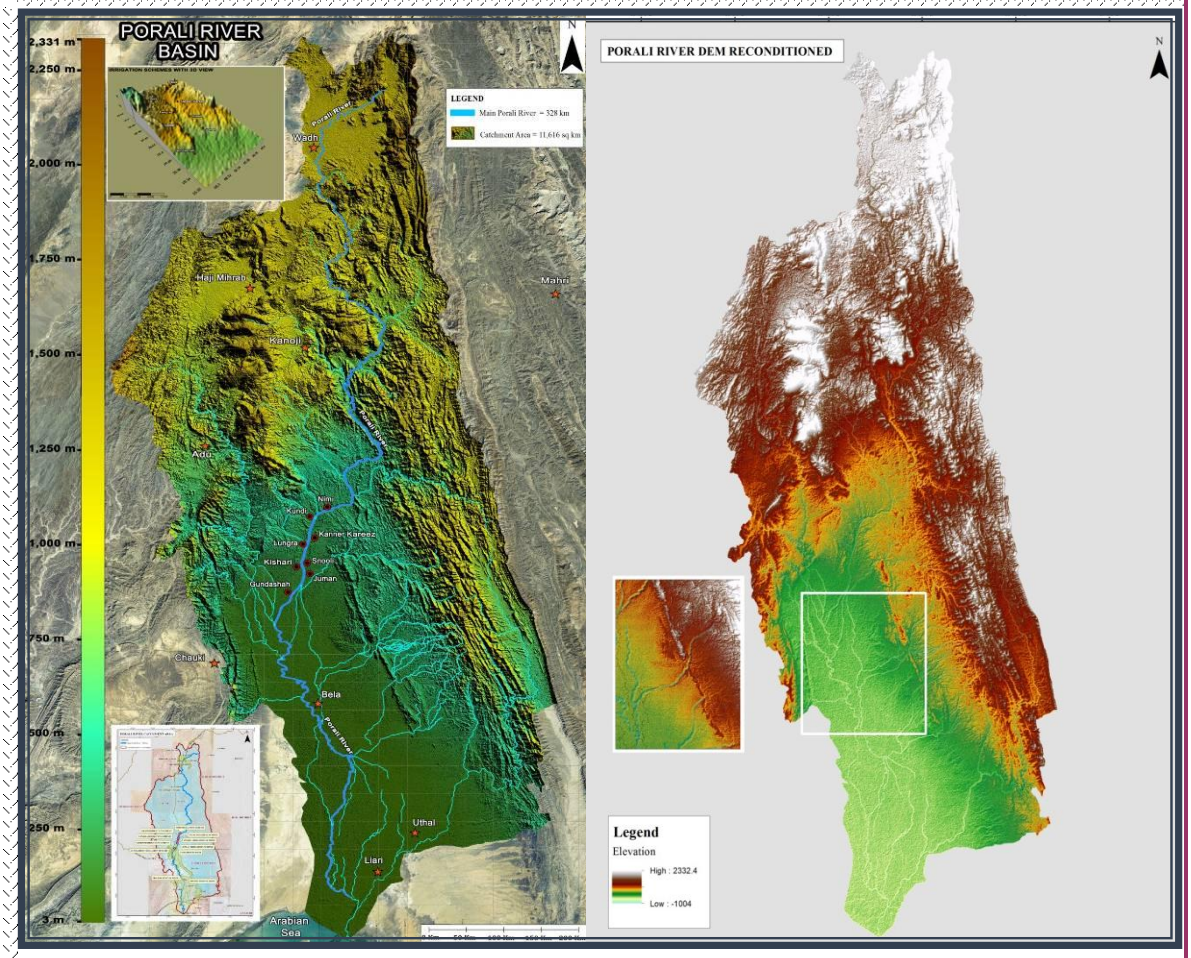
GOVERNMENT OF BALOCHISTAN
BALOCHISTAN SMALL SCALE IRRIGATION PROJECT



Porali River Basin Water Resources Management & Development Plan

Volume-IV

PART A- Social Impact Assessment

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Executive Summary

Balochistan Small Scale Irrigation Project is a World Bank funded project, aimed to support the Government of Balochistan to improve the management of scarce water resources in the Pishin Lora Basin. The revised scope of the project requires an “Integrated River Basin Management” approach covering two river basins; namely Porali and Nari.

Porali River is one of the four rivers of Balochistan falling into Arabian Sea. The 328 kilometer long river originates from the hills of Wadh mountain range in the district of Khuzdar and runs through the plains of Lasbela District. At the southern end, it passes through Miani Hor wetland before entering into Arabian Sea at Sonmiani Bay. Miani Hor wetland is a swampy lagoon lying on the coast covering an area of 7,471 hectares designated as Ramsar Wetland site. The total project area of Porali River Basin is about 11,616 sq.km.

The proposed PRBD Project is targeted towards conservation, management and development of water, land and related resources across sectors in the Porali River Basin to maximize the economic and social benefits derived from water resources in an equitable manner while preserving and, where necessary, restoring freshwater ecosystems. The project will contribute to the economic growth of the villages by reducing the uncertainty of irrigation water availability and contributing to sustainable self-sufficiency by encouraging farmer participation, community mobilization, training and capacity building initiatives of key stakeholders and enabling land users to improve crop production. At the current level, the design consultants have carried out a detailed study of the natural resources potential of the Porali River Basin, and its sustainable use. Porali River Basin management comprises of following components:

- Component A: Investment Component
- Component B: Ground water management and development plan
- Component C: Institutional and Capacity Building
- Component D: Project Management and M&E

Component A is the technical component where physical interventions will take place. This will have allied works of Water Source improvement and Water conveyance Improvement. This component consists of physical interventions in the form of a karez, 13 Perennial Irrigation Schemes, 03 Flood Irrigation Schemes, and 03 Water Storage Dams. The major the Perennial Irrigation Schemes within the project are three ogee weirs along with the off takes and irrigation channels, as well as one off take schemes at 9 different locations. The

three FIS are also based on Ogee Wier, located at Uthal Khantra, Titian, and Phaat Gidri. Two earthen dams and one concrete arch dam are included in the project. The two earthen dams at Bambri and Kharrari are of low reservoir capacity, while the third dam on Kud river is based on RCC structure having a capacity of 83,199 acre-foot.

The project need stems from multiple factors, including the following issues in the Purali River Basin Area:

- Extended Drought and its Impacts
- Flash Floods
- Poor Watershed & Rangeland Management
- Water Shortage for Domestic Use and Irrigation
- Inefficient Use of Water in Agriculture
- Depleting Groundwater Level
- Social and Institutional Aspects

The proposed project is governed by a host of national and provincial statues and regulations. Furthermore, as the World Bank is expected to be involved as a donor / financier, its relevant policies and guidelines will also govern the proposed project. As per Draft Balochistan Comprehensive Development Strategy 2013 -2020 the water sector development will be:

“For the irrigation water, the strategy is clear that evolving Water Resource Management System and Institutional Framework (IWRMA) will be central to sustainable water use in the province. The theme is pillared on undertaking river basin wide management of water with greater focus on the flood irrigation Sailaba and creating water storages on all strategic locations in the river basins and handling the Sailaba irrigation and dams command area in an integrated manner. Under the Strategy, GoB will support establishment of Drip Irrigation Manufacturing Plants in the province under PPP mode for providing either front- end or back- end subsidy to get a system introduced with full institutional support. There is emphasis that water supply and sanitation requires a dedicated attention and given the massive gap, it is planned to undertake integrated water supply and sanitation system in partnership with the local communities especially women through a community infrastructure program for a minimum of 5000 settlements “.

The Project area is spread in three districts of Balochistan as following:

- Khuzdar District 6,167 km^2 53.1 %
- Lasbela District 4,813 km^2 41.4 %
- Awaran District 637 km^2 5.5 %

Ground water is currently the main source of water for domestic, irrigation and livestock. Its uncontrolled withdrawal is causing depletion of water table.

A range of natural resources including water, agriculture, forests (both terrestrial and mangrove), livestock and rangelands, wetlands and fisheries exist in the Porali River Basin. The natural resources suffer from lack of land use planning and over-exploitation, resulting in degradation, affecting the subsistence and livelihoods of the local people. The poor management of flood flows has resulted in very little use for agricultural purpose and results in damages to land, properties and human lives also. A lack of understanding, concern and investment for sustainability is also prevalent. The recent trend of pumping out water for cultivation of banana, other fruit orchards and vegetables is resulting in the rapid depletion of ground water. While vast tracts of cultivable plain lands exist, water for irrigation is a key constraint in the expansion and development of agriculture. In fact there is great potential for sustainable water and agricultural development in Porali River Basin.

The population is generally poor, with low to non-existent access to basic necessities of life including potable water, sanitation, education, healthcare and employment. An estimated 366,000 people currently live in the Porali river basin, with majority of them in the Lasebla district. Roughly 57,200 people, comprising of 6,213 households in 45 human settlements along side the proposed interventions will be directly affected, mostly in a positive way. The major positive impacts will be in the form of consistent and reliable water supply for irrigation, which is the main livelihood source for majority of population.

Though the single major occupation is agriculture, less than 2% of available culturable land is currently under cultivation. This is mainly due to scarcity of water besides inhospitable terrain. Ironically, the scientific analysis shows that there is ample water available in the watershed in any given year. However, more than 90% of this water is drained into the Arabian sea due to absence of suitable irrigation and storage arrangements, and the relatively steep tangent of the area.

Livestock rearing is the second major economic activity. However, this is also limited mainly to small ruminants, because of poor nutritional performance of the rangelands. Again, scarcity of water is a major source of the current dismal status.

The impact analysis was carried out on the basis of available database and stakeholder consultations; this resulted in two broad categories; the developmental phase and the operational phase. The developmental phase is more to deal with earthworks, construction and logistics, since the area has not been represented sensitive from the biodiversity point of

view, therefore no detrimental impact of the project has been envisaged and therefore no offset arrangement has been recommended. The analysis resulted in identifying some of the social impacts, short term in developmental phase and long term in operational phase.

This SIA report provides description of the potential impacts, and pertinent enhancement / mitigation measures. In order to make the proposed project entirely acceptable at the social and environmental levels, the proponents will need to set up an institutional arrangement to steer and monitor the project throughout the project life. This suggestion stems from concerns and comments by various stakeholders on the same lines, specially the EPA (Balochistan) and the community at large.

It is recommended that the project proponent formulate a steering / coordination committee consisting of representatives from all relevant line departments and other stakeholders. This committee should be chaired by the Secretary (Provincial Irrigation Department); however, the members from other line departments should be from lower cadres to ensure regular meetings.

The developmental phase of the project activity would last until the physical completion of the proposed activities (Improvements in Perennial Irrigation Schemes, Improvements in Flood Irrigation Schemes and construction of (Check and Delay action) Dams). This phase is likely to have intense logistic activities.

This has been observed that such project activities enhance the expectation of the stakeholders in the surrounding of the project site in terms of immediate monitory returns in the form of jobs. This aspect of the project should be dealt with extra care to avoid any social problems.

The analysis transpired as a result of stakeholder consultation brought about encouraging results; most of the stakeholders consider the proposed interventions as positive development which has been foreseen to contribute positively for the ecosystem in general and for the inhabitants in particular.

The consultations with line government departments brought about similar results; Balochistan Forest department, Balochistan Livestock department and Balochistan Agricuture department consider the proposed project

supporting their objectives. Balochistan Forest department consider developing plans to plant trees on the embankments of the improved structure, besides developing plans for maintaining rangelands under proposed improved water regimes. This encourages livestock department to identify opportunities to support their objectives. There is a need to develop a very close coordination among these departments to synchronize their efforts in complimenting manner to achieve better results.

The operational phase of the project would bring promising results, if the storage release would be made considering social and technical merits, giving due consideration to downstream and downstream beneficiaries. Similarly the water flow in improved perennial and flood irrigation schemes would be distributed giving due considerations to the potential dynamics of the area.

The sensitivity of the project on Mangrove ecosystem at Miani hor has also been assessed; the inhabitants consider the proposed project to minimize the destructive ephemeral flow of Porali, which often resulted in destruction and damage. They see this project as to minimize the destructive behavior of the flow.

The PRBD is intended to improve the management of water and other natural resources within the Porali River Basin. The cumulative impacts of the PRBD are intended—and expected—to be highly positive overall from a social standpoint.

Poorly-planned development, especially major investments, in the Porali River Basin through sectoral interventions such as irrigation, and water supply could cause significant cumulative impacts in the form of foreclosure of future water uses, or over-commitment of water resources and resulting reduced reliability in water supply. Major new interventions could also have associated induced impacts, such as pollution from enhanced agro-chemical use with irrigation development.

The Basin Planning activities would support development of a comprehensive basin knowledge base and stakeholder inputs to examine the cumulative impact of interventions. The basin planning approach proposed seeks to move away from the current problematic incremental project-by-project sectoral approach to consider inter-relationships between projects and estimating the cumulative system implications of development across sectors.

The monitoring system will set up a framework to provide a systematic tracking of key environmental/natural resources and social parameters in a spatial context across all interventions, using modern remote sensing/earth observation knowledge products and GIS

tools. This would help in keeping track of the progress, exploring synergies/trade-offs in a larger systems context, and outlining future needs in a more systematic manner.

Enhanced awareness of the basin issues and options to enable consensus on decisions and behavioral change is critical across key basin stakeholders (such as government officials, farmers, NGOs, development partners, and the general public).

The preparation phase (e.g. surveys, pre-feasibility, feasibility, or design studies) could have some induced or cumulative impacts depending on the type, location, and scale. The project would support the holistic preparation, including not only the technical studies, but environmental and social impacts assessment studies.

Catchment management activities could have some induced and cumulative impacts, for example small-scale check dams or irrigation pilots could be replicated in unsustainable ways in additional inappropriate locations, and both capacity-building and awareness-raising programs will be needed in this regard.

It is also possible that the PRBD could set in motion a series of activities that have a more virtuous set of positive cumulative or induced impacts. Successful paradigms demonstrated under this project in targeted areas may be significantly scaled-up in future. Basin planning approaches can be developed for other basins in the Country. Enhancing the knowledge base and capacity in key water and land related institutions can manifest themselves beyond their expected role in the project to more effectively manage their other activities.

CHAPTER - 1
INTRODUCTION

1.1 The Background of the PRBD

Balochistan Small Scale Irrigation Project is a World Bank funded project which started in October 2008. It is aimed to support the Government of Balochistan to improve the management of scarce water resources in the Pishin Lora Basin. This project's outcomes initially included feasibility studies for small scale irrigation schemes in 03 other river basins of Balochistan: Porali river; Nari river; and Rakhshan river. The feasibility studies were meant to be limited to isolated small scale irrigation schemes.

Later on, in consultation with various subject experts, the World Bank revised the scope. Instead of localized development schemes, the revised scope requires an "Integrated River Basin Management" approach. This new scope now covers two river basins (rather than three); namely Porali and Nari.

1.2 Description of Project

As described in Section 1.1, the project under consideration, titled "Porali River Basin Development Project (PRBD)", is part of the larger program Balochistan Small Scale Irrigation Project.

This study is aimed to prepare Porali River Basin Development Project based on a long-term vision for the river basin, agreed to by all the major stakeholders. The proposed PRBD Project is targeted towards conservation, management and development of water, land and related resources across sectors in the Porali River Basin to maximize the economic and social benefits derived from water resources in an equitable manner while preserving and, where necessary, restoring freshwater ecosystems. The project will contribute to the economic growth of the villages by reducing the uncertainty of irrigation water availability and contributing to sustainable self-sufficiency by encouraging farmer participation, community mobilization, training and capacity building initiatives of key stakeholders and enabling land users to improve crop production.

At the current level, the design consultants have carried out a detailed study of the natural resources potential of the Porali River Basin, and its sustainable use. For this purpose:

- Data on infrastructure, demography, socio economic condition, institutions and stakeholders, geology, hydrology, climate, agriculture, irrigation, ground water, livestock and fisheries in Porali River Basin has been collected.

- Hydrological and meteorological data has been analyzed, drought and flood frequency analyses carried out, and anticipated climate change impacts assessed.
- Socio Economic Survey of the whole area was conducted to study Anthropogenic presence and activities, Natural Resources, Climate, Agriculture, Livestock, Economic/ Development Information and its management, communication and implementation about development goals.
- Feasibility level topographic survey of Porali River, proposed hydraulic structures' locations and representative survey for command areas of proposed irrigation networks has been carried out. Detailed topographic survey of one component would be selected for detailed engineering design under this Feasibility Study (as mentioned below)
- Existing water resources use in the Porali River Basin for potable water supply and sanitation, irrigation and agricultural development has been studied. Opportunities and threats to Porali River Basin Development are identified.
- Porali River Basin Management Plan is prepared, which includes Water Resources Management and Development Options, Agricultural Development, Flood Management, Drought Management and Investment Opportunities.
- Preliminary design of the proposed development has been made. A preliminary cost estimate has also been prepared.
- Based on the preliminary cost and estimation of expected benefit, Economic Internal Rate of Return and Financial Rate of Return has been calculated to ascertain the justification of the Project
- Detailed Engineering Design and Tender Documents for any one proposed development component (hydraulic structure like diversion weir or storage dam and its irrigation system) would be prepared.
- A Feasibility Report has been prepared covering all the activities mentioned above. If the project is found feasible, the stage of Detailed Design and Construction will be taken up.

1.3 Technical Components of the Project

Porali River Basin management comprises of following components.

- Component A: Investment Component
- Component B: Ground water management and development plan
- Component C: Institutional and Capacity Building
- Component D: Project Management and M&E

Component A is the technical component where physical interventions will take place. This will have allied works of

- Water Source improvement
- Water conveyance Improvement

1.3.1 *Component – A: Investment Component*

A. Perennial Irrigation Schemes

The majority of the Perennial Irrigation Schemes within the project are three ogee weirs along with the off takes and irrigation channels, as well as one off take schemes at 9 different locations. The project will focus on the improvement and increment of the existing command area. Distribution of land and water shares on the schemes will remain the same as existing, thereby providing a highly conducive environment for community participation activities. Typical civil works on PIS comprises main weir body, off take structure, conveyance channel, river training and auxiliary structures including siphons, washing pads and animal drinking points.

Associated community managed watershed improvement, rangeland rehabilitation and OFWM interventions will be undertaken as an integral part of PIS development. The option of HEIS will also be considered on PIS.

Table 1.1 Perennial Irrigation scheme specifications

	Names	Type of water intake	Water drawn (acre-foot)	Water Drawn (m3)
Perennial Irrigation Scheme	Badri Karez	Karez	440	542,731
	Naik M Bent	River diversion	300	370,044
	Khanzeni Bent	River diversion	500	616,740
	Hassan Mengal Bent	River diversion	800	986,784
	Saloon Bent	River diversion	740	912,775
	Bazenjo Bent	River diversion	800	986,784
	Hinnami Bent	River diversion	600	740,088
	Peori Bent	River diversion	400	493,392
	Pepri Bent	River diversion	240	296,035
	Sathy Bent	River diversion	300	370,044
	Nimmi	Diversion weir	7,197	8,877,356
	Nurg Hingri	Diversion weir	103,098	127,169,321
	Sheb & Medan	Diversion weir	4,798	5,918,237
		Total:	120,213	148,280,331

i. Nimmi Perennial Irrigation Scheme:

In the scheme area of Nimmi, the Porali River runs in a gorge with the small patches of agricultural land on both sides. The land on both sides is partly cultivated because most of the potential areas are high elevated. The settlements along the river course are also at high risk. The proposed weir at Nimmi will provide a head to water by which channels on right side of Nimmi.

ii. Gundasha – NurgHingri Perennial Irrigation Scheme:

There is an existing protection bund in the area of Gundasha. A narrow opening serves as an intake for the irrigation of Gundasha area. The existing structure at NurgHingri does not fulfill its purpose because located at downstream from the intake of Gundasha. Secondly, due to the siltation, the existing weir is covered, resulting improper diversion of water and no head to water as required on site.

A weir is proposed at the upstream of Gundasha with an irrigation channel on right hand side and a divide wall or protection bund on existing trifurcation structure for proper flow in the NurgHingri structure.

iii. Sheb & Medan Perennial and Flood Irrigation Scheme:

The area of Sheb is devoid of any proper irrigation system. The local farmers divert the perennial flow to their lands by locally available means and entirely on temporary basis. The cultivable land in the area of Sheb& Medan is about 971 hectare but due to absence of proper irrigation structure only 162 hectare land is under cultivation. The proposed weir will not only divert the water in the required amount for Sheb and Medan also spill over the excess water to downstream.

iv. Khuzdar Perennial Irrigation Schemes:

In Khuzdar area, Porali River runs in a small gorge covered with mountains. The people do their agriculture in small patches of land within the river course on both sides. There is no engineered intake structure for these patches of lands. It is proposed to provide the proper off take structures at nine different bents. These off takes will be designed according to the need of potential available land for the agriculture.

B. Flood Irrigation Schemes

Flood Irrigation is the most common irrigation practice found in the Porali River Basin. Large land areas are cultivated on flood water every season. The Flood Irrigation Schemes within the project at Porali River Basin are three ogee weirs along with the off takes and irrigation channels. The project will focus on the improvement and increment of the existing command area. Distribution of land and water shares on the schemes will remain the same existing, providing a highly conducive environment for community participation activities.

Typical civil works on FIS comprises main weir body, off take structure, conveyance channel, river training and auxiliary structures including siphons, washing pads and animal drinking points.

Associated community managed watershed improvement, rangeland rehabilitation and OFWM interventions will be undertaken as an integral part of FIS development. The option of HEIS will also be considered.

Table 1.2 Flood Irrigation Scheme Details

Flood Irrigation Scheme	Names	Type of Weir	Water Drawn (acre-foot)	Water Drawn (m3)
	Uthal Khantra	Ogee	16,188	19,967,574
	Titian		80,028	98,712,937
	Phat Gidri		50,694	62,530,035
Total:			146,910	181,210,547

i. Uthal Khantra Flood Irrigation Scheme:

The existing system of Uthal Khantra Irrigation structure is not functioning due to the damaged sluice structure and Sholes formed at upstream resulting in meandering behavior, improper spill over the weir and insufficient flow in existing off take. The water required for irrigation is getting wasted through silted up and damaged weir. Presently, there is insufficient water for irrigation even during the rainy season.

The structure is proposed at about 1km upstream of the existing structure with off take and sluice, and at its downstream at the location of Kenwari and Salari proposed a gated bifurcation structure which divides the water between Kenwari and Salari areas according to their shares. This scheme will facilitate a population of over 10,000 by improving area water conditions. The command area would also increase from 2,024 hectare to 4,594 hectare.

ii. Titian Flood Irrigation Scheme:

The existing Titian weir structure is damaged and RHS Lyari off take is completely washed away with guide bund. Presently, there is no cultivation and water required for irrigation is getting wasted through broken bund to sea.

There is a proposed new weir structure with two irrigation channels at both ends named Lyari and Seeran Jheel, The new structure is proposed approx. 1km upstream of the existing damaged structure. This scheme will have the command area of about 7,287 hectare and will solve the water scarcity issue in Lyari and Seeran Jheel.

iii. Phat Gidri Flood Irrigation Scheme:

The limitations of existing Phat Gidri scheme is the meandering behavior of river and improper flow in Phat, Gidri and Lakra channels. This irrigation scheme is totally dependent on flood, while the requirement is of controlled water. The existing trifurcation structure was built on diverted river. Due to this, the downstream population sometimes faces severe flood and damages.

It is proposed that a new structure is built at RD 272+000 (1.5 km upstream of the existing structure) and the river is trained to get back to its original alignment i.e., up to RD 278+000. The off take from the proposed structure will serve as an intake for the existing phat-gidri structure.

C. Water Storage Dams

Two earthen dams and one concrete arch dam are included in component – C. The irrigation channels along with the auxiliary structures will also be the part of schemes. The project will focus on improving and increasing the existing command area. Distribution of land and water shares on the schemes will remain same providing a highly conducive environment for community participation.

Typical civil works on dams comprises main dam body, spillway, off take structure, conveyance channel, river training and auxiliary structures including siphons, washing pads and animal drinking points.

Associated community managed watershed improvement, rangeland rehabilitation and OFWM interventions will be undertaken as an integral part of dams' development. The option of HEIS will also be considered on dams.

Table 1.3 Proposed reservoir locations & capacities

	Names	Type of dam	Reservoir Capacity (acre-foot)	Reservoir Capacity (MCM)
Storage Dams	Bambri	Earthen	5,846	7.2
	Kharrai	Earthen	10,130	12
	Kud	R.C.C	83,199	100

i. Bambri Storage Dam:

The purpose of the dam is to store water for efficient and proficient use, and to mitigate the effects of flash flood, regulate and control flow to command area through proper conveyance channels. The existing dam was broken in the flood of 2010. As a result, channels downstream washed away causing severe damages to the settlement and cultivation.

The dam is damaged in a way that is not repairable. The structure requires totally new construction with conveyance channels for regular supply of water to the command area.

ii. Kharrari Storage Dam:

There is a dam left incomplete in construction in the year 1994 by irrigation department due to the shortage of funds. The existing location has been evaluated and checked the storage capacity which is not enough for over 5000 hectare cultivable land.

Therefore the dam site is selected at the upstream of the existing half constructed dam due to the availability of large impound area.

The storage of water is required at this location for the natives of Uthal Town also the purpose of dam is to reduce the damages of flash flood and proper distribution of water in Lunda Dhora(irrigation channel).

iii. Kud Storage Dam:

Kud River is the largest river in the catchment area of Porali River. Due to high gradient, the erosion rate and downstream damages are severe. As far as topography is concerned, there is a well practicable and feasible location of the storage dam. It will be useful for the agriculture, livestock and other uses. The concrete arch dam is proposed on this river.

1.4 PROJECT NEED & JUSTIFICATION

The following description, as abstracted from the inception report, provides a synopsis of the problems and issues in the PRB. The existence of these issues necessitates appropriate interventions for better management and harvesting of the available natural resources, to alleviate the abject poverty currently found in the human settlements of the area:

Extended Drought and its Impacts:

The PRB and surrounding areas almost alternatively experience severe draughts and sever flash floods. Following heavy rains and floods in 1995, the area gradually drifted towards drought. The drought situation worsened in the region in year 2000-2001 as severe water and food shortage resulted in deaths of dozens of people and thousands of livestock in the region. Although there were some rains in year 2003 and 2006, the drought conditions generally persisted till 2007. In year 2007, the drought hit areas were ravaged by rains and floods which also became further disaster for the region. The floods were so severe that many people were killed and entire communities became homeless. Due to large scale deforestation and land degradation, the floods did not bring groundwater stability in the region.

PRB region depends very heavily on agriculture and livestock. However, no sizable reservoir is available for water storage and management in the area having a trend of erratic rainfall and flash floods. The drought has further intensified the deforestation and overgrazing in the mountainous areas of PRB which multiplies the food shortage problems in the region.

Flash Floods:

Erratic rainfall, coupled with topographical features of PRB where the main plain area is surrounded by steep slope and mountains, results in flash floods of large volumes causing devastation and destruction to human lives, properties, irrigation system and agricultural fields. Most of the perennial schemes in the Porali River Basin do not have permanent intake and also do not have proper protection bunds and spurs to divert the flood water, so the flash flood - like in 2010 – cause high damages, which ultimately reduces their command area. In the downstream of Porali River (Phat-Gidiri trifurcation structure) the width of Porali River reduces which eventually reduces its capacity and results in flood disaster.

Poor Watershed & Rangeland Management:

The general catchment and watershed areas of PRB have been subjected to land degradation ranging from slight to severe conditions due to lack of watershed management measures, overgrazing, cutting and uprooting of trees, shrubs and grasses for fuel and forages. The situation has been further aggravated by cyclic periods of drought and floods, most notably the recent severe event during 2001-2007. Poor watershed and rangeland management has resulted in depleting groundwater in addition to its role in intensifying the flash flows and food shortage for livestock.

Water Shortage for Domestic Use and Irrigation:

Except few places, the inhabitants of PRB are deprived of safe drinking water. Most farmers are unable to have access to irrigation water supplies to grow food and other crops on their lands.

Inefficient Use of Water in Agriculture:

Whatever water is available, it is also being used very inefficiently. No on-farm water management practice has been observed in the fields. The land leveling condition is so poor that even when part of field is flooded with water, patches of land without water can be seen very easily reflecting the uneven field conditions.

Depleting Groundwater Level:

The important income generating activities; irrigated agriculture, horticulture and pastures, depend mainly on ground water for their water requirements. In the area of Khuzdar and Lasbela where groundwater development has been carried out and water has been extracted for the last one decade, it is reported that water level is falling due to its increased

and uncontrolled utilization. It is estimated that the total available ground water potential in sub-basin is about 102 cusecs and total estimated abstraction is about 112 cusecs. This indicates an over drawing of about 10 cusecs from the storage. The opportunities for the recharge to ground water reservoir in arid and semi arid areas are as rare as rain and surface runoff unless we could save the surface water of Porali River by establishing different methodologies.

Social and Institutional Aspects:

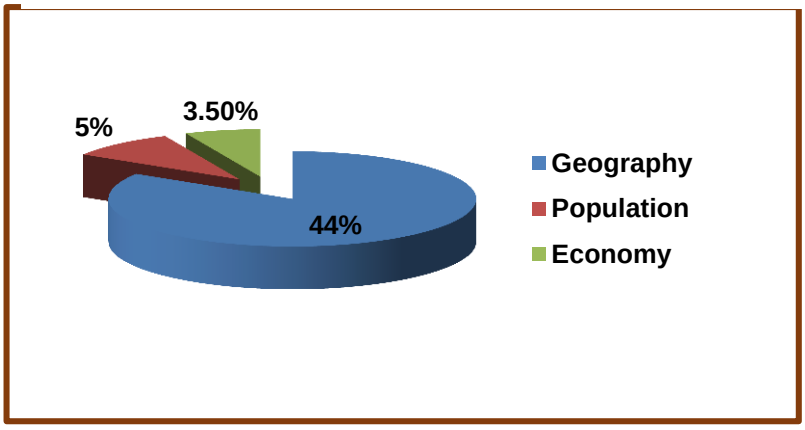
Poor governance, low institutional capacity, and lack of political will and commitment by the public sector to address the water crisis in a planned and systematic way are common water issues in Balochistan. Provincial Government departments lack well-qualified, trained, and experienced personnel, and existing staff are occupied with the operation and maintenance of current schemes. Thus, little capacity exists to conduct technical surveys and holistically plan and design new projects. Moreover, irrigation service delivery is handled in isolation between the agriculture and irrigation sectors.

At the community level, there is little interaction or information exchange among communities and the government on the options available to them to increase water productivity on a long term basis. A sustainable development program cannot be implemented without full participation of all stakeholders and primarily the local communities. This aspect does not exist in PRB where the government departments are working in isolation for operation and maintenance and farmers do not feel any responsibility for the operation and management of any infrastructure.

1.5 THE GEOGRAPHICAL CONTEXT

Balochistan offers some of the best assets for development and is generously bestowed with natural and locational resources. It possesses the largest land area of any province and vast rangelands. Its southern border makes up about two thirds of national coastline, giving access to a large pool of fishery resources. It is ideally situated for trade with Iran, Afghanistan, Central Asia and countries of the Persian Gulf. Over the last four decades, it supplied natural gas to Pakistan's economic

Figure 1.1Balochistan as share of Pakistan (Source: GOP 1998 and World Bank 2008a,b,c; 2012a)



centres, supporting country's industrialization. The province also claims large deposits of coal, copper, lead, gold and other minerals.

In the past, Balochistan's economy has not done well (Figure 1.1). The province has Pakistan's most anaemic growth record, worst infrastructure, severe water crisis, and weakest fiscal base. The poor economic performance leads to poor living standards. Balochistan has the highest poverty along with KPK, lowest social indicators, and, in parts of the province, the weakest state institutions.

1.5.1 Location and Surroundings

Porali River is one of the four rivers of Balochistan falling into Arabian Sea. The 328 kilometer long river originates from the hills of Wadh mountain range in the district of Khuzdar and runs through the plains of Lasbela District. At the southern end, it passes through Miani Hor wetland before entering into Arabian Sea at Sonmiani Bay at about 90 km distance from Karachi City. Miani Hor wetland is a swampy lagoon lying on the coast covering an area of 7,471 hectares designated as Ramsar Wetland site in May 2001 under Ramsar Convention.

The latitude and longitude of the Porali River Basin is 26° 32' 0.20", 66° 25' 6.55" respectively. The total length of Porali river is about 328 km. The total project area of Porali River Basin is about 11,616 sq.km. The **Figure1.2** depicts sub-basin wise area of the Porali river basin

SEGMENT A	
SUB BASINS	AREA (Sq. Km)
Wadh	1,051
Tibbi Jhal	1,547
Ping Jhal	618
AranjiJhal	696
Kulri	714
Total	4,626 Sq. Km.
SEGMENT B	
SUB BASINS	AREA (Sq. Km)
Kud	1,721
Tadar Kaur	636
Total	2,357 Sq. Km.
SEGMENT C	
SUB BASINS	AREA (Sq. Km)
Kaniki Nai	657
Gajri Nai	783
Khanko Nai	664
Kharrari	1,716
Lakhra	393
Lasra	420
Total	4,633 Sq. Km.
11,616 Sq. Km.	

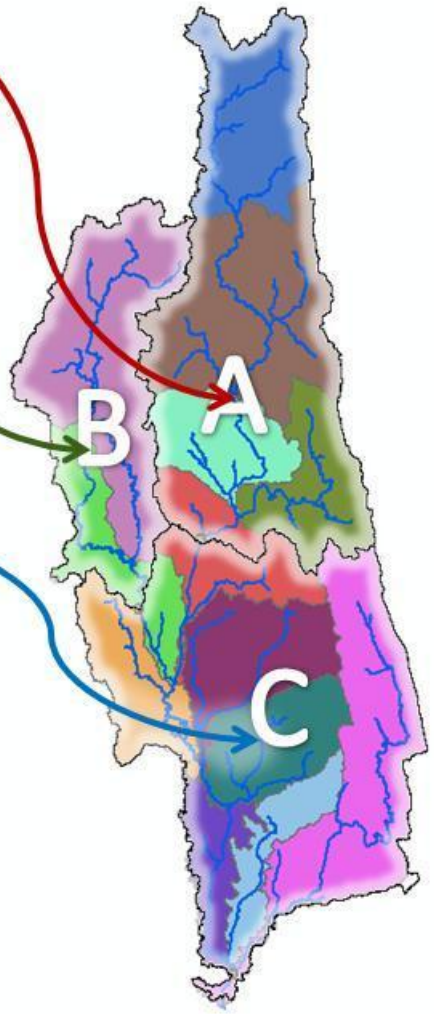


Figure 1.2 Sub-basin Wise Area of the Porali River Basin

Neighboring regions are Khuzdar to the north, Arabian Sea to the south, Dadu to the East, Punjgor to the West. Wad, Bela, Uthal and Winder are the major cities within the catchment boundary of Porali River.

The Project area is spread in three districts of Balochistan as following:

- Khuzdar District 6,167 km2 53.1 %
- Lasbela District 4,813 km2 41.4 %
- Awaran District 637 km2 5.5 %

Almost half of the Porali River Basin falls within the district of Lasbela. The total area of the district is 12,574 km2out of which about 39% area is in the Porali River Basin.

Other half of the Porali River Basin falls in Khuzdar District and a small area in Awaran District. Total geographical area of Khuzdar District is 43,260 km2out of which about 11% land is within the boundaries of Porali River Basin. **Figure 1.3** presents the location Map of the Project Site.

Figure 1.3 Location and Surrounding of Study Area

1.5.2 *Intervention Sites*

The project area could be divided into 04 zones, namely:

- Miani Hor (Coastal region)
- Liari, Uthal & Lakhra Tehsils (Southern region)
- Kanrach & Bela Tehsil (Central Region)
- Wadh & Khuzdar Tehsil (North-eastern region)

Geographically there is no proposed direct intervention in Miani Hor area; however the area has been assessed keeping in view the local fishermen community. The improvement in Perennial and Flood irrigation system will be a positive contribution in improving the ecosystem and also seen as contributory factor to reduce pressure on single trade for earning their livelihoods i.e. fishing.

Fishing is the main activity within this site. Mangroves are increasingly under stress by the local inhabitants, to fulfill their needs for fodder and fuel wood. With increasing population in the area, the foliar harvest cannot be sustained indefinitely without adversely affecting the mangroves, affecting the productivity of the wetland. In the site area, reports of trash fishing seem to have direct correlation between the fish meal facilities in the vicinity and the availability of juvenile catch in the area.

There are a number of proposed irrigation schemes under review in the southern region (Liari, Uthal and Lakhra); they are:

1. Titian Flood Irrigation Scheme (Improvement proposed) Near Liari
2. Uthal Kantra Flood Irrigation Scheme (Improvement proposed) Near Uthal
3. Phat Gidri Perennial Irrigation Scheme (Improvement proposed) Near Gidri In Lakhra area.

Titian FIS has been located in the surrounding of a flat plain area, the soil having a higher ratio of salt in it due to extensive rate of surface and sub surface evaporation. It was noticed that the devastating hydro pressure have eroded the concrete wall and damaged the gates of the canal used to divert water from one course to another one, silting of the channels further compounded the degradation of the system. The proposed improvement at Titian is likely to contribute positively in the economy of the surrounding villages and also contribute in reducing devastation in case of flood, by easing pressure on other infrastructure including sections of coastal highway coming under threat due to flood. It has also seen as a blessing to the people of Bheera village living very close the mouth of Porali river in the mangrove areas.

View of the Flood Irrigation Scheme at Uthal Khanta Bridge

Uthal Kantra FIS is located very close to the established infrastructure; latest flood left a devastating effect in the vicinity, the proposed scheme has been envisaged to improve the flow of water in the waterways. The proposed intervention has been foreseen to ease hydrodynamic pressure on built infrastructure and the surrounding settlements.

The proposed perennial irrigation scheme at Phat Gidri area has been focused to enhance the coverage area for the available water in the channel, the area witnessed to have sizeable agricultural developments, besides livestock as a supporting factor.

Perennial Irrigation Scheme at Phat Gidri Area

The Central region (Kanrach and Bela) represents number of proposed irrigation schemes under review, they are;

1. Sheb Medan delay action dam proposed Near Kanrach
2. Kharrari Dam Near Bela
3. Bhambari Dam near Bela.
4. Gandasha Perennial Irrigation Scheme Near Bela.

Sheb Medan is physically isolated by a mountainous ridge. Presence of newly developed agricultural farm indicates the development trend in the area. A sizeable group of sheep and goats were seen grazing in the area.

A View of Sheb Medan

The proposed site for Khrrari dam is surrounded by a sizeable population pocket. The area is subject to extensive mining and extraction activity of marble, granite and other mineral resources, heavy vehicular movement is a frequent activity in the area besides other allied work.

Proposed Site for Khrrari Dam

Bhambri Dam proposed site presents almost the same area dynamics as Kharrari, with a slight deviation that the area has more evolved agricultural infrastructure, besides having a promptly responding social outfit. They see the proposed intervention as an opportunity to enhance their productivity. Presence of Tamarix indicates the level of waterlogging due to the seasonal accumulation of water.

The perennial irrigation scheme at Gandasha has been surrounded by the agricultural farms showing extensive activity. The human settlements around the proposed facility were found engaged in agriculture and livestock as supporting livelihoods.

The vision of the rangeland in the district is to enhance their productivity to their optimum potential with investment in Range Improvement and grazing management. Improvement in irrigation system has been seen as an opportunity to boost local economy and also ease pressure on already stressed and resource hungry professions like fisheries and services.

Panoramic view of proposed facility at Gandasha

This has also seen as enhancement in already existing livestock sector, and will promote further improvement; the promotion of range land as a result of improvement in irrigation system will also contribute in strengthening the biodiversity regime in the area.

The proposed interventions in North eastern region (Wadh & Khuzdar tehsils) include:

1. Nimi Perennial Irrigation Scheme in Khuzdar
2. Kud Dam in Khuzdar

A part of the area is under torrent -watered cultivation. Nimi is a representative of that definition. The farms were located in stream beds and there seems a defined mechanism to divert flowing water in the agricultural farms. These farms were usually represented by a range of strata, from tree, shrubs and herbs. Trees of date palm and Acacia can easily be recognized around the margins of these farms.

Panoramic view of Nimi Perennial Irrigation Scheme

The system of irrigation under torrent watered cultivation is unique system in this area. The main sources of irrigation in the Khuzdar Tehsils (under study) are flood water and rain. Other source of irrigation includes tube wells, wells and springs.

Kud Dam site represents a relatively captive area, with minimal human interventions; there is a tomb of a lady in the area mostly visited by the women of the area to pay their homage and respect. The area seems to have minimal human interaction and not easily accessible.

Kud Dam Site

Challenges in PRBD

The challenges for designing of integrated schemes for water resources management and development in the PRB are:

- Schemes having higher resource potential and cost-effective in terms of investment and O&M
- The design of integrated schemes addresses all the vulnerable groups in terms of landless, small holders, children, women and graziers so that benefits of investments are equitably distributed to all the segments of the rural society
- The diversification of livelihood addressing all the segments of the scheme covering watershed, reservoir, command area, downstream Sailaba and Khushkaba farming areas instead of traditionally addressing the perennial irrigated scheme
- The negative impacts of scheme development in terms of social, economic and environmental aspects are fully addressed.

CHAPTER - 2
METHODOLOGY FOR CONDUCTING SOCIAL ASSESSMENT

2.1 Assignment objectives

The overall objective of this study is to elucidate the anticipated aspects of the proposed intervention and their impacts on the surrounding environment in order to propose necessary mitigation measures to prevent/minimize adverse impacts. To achieve this objective, an assessment of the existing social status of the project site is a prerequisite and therefore included in this study by collecting and reviewing the baseline data of various social attributes.

This SIA has been prepared to ensure adequate social management during development and implementation of Porali River Basin Development Project. It provides mechanisms for ensuring that potential social impacts of the current program are identified, assessed and mitigated as appropriate, through a social screening process.

More specific objectives of this SIA report include:

- To establish a baseline of existing status at the project site prior to project initiation by collecting secondary and primary data/information on socio-economic environment of the project area.
- To help the project proponents to incorporate necessary measures for legally compliant and socially acceptable performance of their project.
- To identify significant social impacts (both positive and negative) during all stages of the project and propose mitigation measures for negative impacts.

2.2 Scope of assignment:

The scope of the assignment is derived from the PEPA guidelines.

- ***Description of the Project:***

  Complete description of the relevant parts of the project has been provided, using appropriate visual aids (maps, photographs, satellite imageries etc.) where necessary.

- ***Legislative and Regulatory Considerations:***

  The relevant legislation, regulations and standards, and environmental policies which are applicable to the project are described. The appropriate authority jurisdictions that will specifically apply to the project are also identified.

- ***Description of the Environment:***

The baseline data on the relevant characteristics of the study area was assembled, evaluated and presented. This section includes the detailed description of the following attributes within the project area. The 'project area' is defined as the area within which the impact of the project may be expected.

- ***Socio-economic Environment:***

Demographics, employment, land use, community structure, public health, communal facilities or services, sites affected by the project and community perceptions about the project.

Validation of available information was done by characterizing the extent and quality of collected data. This helped in indicating the significant information deficiencies and any uncertainties associated with the prediction of impacts.

- ***Potential Impacts of the Project:***

Impacts related to the project were identified and distinction for significant impacts was made between positive and negative, direct and indirect, short and long term, during different phases of the project.

- ***Mitigation measures of Adverse Impacts:***

Possible measures to prevent or reduce significant negative impacts to acceptable levels have been identified. Recommendations to adopt feasible mitigation measures were included in the report.

- ***Development of a Monitoring and Management Plan:***

The critical issues requiring monitoring to ensure compliance to mitigation measures are identified. Impact management and monitoring plan for operations has been presented.

2.3 Overall Methodology

2.3.1 Orientation Sessions

The SIA team held meetings and discussions with relevant key officials of the design team (TCI), Balochistan Irrigation Department and the World Bank. This activity was aimed at achieving a common ground of understanding on various issues of the SIA study.

2.3.2 Development of Data Acquisition Plan

Following the concept clarification and understanding, a detailed data acquisition plan was developed for the internal use of the consulting team. This plan was revised and updated

throughout the SIA process. The plan identified specific requirements of the primary and secondary data and their sources; determined time schedules and responsibilities for their collection; and indicated the logistics and facilitation needs for the execution of the data acquisition plan.

2.3.3 Secondary Data Collection and Review

The secondary data of similar projects available with NEC and TCI were also reviewed. Additional data was collected from the following departments:

- Balochistan Irrigation Department
- Population Census Organization
- NGOs/CBOs
- Related Studies and Research Articles

On the basis of the secondary information and its review, a primary survey plan was developed.

2.3.4 Primary Data Collection

Primary data was collected for the parameters identified in the gap analysis. Socioeconomic surveys were conducted for the human settlements located near the proposed project corridor. The survey tools included questionnaires and focused discussions. The socio-economic survey was conducted for all teh 45 human settlements located along teh corridors of proposed interventions.

2.3.5 Site Visits

The consulting team made several visits to the project site. The visits were made by all team members in order to collect necessary data pertaining to their respective areas of responsibility for the assignment.

A reconnaissance survey of the proposed site was conducted during 12th to 15th May, 2013, for a better understanding of the proposed corridor and its plausible interaction with the socio economy of its neighborhood. Based on the reconnaissance survey, questionnaire for detailed survey was developed. The 1st phase of detailed survey was conducted during June 2013. Earthquake in Balochistan and law & order situation caused delay in conducting the 2nd phase of the detailed survey, which was completed during 29th October to 6th November, 2013.

During these visits, team members took photographs and observed existing conditions. The visits also helped in verifying various pieces of information available in the secondary sources.

2.3.6 Data Analysis

Based on the information collected through primary and secondary sources, various actions or activities having potential to cause damage to the social environment are listed in Chapter 6. The aspects were identified for each phase of the project including designing, construction, and operation phases.

For evaluation and prediction of various social impacts, quantitative and qualitative descriptions of the anticipated project impacts were made. The identified impacts were further evaluated for their significance level.

2.3.7 Development of Mitigation Measures

Based on the significance of the impacts, mitigation measures for each significant negative impact have been suggested. Approach for suggesting mitigation measure is as follows, in the descending order of preference:

- Avoiding the impact altogether by not taking a certain action or parts of an action;
- Minimizing impacts by limiting the degree or magnitude of the action and its implementation;
- Rectify the impact by repairing, rehabilitating, or restoring the affected environment;
- Reduce or eliminate the impact over time by preservation and maintenance operations during the life of the action; and
- Compensate for the impact by replacing or providing substitute resources or environments.

A conceptual management plan for smooth and effective implementation of all recommended mitigation measures was developed and included in the SIA report.

2.3.8 Stakeholder Consultation

Due to the extensive nature of the proposed project, it was imperative to take all the stakeholders on board, and gather information about their concerns and perceptions at an early stage of the project cycle. The consulting team conducted internal meetings to identify and list all important stakeholders and then contacted them for appointments and meetings. The detail of this process, along with the outcomes of public consultations, is given in Chapter 5 of this report.

2.3.9 Reporting

The draft SIA report has been prepared under the guidelines issued by the PEPA 1997 and submitted to the management of proponents for their comments.

This draft report will be finalized after review and comments by the proponents. The consultants will discuss the comments with the proponents before incorporating them in the Final Report. Once the comments are incorporated, the final report will be submitted to the proponent, who would ultimately submit the report to the concerned quarters.

The Social Impact Assessment report is concise and limited to significant social issues. The main text has been focused on findings, conclusions and recommended actions. It is supported by summaries of the data collected and citations for any references used in interpreting those data.

2.4 Limitations

This SIA document has been prepared by drawing inferences from site visits, primary data and secondary sources of information. The study has been conducted by the consultants in a manner consistent with the level of care and skill exercised by members of consulting profession. The Consultants have tried to cover all important aspects and relevant impacts of the proposed project.

The conclusions in this study are based on primary and secondary data, results derived from earlier studies and a subjective evaluation of the possible aspects during construction and operations of the project. In evaluating the project, the consulting team has relied on information provided by the management of design team (TCI) and Balochistan Irrigation Department. The consultants assume that the information provided is factual and accurate. Also the consultants accept no responsibility for any deficiency, misstatement or inaccuracies contained in this report as a result of omission or misrepresentation by any person interviewed or contacted. The mitigation measures and other recommendations put forth in this report are of the level of conceptual design and implementation framework.

CHAPTER - 3
DEMOGRAPHIC AND SOCIO-ECONOMIC BASELINE

This section presents a demographic and socio economic profile of the project area, based mainly on primary information, gathered through extensive field surveys.

The Socio Economic study has been conducted in the villages located along with the proposed interventions. The study area includes human settlements and villages of Nimmi, Kanraj, Bambri and Uthal etc.

3.1 Population

The inhospitable terrain and climate of the Porali River Basin make for a small and clustered population.

The Population of Lasbela District according to 1981 census was 188,139 which increased to 312,695 in 1998 census. The growth rate was 3.03 %. With same growth rate the current population of the district is estimated at 489,301. Although only 30% of the Lasbela District is within Porali Basin but it is estimated from the settlements in the district that at least 60% of District population equal to 293,600 resides in the Porali Basin as both the major towns Bela and Uthal along with most of the major settlements including Lyari and Lakhra are within the Porali Basin.

The population in the Khuzdar District according to 1998 census was 417,466 and the present population is estimated to be 659,935 on the basis of inter-census period 1981-1995 growth rate of 3.1%. Corresponding to share in total area, about 11% of this population (72,600) resides in the Porali River Basin.

A small part of Porali Basin lies in Awaran District but almost all of this area is barren land and no significant settlement exists in this area. Hence, there is no contribution of Awaran District in the total Population of Porali River Basin.

According to Socio-Economic survey along with the proposed interventions, the population of the project area, which is to be affected in the Lasbela District is around 57,000 people. Most of the villages along with the proposed interventions are relatively small. The largest

settlements along with the proposed interventions actually located with the RCD highway around population of about 3000-5000 people.

Table 3.1 below shows the population distribution along with number of houses in the project area.

Table 3.1: Population Distribution

S. No	Village/Settlement	Tehsil	Population	No. of Houses
1	Kohan Village	Bela	70	15
2	Abdur Rehman Nimi Goth		50	10
3	Jani Village		500	50
4	Sordeer Bizinja Goth		400	70
5	Kannar		550	80
6	Kundi		1,400	150
7	Kishari		2,500	275
8	Juman Bhit		2,500	175

S. No	Village/Settlement	Tehsil	Population	No. of Houses
9	Akri		400	40
10	Gajri Village		350	30
11	Seayan Goth		4,000	450
12	Soonari		900	100
13	Bara Bagh		2,700	350
14	Lungra Village		1,400	75
15	Gundacha Jagir		5,000	600
16	Jamali Goth		200	20
17	Abdul Wahid (Moza North Kanraj)		30	5
18	Karan Khan Gorgeja		500	40
19	Muhammad Umar Jamot Goth	Kanraj	2,000	150
20	Abdul Karim Jamot Goth		880	70
21	Raza Muhaamad Goth		400	20
22	Soomar Goth		20	3
23	Haji Mir Muhammad Goth		70	10
24	Haji Muhammad Ibrahim Jamot Goth		300	40
25	Kheer Golae		280	35
26	Muhammad Yaqoob Gonga Piprani Goth	Uthal	350	40
27	Khareri		180	18
28	Faqir Goth		120	12
29	Bashwani Goth		400	50
30	Jamot Colony (Moza Marri No 1)		3,500	400
31	Tori Moza		2,000	250
32	Pir Goth		1,500	250

S. No	Village/Settlement	Tehsil	Population	No. of Houses
33	Muka Goth		2,000	300
34	Kandyaro Goth		3,000	300
35	Angario Goth		1,200	100
36	Khantra		1,000	300
37	Sheikh Mitha Khan Goth		5,000	300
38	Molvi M. Hassan Goth		500	50
39	Khan M. Goth		450	50
40	Soomar Goth		300	35
41	Khakhacho	Lakhra	1,000	200
42	Orki		600	90
43	Gajro Pat	Sonmiani	700	75
44	Damb		3,000	280
45	Liari	Lairi	3,000	250
		Grand Total	**57,200**	**6213**

Source: Field Survey

3.1.1 *Development Status, Potential and Poverty Situation*

As a whole, the Lasbela district has a critical role for Balochistan. It accounts for 90% of industrial output and 70% of revenue generated by the province. However, the industrial activity is mainly concentrated in areas with closer proximity to Karachi (e.g. Hub Industrial Area). While there is some industrial and commercial activity in the towns of Uthal and Bela, the study area potentially affected by the proposed project is generally devoid of any industrial and major commercial activities.

However, in terms of development potential, this area could be ranked high. This is due to its proximity to the port, availability of highways, and relatively encouraging record of industrial areas located nearby. Especially marble industry, one of the few indigenous industries of the province, could be developed in this region.

Lasbela attracts workers and migrants from all over Balochistan mainly because of irrigated land and job opportunities in industries. To meet the growing demand for electricity and water, the Government of Balochistan is working on a 50-megawatt power plant and supply of additional water from Hub Dam – the lifeline for irrigated land and industries of Lasbela.

As mentioned above, being adjacent to Karachi, Lasbela is developing very rapidly. The area has potential for agricultural, fisheries and industrial development. By developing the industrial state of Uthal and Winder, the people of this area can become well-off, while they currently live in poverty without basic facilities. The climate of the area is suitable for livestock and poultry.

3.1.2 Economic Activities and Income Stratification

The main economic activities in the area are agriculture and livestock. This includes cultivation of land, livestock grazing, reaping and harvesting of the produces and other allied subsidiary occupations. Some of the population is engaged as unskilled labours in roads construction works in B@R (Bridges and roads) and also house building and other construction works. Some of the people of that area are also employed in Government services and private sectors. Most of the people who live along with the coastline are involved in fishing.

The basic income of 60 pc of the population, belonging to agriculture and allied occupations, depends on the quality and quantity of crops harvested and the availability of water. The average annual income per household in these villages is about Rs 160,000. This includes income from livestock and agriculture. On an average, a household earns about Rs 45,000 from livestock each year. Household incomes from the sale of crops and seasonal agricultural labor are about Rs 70,000. People involved in trade and business reported the highest income, followed by those earning salaried income through government and private jobs. Salaried employment often has a higher educational requirement, so the lower employment in such positions indicates the low literacy level in this area.

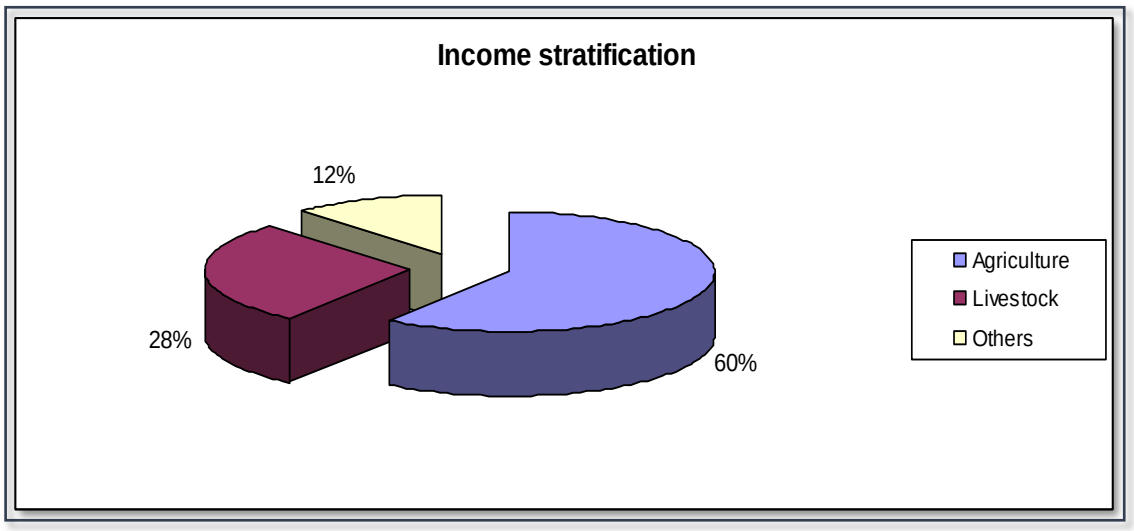


Figure 3.1: Income Stratification

3.1.3 Livelihood Patterns and Activities

Agriculture and livestock are the prime livelihood resources in the project areas. This includes cultivation of land and live stock grazing. Some people have their own shops. Some have government jobs such as school teaching, police and levies etc. Some of the villagers are found working as tenants on annual basis in this area. They have to pay approximately half of the profit to their land owners. Women are generally responsible for daily household work and also do light work on fields to assist their male family members.

In most of the area, generally the people are agricultural land holders. The area of land possessed by an individual ranges between one acre to 100 acres. Land revenue department has issued khasra (survey) numbers to the agriculture land holders of this area.

3.1.4 Land Statistics

Land is a major Natural Resource available in the Porali River Basin, including the Barren and cultivable lands.

The upper part of Porali River Basin lies in the Khuzdar District and is among the most disadvantaged area of Porali River Basin. Most of the land is locked within rocky hills, leaving only little patches amenable to agricultural activities in Wadh and its surroundings.

A large area of the Porali River Basin in Lasbela District can be cultivated if water can be provided for irrigation. Physiographical details of the project catchments area are stated **Table 3.2.**

Table 3.2: Physiographical Details of the Project Catchments

S. No.	Sub Basin Name	Total Area Boundary Km^2	Settlements Km^2	Cultivation Km^2	Barren Land/ Shrubs Km^2	Water Bodies	Road Network
1	Arenji Jhal Basin	695	1.15	0.46	674.47	19.38	-
2	Gajri Nai Basin	781	5.87	90.35	657.19	24.84	2.75
3	Kaniki Nai Basin	651	2.97	8.66	608.28	25.55	5.54
4	Khanko Nai Basin	659	3.06	12.75	619.96	17.25	5.98
5	Kharrai Nai Basin	1,706	13.93	38.78	1,606.10	42.97	4.22
6	Kud Basin	1,685	6	6.7	1,618.88	48.4	5.02
7	Kulri Nai Basin	711	4.37	14	652.49	33.51	6.63
8	Lakhra Basin	494	2.21	9.98	464.14	13.48	4.19
9	Lasra Dhorai Basin	418	2.11	-	405.11	5.38	5.4
10	Ping Jhal Basin	615	0.79	0.9	548.83	15.44	4.27
11	Tadar Kaur Basin	633	6	31.67	548.83	41.42	5.08
12	Tibbi Jhal Basin	1,545	0.71	-	1,609.67	31.06	3.56

S. No.	Sub Basin Name	Total Area Boundary Km^2	Settlements Km^2	Cultivation Km^2	Barren Land/ Shrubs Km^2	Water Bodies	Road Network
13	Wad Basin Cultivation	1,023	9.42	7.66	974.91	22.21	8.8
	Total	**11,616**	**59**	**222**	**10,989**	**341**	**61**

3.1.5 Land Tenure and Holdings

In this area of study, most of the land is owned by Land Lords. Major land tenure types here are classified on the land ownership of the user of that land as follows.

Ownership: Ownership is the first tenure type in Balochistan. Private individuals and entities can obtain freehold rights to land, and communal ownership rights are recognized under customary law.

Lease/Contract: Term leases are common for parcels of agricultural land over 30 hectares. Leases are for fixed rates, generally run at least a year and may have multi-year terms. Leases may be written or oral agreements.

Sharecropping: Sharecropping arrangements are common on small- and medium-sized parcels of agricultural land (less than 30 hectares). Sharecropping arrangements usually provide the landowner with half the production from the land; arrangements vary regarding provision of inputs. Most agreements are unwritten.

Table 3.3 shows the land ownership of the user along the proposed interventions.

Table 3.3: Land Ownership of the User along the proposed intervention

S. No	Village/Settlement	Tehsil	Land Ownership of the User
1	Kohan Village	Bela	Ownership
2	Abdur Rehman Nimi Goth		Ownership
3	Jani Village		ShareCropping
4	Sordeer Bizinja Goth		Ownership
5	Kannar		ShareCropping
6	Kundi		ShareCropping
7	Kishari		ShareCropping
8	Juman Bhit		ShareCropping
9	Akri		Ownership
10	Gajri Village		Ownership
11	Seayan Goth		ShareCropping
12	Soonari		ShareCropping
13	Bara Bagh		ShareCropping
14	Lungra Village		Ownership

S. No	Village/Settlement	Tehsil	Land Ownership of the User
15	Gundacha Jagir		Leased/Contract
16	Jamali Goth		ShareCropping
17	Abdul Wahid (Moza North Kanraj)	Kanraj	Leased/Contract
18	Karan Khan Gorgeja		Leased/Contract
19	Muhammad Umar Jamot Goth		Ownership
20	Abdul Karim Jamot Goth		Ownership
21	Raza Muhaamad Goth		Ownership
22	Soomar Goth	Uthal	N/A
23	Haji Mir Muhammad Goth		N/A
24	Haji Muhammad Ibrahim Jamot Goth		ShareCropping
25	Kheer Golae		Leased/Contract
26	Muhammad Yaqoob Gonga Piprani Goth		Leased/Contract
27	Khareri		Ownership
28	Faqir Goth		Ownership
29	Bashwani Goth		Ownership
30	Jamot Colony (Moza Marri No 1)		Ownership
31	Tori Moza		Ownership
32	Pir Goth		ShareCropping
33	Muka Goth		Ownership
34	Kandyaro Goth		Ownership
35	Angario Goth		Ownership
36	Khantra		ShareCropping
37	Sheikh Mitha Khan Goth		Ownership
38	Molvi M. Hassan Goth		Ownership
39	Khan M. Goth		Ownership

S. No	Village/Settlement	Tehsil	Land Ownership of the User
40	Soomar Goth	Lakhra	Ownership
41	Khakhacho		Ownership
42	Orki		Leased/Contract
43	Gajro Pat	Sonmiani	Ownership
44	Damb		N/A
45	Liari	Lairi	Ownership

Source: Field Survey

3.1.6 Land Use

Land is categorized by three major land uses i.e. privately owned land, grazing land and state owned land. The local communities claim that these lands belonged to them and the Government or Land Revenue Department has issued a Khasra number for their privately owned land. However, people are allowed to use the grazing land and the state owned land for various purposes.

The majority of the land in Porali River Basin area is barren, with only sparse shrubs or grass. Only around 2% of the total land expanse of the proposed project area is currently under cultivation, with most families owning only small pieces of land. The size of landholding, along with environmental and climatic factors, keeps the incomes towards lower side. This also inhibits any meaningful accumulation of capital, which is clearly evident from the obsolete cultivation practices.

Cotton, Bananas, wheat, tir and vegetables are grown. Wheat and bananas are the main commodities for household income. Small-scale mining is common in the tehsils of Bela and Uthal. Other land use types include settlements (in the form of townships, market in Uthal and Bela and villages), roads etc.

3.1.7 Agricultural Status

There is a vast potential of agriculture on land allocated along the proposed intervention. The area along the left hand side of the RCD, going down to the Kud river, is relatively more under cultivation but on the right hand side of the RCD, very small portion of the land is used for agriculture because of water scarcity. Agriculture is heavily dependant on barani and flood irrigation. **Table 3.4** shows the agriculture status along the proposed interventions.

Table 3.4: Agriculture Status along the Proposed Intervention

S. No	Village / Settlement	Tehsil	Land Use for Agriculture (acre)	Source of Irrigation	Crops
1	Kohan Village	Bela	10	Flood	Vegetables
2	Abdur Rehman Nimi Goth		None	N/A	N/A
3	Jani Village		100	Porali, Tubewell	Vegetables, Guwar,Cotton
4	Sordeer Bizinja Goth		60	Porali River	Vegetables, Guwar,Cotton
5	Kannar		5	Flood	Vegetables
6	Kundi		20	Flood	Vegetables, Dates, Cotton
7	Kishari		100	Flood	Vegetables
8	Juman Bhit		6	Flood	Vegetables
9	Akri		6	Barani	Jawar, Mong
10	Gajri Village		None	N/A	N/A
11	Seayan Goth		20	Barani	Vegetables
12	Soonari		8	Flood	Vegetables, Wheat
13	Bara Bagh		25	Flood	Cotton, Mong, Til
14	Lungra Village		7	Flood	Vegetables
15	Gundacha Jagir		250	Flood	Vegatables, Cotton, Mong
16	Jamali Goth		5	Barani	Jawar, Mong
17	Abdul Wahid (Moza North Kanraj)	Kanraj	15	Barani	Gawar, Mash, Wheat
18	Karan Khan Gorgeja		50	Karez	Wheat, Guwar, Mong
19	Muhammad Umar Jamot		1000	Karez, Tubewell	Wheat, Guwar, Mong

S. No	Village / Settlement	Tehsil	Land Use for Agriculture (acre)	Source of Irrigation	Crops
	Goth				
20	Abdul Karim Jamot Goth		30	N/A	N/A
21	Raza Muhaamad Goth		100	Barani	N/A
22	Soomar Goth	Uthal	None	N/A	N/A
23	Haji Mir Muhammad Goth		None	N/A	N/A
24	Haji Muhammad Ibrahim Jamot Goth		200	Tubewell	Vegetables, Wheat, Cotton, Jawar, Bajra
25	Kheer Golae		700	Flood, Tubewell	Vegtables, Wheat, Cotton, Mong
26	MYaqoob Gonga Piprani Goth		250	Flood, Tubewell	Vegetables, Wheat, Cotton, Til
27	Khareri		500	Barani	Bajra, Jawar, Till, Mango, Cheeko
28	Faqir Goth		5	Barani	Jawar, Gawar, Mong
29	Bashwani Goth		500	Tubewell	Wheat, Cotton, Bananas
30	Jamot Colony (Moza Marri No 1)		1500	Flood, Tubewell	Wheat, Cotton, Bananas, Vegetables, Jawar, Mong
31	Tori Moza		350	Flood, Tubewell	Cotton, Banana
32	Pir Goth		2500	Flood, Tubewell	Cotton, Wheat, Banana, Vegetables, Cheeko

S. No	Village / Settlement	Tehsil	Land Use for Agriculture (acre)	Source of Irrigation	Crops
33	Muka Goth		1000	Flood, Tubewell	Cotton, Banana, Vegetables
34	Kandyaro Goth		1000	Flood, Tubewell	Cotton, Banana, Wheat, Vegatables
35	Angario Goth		1000	Barani	Cotton, Jawar, Mong, Wheat, Vegetables, Arandi
36	Khantra		100	Tubewell	Cotton, Jawar, Banana, Mong
37	Sheikh Mitha Khan Goth		1500	Barani	Jawar, Corn, til, Arandi
38	Molvi M. Hassan Goth		None	N/A	N/A
39	Khan M. Goth		None	N/A	N/A
40	Soomar Goth	Lakhra	50	Barani	Jawar, Mong, Til, Arandi, Gawar
41	Khakhacho		15	Barani	Jawar, Arandi
42	Orki		250	Flood, Barani	Cotton, Jawar, Mong, Arandi
43	Gajro Pat	Sonmiani	None	N/A	N/A
44	Damb		None	N/A	N/A
45	Liari	Lairi	40	Barani	Bajra, Jawar, Mong, Arandi, Wheat

Source: Field Survey

The major crops produced in the area are Cotton, Wheat, Jawar, Guwar, Mung Beans etc. Also vegetables and fruits are grown in this area including tomatoes, onions, water melon, bananas etc. Major crops of kharif and rabi season is identified in terms of area and production. Major crops are wheat and cotton in kharif and rabi season.

There are four types of sources for irrigation: flood irrigation, barani, Tubewell and surface water. The source of irrigation is summarized in the **Table 3.4** along with the crops grown in these villages.

The Kharif cropping period in this area is from July to October, and the Rabi cropping period in this area is from Nov to February. Mostly Cotton, Jawar, Guwar, Bananas are cultivated in Kharif Season, while Wheat and vegetables cover up the Rabi Season. **Table 3.5** shows the approximate yield and price of maunds per acre of different crops.

Table 3.5: Per Acre Yield of Different Crops

Crops	Yield (Maunds/acre)
Cotton	10-12
Jawar	7-8
Gawar	7-8
Wheat	15-20
Mong	10
Tomato	20-25
Banana	85-90

Source: Field Survey

3.2 Livestock

Despite the growth of the agriculture sector, the livestock sector has not lost its importance. It is the second biggest sector after agriculture. The sector provides valuable food, such as milk, meat, butter, cheese, ghee and curd. The nomadic population resides mostly in the northern part of the district and it is mainly dependent on the livestock sector.

Women and children herd the animals. Women also help in feeding the animals at house if fodder is available and look after the animals within the house. The work of the women and children is considered family labour and is unpaid. The children who are involved in livestock activities, are deprived of going to school.

Major Livestock present in this area comprises of goats, sheeps, cows, oxen, camels and donkeys. Livestock growth, weight and reproduction depend upon the weather conditions and availability of water in this area. In case of rain, the shrubs and pasture grow in the area, improving the status and position of the livestock. The table below depicts the presence of livestock in the potentially affected villages at a sub-basin level:

Table 3.6: Livestock (Mature) & Poultry

S. No.	Sub Basin	Livestock (L.S)									Poultry	Total
		Cow	Goat	Ox	Donkey	Camel (M)	Camel (F)	Sheep	Horse	Total		
1	Kharrai	359	591	0	0	0	0	91	0	1,041	735	**1,776**
2	Lasra	66	2,080	50	66	6	34	2450	6	4,758	260	**5,018**
3	Lakhra	269	1,354	30	44	11	39	535	0	2,282	1,000	**3,282**
4	Kud	185	3,400	158	360	6	86	750	1	4,946	1,150	**6,096**
5	Tibbi	99	465	0	18	0	5	152	0	739	140	**879**
6	Wadh	28	3,060	10	80	1	2	2200	0	5,381	250	**5,631**
7	Arenji Jhal	12	83	0	11	1	0	0	0	107	25	**132**
8	Taddar	173	1,065	8	4		27	0	0	1,277	440	**1,717**
9	Khanko	25	405	10	11	4	27	85	0	567	55	**622**
10	Gajri	215	855	22	5	18	10	89	0	1,214	375	**1,589**
11	Ping Jhal	160	90	0	19	6	2	295	1	573	160	**733**
12	Khaniki	38	240	8	4	0	12	0	0	302	111	**413**
13	Kulri	224	2,790	44	213		80	0	0	3,351	0	**3,351**
	Total	**1,853**	**16,478**	**340**	**835**		**377**	**6647**	**8**	**26,538**	**4,701**	**31,239**

In the rural areas, livestock mortality rates are higher than in urban areas, due to lack of awareness regarding the livestock diseases and non-availability of timely treatment.

Lasbela district has three veterinary hospitals: one at Bela; the other at Hub; and the third at Uthal. In addition there are 16 dispensaries, two Artificial Insemination Centers (AIC) at Bela and one Disease Investigation Laboratory (DIL) unit. In the past, veterinary services were delivered free of charge. Now there are some nominal charges for treatment and vaccination for livestock. The veterinary hospitals, dispensaries and mobile units of the Livestock Department carry out a vaccination programme twice a year according to their schedule. Vaccination facilities are available in the centres throughout the year. It has been observed that animals suffer from various diseases due to unhygienic conditions. In case of diseases of animals, women also take care of them by giving them domestic herbal medicines.

CHAPTER - 4
TRIBES, ETHNIC GROUPS, LANGUAGES, CULTURE AND DECISION MAKING

4.1 Culture and Decision Making

The social organization in the project area is tribal, and the social structure is patriarchal. All the tribes other than Baloch and Brahvi, Med, Khoja and Hindus that have settled in Lasbela are known as "Lasi". The principal Lasi tribes are only five in number: the Jamot, Roonjhas, Sheikh, Angaria and the Burra. Together they are called the Panjraj and constitute a tribal confederation. Under each raj is a large number of heterogeneous groups.

The Gunjas, Sinars, Sangurs, Burfast, Chhuttas and Khojas include the minor tribes. The Meds are fishermen who live along the coast, mainly at Miani and Somiani. The Hindus are mainly traders. They have also acquired land, by purchase or mortgage, which is cultivated by their tenants. They are all of the Arora casts. The decision of the family head is final in all domestic affairs and the tribal chiefs enjoy the power of decision-making at community and tribal level.

Since the society is predominantly patriarchal, decision-making is in the hands of the males and the decisions made are binding upon females. Women have no say in the decision-making process, though in some urban families they have the right to give their opinion to some extent. Society is structured on kinship bases and each group is attached to a

particular tradition, founded on different rules of social organization. Most of these have undergone a considerable transformation over time.

The political organization is built upon two principals, hereditary authority and personal bonds of allegiance in which protection is exchanged for loyalty. Many elected representatives are tribal chiefs and Sardars.

The “Jam” occupies the highest position on the social ladder these days, followed by Jamots, Roonjhas, Angarias and Burras.

The hierarchical system of authority goes downward from Sardar to the younger men in the clan and family. The Sardar position is supreme. The Lasi tribes have an almost equal social position, with the exception of the occupational groups, which have a higher status.

Inter-marriages between different ethnic groups will create more co-operation, understanding and socialization. Due to the development activities of government and NGOs, the custom of co-operation is disappearing and being replaced by the activities of government institutions. Women have no say in their marriages. Bride price is a social evil, although it is disappearing among educated classes and urban dwellers. Women are very much involved in their family and domestic activities, but have no major role and social status in the society. Their activities are limited to domestic affairs only. In the town areas, some families allow their women to express their opinion in family affairs. But it is very limited. The change can be brought through education and communicational development in the area. Women cannot play an important role in the society and cannot exploit her full potential as long as they are segregated and secluded from the society.

4.2 Tribes and Ehtnicities

Dominant Ethnic groups along with the proposed interventions are the Baloch, Barahvi and Sindhi. As mentioned earlier, we have covered only Lasbela District of the project area, according to that, around 75 pc of the population along with the project area surveyed is of Sindhi Origin (Lasi) and remaining is the Brahvi (Kurd) Origin especially in Nimi Area.

There are various cast in Lasi (Sindhi) origin includes Jamot, Khaskheli, Sao, Sabra, Gonga, Ronja, Buray along with the proposed intervention of Kanraj, Bambri, Uthal Khantra and Kharrari-Lundha Dhora area. In Brahvi, there are various cast including Seyan, Bizinja and Khosa living along with the proposed intervention of Nimi and Kanraj Area.

Table 4.1 shows the bifurcation of the ethnicity of the settlements located along with the proposed intervention.

Table 4.1: Various Ethnic Groups

S. No	Village/Settlement	Tehsil	Ethinicity
1	Kohan Village	Bela	Brahvi
2	Abdur Rehman Nimi Goth		Brahvi
3	Jani Village		Brahvi
4	Sordeer Bizinja Goth		Bizinja (Brahvi, Kurdi)
5	Kann		Brahvi
6	Kundi		Brahvi (Seyan)
7	Kishari		Brahvi (Khosa)
8	Juman Bhit		Brahvi
9	Akri		Brahvi
10	Gajri Village		Brahvi, Lasi
11	Seayan Goth		Brahvi
12	Soonari		Brahvi
13	Bara Bagh		Brahvi, Lasi
14	Lungra Village		Brahvi, Lasi
15	Gundacha Jagir		Brahvi
16	Jamali Goth		Bizinjo
17	Abdul Wahid (Moza North Kanraj)	Kanraj	Brahvi
18	Karan Khan Gorgeja		Gorgej /Mirwani

S. No	Village/Settlement	Tehsil	Ethinicity
19	Muhammad Umar Jamot Goth		Sindhi (Jamot, Khaskheli)
20	Abdul Karim Jamot Goth		Sindhi (Jamot)
21	Raza Muhaamad Goth		Jamot (Lasi)
22	Soomar Goth	Uthal	Jamot (Lasi)
23	Haji Mir Muhammad Goth		Jamot (Lasi)
24	Haji Muhammad Ibrahim Jamot		Bareja (Lasi)
25	Kheer Golae		Sabra (Lasi)
26	Muhammad Yaqoob Gonga Piprani Goth		Gonga, Sabra (Lasi)
27	Khareri		Lasi
28	Faqir Goth		Sao(Lasi)
29	Bashwani Goth		Lasi
31	Jamot Colony (Moza Marri No 1)		Ronja, Jamot, Khankeri, Buray (Lasi)
32	Tori Moza		Lasi
33	Pir Goth		Lasi
34	Muka Goth		Lasi, Brahvi
35	Kandyaro Goth		Lasi, Brahvi
36	Angario Goth		Lasi
37	Khantra		Lasi
38	Sheikh Mitha Khan Goth		Lasi
39	Molvi M. Hassan Goth		Jamot (Lasi)
40	Khan M. Goth		Jamot (Lasi)
41	Soomar Goth	Lakhra	Baloch (Mehsar)
42	Khakhacho		Baloch (Mehsar)
43	Orki		Baloch (Mehsar)
44	Gajro Pat	Sonmiani	Lasi
45	Damb		Lasi
46	Liari	Lairi	Lasi (Khaskheli, Angaria, Baradia)

Source: Field Survey

CHAPTER - 5
HEALTH, EDUCATION AND GENDER

5.1 Water Supply and Sanitation

5.1.1 Water Sources Potable

The supply of drinking water in Lasbela district mostly along the left hand side of RCD is generally the responsibility of PHED, though LGRDD also develops water supply schemes. After completion of the water supply schemes, PHED will hand them over to the union councils and town committees of the benefiting communities. The hand pumps provided by the LGRDD are supplied on self help basis. The pumps are provided free of charge and installation and maintenance costs have to be borne by the receiving communities.

The ground water potential in the district is good. PHED, the Local Government Department and the district council are involved in exploring the ground water. The ground water sub-sector has much potential in Uthal and Bela. Many tube wells are functioning in these areas. In addition, Porali river basin has the potential of almost 155 cubic feet per second, which can be tapped for agricultural development as well as water supply.

In remote areas, Women fetch water from long distances, the selection of sites for hand pumps, water tanks etc. and in most of the remote area, Water is extracted from wells through the use of ropes attached to pulleys, pulled out either manually or by camels or donkeys. Donkeys and Camels are generally used to draw water from the dug wells due to low water level. Also the people of this area are using water from chashma, porali river and rain water storage. **Table 5.1** shows the potable water sources of these settlements along the proposed interventions.

Table 5.1: Potable Water Sources of Settlements

S. No	Village/Settlement	Tehsil	Water Source Potable
1	Kohan Village	Bela	Chashma
2	Abdur Rehman Nimi Goth		Chashma
3	Jani Village		Canal
4	Sordeer Bizinja Goth		Porali River, Well
5	Kannar		Porali River, Well
6	Kundi		Porali River, Well
7	Kishari		Porali River, Well
8	Juman Bhit		Porali River
9	Akri		Well

S. No	Village/Settlement	Tehsil	Water Source Potable
10	Gajri Village		Well
11	Seayan Goth		Well
12	Soonari		Rain Water Storage
13	Bara Bagh		Well
14	Lungra Village		Porali River, Well
15	Gundacha Jagir		Porali River
16	Jamali Goth		Porali River, Well
17	Abdul Wahid (Moza North Kanraj)		Chashma
18	Karan Khan Gorgeja		Well
19	Muhammad Umar Jamot Goth	Kanraj	Well (Handpump & Tubewell water supply)
20	Abdul Karim Jamot Goth		Well
21	Raza Muhaamad Goth		Well
22	Soomar Goth		Durkan Nadi
23	Haji Mir Muhammad Goth		Chashma, Well
24	Haji Muhammad Ibrahim Jamot Goth		Tubewell
25	Kheer Golae		Well
26	Muhammad Yaqoob Gonga Piprani Goth		Well (Tubewell and Hand pump of Govt)
27	Khareri		Tube well
28	Faqir Goth		Well, Rain Water Storage
29	Bashwani Goth		Tubewell (Govt. Supply)
30	Jamot Colony (Moza Marri No 1)	Uthal	Tubewell (Govt. Supply)
31	Tori Moza		Tubewell (Govt. Supply)
32	Pir Goth		Tubewell (Govt. Supply)
33	Muka Goth		Tubewell (Govt. Supply)
34	Kandyaro Goth		Tubewell (Govt. Supply)
35	Angario Goth		Water supply from Uthal (Tubewell)
36	Khantra		Tubewell and water supply from Uthal Tubewell no.8
37	Sheikh Mitha Khan Goth		Tubewell and water supply from Uthal
38	Molvi M. Hassan Goth		water supply through atho dhoro

S. No	Village/Settlement	Tehsil	Water Source Potable
			chasma, well
39	Khan M. Goth		Chashma, Well
40	Soomar Goth	Lakhra	Potable water are fetching 4.5kms on donkey
41	Khakhacho		Tubewell
42	Orki		Well, Rain Water Storage, Porali river
43	Gajro Pat	Sonmiani	Rain Water Storage
44	Damb		Rain Water Storage, Tanker from Winder
45	Liari	Lairi	Tanker/FC/FWO

Source: Field Survey

5.1.2 Water Quality

Four Samples of ground and surface water of the project area were taken during the field survey. The results are given in the following:

Table 5.2: Current Water Quality

Parameter	Unit	Sample 1	Sample 2	Sample 3	Sample 4	Control Limits
Location		Thana Karez	Angario Village	Kharreri Dam	Patokha	
Type		Ground water	Ground Water	Fresh Water	Fresh Water	
Conductivity	us/cm	940	6,600	1,250	1,680	-
Total Hardness	mg/L	330	910	335	435	<500
TDS	mg/L	600	4,220	790	1,060	<1000
TSS	mg/L	12	Nil	Nil	Nil	200
Sodium	mg/L	58	1,200	120	200	-
Calcium	mg/L	86	135	84	100	-
Magnesium	mg/L	28	140	30	45	-
Potassium	mg/L	3.42	9.3	8.58	7.66	-
Chloride	mg/L	72	1910	170	390	1000
Arsenic	mg/L	Nil	Nil	Nil	Nil	1
Bicarbonate	mg/L	270	495	220	170	-
Flouride	mg/L	0.07	0.12	0.06	0.09	10

Parameter	Unit	Sample 1	Sample 2	Sample 3	Sample 4	Control Limits
Total Bacteria	Count/ml	76	145	68	195	500
Total Coliform	Count/ml	Nil	Nil	Nil	Nil	0
Feacal Ecoli	Count/ml	Nil	Nil	Nil	Nil	0

Source: PRD Laboratory Report 876/2013-14

5.1.3 Sanitation

In the urban areas of Uthal and Bela sewerage systems are available. They cover 70 to 80 percent of the households in the Town Committee areas. In urban areas without sewerage the dry pit system is used. In the rural areas most of the people go outside the house.

In urban areas, people throw their disposable waste outside the houses in dustbins from where sweepers collect it. In rural areas no system exists for the disposal of solid waste or waste water. Households manage the disposal themselves.

Overall the sanitary conditions are not satisfactory. They can be improved only by the provision of more sanitation facilities and more clean water. Coverage of sanitation is very low, in particular in rural areas, and the provision of sanitation facilities is constrained by lack of resources, water supply, and institutional capacity.

5.2 Energy Sources

5.2.1 Electricity

Electricity is not a common utility in the project area. It is available only in most populous settlements of the area including Uthal and Bela City and villages near to these cities. These areas are the most populous settlements of the site. The electricity reaches to around 25% of the project area. The Electricity is supplied by the Karachi Electric Supply Corporation (K.E.S.C). It is also be noted that the few solar panels are also used in these settlements at prominent places of the villages including Autaq, Mosque, Basic Health Unit etc. **Table 5.3** shows the electricity status in the settlements located along the proposed interventions.

Table 5.3: Electricity Status in the settlements along the proposed interventions

S. No	Village/Settlement	Tehsil	Electricity
1	Kohan Village	Bela	No
2	Abdur Rehman Nimi Goth		No
3	Jani Village		No
4	Sordeer Bizinja Goth		Solar Power Used at prominent places
5	Kannar		No

S. No	Village/Settlement	Tehsil	Electricity
6	Kundi		No
7	Kishari		No
8	Juman Bhit		No
9	Akri		No
10	Gajri Village		No
11	Seayan Goth		No
12	Soonari		No
13	Bara Bagh		Available
14	Lungra Village		No
15	Gundacha Jagir		Generators
16	Jamali Goth		No
17	Abdul Wahid (Moza North Kanraj)	Kanraj	No
18	Karan Khan Gorgeja		No
19	Muhammad Umar Jamot Goth		Solar and Wind Power Used at prominent places
20	Abdul Karim Jamot Goth		No
21	Raza Muhaamad Goth		No
22	Soomar Goth	Uthal	No
23	Haji Mir Muhammad Goth		Solar Power Used at prominent places
24	Haji Muhammad Ibrahim Jamot Goth		Available
25	Kheer Golae		Available
26	Muhammad Yaqoob Gonga Piprani Goth		Available
27	Khareri		No
28	Faqir Goth		No
29	Bashwani Goth		Available
30	Jamot Colony (Moza Marri No 1)		Available
31	Tori Moza		Available

S. No	Village/Settlement	Tehsil	Electricity
32	Pir Goth		Available
33	Muka Goth		Available
34	Kandyaro Goth		Available
35	Angario Goth		Available
36	Khantra		Available
37	Sheikh Mitha Khan Goth		No
38	Molvi M. Hassan Goth		Solar Power Used at prominent places
39	Khan M. Goth		No
40	Soomar Goth	Lakhra	No
41	Khakhacho		No
42	Orki		No
43	Gajro Pat	Sonmiani	No
44	Damb		Available
45	Liari	Lairi	Available

Source: Field Survey

5.2.2 Fuel Wood

Unlike electricity, Sui Gas is also not available in any of the area around the proposed interventions. People use wood from jangal for cooking purposes.

5.3 Health Status and Facilities

As is common with the low-income communities in Pakistan, the health status of inhabitants is poor. The most common diseases, as reported by the area residents during the survey are tuberculosis and malaria in adults.

Health services are mainly provided through Civil Hospital, Uthal which is one of the largest health facility in whole area and few civil dispensaries and private clinics are also established in Uthal and Bela City.

The level of basic health facility in the remote areas is under developed. Only few Basic Health Unit established in these settlements along the proposed interventions where three male and one lady doctor is available. There are also a few civil dispensaries (CD) available in these settlements.

In emergency situations, the villagers mostly take their patients to the towns of Uthal and Bela. Private clinics are also established at Uthal and Bela which is almost at 25 to 30 km distance from these settlements According to the local residents, the average expense on medical treatment in these clinics excluding transportation cost ranges between Rs. 100-500. **Table 5.4** shows the health facilities in whole area.

Table 5.4: Status and number of Health Facilities in the area

S. No	Village / Settlement	Tehsil	No. of BHUs / CD	Distance from nearest health facility
1	Kohan Village	Bela	-	48 km to Bela
2	Abdur Rehman Nimi Goth		-	48 km to Bela
3	Jani Village		-	48 km to Bela
4	Sordeer Bizinja Goth		-	48 km to Bela
5	Kannar		1	
6	Kundi		-	35 km to Bela
7	Kishari		-	35 km to Bela
8	Juman Bhit		1	
9	Akri		1	
10	Gajri Village		-	15 km to Bela
11	Seayan Goth		1	
12	Soonari		-	15 km to Bela
13	Bara Bagh		1	
14	Lungra Village		1	
15	Gundacha Jagir		1	
16	Jamali Goth		-	
17	Abdul Wahid (Moza North Kanraj)	Kanraj	-	few kms to Sahib Khan Goth for BHU
18	Karan Khan Gorgeja		-	1 km to Thana Kanraj for BHU
19	Muhammad Umar Jamot Goth		1	
20	Abdul Karim Jamot Goth		-	3 kms to Umer Goth
21	Raza Muhaamad Goth		-	3 kms to Umer Goth
22	Soomar Goth	Uthal	-	few kms to Haji Mir Muhammad Goth for BHU
23	Haji Mir Muhammad Goth		1	
24	Haji Muhammad Ibrahim Jamot Goth		-	few kms to Wayaro
25	Kheer Golae		-	few kms to Sukhan for BHU
26	Muhammad Yaqoob Gonga Piprani Goth		-	few kms to Sukhan, Bela and Uthal
27	Khareri		-	few kms to Uthal

S. No	Village / Settlement	Tehsil	No. of BHUs / CD	Distance from nearest health facility
28	Faqir Goth		-	6 kms to Uthal
29	Bashwani Goth		-	few kms to Uthal
30	Jamot Colony (Moza Marri No 1)		Civil Hospital, Clinics and Dispensaries are there	
31	Tori Moza		-	No and few kms to Uthal city
32	Pir Goth		1	
33	Muka Goth		1	
34	Kandyaro Goth		1	
35	Angario Goth		-	few kms to Uthal
36	Khantra		-	few kms to Uthal
37	Sheikh Mitha Khan Goth		-	few kms to Uthal
38	Molvi M. Hassan Goth		1	
39	Khan M. Goth		-	few kms to Molvi. M Hassan Goth for CD
40	Soomar Goth	Lakhra	-	35 kms to Bela
41	Khakhacho		-	12 kms to Bela
42	Orki		-	15 kms to Bela
43	Gajro Pat	Sonmiani	-	30 kms to Winder
44	Damb		3	
45	Liari	Lairi	1	

Source: Field Survey

5.4 Education Status and Facility

Formal schooling in Balochistan province is organised in a three stage system, namely primary, middle, upper secondary or high school, and runs for a total of 10 years. The primary education cycle is composed of six grades running from kachi (kindergarten) to grade 5. The age of entry into the system is variable, ranging from age four to age eight. On successful completion of all six grades, pupils are awarded the primary certificate. They are eligible now to enter middle school which runs for three years from grades 6 to 8. This is followed by 2 years of upper secondary or high school (grade 9-10) ending in matriculation (Matric). Every school has a headmaster or headmistress and other teachers like a secondary and primary school teacher.

The majority of primary school teachers are unqualified and untrained. Most of them remain absent from their duties in this area. Primary school building consists of one to two rooms. Sometimes school buildings are constructed on political basis and occupied by zamindar (landlords) of the areas to be used as guest room. The majority of the schools do not have proper sanitation facilities (toilets or safe water supply). **Table 5.5** shows the number of educational facility including primary, middle and high schools of these settlements along the proposed interventions.

Table 5.5: No. of Educational Facilities in the Settlements along the Proposed Interventions

S. No	Village/Settlement	Tehsil	No. of Educational Facility
1	Kohan Village	Bela	0
2	Abdur Rehman Nimi Goth		0
3	Jani Village		1
4	Sordeer Bizinja Goth		1
5	Kannar		1
6	Kundi		1
7	Kishari		2
8	Juman Bhit		2
9	Akri		1
10	Gajri Village		1
11	Seayan Goth		3
12	Soonari		1

S. No	Village/Settlement	Tehsil	No. of Educational Facility
13	Bara Bagh		2
14	Lungra Village		1
15	Gundacha Jagir		4
16	Jamali Goth		1
17	Abdul Wahid (Moza North Kanraj)	Kanraj	1
18	Karan Khan Gorgeja		1
19	Muhammad Umar Jamot Goth		2
20	Abdul Karim Jamot Goth		1
21	Raza Muhaamad Goth		1
22	Soomar Goth	Uthal	0
23	Haji Mir Muhammad Goth		1
24	Haji Muhammad Ibrahim Jamot Goth		1
25	Kheer Golae		2
26	Muhammad Yaqoob Gonga Piprani Goth		1
27	Khareri		0
28	Faqir Goth		0
29	Bashwani Goth		1
30	Jamot Colony (Moza Marri No 1)		3
31	Tori Moza		2
32	Pir Goth		2
33	Muka Goth		1
34	Kandyaro Goth		1
35	Angario Goth		2
36	Khantra		3
37	Sheikh Mitha Khan Goth		1
38	Molvi M. Hassan Goth		1
39	Khan M. Goth		0

S. No	Village/Settlement	Tehsil	No. of Educational Facility
40	Soomar Goth	Lakhra	1
41	Khakhacho		0
42	Orki		0
43	Gajro Pat	Sonmiani	0
44	Damb		6
45	Liari	Lairi	3

Source: Field Survey

According to survey, around 50% of children are studying at primary schools located in these villages. Some of the children even go to other village for primary education and Uthal and Bela for Matriculation and Intermediate studies. Literacy rate is higher among youngsters as compared to the elders.

Female literacy rate is almost zero among the elders. But the scenario has changed during the past few years. Few girls primary schools are now established in these villages. A separate primary school for girls was established in few villages of Kanraj. The study team also noted that a few girls students of these villages also go to Uthal and Winder for Matriculation and Intermediate Studies.

Similarly, there is a significant trend of religious education through madrassahs in these villages. Some of the Madrassahs were established in Kanraj, Uthal, Bambri and Nimi Area.

5.5 Position, Role and Status of Women

According to the 1973 constitution passed by the National Assembly, all citizens have equal rights. There is no distinction on gender bases. The state may, however, make special provisions for the protection of womens and childrens rights. The labour law ensures the full participation of women in all socio-economic sectors of life. According to the law, women have the right to vote and to hold office. They also have reserve seats in the National and Provincial Assemblies and local bodies. But constitutional guarantees of quality are often superseded. In practice it is very difficult for women to uphold their legal and social rights, as local customs and tradition often prohibit it. The position of women in district Lasbela is the same as it is in other areas of Balochistan. Men hold a monopoly of economic and social power. Tribal chiefs are always male.

The literacy rate among women is very low. This is due to socio-cultural values in the area. However, in the urban areas an encouraging trend can be seen, in which parents take an interest in their daughters education. The number of girls students has increased over the last five years.

Medical facilities for women in the area are very limited. Women visit Pir and Molvies for their general treatment and call traditional birth attendants for the delivery of babies. Generally, women observe purdah, but in the rural areas poor women work in the field without observing it.

Violence against women in the district has been there, but it is never reported. Women think that men have the right to harass and beat them so they do not seek any legal aid in this respect.

5.5.1 Gender gap

Balochistan is the province with the worst record on gender equality. A measure of sex-based discrimination was 115 according to the population census, compared to 1I2 in Sindh, 107 in Punjab, and 104 in KPK. Education and immunization indicators, expressed as female and male attainment, confirm this picture. Balochistan scores low in all indicators. The only exception is middle school enrolment, where KPK ranks lowest, but even for this indicator, the level of female middle NER and GER is lower in Balochistan than KPK. The gender gap is also present in the labour market. The participation rates of women aged 10 years or older are close to 60% lower than those of men in the same age group (World Bank 2008b,c; 2012a).

Women in rural areas are up to three times as likely to work as women in urban areas. While low female participation cuts across all provincial labour markets, Balochistan has the lowest urban participation rate, and, after Sindh, the second lowest rural participation rate. The persistent differences in gender access to resources and spaces are related to entrenched patriarchal tribal norms and customs. The same cultural restrictions that limit women's access to education and health facilities also constrain their opportunities to get jobs. Mobility restrictions are among the most important constraints to women's social and economic advancement (World Bank 2008b,c). They shape the sectors, occupations, and locations of their work.

5.5.2 Gender Mainstreaming

Being a male dominated society the women are given very limited choice in family and social affairs.

In most of the social groups men hold a monopoly on power. All political and religious and other social leaders are men. Denial of women rights in matters of property and inheritance as recognized by Islam, is due to the cultural code of honor, stemming from the male value system. It often entails subordination of women and seclusion of women from the social order. In some cases, especially in religious families, women right of inheritance is practiced.

Women are rarely allowed to own productive assets such as land or livestock. And they generally lack control over their labour and its proceeds. Moreover, their economic contribution is discounted in most official statistics. The industries of Hub and Winder employ some women, but they live in Karachi and come daily for their jobs.[1]

Most development interventions in agriculture and livestock sectors have been designed to meet only the needs of men. Gender sensitive development approaches are now being introduced to look at the impact of development on both men and women and to tailor interventions to ensure more equity in the roles and responsibilities of both. Change is possible, notwithstanding the cultural and social fabric of the province. Strategies will be implemented to ensure that gender issues are addressed by: giving support to women in existing roles, for example in collecting water and fuelwood, and in making domestic tasks easier to perform through the introduction of improved technologies; encouraging women to take on new roles in sectors such as livestock feeding and fattening, fruit processing, rural poultry, and water health and hygiene, and ensuring they have equal access to training in these skills; involving women in the implementation of PRBD Project and opening up more opportunities for women in institutions of government.

[1] www.*un.org.pk/profiles/**lasbella**.html*

CHAPTER - 6
GRIEVANCE REDRESS MECHANISM

Grievance concept has been defined in several ways by different people. The two definitions are:

- grievance as any dissatisfaction or feeling of injustice in connection with one situation that is brought to the notice of management
- grievance as any discontent or dissatisfaction whether exposed or not whether valid or not, arising out of anything connected with the company which an employee thinks, believes or even feels to be unfair, unjust or inequitable.

Indian scholar and political leader Mahatma Gandhi concept of Talisman is reproduced as under:

"I will give you a talisman. Whenever you are in doubt or when the self becomes too much with you, apply the following test: Recall the face of the poorest and the weakest man whom you may have seen and ask yourself if the step you contemplate is going to be of any use to him. Will he gain anything by it? Will it restore him to a control over his own life and destiny? In other words, will it lead to Swaraj for the hungry and spiritually starving millions? Then you will find doubts are melting away."

The grievance redress procedures provide a mechanism to ensure that the compensation and resettlement program has been implemented accurately and fairly lessening any adverse effect on APs. It allows for conflict mediation and helps avoid lengthy process. Dissatisfaction may arise through the process of compensation for a variety of reasons, including disagreement on the compensation value of assets, contentious issues on property ownership, etc. to address the problems of the APs during implementation of compensation, a grievance redress committee exist.

6.1 Channels

Under Balochistan Local Government Ordinance 2001, the Zilla Councils, Tehsil Councils and Union Administrations are the District, Tehsil and Village level elected bodies through which officers of the line agencies should work. At each level a Musalihat Anjuman (Reconciliation Committee) has been constituted. The Musalihat Anjuman shall achieve amicable settlement of disputes amongst the people through mediation, consultation and arbitration, applicable law, bank, and consultant. It is also envisaged that respected elders of the each target group will constitute as a member of the Redress Committee.

6.2 Players

Members: Any of the entities that make up the Joint Association, influential, religious leader of the area, head master of local school, other members of the community and some of the government employs.

Party: The committee, consultant and other organization which are working in the area are party.

Personnel: Personnel means professionals and support staff provided by the consultants or by any sub-consultants and assigned to perform the services or any part there are personnel.

Sub-Consultant: Sub-consultant are any person or organization to whom, which the consultant sub-contracts any part of the services in basin or sub-basin area.

Third Party: Third party is any person or organization or local committee, other than government, consultant or sub-consultant.

6.3 Mechanisms

The disputes amongst the people are redressed through mediation, consultation and arbitration. It is also envisaged that respected elders of each of the target group and distribution of water, channels lining in the area, use of state lands, large number of stakeholders, money lenders, role of women in the channel lining, sale and purchase of land and water, are the mechanisms of the area.

6.4 Functioning of Mechanisms

All APs have the right of appeal against any aspect of decisions made not in accordance with the grieved party or with commitments given to them or on the level or manner of compensation. APs will discuss their grievance with the local government staff. The local staff will do the followings:

- Interview and visit affected sites to ensure effective participation of the communities and confirm data on population of village, number of affected families and any damages which are alleged to have resulted from the integrated scheme.
- Record their findings and recommend due compensation. APs will present their complaints to the reconciliation committee at the Union Council. The committee's principal task is to reach the solution within 21 days of the submission of the grievance.

The Musalithi Anjuman has established its own working method following the principles of participation, transparency, consensus building, documentation of all deliberations and hearing, and decisions. The committee task is to reach a solution to any problems on account of land acquisition resettlement, compensation and rehabilitation accruing to claimants because of an integrated scheme. The elements of the tasks are:

- Interpretation of agreements, promotions, disciplinary discharge or lay-off transfer for another department or another shift inadequacy of safety and health services/devices
- Non-availability of materials, in time violation of contracts relating to collective bargaining, improper job assignment, undesirable or unsatisfactory condition of work and victimization
- Pre-requisite of grievance procedure
- Conformity with prevailing legislation
- Clarity, simplicity, promptness
- Training and follow-up basic elements of grievance procedure

The basic elements of grievance redressal procedure are:

- The existence of sound channel
- The procedure should be simple definite and prompt
- Steps to handle the grievance should be clearly defined and it should comprise of: a) receiving and defining the nature of grievance; b) getting at the relevant facts about the grievance; c) analyzing the facts from economic, legal and social considerations; d) taking an appropriate decisions after careful consideration of all the facts; e) communicating the decision to the aggrieved; and f) errors in the grievance procedure.
- The steps which adversely affect the redressal procedure are: a) stopping too soon the search of the facts; b) expressing opinion without going through the fact of the case; c) non-maintenance of proper record; d) resorting to executive way of handling the case; e) communicating the decision in improper way; and f) taking wrong or hasty decision.
- The steps which positively affect the redressal mechanisms are: a) measure to avoid the errors; b) helpful attitude; c) belief to follow the right procedure; d) introduction of procedure with the concurrence of employees, and union following the simple fair and easy procedure; e) formulating the clear policies and procedure; f) delegation of proper authority; g) functioning of advisory head; and h) fact-oriented and issue-oriented working grievance interviews.

6.5 Grievance Prevention

All the grievances are analyzed for finding the root cause using the information on grievance description and subsequent redress provided to the complainant. The most frequent types of grievance and the most frequent cause behind the grievance are identified and remedial action is taken for modification of citizen's charter the service delivery system and or the grievances redress mechanism needs to be modified to prevent root causes from recurring. They identified remedial actions are assigned to appropriate personnel depending on the nature of action which could range localize process improvements to apex level policy changes. Localized process improvements are implemented quickly in a time bound manner with clear responsibilities to appropriate functionaries. Every quarter, the results of the previous quarter's analysis is reviewed to ensure that there is no backlog in the localized process improvements.

CHAPTER - 7
STAKEHOLDERS IDENTIFICATION AND ANALYSIS

7.1 Introduction

The basic purpose of conducting the stakeholder consultation was to involve the important stakeholders and local people into the process of project implementation and to incorporate the appropriate environmental and social concerns into the process. Moreover, Pakistan environmental Protection Act (PEPA) specifies that the stakeholder consultation process shall be an integral part of this and thus makes it mandatory. This section presents the essence of the stakeholder consultation process carried out for the proposed project.

7.2 Objectives

Basic objective of this activity is to have on board the project affected peoples (PAPs), interested non-governmental organisations (NGOs) and related institutions through:-

- Creating awareness about the project including its impacts
- Mustering their support for the project
- Involving them in the process of determining the right direction for area development

Relevant guidelines of WB prescribe that the affected population and institutions should be fully informed by disclosing the information relevant to the project impacts, the proposed policy of mitigation and compensation options. Consultation with PAPs is, therefore, the starting point for all these activities to allay misgivings and apprehensions about the project and elicit their acceptability, ensure their participation in planning and implementation and provide them with opportunity to participate in key decisions that will affect their livelihoods.

7.3 Stakeholders Identification

The literature identifies many techniques for stakeholder identification and analysis. The academic debate of advantages and limitations of each such technique is beyond the scope of this assignment. This approach was selected because of the similarity of project site in terms of existing natural resources and most of the socio-economic parameters.

The approach adopted by the consultants consists of the following steps:

Step 1– List the various resources (natural and otherwise) within the site or in close proximity of proposed project area e.g. mangrove, fish stock, navigational channel etc.

Step 2 – List the functions and uses for each of the resources.

Step 3 – Identify the groups and actors that have a stake in each of the functions and uses of the various resources by asking the following questions

- Who uses / provides the resource(s)?
- Who benefits from the use of the resource(s)? Who wishes to benefit but is unable to do so?
- Who impacts on the resource(s), whether positively or negatively?
- Who has rights and responsibilities over the use / provision of the resource(s)?
- Who would be affected by a change in the status, regime or outputs of proposed project area and its management?
- Who makes decisions that affect the use and status of the resource(s), and who does not?

These questions were answered using field observations, discussions with key persons, literature reviews and personal experience.

In doing Step 3, it emerged that a number of the same stakeholder (groups) is relevant for a number of the functions and uses. This allowed the consultants to begin to see the interconnected groups and stakeholders that have an important stake in the site or area.

By the end of this exercise, a table was developed with the resources on the left hand column, and a list of stakeholders and any other comments in another column as shown.

Table 7.1: Identification of Stakeholder

Resource	Stakeholders
Mangroves	Environmental Protection agency
	Nature conservation NGOs; Academia
	Forest department
	local communities
Waterways	local fishermen, Irrigation Department
	local communities
Marine	Fisheries department, Pakistan NAVY
	EPA
Beach	Local fishermen
	Community at large

Resource	Stakeholders
Land	Local communities in agriculture and related business
	Agriculture Department Govt. of Balochistan
	Irrigation Department; Balochistan Coastal Development Authority
	Livestock Department
	Local Government and NGOs
Crops and Vegetation	Provincial Forest Department
	Agriculture Department Govt. of Balochistan
	Irrigation Department; Livestock Department
	Lasbela University of Agriculture, Water and Marine Sciences
	local communities
Access Roads	local communities
Live Stock	local communities, livestock department
Potable water	local communities, Public Health Engineering Department
	Lasbela University of Agriculture, Water and Marine Sciences
Fire Wood	Provincial Forest Department
	Community at large

7.4 Stakeholder Analysis

7.4.1 Organization and Composition

Typically, stakeholder consultation is an expensive and time-consuming process. Therefore, most literature on the topic suggests to classify and categorise them, so that more focus could be paid to the more important entities.

For this project, the stakeholders can be classified into two broad categories; i.e. Internal stakeholders who enjoy legal contract (in any form or at any level) with World Bank (the project proponents), and External stakeholders who are made up of other individuals, groups

or parties that have a interest in the project but are not contractually obligated in any way or form.

The approach adopted by NEC for identification and classification of the project stakeholders is based on a tailored form of Winch Matrix. This approach is being used for its simplicity, and its relevance for the situation at hand. The consultants first developed a blank format of a matrix containing 08 cells. For the internal stakeholders, the cells are based on the type of envisaged relationship (supply / demand), and the potential of influence (Direct / Indirect stake). For the external stakeholders, the cells are based on stakeholder origin (public / private) and again on their potential of influence. Once the matrix structure is created, each cell is filled with potential stakeholders' names.

Table 7.2 maps and classifies the envisioned Porali River Basin Project stakeholders

Table 7.2: Classification of Porali River Basin Project Stakeholders

	Internal Stakeholders		External Stakeholders	
	Demand	***Supply***	***Public***	***Private***
Direct stake / Primary Stakeholder	Local Community, Balochistan Irrigation Department	EPA Agriculture Department, Forest Department	Land & revenue Department; Environment Department; Pakistan Navy / Town / UC Nazim	Fishermen and Farmer of the area; Other communities living or doing business in the area
Indirect stake / Secondary stakeholder		Service Providers for this project (technical vendors, labor force, consultants) World Bank and other project financiers	Fisheries Department; Wildlife Department; Livestock Department, Lasbela University of Agriculture, Marine and Water Sciences Zoological Department	IUCN, Consumers of the project output,

7.4.2 Public Consultation in Field

This activity was initiated by the consultants during April – May 2013 along side the socio-economic survey. The consultation was done through meetings in 46 potentially affected villages. Mostly people who were consulted included village elders, school teachers / government employee living in a particular village, or owner of a reasonable size of land. All the villages visited and consulted are located in the Bela district; no village in Khuzdar or Awaran district was covered due to security situation.

During the first phase of consultation, it was realized that among Potentially Affected People (PAPs), there prevails either unawareness or an ambivalent attitude towards proposed development schemes. There seemed slight disapproval at some instances, possibly due to the fear of relocation.

During field activity, the team had discussed the basic requirements, requests, views and perceptions with the local residents of these settlements about this project. Following opinions were shared by the people of respective areas.

- Local residents have a very encouraging opinion regarding this activity, they are very positive about the project as they assume that it will provide not only water for irrigation purpose but will also improve their quality of life, monthly income, live stocks, infrastructure like roads etc. However, some of them had reservations as they thought, these structures will only benefit some influential persons of the area as has happened

in the past, e.g Gijri Dam, which was constructed only for benefiting the lands of a local Sardar. According to people of Shadi Village, Gijri Dam only serves the Sardar's land, causing injustice in water distribution, without any compensation for displacement of resident.

- Some people had concern regarding design or modification in the existing structures like Trifurcation at Lakhra. They thought that trifurcation structure should be constructed 3 ft below the ground level instead of 3 ft above as proposed by the irrigation department to fulfill their needs of irrigation water.
- Some of the villagers from Ganda cha village raised their concern about the ground water depletion. According to them, if the major amount of water is utilized in the upstream areas, then the ground water in the downstream areas will be decreased. It was suggested by the villagers that appropriate measures should be taken to solve with problem.
- Some people showed their interest in the rehabilitation of existing structures like Liari existing weir, which is constructed on Titan khore. By the passage of time, it is nearly ruined due to the negligence of concerned department. The situation is creating drought condition in Liari and its surrounding.
- Many people showed their concerns about the implementation of the project. They were skeptic about the performance of Government departments, and said that many plans are made but nothing on ground takes place.

7.4.3 Consultation with Institutional Stakeholders

Besides consulting with the people living in or around the sites that are potentially affected by the project, the consultants also met the major institutional stakeholders, including the Government line departments and the NGOs working in the area. The proponent of the project, i.e. BSSIP, facilitated the consulting team by sending out a letter to all concerned departments, and also helped in getting appointments.

Brief account of the discussion during these meetings is given in the following:

Mr. Farooq Khajjak – Procurement Engineer BSSIP, Irrigation Department

The consulting team met Mr. Khajjak in his office on 8th April, 2014. Main ideas shared by him are listed below:

- Top priority must be given to preserve perennial water sources.
- Traditional Karez system has largely been replaced by Tube-wells. This transformation has many downsides: firstly, tube-wells take up energy; secondly, it is leading to

unsustainable groundwater use leading to groundwater depletion; and thirdly, this practice socially leads to individualism as opposed to community ownership intrinsic in the Karez system.

- Dam should be for irrigation purposes, especially in case of Baluchistan. Power production is not an option.
- Ground water recharge will probably not be a significant result of the proposed project.
- Dam command area development should be taken into account and properly planned. Mirani dam is an example of wasted resources because it is a dam without command area.
- Inter-department coordination is necessary for the success of this project. The irrigation department has deputed people from forest and agriculture departments in BISSP so far.

Mr. Khajjak inquired about relevance of Fisheries Department as stakeholder for this project. The consulting team responded that where Porali river drains into the sea, there is a significant population of fishermen, and also sizeable commercial fishing activity. Therefore, fisheries department is a legitimate stakeholder.

Mr. Naseer Khan Kashani – Director General EPA Baluchistan

The consulting team met Mr. Kashani in his office on 8th April, 2014. The team briefly explained the proposed project to Mr. Kashani. He took special interest in the proposed locations of various interventions.

Main ideas shared by him are listed below:

- Mr. Kashani welcomed the development of Baluchistan. However, he said, the development should also take into account the sensitivities of indigenous ecosystem, and should not result in unsustainable harvesting of any natural resources.

- He specially emphasized that groundwater recharge is a necessary thing, and the project is likely to have this positive impact. The project design should consider to enhance this positive impact to maximum possible extent.

- He stressed that the project environmental report should take into account any possible impacts on Hingol National Park. The consulting team explained that the project influence is not likely to expand to Hingol National Park.
- M. Kashani stressed that the impact of the proposed interventions on the downstream flows into the Arabian sea should be studied minutely, as the river drains into a Ramsar site i.e. Miani Hor.
- Finally, Mr. Kashani emphasized that there should be a strong monitoring arrangement post project. He said that the EPA will check it and ensure that proper monitoring is carried out, so that there is no inadvertent environmental damage caused by the project.

Mr. Zeeshan ul Haq – Secretary Fisheries & Baluchistan Coastal Development Authority

The consulting team met Mr. Zeeshan ul Haq in his office on 8th April, 2014. The team briefly explained the proposed project to him with the help maps and other relevant documents. Main information shared and concerns raised by him are the following:

In his opinion, Porali is not a river in the strict sense of the word; rather it is a small stream.

Main stake of fisheries department is close to the proposed intervention at Titian; and towards the tail-end where Porali drains into the Arabian Sea.

According to him, the interests of fishermen are three pronged, in that order of priority: clean drinking water; fresh water flows; and perennial flows. The proposed project would regulate the flows and hence likely to improve the situation from the current ephemeral one to a quasi perennial one.

However, a more pressing requirement is of fresh water, not only for the downstream ecosystem, but also for the sprawling anthropogenic activities in the area. He informed that the fish meal factories have gone up from 02 a few years back to 17 now. He also informed that Damb is an important landing site for shrimps and fish; one of the 08 landing sites on Baluchistan coast. It is a permanent abode of fishermen community. Its population size swells during the fishing season, when people from outside the area – and even from

outside the province – come here for economic reasons. He said that freshwater requirement for ecosystem, domestic consumption and industrial / commercial use has to be taken into account. He also sees the proposed project as an opportunity to ease the burden on fishery sector in terms of offering a relatively diversified availability of trade, particularly agriculture and livestock, which potentially reduces the juvenile catch of fishes for fish meal.

He recalled that the floods previously caused damage to the Makran Coastal Highway to the extent of around 9 km. One reason was that the existing Titian FIS was not working properly. Therefore, rehabilitation and improvement of this structure will help sustain the infrastructure as well.

He proposed that the project should consider to include a water storage and distribution system for fishermen, along the same lines as is done in Gwadar and Jeevani.

He also advised that the project could also identify potential aquaculture sites upstream, for example the proposed dam at the Kud river, in order to partially shift the burden from catch-culture. He further advised that the project should not result in reduction of coastal vegetation cover. He emphasized that reduction of coastal erosion potential is a definite positive of the proposed project.

Mr. Inam Ullah – Director Planning (Agriculture Irrigation & Extension Department)

The consulting team met Mr. Inam ullah in his office on 9th April, 2014. The team briefly explained the proposed project to him with the help maps and other relevant documents. Main concerns raised by him related to inter-department coordination. He was of the opinion that Irrigation department must be more forthcoming in sharing their plans with all other departments. He advised that the project must consider the climatic factors, so that the ultimate objective of improved agricultural productivity could be obtained.

He also shared the limitations of his jurisdiction to effectively convince the farmers particularly in some of the pockets of the proposed project area to adopt farming of less water intensive crops, he identified the social setup of the area playing a leading role for such deviation from the demand.

He suggested that the Irrigation department, being the proponent of the project, must hold a meeting of various line departments and give a

detailed presentation to all concerned, so that every department could know its role in the proposed project and hence all could contribute to it jointly.

Mr. Abdullah Shah – Chief Engineer South, Irrigation Department

The consulting team met Mr. Abdullah Shah in his office on 9th April, 2014. The team briefly explained the proposed project to him with the help maps and other relevant documents.

He informed that Gandacha dam is being recharged by precipitation. It is part of the Porali basin.

He suggested that a better option could be to build a large dam on Porali at Nimmi. He has previously recommended it to the concerned authorities. He is of the view that such large dam will basically serve all the purposes currently envisaged from any delay acton dam, check dam or flood protection arrangement. Such large dam would store enough water which could then by supplied for irrigation through pipes. This will also ensure elimination of flood damages downstream. He added that the ancillary infrastructure with a large dam would also serve the area that is currently under-developed in terms of infrastructure. Whatever infrastructure is there, is also prone to destruction by flash floods.

Mr. Akhter Bazai – Chief Conservator Forests

The consulting team met Mr. Bazai in his office on 9th April, 2014. He was assisted by the deputy conservators and other staff of forest department. The team briefly explained the proposed project to them with the help maps and other relevant documents.

Mr. Bazai strongly supported the project and even recommended adding further check dams and delaying action dams at Uthal and Bela. He lamented that currently there is almost no provision to use the floodwater of Porali. Since there is almost no delay or storage arrangement, the floodwater could not be used for rangeland development or raising

plantation. Once flood is controlled and plantation is raised, it will enable a continual cycle of flood control and sustainability of proposed intervention by creating positive inter-dependencies.

He recalled that the rains of June 2013 caused quite devastating floods. People were stranded for almost 15 days because the infrastructure was damaged. Such type of interventions will have a direct advantage by protecting the infrastructure, besides the obvious advantages of water management.

He expressed willingness by the forest department to develop the rangeland as soon as the water storage arrangement is there. He also instructed his staff to ensure appropriate plantation at all the streams and distributaries embankments of the proposed scheme.

Dr. Noor Ahmed Baloch – Livestock Department

The consulting team met Dr. Baloch in his office on 8th April, 2014. Dr. Amjed was also present. The team briefly explained the proposed project to them with the help maps and other relevant documents.

Dr. Baloch supported the idea of the project in a long term manner. He was of the opinion that more consistent availability of water would lead to better availability of nutrition to the livestock through rangelands. This would, in turn, lead to better livestock productivity both in terms of quality and quantity.

The livestock people recommended that the project should also encourage and promote fodder crops at its operational stage. They were of the view that livestock dispensary and model dairy farm should be considered as off-farm components of the integrated agricultural development of the area – expected to result from the implementation of proposed project.

Mr. Jahanzeb – Coordinator Coastal Association for Research & Development

The consulting team met Mr. Jahanzeb in his office on located in Winder. Mr. Abdul Qayyum was also present. The team briefly explained the proposed project to them with the help maps and other relevant documents.

Coastal Association for Research & Development (CARD) is a community based non-government and non-profit organization. It was established in 2002. It is a community

focused organization working to strengthen ultra-poor people in the coastal areas, particularly in Lasbela and Gwadar districts of Baluchistan.

CARD had been identified by the consulting team to be an effective representative of area people, specially those from the fishermen community. CARD members shared their views about the development potential of the area. They informed that the fishermen community is now much more aware about the harmful effects of unsustainable fishing methods, but economic pressures may still sometimes force them into such practices. They were of the view that the project might help in eradicating abject poverty in the fishermen community by providing them freshwater on a more regular basis and also by ensuring minimal flood damages.

Mr. Tahir Qureshi – IUCN

The consulting team met Mr. Tahir Qureshi in his office in Karachi on July 11, 2014. Mr. Qureshi is amongst the most authentic experts on mangroves in the region. The purpose to meet him was to confirm the validity of the positive perceptions about the project benefits shown by the people of project area. The team briefly explained the proposed project to them with the help maps and other relevant documents.

Mr. Qureshi has been working on the mangrove ecosystems of the coastal belts of Pakistan since a very long time and is well versed with the ecosystem sensitivities of Miani Hor. He also contributed in getting Miani Hor the status of Ramsar Site. He informed the consulting that the Ramsar site actually consists of Sranda Lake and the Miani lagoon jointly. Siranda lake used to form a natural storage for monsoon flood waters around quarter of a century ago. However, with development of infrastructure upstream, specially around the RCD Highway, the lake stopped receiving flood waters and now it is practically dry. Even when there is water, it is sea water.

Mr. Qureshi was of the view that the existing water flow regime is not significantly supportive for the mangrove ecosystem. A major share of water comes in sporadic bursts within very short time spans, while the life forms have to survive without fresh water for the remainder of

the year. As is the case with Indus delta, rather than flash floods, more regulated flow is required.

Mr. Qureshi informed that there could be three major beneficiaries of the regulated water supplies, namely: mangroves; agriculture; and freshwater fisheries. He emphasized that regulated hydrology regime will be more beneficial for the overall ecosystem health, even with reduced total quantity of water, than the current erratic regime.

7.4.4 Public Consultation Workshop

The consulting team had previously requested CARD to arrange a meeting with the local community representing people from all areas and all walks of life. CARD, along with another CBO DAWN, arranged the requested meeting in Winder on March 19th, 2014. The purpose of this meeting was to present the salient features of the proposed project, and the progress of the environmental study to the public stakeholders.

The meeting was attended by more than 50 members of local community. They represented people belonging to agriculture as well as fisheries and other professions. The participants included Vice Chairman of the Landowners Association, President Dawn Welfare Organization, Coordinator CARD, general councilor of the area etc. The attendance list of participants is attached with this report as **Annexure – 1**

Engineer Muhammad Ali Daudpota presented the salient features of the project, while Mr. Rafiul Haq informed the participants of the progress of EIA. He has had vast experience of working in the area of proposed project from the platforms of IUCN and WWF, and therefore knows the local issues and problems very well. The participants agreed whole heartedly when he suggested that lack of water storage and management is rather a bigger problem in the area than the actual availability of water.

The main points raised by the participants during the discussion are summarized in the following:

- The project should plan ahead for at least 20 years. Our area is suffering from ad hoc development as much as from no development.
- The communities have no issues with the concept of dams; but the issue is with the design. Flawed designs of such schemes have in the past not only resulted in public money, but have also caused havoc to the local population.
- Spillway of the dams should be very properly planned. Material and planning should be of best quality. Dam height should be optimum.
- Spillway water may support fishing and agriculture.
- People living close to the proposed intervention sites will be the major beneficiaries. It should be ensured that those living at a distance also benefit from it.
- Dams will also help in reducing flow of debris into the sea. However, water calculation should be rechecked before going ahead with the project.
- Dams will also support groundwater recharge. In this regard, engineering design of the project should expand this benefit to the maximum possible area.
- Independent monitoring mechanism should be put in place for the project.
- The project will have no direct benefits for Winder. There should be some component to this end. Winder river has better flow than Porali river. There were some structures previously built, but now they stand completely destroyed.

Mr. Abdus Sattar Angaria, Mr. Abdul Hafeez Angaria, Haji Abbas Mahigeer, Nabi Bux Angaria, Wadera Suleman, Taimur Hamza and others spoke on the occasion. The forum unanimously supported the project.

It is evident that the agricultural activity will have direct benefits from the project, and therefore, landowners and peasants are in favour of the project. However, one key feature of the forum was that the people engaged with fishing trade also supported the proposed interventions. Fishermen community residing very close to the Porali mouth supported the proposed project because they felt that the intensity of damage due to ephemeral flow is likely to reduce if the flow is made into a regulated perennial type. Further, it will also help reduce the amount of silt at the river mouth and the lagoon.

7.4.5 Continual Engagement with Stakeholders

Notwithstanding the efforts so far put in for public participation, this activity will have to be pursued through the forthcoming implementation phases of the project. In particular, the focus will be on the improvement and modification of the proposed intervention designs.

Participation mechanisms facilitate the consultative process and include information sharing and dissemination, disclosure, and participation of affected people and other stakeholders in

the project related activities. In the peculiar social set-up of the project area, it is also important to involve the religious leaders as representatives of the public as well as part of effective communication process. They can provide a very effective medium to bring information to the affected male population through Friday prayers. Local business community, specially the affected one, should also be brought into the process of awareness and participation.

The related institutional arrangements should also be in place for continuous consultation throughout the process of planning and implementation.

CHAPTER - 8
WATER POLICY, LEGAL FRAMEWORK AND TRADITIONAL ESTABLISHMENTS

8.1 General

This chapter elucidates the current legal framework which is applicable on the proposed project in context of sustainable social development. The institutional arrangement that exists in Pakistan and may influence the management of the proposed project is also discussed cursorily.

8.2 IWRM Policy

The Integrated Water Resources Management (IWRM) Policy in Balochistan was approved in 2006 which highlighted the reforms needed for water resources monitoring and planning in the province. The policy also enforces the adoption of IWRM approach for basin sustainability.

As per Draft Balochistan Comprehensive Development Strategy 2013 -2020 the water sector development will be as under:

"For the irrigation water, the strategy is clear that evolving Water Resource Management System and Institutional Framework (IWRMA) will be central to sustainable water use in the province. The theme is pillared on undertaking river basin wide management of water with greater focus on the flood irrigation Sailaba and creating water storages on all strategic locations in the river basins and handling the Sailaba irrigation and dams command area in an integrated manner. Under the Strategy, GoB will support establishment of Drip Irrigation Manufacturing Plants in the province under PPP mode for providing either front- end or back- end subsidy to get a system introduced with full institutional support. There is emphasis that water supply and sanitation requires a dedicated attention and given the massive gap, it is planned to undertake integrated water supply and sanitation system in partnership with the local communities especially women through a community infrastructure program for a minimum of 5000 settlements ".

8.3 Legal and Regulatory Framework

8.3.1 Baluchistan Acquisition of Land Act 1974 & (Amendment) Ordinance 1976

The primary law for acquisition of land for public purposes in Pakistan is the "Land Acquisition Act, 1894" (hereinafter referred as the Act). The land acquired under the Act

vests in the Province and it is only thereafter that the Province may transfer it to someone else.

The Baluchistan Acquisition of Land Act allows the government to acquire private land for housing or development schemes. Initially, the law specifically mentioned “in rural areas”, but this was deleted subsequently through the Ordinance in 1976. “Land Acquisition” literally means acquiring of land for some public purpose by government/government agency, as authorized by the law, from the individual landowner(s) after paying a government fixed compensation in lieu of losses incurred by land owner(s) due to surrendering of his/their land to the concerned government agency. The laws essentially are developments on the land acquisition act of 1894 which was created with the purpose of facilitating acquisition by the government of privately held land for public purposes. The word "public purpose", as defined in the act, refers to the acquisition of land for constructing educational institutions or schemes such as housing, health or slum clearance, as well as for projects concerned with rural planning or formation of sites. It is not necessary that all the acquisition has to be initiated by the government alone. Local authorities, societies registered under the societies registration act, 1860 and co-operative societies established under the co-operative societies act can also acquire the land for developmental activities through the government.

Land acquisition requires interaction between the Requiring Body (RB), which is normally a government agency that requires the land for certain national development project, and the Acquiring Body (AB), which is normally the Provincial Revenue Board, since land is a provincial subject according to the Constitution. The division of responsibility between the Requiring Body and the Acquiring Body in broad terms is that the Requiring Body provides the technical input and the Acquiring Body the legal input in the land acquisition process. It is the Requiring Body which must ensure that the project, for which the acquisition of land is required, is approved by the authorities and that funds are available. The Requiring Body must also justify the need for land and other property on the basis of field surveys including detailed engineering design and prepare all necessary documents required for decision making.

It is to be noted here that no acquisition of privately held land is envisaged for the Porali River Project.

8.3.2 Groundwater administration ordinance of 1978 and 2000

The objectives of this Ordinance are to regulate the use of groundwater and to administer the rights of the various persons involved at the provincial and district level. Provincial water Board was constituted for administering the groundwater rights and to lay down policies for conservation and development of groundwater resources. Additional Chief Secretary, P & D, member of board of revenue, Secretary Irrigation Department and few non-official members appointed by the government are the members of this board. The ordinance established the procedures and framework within the district level administration to issue permits for the development of new Karezes, dugwells and tubewells by the District Water Committee. Along with issuing permits, this committee also has a right to stop any groundwater extraction by any unauthorized person. The relevant authorities, identified by the Ordinance, were the District Water Committees, composed of the DCO, the district heads of the Irrigation and Agriculture departments as well as appointed local notables. The Ordinance provides a legal and institutional framework for local resource management by involving the local administration, as well as tribal leaders, and allowing flexibility in determining the rules for the use of groundwater as a common property. The Provincial Water Board will have the supreme power to call for record of any case relating to water rights to satisfy it as to the regulatory; propriety and legality of the proceedings and can set aside and quash the proceedings, if it considers that any material irregularity has occurred. The main shortcoming of the existing ordinance has been the lack of involvement of local communities in the implementation and formulation of groundwater management rules and overall poor enforcement by the District Water Committees. In particular, the technical vetting of license applications has been subject to interference usually by local powerful elite.

According to the World Meteorological Organization (WMO) the groundwater monitoring network should be dense enough to observe all the major aquifers. It spells out the following criteria for developing the network in aquifers.

- The distance between two observation wells must be similar to the distance over which the geological configuration of the aquifer can be extrapolated;
- This distance will vary from place to place. The maximum distance between wells in extremely large areas in a basic network should not exceed 40 kms;
- Full use should be made of hydro-geological information from wells drilled for other purposes, such as oil exploration, etc.;
- Existing wells should be introduced in the network to reduce the cost of drilling and installation of additional observation wells;

- In alluvial terraces the lower reaches of rivers, the hydraulic connection between the groundwater and the water level fluctuation in the river should be investigated;
- In areas with phreatic aquifers in which depth to water table from land surface is small the density of the basic network should be increased by installing one observation well every 5 to 20 km^2.

To measure the hydrological functions data loggers should be employed in addition to manual reading arrangements. The function of a hydrological-measurement sub-system is to sense a characteristic of water, and convert it to data form suitable to be displayed, recorded or processed. For remote monitoring in accessible points, data loggers offer the best data collection instruments to minimize human errors in collection. In NRB, the Groundwater Monitoring System is extremely deficient as there is no Groundwater Monitoring Stations (GRMS) deployed since now however a total number of 6923 GRMS have been proposed in different sub-basins of NRB. The addition of these GRMS will certainly help the decision makers to plan and manage groundwater of this extremely dense populated river basin in proficient way for wellbeing of community. The groundwater management action plan for the NRB will be formulated in the Feasibility and detailed design study.

8.3.3 Canal and drainage act 1980, 2000 and 2006

The Balochistan Canal and Drainage Ordinance, 1980 entitles provincial government to use and control (for public purposes) water of all rivers and streams flowing in natural channels, of lakes, sub-soil and other natural collection of still water. This Ordinance was amended in 2000 empowering the government to control the areas permitted for cultivation of particular crop and control waterlogging and salinity. The government may compel the tenant, occupier or land owner to grow particular crop for complying with the designed parameters of concerned canal system or any good reason to control and save water. The government may also impose ban on cultivation of certain crops in lands situated outside the canal command area and can charge penalty in case of violation in terms of punishment and fine. In the NRB, the management of streams and natural flows are far behind to the given standards by WMO. For instance there are only 7 stream gauges installed in the NRB while as per WMO standards, where there should be 45 stream gauges. Similar is the case with the sediments gauging stations. Unfortunately there are no sediments gauging stations in the entire province. In fact we do require 9 sediment gauging stations to cover the entire area of the NRB. The incapability of existing canal system in managing the share of Indus water further exacerbates the situation by losing almost 65% of its share. The last revision of the Canal and Drainage Act was made during 2006 with the support from the ADB TA-4560

(PAK). The revised Canal and Drainage Act is now available with the Balochistan Irrigation Department.

8.3.4 Irrigation manual order 2006:

There was no Irrigation Manual Order with the irrigation department since its inception. This is a very important and essential document needed by the irrigation engineers in the department for the O&M of the irrigation system and water management. This Manual Order was approved by the Department of Irrigation and enforced. Copies of this document were provided to all the field staff. The support was provided under the ADB TA-4560 (Pak).

8.3.5 BIDA act 1997

Balochistan Irrigation and Drainage Authority Act was promulgated in 1997 to transform the Irrigation wing of the Provincial irrigation and Power Department in to an autonomous Authority for development and management of the irrigation, drainage and flood control infrastructure. This Authority was supposed to be responsible for making irrigation and drainage network sustainable and equitable distribution of irrigation water. It will improve efficiency of water utilization along with minimizing drainage surplus. The authority comprises of Provincial Irrigation Minister, Additional Chief Secretary, Secretaries of the Departments of Irrigation and Power, Agriculture, Finance and few representatives of FOs. This authority has all the powers under the Canal and Drainage Act and Balochistan Groundwater Rights Administration Ordinance to formulate and implement policy guidelines regarding water management and use. The main operations of BIDA include:

- Maintaining the irrigation, drainage, storage reservoirs and flood control infrastructures in the province including hill-torrent control and development works for irrigation of adjoining lands including watershed management practices in the catchment areas.
- Prescribe rate, fee and other charges for various types of services which the authority supposes to provide under the Act.
- Undertake anti-erosion activities including conservation of forests and preventing breaking up of land in catchment areas of any river, hill-torrent or any other stream.
- Formulate and implement policies to prevent waterlogging and salinity and develop irrigated agriculture.

Due to partial reform of the department, the Act remains a legislative tool which has yet to functionalize the irrigation department as an Authority which can fully assist irrigation communities.

8.4 FOs Regulations

Community irrigation farmers' organization regulation, 2000:

Despite the prevalence of minor irrigation schemes there was no appropriate legislation for registration of FOs except the Water Users Association Ordinance which provided framework for improvement of watercourses in the canal command areas. BCIAP prepared the Community Irrigation Farmers' Organization Regulations for giving legal status to entities that may be established on community irrigation schemes outside the Indus basin and were responsible for O&M of schemes. The Regulations for registration of FOs were approved and issued by BIDA in April 2000. In this act, the registrar appointed by BIDA will be responsible to register and maintain operations of the FOs. He may also foster efficient functioning and prudent management in CIFOs and Associations by issuing model bye-laws and such other guidelines, and to approve the bye-laws of CIFOs or Associations. Registrar can issue the certificate of registration only when he is satisfied to the authenticity or correctness of any element in the demand for registration otherwise he may issue a notice of refusal of registration, stating the detailed grounds for such refusal. Thirty-seven FOs were formed in the BCIAP[2] funded by the World Bank, which were trained to take over the control and management of schemes and seems to be sustainable as the report says.

Water Users Association Act, 1981:

The Balochistan Water User Association Ordinance provides a law for formation, operation and promotion of WUAs. The Ordinance makes it obligatory for farmers to organize themselves for collective action and related to watercourse rehabilitation and its O&M. The main shortcoming of this Act is that it is applicable to WUAs in canal irrigated systems rather than small scale irrigation schemes operated by farmer or community based organizations.

8.4.1 The Antiquities Act, 1975

This act basically defines how to repeal and re-enact the law relating to the preservation and protection of antiquities. The Federal Government may, by notification in the official Gazette, declare any antiquity to be a protected antiquity for the purposes of this Act. No person shall put any neon signs or other kinds of advertisement, including bill posting, commercial signs, poles or pylons, electricity or telephone cables and television aerials, on or near any protected immovable antiquity. No person shall, for any commercial purpose, make a cinematograph film of any protected antiquity or any part thereof except under, and in

[2] *Information taken from final report of Balochistan Community Irrigation and Agriculture Project.*

accordance with, a license granted by the Director. A contravention of any provision of this Act or the rules shall, where no punishment has been specification provided, be punishable with rigorous imprisonment for a term which may extend to six months, or with fine which may extend to five thousand rupees, or with both.

8.4.2 Baluchistan Goats (Restriction) Ordinance 1959

This law may come into play, if any of the proposed intervention falls in any informal grazing pasture, as livestock rearing is an important occupation in the project area. The ordinance empowers the Government to restrict movement and / or grazing etc of livestock in certain areas.

8.5 Environmental Legislations

The key environmental regulations and legislations which are applicable to the proposed project and have a social angle to it are discussed below.

8.5.1 Pakistan Environmental Protection Act, 1997

The PEPA 1997 is the apex environmental law of the country. Under section 12 of the Act, it is mandatory for the proponents of the projects[3] to execute the IEE and / or EIA (where warranted), and get the approval from provincial EPA.

The following rules and regulations have been issued under the Pakistan Environmental Protection Act, 1997.

Rules:

- National Environmental Quality Standards (Self-monitoring and Reporting by Industries) Rules, 2001.
- Provincial Sustainable Development Fund (Procedure) Rules, 2001.

[3] The Act defines a Project as: *"Any activity, plan, scheme, proposal or understanding involving any change in the environment and includes:*
- *Construction or use of buildings or other works;*
- *Construction or use of roads or other transport systems;*
- *Construction or operation of factories or other installations;*
- *Mineral prospecting, mining, quarrying, stone-crushing, drilling, and the like;*
- *Any change of land use or water use; and*
- *Alteration, expansion, repair, decommissioning or abandonment of existing buildings or other works, roads or other transport systems, factories or other installations."*

- Pakistan Sustainable Development Fund (Utilization) Rules, 2001.
- Pollution Charge for Industry (Calculation and Collection) Rules, 2001.
- Environmental Tribunal Procedures and Qualifications Rules, 2000.
- Environmental Samples Rules, 2001.
- Hazardous Substance Rules, 2000.

Regulations:

- Review of IEE / EIA Regulations, 2000.
- National Environmental Quality Standards (Certification of Environmental Laboratories) Regulations, 2000.

8.5.2 Balochistan Environmental Protection Act, 2012

After the 18th Constitutional amendments the subject of environment vide Notification No.4-9/2011-Min dated 29th June, 2011 stand devolved to the provinces with effect from 1st July, 2011. Even after the deletion of the subject of environment from the concurrent list the Pakistan Environmental Protection Act 1997 remained intact as per Article 270-AA, Sub Article (6). However, there is provision that the province through an appropriate legislature / competent authority may alter, repeal and amend the laws related to the subject.

To regulate and effectively address the peculiar environmental issues of the province of Balochistan this act namely “Balochistan Environmental Protection Act 2012” is submitted as per provisions of the Article 270-AA, Sub-Article(6) of 18th Constitutional amendments.

In terms of requirements of EIA / IEE, the provincial Act contains, in its section 15, similar provisions as given in the PEPA section 12. The PEPA has entrusted the authority of review and to approve environmental assessments to the provincial EPA. The proposed project falls under the jurisdiction of the Balochistan Environmental Protection Agency (BEPA). Individual project component will need to be assessed in the form of either Initial Environmental Examination, or Environmental Impact Assessment. These IEE / EIA reports will be submitted to the BEPA for its review and grant of the NOC.

An interesting provision of the provincial Act, which is relevant for the proposed project, is given in its section 20. Sub-section 2 of Section 20 states that “When preparing water resource management plans, Departments and other relevant institutions shall at least take the following into account:

a. provisions for integrated watershed management;
b. regulation of sustainable abstraction of groundwater;

c. regulation of the use of ground or surface water for agricultural, industrial, mining, and urban purposes;
d. measures to protect human health and ecosystems;
e. measures to protect wetlands and their associated ecosystems;
f. any other provision necessary for the sustainable use and management of water resources.

8.6 World Bank Safeguard Policies

8.6.1 Description

To ensure the social and environmental sustainability of the projects, the World Bank developed its Safeguard Policies, divided in environment, social, and legal areas. Likewise, the World Bank has a Public Disclosure Policy that is of cross-character and applies in all the Safeguards Policies.

The Safeguard Policies pursue three objectives:

I. ensuring that environmental and social issues are evaluated in the preparation and decision-making process;
II. reducing and mitigating the environmental and social risks of Bank-financed programs or projects ; and
III. providing mechanisms for consultation and information disclosure.

The PRBD project will need to comply with all the Safeguard Policies in the subproject or activities, irrespective of whether or not they are being funded in whole or in part by the World Bank, the GoP, or any other donor. A complete description of the World Bank's safeguards and their triggers can be found on the Bank's official Web site, www.worldbank.org. The Safeguard Policies can be used as part of the social management process presented in Chapter 6 and 7 of this report.

8.6.2 Safeguard Polices Relevant to PRBD

The Social Safeguard Polices that are potentially relevant for the PRBD project are:

- OP/BP 4.11 Physical Cultural Resources
- OP/BP 4.12 Involuntary Resettlement

Table 8.1 presents the common settings in which the safeguards are triggered and generic directions to comply with them.

Table 8.1: Social Safeguards Relevant for PRBD

Safeguard Policy	Trigger settings and requests
Involuntary Resettlement	This safeguard is triggered when projects require the relocation of people or compensation is required because of project impacts on livelihoods or natural resources. The affectation could be minimal or substantial depending on whether houses or productive lands (legal or illegal) are impacted. These cases require a Resettlement Action Plan (RAP) developed in accordance with the Bank's guidelines.
Cultural Properties	This safeguard might be triggered during projects constructed in zones of recognized archaeological/cultural/physical potential. Investigations, Rescue, and the Chance Finds Procedures Plan are the most common instruments required.

In accordance with the Bank's Public Disclosure Policy, generally a Communication and Disclosure Program is required to present all the environmental and social documents developed for the subprojects (ESIAs, ESMPs, RAPs, or others) as part of the participation and consultation process.

8.7 Traditional Establishment

Balochistan has a long history for customary institutions for solving disputes and other issues locally. The most famous type of these establishments is Jirga. It refers to an indigenous practice of referring disputes to a council of tribal elders among Baloch and Pashtun tribes. The instigation of Jirga system is dated back to British rule in Balochistan. During this period Jirga's were formalized and integrated into the colonial administrative system with the object of ensuring political stability and obtaining the support of the chiefs of Baloch and Pashtun tribes inhabiting the northwest frontier of India. Under the Jirga system, local cases were referred to local assemblies of tribal elders whereas inter-tribal disputes and the more prominent civil and criminal cases were decided upon by a Shahi Jirga which met twice a year, once at Sibi and once at Quetta. On June 8th, 1972, a resolution was introduced demanding "the eradication of outdated institutions such as the Sardari system, the jirga system and the tribal system so that the province may progress socially and economically. Despite the opposition of pro-establishment Nawabs and Jams, the Balochistan Assembly adopted the resolution with overwhelming majority. In some parts of

Balochistan local Jirga system is still alive especially for solving inter-tribal issues. When it comes to managing water resources, one cannot ignore Karezes as it is the most ancient and indigenous source of irrigation. Kareze water fulfills a number of community needs both agricultural and non-agricultural. The water from Kareze is shared by many landowners whose socio-economic conditions very much depend upon regular operation of Kareze system. Land on Kareze is individually as well as jointly owned. Efficient operation of a Kareze is directly linked with its maintenance and cleanliness and for this purpose funds are generated through sale of water, irregular grant from the Government, or cash contribution by the shareholders known as “Naghaand” in local language. The government releases funds for the Karezes amounting to Rs.5000 to 10000 annually to the head of the Union Council known as “Mir-e-Aabs”. He collects the amount from the government and other sources and spends it for maintenance of the Kareze. This system is still practiced in Ziarat and other parts of the province.

CHAPTER - 9
POTENTIAL SOCIO-ECONOMIC IMPACTS & MITIGATIONS

This chapter identifies the significant potential socio-economic impacts which may occur during the project life. The appropriate mitigation measures are also discussed in this and the subsequent chapters of this report. A brief qualitative description of each aspect and the affected environment is presented in the following sections.

The major subprojects and technical components of the project have been listed in Chapter-2. In broader spectrum, the project activities could be categorized in the following three components:

- Planning & Design Stage
- Physical Intervention Stage
- Operations Stage

Social issues and the assessment of their impacts are presented in the following sections.

9.1 Potential Impacts of the Proposed Project

The proposed project activities for the PRBD are generally designed to improve catchment management of the Porali River Basin. The Project is designed with sustainability in mind for all components and activities. The social impacts of improved coordination in basin water resources management, watershed management, improved climate resilience, and ecosystem improvements are expected to be highly positive overall; likely environmental and social benefits include reduced soil erosion and land degradation, reduced risk of flash floods, reduced risk of the basin running dry during an extended draught, and improved forest conservation and restoration. Social considerations will be given major attention in PRBD planning, as well as major civil works, to ensure that any adverse social impacts are minimized and adequately mitigated.

9.2 Design / Planning Component

At the initial stage during the first component, the focus will be on laying the foundation for integrated planning for water resources management. This component is likely to result in improvement in institutional arrangements and capacity in the areas of environmental and social management and monitoring. Development of decision support systems and training to develop local expertise is expected to substantially improve the management and monitoring of social impacts.

The planning, information management, and capacity-building activities are all intended to facilitate increased awareness-raising to foster ownership, understanding and mainstreaming of social considerations within water resources planning for the overall Porali River Basin.

Following activities and concerns are expected at the planning and design stage:

- Topographical survey and Geotechnical investigation of the area
- Assessment of water availability
- Route selection (Alignment) for water channels
- Land acquisition requirements for Water Storage Dams
- Design works for Construction of new interventions as per proper engineering standards e.g. proper gradient to maintain desired velocities
- Water rights Issues in the area

9.2.1 Potential Impacts at Design / Planning Component

Understandably, the potential environmental impacts, in a physical sense, of the design stage are quite low.

The general culture of the area seems to discourage individual's interaction with outsiders besides strictly business relationship. Any social interaction is to be at the collective level. Hence, when the consulting team went to various villages for surveys, it was made to sit and meet with village people collectively. Mostly, the village elders spoke in response to questions. Under these circumstances, the frequent visits of various survey teams may also cause disturbance to local public life. However, the very surveys may also prove to be positive in socio-economic terms, in providing short term employment opportunities to some local folks during surveys.

The other positive impacts that are expected from the project at the design stage are the following:

- Improved water resources and basin knowledge base
- Basin planning process that integrates analytical and stakeholder inputs
- Reduced future water conflicts arising from more uncoordinated/unplanned development
- Increase in institutional capacity for coordinated basin management

9.2.2 Mitigation / Enhancement Measures

The potential negative social impacts of the design phase will easily be mitigated through well-coordinated efforts.

The various surveys to be carried out should be planned in a way that maximum information could be obtained through mobilizing minimum survey teams. This will help in reducing the possible disturbance to social life. The sample collection for soil analysis should be carried out at remote, precise locations, preferably under low wind conditions.

The most important mitigation and / or enhancement measure, however, remains satisfactory level of inter-departmental coordination. Once the draft feasibility is ready, the BSSIP, being the proponent, should call a meeting of all major stakeholder departments and present the project in front of them. The meeting should discuss and finalize the role and contribution of various departments in the project. This will be in line with the advice given by various stakeholders during consultations.

9.2.3 Physical Intervention Stage

This will mainly entail construction of new structures and rehabilitating the existing structures.

The catchment management through new interventions will introduce direct significant interventions aimed at better managing the available flows in Porali River. The interventions planned under this component are expected to be socially positive overall, without significant adverse social impacts. These include water storage dams and other small civil works on perennial and / or flood irrigation schemes, intended to reduce erosion and slow down stream runoffs.

Rehabilitation of water related Infrastructure aims at mitigating risks from droughts and floods. Upgrading and rehabilitation of some existing infrastructure including bifurcation and trifurcation structure and weirs etc. will be part of this component.

Following activities and concerns are expected at the physical intervention stage:

- Contractor mobilization and Establishment of campsite and machinery/ equipment Yard
- Transportation of construction material
- Excavation, backfilling and compaction works

9.3 Potential Impacts at Construction Phase

The construction phase of the project might result in a number of social aspects that are identified in this section. Activities that have been perceived as potential sources of these concerns are also discussed. However, if managed properly these activities will not cause any social disturbance.

The main responsibilities for mitigation during the construction phase of the project rest with contractors appointed to construct the various interventions. The Clients' Site Manager will however, have the responsibility for monitoring the implementation of mitigation plans by the contractors and will need to implement his own system of internal checks to ensure them.

In order to avoid creation of misunderstandings regarding who is responsible for particular activities recommended for the construction phase, the mitigation measures (in the form of a plan) to be taken should be appended to tender documents. This will ensure that contractors include the cost of migratory actions into their bids and will provide a reliable mechanism for enforcement. In fact, most of the recommended actions involve no or very little capital investment, but it depends on the contractor's management to adopt a responsible attitude; ensuring construction activity is properly planned and migratory actions are correctly implemented.

9.3.1 Social Disturbance due to Non-compliance of SMMP

This SIA document attempts to enlist all major potential impacts of the project, and their likely mitigations. These impacts and mitigations will be presented in the form of a Social Management & Monitoring Plan in the next chapter of this document. During the stakeholder consultation meeting with EPA (B), they strongly mentioned the need to establish a formal mechanism to monitor project progress in terms of environmental and social compliance.

Once the project construction starts, and through its operations phase, the most likely source of social impact could be non-compliance of SMMP by the concerned entities; whether willingly or otherwise.

Mitigation / Enhancement Measures:

The project proponent will hire an independent monitoring consultant firm, for regular monitoring of the project. The firm will submit progress and monitoring report on monthly basis during construction phase. The frequency of monitoring will gradually become lower

during operations. Still, quarterly monitoring and progress reporting is reported during the initial 1 ½ years of operations. Later, it could become biennial if the EPA agrees.

The proponent will also formulate a Project Steering Committee which will review the project progress on periodic basis. This SC will comprise of a senior representative from the various line departments as mentioned in the chapter on Stakeholder Consultation. The SC will also include at least one technical expert from R&D institutions (either from academia or international NGOs e.g. IUCN / WWF).

Social Disturbance due to poor Expectation Management:

More than any major impact on the physical or biotic environment in the real terms, the proposed project may cause social impact due to misperceptions or poor expectation management. During the various surveys, it was found that the general population is quite disappointed by the performance of government departments. However, it was encouraging to note that people were not too skeptic about the potential benefits of the proposed project.

It should be noted that in the past, unfulfilled expectations from many mega projects have contributed greatly to the disillusionment of the Baloch population. Many stakeholders believe this to be a major contributing factor towards the current volatile law & order situation in the province of Balochistan.

If the expectations of area people are not kept at a realistic level; and then those realistic expectations are not met, the project will cause negative social impact. Under extreme circumstances, this may lead to acts of sabotage even.

Mitigation / Enhancement Measures:

The pubic consultation carried out for this SIA assignment is good first step in the direction of expectation management. The project proponent should make formal arrangement for continued communication and engagement with local stakeholders, in the form of a community engagement cell. The cell will also serve as the grievance redressed mechanism for the project. The prime responsibility of this cell will be to keep the community informed about project facts in a proactive manner. This cell will be headed by a senior officer of the proponent department. This cell will have due weightage in the project decision making process.

Land Acquisition:

Construction of various civil works might require land acquisition. In most of proposed interventions, land requirement is minimal and should be fulfilled through Government lands. No private land acquisition requirement is envisaged at this stage.

Mitigation / Enhancement Measures:

Use of any private lands, or lands traditionally held or used by communities should be avoided in the project. The current level of design details clearly indicates that no such lands will be required. However, in case private land acquisition becomes unavoidable at any stage, the acquisition will be carried out under the relevant laws as given in Chapter 3 of this report. Also, the acquisition process will follow the general guidelines for land acquisition as stipulated in the Environmental & Social Management Framework, developed previously for this project.

Socio-economic Conditions:

There are no sites of religious, cultural or historical importance near the proposed intervention sites. The project does not involve any loss of land or property and therefore no significant negative impact on socio-economic setting in this respect is expected due to the proposed project. There is a mausoleum of religious importance for local people on the way to the proposed site of Kud Dam. But this site is almost 3 km downstream of the proposed site.

The construction activity would involve people of labor class frequenting the area for the entire length of construction period. The surrounding residential area is inhabited by people who associate very closely with a certain set of cultural values. The area being a part of a rural setup, it is quite uncommon for residents to experience and easily adjust to the presence of outsiders in their areas for any length of time.

An anticipated positive impact on socio-economic conditions during construction phase is the creation of limited-time employment opportunity for the local population. Since the project interventions will require substantial input from manual labor, even people with relatively lower levels of education or skills could get short term employment.

Another positive impact will be creation of other small scale income generation opportunities, e.g. tuck shops, tea shops or mechanics.

Mitigation / Enhancement Measures:

In case, people from outside the area are engaged in the construction or operation of the project activities, this might result in cultural conflict with the local communities. Therefore, it

is imperative to engage local work force as much as possible, and also develop and implement a strong community communication and participation plan.

The contractor will be liable to engage at least 50% of its required (unskilled) labor force from within or around the project area.

It is highly recommended that the project proponent include some CSR measures specifically for the tail-end population. This population is mostly engaged with fishing and will not reap agriculture related benefits envisaged from the project. During public consultations, people from these villages mentioned lack of potable water as a major issue. Some stakeholders suggested that storage and supply of potable water to the communities of Dam and Bheera will greatly enhance the social acceptability of the project.

Health & Safety:

Various activities during the construction phase of the project could have health & safety impacts on workers and the people living in the nearby vicinity.

The activities such as loading and unloading of excavated soil and construction material will be expected during the construction phase of the project. Workers safety would be at risk if they are not adequately trained. The impact on worker safety will be direct and of moderate significance.

During the construction of sub and superstructure, activities such as fabrication, installation of formwork, installation of scaffoldings could have serious safety risks to the workers. The use of heavy machinery and vehicle is expected during the excavation and transportation activities. The safety of workers is of prime concern while dealing with such machineries and vehicles. The probability of such accident at project site is low but the significance might be of moderate nature.

Mitigation / Enhancement Measures:

During the construction phase, as the project involves slope cutting and excavation in the hilly portion, the construction work requires careful planning and precautionary measures, this will include the following.

- Usage of heavy machinery will be planned carefully and only skilled persons will be allowed to operate the equipment.
- Provisions of proper signboards and informing the local people about the activity will be important. In addition, personal protection equipment such as helmets, gloves, dust masks, boots and earmuffs etc will be provided for the workers.

- Adequate water supply and sanitation facilities will be provided in the labor camps
- Caution signboards for the road users and surrounding people will be provided to avoid any accidents at the work site.
- In case of traffic diversions, proper signboards will be provided sufficiently ahead of the work site.

9.4 Operations Stage

This will be the stage where major impacts, both positive and negative, can surface, and the earlier predictions could be validated. This stage will comprise of commissioning the rehabilitated and new interventions. Most important component of this stage would be the filling of water storage dams; especially that on the Kud River. While the operations stage entails mostly engineering activities, it has an equally important requirement of inter-departmental departmental coordination, for harvesting the full potential of positive impacts of the project.

Following activities are expected at the operations stage:

- Commissioning of rehabilitated and new interventions
- Filling of water storage reservoirs
- Formation of inter-departmental coordination mechanism
- Formation and engagement of third party monitoring arrangement

Besides the above, following concerns might arise due to untoward events:

- Conflicts caused by unavailability or improper distribution of irrigation water in the area
- Breaching of main canal
- Use of irrigation water for drinking purposes and vice versa

9.4.1 Potential Impacts at Operations Phase

Water Availability:

As per the feasibility calculations, almost 700 million m^3 water is available on average per annum. During the wet season, as much as 2,650 million m^3 could be available while only 10% of this volume is available during dry season. The excess water stored during wet years will be accessible during dry years. The existing water needs are the following:

Table 9.1: Existing Water Needs

Use	Volume Required million cubic meters
Domestic	13.4
Irrigation	67.6
Livestock	1.1
Total	82.1

It is evident that in any given year, there is theoretically sufficient amount of water available to cater to the above mentioned requirements. However, since the water flow is unregulated and there is no arrangement for storage, the available water just passes through in the form of flash floods – many a times annual required quantities flowing and draining within a week. Therefore, the proposed project will basically ensure a more regulated flow of water so that it could be utilized more properly. People of the area will have adequate water for their use, for most of the year.

Mitigation / Enhancement Measures:

It is obvious that more consistent and regulated availability of water will be a beneficial outcome. To further improve the situation, the previously recommended project steering committee could play a key role. The irrigation department, being the proponent of the project, provides information to the SC and the department concerned with supplying potable water to the project area, specially downstream users. As previously mentioned, many area people mentioned the need for potable water storage arrangements for tail-end localities. Once the consistent availability of water is assured, the water supply agency could make potable water storage arrangements.

Recharge of Ground Water:

Improvement of existing schemes and development of new schemes will help in harvesting the surface runoff, by increasing the contact time between the water and the river bed to facilitate infiltration. This will improve the groundwater recharge and reduce the runoff into the sea. The storage dams are expected to significantly increase ground water recharge. The total estimated recharge is expected to be 18% more than the current recharge, as calculated with the help of ARC-SWAT software.

Table 9.2: Recharge of Ground Water

Sub Basin	Pre-Project Scenario GW Recharge m^3	Expected Post-Project Scenario GW Recharge m^3
WADH	13.3E+06	15.7E+06
TIBBI JHAL	18.9E+06	22.3E+06
KUD	19.4E+06	22.9E+06
PING JHAL	4.37E+06	5.16E+06
ARANJI JHAL	4.93E+06	5.81E+06
KULRI NAI	5.05E+06	5.96E+06
TADAR KAUR	4.50E+06	5.31E+06
KANIKI NAI	4.65E+06	5.49E+06
GAJRI NAI	5.54E+06	6.54E+06
KHANKO NAI	4.70E+06	5.55E+06
KHARRARI NAI	9.72E+06	11.5E+06
LAKHRA	2.09E+06	2.47E+06
LASRA	1.87E+06	2.21E+06

Mitigation / Enhancement Measures:

This is a positive impact. No specific mitigation or enhancement measures are needed at this stage.

Water Quality:

Groundwater quality is also expected to improve as long as the impounded water is safeguarded from contamination. Quality of water is as important as that of its quantity. Water in the storage dams will primarily be rainfall runoff drained from different land use of the catchment. It should be noted that there is nominal agricultural activity in and around most proposed intervention sites, therefore the leachate is unlikely to contain any harmful chemicals. In fact, it may even dilute the naturally occurring unwanted elements in the groundwater through dilution. In a few similar regional projects4, studies have found that the regulated water flow (through check dams) had improved the groundwater quality.

Another possible contamination source is the human population. Currently, the areas around the sites of proposed interventions are very sparsely populated. However, with more assured water availability, the area will attract more people, putting burden on the surface water quality which may also lead to degradation of ground water. However, it is only a distant possibility.

[4] Mudrakartha (2003)

Mitigation / Enhancement Measures:

Since the likely impact on ground water quality is low, no major mitigation is required at this stage.

Release of domestic sewage into the surface water streams will need to be controlled in a gradual manner. Soak pits and septic tanks should be constructed in the existing human settlements around proposed intervention sites. Though this is not under the mandate of Irrigation department, it could be made a part of the project through the proposed Steering Committee.

The project IMC will include monitoring of population density around the proposed interventions and streams. The sufficiency of soak pits / septic tanks vis-à-vis population size in each settlement will be commented upon in each progress report.

Reforestation in the Vicinity of the Proposed Interventions:

During the initial surveys, it has been observed that there is very little vegetation and practically no trees in the surrounding area. After the completion of the project and the storage of some rainwater, the local community may launch efforts to plant trees and other greenery throughout the area. This reforestation can substantially improve the local environmental condition. The trees can also be also used for construction purposes and as fuel.

The Forest department also showed keen interest in plantation alongside water channels, once the water flow regime is regulated, so that the plants can have the required amount of water and also not blown away by the floods. The total channel length will be around 280 km. Based on the general standard of 33 trees per km, a total of 18,500 trees could be planted only along the water channels. This is equivalent to 17 hectares of block plantation. The overall development of rangeland will be in addition to that.

However, availability of water may lead to false perceptions of abundance, resulting in introduction of water intensive species. As stated elsewhere in this report, in some portions of project area where tube well is used for irrigation, water intensive crops like banana are grown. This is not a sustainable practice.

Mitigation / Enhancement Measures:

It needs to be ensured that the planted species are suitable for the local environmental conditions, in all respects. Therefore, it is vital to take the forest department onboard from the very outset.

Project IMC will monitor tree plantation activities by the community and will include a section on it in the periodic progress reports.

Area under cultivation:

The cultivated area currently is very low; amounting to less than 2% of the total Porali basin area. The reason for this low level of cultivation is poorly distributed rainfall and absence of perennial water streams (either natural or man-made). In the villages within direct vicinity of proposed interventions, the total area under cultivation is around 5,400 ha for Kharif crop that goes down to 2,400 ha during the Rabi crop. One of the key factors is that the area lacks a dependable irrigation system despite having the potential for one.

Hence it is safe to assume that the proposed project will increase the area under cultivation. It is difficult to estimate the extent of this increase, but due to the fact that the current land utilization for agriculture is very low, it could be deduced that the increase will be substantial.

Mitigation / Enhancement Measures:

The project area is very large with low population density. Therefore, competing land uses could be easily accommodated.

Area under Tube-well irrigation:

Availability of fix rate electricity has facilitated the switching over of irrigation to tube-well pumping. As per irrigation sources (Irrigation Department 2012), an area of 9,686 ha in Khuzdar and 13,825 ha in Lasbela is under tube well irrigation. It is estimated that at least 30% of this Tubewell irrigated area in Khuzdar and 60% in Lasbela District lies within the boundaries of PRB.

The situation of groundwater in southern parts of PRB is better, with the exception of the coastal areas, but rapid depletion of ground water has started where intensive tube well irrigation is practiced for cultivation of banana, vegetable and other high delta crops.

The use of irrigation water per unit area is generally high and is quite inefficient due to significant wastage. This has implications not only for ground water depletion but also for extra consumption of electricity or diesel for tube wells and increase in cost of production.

The proposed project will contribute to an increase in the area under surface water irrigation, which is vital for a dry region like the PRB. This will reduce the burden on groundwater sources and will help in eliminating unsustainable harvesting of this important natural resource.

Mitigation / Enhancement Measures:
No specific mitigation or enhancement measure is required at this stage.

Change in Cropping Pattern:
The major crops cultivated currently are wheat, cotton, bajra, jowar and maize. After the farms are irrigated by the water available through the proposed project, some new crops may be cultivated, such as vegetables including chili, tomato, ladyfinger, potato, onion, and round gourd. Besides this, the production and yield of crops already under cultivation will increase.

During the survey of project area conducted by consultant's team it was observed that most local farmers give priority to grow those crops that have low water dependence. However, farmers of some sub basins like Lakhra are growing high value crops including banana, castor oil, cotton and rice. These are grown on tube well being water intensive. It shows that the land is fertile and productive enough to grow these crops. On the other hand farmers also have good perspective to grow high value crops. After the project implementation water will be available to all the land in command area. Farmers will have option to grow high value market intensive crops as mentioned above. In addition to being source of water, the proposed flood protection works will also help to protect the cropped area/farmland from flood damages. This will further encourage farmers to grow high value crops.

Mitigation / Enhancement Measures:
One thing that will need to be monitored is that any change in the cropping pattern should be in line with the overall climatic conditions of the area.

Change in composition of animals:
The livestock observed in the area is mostly small ruminants, as these animals consume less amount of water. Large animals are less in numbers. Buffaloes – a key source of milk and animal protein – are entirely absent.

The current scarcity of flora and its low nutritional value is a factor that has kept livestock productive output of this area minimal. The development of rangeland as a result of this project will substantially improve this situation.

Similar projects in the region have shown that the numbers of animals has increased after project implementation. It was found that animal rearing becomes an alternative source of livelihood for the people.

Mitigation / Enhancement Measures:
Outside the purview of this project, the livestock department may take this opportunity to develop the livestock potential of the area.

Increase in income:
Other similar projects in the region have found that the average household income increases substantially with the construction of dams and other irrigation improvement measures. This is mainly on account of improved crop yields, increase in the number of animals, and availability of other occupational opportunities.

A research project was undertaken by Redlich (2010) in Nagda, Ujjain District, Madhya Pradesh, India to assess the socio economic impacts of check dam upon the lives of farmers around the structure. The farmers narrated that they could get additional earnings due to assured water supplies and they could reinvest the income back into the farming. The additional disposal income also led to improved educational opportunities, health care treatment etc.

Mitigation / Enhancement Measures
The periodic project monitoring could keep the level of disposal income of the beneficiary population as a parameter for monitoring. If this potential improvement trend could be tracked, other community development measures e.g. schools etc. could be introduced into the area at the right time.

Social Uplift of Women:
The proposed project is expected to have both direct and indirect impacts on the current social status of women. In terms of direct benefit, the women will not need to fetch water from long distances any more. But indirect impacts will be more far reaching, resulting from a general improvement in living conditions.

Mitigation / Enhancement Measures:
No specific mitigation or enhancement measure is required at this stage.

In-migration of Outsiders:
The inhabitants of the project area may be generally described as a rather secluded and conservative social group. In case, people from outside the area are engaged in the construction or operation of the project activities, this might result in cultural conflict with the local communities.

More reliable water availability will also attract people from other nearby areas to the project area. Since the population in the vicinity of direct project interventions is low, any small scale influx of outsiders may have a significant impact.

Mitigation / Enhancement Measures:
It is imperative to engage local work force as much as possible.

The proponent will also develop and implement a strong community communication and participation plan, through its community engagement cell.

Poor Governance:
The pros and cons of impact of a check dam on livelihood were identified by Ashraf et al. (2007) in Pakistan. Illegal taping of water, non-functional water use associations, leakage, improper maintenance of structure, broken outlets, and poorly maintained field channels resulted in unequal utilization of water in the check dam. Need for an integrated programme was emphasized for effective utilization of available water to get maximum benefit to the people.

Mitigation / Enhancement Measures:
The proposed project is an integrated irrigation program. The proponent will also facilitate it to become an integrated community development program through formal structure of SC and through the community engagement cell. Timely and correct sharing of information will enable other line departments to implement their own development schemes in the area.

Poor Maintenance:
Efficiency of the system will be at its best by adopting proper maintenance activities such as silt removal and bed scratching at periodical intervals.

The proposed project aims to bring in few new interventions while refurbishing few old and existing ones. A cursory examination of existing non-functional structures clearly indicates that such structures were rendered useless either by design deficiencies or because of poor maintenance, as given below:

Bambri Dam - damaged during 2010 Flood, the capacity of the spillway did not cater the discharge and the water overtopped the dam wall. The breaching of the dam results in the enormous destruction at downstream. The divide wall and RCD Highway was damaged.

Kharrari Dam - it was planned to construct the dam wall of crest length 2500 ft, of which 1500 ft was constructed but the construction was stopped in the year 1994 because of the lack of funds. The portion of the spillway is also constructed. The project was funded by the

federal government. The proposed location of the dam by TCI is 800 meter upstream of the existing location that was proposed by Irrigation department.

Uthal Khantra - There is existing weir along with the irrigation channel (Zamindara) at the downstream of the proposed location. Gated sluice channel also exists whose winching system is out of order. The system was designed as a flood irrigation scheme in the year 1964.

Titian - The right side of the Titian weir and the marginal bund was washed away in the 2010. Before the destruction, the weir was served as flood irrigation scheme as well as water supply scheme for Lyari and Siranda Lake. The weir had canals at its both sides.

Phat Gidri - At the downstream of the proposed location, the weir divides the river into 3 canals. From left to right 1st is Phat with bed width of 16 ft and design discharge of 4000 cusecs. 2nd is Gidri which has bed width of 36 ft and design discharge of 6000 cusecs and the 3rd one is Lakhra with a bed width of 87 ft with the design discharge 14000 cusecs. It has a sharp turn at the downstream of the weir with a baffle wall. Presently, because of sharp curves and bend in Lakhra, there is a lot of erosion and silting in the river. Hydraulically, the system is totally a failure.

Nurg Hingri Diversion Weir - There is an existing structure of trifurcation in the main Porali river which has a width of 472 m. it divides the river into 3 channels. Hingri, has a bed width of 46 m. The second channel name is Nurg, it has a bed width of 66 m. The third one is the Porali, which has bed width is 360 m. The existing stone masonry weir has been damaged at many locations.

Mitigation / Enhancement Measures:

The BSSIP will develop and implement a proactive maintenance plan for the proposed project, with predefined periodicity.

The IMC team will be liable to visit each proposed intervention in every monitoring mission, and report on its maintenance status.

Restriction on open-access grazing:

The proposed project is expected to increase the area under cultivation. Also, it will convert some seasonal water ways into quasi-perennial ones. Further, it will inundate some patches of land at three places for construction of storage dams. All these activities will cause some restriction on the current grazing practices that are entirely on open access basis.

However, the impact will be very low, because the area to be directly used for project physical infrastructure is negligible compared to the overall expanse of the PRB. With most water ways remaining along the existing natural drainage pattern, it is also not likely to cause disturbance to traditional routes either.

Mitigation / Enhancement Measures:
The current species of flora being used as feed by the livestock are of relatively inferior value. Implementation of proposed project will improve the diversity of flora in the region. On a more formal note, the project will provide an opportunity to the forest department to develop the area as a rangeland. This will help local livestock rearing industry and will more than make up for any lost grazing accesses.

Enhanced / induced use of fertilizers & pesticides:
The proposed project is expected to increase the area under cultivation. Currently there is almost 222,000 ha under cultivation in the PRB. The per ha use of fertilizers is the following:

Table 9.3: Per ha Use of Fertilizers

DAP	0.02 bag
Urea	0.04 bag
Potassium	Nil

In terms of pesticide / insecticide sprays, the survey showed there is no practice of such sprays in 05 sub-basins, while farmers in the other sub-basins go for 5 – 37 sprays. With additional area under cultivation, and with better water availability for existing area, cropping intensity will increase, resulting in an automatic increase of fertilizer and pesticides use.

However, the impact will be low, because the current use of fertilizer is very minimal.

Mitigation / Enhancement Measures:
Concerted efforts by the department of agriculture to disseminate information regarding sustainable use of fertilizers and insecticides will help in keeping the use at an optimal level.

Dam Safety Concerns:
The proposed project includes three water storage dams also at Bhambri, Kharrari and Kud. Only the Kud dam is a structure of significant size. The other two are smaller storage dams. In case of Kud dam, an important consideration is that the gradient is relatively high in the area. Hence flood induced erosion rates and downstream damages are severe. While the dam will contribute into controlling the erosion and other damages, its own structure will be

subject to high pressure during floods. In case of dam breakage, the downstream losses will be very substantial.

Mitigation / Enhancement Measures:
The proponent will get the design whetted by a third party engineering consultant for independent verification vis-à-vis built-in safety features.

Though the size of the dams does not warrant application of ICOLD recommendations, the same will be followed as design guidelines. Any deviation from ICOLD will be clearly spelt out in the design documents, along with technical reasons thereof.

The design of the main dam body, spillway, off take structure, conveyance channel, river training and auxiliary structures including washing pads, siphons etc. will be based on best international practices.

9.4.2 Cumulative Impacts

The other impacts that are expected from the project in general are the following:

- Increase in institutional capacity for coordinated basin management
- Improved land resources management
- Protection of natural resources, human settlements and transport infrastructure such as bridges, and roads from excessive flooding
- More consistent water flows in the Porali River and its tributaries.
- Improved livelihoods through enhanced food security, nutrition and availability of disposable income
- Reduced reliance on forest resources for charcoal production and income generation
- Increased job opportunities and small businesses
- Improved sanitation and hygiene

Mitigation / Enhancement Measures:
In order to make the proposed project entirely acceptable at the social and environmental levels, the proponents will need to set up an institutional arrangement to steer and monitor the project throughout the project life. This suggestion stems from concerns and comments by various stakeholders on the same lines, specially the EPA (Balochistan) and the community at large.

It is recommended that the project proponent formulate a steering / coordination committee consisting of representatives from all relevant line departments and other stakeholders. This committee should be chaired by the Secretary (Provincial Irrigation Department); however,

the members from other line departments should be from lower cadres to ensure regular meetings.

The steering committee will not only enable smooth progress of the project, it will also help in optimizing development efforts by various departments through integration. Furthermore, it will also monitor the progress of the project under development sustainability criteria.

The technical monitoring system will set up a framework to provide a systematic tracking of key environmental/natural resources and social parameters in a spatial context across all interventions, using modern remote sensing/earth observation knowledge products and GIS tools. This would help in keeping track of the progress, exploring synergies/trade-offs in a larger systems context, and outlining future needs in a more systematic manner.

For the evaluation of SMMPs compliance evaluation criteria established by Development Assistance Committee (DAC) of Organization for Economic Co-operation and Development (OECD) could be used.

9.4.3 DAC Evaluation Criteria

I. Relevance:

- Was the particular mitigation measure needed in the context of the target areas?
- Are the SMMP's activities and outputs consistent with the key goals and attainment of objectives for the proposed project?
- Are the SMMP's activities and outputs consistent with its intended impacts and effects?

II. Efficiency:

- How efficiently were resources used to produce intended outputs?
- How could resources have been used more efficiently?

III. Effectiveness:

- To what extent did the project achieve its intended results?
- What factors contributed to the achievement of intended results or the lack thereof?

IV. Impact:

- What occurred as a direct result of the individual mitigation measure and the overall SMMP?
- What real difference was made to intended beneficiaries?
- How many people were affected?
- What is the health benefits derived from the project?
- Impact of Carbon credits in project sustainability?
- What are the economic benefits?
- What are the potential benefits for large scale initiatives?

V. Sustainability:

- To what degree did the program/project's benefits are likely to persist following the end of project?
- What are the major environmental and financial sustainability factors?
- Which major factors are responsible for the achievements or failures of the program/project's overall sustainability?
- What is the potential for replication?
- What are the impacts on institutional linkages?

CHAPTER - 10
SOCIAL MONITORING & MITIGATION PLAN

Project Phase	Impact	Mitigation	Responsibility		Monitoring frequency
			Supervision	Execution	
Design	slow or no progress due to lack of coordination	Call meeting of all major stakeholder departments and present the project in front of them. The meeting should discuss and finalize the role and contribution of various departments in the project.	Secretary Irrigation	BSSIP	Quarterly
	Disturbance to local public life due to surveys.	Limited survey teams with efficent planning	BSSIP	Feasibility team	Once
		Strict adherence to local norms and culture by the survey teams	BSSIP	Feasibility team	Once
	Short term employment opportunities to some local folks during surveys.	Provide such opportunities as much as possible	BSSIP	Feasibility team	Once
Construction	Lack of resources due to miscommunication / misunderstanding of roles and responsibilities	The mitigation measures (in the form of a plan) to be taken should be appended to tender documents	Funding Agency	BSSIP	Once
	Social or Ecological Disturbance due to Non-compliance of EMMP	Formulate project steering committee	Secretary Irrigation	BSSIP	Once
		Hire independent monitoring consultants	Funding Agency	BSSIP	Once
	Social Disturbance due to poor	Formulate Community Engagement Cell for the	SC	BSSIP	Monthly

Project Phase	Impact	Mitigation	Responsibility		Monitoring frequency
			Supervision	Execution	
	Expectation Management	project, mandated for continued public consultation, information dissemination and grievance redressal mechanism			
	Social issues due to influx of labor	Develop and implement a strong community communication and participation plan.	Funding Agency	BSSIP	quarterly
	Social considerations of tail-end population	Storage and supply of potable water to the communities of Dam and Bheera	Planning Deptt	Water Supply Agency	quarterly
	Income generation / job opportunties to local population	Engage at least 50% of required (unskilled) labor force from within or around the project area	BSSIP	Contractor	Monthly
	Disturbance to sites of religious importance	Location of all intervention sites at a safe distance from any sites of religious importance	BSSIP	Design Engineers	Once
	Health & Safety Issues during construction	Usage of heavy machinery will be planned carefully and only through skilled persons	BSSIP	Contractor	Monthly
		Provisions of proper signboards. PPEs for the workers.	BSSIP	Contractor	Monthly
		Adequate water supply and sanitation facilities in the labor camps	BSSIP	Contractor	Monthly
		Caution signboards for the road users and surrounding people	BSSIP	Contractor	Monthly
Operations	more consistent and regular water availability	Integration of development projects by other line departments	Planning Deptt	SC	quarterly
	Improved recharge of ground water		BSSIP	IMC	quarterly
	Groundwater quality degradation	Soak pits and septic tanks in human settlements	Planning	Sanitation	quarterly

Project Phase	Impact	Mitigation	Responsibility		Monitoring frequency
			Supervision	Execution	
	through surface seepages	around project sites	Deptt	Agency	
		Monitor population density to confirm adequacy of soak pits and septic tanks	SC	IMC	quarterly
	Reforestation in the vicinity of the proposed interventions	Ensure that the planted species are suitable for the local environmental conditions, in all respects.	Forest Department	Forest department	quarterly
		Project IMC will monitor tree plantation activities by the community and will include a section on it in the periodic progress reports.	SC	IMC	quarterly
	Increase in area under cultivation	Additional area under cultivation should be used for crops suitable to the overall climatic conditions of the area	Agriculture Deptt		half-yearly
	Reduced burden on ground water / reduced area under tubewell irrigation				
	Change in Cropping Pattern	Any change in the cropping pattern should be in line with the overall climatic conditions of the area	Agriculture Deptt		half-yearly
	Change in composition of livestock	Develop livestock potential of the area		livestock department	half-yearly

Project Phase	Impact	Mitigation	Responsibility		Monitoring frequency
			Supervision	Execution	
	Increase in income and improved quality of life	The periodic project monitoring should record the level of disposal income of the beneficiary population, in order for other community development measures e.g. schools etc. could be introduced into the area at the right time.	Planning Deptt	IMC	half-yearly
	Social uplift of women				
	Land acquisition	Only government land to be used; no private or community land to be used	Revenue Deptt	BSSIP	quarterly
		in extreme case where private land acquisition is unavoidable, it will be done under guidelines given in ESMF	Revenue Deptt	BSSIP	quarterly
	In-migration of outsiders	develop and implement a strong community communication and participation plan	SC	BSSIP	quarterly
	Poor governance resulting in unequal utilization of water	Facilitate it to become an integrated community development program through formal structure of SC and through the community engagement cell.	Planning Deptt	BSSIP	quarterly
	Low system efficiency due to poor maintenance	Develop and implement a proactive maintenance plan for the proposed project, with predefined periodicity.	Secretary Irrigation	BSSIP	Monthly
		Visit each proposed intervention in every	SC	IMC	quarterly

Project Phase	Impact	Mitigation	Responsibility		Monitoring frequency
			Supervision	Execution	
		monitoring mission, and report on its maintenance status.			
	Restriction on open-access grazing	Develop rangelands		forest department	half-yearly
	Enhanced / induced use of fertilizers & pesticides	Disseminate information regarding sustainable use of fertilizers and insecticides to keep the use at an optimal level		Agriculture deptt	half-yearly
	Dam Safety Concerns	Whet the design by a third party engineering consultant for independent verification vis-à-vis built-in safety features.	Funding Agency	BSSIP	Once
		Follow ICOLD recommendations as design guidelines. Any deviation from ICOLD will be clearly spelt out in the design documents, along with technical reasons thereof.	BSSIP	Design Engineers	Once
		The design of the main dam body, spillway, offtake structure, conveyance channel, river training and auxiliary structures including washing pads, siphons etc. will be based on best international practices	BSSIP	Design Engineers	Once

ANNEXURES

ANNEXURE-I

(Attendance List of Participants)

Consultative meeting to discuss Proli River Rasin project at Winder, Balochistan; March 20th , 2014

نمبر	نام	پتہ	دستخط	نمبر موبائل
1	عبدالحفیظ (زراعت)	ونڈر کالونی		0333 3547683
2	وزیر محمد خان زراعت	سائنہ گوٹھ	محمد خان	0344 9912699
3	یار محمد زراعت	سفر گوٹھ		
4	علی بخش زراعت	حاجی حسن گوٹھ	علی بخش	0332-2278521
5	نور محمد ولد محمد صدیق	حاجی حسن گوٹھ	نور محمد	0332 2353440
6	A Majeed	سفر گوٹھ		0315-2801241
7	خیر محمد ولد صالح محمد	مونبار		0331 2060035
8	A. Sattar Angaria	Hossan goth		0345 6278767
9	محمد ایوب ولد محمد ابراہیم	حاجی گل گوٹھ		0312 3850381
10	محمد الیاس ولد پنو اللہ رکھیا	پنو گوٹھ		0332 3181717
11	عبدالکریم ولد محمد صدیق	سائنہ گوٹھ	A. Karim	0334-3824326
12	محمد حسن ولد سلیمان	سفر گوٹھ	محمد حسن	
13	وزیر محمد سلیمان انگاریہ	محمد خان گوٹھ بانڈی	حسین	0300 9299388
14	لقمان ولد علی	لقمان گوٹھ		0318 8828580
15	حاجی محمد حسن ولد محمد رمضان	ابراہیم جاموٹ		0334 3832791
16	عظیم خان ولد محمد رحیم	اسحاق گوٹھ		0344 2156051
17	منظور الحق ولد آدم خان	محمد سومیانی	manzoor	0312 8916133
18	طیب احمد ولد آدم خان	محمد سومیانی	zaheer	0312 8010626
19	محمد حسن ولد موسیٰ	سفر گوٹھ	محمد حسن	0333 2587749
20	شہباز گل ولد گل محمد	بھٹو	شہباز علی	0311 8021031
21	تیمور حمزہ ولد میر حمزہ	بھٹو	تیمور حمزہ	0315 2412378
22				
23				

Consultative meeting to discuss Proli River Rasin project at Winder, Balochistan; March 20th , 2014

نمبر موبائیل	دستخط	پتہ	نام	
03128843901	Abbas	ڈام	حاجی محمد عباس	24
03130842020	A-Latheeb	ڈام	عبداللطیف	25
03131062600	Ejaz Ali	سونمیانی	اعجاز علی	26
03138638153	Hassan	سونمیانی	محمد حسن	27
03362178188	Abdul Hamid	عارب گوٹھ	عبدالحمید	28
03323516370	محمد سلیم	عارب گوٹھ	محمد سلیم	29
03432325869		سائیں گوٹھ	محمد حسن ولد محمد اسحاق	30
03143926097		حاجی حسن گوٹھ ڈان	محمد حسن ولد رشید بخش اشتاسی	31
03125752770		وندیسا	محمد حسن ولد خان لالہ وندر	32
03453431942		وندر	محمد یوسف ولد حاجی گل وندر	33
03332707300	M. Ayub	حسن گوٹھ	محمد ایوب ولد محمد یوسف	34
03138608758		سونمیانی	احسان بخش ولد عبدالرحمن	35
03152681135	عبدالحلیم	حسن گوٹھ	عبدالحلیم ولد محمد رمضان	36
—		Hassan Goth	Allah Dma Allah Bux	37
0333-3628613		اسحاق گوٹھ	محمد اسلم سومرو	38
03434828510			حاجی نادر خان وندر	39
03332945634		دودا باد گوٹھ	عبدالغفور دودا وندر	40
03332902821		حاجی چاکر	عمر بلوچ اکمل وندر	41
03323266891	Mir. Bux	حسن بوتل	فیض انگاریہ وندر حسن گوٹھ	42
03432561236		حسن آباد	نذیر جان انگاریہ وندر حسن آباد	43
03368526189	M. Tahir	حسن آباد	محمد طاہر بلوچ وندر حسن آباد	44

نمبر	نام	پتہ	دستخط	فون نمبر
45	محمد عمران	وندر کالونی فیڈر بسیلہ بوجیاں		0333-2587650
46	بشیر احمد	بوجی گوٹھ لکھڑا		03458746271
47	محمد الیاس	حسن آباد		0333302875
48	عبدالکریم	سانتر گوٹھ		0345 7349714
49	مہر اللہ	حاجی حسن گوٹھ		0342 2429270
50	نواز علی	سومنیان		0315 8939601
51	احمد خان	حاجی حسن گوٹھ وندر		03022870317
52	غلام محمد	حاجی حسن گوٹھ وندر		0312-8513455

ANNEXURE-II

(Survey Questionnaire)

PORALI RIVER BASIN INTEGRATED DEVELOPMENT PLAN

QUESTIONNAIRE FOR BASELINE ENVIRONMENTAL AND SOCIAL SURVEY JUNE 2013

IMPORTANT NOTE:

Interview must be conducted with group of villagers. It is not necessary that the same group should answer all questions, survey may take more than several sitting and each time participants in the group may differ. At any time respondents should not be less than five persons.

Survey Date:----------

District	
Tehsil	
UC	
Village	
Scheme	
Sub-Basin Name	