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## Study on Knowledge, Attitudes & Practices of Fisherfolk Communities about Fisheries and Mangrove Resources

**Kalimat Khor**  
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## Acronyms

BHU	Basic Health Unit
CBO	Community Based Organization
CIR	Center for Information and Research
EEZ	Exclusive Economic Zone
EPA	Environmental Protection Agency
FCS	Fishermen Cooperative Society
FDO	Fisherfolk Development Organization
GOP	Government of Pakistan
GOS	Government of Sindh
KPT	Karachi Port Trust
KWSB	Karachi Water and Sewerage Board
LHV	Lady Health Visitor
LHW	Lady Health Worker
NGO	Non-Governmental Organization
NIC	National Identity Card
PLA	Participatory Learning & Action
PRA	Participatory Rural Appraisal
RCD	Regional Cooperation for Development
RHC	Rural Health Center
SCLP	Sustainable Coastal Livelihood Project
SDO	Sonmiani Development Organization
SZABIST	Shaheed Zulfikar Ali Bhutto Institute of Science & Technology
UC	Union Council
WAPDA	Water & Power Development Authority
WWF	Worldwide Fund for Nature

## Glossary of Local Terms

Bunder	Sea Port
Chhapra	Shed (For Fish Cleaning)
Chowki	Picket
Ghatoo	Experienced Fisherman
Ghattoo	Most experienced fishermen
Ghut	Long fishing trip
Goth	Village
Hello	One Day Fishing Effort
Horho	Boat mostly used for fishing
Jaar	Net
Jawar	Half Moon
Jawaar	High Sea Tide
Jhenga	Shrimps
Karigar	Expert in any Profession
Karkhano	Factory
Katra	Surrounding Net
Khalasi	Helper
Khalasi	Fishing Boat Crew Member
Laro	Fishing Effort without Success
Madarssah	Religious School
Mallah	Fishermen
Mangro	Shark Fish
Mirbahar	Fisherman
Nakho	Boat Captain
Otaq	A common village place where guests stay
Paras	Locality in Village
Paro	Locality in Village
Patti	Share (of Fish Catch)
Rachh	Gillnet mainly for fish
Taluka	Subdivision
Thukri	Entangle Gillnet
Tonga	Horse cart
Zikirkhana	Worship place of Zikris
Zikri	A religious sect

## 1. Introduction

Pakistan has a coastline of about 1050 km along the Arabian Sea. It extends from Sir Creek on the Indian side in the east to Gwatar Bay on the Iranian border in the west. It has a territorial coastal zone of 23,820 sq. km and an Exclusive Economic Zone (EEZ) of more than 266,650 sq. km. The coast of Pakistan is divided into the coasts of Sindh and Balochistan. This coastal zone is endowed with abundant natural resources, especially fisheries resources and mangrove forests.

The total population living along Sindh coast (up to 2-5km inland) is estimated to be about 1,000,000. Similarly, the total population living along Balochistan coast is about 250,000. Accordingly, the average population density in densely populated area is 1785/sq.km, while the average population density in scarcely populated area is about 87/sq.km. The Karachi coastal belt has a population of about half a million. The local inhabitants are mostly fishermen, professional grazers and agriculturists.

The Balochistan coast extends to 770 kilometres from the mouth of Hub River in the east to the Iranian border in the west. Ancient raised beaches mark the landward boundary of the Balochistan coastal zone about 20 kilometres from the present coastline. The Makran Coast Range, which closely parallels the coast, effectively defines the zone and separates it physically, socially and economically from the rest of the province. A narrow continental shelf – in much of the area, only 15-50 kilometres wide at the 200-metre isobaths – defines the extent of the coastal waters. From here the continental slope dips sharply, delimiting an extensive, deep offshore zone. The only large island is *Astola*, near *Pasni*. It has an area of 20 square kilometres and is uninhabited. One smaller island lies just off the coast, but it has disappeared.

Majority of the coastal communities are solely dependent on the fisheries resources. The coastal waters of Pakistan are bestowed with a variety of fish and shrimp resources. The commercially important marine fisheries resources of Pakistan comprise about 350 different species. Some 240 are demersal fish, 50 are small pelagic, 10 are medium sized pelagic and 18 are large pelagic fish. In addition, there are 15 species of shrimps, 12 of squid/cuttlefish/octopus and 5 species of lobsters [Mangroves: Status and Management IUCN 2004].

The other important natural resources, on which the coastal communities largely depend, are the mangrove forests. These forests constitute an important productive ecosystem of the coastal region of Pakistan. They provide a range of valuable forest products such as timber, fuel-wood and fodder. They also provide shelter and serve as nursery and breeding grounds for prawns, crabs and many species of fishes as well as habitat for certain species of birds and mammals. They bind silt, accrete shorelines, halt erosion of beaches and of coastline and buffer the impacts of cyclones, storms and tsunamis.

Both the fisheries and the mangrove resources are under grave stress due to a variety of factors which have resulted in their rapid degradation as well as impacted the livelihood and socio-economic conditions of dependent coastal communities.

WWF Pakistan is implementing European Commission supported “Tackling Poverty in Coastal Area of Pakistan through Sustainable Coastal Livelihood Project” which is being implemented with the participation of coastal communities of Sindh and Balochistan. The targeted areas are *Keti Bunder*, Sandspit in the Sindh province, *Sonmiani* and *Kalmat Khor* in the Balochistan province, covering the population of about 30,000. This project has a number of important components and activities. It is aimed at improving livelihoods of these communities by achieving sustainable use of the mangrove and fishing ecosystems on which their livelihood depends. Besides, WWF is also engaged in mangrove resource conservation activities in *Korangi Phitti* Creek along the Karachi Coast.

One of the major components of the projects is to conduct “Baseline Research on Knowledge, Attitudes and Practices of Fisheries and Mangrove Forests” in the target communities/ areas. For this purpose, WWF engaged SZABIST Center for Information and Research (CIR) to conduct objective and systematic baseline research in the project areas, using the Participatory Learning and Action (PLA) process for documenting knowledge, attitude and practices of local communities towards fisheries and mangrove resources.

## **2. Study Objectives**

The research activity was aimed at understanding target communities’ attitudes and knowledge about their livelihood resources, besides the collection of vital information about their socioeconomic conditions and poverty levels. The research will also facilitate in understanding and involving the local communities in data collection as well as preparation of community-based management and conservation plans for forestry and fisheries resources of these communities to ensure sustainable livelihood for them through mitigation of threats resulting in natural resources degradation and poverty.

## **3. Methodology**

A participatory method, PLA (Participatory Learning and Action) was adopted in the research process. PLA is an umbrella term used for a wide range of similar approaches and methodologies, including Participatory Rural Appraisal (PRA), Rapid Rural Appraisal (RRA), Participatory Learning Methods (PLM), Participatory Action Research (PAR), and Farming Systems Research (FSR). The common theme to all these approaches is the full participation of people in the processes of learning about their needs and opportunities, as well as the actions required to address them.

Participatory approaches offer creative opportunities for investigating issues of concern to the people, and for planning, implementing, and evaluating development activities. They challenge prevailing biases and preconceptions about people’s knowledge. The methods used range from visualization, to interviewing and group work. The common theme is the promotion of interactive learning, shared knowledge, and flexible, yet structured analysis. PLA has frequently been used for appraisal, analysis and research in natural resources including forestry, fisheries and environment. This tool helps in participatory appraisal and planning as well as participatory implementation, monitoring and evaluation of programs. PLA tools also help in the formulation of Village Development Plans.

### **3.1 Team Formation and Training**

A rigorous exercise was done for selecting a skilled and experienced team to conduct field study. To ensure the participation of all community groups of the project areas, male and female teams were formed separately. Each team included field researchers, community development professionals and natural resource management experts. The selected team was imparted two days PLA/ PRA training at SZABIST Center for Information and Research to refresh their PLA skills before sending them in the field.

### **3.2 Research Process**

A participatory approach was adopted to initiate research activities in the village by informing in advance the village CBO and other stakeholders about the research team visit and its objectives. Five days research activities were planned and carried out in the coastal villages, *Sonmiani, Dam Bunder, Baloch Goth and Bhira*.

A number of research tools were used to collect data from the villages. For example, village map was the key tool, which both, male and female teams of researchers used to collect accurate information about the background of the area / village including its history. The female and male community members of the village separately conducted this exercise. The village men and women were facilitated by the team to prepare village map. This exercise proved to be ice-breaking step, as it was during this process that the villagers and the research team came closer to each other.

Preparation of village social map by the villagers generated ample information about the demographic characteristics of the village. The information was further supplemented with two other important PLA tools i.e. semi-structured interviews, timeline matrix, direct observations and transect walks.

The PLA tools helped in generating data about the key capital assets of the community including their human, physical and social capital. For example, village map and social map generated data about different assets available with the communities and preparation of mobility map by both women and men of the village helped in generating information about social capital including the levels of cooperation and conflict in the village.

Besides the preparation of village map and village resource map by the village women, the participatory exercises of resource picture cards and benefit analysis flow generated information about the gender based status and differences in the village. Such data was further supplemented with the preparation of separate daily activity clocks by male and female of the village. Semi- structured interviews of the women of the village also helped in the data generation and analysis.

In addition, both male and female teams conducted exercise of natural resource mapping as well as developing livelihood system diagram to generate information about the main natural resources of the area. Tools like seasonal calendar, transect walk towards the natural resources and daily activity clock also supplemented the data. Similarly, Village Resource Map and Livelihood System Diagram, coupled with semi-structured interviews, generated information about the pattern of natural resource exploitation. While, the participatory exercise of historical timeline of

natural resource status provided valuable information about temporal status of the natural resources.

Community practises toward the natural resources conservation were analysed through the tools such as, direct observations, semi-structured interviews as well as daily activity charts of male and female members of the village. The exercise of transect walks also supplemented information in this regard. The key tool used in PLA exercise to analyse the village problems was Problem–Cause–Solution Matrix. This exercise was carried out with the male and female members of the village. Other PLA tools including semi-structured interviews etc. also supplemented the information.

Preparation of the village development plan through community based planning process was the important phase of PLA process in the village. The exercises for this phase were done on the last day of the PLA process after the collection of comprehensive information about the village, the people, the resources and the problems. For this purpose, separate gatherings of male and female were arranged, as the local traditions prohibit sitting of both men and women together. Before initiating the exercise, all the problems of the village, including social and natural resource problems, were written on a sheet of paper and presented before the villagers to show them whether their problems were properly reported and analysed by the PLA team.

After going through these problems, an exercise of Venn diagram of stakeholders and institutions was carried out with the villagers to know about the influence of different stakeholders on the issues and their expected role in the solution of such problems. After the completion of such exercise problem, prioritisation and solution exercises were done with the help of PLA tool Problem Ranking and Pair-wise Ranking Matrix.

In the end, through the PLA tool of Problem –Cause- Solution Matrix, first the solution of the problems, already prioritized by the local community, was identified and written into specific Matrix column and then the roles of community, local CBO, WWF and the Government were identified. The community gathering to prepare this community planning was joined by a large number of community members, office bearers of local CBO, WWF - Pakistan staff and the councilors of local government.

## **4. Socio-economic Background of the Area**

### **4.1 Background of the area**

*Kalmat Khor* is basically a coastal plain of *Tehsil Pasni*, Balochistan. It consists of mud and salt flats and tidal channels. The *Kalmati Baloch* community is living in vast majority in this area since many centuries. The term ‘Horr’ is basically a local Balochi language term, which is used for water channels. A number of tidal channels exist in this area, which are filled with seawater during high tides. That is why this area is known as *Kalmat Horr*. There are eleven villages in this area. The PLA study team visited two villages of the *Kalmat Horr* area, which includes *Grusant* Village, and *Chandi* Village. The rationale behind the selection of these two villages is that they are the oldest and major villages of the area and being very close to the coast they are directly in interaction with the coastal resources especially fish and mangrove resources.



#### 4.1.2 *Gur Sant* Village

The word *Gur Sant* (combination of two Balochi words; *Gur*, means chain and *Sant* means sea shells) used in local language for very last land area, as after that sea begins. The *Gur Sant* village is located some 90 km from Pasni, the tehsil headquarter, 20 km away from main Coastal Highway and just half a kilometre from sea on western side. On the Eastern side of the village, there is a water channel (Hor); the villagers/fishermen anchor their boats in this Hor. There is a vast sandy area and sand dunes with some vegetation on the Northern side of the village. On the western side again the sea surrounds the village.



Villagers in Grusant Village prepare their village map

During the months of June and July when there are high tides of the sea, the Horr is filled with seawater. As a result, the village is surrounded by seawater and sometimes the seawater finds its place in the courtyards of the village houses. The village's sandy land is abundant in sea shells, which shows that some times back, the sea, which has now receded back, occupied the land. About 90% percent of houses are *Pucca* (concrete), while the remaining 10% are *half Pucca* (semi-concrete).

#### 4.1.3 *Chandi* Village

*Chandi* village is basically divided into three clusters situated at some distance from each other. The villagers said that due to dust storms etc. some villagers settled at some distance in order to avoid dust storms. Tracing the historical background of the village, the villagers told that *Mir Hamal Kalmati* was a spiritual personality of this region during the British Rule. He fought battle against the Britishers. However, all his people were killed and he was captured and later on killed. *Chandi* village is located approximately 10 km from *Gur Sant* Village towards north-east, and is 30 km from main Coastal Highway, and almost 90 km from *Pasni*. The path from Coastal Highway to the village is *Katcha* (un-metalled).

*Chandi* village is the oldest settlement in the area. The villagers informed that this settlement is more than 200 years old. Before the creation of Pakistan, Hindus were also settled here. These Hindus were businessmen and they owned 10 shops. The villagers have no document showing the ownership of their houses or regularization of the village. Presently, there are two shops and cabins in the village. Almost whole

population of this village is fishermen. Sea in the East and Hor in the South surrounds the village. There is an ancient graveyard. According to the villagers it is almost 200 years old. As a result of continuous dust and sand storms in the area, the graves have been uprooted and the human bones and skulls litter the surface.

#### **4.2 Demographic characteristics**

There are about 130 households in the *Gur Sant* village. The total population of the village is about 1130 which includes 630 men and 500 women. All the households are indigenous fishermen. Before the separation of India and Pakistan, Muslims and Hindus lived together in a peaceful manner. Presently, not a single Hindu family lives in the village.

There are total 60 households in *Chandi* village and the total population of the village is 500, which includes 300 male and 200 female. There are two clans/tribes in this village, which includes *Kalmati* and *Sanghoor*, both are Balochi speaking Muslims. *Kalmati*, belongs to Sunni sect and *Sanghoor*, belongs to *Zikri* sect. The entire population is indigenous and not a single household/family has migrated in the village in recent past. However, during the last two years, three families have migrated out from the village to *Pasni*.

#### **4.3 Social Setting**

The area of the *Gur Sant* village is spread over 30 acres. In *Gur Sant* all the villagers belong to the *Zikri* sect of Muslims. There are two *Zikirghanas* (place of worship for *Zikri*'s) one is for men and other is for women. Although the village exists on the government record but the villagers do not have ownership documents of their houses.

The communities living in the village said to have migrated from Iran and settled here. A large number of Hindus were also living in the area. However, the Hindus left the village in 1948 and migrated to India after the communal riots between Hindus and Muslims took a serious turn in the wake of partition. After the migration of Hindus and some families of local communities, which took place later on, the village population decreased to greater extent.

During the last two years, at least three families of local communities have migrated from the village and settled in *Pasni*. The basic cause of the migration was chronic shortage of water due to persistent drought, as well as lack of other basic facilities. All the families living in the village are Baloch belonging to two separate clans i.e. *Sanghoor* and *Jaurak Baloch*.

Three castes including *Sanghoor*, *Kalmati* and *Pando Pati* are the residents of *Chandi* village. All three castes are basically Baloch and speak Balochi Language. The residents of the village belong to *Zikri* and *Sunni* sects of Muslims. Mostly, they belong to *Kalmati* and *Sanghoor* castes of Baloch. There is one *Zikirkhana* having no roof. The villagers call their village head as Chairman. Presently, a *Kalmati* Baloch is the Chairman (village Head).

#### **4.4 Livelihood Resources**

Fishing is the key livelihood resource for the communities of both villages i.e. *Gur Sant* and *Chandi*. The villagers also rear camels, goats, sheep and hens for supporting their livelihoods. Livestock rearing was common in the area until some years back. However, due to persistent drought conditions it has become difficult for the villagers to keep and feed animals. Low rainfall, non availability of sweet water and disappearance of grass have made the livestock rearing almost impossible. There are only 15 camels owned by *Gur Sant* villagers. These camels feed on mangroves leaves. About 30 individuals of the *Chandi* village have established *Chhapras* (local terminology for a fish trading company) for purchasing shrimp and fish from the fishermen.

At present, about 95% villagers are engaged in fishing. Only 1% villagers are engaged in fish sale being owners, managers or workers at *Chhapras*, 2% are jobless and others are drivers, boat-repairers, etc. Women also support in fishing activity occasionally by cleaning fish, peeling shrimp and mending the fishing nets. About 95% women are adept in embroidery and are engaged in embroidery work during their free time.

#### **4.5 Wealth and Poverty Profile**

According to the villagers' perception of poverty, those who do not own boats and work as labourers on others boats are in fact the most poor. They work as *khalasis* on the boats of other people. Those who have their own boats can be termed as middle class while those who have other alternative resources of livelihood besides being boat owners are the rich community members. According to the wealth ranking done with the villagers in *Gur Sant* 20 households belong to wealthy class, 10 households belong to poor class, while rest of the villagers belongs to middle class group. Almost 50% households have their own motorcycles. There are seven shops in the village, from where the villagers purchase the items of daily consumption. There are about 15 camels in the village, while 50% villagers have sheep and goats albeit in a very small number. All the households keep and nurture hens, which are a good food support to the villagers as their meat, and eggs are used in daily consumption. Majority of the villagers have their own *Pucca* houses. However, these houses have no toilets and the villagers, including women usually use open ground.

Meanwhile, according to the villagers of *Chandi* village, those who eat proper food and make some savings are considered as rich persons/families, while those who do not have good means of livelihood are considered as poor. According to this definition, 80 percent villagers are poor and 20 percent are rich (middle income rich group). Two families are very rich.

### **5. Key Capital Assets of the Community**

#### **5.1 Human Capital**

##### **5.1.1 Education /Literacy**

In *Gur Sant* village, only 5 per cent male are able to read and write. Only three male are matriculates. The female literacy is almost zero. However, the villages have taken

a positive step of educating their girls, as since last two years the girls of the village are also receiving education in the Government Boys' Primary School.

Literacy ratio in village *Chandi* is quite low as less than 6 per cent of the villagers are able to read and write. The situation of female literacy is even worse, as not a single female is literate. However, since last two years few girls have been enrolled in the primary school. There are only four youngsters in the village who have completed matriculation. In all there are only 50 villagers who have completed education up to five classes. The primary school was established in this village in 1983. At present, 41 students are enrolled in the school. The medium of instruction is Urdu.

### 5.1.2 Health

Diseases like malaria, throat diseases, Hepatitis and T.B. are common among villagers. People are ignorant about the causes of such diseases. Village women believe that Allah gives them these diseases. There is one Government civil dispensary in the *Gur Sant* Village, which was established in 1961. There is only one male MBBS doctor in dispensary with one dispenser. As both, the doctor and the dispenser are the residents of the village, they are fulltime present in the clinic. However, there is no lady doctor in the village. The number of patients visiting hospital ranges from 10 to 30 per day. These patients come from *Gur Sant* and nearby villages of *Kalmat Khor*.

Due to deep-rooted traditional and cultural restrictions, the ratio of female patient visiting the dispensary is quite low. In cases of emergency, the villagers spend significant amount on transport to take their female patient to *Pasni* for treatment. The travel cost to shift a patient from the village to *Pasni* ranges from Rs. 2000-3000.

There is no hospital or health facility in the *Chandi* village. However, in case of health problem, the villagers go to *Gur Sant* village or *Pasni* for treatment. In both the villages the child births are attended by the traditional child birth attendants.

### 5.1.3 Skills

Being dependent on the fisheries/sea resources, the male villagers of both *Gur Sant* and *Chandi* villages have knowledge of fishing and related skills. On the contrary, women possess diverse skills. Beside their household chores, they are also active in animal keeping, tailoring and embroidery. Through these activities they earn income to supplement the basic needs of food and health of the family.

## 5.2 Physical Capital

### 5.2.1 Land

The villagers have no official record of the ownership of their households and surrounding land. They earn their livelihood from the natural resources. The villagers depend largely on different natural vegetables and herbs growing in the area after rains. However, due to significant reduction in rainfall since last many years no grass and vegetable are growing naturally. Every household of the village has its share in

the land available in surrounding areas. The mangrove forest is also shared commonly between the communities of both the villages.

### 5.2.2 Boats & Fishing Gears

The fishermen of this village own around 150-200 fishing boats of various sizes. There are 10 fisheries companies, which operate in the area. The outsiders are the owners of these fisheries companies. Except few, all the villagers have their own boats and most of these boats have been purchased on loan. The villagers have both the smaller boats locally known as *Yakdar* and launches, which they use for fishing. The poor villagers do not have their own boats. They work as labourers (*Khalasi*) on the other boats on the basis of one-fourth share from the income earned per trip.

The cost of one boat is over 100 thousands rupees and the cost of nets ranges from Rs. 5000 to 20,000.

There is no difference in the prices of petrol and diesel as both are sold at Rs. 17 per litre. The low price of petrol and diesel is due to smuggling of petrol from Iran.

## 5.3 Social Capital

### 5.3.1 Social Cooperation

The villagers of both *Gur Sant* and *Chandi* villages live in complete cooperation and peace. Each villager has the access to the natural resources including fisheries and mangrove resources. Although officially they have no ownership or custodianship documents of these resources, however, practically they own and nurture the mangrove resources. Almost all villagers belong to the same profession of fishing.

### 5.3.2 Institutional Cooperation

No government institution is functioning in the area, except a primary school in *Chandi* village, and a primary school and a dispensary at *Gur Sant* village. There is no local CBO in the area. National level NGOs have also not initiated any substantial work in the area. However, WWF Pakistan has recently taken initiative to work towards natural resource conservation in the area. There are even no informal groups of the village communities active in the area.

### 5.3.3 Social Conflicts

The PLA team witnessed no noticeable conflict. They share their common resources like mangroves on the basis of equality. The most important fact is that no violent conflict has been reported in the area, as such there is no police station or picket in the whole area. The local conflicts are usually resolved by the village heads and in the case of serious conflicts, village heads of different villages sit together to resolve the issue. In some cases, conflicts of serious nature are referred to the spiritual head of *Zikri* community in *Turbat*, Balochistan.

However, the fishermen of both the villages are in conflict with the fishermen who come from outside, especially the big trawlers from Karachi who fish in their fishing

grounds using harmful nets. Outside fishermen are considered by the villagers as the enemies of their livelihoods. The villagers even resort to fighting with these fishermen and sometimes exchange fires with them. However, the local fishermen owning small boats are unable to follow these trawlers to catch them.

## 6. Gender Analysis

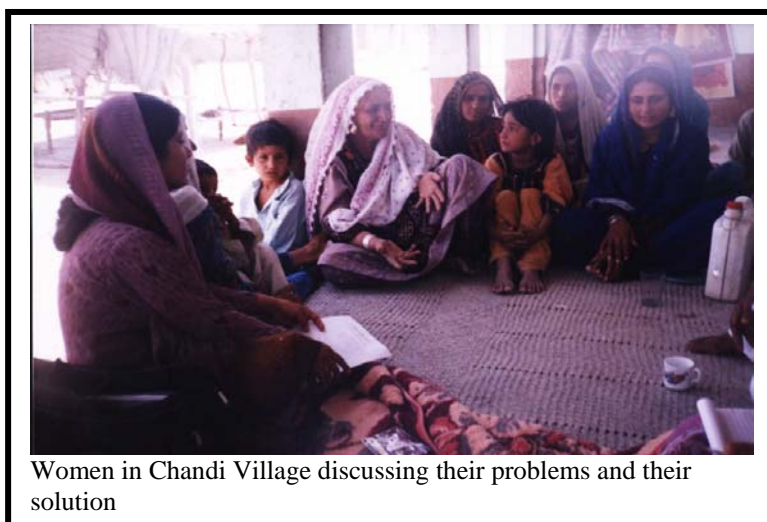
### 6.1 Gender & Social Status

This area is the part of a rural and semi tribal structure. In such a social setting usually the male members consider themselves as the heads of the family. As such, in almost entire area of *Kalmat Khor* and especially the *Gur Sant* and *Chandi*, women are given less importance and in some cases no importance in any decision making with regard to selection of their life partner, right to the ownership of property (except if her husband dies), travel alone and work outside the home. Men of the village own majority of family resources. Women have ownership right only on hens and goats etc.

The cases of violence against women are rare in the *Gur Sant* and *Chandi* villages; however, sporadic incidents of women beating by the family men do occur in the area. The custom of Honour Killing (*Karo-Kari*) also exists as the area is the part of traditional Baloch society.

The marriages usually occur at the age of 20 years. The women are married to the close relatives. In most of the cases women are married on exchange basis, while men also marry a single wife. The tradition of bride price also exists in these villages. The bride price ranges from Rs. 50,000 to 60,000.

Both male and female consume *Gutka* (a kind of betel nuts), but in comparison to female, male consume more *Gutka* and also smoke cigarettes.



### 6.2 Genders & Empowerment

The key activities carried out by male are fishing and related activities including mending of damaged fishing nets, cleaning nets, separating fish-catch. Women do not perform fishing related activities. Similarly, male and female never work jointly outside the home. The women use their additional time for tailoring their cloths and doing embroidery work. The price of embroidered suit ranges from Rs. 2000 to Rs. 3000 in the local markets of *Pasni* and *Gwadar*. The shopkeepers of *Pasni* and

*Gwadar* usually purchase these suits and then sale the same to the wealthy families or outsiders visiting the area.

The key household and field activities of women of the village were identified through the preparation of participatory activity chart of the women. The analysis of the chart shows that major activities of the women are basically household based. They have limited time for rest and sleep, as they have to wake up as early as 4:00 AM to prepare breakfast for their men who leave for fishing at that time. In addition, their household activities include preparation of breakfast for the children and preparing them for school, sending goats to pastures, cleaning their houses, washing cloths, preparing lunch, afternoon tea and dinner. Daytime field activity includes collection of fuel wood. Their household chores continue up to almost 11.30 PM. During the day, they take rest only for one hour from 3 pm to 4 pm.

Information about the scale and extent of mobility of the women of the village was collected through participatory mobility map of the women. About 14 women participated in the preparation of map. According to the information collected through this map women have limited mobility, which they enjoy for the purpose of keeping up social relations. They visit their relatives in *Pasni* as well as in



Women of Chandi Village Preparing Mobility Map

Karachi, Sindh. Interestingly, their mobility is restricted to only keeping up social relations with their relatives. They have no permission to do shopping, as it is the prerogative of the male to make purchases. However, women are allowed to visit shrines of spiritual people of the area for spiritual satisfaction. Women of the village usually visit the *Mazar* (shrine) of *Dad Karim* in *Ormara* town of Balochistan. The interesting aspect of the mobility of the women is that they never come out of their homes without accompanying male relatives.

### 6.3 Gender, Use and Control of Resources

Information about the use and control of resources by the either genders was collected through the process of Resource Use and Control Cards. Under this process pictures of various resources were already prepared on different cards. Besides, separated cards each with the picture of man, women and couple were also prepared. The women were asked to put the pictures of the resources on the pictures of men, women and the joint picture of men and women, to whom such resources belong.

The women villagers of the *Chandi* and *Gur Sant* villages actively participated in preparation of their respective resource control map. While analyzing the gender, use and control of resources map, it was learnt that the males of the village control key resources such as, the land and houses. Key resources which generated income and livelihoods i.e. boats, nets, vehicles including motorcycles are also owned by the



male. The male also have traditional right over the children. However, women have traditional ownership rights on the ornaments, sewing machines and embroidery items. The resources which are owned jointly include camels, goats and hens etc.

#### 6.4 Gender & Natural Resources

There is great link between natural resources, especially mangroves and fisheries and the women. Women use mangrove areas for the collection of fuelwood for cooking and heating and fodder for feeding their livestock. Livestock ownership pertains to women and in some cases jointly with men.

Fishery resources are the key livelihood source for the whole family including the women and children. Degradation of fisheries resources brings economic pressure on the whole family and the women being the disadvantageous group are certainly affected the most. In case of poverty, as a result of decreased income from fishing, it is the women who suffer the most, if the family is not able to afford medical treatment or education.

### 7. Natural Resources

The whole *Kalmat Horr* area, including *Gur Sant* and *Chandi* villages, is blessed with two key natural resources i.e. fisheries and mangrove forests. Fisheries are the main livelihood for the local villagers/fishermen, while, mangroves forests are used for firewood and fodder. Many species of migratory birds are also found in the area.

Livestock has also been the key source of livelihoods for the villagers. In the past, frequent rains used to support natural growth of vegetation and grasses in the area. However, due to constant drought conditions, the green pastures and grasses have vanished altogether. Resultantly, the villagers in many cases sold their livestock, as it was not possible to keep them due to the non-availability of grasses and water.

Although in the past agriculture crops were sown following rains, however, since last many years continuous drought spell in the area has made the agriculture as remote possibility in the area.

#### 7.1 Fisheries Resources

A variety of fish species are available in the fishing grounds of *Kalmat Khor*. The key fish species are *Mushk*, *Paplets* and *Sunheri*. *Paplet* is found in sufficient numbers in the local fishing grounds. Similarly, three key species of shrimps, which include *Tiger*, *Jairo* and *Kiddi* are caught in the local fishing grounds. The local fishermen also take voyage to *Pasni* and *Gwadar* for catching shrimps. The area produces best quality shrimps and lobster.

Table: 1  
**Key Fish Species of Kalmat Khor**

Magro	Paplet
Mushko	Kunn
Khago	Sonaab
Sua	Patan
Pagaas	



## 7.2 Mangrove Resources

*Kalmat* coastal plain is 55 km long and 19 km wide. It has a tidal lagoon consisting of mud and salt flats and tidal channels. This lagoon supports mangroves consisting of *Avicennia marina*. The area under mangroves is roughly estimated at 2160 ha. The mangroves are stunted and are in a degraded state. Besides being the nursery grounds for the fish and shrimp resources, the mangroves forests are also a source of fuelwood, fodder and honey for the villagers.

## 8. Natural Resource Exploitation and its Impact

The village communities being solely dependent on mangrove, fish and shrimp resources exploit them for their livelihoods. Following is the impact of the exploitation of such resources:

### 8.1 Exploitation of Fisheries Resources and its Impact

Being only and the vital resource, the extensive fishing has significantly reduced the fisheries resource in the fishing grounds, the catch has declined considerably (Table 2). The fishing is done by the local fishermen as well as the Karachi-based fishermen, and foreign trawlers. The exploitation by these groups has put a greater stress on the fisheries resources. Similarly, unsustainable methods/techniques and use of harmful fishing gears are the major causes of decline of fisheries resources.

The exploitative means of fishing including small mesh nets, *Boolo*, *Gujo* net, plastic and wire net are normally employed by the outsiders. The

outsider fishermen have state-of-the-art fishing through launches and trawlers. The local fishermen use the traditional methods/techniques and nets for fishing which are largely un-exploitative in nature. According to the communities, the big launches and trawlers catch as more fish in one day as the local communities catch in one month.

The key findings through the PLA exercises show that unsustainable methods of fishing (use of destructive nets) by the outsiders and increase in number of fishing boats are the main reasons for a decline in fish catch. According to them some ten years back the fishermen of *Gur Sant* village had around 80-90 boats of various sizes but presently the villagers have around 150-200 boats. This also shows that the local pressure on fisheries resources has increased manifolds.

<b>Fish Specie</b>	<b>10 Years Back</b>	<b>Present Status</b>
Paplet	200 pieces	10 pieces
Mushka	300-400 pieces	40-50 pieces
Chota Mangra	200 pieces	20-30 pieces
Ghalo	200 pieces	Extinct
Kunn	500 pieces	100 pieces
Sonab	40-50 pieces	10 pieces
Kaka Torr	100-200 pieces	Extinct
Khir Soota	10-15 pieces	Extinct
Patin	200 pieces	50 pieces
Pagaas	6-7 pieces	Extinct
Gerk	20-30 pieces	Extinct

The fish species like *Palwar*, *Pushant Khar*, *Gawana*, etc. have vanished completely. While, other species like *Kiddi*, *Kalri* and *Sano* face serious threat of extinction. According to the fishermen previously they used to catch 5000 pieces of Sano fish but, now they hardly catch 1000 pieces of this fish per fishing trip.

## **8.2 Exploitation of Mangrove Resources & Its Impact**

Situated in a very remote area, the Mangrove forests of *Kalimat Khor* are relatively safe from increased pressure of cutting for commercial purposes. However, these forests do face other stresses. For example, the local communities depend on these forests for fuel wood and fodder. With the continuous drought conditions in the area, the dependency on the mangrove leaves as fodder has increased, as other grasses in the area have vanished.

The drought conditions have also reduced the availability of freshwater for these mangroves. The natural water channels and springs which would bring lots of rain water from the hilly areas to the mangrove grounds have gone dry. As such, the mangrove forests in the area have decreased both in area and density.

## **9. Community Role in Conservation of Natural Resources**

### **9.1 Local Communities and Conservation of Fisheries Resources**

The commercialization of the fisheries sector and increase in the fish and shrimp exports coupled with increasing population pressure has resulted in stress on the fish resources of the area. However, the local communities are playing vital role in the conservation of fish resources through their indigenous fishing methods and avoid using harmful nets, which bring short-term earnings but, harm the fish resources. They also avoid over- fishing or round the clock fishing. There are traditional timetables for fishing during different seasons and for different fishing ground.

The community is aware about threat to their fish and shrimp resources and prohibit unsustainable exploitation of fisheries resources in their traditional fishing grounds. The communities are of the opinion that they are engaged in fishing since many centuries, as they know how to fish in a sustainable manner. According to the local communities, the outsiders come here to fish and return back to their homes, they are there to live forever, and fishing is our only means of livelihood.

The local communities often keep informal check on the fishing activities of the outsider trawlers in their fishing grounds and whenever such trawlers are found they force them to flee. However, during night hours the local communities with small boats are unable to check them. Some quarrels have also taken place between the local communities and outsiders on this issue. The situation requires intervention by the government to disallow fishing by these trawlers in communal fishing grounds.

### **9.2 Local Communities and the Conservation of Mangrove Resources**

Being dependent on the mangrove resources of the area, the local communities do take steps for management of mangroves. The influential community members are in control of patches of mangrove forests and are managing them through watch and ward, and do not allow outsiders to exploit them. The local communities have challenged the commercial interests and outsiders whenever they try to exploit mangrove resources. This has reduces the outside stress on these resources.

## **10. Problems' Analysis**

The major problems of the area include the following:

### **10.1 Lack of Health Facilities**

Although, a government dispensary is available in *Gur Sant* village but there is only one male doctor. The medicines are in shortage and there is no lady doctor to treat gynaecological problems of the local women. Similarly, lack of health facilities is one of the key problems of the village *Chandi*. The village has no health centre or dispensary. The only government dispensary is about 10 km away from the village. The pregnant women bear the brunt of the lack of health facilities as pregnancies are dealt by the traditional *Daees* (Midwives). The patient is shifted to the hospital at Pasni only when the pregnancy case becomes complicated. In most of the cases, women die before reaching the hospital.

### **10.2 Lack of Electricity**

Lack of electricity is another key problem of both the villages. The villages are doomed in darkness at night time. A Grid Station has been set up for providing electricity to *Gur sant* and other nearby villages of *Kalmat Khor*. Two oil run engines have been fixed, due to which the villagers would get electricity for 12 hours in a day. The work on the grid station has been completed since last three months.

However, still electricity facility has not been provided. The WAPDA authorities are asking for money for installation of meters and supply of electricity. The villagers say that they are unable to bear the cost of installation of meters, as they even do not have enough cash to purchase drinking water. In a situation of such an extreme poverty it seems difficult for them to bear the installation of electricity meters. The government may consider providing them electricity meters free of cost.

### **10.3 Shortage of Drinking Water**

One of the key problems of both the villages (*Gur Sant* and *Chandi*) is severe shortage of drinking water. Water is fetched from *Ranbar* & *Sanhri* natural water channels, which are about 30 km away from these villages. In fact, rainwater is collected in a depression at a place in the water channel in the north near *Bakhashi* Hotel, which is used for drinking commonly by the people from different villages. The depression is located at least 5 km on the western side of the hills. The water of this depression is jointly consumed by the humans as well as domestic and wild animals. The water is fetched from the area through tankers. The tanker owner sells water at the rate of Rs. 20 per one-gallon to the villagers, resulting in severe heavy financial burden on the local communities.

### **10.4 Decline in Livelihood Resources**

With the passage of time drastic reduction has occurred in fish and shrimp catch, which are the major livelihood resources for the local communities. As such, poverty has increased. The basic reason behind decline in fish and shrimp catch is use of destructive nets by the outsiders, especially Karachi-based fishermen, and

unsustainable methods of fishing by the foreign trawlers. Not a single local fisherman uses the destructive nets. The use of destructive nets by the outsiders has increased since last five years.

### **10.5 Lack of formal Credit Facilities**

There is no formal credit system by any bank or any other financial institution. As a consequence, the fishermen seek loan from the middlemen and in return they sell their fish-catch to those businessmen on throwaway prices. In case any fisherman refuses to sell his fish catch to the moneylender, he is penalized to pay principle amount along with 25 percent interest. The whole area of *Kalmat Horr*, including *Gur sant* and *Chandi* villages face same problem of exploitative nature of informal credit system, which badly affects their incomes.

## **11. Prioritisation of the problems**

### **11.1 Prioritisation of Problems by Male**

The prioritisation of problems by the male members of *Gur Sant* and *Chandi* villages shows that their core problem is lack of availability of drinking water, which they have to fetch or purchase from the influential tanker owners by paying a high cost. This causes them a significant loss of their earnings. Thereafter, the villagers believe that fishing by foreign trawlers and use of destructive nets by them is the biggest problem and they see it as a biggest threat to their only means of livelihood. Male prioritised their local problems as under:

1. Non availability of drinking water
2. Foreign fishing trawlers
3. Use of destructive nets
4. Lack of Road
5. Lack of Health facilities
6. Lack of Electricity
7. Lack of Middle school

### **11.2 Prioritization of Problems by Females**

Like male members, the female members also consider drinking water as their key problem. They give second priority to the non-availability of gas for cooking and heating. Thereafter, lack of health facilities, road, electricity and girls' school are other problems identified and prioritized by the women. The list of prioritised problems by the female is as under:

1. Lack of drinking water
2. No gas facility
3. Lack of Health facilities
4. Lack of metalled road
5. No electricity
6. Lack of girls school

## 12. Stakeholders Analysis

Stakeholder analysis was done through the exercise of preparation of vein diagram by the local communities. The key stakeholders in the area are the local villagers, local middlemen, Balochistan Fisheries Department, Balochistan Forest Department, WWF and local government departments. There should be understanding between different stakeholders for initiating any community development plan for the area.

Although, there is common understanding among all the stakeholders that the natural resources of the area, especially fish and mangrove resources are depleting; however, there might be differences of opinions on the steps suggested for preventing such a state of affairs. For example, according to the local fishermen, harmful nets are responsible for depletion of fish resource, but there are powerful interests involved in allowing the use of such nets. Such issues have to be analysed deeply before initiating community development and natural resource management plans in area.

## 13. Village Development Plan: Community-based Planning

The exercise of village development plan was carried out on the last day of the research. A meeting was held in the village school. It was ensured that more and more villagers and other stakeholders should participate in the meeting as the village development plan should be a representative plan of all the stakeholders.

#	Problem	Solution	Community (CBO) Role	WWF Role	Government's Role
01	Lack of Drinking Water	Construct dam near Bakhshoo Hotel	Motivate local MNA/MPA	Present local people's demand to government	Construct Dam
02	Lack of Health facilities	Provide lady doctor	Provide security to lady doctor	Present local people's demand to government	Provide lady doctor
03	No School	Provide School	Write letter to the Government	Provide teachers	Provide school
04	Lack of Road	Construct metalled Road	Motivate MNA/MPA	Help communities in reaching to government	Construct Road
05	Lack of Transport Facilities	Metalled road be Constructed and public transport be made available	Write letters to the authorities	Linkages	Provide public transport facilities
06	Lack of gas facility	Provide Gas	Contacts with the authorities	Linkages	Provide gas
07	Un-employment	Vocational Training centre should be established	Motivate youth to receive training	Linkages	Provide Vocational centre
08	Decline in fish catch	Harmful nets should be banned	Contact with Fisheries Department	Highlight the matter with the Government	Enforce law banning use of harmful nets

*Note: Village Development Planning could not be made with the womenfolk due to lack of cooperation by the villagers and their cultural practice of not allowing women to openly discuss common village issues with the outsider women's team.*

## 14. Training Needs Assessment

For initiating work on the natural resource management and village development plans in the area, almost all the stakeholders need training for developing their capacities and skills. Based on Training Needs Assessment of different stakeholders, the following trainings are suggested:

**Local Communities:** Mangrove plantation, organizational management of local CBOs, Saving and credit system,

**Line Departments:** Community based management of natural resources

**WWF Staff:** integration of community development with natural resource management

## 15. Conclusion

*Kalmat Khor* is an isolated remote place, where the local communities are largely disconnected from the outside world and are living in the world of their own. Having not come into interaction with the outside world, the local communities have learnt to live in isolation depending on the local fisheries and mangrove resources.

The continuing decline in their incomes from the fisheries resources coupled with severe shortage of drinking water has disturbed their social fabric. For the first time, they have mentally started the process of thinking in the terms of external support in such a hard situation under the intervention of this project. However, still they are fearful of the external forces and behaviours and are shy of trusting the outsiders.

In such a situation, a sudden rush of the external forces for their own agenda may further frighten them to reject the outside interventions. Therefore, initially it is required that their confidence and capacities are build along with local organizational capacities. An understanding with them needs to be developed before initiating large scale external interventions.

There is also a need that the local communities are gradually made to understand and believe that the external NGOs and other institutions are meant for their socio-economic benefit. Addressing or helping the communities in solving their basic needs such as, provision of drinking water may work towards creating a sense of goodwill between the external players and the local population.

***Annexure I: Study Team***

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## *Annexure II: List of Tools Used in the Field*

The teams used following key tools to collect data from the field:

- Observation
- Semi-Structured Interviews of individuals, key informants and groups
- Focus Group Discussions
- Village Social Maps
- Village Resources Maps
- Transect walks
- Timeline
- Venn Diagrams
- Wealth Ranking
- Daily Activity Clocks
- Seasonal Calendars
- Resources Picture Cards
- Income & Expenditures Matrices
- Pair-wise Ranking / Problem Ranking
- Problem Analysis Chart
- Community Action Plan