered with the composition of animals undergoing change. Where one family could keep several hundred cows, 100-150 buffaloes and an equal number of goats now they prefer to keep goats as it is difficult to feed cows and buffaloes. The goats are less costly to keep and reproduce frequently. With this switch the number of cows and buffaloes in the village has come down to 1000 each and that of goats and sheep gone up to 5000. The production of milk and ghee has therefore also declined.

While women's unpaid work is taken for granted (collecting fuel, fodder, getting and storing water, cooking, etc.) women's labour and productive activities are very critical to

household incomes in all three villages. Women work in the fields especially at the time of harvesting and make *rallis*, as well as sew and embroider to make ends meet in lean periods. They charge from Rs.200-1000 for a *ralli* that takes up to a month to make in both Nangar Chandio and Jaffar Jamali. The rates are a little lower in Mari Jalbani at Rs. 200-500. In Nangar Chandio and Mari Jalbani women also stitch clothes at Rs.50 per suit and when they manage to collect honey they sell it for Rs.400-500 a bottle. Milk and *ghee* are sold when cash is needed. Embroidery by women in Jaffar Jamali fetches between Rs.100-500 per piece and *parandas* Rs.100 a piece in Mari Jalbani. Picking cotton is a major source of earning for women .Rs.100/maund is paid for cotton picking and a women can pick up to 1-2 maunds in a day (between 8.00 am and 6.00 pm). Rs 7/kg is paid for cutting *bajra*. In addition, Mari Jalbani being a larger village with a BHU has three or four Lady Health Workers (LHWs) who receive Rs.1800/month. A few women here have been enterprising and have opened shops in their homes and earn Rs.30-50 daily.

Table 7. Women’s Income and Sources: Pai Forest

	Nangar Chandio	Mari Jalbani	Jaffar Jamali
Plaits (Paranda)*		Rs.100 per piece	
Stitching	Rs. 50 per suit	Rs. 50-60 per suit	
Making Ralli*	Rs.1000	Rs.500-2000	Rs.200-1000
Bottle of Honey	Rs.400-500		
Embroidery	Rs.100 per suit		Rs.100-500
Cutting Bajra (season)		Rs.7/- kg	
Cotton picking (seasonal)		Rs.100/- Maund	Rs.100/- Maund
Charpai		Rs.100/- per charpai	
Govt. employee**		Rs.1800	
Milk	Irregular	Irregular	Irregular

Notes: * These are sale prices and do not include costs incurred in raw material

** LHW

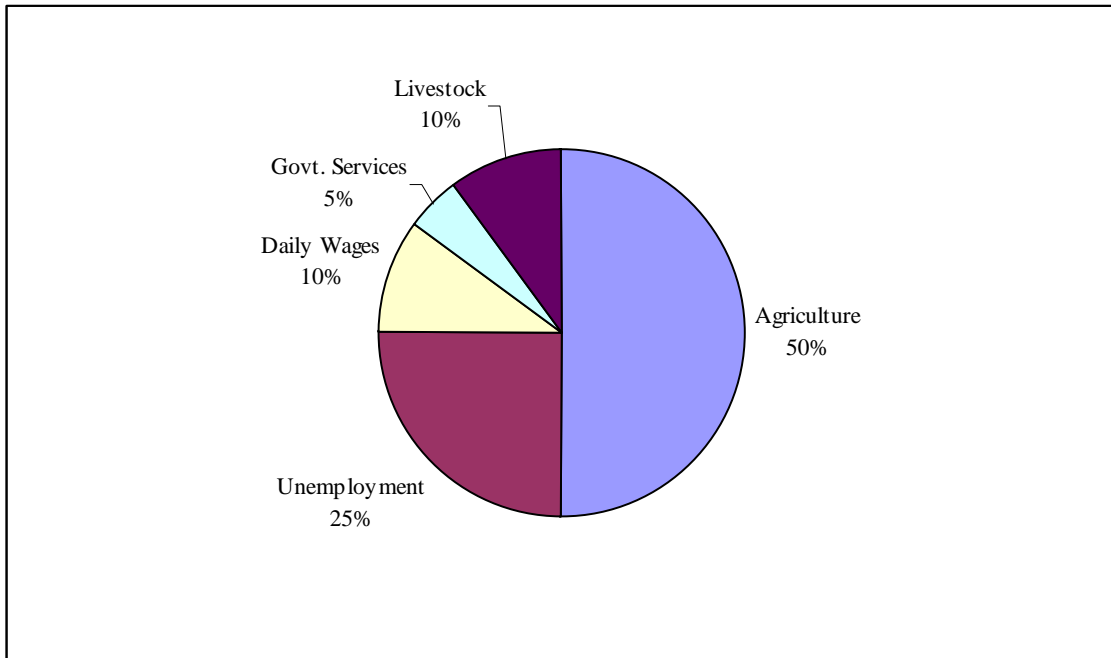
Conclusions: The PRA in the three villages reveals that:

- The reduction of water resources in the area has changed both the natural resource base and the livelihood patterns of the people, particularly the poor. From being a livestock and cattle herding area it now has shifted to agriculture. Those engaged in fishing in the past can no longer pursue the profession and rely on menial labour for their living.
- The Pai Forest has shrunk. Its wood, medicinal herbs and honey have declined drastically. It no longer serves the needs of the local people and while there is still dependence on it, there is a price to be paid (bribes, fewer livestock, purchase of fuel wood, growing of fodder). There is litigation over ownership of some of the Forest land and the interest of one of the villages is in clearing the Forest altogether.
- The villages are poor in infrastructure. While there is electricity and road access, educational and health facilities are abysmal. Drinking water is available through hand pumps but there is arsenic in the water at shallow depths (upto 150 ft).
- Incomes are irregular and seasonal from multiple sources and occupations and inadequate as high indebtedness suggests.
- Of the various development programmes in the District (See Box 1) none has reached the three villages except for the water treatment plant in a school in Mari Jalbani. The plant is not sufficient to meet the drinking needs of the whole village.
- Of the number of NGOs working in the District only one has come to this area (SAFWCO) to put up the water treatment plant.
- Women's role is significant in the total household income through craft production which however is not systematic.
- Coping mechanisms for dealing with vulnerabilities (economic or others) is taking loans, selling animals, selling milk and women's craft production.

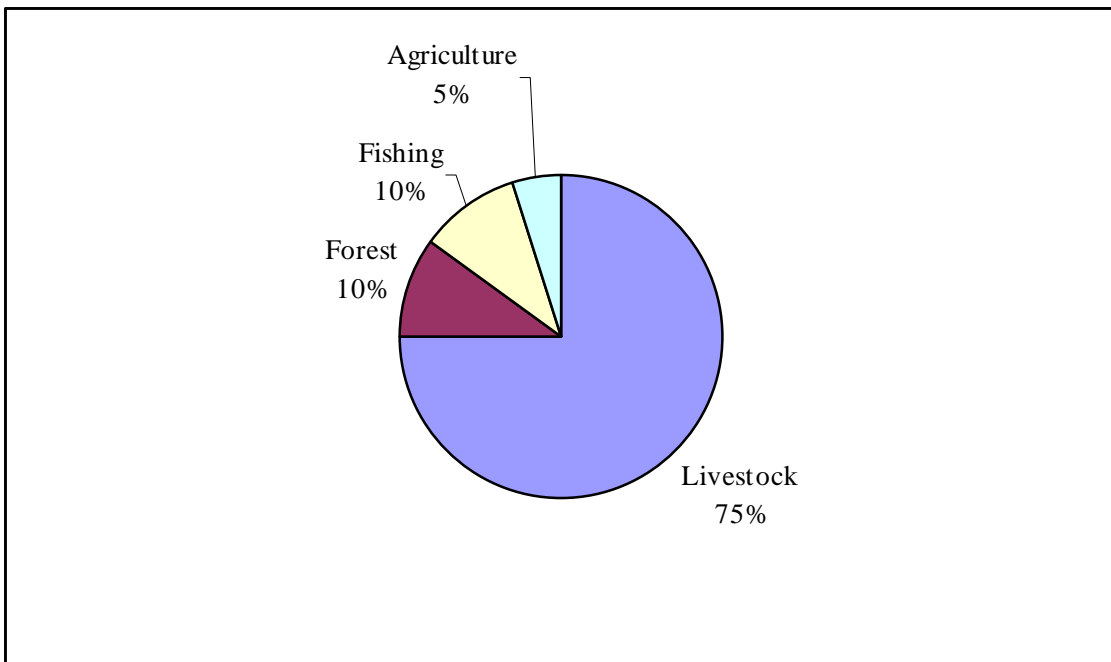
Ranking of the villages has not been easy or straight forward. A qualitative analysis based upon people's perceptions does not elicit data that can be compared easily. Below is an attempt to rank villages on variables regarding which there was comparable information.

Fig. 2: Pie Chart: Sources of Livelihoods Compared: Mari Jalbani (males)¹⁰

Current Situation



Situation 20-30 years ago



Under natural capital current “dependence” in terms of fuel, fodder and honey from Pai Forest is measured. A score of 1-5 is used for each variable with 1 standing for least dependence and 5 for maximum. Under produced capital livestock, hand pumps, schools, health facility and others are included. “Livestock” only includes buffaloes as the most expensive animal in local people’s perception and because there numbers are given, and “Others” includes other infrastructure e.g. shops, mosque, etc. Included under

¹⁰ The pie chart was the outcome of an exercise in which 35 largely poor men (30-60 year old) from different caste groups in the village analysed the change in livelihood sources over 20-30 year period.

social/political capital are educational level (above matric), women’s craft skills, presence of NGOs and the politically influential in the area. For all variables the score is 1-5. Shared hand pumps are ranked lower than hand pumps in all house holds, a non-functional school just gets one score, a high school gets the highest, etc. etc.

Box 4: Village Ranking by Capitals: Pai Forest

Villages	Dependence on Natural Capital	Produced Capital	Social Capital
Nangar Chandio Household = 65 Population = 800	Fuel 3 Honey 2 Fodder 3 } = 8	No of buffaloes HH 5 Handpumps 5 Schools 2 Health facility 3 Others 3 } = 18	Matric & above 1 NGOs 0 Politician 1 Women’s Crafts 2 } = 4
Jaffar Jamali Household = 40 Population = 500	Fuel 3 Fodder 3 } = 6	No of buffaloes HH 1 Handpumps 2 Schools 2 Health facility 0 Others 1 } = 6	Matric & above 2 NGOs 0 Politician 3 Women’s Crafts 2 } = 7
Mari Jalbani Household = 1140 Population = 8000	Fuel 1 Fodder 1 Honey 1 } = 3	No of buffaloes HH 3 Handpumps 5 Schools 5 Health facility 5 Others 5 } = 23	Matric & above 4 NGOs 2 Politician 2 Women’s crafts 2 } = 10

Score: 1 is minimum and 5 maximum for each variable

The above indicates that Mari Jalbani is the least dependent on Pai Forest, while Nangar Chandio is the most. It may be deduced from this that it is perhaps the poorest of the three villages. From the produced capital perspectives Mari Jalbani is better endowed with Nangar Chandio and Jaffar Jamali following in that order. Mari Jalbani has comparatively more opportunities in the shape of educational (male and female) and health facilities and is ahead of the others in social capital as it has about six to seven hundred matric and above individuals including women (out of an estimated population of 8000) qualified for government jobs, there are two NGOs working here and also two influential politicians. Nangar Chandio is lowest in ranking under this.

Taken together Mari Jalbani ranks the highest among the three villages as having the most produced social and produced capital and least dependence on natural resources.

Recommendations: Given that the forest cover is now a quarter less than its original area, is under litigation, the allocated water does not reach it and it is in a state of degradation its inclusion in IFAP needs to be thought through and given serious consideration. Making water available would require political intervention. The Forest Department’s role so far in protecting the forest does not inspire confidence especially in the light of allegations of its officials’ connivance in cutting of trees and the depletion of the forest. *With Jaffar Jamali small in size and not interested in the maintenance of the forest and Mari Jablani least dependent on its resources Nangar Chandio would be the logical village to select if Pai is at all included in the project.*

3.2. Chotiari Reservoir

3.2.1. Background

Chotiari Reservoir is located in Taluka Sanghar, District Sanghar at a distance of about 30-35 km north-east of Sanghar town. It occupies an area of about 18000 hectares and water storage capacity of 0.75 million acre feet (MAF). Created in a natural depression along the left bank of the Nara Canal its construction began in 1994 and was completed in 2003. The Chotiari Reservoir was designed to store the flood waters of River Indus during the flood season (June to September) and to release them as required in the winter (December to March) or early summer (April to June) season. There are depressions and *dhands* (lakes) in the area that are filled up with rain water and seepage from the Lower Nara Canal as well as the surplus water of Nara Canal. The largest *dhands* are Bakar and Makhi reaching a depth of 45 feet in places. The reservoir lands cover seven clusters of villages (*dehs*) Makhi, Haranthari, Bakar, Phuleli, Akanwari and Khadvari.

The main storage of the Reservoir has the Thar Desert on one side and is bounded by sand hills towards north, east and south-east and the Nara Canal towards the west and south. Bunds and dykes surround the reservoir: The Northern Bund (19 km long embankments), Western Bund (14 km), The Southern Bund (16km) and South Eastern Dykes (9km). Land in the vicinity of the embankments is largely waterlogged with reeds growing in it. The area is a rich breeding and nesting ground for birds and stopping place for migratory birds and is equally rich in fish.

According to the Directorate of Fisheries Sindh¹¹ the Chotiari Reservoir project was handed over to the Irrigation and Power Department, GoS in May 2005 for operation and maintenance. According to the project design fish production in the reservoir area was expected to increase from 525 tons to 4,200 tons, and cropping intensity from 118% to 148%.

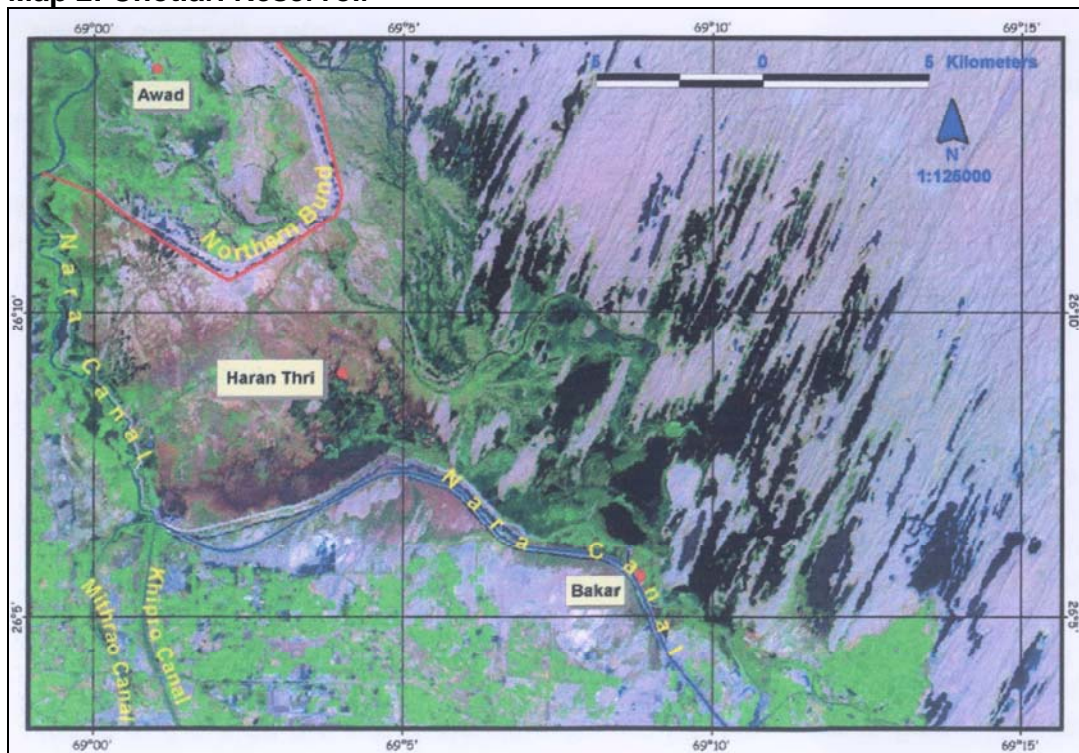
The Department estimates that about 30,000 people live in the different villages in and around the reservoir. The main landing centres are Phulel, Village A. Qadir, Pariyo Goth, Raheem Dino Tar, Seri Tar, Village A. Karim, Haji Islam Goth, Village Ali Gul, Village Pir Bux Mallah, Village M. Hayat, Tar Harnee, Tar Awadh, Wadhki and Mundh Jamrao.

There are about 800 fishing boats and about 20 long shaft motorboats. Fishing gear include cast nets, gill nets, seine nets and hook/line, which are manually operated in the reservoir. The licensing system was introduced with the following category-wise fees per annum:

- fishing license fee with nets and boats Rs. 1,500
- fishing license fee with nets but without boats Rs. 800
- helper license fee without nets and boats Rs. 375

¹¹ “Brief Note on Chotiari Reservoir, District Sanghar,” Directorate of Fisheries Sindh Inland Hyderabad, Livestock and Fisheries Department, Government of Sindh.

Map 2: Chotiari Reservoir



Source: Preliminary Environmental Baseline Study Report: Indus for All Programme Sites

However, income under this system fell to under Rs. 500,000. The Mole system was introduced in 1996 but again did not yield sufficient monetary benefit. Ultimately it was decided to introduce the contract system in Chotiari: in the year 2003-04, contracts fetched Rs. 2,050,000. The lease period was then extended for a further two years. In 2004-05, it fetched Rs 2,255,000 and in 2005-06 (up to 30.07.2006) Rs. 2,480,500 which represents 94.54 % of Sanghar District earnings from fisheries.¹²

¹² *Ibid.*

Box 5. Issues between the provincial and district governments¹³

1. Angling licenses. Before devolution, the district officer incharge issued angling licenses according to the fee fixed by the government.
2. Fish stock replenishment in natural water bodies. To date, fish seed are not released in any natural waters. However, the District Officer Fisheries has requested the Director Fisheries Sindh, Inland vide letter dated 22.8.05 for permission to do this.
3. Seed production, distribution and supply programme. To date no such programme exists, though the District Officer Fisheries has made this request for the last three years. The hatchery at Jacobabad has been shifted to Sanghar vide letter no P&D/AGRI-PO/Fish/Jacobabad/20003 dated 25.08.05.
4. District level school training programmes or trainings. There are no arrangements at the district level and all trainings are arranged through the Director Fisheries Sindh, Inland in Hyderabad through public notices. If a budget is available to the district, the DG is willing to organize a high school level training programme in the whole district.
5. Aquaculture development training is for provincial level officers only. No training is offered to district level officers.
6. Implementation of Sindh Fisheries Ordinance, 1980. This is to be implemented by the Provincial Government as most waters are under their control. However in Sanghar, this is done locally by the field staff. In the large water areas or canals, there is occasional misappropriation.

The auction system, however, is seen as a major threat to the inland fisheries of Pakistan. It is alleged that the fishing contracts are often awarded under influence and in a non-transparent manner. The local fishermen have been continuing their protest against the auction system and demanding the restoration of license system. The fishermen in Chotiari, with the assistance of the Pakistan Fisherfolk Forum have protested against the auction system.

In Taluka Sanghar, according to the SEMIS Census 2002-03, there were 646 schools with 584 in rural and 62 in urban areas. The number of closed schools was quite high at 109, with 105 in the rural areas. Total enrolment figures were 35,826 with rural figures double that of urban—24,859 versus 10,967 respectively.¹⁴

3.2.2. Local People's Analysis

In all, five villages in the Chotiari Reservoir project area were covered in the field analysis. Of these, four villages – Phulel, Padhrio, Dubi-Khamiso Gaho and Avad— are located in Union Council Shah Sikanderabad while Village Haji Ghulam Hussain Leghari is in Union Council Khadwari. All the villages are affected by the flow of water in the reservoir and many have been displaced. Given the high population growth rate recorded in the 1998 Census and a low CPR (15.1%) it is not surprising that the household sizes were found to be rather large here. It would need to be further determined whether the numbers in a household include those who may be periodically or on long term outside the village.

¹³ *Ibid.*

¹⁴ SEMIS, n.d. District Education Profile, 2002-03, Sanghar. Karachi: Education and Literacy Department, GoS. Available: <http://www.sindhedu.gov.pk/Links/semisprevious2005.asp>

1. Village Phulel dates back to 1965 and is situated at a distance of 40 km south-east of Sanghar on the bank of Phulel Lake (*dhand*) in Chotiari Reservoir project area and is surrounded by water on all sides. The access to the village is by boat. Phulel is the biggest, and in the eyes of local people, the “most beautiful village” of Chotiari. It is flanked by a big sand dune (*Bari Warotor*) on the east and Lake Phulel on the west. To the south is the Nara Canal that releases the water from the Chotiari reservoir, as well as “the beautiful” Rehri lake. Comprising of the Mallah community the village used to have 250 households but during the past six months around 40% of the households have migrated to lakes (wetlands) in Punjab. The reason for migration is the decrease in fish stock and the prevalent contracting system of the area. Presently the village has 150 households (women’s assessment of the number of households is at variance with that of the men) with an estimated high population of around 1600. The village is divided into three *mohallahs/paras* -- Hashmani, Kundani and Chandny.

2. Village Padhrio: Village Padhrio at a distance of 50-70 km from Sanghar, also located in the Chotiari project area (villagers refer to the reservoir as “dam”) near Padhrio Lake and is accessible only by boat. The village has two parts one is (Padhrio-1) where Mangria biraderi lives (10-15 houses) and at a distance of 2 km to its north is Mangrio Junejo (Padhrio-2) where the people of Juneja caste live (18 households) along with Mangrios and Hangoros. The two villages are located in the midst of dunes and *dhands*. Besides Lake Padhrio there are other *dhands* of which Kundi is a large saline *dhand* Fish farms have been established in Wanhel Wari Sim and Galao *dhands*. The villagers feel their lives have become difficult and their whole culture is under threat, as a group of men in Padhrio stated:

“The face of this place will be wiped out. If we are not here what will be the use of this dam or water; ultimately we will leave our ancestral land.”

3. Village Avadh is situated at a distance of 32 km north-west of Sanghar City with Nara Canal on its west. The Chhotiari “dam” surrounds the village on three sides i.e. south, east and north. The village and adjacent area was to come under the Chhotiari reservoir but on agitation by local people, the village was left out of the scheme. The people are scattered by choice in *goths* at some distance from each other according to their caste/tribe. The larger area has almost 450 households. The particular village where this assessment was done comprised 15 households with a population of around 300 [the figure needs to be cross checked] though the general discussion covered the whole area. Junejos, Syeds, Legharis, Muchis, Bhattis, Hangoros, live in the village. Avadh is the only village among the five with electricity.

4. Village Dubi-Khamiso Gaho is situated at a distance of 50 km north-east of Sanghar city. At the time of the visit of the field team it had 20-25 households with a population of about 200-300 people. According to the survey conducted by SDF, the village earlier was a conglomerate of 11 smaller *goths* and almost 365 households. But after the construction of Chhotiari “dam” (neither compensation given, nor a proper survey done) and the release of water many of the households migrated to safer places. At present around seven *goths* are left with an estimated 150 households. The villagers reported that the reservoir managing authority or the contractor release water suddenly without any prior notice as a result 11 people and unlimited numbers of cattle have died at different points in time.

Village Dubi-Khamiso gets inundated when water is released in Ranto canal or if the reservoir is filled and water released as happened about a month back, when it inundated standing crops over an area of 450 acres. Nobody was paid compensation. The roads for

commuting to and from the village also get submerged and people can move out only by boat. The Ranto canal flows over an area of around 20 km between Head Jamrao and Ranto and has a single bridge over it; people have to use boats to cover this distance which is not always safe because of the condition of boats. Five days before the Shirkat Gah team visited the area, two men and 4 women died when their boat capsized.

5. Village Haji Ghulam Hussain Leghari is also situated between Chotiari and the Nara Canal. Located on a mound called Sarmast ka Teela (the mound of Sarmast), it dates back to the creation of Pakistan. Till about five years ago the population of the village was quite large but due to dwindling livelihood opportunities people have migrated from this area. At present, the village has around 45-50 households comprising about 500 people who hail from Leghari, Mangwanay, Narleeja and Mallah castes. Earlier, the Mallahs lived inside the reservoir area, but after it filled up their houses were inundated and they had to move out. They are living on the right side of Nara Canal since the past six months.

Table 8: Village Profile: Chotiari Reservoir (Findings from the field)

Village	Household	Pop.	School				Electr icity	Health		Road	Water
			Male		Famale			Pub.	Pvt.		
			P / M	High	P / M	High					
Phulel	150	1800	1 / -		1 / -		-		2 dais	14 ** Hand-pumps	
Padhrio	33	300	1 / -	-	-	-	-	-	-	2 Hand-pumps	
Awadh	15	300	1 / -	1	-	-	Yes	1*	1 disp 1 dai	Yes 15 Hand-pumps	
Dubi-Khamis Gaho	20-25	200	- / -	-	-	-	-	-	-	-	1** Hand-pump
		-300									
Haji Ghulam Hussain Legh	40-50	500	1 / -	-	-	-	-	-	-	-	40-50 Hand-pumps

Note: * Closed. ** 8 handpumps in Phulel and the only one in Dubi Khamiso Gaho not working.

Natural Capital: All five villages count **water**, forest, fish, pasture and land as the most important natural capital; however there was some difference between the villages as to which of these mattered more like in Avadh where agriculture is the secondary occupation land has more importance than in other villages. People of all villages spoke nostalgically about the state of natural resources available to them before the Reservoir was built. According to villagers (men and women) in Phulel, the largest village among the ones analysed, earlier (almost 10-15 years ago) the area used to be irrigated through outlets from Nara Canal when its water was released into the three nearby lakes. During the rainy season when the water level rose the whole area would get irrigated. The people of Dubi Khamiso Gaho, a much smaller village with about 25 households, corroborated the information adding that the Ranto canal used to be a natural stream flowing from Head Jamrao and provided water in their area. The water used to be released in smaller quantities and the natural flow helped maintain fresh water supply to small lakes, pastures and forests. People would also lift water for irrigation with the “lift machine.”

In both Phulel and Dubi Khamiso construction of the reservoir brought in dramatic change. As a male group in Phulel doing a change assessment of natural resources said,

“After the construction of Chotiari dam, the quantity of water fell resulting in a great loss to the area. Plants and trees in the forest withered, pastures were destroyed and the trees and plants along the lake dried up.”

According to the residents of Dubi Khamiso the construction of the reservoir and conversion of the Ranto Canal to a discharge canal with fast flowing water ruined all the water bodies (*dhands/lakes*) from Head Jamrao to Ranto Escape. “*The pastures withered, mango orchards and standing wheat crops were destroyed.*” They further said that the increase in the level of water in the canal has resulted in water logging; after heavy rains the water does not drain out. In Phulel, villagers reported that three years after the construction of the Reservoir the level of water increased and then it was released suddenly in great quantity. As a result the forests were submerged, and almost half the villages of the area were inundated (75% of Phulel itself) forcing almost 40% of the people to leave the area with others shifting to safer places. However the Incharge of the Irrigation Department (met at the time of the field analysis) said the Reservoir is still not full and in order to fill it the water level of 25 feet has to be maintained which presently is only at 15 feet (implying that the Reservoir and its water management is not responsible for the damage). Despite the problems water from the lakes and sub-soil is a critical resource for the villages of the area.

For residents of Padhrio sweet water lakes around it are breeding grounds for fish and saline lakes, pastures and forests along them for grazing and watering their cattle. The villagers extract soda and salt from saline lakes and both kinds of lakes attract seasonal birds. The residents of Padhrio and Avadh complained that the water of the Reservoir causes rash and is bad for the hair and those of Haji Ghulam Hussain Leghari said that the Nara Canal water gets infested with worms when the water flow is low. Avadh, the village that was excluded from the Chotiari project area, as well as Haji G. H. Laghari use water from Nara Canal tributaries for irrigation on payment (to the government). When the level of the canal water rises, as these days, it damages cultivable land. Salinity is also rising and stagnant water is harmful for animals.

Closely connected with water is **fish**, the principal natural resource of village Phulel where fishing is the main occupation whereas in Dubi Khamiso Gaho it is the secondary occupation (25% of households). In Haji G.H. Laghari while there is fish in the nearby Nara Canal and the Reservoir, only 10% of the people fish as the traditional fishing community, Mallah, is too poor to afford boats and nets and is only able to fish in shallow waters and cannot sustain the contractor’s prices. In Padhrio, commercial fishing is not permitted by the contractor.

For people in Phulel *fishing* is the sole source of livelihood and both men and women are engaged in the activity. Men fish and women look after the catch and weave the cotton nets (nylon ones are bought). From the good days in 1952, when the whole area turned into lakes, the fish was in abundance and fishing at its peak, to the falling of the water levels 15-20 years back, the Mallah community continues to depend on fishing. At that time an individual owning a boat used to catch one to two *maunds* of fish in a day. Now due to the increase in water level fish quantity has decreased on the one hand and on the other when the water is released through Nara Canal outlet the fish also goes out. As many as 37 types of fish are found in the lake including Rahoo, Morakh, Dahi, Shakar, Chatto, Srahio, Singiari, Kheera etc.

Box. 6: Prices paid to fishermen and rate in Hyderabad market –Village Pholel

Name of the fish	Rates paid to the fishermen	Market rates in Hyderabad
<i>Chhatto</i>	Rs.70	Rs.250-300
<i>Seengari</i>	Rs.80	Rs.350-400
<i>Jargo</i>	Rs.80	Rs.350-400
<i>Rao and Morakho</i>	Rs.65	Rs.180-200
<i>Sarhio</i>	Rs.07	Rs.40-60
<i>Gooj</i>	Rs.25	Rs.90-100
<i>Dahi</i>	Rs.25	Rs.70-80
<i>Gadan</i>	Rs.25	Rs.100-110
<i>Danbar small Rao</i>	Rs.25	Rs.80-90
<i>Shakir</i>	Rs.25	Rs.80-90

Note: Names of fish are in Sindhi as given by locals.

The role of the contractor is very critical from the point of view of local people whose livelihoods depend on fishing. In Padhrio the contractor does not allow villagers from even fishing in the fish farm established by local people in Wanhel Mangrio village. He has extended his writ beyond the two lakes that feed the Nara Canal for which he has a contract and is said to be trying to take control of the lakes below the village even though no fresh water flows into them. Similarly in Phulel and Dubi Khamiso Gaho fishing is controlled by contractors. In Phulel the influential Nizamans are the contractors and do not let local people to sell fish to anyone else. They determine the time of picking the catch and the price to be paid. Without the capacity to keep the fish fresh for a prolonged period the fishermen are dependent on the contractor. They are heavily indebted to the Nizamans who harass them or call the police if fishermen try to sell the fish elsewhere. Fishermen said they are forced to sell fish at very low prices when the same is sold, according to them, at several times higher rates in the Hyderabad market (See Box 5).

In Dubi Khamiso too despite the abundance of fish the contractors will not let anyone catch or sell fish without their permission. 20-25 houses of Aidpoto caste, who are not traditional fishermen started fishing when their cattle died, were helpless at the hands of the contractors. The latter's *chowkidars* and servants harassed them; their vehicles were searched to prevent fish from being sneaked out. The field team saw a contractor's vehicle picking up good quality fish from fishermen without weighing it. The combination of decreased quantity of fish and the low rates given to villagers makes for very little earning for local people.

Forests and pastures: According to the residents of all five villages up until the work on the reservoir began (15-20 years ago), the entire Chotiari Reservoir area used to have thick forests with a large variety of trees (*kundi, phog, lai, lao, ber, khubar* etc.) and especially *kundi, lai* and honey in abundance. The honey it was said could cure 32 diseases. All villages reported that there still are some thick forests and also pastures that provide free grazing and fodder for cattle, goats, camels and horses especially in Padhrio where livestock is the main occupation. Inside the village in Phulel only those trees remain which give fodder for the cattle, or are used as firewood or in construction. Women here claimed to have planted *neem, date, poplar* and *beri* trees inside the village. *Neem* and poplar is used in construction, *neem* is considered good for its medicinal values and comforting shade, its leaves are used for making medicines and boiled to wash wounds and its fruit for longer and stronger hair. *Kundi* (known as *jhojha* in Padhrio) is used as

firewood and for construction, and its fruit (*mewat/sagar*) is used for a curry and fed to the goats. *Thauber* is used as fodder.

However, the forests are reportedly in decline and fast dwindling. Around Phulel the sand dunes on which the forests grew are being swept away because of the rising reservoir water, in Padhrío rising water has inundated pastures as also in Haji G.H. Laghari village where fire also damaged some of the forest. All villagers feel that this natural resource is under serious threat, though good rainfall yields grasses and fodder. In Dubi Khamiso the reduction in pastures during the past five years has led to the reduction in the number of animals. The forests were a source of fuel wood (collected by women) but since the building of the reservoir there has been a ban on cutting wood. Those relying on the sale of wood find their income seriously reduced as in H.G.H. Laghari. The remaining forests are controlled by local influential people who harass those collecting wood from there.

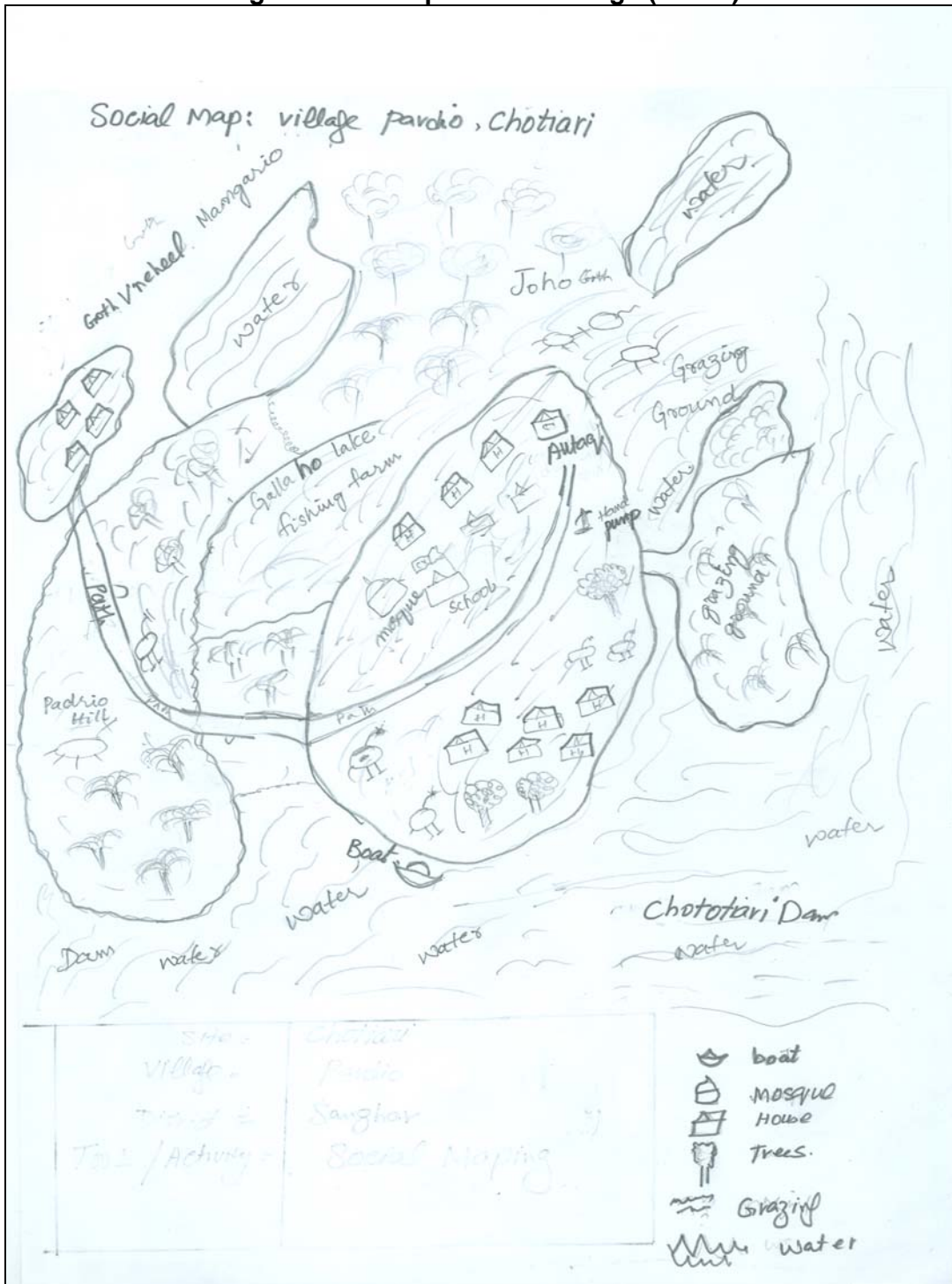
The forests at one time were also rich in wild life. While some animals still exist their numbers are much reduced. There is however a game reserve with hog deer on the left side of Nara Canal, named after Pir Sahib Pagaro; and one in the south of Avadh bridge for Makhdoom Sahib. Partridges are abundant in the area and there is a partridge game reserve for Pir Sahib Pagara. Interestingly, a ban on hunting of animals or birds is observed in "*his name*".

On a sand dune in village Padhrío local landlord, Karim Dad Juneja has kept deer but their numbers have decreased. In Haji Ghulam Hussain Leghari, people mentioned *seerai* [not clear what this is] as a precious resource as well as *pan* (wild reeds) that grows very thick in the area and is used for making mats, fans and construction material for sale. There has been a reduction in the medicinal herbs.

Produced Capital: In all villages **livestock** is the most important produced capital. The sole exception is Phulel where it is only kept for domestic use or as insurance for difficult times. In both parts of village Padhrío (1 and 2) sole dependency is on cattle farming. Meat, milk, butter, ghee, *lassi* and hides from animals are sold to meet the daily household expenses. At present Padhrío-1 has 300 cows and around 100 goats and Padhrío-2 has 350 cows, 150-200 goats and 100 buffaloes besides 10-156 camels. Cows and buffaloes are preferred and while milk is used at home, ghee is sold @ Rs.190/kg. Goats are preferred for their ability to multiply fast and considered more financially beneficial as these are sold when there is a shortfall in cash. Livestock grazes in the nearby forest, cows coming home in the evening to be milked and then returning, goats are herded by children. In Avadh everyone owns livestock, the preference is for buffaloes. Men graze the cattle while women look after it and are responsible for collecting and growing fodder (*lucerne, junter, jawar, etc.*).

In Haji Ghulam Hussain Laghari where livestock was the backbone of people's livelihood because of easy availability of fodder, the submersion of pastures has led to people selling their animals, moving out with their animals to safer places, with some getting one caretaker to shift with the cattle to higher ground. Goats are still in the village and people grow lucerne and *nar* (types of fodder) on their lands. In Dubi due to the inundation there has been a drastic reduction in livestock including in camels and horses from the time when every household had 100-200 buffaloes, 400-500 cows, 300-400 goats to now when they are left with 4-5 buffalos, 10-15 cows and 20-25 goats and a preference for the latter. Children take the goats for grazing.

Fig.3. Social Map Padhrio Village (males)



As far as **physical infrastructure** and **services** go almost all villages are very inadequately provided. Phulel has one government co-educational primary school with one male teacher (the classes are held in a hut or under the tree as there is no building); two *dhabas* that open in the evening; a mosque; a *madrassah* run by a village *maulvi*; 14 hand pumps which are shared by all and of which 8 are out of use (due to rising water table). The sweet sub-soil water is used for drinking and various domestic needs. It is fetched and stored by women and girls in pitchers or plastic jerry cans. There is no health facility but

there are two birth attendants (*dais*). People go to Sanghar for treatment. Transport out of the village consists of one vehicle that daily goes to the city in the morning and comes back in the evening. There are 525 boats in the village and each family has its own nets.

Padhrio, with houses made of mud does not have telephone, electricity, hospital or transport. Boats are the only mode of transport here. People travel by boats taking two hours to reach Pholel, the nearest village. Both parts of Padhrio have a primary school each for boys and girls. The one in Padhrio-1 is run by the NGO, SDF and that in Padhrio-2 by the villagers who pay the same teacher Rs 2000 pm as salary. The village has two hand pumps and one mosque.

Avadh, on the other hand appears to be slightly better off with some cement houses. The *goth* assessed in this study has one boy's primary school (the full cluster has 18 primary schools for boys, most of which are shut, one high school in Allah Dino Bhan and one BHU which is also usually closed). There is a mosque but no proper health facility (except a voluntary quick health service/first aid and two *dais*) is available, people go to Sanghar when ill and women with complications have sometimes to be taken to Nawabshah city. Handpumps are found in every house. The government has installed electricity lines exclusively for the reservoir area, but the supply is erratic disappearing sometimes for three days at a time. In any case it is not accessible to the villagers and only three influential people (Allah Bux Junejo, Alahdino Bhan and Fazal Leghari) have taken connections. There is transport service available; daily two Datsons take people to Sanghar and come back in the evening. A pumping station to prevent the flooding of Avadh, especially of the road has two of its five pumps out of order, and the remaining three usually switched off because of poor electricity. The road and houses thus all get inundated whenever the water level rises.

Dubi Khamiso Gaho, perhaps the poorest is made up of mud housed and was suffering from acute domestic water shortage at the time of the field work as the only water pump of the village was broken. The other accessible pump was at a distance of one to one and a half km in a hotel near the canal. Reportedly a hand pump has a life of 3-4 years and has to be re-bored. Fortunately the water is sweet and found at the depth of about 20-25 feet. Dubi is under serviced. It has one mosque and a flourmill at the bridge of Ranto Escape where PTCL wireless phone is being installed. There are no school or health facilities.

Every house in Haji Ghulam Hussain Laghari has a hand pump for domestic purposes. Clothes are washed in canal water. Here too people have mud huts. There is a primary boy' school nearby accessible by boat, a mosque and one *autaq* (community meeting place). People go to Sanghar for medical treatment though polio drops are administered in the village. Mobile phones are the principal means of communication (Ufone, Telenor, Mobilink) and boats the only means of access to the village as it is surrounded by water. People have to travel from Nara canal to Pattan by boat to go anywhere. A broken plastic boat is currently used as the previously wooden boat broke down.

Social Capital: The low level of development of the area is reflected in limited social capital in the villages. As far as literacy levels go only Phulel has some literates: 3 intermediate, 4 matriculate, 5 middle grade and 40 primary educated males and 10 primary educated females. Padhrio has only one girl who has studied up to 8th grade and there is a school teacher in Haji G.H. Laghari. There is some social mobilisation probably due to the presence of NGOs in the area. In Phulel the villagers whose houses had been damaged due to construction of the reservoir had mobilised for compensation, though only about half of those managed to receive it. The villagers are members of Pakistan Fisher

Folk Forum (PFFF) that has been here since the past three years. During field work men and women were found to be on hunger strike against the contract system. SDF is working in all the villages for promoting education and creating awareness. Polio drops are also administered by some NGO in Dubi. Other than that Thardeep has started a credit programme in Avadh since the past one year. However the local people are irked by the high interest rate, surcharge on late payment and using the police to get loans repaid. In Dubi one person took the initiative of filing a court suit following the inundation of standing crops and mango orchards. He received a decision in his favour for compensation for both crop and land. The Revenue Department has appealed against the decision.

Generally speaking social cohesion was evident among residents of various villages as reflected in the statement of an elderly man in Dubi who said that “*if a person falls ill we take him on our shoulders to the roadside to get a transport for the city.*” In the same manner the sharing of hand pumps, or one person looking after everyone’s cattle in Haji G.H. Laghari also reflects this. That does not mean there are no disputes at all. In Avadh major conflicts are over irrigation water. The presence of landlords and other influential people helps in resolving conflict if it occurs. However the influentials are also responsible for oppressing local people as an old man in Phulel said, “*our thekedari nizam has killed us; we are not getting freed from it ...we are weak and weak people can’t fight back.*”

Livelihoods and Income: As mentioned above the major source of income for Phulel residents is fishing but is not sufficient for their livelihood needs as they are forced to sell at low prices. Women contribute through supplementary activities like weaving nets, collecting *paban/babh* (a kind of wild grass)-- naturally found in the reservoir in winters at a depth of 15-20 feet—which they sell in the Sanghar market at Rs.5-9/kg, and make *rallis* on order. However this additional income notwithstanding, families have to take loans that are repaid after selling the fish.

All other villages depend on livestock for their incomes and livelihood. Cattle farming however has suffered a set back due to the construction of the reservoir. From the villagers’ perspective substantial pastures and forests have become submerged and if not for the rainfall this season, local people said, they would have had to migrate. People earn by selling milk products, salt, and animals. Goats are sold @ Rs.1500-Rs 3000 and a cow at Rs 5000-Rs 20000, the price determined by the quality of the animal. Livestock is kept largely on a 50% sharing basis (if a goat gives birth to two kids one goes to the owner; if the owner sells a buffalo/cow then he gives half the amount to them) local people have control over their own share of milk and animals. Ghee in Padhrio is sold at Rs. 195/kg.

In Avadh where people are secondarily engaged in agriculture the threat of excessive rain damaging crops and by extension their incomes is ever present. There is also the fear that agricultural land will get affected by water logging in the future in the same manner as 90% of their land that is already lost. They take loans from the *zamindar* at 30% interest rate and sometimes have to sell their assets (silver, gold, cattle) to repay the loans. In Dubi Khamiso Gaho, men work in farms and cut wood from the forests for sale. The people are heavily indebted as they are compelled to take loans from the landlord in case of illnesses (which are a great cause of vulnerability in all villages) and before the harvest. If for any reason the yield is low, like this year because of the rains, they sell their livestock.

In Haji G.H. Laghari only 50% of people depend on livestock incomes, 40% are wage labourers. Mallah, who are the poorest, depend on craft products (mats and hand held fans) made by men and women with *pan* and *khajoor sur* (date palm fronds).

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Women bring pan from the forest then flatten it with a two feet long iron bar then make mats that are used in making their huts. Each mat is about 5 to 6 ft long and 3 to 4 ft wide. The contractor charges Rs.10 as commission for each fan and Rs. 2000 for a truck load of goods made from pan. (Women, Haji Ghulam Hussain Laghari Village)

These are taken by the contractor/middleman (from the Nizamani caste) at very low rates and sold in the market at a much higher price. Craft producers are indebted to the contractor who does not help them in times of illness or other emergencies. The male field team saw the 10-year old son of Soomar Mallah, who was suffering from stones in the kidneys, he had a catheter fixed, but the family did not have the money for the operation. The child was in great pain and discomfort.

In all the villages incomes are supplemented by women making *rallis* which are sold at the rate of Rs. 200-1000 a piece, stitching clothes at Rs. 50 per suit and doing embroidery. The women in Avadh prefer to stitch and embroider as they earn more from these in less time.

Conclusions: the above information shows that:

- Construction of the Chotiari Reservoir has affected the rich natural resources of the area and by extension the livelihoods of those depending on them. Forests (75% around Phulel), pastures, have all been damaged or reduced; land has become saline or waterlogged and even the fish stock has been affected.
- Many of the local people have been displaced and out-migration has been quite extensive.
- While livestock farming is still the main occupation, except in Phulel, incomes have to be supplemented by agriculture, wage labour, sale of wood, wild grass and craft products (fans, mats, *rallis*).
- Development work under government schemes in Chotiari area has not benefited the poor (e.g. electricity). Mobile phones in Haji Ghulam Hussain Laghari are the only manifestation of modern facilities.
- People are vulnerable to ill health and the weather, poor transport (boats are needed to get out of 4 of the villages), distance to nearest town, Sanghar. Taking loans and selling livestock or other assets is their means of coping with vulnerabilities. Out-migration is the last resort.
- The poor in all the villages are in bondage—to fish contractors in Phulel and Phadrio; to landlords; and to contractors who sell mats and fans. The fish contractors are particularly powerful and even control water bodies that are not part of their contract, they determine who can fish and where, and what price is to be fixed
- All the villages are under-serviced with poor or no health, education and transport services. Human capital is low.
- There are NGOs in the villages: Fisher Folk Forum, SDF and Thardeep with its micro-credit programme.
- There is wildlife (hog deer, black partridge) still and some of it conserved in the name of Pir Paghara.

Ranking: at best is indicative of the relative status of each village. The influence of the contractor is not factored in as contractors are not seen as assets by local people. Nor could the fact that local populations have decreased be included as the ranking below is of the villages and villagers as they are at this point and time. While the same principle is

followed as for Pai Forest livestock here includes goats as well as camels and horses. Scores for individual items range from 1-5.

Box 7. Village Ranking by Capitals: Chotiari Reservoir

Villages	Dependence on Natural Capital	Produced Capital	Social Capital
<u>Phulel</u> Household = 150 Population = 1600	Fuel 3 Fish 5 Fodder 1 } = 9	Livestock 1 Handpumps 2 Boats 5 Schools 2 Dai 3 Others 2 } = 15	Matric & above 1 NGOs 2 Women's 2 Crafts 2 } = 5
<u>Padhrio</u> Household = 33 Population = 300	Fuel 4 Fodder 4 Honey 1 Fish 1 } = 10	Livestock 4 Handpumps 1 Milk 4 Schools 2 } = 11	NGOs 1 Women's 2 Crafts 2 } = 3
<u>Avadh</u> Household = 15 Population = 300	Fuel 4 Fodder 4 Honey 1 } = 9	Livestock 3 Handpumps 5 Schools 2 Dai 1 Milk 3 } = 17	NGOs 1 Politician 2 } = 3
<u>Dubi Khamiso Gaho</u> Household = 25 Population = 300	Fuel 4 Fodder 4 Honey 4 Fish 2 } = 14	Livestock 3 Handpumps 1 Milk 3 Others 1 } = 8	NGOs 2 Politician 1 } = 3
<u>Haji Ghulam Hussain Leghari</u> Household = 50 Population = 500	Fuel 3 Fodder 3 Honey 4 Reeds 4 } = 14	Livestock 3 Handpumps 5 Schools 2 Milk 3 Others 2 } = 15	NGOs 1 Women's 2 crafts 2 } = 3

Score: 1 is minimum and 5 maximum for each variable

As in Pai Forest area the poorer the people the more their dependence on natural capital. The villages are at almost equal levels in terms of produced capital except Dubi Khamiso Gaho which is the poorest. Social capital is also almost the same with Phulel relatively better with some literate people. The villages are reflective of Sanghar district's extreme state of deprivation (94% in rural areas) and the high number of closed schools (105 out of 109 closed schools in rural Sanghar).

Recommendations: In terms of selection for the IFAP *Phulel, Padhrio and Avadh* are all recommended for inclusion. Phulel because of its size and the fact of it being the only fishing village; Padhrio because of its rich natural environs and livestock farming base; and Avadh along with its scattered *goths* as an area not included in the Chotiari project site but affected by the reservoir. The natural environment—*dhands*, forests and wildlife—are potential attractions for tourism. While Phulel and Avadh are important as main landing centres, all three have NGOs working in them on relevant issues: PFFF on fishermen rights, SDF for promotion of education and Thardeep offering micro-credit. A prominent health service delivery NGO, Marie Stopes Society operates in the District and could be

drawn into the programme to provide services here especially for women and children. Shirkat Gah that had been involved in advocacy in the region and has a community-based health and women’s rights programme in Sindh could be engaged on these aspects. Given that Chotiari Reservoir’s share in Sanghar district’s earning from fish is almost 94.5% suggests that with appropriate interventions to regulate the exploitative contract system and facilities for storage fishermen’s livelihoods could be made sustainable in Phulel. Since women’s craft production is an integral component of cash incomes it is suggested that market chain analysis of both *rallies* and reed products be undertaken as one of the initial activities of the programme, linkage with credit programmes and markets for sustained production could then follow. *If only one site is to be selected then Phulel is recommended for reasons given above.*

3.3. Keenjhar Lake: District Thatta

3.3.1. Background

Keenjhar Lake is one of the 103 (out of 230) public waters in Thatta District that is controlled by the provincial government and one of the waters where fish auction does not take place.¹⁵ It falls in Taluka Thatta of District Thatta. The sweet water Lake Keenjhar, also known as Kalri Lake, is located in the dry and stony desert at a distance of about 20 km north and north-west of Thatta. It is 24 km long and 6 km wide and has an area of 14000 ha. The lake is fed by the Kalri Bagar feeder canal from the north-west as well as by small seasonal streams entering it from the north and the west. The feeder is also the conduit for the industrial wastes of Kotri town. The only outlet is the Jam branch canal in the south-east end of the lake. Keenjhar is a wild life sanctuary and a Ramsar site. Jhampir town, on the northern banks of the lake is the main town on Keenjhar besides twelve large and twenty small villages scattered around it. About 50,000 people are said to be dependent on the lake and in 2005-06 about 800 boats of different size are said to be operating in it (declining from 2200 in 1988-89 and 1710 in 1998-99)¹⁶

There are four fish landing centres at Chilya, Sonahri, Jhampir and Khumbo.¹⁷ Chilya also has a hatchery that produces carp fry in season for both the fish farmers and public waters including Keenjhar. Chilya's fish seed production and income is given below.

Table 9: Chillya Hatchery

Year	Hatch (in millions)	Fish Seed Stocked in Public Waters (no.)	Fish Seed Sold to Farmers (no.)	Income from Fish Seed Sale
2002-03	7.394	150,000	141,655	127,625
2003-04	2.824	289,400	46,900	35,540
2004-05	8.120	500,000	311,710	375,990

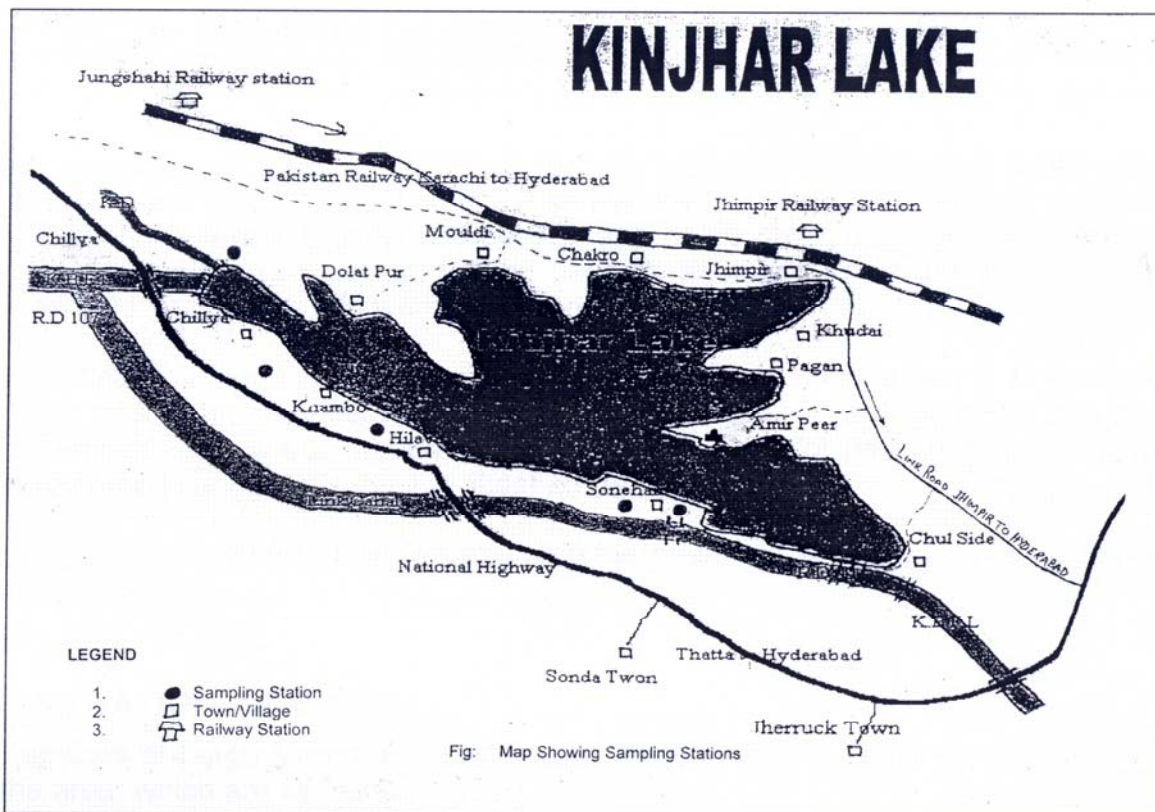
Source: Brief Note on Activities of Fisheries Department in District Thatta.

¹⁵ Brief Note on Activities of Fisheries Department in District Thatta.

¹⁶ As cited on the basis of official data in, *Preliminary Environmental Baseline Study Report Indus for All Programme Sites*. September 2006. p.34.

¹⁷ *Ibid.* p. 34

Map 3: Keenjhar Lake



Source: Preliminary Environmental Baseline Study Report: Indus for All Programme Sites

The most significant aspect of Keenjhar Lake area is its out-migration. A sample household survey carried out in 2005 in Thatta and Badin Districts found that even though out-migration was occurring for a long time, it had increased in the last few years coinciding with extreme weather events and natural disasters in the [coastal] area.¹⁸ For a World Commission on Dam study, respondents in 18 villages in the districts Thatta and Badin were interviewed. Out of eighty, fifty respondents were from 13 villages of Talukas Thatta and Jatti, (30 were from 5 villages of Taluka Badin). The population in the selected villages was mainly fishermen who fished in the Keenjhar Lake and the open sea. Fishermen at Keenjhar pointed out that if cold storage had been available, they would have sent the fish directly to Karachi and obtained better returns. In summer, fish perishes quickly, and they are therefore unable to store it for transportation to Karachi. In such cases they are compelled to sell it to the middleman for less than a reasonable price. According to a World Commission on Dam study (2000) the family income of fishermen fishing on Keenjhar Lake ranges between Rs. 4 000 to 6000 per month. 13 villages of Taluka Thatta and Jatti were covered in the 18 village study in districts Thatta and Badin. Out of eighty, fifty respondents were from 13 villages of Talukas Thatta and Jatti. The population in the selected villages was mainly fishermen who fished in the Kinjhar Lake and the open sea.¹⁹ Fishermen at Kinjhar had pointed out even then if cold storage had been available they would have sent the fish directly to Karachi and obtained better

¹⁸ World Bank, April 2005. Socioeconomic Study and Proposal for Livelihood Improvements: Badin and Thatta Districts, Sindh, Pakistan. Agriculture and Rural Development Sector Unit, South Asia Region.

¹⁹ Asianics Agro-Dev. International (Pvt) Ltd. 2000. "Tarbela Dam and related aspects of the Indus River Basin, Pakistan, A WCD case study prepared as an input to the World Commission on Dams, Cape Town." Available: www.dams.org

returns. In summer, fish perishes quickly, and they are therefore unable to store it for transportation.

3.3.2. Local People's Analysis

There are small and large *goths*/villages around the lake; of these Jhampir on the north west of the lake is the largest comprising of 15 *paras*/neighbourhoods. The present assessment covers 7 of Jhampir's neighbourhoods/*paras*/*goths* selected after a preliminary analysis of their composition and occupational characteristics. Other villages included in the assessment of Keenjhar are Sonahri (UC Sonahri) on the eastern bank, Daulatpur on the south west and Haji Ali Bux Manchhari (UC Hillaya) near the southern tip of the lake. Hillaya and its neighbouring villages Shaukat Gandhro and Abdullah Gandhro (all in UC Hillaya) are at a little distance from the lake on the main National Highway going to Hyderabad. Brief descriptions of the sites follow.

1. Jhampir: People of Jhampir defined it as an old town of historical significance, rich in minerals and natural resources and a population of about 35000 – 40000 scattered in several *goths/paras*. Among its resources people counted Keenjhar Lake, the nearby hills that produce limestone, gypsum, dolomite stone, coal, etc. (of significance for industrial use including the steel mill), and forest. Jhampir has variable topography e.g. Ezzo Manchhari is mountainous with more stones than trees and Palari is surrounded by *devi* forest. Dependence on natural resources is determined, as much by available natural resources as by the occupations of the tribes/castes living in each of the *paras*, for instance the residents of Palari graze animals, get their firewood from the forest and work as wage labourers in the nearby coal mines. In Haji Jumman Dars and Haji Qasim Jakhro, people depend on livestock and graze them near the Lake, do agricultural labour and rely on commercial activities. Those in Solangi and Abbas Mir Beher and Manchhari are engaged in fishing, etc.

Basic problems identified were related to services that are lacking-- health, education, electricity, gas, water supply and drainage. Poor drainage and health were identified as inter-linked issues, particularly as most of the sewerage of Jhampir town is collected through open drains into a big pond and then drained into the lake, only 1000 feet away from one of the *goths* included in the assessment-- Abbas Mir Beher.

Table 10. Profiles: Jhampir neighbourhoods/paras (Findings from the field)

Paras: Jhampir Town	Household	Pop.	School				Electri-city	Health		Road	Water
			Male		Female			Pub.	Pvt.		
			P / M	High	P / M	High					
Essa Manchari	35	350	-	-	-	-	-	-	-	-	Lake water
Ali Ahmad Palar	20	125	1	1	-	-	Yes	BHU	-	Yes	Purchase
M. Abbas Bahar	60	600	1	-	-	-	-	-	-	-	Water supp
Bheemo Mall M. Para	25	250	1	-	-	-	Yes	-	-	Yes	Water supply
Haji Qasim Jakhro	45	450	1	-	1	-	Yes	-	-	Yes	Water supply
Goth Muhamn Juman Dars	50	500	1	-	1	-	Yes	-	-	Yes	Well,hand pump water supply
Hashim Solangi	25	200	-	-	-	-	-	-	-	-	Lake water & purchase
Total	270	2475	5 / -	1	2 / -	-	-	1	-	-	

- Hashim Solangi, is an older part of Jhampir about 50-60 years old situated on both sides of the road. On one side it has the Meghwar *para*, on the other Jhampir town, and on the east touches the banks of the Lake. It is the farthest from the forest. There are about 50 households in the village. The water pipeline passes at a distance of 50-100 feet from the locality but does not benefit it; locals have to buy potable water at Rs. 50 a drum. The majority of the people are engaged in fishing here. There were complaints that any fisherman who does not sell his catch to the contractor is reported to the police and harassed. Here too people are tied in debt to the Hindu *beoparis* (traders) over generations.

Table 11: Sources of Livelihood: Jhimpir neighbourhoods /paras

Paras: Jhampir town	Agriculture	Livestock	Labour	Professional	Fishing	Stone crushing	Others
Essa Manchari	-	Poultry (seasonal)	Works in other cities (seasonal)	-	Majority	(Seasonal)	-
Ali Ahmad Palari	-	-	Works in coal mines (seasonal)	teacher, 1 policeman & 1 crane driver	-	Majority	-
Muhammad Abbas Mir Bahar	-	-	Labour (seasonal)	Govt. & Pvt. services	80%	-	-
Bheemo Mall Maghwar Para	-	-	26%	Govt. services 15%, Cobbler 12%, Pvt. Services 24% & Tailor 14%	-	-	Business 8%
Haji Qasim Jakhav	-	-	40%	Govt. services 10%, Pvt. Services 24%	-	-	Business 30%
Goth Muhammad Juman Dars	-	-	70%	Govt. services 5% Pvt. Services 7%	3%	-	Business 5% & unempl. 10%
Hashim Solangi	-	-	-	-	80%	-	Catching birds

- Haji Jumman Dars, surrounded by *devi* trees comprises 40-50 households with a population of 400 to 500. A 50-year old *goth* it is inhabited by migrants from Multan who came here in search of livelihood and settled down. Every house here has a fruit tree (mango and lemon). People rear livestock, predominantly goats for domestic use and purchase fuel wood at Rs. 300 a cart. The population (male and female) here is relatively better educated and better off. Several men are in government employment as school teachers.
- Haji Qasim Jakhro, is situated at the left side of Jhimpir station and dates back to almost 200 years. The locality has 45 households with a population of about 450 people. The majority of men work as daily wage labourers and women do bead work but do not have to market their product as men feel embarrassed about selling women's work.
- Esso Manchhari, dates back to 1840 and its actual name is Esso Chandani Mallah but people call it Esso Manchhari. This is inhabited largely by people belonging to the fishing community. The village has about 25-30 households and a population of about 300. While the principal fuel wood source like in all *goths* is *devi* it is supplemented by purchase of fuel from the market (Rs. 100 a sack).
- Meghwar Para is inhabited by Meghwar Hindu community who came in search of livelihood from Mithi, Tharparkar about 50 years ago and settled here. This *para* is adjacent to Mir Behar neighbourhood mentioned above. The community keeps livestock and is engaged in a number of commercial activities (shop keepers, shoe makers, etc.). A number of people are vendors who sell home made products (henna patterns, children's toys, medicinal plants) in other neighbourhoods. Here

women vendors earn more than their male counterparts. Girls and boys both receive education in the neighbourhood and because of this a number of men work in NGOs as field workers and as school teachers. Houses suffer cracks from the dynamiting of dolomite in the nearby hills and the water supply is irregular (every 2-3 days).

2. Sonahri came into existence almost 50 years ago. The village lies in a deep depression with Keenjhar hills on one side and very high banks of the Link canal on the other. Excessive rain or overflowing of the Lake poses a constant threat to the village as in the flood of 1986 and more recently in 2006. The village was inundated and 250 houses razed to the ground (for which no compensation was paid the locals complained). Recent rains led to accumulation of water in the village that has added to the pollution. The village comprises 300 households distributed in its 8 *paras* with a population of around 3000 people. The majority of the population belongs to Gandhra tribe with a sprinkling of Sheedi, Banbra and Kangani castes. They are *mahigeers* (fishermen) by profession but do not fish in the Lake. A small number (10-15 households) are in government jobs, own land, or are shopkeepers and labourers.

3. Haji Ali Bux Manchari is called Manchari because its residents migrated from Manchhar Lake and settled here as the water quality of the latter deteriorated as also the shrinking of its size. The village is inside the Lake and at a distance of about 10 km from Jhimpir city. It has 40-50 households with a population of 450-500. The village is about 50 years old but its population fluctuates as people migrate out (to Thatta, Karachi, Ibrahim Hyderi, Rehri Goth, Ghara, etc.) in search of livelihood and often settle down. At the time of this assessment most of the men had gone to Zero point. The main occupation is fishing.

4. Haji Jafer Hillaya village was established in 1940 and lies near the road leading to Hyderabad and Karachi at the picnic point site of Keenjhar Lake. It comprises of 40 or so households with a population of 400-500 people. As a picnic point it is the hub of activity; officers from all departments frequently visit the place and keep an eye on the overall facilities in the area rectifying any shortcoming found. The people in the village are hard working and conscientious and comparatively more prosperous than in other areas of the Lake.

5. Shaukat Gandhro, inhabited by the Gandhro *biraderi*/tribe has between 15-20 households and a population of 250-300. The village dates back to almost 50-70 years. In the south of the village there is Keenjhar Lake. The village is in a depression so the water from the last rain is still standing in the fields near the hill and is of no use because it is brackish. Fishing is the principle occupation of the people.

6. Abdullah Gandhro Khanbo situated on either side of the wide highway that passes through it is bigger than the other villages of the area with about 250-300 households and an estimated population of 3000-3500 distributed across 15 *mohallas/paras*. Local people claim that the village dates back to almost 100 years and is probably historically the oldest of the *goths* in and around Keenjhar Lake. The village is inhabited predominantly by Gandhra community/tribe. Other castes living here are Goya, Belai, Mallah, Kangani, Sahrai, Kholesai and Saman. The population has declined over the last 20 years because of the decline in fish in the Lake and people migrated in search of livelihoods to Karachi, Ibrahim Hyderi, Rehri Goth, Thatta, and Danb, Balochistan.

7. Daulatpur is situated at the foot of the mountains facing Keenjhar Lake and was established almost 40-50 years ago when people from different parts of Sindh came and settled here. The village population dwindled and migrated to different parts of Sindh with reduction in the Lake's fish quantity made it difficult for people to sustain themselves. Presently, the village's population is 200 and all are fishermen. The village has two *mohallahs* --- Gathani Mir Behar and Halani Mir Bahar.

Natural Capital: Whereas communities in some of the neighbourhoods of Jhampir follow other occupations, in all other villages of this assessment fishing is the principal occupation. Hence the main natural capital sited was *Keenjhar Lake*, its water and fish and the seasonal birds (*karwa, chakor, arion, hanj and nergi*) that visit the lake in winter. Other natural capital included ares forest (*devi, thouar, babbar, lai, karar, trees*), stone, coal and minerals from the hills.

Fishing has been the traditional occupation which has been drastically affected by the reduction in water ("*there is no water in the delta*"). The water level of the Lake goes down in June and July and water is not released because of the fear of flooding. Despite the decline in fish resource 90% people continue with fishing. All villages reported a steep decline in fish stocks in Keenjhar Lake over the past 10-15 years. Essentially, mismanagement is perceived to be at the root of the fish crisis. Specific reasons for the reduction in fish stocks in common perception are:

- The removal of sieve at the mouth of the canal at Chhul lets the fish "seed" (fry) to float back into the canal; the Lake therefore does not get adequate quantity of "seed".
- Absence of sieve at the branch canal outlet allows the fish to swim out of the Lake.
- Plucking out the grass along with its roots in which fish lay eggs by the government when cleaning the Lake.
- Reduced quantity of fresh water in the Lake as a result of the construction of the link canal to irrigate agricultural lands in Thatta which by-passes the Lake and could have been routed through it.
- End of the contract system. Earlier, under the contract system the contractor was responsible for looking after fish breeding and would never let the fish go waste. He made sure that fresh water was released in the lake during the breeding season. As a result fish was in abundance and all the fishermen were prosperous. With the end of the contract system (on the demand of local fishermen) now nobody owns the lake; the Fishery Department is indifferent and does not put in enough fry/fingerlings.
- Spread of weed (*bari wal*) that floats on the lake surface and prevents sunlight from reaching the fish, as well as chokes the natural grasses and reeds that fish feed on.
- Excessive fishing and pollution.
- Establishment of fish farms that take away the fry/ "seed" meant for the lake.

Fishing begins in November and between November-January is the peak fishing season. From February to April strong winds blow across the lake and fishermen do not take their boats out though they put out their nets. The catch however is very nominal, not even enough to cover costs of two meals. In these days most fishermen go to the sea and sometime do not return for two months. May – July, the rainy season begins and also the breeding season for fish, in these months no fishing is done. A number of fish of commercial value are in decline for example *morakhi, dhai, karori,*

jarko, etc. New species, *chhillori*, *loron* and *diya*, that were not found in the lake earlier have been introduced (and may also be a factor in the depletion of fish).

Box 8: Prices paid to women for fish in Sonahri

Name of the fish	Rates paid to the fishermen
Karori	Rs.100/- kg
Morakhi	Rs.50/- kg
Jarko	Rs.50-60/- kg
Singario	Rs.50-60/- kg
Dhai	Rs.50-60/- kg

Traditionally women in Sonahri used to be involved in fishing as well as cleaning the catch but not any more, as the catch is sold immediately to the “*vepar*” (middle man). In an exercise involving a group of women who still catch fish the rates at which they sold fish were given by them (Box 7). These according to them were the rates at which fish was sold in the local market. In Hillaya both men and women still fish; the men paddle the boat while the women throw the net. The Lake is the source of water for drinking, bathing and domestic use in all villages. In village Haji Jaffar Hillaya Lake water is now available from a tank built for this purpose. Women of Palari walk about one km to reach the Lake when the water level is high and walk up to 2-3 km in February March when the level is low. The grasses and bushes on the banks of the Lake provide grazing grounds for livestock except when rain has been inadequate and fodder has to be purchased. *Pan* is another natural resource found in abundance on the lakeside, and used to make mats and hand held fans. Women in Daulatpur cut and dry *pan* and are engaged in weaving throughout the year.

Forests: Forests are referred to by local people with reference to fuel i.e. a combination of trees, bushes and grasses. People of Haji Jaffar Hillaya and Abdullah Gandhro Khanbo spoke of the very thick *babbar* and *kundi (keekar)* forest of the past that was irrigated by River Indus. Now due to the scarcity of water in the delta it has withered, and the denuded forest land has been leased out to new owners for cultivation. Randomly growing *devi* seems to be spreading and is the most widely used fuel along with *thuar*. Fuel wood is collected by women and entails walking distances as in Abbas Mir Beher *goth* of Jhimpir where women spend up to five hours (going and coming) to fetch fire wood that lasts two days. Women of Sonahri walk four miles --one visit taking 3-4 hours. They find this chore most trying as their clothes get caught in the thorns and tear and their feet get wounded. When it is the off season for fishing wood is also sold to make two ends meet. In *goth* Hashim Solangi and Meghwar *para* wood is bought from the market (Rs.250 per donkey cart load lasting up to 15 days) as the forest is at a distance. There are however date trees in Hashim Solangi.

Birds: Birds that visit the lake include *badak*, *ari*, *dhanore*, *seeklo*, *hong*, *pen*, *san*, *jonghlo*, *blue bet* etc. They remain on the lake for 4-5 months. The rich hunt them while the poor cannot due to a ban but they stealthily do so and sell them for a good price. Sometime the latter are arrested for hunting and are forced to sell their assets to secure release (according to men in Sonahri). Residents of Hashim Solangi also depend on the sale of birds arriving in the Lake during winter. Catching birds is banned but they still net and hunt them on the sly. *Ari* is in large numbers here and fetches Rs.30-35 per bird.

Mountains: the area near Haji Jafer Hillaya has a big range of small mountains, which contain natural minerals like limestone, gypsum, and marble. The range is also a source of stones, which are used in road construction. In Daulatpur between September and February if fishing is insufficient people turn to cutting/breaking stones.

Produced Capital: The produced capital -- electricity, schools, drinking water, health services and sanitation—in all villages is very limited (Table 11 below). **Drinking water** is taken from the Lake except in parts of Jhimpir town. In Shaukat Gandhro government had constructed a water tank which was never filled. The water in Khanbo becomes so filthy in summer that the people in the area suffer from gastric illnesses. Sanitation and drainage is non-existent except in Hillaya and poor drainage results in the accumulation of rain water as in Sonahri. Hillaya has a water tank built by the World Bank last year water from the Lake is stored in it. Women get drinking water from here and do their necessary washing. Earlier, there was a tap provided by the Water Supply department from where women fetched water twice a day but needed to go to the Lake for washing clothes and bathing. The supply was not reliable as power breakdowns would disrupt the supply.

Even Jhimpir, while relatively better is actually poorly serviced. Here considerable variation was found between localities that were very poor and those relatively better off among the 7 constituting *goths* covered in the study. Thus, Haji Qasim Jhakro, Haji Jumman Dars and the Meghwar Para each have a boy's and a girl's primary school, electricity, roads, and water supply. Hashim Solangi and Mohammad Abbas Mir Beher do not have electricity, school, or water supply (despite the fact that the water supply lines go past these neighbourhoods) and have to pay from Rs.25 a barrel to Rs.500 a tanker (for a month's supply). In Jumman Dars, a number of people work in offices/schools and use motorcycles for commuting.

Schools: Five out of seven villages of Keenjhar have primary boy's schools and three primary girl's schools. In Manchari the school is co-educational and the teacher attends irregularly. The two female teachers in the girl's school in Sonahri are working with the support of NGO, HANDS.

Health poses serious problem to residents of all villages as facilities are missing or very poor. Most people come to Jhimpir or even Thatta for treatment. Women in particular experience difficulties related to reproductive health/child birth especially if there are complications. The government primary health facility in Sonahri is more or less closed since 5 years; a doctor comes for 2-3 hours every 6-7 months and patients have died in emergency situations because of lack of treatment. Even *dais* are present in only two villages. The situation is compounded by poor **transport**. Bus service in Jhimpir is available once a day leaving in the morning returning in the evening. The usual routing for all villages is by boat to Jhimpir and then by road to Thatta. In Manchari there are only paddle boats that take up to 2-2 1/2 hours to get to Jhimpir and the vehicle to Thatta charges Rs.600 which is steep for the poor fishermen. The cost from Abdullah Gandhro Khanbo is Rs.700 to get to Thatta. Daulatpur has a *kutch* road going to Thatta (20-25 km) via Chalya. Here donkey carts are used in rare cases. Haji Jaffar Hallaya is the only village which has access to metalled road as it lies on the Hyderabad-Karachi highway.

The transport available is boats that are usually dilapidated as in Manchari where people are too poor to afford a motorboat and therefore commute by slow moving paddle boats that sometimes capsize. The 1.5 km long pathway connecting Manchari to *goth* Khadai usually remains submerged in water. Some people in Jhimpir own motorcycles.

Table 12: Village Profiles:- Keenjhar Lake

Village	Househ	Pop	School				Electricity	Health		Road	Water
			Male		Female			Pub.	Pvt.		
			P / M	High	P / M	High					
Jhimpir	235	2275	5 / -	1	3 / -	-	Partly	1BH	-	In part	Buy + multiple
Sonehri	300	3000	1 / -	-	1 / -	-	Yes	1*	-	Yes	water supply+ Lake
Haji Ali Bux Manchari	50	450	1 / -	-	-	-	-	-	1 dai	-	Lake
Haji Jafer Hillaya	40	500	1 / 1	1	1 / -	-	Yes	1	-	Yes	Water supply
Shaukat Gandhro	20	300	-	-	-	-	-	-	-	-	Lake
Abdullah G. Khanbo	300	3500	1 / -	-	-	-	Yes	-	-	Yes	Lake
Daulatpur	60	200	-	-	-	-	-	-	1 dai	Dirt-	Lake

Note: * Non-functional

Most people of the fishing community own **boats**, which are often worn out, and **nets** of different types for catching various kinds of fish. In Sonahri all local people own boats that they have made themselves and possess two types of nets. One made of fine yarn bought from the market at the wholesale rate of Rs.300; the other rough and made at home, used for catching *singario* and *dhai* fish. The homemade net costs Rs.3000-4000. Women mend the nets and in Manchari they reported that nets are sometimes stolen. Here people also catch fish with hooks. In Shaukat Gandhro only 8-10 people own boats that are 20-30 feet long and can carry 3-4 persons at a time to go fishing. In Abdullah Gandhro Khanbo, a particularly poor village, fishermen own 20-26 boats that are in a state of disrepair as people cannot afford to repair them. Her many neither have nets nor have the money to buy new ones. Their boats can only ply in shallow water and they use three types of nets—*level*, *badam* and *jari*—to catch fish to a depth of 10-15 feet; when the water in the Lake increases the boats have to be anchored.

Other infrastructure is in the shape of mosques, *mandirs* and shops selling basic groceries, a poultry farm and the tomb of a saint in Hillaya, etc. Residents of Shaukat Gandhro mentioned their keeping weapons in spite of abject poverty for security reasons.

Social Capital: Each village and every *goth/para* of Jhimpir in the study operates like a well knit tribe/community/caste with the local *wadera*/landlord as the most powerful and influential person and financial standing an important element in wielding influence. Usually the *wadera* is well connected with politicians, the judiciary, bureaucracy and the police and has good relations with the local MPA and MNA. The most influential person of Thatta district is District Nazim Ejaz Shah Sherazi who belongs to PML-Q and good relations with him are seen as valuable.

Most serious disputes in Jhimpir related to conflict between two tribes, murder or dacoity are referred to the District Nazim (See Box 10). In some of the *goths* more than one person may be influential in which case local decisions are taken by consensus of all of them, like in Palari. Here exceptionally a school teacher (Abdul Qadir) who has affiliation with NGOs, CBOs and Teacher’s Association and a social worker (Abu Bakar) enjoy some importance.

Box 9: Important/Influential persons in *goths* of Jhimpir Town

<i>Goth Palari;</i>	Ali Ahmed Palari
<i>Eso Manchari</i>	Pagdar Dur Mohammad Wadera
<i>Jumman Daras</i>	Hasan Daras
<i>Haji Qasim Jakhro</i>	Wadera Muhammad Yousuf, Haji Qasim Jhakro
<i>Mohd Abbas Mir Behr</i>	Wadera Mohammad Ishaq
<i>Behr Mohammad Hashim Solangi</i>	Behr Mohammad Hashim Solangi
<i>Meghwar Para</i>	Saiyu Ram

In Sonahri, the UC Nazim is the most influential person whose decisions are abided by; most conflicts here are around elections and more serious matters are referred to District Nazim Sherazi. In Manchari there are three groups led by three influential people (one leads a big group of fishermen) but none is strong enough to control the whole community and needs concurrence for community related decisions. In Hillaya Sardar Munawwar Ali is responsible for all major decisions regarding the village. In Shaukat Gandhro, Wadera Shaukat is the *biraderi* leader. He is seen as very sympathetic towards the poor (had recently borne treatment expenses of an ailing child). As an exception to the rule three persons have a lot of influence and respect in Abdullah Gandhro despite being poor. Poverty prevents them from politically representing the community but no decision can be taken without their concurrence. In fact the politically powerful person here is not seen as sympathetic to the community. Most disputes in this village are over stealing of nets.

Sonahri is the only village with three outside organizations working in it. The Fisher Folk Forum has helped in solving employment problems, HANDS is working for education and NCHD for education. NGOs have fixed the power transformer of the village and restored the electricity supply.

Livelihoods/Income: The principal means of livelihood in all villages is fishing except Hillaya where the picnic point and services associated with it are the main source of income. Other activities are undertaken when fishing stops or to supplement earning. That fish stock has drastically declined and people have been forced to out-migrate from the area was stated by residents of the villages. Fish that is caught is taken by middlemen (*veparis*) to sell in the market in Thatta.

In Jhimpir while the main sources of income for men is fishing , hunting/catching birds is done at least for 4 months of the year. Other sources of income are wage labour in coal mines, stone quarries, other menial labour, and working as vendors and *qulis* at the Jhimpir railway station. Here a number of the educated are in jobs (schools, offices) in Thatta, and members of the Meghwar community are engaged in making shoes and handicrafts, are entrepreneurs, shopkeepers, in jobs and labourers. They are also money lenders (*seths*) and middlemen (*veparis*). Women belonging to fishing households help in repairing and making nets and cleaning fish. Otherwise women of all communities make *rallis*, stitch and embroider for cash income, the Meghwar women make handicrafts like children's toys, herbal medicines used by rural women, and often sell these themselves and earn almost as much as or more than men.

Fishing is the principle form of earning in Sonehri, Haji Ali Bux Manchari, Shaukat Gandhro, Abdullah Gandhro Khanbo, and Daulatpur. The fish is sold both to the middlemen and in markets at Thatta and Karachi. *Karoro*, being large in size fetches a higher price @ Rs.100/kg. Similarly, *therako* weighs more and fetches a better price whereas *moraki*, *jarko*, *singario* and *dahi* are sold at a lower rate of Rs.50-60/kg. In the

fishing off season almost half of village Sonahri works as daily labourers in construction, breaking stones, or in poultry farms and agricultural farms earning up to Rs.2500 to 4000 per month. Some go outside the village in search of work. Others make charcoal from wood to sell, and yet others go out to sea for work. There are a few government servants in Sonahri.

Manchari fishermen said they earned between Rs. 60-100 a day (according to one woman they sold 18 *maunds* of fish for Rs 360 in the last 2-3 weeks). Fish is taken by the *vepari/seth* belonging to the Hindu community of Jhimpir at 50% of the market price (Manchari) and at 10-20% commission (Shaukat Gandhro and Abdullah Gandhro). In Daulatpur the *vepari* from Hillaya takes their fish. In Daulatpur small fish is sold in nearby villages the big ones to the seth. The fish from Keenjhar is sold in Khanbo, Thatta and Karachi markets. The *veparis* are also the ones fishermen take loans from when the catch is not good or if there is a drought. Goats are kept to be sold in case of emergency.

Fishermen in Manchari are also indebted to the local grocery shop to a tune of Rs.10,000-15,000 and up to Rs.100,000 in some instances. The repayment is in kind i.e. fish and not a single person in the village feels that he is in a position to completely repay the loan. In Daulatpur outstanding loans from the shopkeeper stand at Rs. 5000-10000 per household.

Breaking stone/quarrying is a major male activity in Hillaya, Abdullah Gandhro and family activity in Daultapur carried out throughout the year. These are sold through the contractor. Big stones are sold at a higher price; small pebbles at lower. A truckload of stone that takes 3-4 days to fill fetches Rs 700-800. The money is shared by all those involved in the quarrying (*pathar torna*). One truck of *rorri* (pebbles) in Abdullah Gandhro fetches Rs 800-1200 and six to seven labourers fill one truck, if the contractor decides to stop the work people starve. In Daulatpur the entire family participates in this activity and women and children often get hurt. Women are said to work The stone breaking is done for 4-5 months (Sept-February or March) for truck owners belonging to *Jhakar* and *Bhanbhro* caste people. Women are said to work more than men in this task

Principally residents of Hillaya and some of Shaukat Gandhro also earn about Rs. 150 a day through services at the picnic point, e.g. working in hotels and on boats, as hawkers, selling fish, running motorboat service, etc. Others work as agricultural labourers, or as wage labourers, In addition people from most households also cut wood and sell in the nearby villages. Women's role in earning is almost negligible except for making handicrafts or stitching that brings in some income. The combination of activities (stones, birds, wage labour) people earn about Rs.2000-3500 a month in off season

Women's incomes supplement household earnings in most villages especially when the pressure of debts is high. In such situations the house is run on women's income generated from embroidery, *ralli* work and stitching. They earn Rs.500 for one suit and Rs.100 for *zari* work per suit in Sonahri. Older women of Shaukat Gandhro do *bharat* work and earn Rs 2000 to Rs 3000 in the wedding season, Ramazan and summer vacations, charging Rs.1000 for one suit. Women in Daulatpur earn from embroidery, stitching and crotchet work but their household expenditure outstrips their incomes.

For the first time villagers in Daulatpur have kept a few goats for somebody from the city and can use the milk. The owner will take the goats away at the time of Eidul Azha. They are satisfied with this arrangement.

Conclusions: The above findings establish that:

- The fish stock in Keenjhar Lake is fast depleting and the principal occupation i.e. fishing cannot sustain people's livelihoods. There are multiple reasons for this -- not enough fresh water and fry (seed), plant growth in the Lake prevents oxygen to fish, escape of fry from the Lake, not enough fry introduced every year, overfishing, pollution and lack of ownership—indifference and mismanagement of the Fisheries Department.
- Poverty prevents the poorest from maintaining nets and boats and to seek supplementary means of earning – mainly menial work or dependence on selling wood, making charcoal, cutting stones, seasonal migration, etc.
- Poor social services especially for health and reproductive health services for women and large families.
- Transport is expensive and entails both boat and vehicular travel to get to nearest town—Thatta. The boats are dilapidated, buses run once a day, hired vehicle for emergencies can cost between Rs.500-700. Delays in taking patients to appropriate health service results in deaths.
- Potable water is not available in all villages, nor is drainage and adequate sanitation.
- People are highly indebted to middlemen and shopkeepers.
- The most powerful political person is Nazim of District Council, Ejaz Shah Sherazi. *Beraderi* relationships are strong and no decisions are possible without the wish of the caste/tribe head. Connections with influential people are important.
- Women participate in stone crushing and contribute to household income through crafts while important it is not adequate for household needs.
- There are NGOs in the area: PFFF working for fishermen's rights, HANDS for education and health and NCHD for education.
- No mention was made by the local people about the several specific development programmes and projects for Keenjhar including one for the welfare of fishing communities that official documents show (Box 1). The project they mentioned and were apprehensive about was the water supply scheme for providing water to Karachi and its implication for Keenjhar's water.
- Among major vulnerabilities are declining sources of livelihood, poor health and high indebtedness.

Ranking: Village wise ranking follows the same pattern as the previous two sites. Variables across sites in each category (Dependence on natural capital, Produced capital and Social capital) are not exactly the same e.g. some places do not have NGOs, others no school, etc. It should also be mentioned that ranking does not take away from the fact that all villages of Keenjhar are highly deprived (rural Thatta has a 98% rate of high deprivation) and the ranking is relative between the study villages. Here, like Pai and Chotiari, there is an inverse correlation between dependence on natural resources and produced capital. Where there is more produced capital there is less dependence on natural resources. In terms of Produced capital Jhampir the largest location ranks the highest and also ranks high by being low on dependence on natural capital. Similarly Hillaya which is much smaller in size but being a picnic spot has proportionately more schools, water supply, etc. and a point higher in Produced capital. On the other hand Manchari and Shaukat Gandhro rank at the bottom in produced capital and high on natural resource dependence. Social Capital is more or less even with Sonehri on top because of NGOs working in it.

Recommendations: That Keenjhar is an environmental hot spot and needs attention is unquestionable. Over here a big issue is that of lack of interest in the maintenance of the lake and the mismanagement of its resources. As pointed out by various local people, there is indifference of the Fisheries Department in ensuring sufficient fresh water, clearing of water weeds and plants, timely introduction of fry/seeds, and non-prevention of fish escaping the lake through its only outlet.

Regulatory mechanism for fishing is weak as also for hunting birds. The bondage of fishermen and local poor is debilitating and needs to be broken with alternative credit facilities and appropriate equipment (e.g. cold storage units) to enable sales in the market, improvement of their boats, opportunities of employment etc. Health and education services for women are almost non-existent. Transport needs to be improved. For these the powerful Nazim probably needs to be mobilised. Marketing of women's crafts can be stream-lined to ensure regular and proper remuneration.

Box 10: Village Ranking by Capitals: Keenjhar Lake

Villages	Dependence on Natural Capital	Produced Capital	Social Capital
Jhimpir Household = 235 Population = 2275	Fuel 2 Fish 3 Fodder 1 } = 6	Livestock 1 Water supply 3 Boats 3 Schools 19 Health facility 2 } = 28	Matric & above 2 Politician 4 Women's Crafts 2 } = 8
Sonehri Household = 300 Population = 3000	Fuel 4 Fish 4 } = 8	Livestock 1 Water supply 5 Milk 1 Schools 4 Boats 4 } = 15	Matric and above 1 NGOs 2 Politician 4 Women's Crafts 2 } = 9
Haji Ali Bux Manchari Household = 50 Population = 450	Fuel 4 Fish 5 Water 5 } = 14	Schools 2 } = 2	Matric & above 1 Politician 4 Women's crafts 2 } = 7
Haji Jaffer Hillaya Household = 40 Population = 500	Fuel 5 Fodder 4 } = 9	Livestock 4 Water supply 5 Milk 4 School 12 Health facility 2 } = 27	Matric & above 2 Politician 4 Women crafts 2 } = 8
Shaukat Gandhro Household = 20 Population = 300	Fuel 4 Fodder 4 Fish 4 Water 4 } = 16	Livestock 1 Milk 3 Boats 3 } = 7	Politician 4 Women's crafts 2 } = 6
Abdullah Gandhro Khanbo Household = 300 Population = 3500	Fuel 1 Fodder 1 Fish 4 Water 4 } = 10	Livestock 2 Milk 2 School 2 Boats 4 } = 10	Politician 4 Women's crafts 2 } = 6

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Villages	Dependence on Natural Capital	Produced Capital	Social Capital
Daulatpur Household = 60 Population = 200	Fuel 4 Fish 4 Water 4 } = 12	Livestock 1 Milk 1 Boats 3 Dai 1 } = 6	Politician 4 Women's crafts 2 } = 6

Score: 1 is minimum and 5 maximum for each variable

The most appropriate villages for inclusion in IFAP would be Sohnari, Jhimpir and Hillaya because the former two are already landing centres and therefore important; Hillaya's significance is its tourism potential. The NGOs in Sonehri can expand to the other two locations and also Abdullah Gandhro a substantially larger village. In Jhimpir town recommended paras are Essa Manchari and Muhammad Abbas Mir Bahar for their poverty, deprivation in terms of services and dependence on fishing.

A significant component for Keenjhar site should be an assessment of the current and pipeline government programmes for the Lake especially for their implications for people in order to take up the issue of their implementation as an advocacy matter with relevant agencies. Here it would be advisable to work closely with the Fisheries Department and District administration to improve the maintenance and management of the Lake and its resources.

NGOs that can be collaborated with are those already working in the area i.e. *PFFF working for fishermen's rights, HANDS for education and health and NCHD for education.*

3.4. Keti Bunder : District Thatta.

3.4.1. Background

Keti Bunder is a Taluka of Thatta District and situated about 200 km south-east of Karachi. It is located in the Indus Delta and has four major creeks – Chan, Hajamoro, Khobar and Kangri. Keti Bunder consists of 42 village clusters (*dehs*) a number of the clusters have been engulfed by the intruding sea. The town itself is very old and was devastated thrice and rehabilitated, the first time in 1948 when it was swept away completely by a hurricane leaving many dead. Keti Bunder town consist of 253 families with a total of 1,437 people.²¹ Together the population of the town and adjacent creeks is estimated to be 12,000.²² Majority of the people living here are fishermen and belong to Baloch, Jat, Dabla, Solangi, Syed, Memon, and Gug, etc. tribes.

In the past, coastal villages used to rely on multiple sources of income depending upon the household resource ownership. While fishing formed a major part of their livelihoods, crop farming was also a key component as each family had access to some land, which they cultivated on a subsistence basis. The first diversion of livelihoods from crop and livestock farming towards the fishing sector coincided with the decrease in the fresh water flows in the Indus Delta. These changes forced the agricultural communities to shift their livelihoods to fisheries. Livestock ownership was an additional strategy for supplementing household consumption needs and as a store of value. Wood cutting enabled households to meet their fuel needs as well as supplement incomes for the poorer households. The decrease in water availability and increase in salinity was a source of pressure on all the diverse livelihoods. The choice that was once available to households gradually diminished and increasingly households became dependent upon one or two sources of income. Fishing, the single most important source of income for many families has become highly unreliable with much lower returns than were possible a decade or so ago.²³

Currently the main source of livelihood is fishing (90%) with agriculture and livestock at 8%. It is assessed that there has been a significant change in the fishing sector in the last few decades. The number of fish species, which were in abundance, has now declined; however, the number of fishing boats has increased and there is increased mechanization in the sector. Livestock comprises cattle, buffaloes and camels and feed on the mangroves with the latter free grazing 10 months of the year. In Kharochan they feed on grasses growing on mud flats. While officially locals have a customary right over mangroves forest, the stronger Jat community has sub-divided the forests for grazing among villagers.²⁴

Historically Keti Bundar was the headquarters of Thatta exported rice to other parts of India and beyond and had a a rice mill. Keti Bunder town is protected by a *bund*, about 15% of houses are made of brick or block masonry. Otherwise chattai is used. It has a Rural Health Centre, 3 Lady Health Workers, one dispenser who only distributes medicine and drips and one vaccinator. The centre is practically run by the dispenser as government appointed doctors who despite buildings, staff and residences have not stayed in Keti

²¹ Aga Khan Planning and Building Service, Pakistan. General information for Education Facilities in Keti Bunder, October 2006.

²² WWF Pakistan, 2005. Village Development Plan, Keti Bunder.

²³ World Bank, April 2005. Socioeconomic Study and Proposal for Livelihood Improvements: Badin and Thatta Districts, Sindh, Pakistan. Agriculture and Rural Development Sector Unit, South Asia Region.

²⁴ Preliminary Environmental Baseline Report IFAP. WWF. September 2006.

Bunder. Local lady health workers have successfully conducted a vaccination program for children below 2 years of age.

Box 11: RHC Facilities: Keti Bunder

Beds	2
Tube lights	In each room
Fans	In each room
Oxygen	1
Freezer (for vaccination)	1
Assessment beds	2

Source: AKPBS.

A particular problem is of access to health services due to the scattered nature of the population. Thus many of the people have no access to health services within a convenient location from their homes. The common diseases in the community are diarrhoea or dysentery, typhoid, hepatitis B, asthma, TB, malaria, skin and eye infections and other seasonal diseases. Both people from Keti Bunder and other nearby villages come to Keti Bunder RHC for medicines for seasonal diseases. In an emergency, people go to Baghan Rural Health Centre, which is 25 km away. No gynaecology facility is available except for 8-9 *dais* and at the time of delivery, cases go to Baghan RHC.²⁵

Out-migration from the coastal areas is a significant aspect of the area especially as a result of the shortage of drinking water and disruption of livelihoods as well as vagaries of weather. According to the World Bank survey of Badin and Thatta mentioned in the earlier sections nearly 27% of the households reported migration from among their families from coastal areas between 2000 and 2004. In 57% of the cases of out-migration, the entire family moved out; in 31% of the cases, only part of the family moved out while in 4% of the out-migrations this was seasonal in nature. From among the families that out-migrated, one-third find daily wage labour, one-third undertake farming in another location, one-fifth are engaged in fishing while the rest undertake other types of work. Most families that migrated relocated either to Golarchi or Karachi followed by Badin and other locations. While Karachi is a favourite location for resettling due to its potential for work, the principal problem is the shortage of land along the coast in and around Karachi. ²⁶

3.4.2. Findings from the Field

Altogether seven locations were covered in the field study. These included besides Keti Bunder town six villages belonging to UC Keti Bunder and scattered in the four creeks of the Indus Delta. At the time of the assessment it was found that men from Mohammad Lakhio village seasonally migrate to Rehri Goth and were not in the village at the time of the field visit they were therefore met by the field team in the Lakhio *para* of Rehri Goth. The villages covered are as follows:

Keti Bunder, a very old town devastated thrice and rehabilitated, it has seen change in its status from rice growing and exporting centre to an exclusive fishing hub. According to local people the construction of Kotri barrage marked the beginning of the gradual

²⁵ Aga Khan Planning and Building Service, Pakistan. "General Information for Health Facilities in Keti Bunder," October 2006.

²⁶ World Bank, April 2005. "Socioeconomic Study and Proposal for Livelihood Improvements: Badin and Thatta Districts, Sindh, Pakistan". Agriculture and Rural Development Sector Unit, South Asia Region.

diminishing of sweet water supply to the area and the elimination of irrigated agriculture. Local estimate was that 2500-3000 people belonging to around 300 households are presently living in Keti Bundar (this figure is at variance with that given by AKFEB). The main livelihood of the area is fishing and women and men both are engaged in it while some people also work as wage labourers and in commercial activities.

Goth Hamza Dablo is situated 5 kilometres south-west of Keti Bandar in the Khario area of Hajamaro Creek. It is an island half an hour away by boat from Keti Bundar. The village consists of 20 or so households. All the people in the village belong to the same caste/tribe and live in a single *para/mohallah*. The houses are made of wood and mats. The villagers have been living in this area for many generations. According to men many years ago the River Indus flowed by Bhanbore and fell into the sea passing through Chan Creek. But gradually the river changed its direction, and fell into the sea at Keti Bandar via Hajamaro creek. Now it has shifted towards Khobar creek.

Yousuf Dablo, 15 km from Keti Bandar is on the north west of the Gabri creek area of Chan creek. The access to the village is only through boat and it takes almost 2 hours to reach the village. It is a tiny village on a small piece of land surrounded by water with about 12-15 houses and an estimated population of 100 people all of whom belong to the same extended family and caste--Dabla. People came here about three years ago in search of livelihood. The winds here are strong and furious in the summer months.

Siddique Dablo is situated 5 km south-west of Keti Bandar, inside the creek of Hajamaro. The village is only accessible by boat. It takes half an hour to reach it and while coming back one has to walk through a muddy pathway. Surrounded by the sea, it has about 40 or so houses divided into two *paras* -- Golani Jamro and Badiani Jamro. The total population of about 400 belongs to Dabla caste. Mathara Jamro is the nearest village accessible by a mud road. The houses in Badiani *para* remain wet and damp despite being built on raised land.

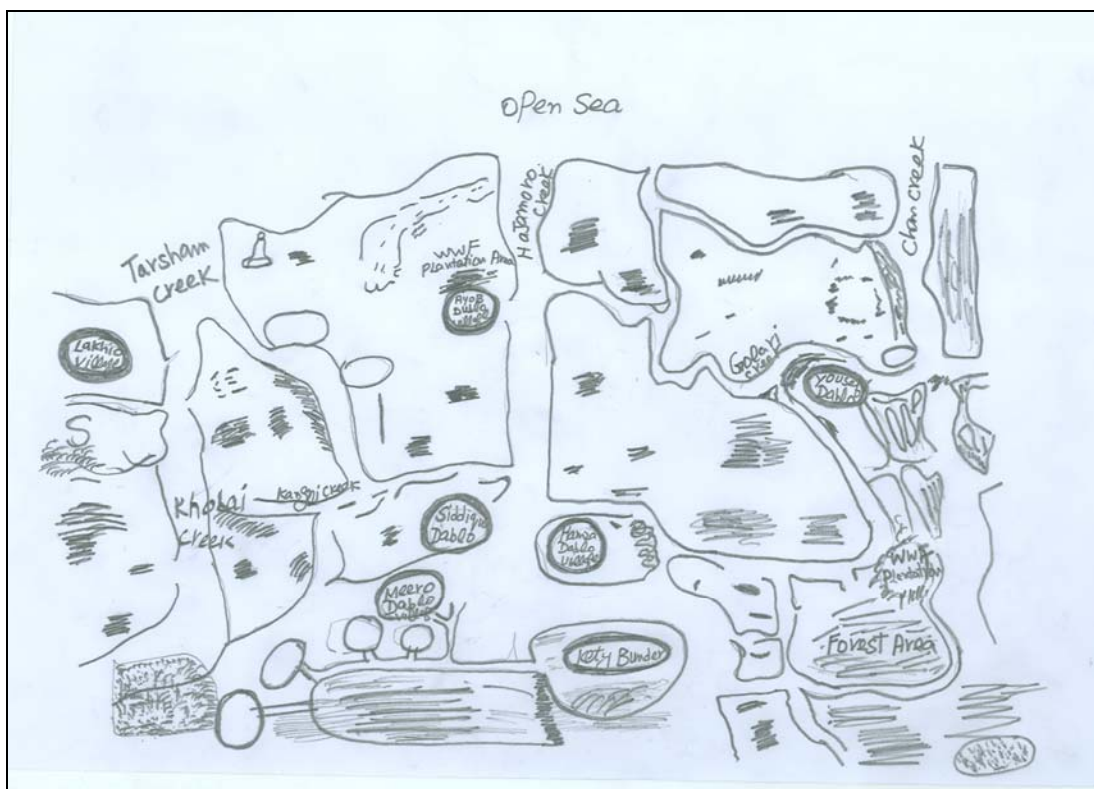
Goth Mohammad Lakhio dates back to 1885 when the freshwater from River Indus flowed here. It lies 25 km southeast of Keti Bundar. On three sides of the village there are three creeks—Khobar creek (Darba), Tarchhan (Tarsham) and Kanghri. It takes almost 2-2 ½ hrs by boat from Keti Bundar to reach the village. The village was reduced to its current strength of 15 households and an estimated population of 100 people after 1962 when fresh water from Indus River stopped flowing here and the sea intruded, engulfing thousands of acres of land as well as the village itself. The last hurricane destroyed it completely. All the inhabitants belong to Lakhio tribe/caste and the remoteness from Keti Bandar means high commuting cost to Keti Bundar (Rs. 1000 in fuel). Many households of Mohammad Lakhio migrate seasonally to Pan Para in Rehri Goth for six months.

Meero Dablo, at a distance of 2 km from Keti Bundar was established 13 years ago when people moved in from Hajmorro Creek. It comprises of 35-40 households and a population of 250 persons, all engaged in fishing the year round. Like other villages in the study Meero Dablo does not have basic facilities but for the locals bringing drinking water to the village poses a particularly grave problem as the water tanker is unable to reach the village storage tank because of the fortnightly *jwar* (lunar high tide) and gets stuck in the wet mud. The villagers either have to get water before the tide or bring it by boat.

Ayub Dablo is made up of 80 houses and 400 people belonging to the Dabla tribe, of which about 150 are children. The village gets inundated by knee high water during the rainy season which takes several days to drain out and remains muddy for days afterwards. Residents of Ayub Dablo claimed that they make a reasonable earning from

fishing as they are hard working but admitted to wasteful expenditure especially at the time of marriages and deaths.

Map 4. IFAP Villages: Ketī Bundar



Provided by WWF to field teams

Natural Capital: Almost everyone involved in the assessment, regardless of the village they belonged to, were nostalgic about what the delta was and despaired at what it has become. In the words of men from Yusuf Dabho:

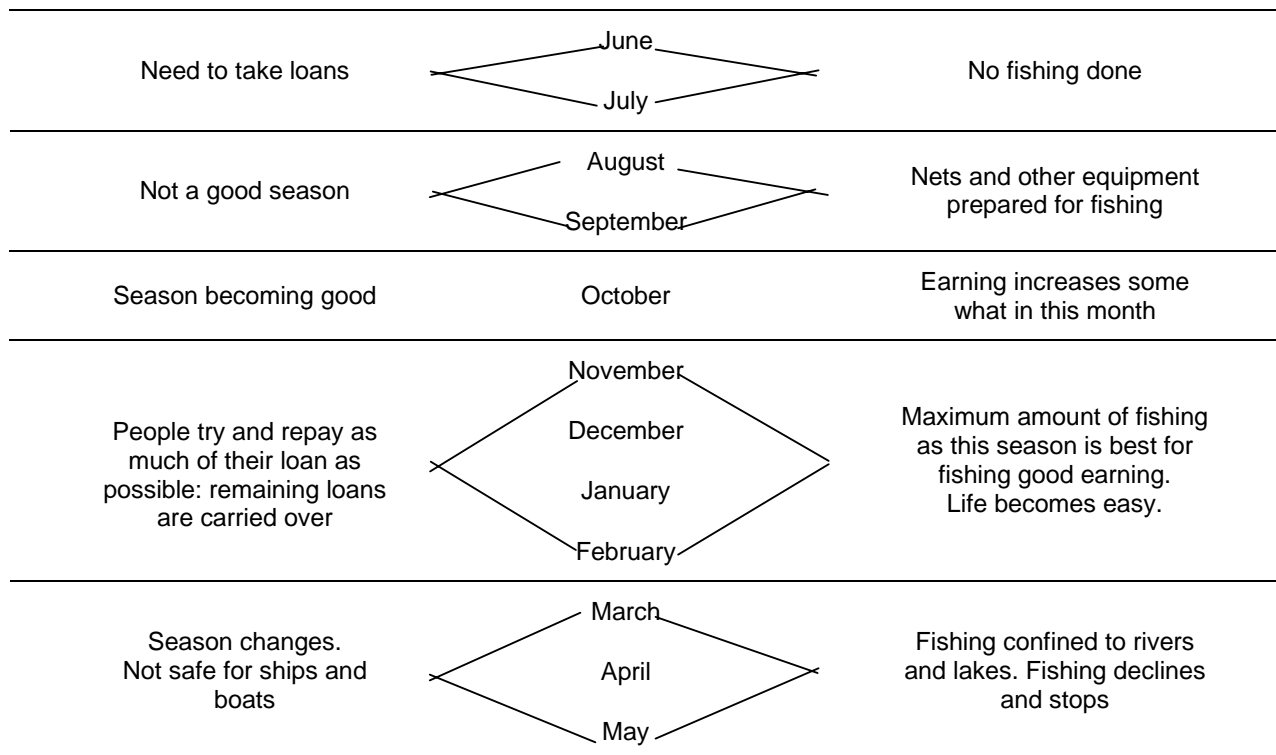
“River Indus used to flow here many years ago; the lands were fertile, basmati rice was grown and livestock grazed in the many goths that were present then. The last flow of fresh water was seen in the era of Zulfikar Ali Bhutto and earlier during Ayub Khan’s tenure. As soon as fresh water stopped flowing the greenery vanished, mangroves were damaged, fish dwindled and some species like the palla were totally eliminated, and salt water engulfed the fertile lands as well as homes leaving the area surrounded by sea water. Goths were destroyed; the landowners left and only fishermen stayed behind. Now at midnight at high tide the sea water enters the houses to retreat around mid day as the tide recedes.”

Sea, water, fish, cattle and forests are identified as the main natural resources of the area by both men and women with **fish** as the current most important capital on which the livelihoods of the entire area depends and which has become the only viable occupation left. Men and women are both involved in fishing in most of the villages. Usually men fish while females dry up small fish for domestic use and look after the left-over fish from the nets (*gund*).

The fishing season starts in September and continues till March. Fishing is done from December to February in the deep sea and from September to November in the streams inside the creeks area or in shallow sea water. During April and May the catch is very

nominal; June-July is the breeding season for fish and there is an official ban on fishing. The wind from the sea is also strong during this month; August is the rainy season bringing with it the fear of storms/hurricanes. During off season (and ban period) small boats are used to fish in the creek.

Fig. 5: Seasonal Calendar: Village Yousaf Dablo – Ketī Bundar



In the open sea a variety of fish is still available known in local language as *paplet*, *chhodri*, *gusar*, *sao*, *wangar*, *aal*, *khagga*, *pallo*, *tarzan jheenga*, *kalri jheenga*, *suha*, *palla*, *koka safaid* (crab), *koka kala* (crab) and *masko*. While good quality, larger sized fish is sold (for export) the small fish like *danthi*, *maska*, *patel*, *singara*, etc. is sold to the poultry feed industry or used at home. Fishermen complain about the reduction in fish stock particularly over the past 10-15 years. Their reasons for this decline are:

- Non-availability of sweet water due to stoppage of fresh water to the Indus Delta; thus some kinds of fish like *palla*, a specie specific to the Sindh delta has now become rare.
- Indiscriminate use of *bholo* (fine mesh, nylon net), *katro* and other banned nets and widespread over-fishing for commercial reasons. Reportedly 75% of the people of the area use *bholo* net.
- Diminishing mangrove forests that used to serve as nurseries/breeding grounds as well as provide food for the fish.
- Increase in sea pollution.
- Lowering of the market value of available fish.
- Increase in the number of fishermen and nets.
- Government's permission to foreign deep sea fishing trawlers to fish.
- Oil spill that left tons of fish dead (probably referring to Tasman spirit).

Referring to the state of fish stock the residents of Goth Mohammad Lakhio said that fish now is depleted to the point that they sometimes catch nothing for a whole week.

Forests/mangroves: Qualities of mangroves and their usefulness to coastal communities was pointed out by all villagers. It was also said that only 10% of the thick mangrove forests remain. The wood of *timar* (mangrove) was used as fuel and the forests served as a natural nursery for young fish, prawns and *sata jheenga* (crab) that was found in abundance in the thick forests. Wood for fuel and construction used to be taken entirely from the forest besides fodder for livestock, especially camels. The forests would resist sea tides and also had some animals living in them. A lot of birds e.g. *sanain*, *bagh*, *choraro*, *teto*, *pen*, *keno* and crow were attracted to the forest and nested in it. (Some of the birds including *keno*, *bagh* etc were sighted by the male field team). Animals like jackal, fox and snakes are still found. One type of snake, *Lundi Bala* was specifically mentioned. It lives inside a small plant that grows in the creek and is very venomous; people die from its bite. Among reasons for the drastic reduction of mangrove forests were:

- Shortage of sweet water.
- Illegal cutting by locals in collusion with officials of the Forest Department.
- Overgrazing by camels (reportedly around 500-1500 camels graze unchecked).
- Excessive use as fuel, and leaves and twigs as fodder.
- Sea intrusion due to heavy winds and reduction of water flowing to the delta.
- Hurricanes and storms especially the storm of 1999 that damaged the thick swathe of mangrove forests that spanned the belt from Shah Bandar to the Indian border.

With the destruction of forests, the livelihood of the local people has been badly affected. According to the residents of Hamza Dablo the negative effects are:

- People have to buy firewood at Rs.15 for a 5 kg bundle that was earlier available free of cost. The firewood is often soggy and has to be dried before use.
- Quantity of fish has reduced, especially *sana* prawns.
- High tides have engulfed homes and dry land.
- Destruction of homes has forced many to out migrate.

Despite the decline, wood from mangroves is used in construction of huts, as industrial and domestic fuel, making boats and nets. Many people are in the wood business, cutting the wood and sending it by boat to coastal villages of Sindh (for doing this the officials of the Forest Department are said to demand financial gratification).

Yusuf Dablo has mangroves as well as *pan* near it. Here men cut wood for fuel for domestic use and women dry it in the sun if it is soggy. According to local residents mangroves have started regenerating because of need-based cutting by locals that has given smaller trees time to grow. Wood for construction is bought in Keti Bandar and Gharo.

The forest on the west of Siddique Dablo is an hour-and-a-half away by boat. Here it also has *babbar*, *lai*, *devi* and *ber* trees. The *ber* wood is used in the construction of houses while mangrove, *babbar*, *lai* and *devi* are used as firewood. Firewood becomes scarce during the rainy season and has to be bought from Keti Bundar at Rs.20 for 20 kg – considered dear by local people. The mangrove forest is at quite a distance from village

Mohammad Lakhio; it takes women almost 24 hours to reach it (they do not go there during high tides) to purchase fuel wood from forest caretakers.

Produced Capital:

Keti Bundar is the only place in the area that has primary and secondary schools for boys and a primary school for girls. It also has a Rural Health Centre but no doctor. The dispenser, vaccinator, clerk and chowkidar attend office. At the time of Shirkat Gah team's visit the vaccinator was the acting doctor as well as the dispenser. There are three Lady Health Workers in the area but are not of much help to female patients in emergency as there is no lady doctor or LHV to deal with maternal health matters and many lives have been lost in emergency cases.

The water supply scheme built during Mumtaz Bhutto's tenure no longer works. People now buy water tankers for Rs.300-Rs.600 for their daily use. Drainage is a persistent problem currently addressed through a water and sanitation project initiated with collaboration of Aga Khan Foundation (AKF) whereby cement latrines (AKF designed) cement are provided to households at a cost of Rs.2000. Rest of the cost (Rs. 14000) is subsidised by AKF. 100 houses now have latrines. The Foundation has also constructed drainage and sanitation lines. It will also build protective walls under the project to save the adjoining villages/*goths* of Keti Bundar from sea water.

All other villages do not have any infrastructural facilities other than a roofless mosque and *autaq* in Yusuf Dablo and one in Hamza Dablo. In places like Siddique Dablo, houses are made of wood and straw and the land is so low that they get inundated during high tides.

Dependence for all necessities is on Keti Bunder from groceries to drinking water, fuel wood, diesel, and gas. Residents of Lakhio village purchase a boatload of fuel wood for Rs 400-500 from forest caretakers. Siddique Dablo has a *dai* but in serious cases patients are taken to Keti Bunder, the distance from it determining the time taken to get there. Given the rudimentary nature of health service seriously ill persons have to be taken onwards by road to Thatta or Gharo or even to Ibrahim Hyderi. The expense from there point of view of the poor residents is prohibitive. Transport can cost from Rs. 800 in the case of Ayub Dablo to Rs. 1000 in Mohammad Lakhio (in the latter just to get to Kaeti Bunder). The Dispenser in Keti Bunder charges Rs. 500 for administering an injection.

Drinking water shortage in all villages mean that sweet water for drinking and cooking is purchased from Keti Bundar @ Rs 100/drum; a half-drum is sold @ Rs 50 and a 16kg ghee can is available for Rs 5. A drum at times lasts only one day. Siddique Dablo. Often sea water is used for washing utensils. However women in Yousuf Dablo said that in the rainy season when there is water released in Khobar Creek they get free of cost sweet water.

There are few individually owned assets except for fishing equipment and nets. Material/equipment needed for fishing includes *hora* (boat), net, *chabbi* (basket), plastic can, *lona* (salt), rope and pulley and thermopor sheets salvaged from the sea. Around nine types (*dek, rebi, gobhi, raos, jari, qatro, bin, tohkar, and perat*) of fishing nets are used for catching different types of fish. They are made of two types of ropes -- one nylon; the other silk. The nets are usually owned by fishermen, often bought with borrowed money. Boats in the villages are in poor condition (a woman who used to fish in her own boat was restless as her boat was broken and she could not afford to have it repaired). While inside the creek fishing is done in small boats, for deep sea fishing fishermen who do not have a

big boat go as labourers (*khalasi*) in the big boat belonging to a *seth*. In Hamza Dablo there are 20-25 small boats and four big boats (*hora*) for fishing in the sea. A small boat with nets costs Rs. 20,000-25,000, while *katra* net and a big boat up to Rs. 20-25 lakh. In Lakhio there are 6 small boats and the one relatively big boat is owned by the contractor.

The sea also brings material that the fishermen can use e.g. *diyar* planks that are sometimes found floating and are used for construction, or sheets of thermopore. In Yousuf Dablo, women mentioned *amber* (resin) that came from the sea, had medicinal value, and was worth lakhs of rupees. A grain of *amber* boiled in one kg milk till only a ¼ kg is left cures colds. Doctors reportedly buy *amber* from them at Rs.35, 000 per *tola* (approx 12 grammes). Whoever finds this herb becomes rich. Yet another profitable resource mentioned by residents of Ayub Dablo was the very precious hawk that fetches Rs.500,000 to 1,000,000 and is searched and caught by local people. Once the location of a hawk is confirmed people use a kind of net/trap with a pigeon or dove as bait to capture it. Three or four kinds of hawk were said to be around the coastal forest. Gulf sheiks pay a high price for the bird.

Social Capital: According to local people in Keti Bunder social capital consists of business and trade, opportunities for labour, government and private sector jobs, fishing, and people. The latter are further categorised as “prosperous” i.e. those who own businesses and/or boats, are commission agents in the fish market, or have shops and enjoy influence in the area. They work as contractors/agents for fish and crabs, and can give loans to small fishermen or poor and middle class people. Such people also have somebody to sell fish to or have a couple of shops and enjoy influence in the area. “Middle class” people own a shop or boat; have a small fishing business or commercial activity (small hotel or café), or are in employment with government or NGO. The “poor” don’t have a business or regular income and work for others. They earn very little and hardly manage to meet the daily needs of their families.

Local people are generally supporters of PPP and any development work done for the area was, in local perception, by PPP when it was in power. Currently the UC Nazim, his brother and Councillor belong to the Shirazi group and are the powerful people of the area. Political rivalries are seen as the underlying reason for the area’s unresolved problems as people amongst themselves have few political differences and those too of a temporary nature. People were critical of the current leaders. The Nazim however denied that the present government has not undertaken development. According to him development work is underway and the budget for the water supply system has been approved..

Village Hamza Dablo does not have any educated person, except one man who studied till third grade. WWF has been working in the area and has helped form Hajamaro Environment Friendly Committee (HMDC). People seemed happy with WWF’s initiative. Most of Aga Khan Building and Service Pakistan’s work is in Keti Bundar but it has provided smoke less efficient stoves in the village. No other institution operates in the area and the government only administers polio drops. Local people arrange for BCG vaccine for their children themselves. Disputes here are mostly related to exchange marriages and usually end if somebody falls ill and is visited by the other. People seemed dejected with political leaders, *sardars* and *pirs* and afraid of influential people.

Yusuf Dablo has only one primary educated boy who can read and write a little. There seemed to be little inclination towards education or political understanding. There was however social cohesion as reflected in the way they managed water, collectively owned the big boat, and sold their catch, etc. The few disputes (matrimonial or others) in the

village, are solved by the village female elder (*dadi*). Interestingly, loans were not considered a major problem despite the fact that most people were indebted. They perceived themselves as poor and expected that someone from outside will do something for them. People were fatalistic and have the tendency to spend recklessly on receiving payments in the belief that “*God will give us more tomorrow.*”

Village Mohammad Lakhio is particularly desolate. People seemed dejected and rather annoyed with the government and NGOs. They complained that nobody does anything for them. Similarly, leaders take votes from them, but have no interest in their problems. An old man was a member of Pakistan Fisher Folk Forum, but it too hasn't done anything for the village. There is an inter-tribe conflict in the village over land ownership. According to the people of Lakhio community, before the sea intrusion people of Syed, Jat, Khatri castes owned land and were agriculturists. But after the submersion of their land they shifted to fishing and have occupied fishermen's land and also the creek which is relatively richer in fish. These people also commit dacoities and sometimes snatch nets and fish at night. The Lakhios allege that a year ago on the instigation of a Syed influential of Thatta, the people of Dabla community took away their nets. The latter have the support of political people as well as the police. The case is in the lower court; no decision has been given so far. The Lakhio community however is cohesive and are *mureeds* of a *pir* who wields influence in the village.

In Ayub Dablo village Talib Dablo is seen as influential as he is financially strong and has good relations with the Shirazi group as well as the PPP. His relationship is also good with PFFF, WWF and AKBSP. Meero Dablo is poorly endowed like the other villages.

Livelihoods/Income: Fishing is the main occupation of the inhabitants of all villages and the sole source of income. In Keti Bundr a small percentage are employed as labourers, work in hotels, shops, etc. and a small number in government and private jobs. In rest of the villages almost the entire populations are engaged in fishing. Fish catch varies seasonally but the main complaints are related to a) the marketing of fish; b) the rising costs entailed in fishing of boats, nets, diesel for the bigger sea-faring boats, etc. and c) the relationship of bondage with the contractors who finance the fishing and bind them to sell the catch to them at prices they set. The result is a lifelong indebtedness of all fishermen. The contractor, fishermen complain pays them a pittance for fish which he sells at high rates in the Karachi Fish Harbour Society market where the fish auctions are held (Boxes 11, 12, 13 below). There is a local fish market in Ibrahim Hyderi and also in Thatta. There are various small companies and agents also present in different areas and variations in the rates of different kinds of fish according to local fishermen. Some have greater export potential and more expensive while the smaller ones are sometimes returned by the contractor and used at home or sold locally. The contractor picks up the catch as soon as the boats return and sometimes while they are still in the waters. The market rates of fish according to fishermen are two to three times the amount paid to fishermen (Boxes 11, 12, 13).

The cost of taking a launch to sea for 10-15 days is very steep, about Rs.200, 000; and of a boat between Rs.30-40 thousand. When going fishing, men take food, nets, diesel, ropes, etc. and on board big boats ice, as well as *tamboor/dafa* (tent). The latter in case the boat capsizes, they can swim with its help. The fishing equipment is acquired on loan from contractors in Keti Bundar. The investment on big boat and on *kastra* net is high worth from Rs.5-6 lakh and is usually done by a contractor. Around 5-6 people go in the *kastra* boat and make a round daily. This costs around Rs.6000 (on diesel and food) and while sometimes they get a normal catch there are times they come back empty handed.

Generally after deducting all expenses, they individually manage to earn around Rs 2500-3000 per month (almost Rs 100/day). Occasionally, if in luck a person can get Rs.50, 000-60, 000 also. At times fishermen work as labourers (*khalasi*) on boats owned by the contractor (*vepari*). If the catch is good they receive some income.

Box 12: Prices paid to fishermen and rate in market –Yusuf Dablo

Type of fish	Rates paid to the fishermen	Karachi Market per kg
Sao	Rs.100-150	Rs.300-400
Mangarwa	Rs.50-60	Rs.200-250
Dangro	Rs.100	Rs.200
Mitto	Rs.500/bag of 60 kg	Rs.1200/bag of 60 kg
Goli	Rs.30-40	Rs.50-60
Khaggo	Rs.30-40	Rs.50-60
Khekhar/Koko	Rs.20-25/piece	Rs.60/piece

Loans are taken from the contractor or “*seth*” not only for fishing equipment, but also for marriages and illness and daily expenditures in off season. The loan though easily available leads to long term bondage as the loans keep accumulating. The irony is that while fishermen sell their catch at lower rates they purchase groceries and diesel at higher rates from the Keti Bundar market (e.g. diesel is sold at Rs.10/litre more than elsewhere).

Box 13: Price paid to fishermen and rate in market – Siddique Dablo

Type of fish	Rates paid to the fishermen	Karachi Market per kg
Solo	Rs.60-100	Rs.700-1000
Dangro	Rs.100	Rs.200-300
Seenery (gand ki fish)	Rs.500/hunar	Rs.800-1000/hunar
Khago	Rs.30/piece	Rs.200-250/piece
Aal	Rs.200/-	Rs.500-600/-
Dothar	Rs.200/-	Rs.900-1000/-
Dana	Rs.100/-	Rs.300-400/-
Dungar (big fish)	Rs.80,000-90,000/piece	May be sold for Rs. One lakh per piece
Godogasar	Rs.15,000-20,000/piece	Rs.80,000-90,000/piece
Yatu	Rs.500/hunar	Rs.1000/hunar (60 kg)
Bhuro	Rs.500/hunar	Rs.1000/-hunar
Masko	Rs.20/-	Rs.50-60/-
Dathi	Rs.40/-	Rs.150/-
Dandio	Rs.25/-	Rs.60/-
Heero	Rs.25/-	Rs.60/-
Kokha	Rs.15/-	Rs.45/-
Surmai	Rs.15/-	Rs.50/-
Koko	Rs.27/piece	Rs.45-50/piece
Sano/Jheeglo	Rs.50/-	Rs.250/-
Paplait	Rs.50/-	Rs.250/-
Jerio	Rs.100/-	Rs.200/-
Kaddi	Rs.20/-	Rs.60/-
Malar (dolphin)	Rs.1000/piece	Rs.8000-15000/piece

Given that the average income of each household is about Rs. 2000-3000 and household expenditures vary from Rs 2000-3000 to Rs 5000 there is an obvious deficit in cash flow. Expenses related to illness are additional it is therefore not surprising that there is such a high level of indebtedness. There is also abject poverty in the case of more than 50% of the people.

Women have a significant role in the fishing process. Usually men fish while females dry up small fish for domestic use and look after the left-over fish from the nets (*gund*). From this *chhodri* and *mitto* (small fish) is kept for their own use. *Gund* sells at Rs.400-500/*hunar* (60kg) and at Rs. 800-1000 in the Karachi market at, small crabs at Rs.30-40/kg and big prawns for Rs 80-100/kg. Sometimes women also go fishing with men and some women fish alone, by themselves. Fish caught by women, often with a fishing rod, is used at home except crabs that are sold at Rs. 20-25 a piece. During the season they sell crabs worth Rs. 200-250. The price of *gund*, in the market has gone down in the past 2-3 years. These were earlier purchased for making poultry feed and fetched a good price. Since the government has started the import of poultry feed from India and China the demand for local feed has gone down. Women also make *rallis* at home --a cover for Rs.50 and a complete *ralli* for Rs 200—and weave fishing nets.

Box 14: Price paid to fishermen and market rate--Muhammad Lakhio

Type of fish	Rates paid to the fishermen	Karachi Market per kg
Jeero	Rs.80/-	Rs.280/-
Patas Sano	Rs.40/-	Rs.150/-
Kiddi Sano	Rs.20/-	Rs.120/-
Sao	Rs.150/-	Rs.500/-
Dangro	Rs.30/-	Rs.150/-
Small Fish	Rs.20/-	Rs.100/-
Gand	Rs.450/- <i>hunar</i> (60 kg)	Rs.800/- <i>hunar</i> (60 kg)
Koko	Rs.20/piece	Rs.60/piece
Koko Bilo	Rs.20/-	Rs.140/-

The villages covered in the study did not keep livestock except in Keti Bunder where camels were kept.

Local people had several suggestions for the improvement of their livelihood both for government and NGOs working in the area. These include:

- The government should release fresh river water into the sea.
- Provide drinking water to all villages in the creek on a weekly basis.
- Provide ration to fishermen during off season and banned months.
- Provide big boats and nets to all fishermen.
- Open a market in Keti Bandar where it buys fish from local fishermen.
- Provide with other institutions educational, health and clean drinking water facilities to villages of the area.
- AKF could introduce refrigerators to fishermen on cost sharing basis so that they are not compelled to sell their catch immediately.
- Give electricity connections and build power stations; explore solar power.
- Introduce credit programmes on easy and affordable terms and conditions. Small loans for emergencies should also be organised, so that loans from contractors are be stopped. Develop a system of access to the market without intermediaries.

Conclusions: The salient points of the study in Ket Bunder highlight that:

- The natural resources of the area are heavily depleted and under stress largely due to manmade factors i.e. not enough water flowing down the Indus to the sea has destroyed mangroves. In the process the stock and variety of fish has reduced, and has been further depleted by over fishing especially because of the widespread use of banned nets and foreign trawlers.
- The fishing community living in the Indus Delta region is extremely poor and its current pattern of dependence on a single resource is highly unsustainable.
- Fishing households are in bondage for life because of the loans they take from the contractor. Not only are they exploited they are forced to fish more to be able to make some earning and repay loans thus exacerbating the pressure on a rapidly depleting resource.
- There is no alternative means of livelihood. In fact traditional occupation of agriculture is dead and livestock barely exists in the creek region except in Keti Bunder.
- Human capital in terms of education and health is abysmal. Basic social services are missing. The costs involved in accessing health care and basic livelihood needs like drinking water, fuel, diesel is beyond the capacity of the poor.
- The presence of two NGOs (WWF and AKF) is encouraging; both are welcome in the area, though their scope of work is limited.
- There is general cohesion as each village is small and has the same caste group residing in it. In fact at least five of the smaller villages were from the same tribe (Dabla). However one major conflict is between the Lakhios and Syeds on the one hand and Dablos on the other, over fishing rights on submerged agricultural property and the issue of stealing of nets.
- Women's role is tied to fishing—a full time occupation with little room for any other activity.

Box 15: Village Ranking by Capitals: Keti Bundar

Villages	Dependence on Natural Capital	Produced Capital	Social Capital
Keti Bundar Household = 300 Population = 3000	Fuel 2 } Fish 4 } = 10 Fodder 4 }	Boats 4 } Camel 4 } = 26 Health facility 3 } School 9 } Others 3 } Nets 3 }	NGOs 1 } Politician 3 } = 5 Women crafts 1 }
Ayoub Dablo Household = 80 Population = 400	Fuel 2 } Fish 4 } = 10 Hawk 2 } Amber 2 }	Boats 3 } = 5 Nets 2 }	NGOs 3 } Politician 5 } = 13 Women crafts 1 } Cohesion 4 }
Meero Dablo Household = 40 Population = 250	Fuel 2 } Fish 4 } = 6	Boats 3 } = 5 Nets 2 }	Politician 2 } = 6 Cohesion 4 }
Hamza Dablo Household = 40 Population = 450	Fish 5 } = 5	Water supply 1 } Boats 3 } = 7 Others 1 } Nets 2 }	NGOs 2 } Politician 3 } = 5
Yousuf Dablo Household = 15 Population = 100	Fuel 2 } Fish 5 } = 7 Wild life 2 }	Water supply 1 } Boats 3 } = 9 Dispenser 1 } Others 2 } Nets 2 }	Cohesion 4 } = 4
Siddique Dablo Household = 40 Population = 400	Fuel 2 } Fish 5 } = 9 Amber 2 }	Water 1 } Boat 2 } = 6 Dai 1 } Others 1 } Nets 1 }	Politician 1 } Women's crafts 2 } = 7 Cohesion 4 }
Goth Mohammad Lak Household = 15 Population = 100	Fish 5 } = 5	Water supply 1 } Boat 3 } = 7 Others 1 } Nets 2 }	Politician 1 } NGOs 1 } = 5 Cohesion 3 }

Score: 1 is minimum and 5 maximum for each variable

Ranking: The 6 villages and Keti Bundar town are all engaged in the same activity and experience almost the same kind and extent of problems, issues and economic status.

The villages of Keti Bundar are poor on the one hand and isolated on the other but their dependence is on one natural resource. As a result the pattern observed in other sites, of

an inverse relationship between dependence on natural capital and produced capital is very diffused here except in the case of Ayub Dablo (low produced capital and high dependence on natural capital). Keti Bunder which has a several times higher produced capital at the same time has high dependency on natural resources. Social capital here is only relatively high in Ayub Dablo where NGOs are working and there is minimal political rivalry. In all other villages including Keti Bunder town it is almost the same and uniformly low with no apparent significance.

Recommendations: The fact that villages in this site are fairly uniform with similar problems (depleted fish stock, bonded status and poor social capital) offers the possibility of a programme with a wider ranging impact and higher replicable potential. Even if two-three villages are selected for implementing the programme a wider multiplier effect can be anticipated. A systemic change in the contract system would inevitably have similar results whether a village is in the programme or not. Conversely an argument can be made for the same reasons to consider the entire area for programme implementation. *A good entry point would be Ayub Dablo where WWF already has some work and Keti Bander as an administrative focal point.*

An initial useful exercise in the area would be an analysis (if it has not already been done) of the fish markets in Karachi, Thatta and Ibrahim Hyderi for their respective significance, the dynamics of markets' operations, the role of the contractor and its various dimensions (as creditor, middleman, employer), the logic of the rates paid to fishermen, etc. Indicators here would be regarding reduction in the use of banned nets, disentanglement from loans, rehabilitation of mangroves, introduction of alternative occupations, and increase in health and education facilities.

4. Conclusions

4.1. Overall Conclusions

Specific conclusions pertaining to each site are included in relevant sub-sections of Section 3 of the Report. Over here a few overall conclusions are highlighted to provide broad framework to incorporate socio-economic dimensions in the implementation design of the programme.

To conclude, the study very strongly reaffirms the poverty-environment nexus. Lack of opportunities and varied livelihood options as well as the absence of employable skills compels the poor to place greater reliance on natural resources, traditionally freely available. However, as poverty deepens the reliance on freely available natural resources increases. In our sites it is observed that the resources that used to be easily available traditionally are no longer free and have a cost attached which in most instances is unaffordable.

Alternatively the reliance is on human capital i.e. physical labour. The fact that the only self owned capital is people's physical capacity was established very strongly in the Pakistan Participatory Poverty Assessment. That poverty is also responsible for the debilitation of this asset combined with the absence of necessary healthcare to maintain and sustain it renders it a vulnerable asset and underscores the need to address health needs of the poor in deprived rural areas. All four sites of the Indus Delta selected for IFAP are poor, their natural resource base is under severe threat and stress, and people's health needs are unaddressed.

The village profiles of the 22 villages (Table 13) show large household sizes notwithstanding the out-migration and displacement that has occurred due to depleting natural resources and paucity of livelihood sources in Chotiari, Keenjhar and Keti Bunder. Thus the out-migration and/or displacement have not reduced the dependency ratio as is indicated by the big household size.

Table 13: Village Profiles - all IFAP Sites

Village	Househ	Pop.	School				Electr icity	Health		Road	Water
			Male		Female			Pub	Pvt.		
			P / M	High	P / M	High					
PaiForest (Nawabsahah)											
Nangar Chandio	65	800	1*	-	1*	-	Yes		1	Yes	65 Hand pump
Jaffar Jamali	40	500	1 / -	-	-	-	Yes	-	-	-	10-12 H. pump
Mari Jalbani	1140	8000	2 / -	1	- / 1*		Yes	1		Yes	1140 H. pump
Chotiari Reservoir District Sanghar											
Pholel	150	1800	1 / -		1 / -		-		2 dais		14(8*) H. pump
Padrio	33	300	1 / -	-	-	-	-	-	-	-	2 Hand-pu
Awad	450	-	1 / -	1	-	-	Yes	1*	1 desp 1 dai	Yes	15 Hand- pump
Dubi-Hamiso Gaho	25	300	-	-	-	-	-	-	-	-	1* Hand- pump
Haji G. Hussain Leghari	50	500	1 / -	-	-	-	-	-	-	-	40-50 Hpu
Keenjhar Lake: District Thatta											
Jhampir	235	2275	5 / -	1	2 / -	-	Partly	1	-	In part	Purchase - multiple
Sonehri	300	3000	1	-	1	-	Yes	1*	-	Yes	water supply
Haji Ali Bux Mancha	50	450	1 / -	-	-	-	-	-	1 dai	-	Lake water
Haji Jafer Hillaya	40	500	1 / 1	1	1 / -	-	Yes	1	-	Yes	Water supply
Shaukat Gandhro	20	300	-	-	-	-	-	-	-	-	Lake water
Abdullah Gandhro	300	3500	1 / -	-	-	-	Yes	-	-	Yes	Lake water
Daulatpur	60	200	-	-	-	-	-	-	1 dai	-	Lake water
KetiBundar: District Thatta											

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Village	Househ	Pop.	School				Electr icity	Health		Road	Water
			Male		Female			Pub	Pvt.		
			P / M	High	P / M	High					
Keti Bundar	300	3000	1 / -	1 second y	1 / -	-	Yes	RHC 3 Lhw 1 dis	-	Yes	Purchase water
Ayoub Dablo	80	400	-	-	-	-	-	-	-	-	Purchase water
Meero Dablo	40	250	-	-	-	-	-	-	1 dai	-	Purchase water
Hamza Dablo	40	450	-	-	-	-	-	-	-	-	Purchase water
Yousuf Dablo	15	100	-	-	-	-	-	-	1 dispen	-	Purchase water
Siddique Dablo	40	400	-	-	-	-	-	-	1 dai	-	Purchase water
Goth Lakhio Moham	15	100	-	-	-	-	-	-	-	-	Purchase water

Keys:

* Not functional

** Collective purchase of water tank Rs.1500-2000

Pop. Population

P / M Primary/Middle

Pub. Public

Pvt. Private

The profile also reveals the poor state of essential physical infrastructure (roads, transport, and communication) and basic social services. Between them, 11 of the 22 villages (50%) do not have a primary school for boys, and only 7 have a girl's school. The figure includes non-functional schools. Similarly, only 6 villages have a public sector health facility and that too very rudimentary, either not properly staffed or closed. Women's health issues, especially of child birth and related complications, reportedly lead to deaths and incur high transport and treatment costs (Table 15 for vulnerabilities). Illness as the PPPA established heightens the vulnerability of the poor and plunges them into greater poverty. The fact is reaffirmed here also. LHWs under the National Programme for grassroots level

health coverage were found in a few places, absence of proper back up or medical service their efficacy becomes minimal. Even TBAs (*dais*), usually the most easily available and affordable service providers in rural areas were found in only 6 villages. Hand pumps in Chotiari and Pai provided potable water, though dropping water tables require regular re-boring and in Keenjhar and Keti Bunder it has to be purchased.

Transport systems on all four sites are extremely poor. People have to spend hours in travel and at unaffordable cost. In many instances getting to the main town or village means using more than one mode of transport i.e. boat and vehicles (Table 15).

A look at the sources of livelihoods in all sites shows the dominance of one principal occupation in each site with a secondary source during lean times or off-season (Table 14).

Table 14: Sources of Livelihood in all IFAP Sites

Site	Agriculture	Livestock	Labour	Professional	Fishing	Stone crushing	Others
Pai Forest: Nawabshah							
Nangar Chandio	75%	15%	2%	5%	-	-	3%+ women crafts
Jaffar Jamali	20%	Majority	15%	5%	-	-	10%* + women crafts
Mari Jalbani	50%	10%	10%	5%	-	-	25%*+ women crafts
Chotiari Reservoir: District Sanghar							
Pholel	-	-	-	1 teacher	99%		2 dais + women crafts
Padrio	Secondary	100%	-	1 teacher	-	-	Women crafts
Awad	Secondary	Majority	-	1 dispenser 1 teacher	-	-	1 dai
Dubi-Hamiso G.	-	75%	-	-	25%	-	Women crafts
Haji G. Hussain Leghari	10%	50%	40%	-	-	-	-
Kiti Bundar: District Thatta							
Keti Bundar	-	Camel 1000 – 1500 buffalo	5%	3 1 Vaccina 1 Dispenser	85%	10% (vap women cra	
Ayoub Dablo	-	-	-	-	100%	-	
Meero Dablo	-	-	-	1 dai	100%	-	

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Site	Agriculture	Livestock	Labour	Professional	Fishing	Stone crushing	Others
Hamza Dablo	-	-	-	-	100%	-	-
Yousuf Dablo	-	-	-	1 dispenser	100%	-	Women crafts
Siddique Dablo	-	-	-	-	100%	-	Women crafts
Goth M. Lakhio	-	-	-	-	100%	-	-
Keenjhar Lake: District Thatta							
Jhumpir	-	Poultry seasonal	Majority	Govt. & Pvt. Services, cobblers, tailors	In 2 paras	In 2 paras	Traders/ women crafts
Sonehri	-	3%	4%	3%	85%		5%
Haji Ali Bux Mancha	-	-	-	-	100%	-	-
Haji Jafer Hillaya	-	-	70%	22%	-	-	8%
Shaukat Gandhro	-	-	Working field + other cities seasonal)	-	90%	Crushing stone: seasonal)	Women crafts
Abdullah Gandhro	-	-	10%	10%	Majority	Crushing stone (seasonal)	-
Daulatpur	-	-	-	-	Majority	Crushing stone: seasonal	1 dai + women crafts

* - Unemployment

Diversity of livelihood sources is therefore a desirable objective. Streamlining of existing skills, setting up smooth marketing channels combined with the creation of employment opportunities and training in newer skills would be the way forward.

Vulnerabilities and risks of the poor are found to be invariably mediated by debt and loans in all sites. Indeed the mainstay of the poor, like other parts of Pakistan, is the “debt economy” of the rural poor. The four sites are no exception to this (See Table 15). In Chotiari, Keenjhar and Keti Bunder the contractors while ready to provide loans, control markets, prices and even the exercise of choice in selecting livelihood (as in Chotiari) and by extension the lives of local people who depend on natural resources. Landlords with whom land is share cropped or livestock reared on sharing basis create similar dependency and bondage. The nature of the relationship reinforces social power relations and structures of inequity and creates a vicious circle that needs to be broken if sustainable development and sustainable use of natural resources is to be achieved. The nature of contractual obligations and arrangements may have local specificities that need to be determined.

Table 15: Select Vulnerabilities in IFAP Villages

Site / Village	Distance from town	Mode Transport	Loans / rate	Drinking Water	Fuel	Fish Stock	Water	Forest/ Pasture
Pai Forest:								
Nangar Chandio	Skrand 16 km	By Road	Contractor 25%	-	-	-	Acute shortages lowering table	Dry denuded
Jafar Jamali	Skrand 8 km	By Road	Landlord	-	-	-	Acute shortages lowering table	Dry denuded
Mari Jalbani	Skrand 16 km	By Road	Contractor 25%	Arsenic	Buy Rs. 100/- maund	-	Acute Shortages lowering table	Dry denuded
Chotiari Reservoir								
Pholel	Sanghar km	By Boat Road	Contractor	-	-	Contractor control	Inundated	Reduced
Padrio	Sanghar km	By Boat + Road	Relative	-	-	Contractor control	Inundated	Reduced
Awad	Sanghar km	-	Contractor 30%	-	-	Contractor control	Water logging	-
Dubi K. Gaho	Sanghar km	By Boat + Road	Landlord	-	-	Contractor control	Inundated	Reduced
Haji G. Hussain Leghari	Sanghar km	By Boat + Road	Landlord	-	-	Contractor control	Inundated	Reduced
Keenjhar Lake								
Jhumpir	-	By Road to Thatta Rs.600/-	Contractor relatives	Purchase+ Multiple	5 hrs available / buy Rs.500/-	Contractor control	Acute shortage	Reduced
Sonehri	Jhumpir	By Boat Road (Thatta)	Contractor	-	4 hrs available	Reduced stock	Shortage water	Reduced
Haji Ali Bux M	Jhumpir km	By Boat Road (Thatta) Rs.600/-	Contractor	-	-	Reduced stock	Shortage water	Reduced
Haji J. Hillaya	-	By Road	-	-	-	Reduced stock	Shortage water	Dry denuded
Shaukat Gandhro	Thatta	By Road	Contractor	-	-	Reduced stock	Polluted water	-
Abdullahah	Thatta	By	Contractor	-	Buy Rs.	Reduced	Shortage	Reduced

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Site / Villag	Distance from town	Mode Transport	Loans / rate	Drinking Water	Fuel	Fish Stock	Water	Forest/ Pasture
Gandhro		Road Rs.700/-	ctor		maund	stock		
Daulatpur	Thatta 25km	By Boat/ Road	Contractor	-	-	Reduced stock	Shortage	Reduced
Keti Bundar								
Keti Bundar	Thatta	By Road	Contractor	Water Tanker Rs. 300-600/-	Forest + Buy 1 Maund Rs.120/- Datson Rs.1000 -1500/-	Acute reduced	Shortage	Illegal cut & grazing
Ayoub* Dablo	Keti Bundar	By Boat Rs.800/- Road	Contra ctor	12 litter Rs.20/-	-	Reduced	Shortage	Reduced
Meero Dablo	Keti Bun 2 km Gharo	Taxi fare Rs.1000/- t Gharo	Contractor	Tanker Rs.800 1000/-	-	Reduced	Shortage	Inundated
Hamza Dablo	Keti Bunder 5 km 1 ½ hrs	-	Contra ctor	20 kg drum buy Rs.20/-	Buy Rs. 4/ kg	Acute reduced	Shortage	Reduced
Yousuf Dablo*	Keti Bunder km 2 hrs	By Boat + road	Contra ctor	Buy 2 trailer@ Rs.4000- 5000/-	-	Acute reduced	Shortage	Inundated
Siddique Dablo*	Keti B 5 km ½ hrs	Boat + road	Contra ctor	8 gallon water Rs.100/-	Buy Rs.4/ kg	Acute reduced	Polluted water / inundated	-
Goth M Lakhio	Keti Bun 25 2 ½ hrs	Boat + road Rs.1000/- f	Contra ctor	Buy drum Rs.60-70/-	Boat wood Rs.500/-	Acute reduced	Shortage water	Reduced forest

* - These get inundated at high tide and rain

Women in all sites are found to be actively engaged in the primary occupation of their household (Table 16). In addition they generate incomes from supplementary activities. These activities however are either seasonal or irregular. Inclusion of women's activities and concerns in order to tap their full potential will therefore be essential.

Table 16: Women’s income and sources in All IFAP Sites

Site / Village	Paranda	Stitching	Ralli	Embroidery	Cotton	Paban	Pan	Zari	Fish
Pai Forest:									
Nangar Char		Rs.50/- per suit	Rs.1000/-	Rs.100/- per suit					
Jafar Jamali			Rs.200- 1000/-	Rs.100 -500/- per suit	Rs.100/- Maund				
Mari Jalbani	Rs.100/- Per piece	Rs.50-60/ per suit	Rs.500- 2000/-		Rs.100/- Maund		Charpai Rs.100/-		
Chotiari Reservoir									
Pholel		Yes	Yes			Rs. 5-9/- sold in m			
Padrio		Rs.50/- per suit	Rs.500- 1000/-						
Awad		Rs.50/- per suit	Rs.200- 1000/-						
Dubi-K Gaho		Rs.50/- per suit	Rs.200- 1000/-						
Haji Ghulam Hussain Legh		Rs. 50-100/- per suit	Rs. 200-500/-				Hand Fan + mat Rs. 20-40/-		
Keenjhar Lake									
Jhumpir		Rs. 80-100/- per suit	Yes	Yes			Yes	Rs. 2500/	
Sonehri			Rs.500/-					Rs. 1000/	
Haji Ali Bux Manchari									
Haji Jafer Hillaya		Yes							
Shaukat Gandhro				Bhart Rs.1000				Rs. 1000/	
Abdullaha Gandhro									

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Site / Village	Paranda	Stitching	Ralli	Embroidery	Cotton	Paban	Pan	Zari	Fish
Daulatpur		Yes		Crochet			Mats		
Keti Bundar									
Keti Bundar				Bedsheet Rs.1000 Suit Rs.500/				Yes	
Ayoub Dablo									Gand
Meero D									Crab Rs. 20-25/ piece
Hamza D									Gand
Yousuf D			Yes						Gand
Siddique D			Rs.200/-						Rs.20-25/ per piece
Goth Mohammad Lakhio									Gund & C

Poor governance or rather the absence of it marks all the sites. The devolved local bodies system while subject to elite capture still has the space to involve people at the local level and provide opportunities to counter the prevailing social relationships. (See Annex II for the List of influential people in the four sites and villages.)

4.2. Recommendations

Specific recommendations related to each site are included in the previous section (Section 3). Here strategic recommendations for the broader framework are being given.

- It is suggested that a census of villages that are included in IFAP be made part of implementation design to determine the dependency levels and establish the exact demographic baseline. This would also help in tracking progress as well as change.
- Partnership with NGOs working in the site districts or specific locations and relevant Government Departments to ensure that basic services essential for ensuring sustainability, especially for women be made an integral component of IFAP. (Recommendations regarding NGOs for each site are in Section 3).
- Systematic analysis of the contractual systems in Chotiari, Keenjhar and Keti Bunder to be undertaken to examine the dynamics of each system, their financial underpinnings, and political dimensions.
- Exploration of alternate systems/institutions of credit for short term off season needs for both men and women, and substantive requirements like equipment, tools, etc .including subsidized provision of essential equipment. This could be part of the partnership arrangements with NGOs and institutions (Thardeep, PPAF).

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- Market chain survey of the existing major crafts or income generating activities of women in the sites and exploration of new economic enterprises. Appropriate strategies for taking this forward should be a part of the implementation design.
- Two-pronged advocacy strategy is recommended (1) for awareness about natural resources, implementation of rules regarding use of banned nets, hunting birds, allocating water, etc.. (2) For improved health, educational and skill development services for women for alternate sources of livelihood. This would be best done in collaboration with strong advocacy NGOs like Shirkat Gah, PFFF, SPO and local CBOs in Chotiari and Thatta.

**Terms of reference of baseline study using situational analysis tool
SOCIO-ECONOMIC ASSESSMENT
Indus for All Programme**

A. Proposal Rational:

WWF – Pakistan has recently initiated a 6-years project titled “*Indus for all Programme*” with the financial support of the Royal Netherlands Embassy. The rational for developing the *Indus for all Programme* stems out of the poverty-environment nexus. The Indus Eco-region is one of the most prioritized eco-region within the region. The aim of establishing an eco-region programme by WWF-Pakistan is to facilitate articulation of a 50-year vision for the eco-region. The beneficiaries of the program are the communities dependent upon natural resources. While implementing the proposed activities the partners’ capacity will be built and they will ultimately benefit from the program. The project has an inception phase of first nine months in which a situation analysis is of four project is to be conducted.

B. Programme Objectives

1. Community-based NRM in four (Keti Bunder, Kinjhar, Pai forest and Chotiari) priority areas contributes to improved livelihoods;
2. Improved natural resources and livelihoods through mainstreaming of poverty-environment linkages at policy, planning and decision-making levels;
3. Improved institutional capacity and awareness for sustainable environmental management at various levels;
4. Improved alignment and collaboration for stakeholder interventions.

C. Purpose of this consultancy

Establish a socio-economic baseline using participatory rural appraisal in and around the four project sites which will involve the following outputs:

1. Collection of socio-economic data using primary and secondary sources on the following factors but not limited to:
 - i. Number of selected villages
 - ii. Number of households and population profile
 - iii. Poverty profiles and livelihood dependencies (including resources such as human, economic, asset, knowledge, livelihoods etc)
 - iv. Local level institutions and their institutional capacity.
2. Gender profiling and analysis
3. Mapping of resource use practices
4. Assessment of non-consumptive/customary practices such as traditions, religion and human interaction with natural assets.
5. Analysis of stakeholders, their relationship and the role they play in rural development and natural resource management.

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6. Assessment of development status in the project areas and identify gaps and potential areas of improvement.
7. Identification of inter and intra communal conflicts, their sources and implications on NR.
8. Identification of conflicts between communities and other stakeholders such as government, NGOs etc.
9. Identification of social issues and potential areas for project interventions in line with the recommendations of the environmental baseline studies.
10. Preparation of area/cluster specific reports and a consolidated report of all four sites.

Influential People in IFAP sites

Site / Village	Politicians/Influential Persons
Pai Forest:	
Jafar Jamali	<ul style="list-style-type: none"> • Syed Maqbool Jamali
Mari Jalbani	<ul style="list-style-type: none"> • Muneer Shah • Bashir Shah
Chotiari Reservoir	
Haji Ghulam Hussain Leghari	<ul style="list-style-type: none"> • Nizamani's
Keenjhar Lake	
Jhumpir	<ul style="list-style-type: none"> • Ijaz Shah Shirazi (PML-Q)
Sonehri	<ul style="list-style-type: none"> • Shirazi group
Haji Ali Bux Manchari	<ul style="list-style-type: none"> • Wadera Ghulam Mohammad • Sahib Dino • Ata Mohammad
Haji Jafer Hillaya	<ul style="list-style-type: none"> • Sardar Munawar Ali • Haji Hassan
Shaukat Gandhro	<ul style="list-style-type: none"> • Wadera Shaukat
Abdullahah Gandhro	<ul style="list-style-type: none"> • Haji Salman Hillayo
Daulatpur	<ul style="list-style-type: none"> • Mir Behar • Munawar Manchari
Keti Bundar	
Keti Bundar	<ul style="list-style-type: none"> • Union council Nazim (Pir Ali Hassan Shah) Shir group • Sikandar Shah (Shirazi group)
Ayoub Dablo	<ul style="list-style-type: none"> • Ayoub Dablo • Mohammad Amin Dablo
Meero Dablo	<ul style="list-style-type: none"> • Pir Ali Hassan (Shirazi group) • Haji Cholani (Shirazi group) • Pir Hussain (PPP) • Abdul Razaq (PPP)
Hamza Dablo	<ul style="list-style-type: none"> • Haji Shafi Mohammad Jamote
Siddique Dablo	<ul style="list-style-type: none"> • Wadera Hassan Jamote • Haji Shafi Mohammad Jamote
Goth Mohammad Lakhio	<ul style="list-style-type: none"> • Mureed (Peer Ibrahim Jan Sarhadi)

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Shirkat Gah

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References

Asian Development Bank, December 2005. Pakistan: "Sindh Coastal and Inland Community Development Project," Technical Assistance Consultant's Report.

Aga Khan Planning and Building Service, Pakistan, 2006. "General Information for Education Facilities in Keti Bunder." Baseline Data on Boys Schools.

Aga Khan Planning and Building Service, Pakistan, 2006. "General Information for Education Facilities in Keti Bunder." Baseline Data on Girls School.

Aga Khan Planning and Building Service, Pakistan, 2006. "General Information for Health Facilities in Keti Bunder."

Asianics Agro-Development International (Pvt) Ltd., 2000. "Tarbela Dam and related aspects of the Indus River Basin, Pakistan." A WCD case study prepared as an input to the World Commission on Dams, Cape Town. Available: www.dams.org

"Brief Note of Fisheries Department, District Sanghar". Office of the District Officer, Fisheries, Sanghar. No date.

"Brief Note on Activities of Fisheries Department in District Thatta." No date.

"Brief Note on Chotiari Reservoir, District Sanghar," Directorate of Fisheries Sindh Inland Hyderabad, Livestock and Fisheries Department, Government of Sindh. No date.

Dawn, Editorial, June 17, 2006.

"Facts and Figures: Pakistan." 2002. Ministry of Education, GoP. Available: <http://www.moe.gov.pk>.

Forest Department, n.d. "Brief for Secretary to Government of Sindh for Forest and Wildlife Department Regarding Pai Irrigated Plantation."

National Rural Support Programme. 2006. "Programme Update." Available: [http://www.nrsp.org.pk/Programme%20Update%20as%20of%20November%20\(with%20title%20Pages\)%20in%20PDF.pdf](http://www.nrsp.org.pk/Programme%20Update%20as%20of%20November%20(with%20title%20Pages)%20in%20PDF.pdf)

National Rural Support Programme. 2006. *NRSP 11th Annual Progress Report, 2004-05*. Islamabad: NRSP.

Planning Commission, 2003. *Pakistan Participatory Poverty Assessment*. GoP. Islamabad

Population Census Organization, Statistics Division. 1998. *District Census Report of Nawabshah 1998*. Islamabad. GoP.

Population Census Organization, Statistics Division. 1998. *District Census Report of Sanghar 1998*. Islamabad. GoP.

Population Census Organization, Statistics Division. 1998. *Provincial Census Report of Sindh 1998*. Islamabad: GoP.

Population Census Organization, Statistics Division, 1998. *District Census Report of Thatta 1998*. Islamabad: GoP.

SAFWCO, 2004. "Arsenic Contamination in Drinking Water in Sindh Province of Pakistan." Study done for UNICEF. Available at: www.pcrwr.gov.pk

SAFWCO, 2006. *District Profile of Sanghar*.

SDSSP Local Support Unit. n.d. "Report on Tranche Condition D (i). Utilization of Conditional Grants in Accordance with Agreed Eligibility Criteria." District Government Nawabshah.

Sindh Education Management Information System, n.d. "District Education Profile, 2002-03, Sanghar. Karachi: Education and Literacy Department." GoS. Available: <http://www.sindhedu.gov.pk/Links/semisprevious2005.asp>

Sindh Education Management Information System, n.d. "District Education Profile, 2002-03, Thatta." Karachi: Education and Literacy Department, GoS. Available: <http://www.sindhedu.gov.pk/Links/semisprevious2005.asp>

SEMIS, n.d. "Sindh Education Profile 2003-04." Karachi: Education and Literacy Department, GoS. Available: <http://www.sindhedu.gov.pk/Links/semisprevious2005.asp>

Social Policy and Development Center. 2001. *Social Development in Pakistan: Growth, Inequality and Poverty*. Oxford University Press. Karachi.

Strengthening Participatory Organisation, n.d. *Profile of District Nawabshah*.

USAID/ESRA Reform Support Unit, n.d. "Sindh Education Profile 2005-06." District Nawabshah.

World Bank, April 2005. "Socioeconomic Study and Proposal for Livelihood Improvements: Badin and Thatta Districts, Sindh, Pakistan." Agriculture and Rural Development Sector Unit, South Asia Region.

World Bank, October 2006. "Inspection Panel Investigation Report, Pakistan National Drainage Program Project. Management Response, Elaboration of the Short Term Action Plan."

WWF Pakistan, 2005. "Village Development Plan, Keti Bunder."