



Feasibility Study for Interventions



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List of Acronyms

1	ADB	Asian Development Bank
2	AKPBS	Agha Khan Planning and Building Services
3	CO	Community Organization
4	CCAP	Building Capacity on Climate Change adaptation in Coastal Areas of Pakistan
5	CBO	Community Based Organization
6	FGD	Focus Group Discussion
7	IFAP	Indus For All Programme
8	NRSP	National Rural Support Programme
9	SAFWCO	Sindh Agricultural and Forestry Workers Coordinating Organization
10	SCOPE	Society For conservation and Protection of environment

I. Background

In January 2011, WWF Pakistan started a five year project with funds from the European Union's 'Environment and Natural Resource Thematic Programme' budget line (ENRTP). The project title is "Building Capacity on Climate Change Adaptation in Coastal Areas of Pakistan" project (CCAP).

The overall project objective is that: "By 2025, coastal areas in Pakistan and neighboring regions have climate resilient ecosystems to support the livelihoods/lives of coastal communities." Whereas the specific objective for the 5 year period (2011-2015) of the project is that: "By 2015, government and community climate adaptation capacity is increased and water governance strengthened, to improve climate resilience of Indus Delta ecosystem processes on which coastal communities depend, supported by regional and trans-boundary cooperation on adaptation in river deltas."

The CCAP project plans to implement union council level climate change adaptation plan during 2013. The project aims to improve the livelihood and conservation of coastal communities of Pakistan in the areas of Sindh and Balochistan.

From January 2013 CCAP intends to start the interventions for its target communities in the areas of Keti Bunder and Kharo Chan, district Thatta.

II. Purpose

The CCAP project intends to reduce the risks faced by vulnerable communities in coastal areas of Pakistan through implementation of numerous and varying actions. These actions include interventions related to adaptation and building capacity among coastal communities. The project specifically plans to implement union council level climate change adaptation plan during the year 2013. The project aims to improve the livelihood of coastal communities of Pakistan in the areas of Sindh and Balochistan.

From January 2013 CCAP intends to start the implementation of physical interventions for its target communities in the areas of Keti Bunder and Kharo Chan, District Thatta. For this purpose, project required to prepare a comprehensive feasibility report which shall clearly highlight the areas or communities which are suitable for the below mentioned proposed interventions.

III. Methodology

Community meetings and focus group discussions were arranged for both Keti Bunder & Kharo Chann areas. These sessions were conducted in order to obtain the current & 1st hand knowledge on the status of physical interventions implemented by the communities in collaboration with WWF – Pakistan's and other agencies viz: National Rural Support Programme (NRSP), Sindh Agricultural and Forestry Workers Coordinating Organization (SAFWCO) and Agha Khan Planning and Building Services (AKPBS) etc. Such consultation also aimed at assessing the modus-operandi behind the success & failures.

In Kharo Chann, 2 FGDs were conducted at village Ahmad Khan Jat and Kharo Chann town in which representatives of four and eight surrounding villages participated respectively. Whereas; in Keti Bunder three open Community sessions were conducted (list of villages is given at annex-III). CCAP is targeting 55 villages in Kharo Chann (30) and Keti Bunder (25) under UC level Climate Change adaptation plan. The community meetings & FGDs were focused on the creek villages in both areas of Kharo Chann and Keti Bunder. During the field visit, Kharo Chann was focused on more as WWF- Pakistan had fewer interventions in the area so it was strategically planned to have more consultation in Kahro Chan to get the first-hand knowledge of the area for the purpose. Under Indus for All Programme, WWF- Pakistan had presence in Keti Bunder since year 2007 and had direct exposure with the communities and adequate experience in implementation of physical intervention. Hence considering the limited availability of resources for the study, less focus was paid on the community consultation at Keti Bunder. *Besides; it has been reported generally and could also be concluded from the Socio-economic baselines of IFAP (2007) and CCAP (2012) that creek villages are more disadvantaged and vulnerable as compared to the inland villages.*

It is worth mentioning here that being associated with WWF- Pakistan's Indus for All Program (IFAP), the Consultant has had vast exposure to the coastal areas of Thatta, deep understanding of its socio-economic conditions and direct experience of working with the communities in general and particularly of Keti Bunder. It may also be noted that during the period year 2008 to 2011, the consultant have had paid numerous visits to these areas for M&E purpose. Such association of the consultant proved to be an advantage in conducting the task in hand within the scarce availability of resources (i.e. time & money).

This feasibility study utilized the data of coastal areas collected under Indus for All Programme from year 2007 to 2012 since the IFAP data was compatible with the approach of CCAP. Additionally, in order to review the previous spread of interventions particularly in Kharo Chann area, the study made consultation with local staff of National Rural Support Program (NRSP) based at Garho town and utilized their data of Small Scale Community Managed Interventions implemented in Kharo Chann & Keti Bunder under Coastal

Community Development Program since 2008. These Small Scale Interventions of NRSP are of similar nature and extent which CCAP is planned to implement.

IV. Socio-economics of the Area

In order to present the fundamental socio-economic condition of the area under study, following paragraphs under the section have been reproduced from the Socio-economic baseline study of Pakistan's Coastal Areas (Keti Bunder, Kharo Chann in Thatta, Sindh and Jiwani in Baluchistan) conducted by WWF- Pakistan for CCAP Project in 2012.

First, more than 40% of the sampled households at Keti Bunder fall below the PKR poverty line, while about 20% fall below the national poverty line at Jiwani. Of the three sites, Kharo Chan shows the highest incidence of poverty as measured by the national poverty line. Monthly average household incomes, with mean figures bracketed alongside site names in descending order, are as follows: Kharo Chan (PKR 21,144), Jiwani (PKR 19,716), and Keti Bunder (PKR 13,002).

Second, several and significant obstacles stand in the way of shifts out of poverty as indicated by livelihoods indicators examined in CCAP's socioeconomic baseline. Livestock ownership represents an important means of insurance or safeguard that can be used as a contingency measure or to supplement income. By this measure, vulnerability in the face of shocks to regular streams of income would appear to be highest at Keti Bunder. Hours spent hauling water is an indicator of the opportunity cost of time borne by households -- time that could be spent productively accumulating assets to boost or complement household livelihood and welfare -- and is highest at Kharo Chan. Illiteracy is highest at Keti Bunder where 80% of households reported not having schooled at all; and, it is the lowest at Jiwani where 14% of households reported illiteracy. The male to female illiteracy ratio, when it is at parity or above, signals a low disparity in educational levels: Kharo Chan has a ratio of 1.32, while Jiwani shows least educational attainment for women as compared to men with a ratio of 0.15 (Keti has a ratio of 0.82).

Third, we find that women have significant constraints that prevent them from contributing to monthly earnings. Illiteracy is lowest at Kharo Chan (50%) and highest at Keti Bunder (97%). Vocational skills such as rilly making, hat making, embroidery, and sewing are most diversified at Jiwani and least so at Kharo Chan. Information sources are most diversified at Jiwani where they include newspapers, TV, radio, friends/relatives, and mobiles.

Fourth, we found more exclusive fishers at Keti Bunder (68%) than at Jiwani (53%) or Kharo Chan (48%). Though a basic indicator, high natural resource dependency is tied closely to

vulnerability. A high dependency on a single natural resource stock is sustainable only if natural resource management practices are followed.

Fifth, we find a variety of priorities and challenges at each site. Water supply is a widespread and primary priority at both Kharo Chan and Keti Bunder. Perhaps the next most widespread priority is obtaining access to basic health units. Road construction is a priority among inland villages at Keti Bunder and Kharo Chan, and is a priority for all villages barring four at Jiwani. The demand for schools is evident in the high numbers of respondents in nearly all villages at both Jiwani and Keti Bunder. In terms of challenges, as the surveys were conducted within a period of 2-3 months of severe floods or unprecedented rains, responses convey requirements in terms of relief and rehabilitation at all three sites. Unemployment is a major challenge at Keti Bunder and Jiwani, while disease prevalence is the next most common reported challenge at all sites.

Sixth, linkages between poverty and environment are likely to be identified and established considering the presence of preconditions such as high natural resource dependency in terms of primary income sources, reports of declining fish and forest stock, and extremely low levels of earnings and savings. At Kharo Chan there is high dependence on natural resources, both fish stock and productive land. At Keti Bunder dependence on fisheries is very high, with 77% of all heads of households reporting that they are exclusive fishers. Households at Jiwani rely on a variety of livelihoods that are dependent on natural resource extraction and use including wood based enterprise, sale of Non-Timber Forest Products, agricultural production, aquaculture and fisheries. All respondents engaged in such resource extractive activities considered that these activities contributed to over 80% of their monthly household income.

V. Scope of CCAP and Proposed Interventions

CCAP project is targeting 55 villages in Keti Bunder and Kharo Chann areas. The brief summary given below wherein; complete list of these villages is given as annex-I.

Kharo Chann

Inland villages	8
Creek villages	22
Total villages	30

Keti Bunder

Inland villages	9
Creek villages	16
Total Villages	25

The proposed physical interventions under the UC level Climate Change adaptation plan preferably include the following¹;

- 1. Disaster Risk Reduction:**
 - a. Raised Emergency Support Platforms
 - b. Early Warning Systems)
- 2. Provision of Services**
 - a. Cold Storage Tanks
 - b. Drinking Water Ponds
 - c. Sand Filters
 - d. Mangroves Plantation
 - e. Installation of Solar and Hybrid Alternate Energy Units
- 3. Livelihood Diversification Interventions**
 - a. Hatcheries
 - b. Small Enterprises
 - c. Saline Agriculture
 - d. Vocational Trainings

VI. Past Experience

WWF-Pakistan under the Indus for All Programme implemented a number of physical interventions through Community Based Organizations covering various inland & creek villages of Keti Bunder during the period year 2008 – 2012. These interventions mainly included;

- Drinking water tank,
- Distribution of ice boxes, small boats, sails & nets
- Aquaculture schemes; fish ponds, shrimp ponds, crab ponds, cage culture,
- Alternate Energy; Bio-gas plants, Solar panel systems, Wind turbines & Hybrid systems,
- Vocational center for women,
- Boat motor repair workshop

It is imperative to indicate here that both success rate and the sustainability of such interventions critically depend on the response of communities for whom those interventions were executed. However, assessment of success rate and sustainability level is not within

the scope of this study but it is essential to refer to the latest external evaluation of IFAP done in November 2012. The evaluation provides the feedback on these two parameters for almost all major interventions under IFAP. A chart describing the lessons learnt and recommendations on some of the interventions taken from the draft evaluation report is reproduced here;

<p>Successful/Unsustainable</p> <p>Solar panels, provision of boats, maybe ice boxes,</p>	<p>Highly successful/Highly sustainable</p> <ul style="list-style-type: none"> • Mangrove planting • Pitcher irrigation • Constructed wetlands • CBO establishment • Indigo farming • Shops & bakeries • Cotton ginning • Model farms
<p>Unsuccessful/Unsustainable</p> <ul style="list-style-type: none"> • Drip irrigation • Shrimp ponds • Poultry farming • These are the ones you probably want to avoid (or re-design) • <wind turbines> 	<p>Low success/Highly Sustainable</p> <p>Kitchen gardening...</p>

Chart 1: This chart is reproduced from the External Evaluation Report 2012 of IFAP

The above chart mentions interventions in all 4 priority sites under IFAP². However; Solar panels, provision of boats & ice boxes, mangroves plantation, shrimp ponds and wind turbines are relevant in the context of Keti Bunder & Kharo Chann.

An Asian Development Bank funded Coastal Community Development Program (2009 – 2013) is being implemented by National Rural Support Programme (NRSP) in all 5 coastal tehsils of District Thatta including Keti Bunder and Kharo Chann.

From the IFAP data of physical interventions, it was noted that some 67 interventions³ had been implemented with 17 villages of Keti Bunder whereas; NRSP also implemented some 42 interventions in around 40 villages. There are around 10 villages of Keti Bunder in which both IFAP and NRSP had intervened and implemented small schemes.

Similarly; in Kharo Chann IFAP under its Partnership Fund implemented 3 projects in 13 villages of Kharo Chann whereas; NRSP implemented 40 schemes in 33 villages of Kharo Chann. Additionally; some other NGOs namely; SAFWCO, SEWA-Pak, Society for

² Scope of IFAP was spread on four priority areas viz: Keti Bunder (Coastal ecosystem), Keenjhar Lake (Freshwater ecosystem), Chotiari Reservoir (Wetland ecosystem) and Pai Forest (Reverive ecosystem)

³ These interventions include mangroves plantation.

Conservation and Protection of Environment(SCOPE) & AKBPS had also intervened in Keti Bunder & Kharo Chann and implemented similar kind of schemes at community level. The data on physical interventions of those NGOs could also be useful to CCAP while planning for implementation of the proposed interventions.

All the projects/schemes either implemented by WWF- Pakistan or any other agency were directly or indirectly addressing the need of Climate Change Adaptation.

Village wise data of physical interventions implemented by WWF- Pakistan and NRSP in Keti Bunder and Kharo Chann during the period 2008 – 2012 is given at annex–V and annex–VI respectively.

VII. Social Mobilization – Community Based Organizations (CBOs)

WWF- Pakistan under Indus for All Programme intervened with 18 inland & creek villages of Keti Bunder and those villages were organized through 9 CBOs. IFAP conducted CBO maturity exercise for the first time in year 2009 and established that all assessed CBOs of Keti Bunder fall under the category of Institutional Infancy⁴. The same exercise was repeated for same CBOs in year 2011 and the results were unchanged. Such unchanged results concluded that those CBOs could only perform with continuous support of some external agency like WWF. It is the motivation factor which brought them into the fold of organization and they actively participated in the development initiatives.

Socio-Economic Baseline conducted for CCCP project at the outset of year 2012 reported 80% illiteracy at Keti Bunder. In such status of education it would be exceptional to find CBOs growing beyond infancy level and develop towards the institutional independence.

NRSP cumulative data on Small Scale Community Managed Schemes for the month of October 2012 reported that NRSP has implemented 44 such schemes in 40 villages of Keti Bunder and 36 schemes in 33 villages of Kharo Chann. NRSP believes in participatory approach and always intervene in the villages by organizing the communities in the fold of Community Organizations (COs). In Keti Bunder and Kharo Chann, they had formed men & women COs in each village where they have implemented such schemes.

The most significant factor found from the personal experience, established from the IFAP's external evaluations (2010, 2011 & 2012) and the data of other agencies operating in the area is the *Social Mobilization* which proved to be the key instrument in sustainable development. For CCAP to pilot the physical interventions strong base of Community Based

⁴ Institutional Maturity Index categorized CBOs in 4 levels; Inactive, Institutional Infancy, Institutional development and Institutional Independence.

Organizations is available in almost all its target villages of Keti Bunder and Kharo Chann which should preferably be utilized while implementing the proposed interventions.

VIII. Rapid Needs Assessment

During the direct community consultation for this pre-feasibility study, community representatives identified following needs at their priority;

- Drinking Water Supply and water filters – top on the list of Kahro Chann Community
- Mangroves plantation
- Fish & Crab fattening ponds
- Solar Home Systems
- Small boats & Motors for small boats
- Provision of Ice Boxes
- Village Protection Bunds
- Health facility

Cost Benefit

A simple payback technique can be applied to calculate the “*Return on Investment*” on the proposed interventions. Additionally; implementation of *Pilot Interventions* under CCAP project would earn the following benefits which can subsequently be give a rupee value to calculate the monetary benefits.

- Improvement in sense of responsibility & ownership
- Improved natural resource base
- Increase in incomes
- Conservation of natural resources
- Time & cost saving e.g. time & cost spent on fetching of drinking water
- Additional productive hours
- Improved sense of security
- Improvement in health conditions

Moreover; benefits in relation to the improved/accepted adaptation practices for climate change can also be utilized devising long-term climate change adaptation strategies.

IX.

X.

XI. Conclusion/Recommendations

From the above discussions under various sections, it appears to be convincing that the success and sustainability of the interventions depends on the attitude, response and capacity of respective communities. Additionally, the accurate need assessment and their logical prioritization also increase the probability of success rate.

Access to safe drinking water had been the dream of coastal communities since they existed but the availability of just water for drinking purposes is also one of the severe challenges of these communities. Drinking water remains on the top of the priority among the long list of needs but unfortunately none of the government or non-government organization could help these communities out to address this challenge. One single intervention at village level can be done to create an economical model by establishing some water storage facility along with some suitable filter arrangement. Fulfilling the very basic need of the community means bringing them into the process of sustainable development hence resolving the drinking water issue of the coastal communities can be proved as an effective tool towards achieving the objectives of climate change adaption.

While discussing the post completion operation & maintenance of the physical interventions with community, it was observed that most of the alternate energy schemes of solar Systems, wind turbines and hybrid systems went out of function due to the use of sub-standard materials in the assembly of those units.

It is also advisable to make a specific need assessment and /or prioritization of the needs of the target villages before implementing any interventions. Some criteria may also be adopted for making decision in selection of the villages for pilot interventions; such criteria can be;

- Prioritization of the community/village needs against the proposed interventions
- Establishment of community organization (Exists or to be done)
- Number of previous interventions (by any of the agency)
- Status of previous interventions (operations & maintenance)¹
- Villages of Activists' who have been facilitating CCAP Project in various surveys & Studies
- Preference may be given to those villages where no interventions have been done by any agency.
- Accessibility of village (Pilot interventions is required to be easily accessible so that it can be followed up conveniently – relatively easy visitation)
- And so on...

In order to make even distribution of available resources for interventions, the target villages can also be selected as per their location i.e. inland villages and different creek villages. This should be considered in conjunction with the selection criteria. In this case villages of Kharo Chann and Keti Bunder stand as follows;

Kharo Chann (see the list given below)

Location ==>	Inland Villages	Kanat/Kanand Creek	Mal Creek	Mutni Creek	Rorho Creek	Padwari Creek	Total
Number of Villages	8	3	2	8	4	5	30

Keti Bunder (see the list given below)

Location ==>	Inland Villages	Chann Creek	Hajamro Creek	Turchan Creek	Khober Creek	Total
Number of Villages	9	2	4	2	8	25

Following proposal can be considered for implementation of Raised Emergency Platforms, Early Warning System, Small Enterprises and Saline Agriculture. However; for implementation of other proposed interventions Viz: Cold Storage Tanks, Drinking Water Ponds & Filters, Solar Systems, Hatcheries and Mangroves Plantation above indicated criteria may be adopted.

Kharo Chann (KC) & Keti Bunder (KB)

Proposed Intervention	Unit Cost (as provided by CCAP PMU)	Implied Number of Units	Recommended Village	Why/Justification/ Remarks
Raised Emergency Support Platforms	1,600,000	As per available resource	1. Kharo Chan 2. Keti Bunder 3. Abdullah Mallah or Abdullah Khatti or Ismail Khaskheli (KB) 4. Beer Jat or Gurb (KC)	Due to central locations
Early Warning Systems	300,000	-do-	1. Berrim (KB) 2. M Yousif Dablo (KB) 3. Misri Rajero (KB) 4. Abdullah Mallah or Abdullah Khatti or Ismail Khaskheli (KB) 5. Haji Ibrahim Jat (KC) 6. Haji Ahmad Jat (KC)	Remotest & isolated villages, where, there may be no mobile phones work. Central location Remotest & isolated villages, where, there may be no mobile phones

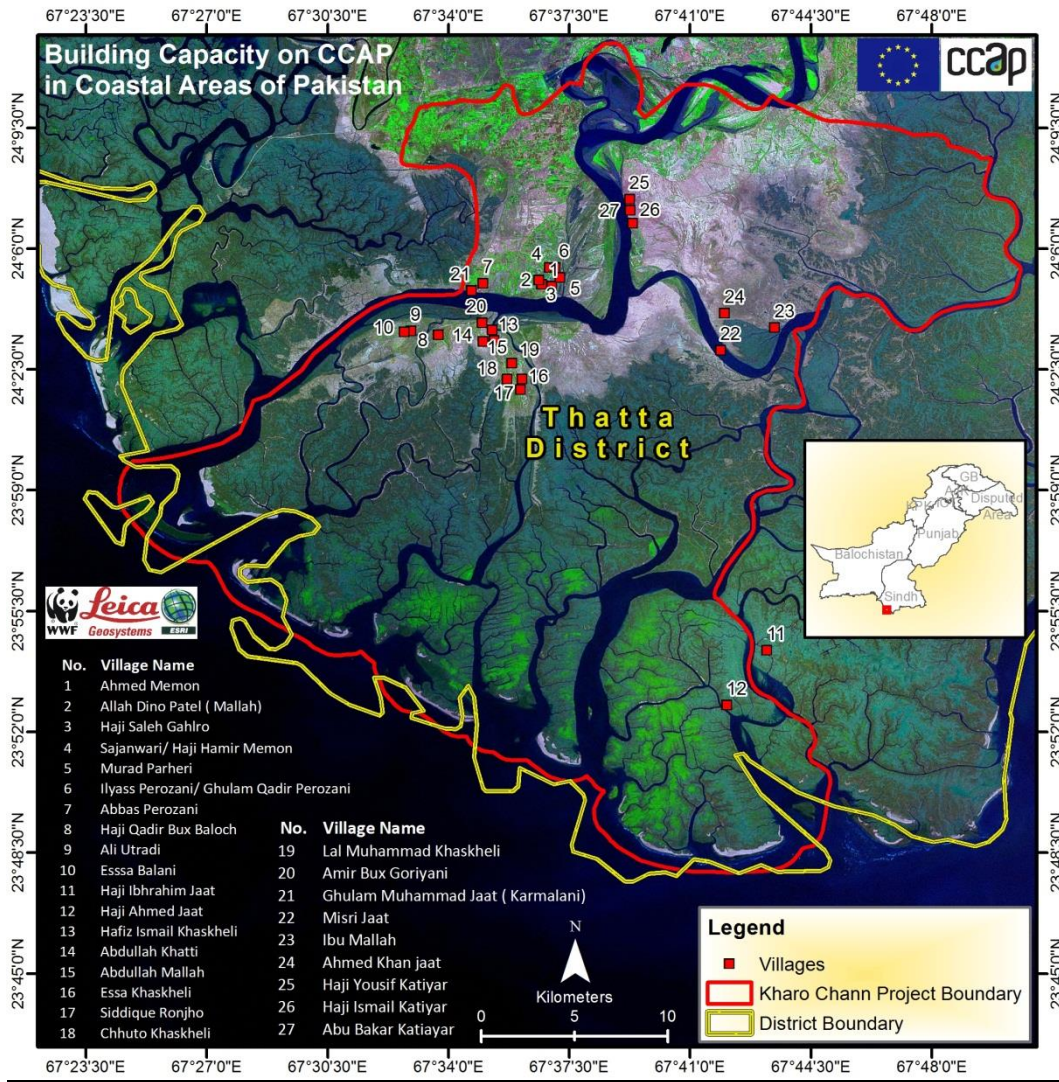
			7. Beer Jat or Gurb (KC)	work. Central location
Cold Storage Tanks	145,000	-do-	As per indicated criteria	
Drinking Water Ponds & Sand Filter	255,000	-do-	As per indicated criteria	Creek Villages
Installation of Solar Energy Units	1,250,000	-do-	As per indicated criteria	
Installation of Hybrid Energy Units	950,000	-do-	As per indicated criteria	
Mangroves Plantation	1,374,250	-do-	As per indicated criteria	
Aquaculture/ Hatcheries	1,220,840	-do-	As per indicated criteria	
Small Enterprises	465,000	-do-	Keti Bunder Kharo Chann	
Saline Agriculture	315,000	-do-	inland villages	Agriculture is land is available with inland villages

Complete List of Target Villages of Kharo Chann & Keti Bunder

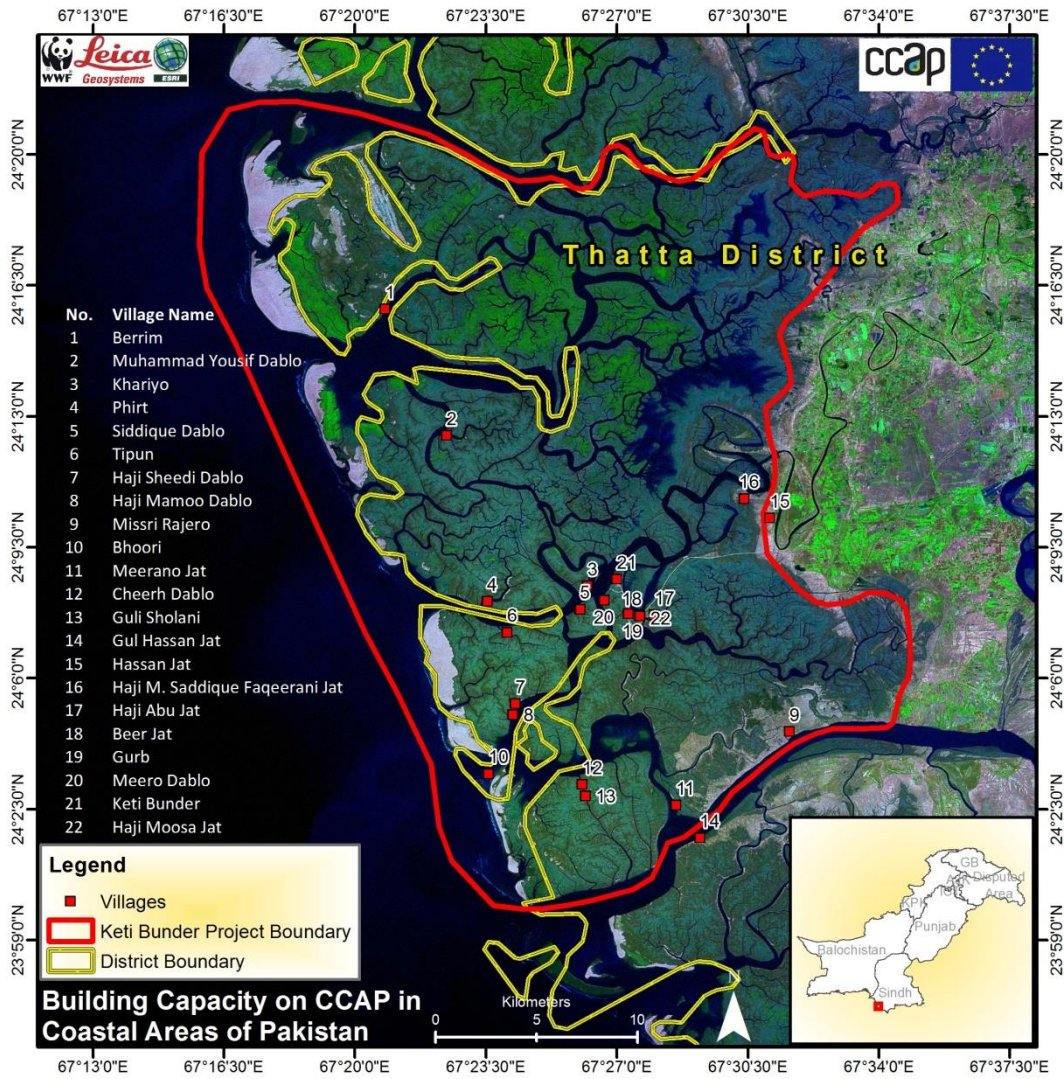
Sr. No.	Name of village	Creek/Inland
Kharo Chann		
1	Ahmed Memon	Inland
2	Allah Dino Patel (Mallah)	Inland
3	Haji Saleh Gahlro	Inland
4	Sajanwari/ Haji Hamir Memon **	Inland
5	Murad Parheri	Inland
6	Ilyass Perozani/ Ghulam Qadir Perozani	Inland
7	Abbas Perozani	Inland
8	Babeyo **	Inland
9	Haji Qadir Bux Baloch **	Kanat/Kanand Creek
10	Ali Utradi**	Kanat/ Kanand Creek
11	Essa Balani *	Kanat/ Kanand Creek
12	Haji Ibbrahim Jaat	Mal Creek
13	Haji Ahmed Jaat	Mal Creek
14	Hafiz Ismail Khaskheli	Mutni Creek
15	Abdullah Khatti **	Mutni Creek
16	Abdullah Mallah	Mutni Creek
17	Essa Khaskheli*	Mutni Creek
18	Siddique Ronjho *	Mutni Creek
19	Chhuto Khaskheli *	Mutni Creek
20	Lal Muhammad Khaskheli *	Mutni Creek
21	Amir Bux Goriyani	Mutni Creek
22	Ghulam Muhammad Jaat (Karmalani)	Rorho Creek
23	Misri Jaat	Rorho Creek
24	Ibu Mallah	Rorho Creek
25	Ahmed Khan jaat	Rorho Creek
26	Haji Yousif Katiyar	Padwari Creek
27	Haji Ismail Katiyar	Padwari Creek
28	Abu Bakar Katiayar	Padwari Creek
29	Gul Muhammad *	Padwari Creek
30	Ramzan Sehtio *	Padwari Creek
Keti Bunder		
1	Berrim	Chan Creek
2	Muhammad Yousif Dablo *	Chan Creek
3	Khariyo *	Hajamro Creek
4	Phirt	Hajamro Creek
5	Siddique Dablo *	Hajamro Creek
6	Tipun **	Hajamro Creek
7	Haji Sheedi Dablo	Turchan Creek

8	Haji Mamoo Dablo	Turchan Creek
9	Missri Rajero	Khobar Creek
10	Bhoori **	Khobar Creek
11	Meerano Jat	Khobar Creek
12	Cheerh Dablo	Khobar Creek
13	Guli Sholani	Khobar Creek
14	Haroon Lakhio	Khobar Creek
15	Gul Hassan Jat	Khobar Creek
16	Ali Dablo	Khobar Creek
17	Hassan Jat	Inland
18	Haji Muhammad Saddique Faqeerani Jat	Inland
19	Haji Abu Jat	Inland
20	Beer Jat	Inland
21	Gurb	Inland
22	Meero Dablo **	Inland
23	Keti Bunder**	Inland
24	Babu Dablo	Inland
25	Haji Moosa Jat *	Inland

Map of Kharo Chan



Map of Keti Bunder



List of villages which were consulted during the Study

#	Village	Area/Union Council
1	Ahmad Khan Jat	Kharo Chann
2	Misri Jat	Kharo Chann
3	Ghulam Muhammad Jat	Kharo Chann
4	Sikander jat	Kharo Chann
5	Kharo Chann	Kharo Chann
6	Siddik Runjho	Kharo Chann
7	Ismail Bagdo	Kharo Chann
8	Abdullah Khatti	Kharo Chann
9	Abdullah Mallah	Kharo Chann
10	Ismail Khaskheli	Kharo Chann
11	Amir Bux Ghuryani	Kharo Chann
12	Qadir Bux Baluch	Kharo Chann
13	Ali Muhammad Baluch	Kharo Chann
14	Bhuri	Keti Bunder
15	Gilli Sholani	Keti Bunder
16	Mamoon Dablo	Keti Bunder

Village wise data of physical interventions implemented by WWF-Pakistan in Keti Bunder and Kharioon during the period 2008 – 2012

#	Village Name	Area	Intervention
1	Ali Bux Jat	Keti Bunder	Mangrove Plantation/Rehabilitation
2	Bhoori	Keti Bunder	Centralized solar unit
3	Bhoori	Keti Bunder	Wind Turbines
4	Bhoori	Keti Bunder	Hybrid system
5	Bhoori	Keti Bunder	Introduction to Aqua culture
6	Bhoori	Keti Bunder	Mangrove Plantation/Rehabilitation
7	Bhoori	Keti Bunder	Installation of Solar/Hybrid units
8	Bhoori	Keti Bunder	Strategy to Reduce Banned Nets
9	Cheer Dablo	Keti Bunder	Centralized solar unit
10	Cheer Dablo	Keti Bunder	Home based solar unit
11	Gili Sholani	Keti Bunder	Centralized solar unit
12	Gili Sholani	Keti Bunder	Community Based Crab and Shrimp Culture
13	Haji Ismail Jat	Keti Bunder	Mangrove Plantation/Rehabilitation
14	Haji Ismail Jat	Keti Bunder	Installation of Solar/Hybrid units
15	Haji Mamoo	Keti Bunder	Centralized solar unit
16	Haji Mamoo	Keti Bunder	Encouragement of Wind Sails
17	Haji Mamoo	Keti Bunder	Mangrove Plantation/Rehabilitation
18	Haji Mamoo	Keti Bunder	Installation of Solar/Hybrid units
19	Haji Moosa Jat	Keti Bunder	Drinking Water Tank & Landing Platform
20	Haji Moosa Jat	Keti Bunder	Mangrove Plantation/Rehabilitation
21	Haji Moosa Jat	Keti Bunder	Installation of Solar/Hybrid units
22	Haji Sheedi	Keti Bunder	Encouragement of Wind Sails
23	Haji Sheedi	Keti Bunder	Mangrove Plantation/Rehabilitation
24	Haji Sheedi	Keti Bunder	Installation of Solar/Hybrid units
25	Siddique Faqeerani	Keti Bunder	Mangrove Plantation/Rehabilitation
26	Hashim Jat	Keti Bunder	Mangrove Plantation/Rehabilitation
27	Hashim Jatt	Keti Bunder	Replication of Crab Pond
28	Keti Bunder	Keti Bunder	Vocational Center
29	Keti Bunder	Keti Bunder	Support to poor woman through provision of Goat
30	Keti Bunder	Keti Bunder	Provision of Fishing Equipment
31	Keti Bunder	Keti Bunder	Boat Engine Repair Workshop
32	Keti Bunder	Keti Bunder	Mangrove Plantation/Rehabilitation
33	Keti Bunder	Keti Bunder	Installation of Solar/Hybrid units
34	Kharioon	Keti Bunder	Hybrid system
35	Kharioon	Keti Bunder	Fish Cold Storage Tanks
36	Kharioon	Keti Bunder	Establishment of Aqua Culture Practices
37	Kharioon	Keti Bunder	Provision of Fishing net to poor woman
38	Kharioon	Keti Bunder	Mangrove Plantation/Rehabilitation
39	Kharioon	Keti Bunder	Installation of Solar/Hybrid units

40	Khuda Bux Jat	Keti Bunder	Mangrove Plantation/Rehabilitation
41	Miro Dablo	Keti Bunder	Wind Turbines
42	Miro Dablo	Keti Bunder	Mangrove Plantation/Rehabilitation
43	Miro Dablo	Keti Bunder	Installation of Solar/Hybrid units
44	Miro Dablo	Keti Bunder	Community Based Crab and Shrimp Culture
45	Phirt	Keti Bunder	Centralized solar unit
46	Phirt	Keti Bunder	Home based solar unit
47	Phirt	Keti Bunder	Fish Cold Storage Tanks
48	Phirt	Keti Bunder	Establishment of Aqua Culture Practices
49	Phirt	Keti Bunder	Provision of Fishing net to poor woman
50	Phirt	Keti Bunder	Mangrove Plantation/Rehabilitation
51	Phirt	Keti Bunder	Installation of Solar/Hybrid units
52	Pir Alah Dino Shah	Keti Bunder	Establishment of Poultry Farm
53	Siddique Dablo	Keti Bunder	Centralized solar unit
54	Siddique Dablo	Keti Bunder	Home based solar unit
55	Siddique Dablo	Keti Bunder	Fish Cold Storage Tanks
56	Siddique Dablo	Keti Bunder	Establishment of Aqua Culture Practices
57	Siddique Dablo	Keti Bunder	Provision of Fishing net to poor woman
58	Siddique Dablo	Keti Bunder	Mangrove Plantation/Rehabilitation
59	Siddique Dablo	Keti Bunder	Installation of Solar/Hybrid units
60	Tippaan	Keti Bunder	Centralized solar unit
61	Tippaan	Keti Bunder	Home based solar unit
62	Tippaan	Keti Bunder	Wind Turbines
63	Tippaan	Keti Bunder	Fish Cold Storage Tanks
64	Tippaan	Keti Bunder	Establishment of Aqua Culture Practices
65	Tippaan	Keti Bunder	Provision of Fishing net to poor woman
66	Tippaan	Keti Bunder	Mangrove Plantation/Rehabilitation
67	Tippaan	Keti Bunder	Installation of Solar/Hybrid units
68	Kharo Chann	Kharo Chann	Wind Turbines
69	Abdullah Mallah	Kharo Chann	Wind Turbines
70	Ali Muhammad Khaskheli	Kharo Chann	Wind Turbines
71	Chutto Khaskheli	Kharo Chann	Wind Turbines
72	Amir Bux Ghuryani	Kharo Chann	Wind Turbines
73	Haji Ibrahim Jat	Kharo Chann	<ul style="list-style-type: none"> - Training on Community based Mangrove Resource Management - Establishment of Mangrove Nursery - Plantation of Mangroves - Action against the Illegal Cutting of Mangroves - Awareness raising on Reducing the Use of Illegal Nets - Trainings on Community based Fisheries Resource Management - Boat Engine Repairing Trainings - Boat Engine Repairing Shop - Establishment of Fisherman Cooperative Society
74	Haji Suthio	Kharo Chann	
75	Ahmed Jat	Kharo Chann	
76	Mahmood Jat	Kharo Chann	
77	Ahmad Khan Jat	Kharo Chann	
78	Hamzo Danglani	Kharo Chann	
79	Misri Jat	Kharo Chann	
80	Syed Usman Shah	Kharo Chann	

**Village wise data of physical interventions implemented by NRSP in Keti Bunder and
Kharo Chann during the period 2008 – 2012**