



SOCIO-ECONOMIC ASSESSMENT

Balochistan Carbon Offset Project

JUNE 27, 2025

EXECUTIVE SUMMARY

Balochistan, spanning over 347,000 square kilometers, is Pakistan's largest and most ecologically diverse province.¹ It features a mosaic of landscapes ranging from arid deserts and semi-arid rangelands to critical wetland and coastal ecosystems. Among its valuable ecological assets are its mangrove forests distributed across the coasts of Lasbela and Gwadar districts.² While they are increasingly significant ecologically, and for their provisions to local communities, mangrove ecosystems face significant threats from both human and natural issues such as climate change, unsustainable resource use, and inadequate institutional management. At the same time, Balochistan's socio-economic landscape remains fragile, pressurizing ecosystems due to of coastal communities on marine resources for their livelihoods. To address these challenges, the Balochistan Public Private Partnership Authority (BPPA) initiated the Balochistan Carbon Offset Project, focused on Afforestation, Reforestation, and Revegetation (ARR) of mangroves. As part of this comprehensive assessment, this report encapsulates a Socio-economic and Community landscape assessment, and is attached with a Supplementary Document that includes a High Conservation Value (HCV) and Biodiversity Assessment (See Supplement Report). The primary aim of this community assessment is to guide the Government of Balochistan in tailoring the proposed carbon market project for the mangroves of Balochistan, to the local socio-economic context and need, ensuring a collaborative and inclusive way forward.

This document contains the socio-economic assessment which provides a foundational analysis of six key coastal sites—Sonmiani Hor, Kalamat Khor, Jiwani, Shabi & Ankara Creeks, Shahidi Khor, and Sawar Khor—exploring the socio-economic context including local livelihoods, environmental risks, gender roles, and infrastructure gaps, and more. The assessment finds that a majority of community members living around the sites depend on fishing as a primary source of employment. Infrastructure such as presence of educational or health facilities is inadequate while provision of services such as water or electricity is also dire. Education levels are critically low, especially amongst females and gender inequality persists, while women do retain participation in the economic sphere through participation in activities such as livestock rearing, fuelwood collection, and making traditional crafts.

Environmental degradation, fueled by human and natural factors, was noted across sites. Mangrove ecosystems face degradation due to unsustainable and rampant fishing practice, illegal trawling, impacts of the climate crisis such as coastal erosion, floods and droughts. Additionally, assessments reveal a strong willingness of locals to participate in the project and gain the associated benefits. The report builds upon this assessment to identify the key challenges faced by local communities and identify mitigation options that may be integrated into the development of the proposed carbon market project, as part of the benefit-sharing mechanism. To further expand the understanding of community considerations, the report

¹ IUCN, Balochistan Conservation Strategy, <https://portals.iucn.org/library/sites/library/files/documents/WCS-PK-034.pdf>

² IUCN, Balochistan Conservation Strategy, <https://portals.iucn.org/library/sites/library/files/documents/WCS-PK-034.pdf>

also provides an insight into the Delta Blue Carbon (DBC) project, assessing how they have mainstreamed and implemented community upliftment and integration strategies.

The report further draws upon with-and without- project impacts to identify the need of the potential intervention and assesses potential risks that may threaten communities. It also identifies mitigation measures. To further align the development of this intervention with global best practices and the guidelines set out by carbon market standard-setting bodies such as Verra and Gold Standard, the report explores and outlines a Free, Prior and Informed Consent (FPIC) procedure the proponents must ensure to demonstrate community consent, inclusion, and engagement. Finally, the assessment outlines key recommendations to pave the way forward.

In conclusion, the assessment establishes a strong case for community-driven, environmentally sound, and socially inclusive carbon offset interventions. It underscores the importance of local participation, gender inclusion, and institutional support in building long-term climate resilience and livelihood security. With targeted investments and multi-stakeholder collaboration, the project has the potential to position Balochistan as a model for carbon offset development rooted in equity, sustainability, and ecological integrity.

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KEY TERMS

Term	Definition
ARR (Afforestation, Reforestation, and Revegetation)	Activities to restore degraded land by planting trees or regenerating vegetation, often for carbon sequestration.
BPPA (Balochistan Public Private Partnership Authority)	Government body facilitating PPP projects in Balochistan, including the mangrove carbon offset initiative.
CCB Standards (Climate, Community & Biodiversity Standards)	A certification framework ensuring projects deliver measurable benefits for climate, ecosystems, and local communities.
DBC (Delta Blue Carbon)	A landmark mangrove restoration and carbon credit project in Sindh, Pakistan, serving as a model for community-inclusive climate action.
FPIC (Free, Prior, and Informed Consent)	A rights-based process ensuring Indigenous Peoples and local communities' consent to projects affecting their lands/livelihoods.
HCV (High Conservation Value)	Ecological or social attributes critically important for biodiversity, ecosystem services, or cultural identity.
ICVCM (Integrity Council for Voluntary Carbon Markets)	Global governance body setting quality benchmarks for carbon credits (e.g., Core Carbon Principles).
MRV (Monitoring, Reporting, and Verification)	Systems to track and validate carbon sequestration, project impacts, and benefit-sharing outcomes.
NbS (Nature-based Solutions)	Climate mitigation/adaptation strategies harnessing ecosystems (e.g., mangrove restoration).
VCS (Verified Carbon Standard)	A leading carbon credit certification program by Verra, used by the Delta Blue Carbon project.

ACRONYMS

ARR	Afforestation, Reforestation, and Revegetation
BPPA	Balochistan Public Private Partnership Authority
CCB	Climate, Community, and Biodiversity (Standards)
CCBS	Climate, Community & Biodiversity Standards
CCP	Core Carbon Principles
CLLGP	Community-Led Local Governance Policy
DBC	Delta Blue Carbon
ERP	Emergency Response Plan
FPIC	Free, Prior, and Informed Consent
GRM	Grievance Redressal Mechanism
HCV	High Conservation Value
ICVCM	Integrity Council for Voluntary Carbon Markets
IPs	Indigenous Peoples
KIIs	Key Informant Interviews
M&E	Monitoring and Evaluation
MRV	Monitoring, Reporting, and Verification
NbS	Nature-based Solutions
PES	Payment for Ecosystem Services
PKR	Pakistani Rupee
SDG	Sustainable Development Goals
SOP	Standard Operating Procedure
tCO ₂ e	Tonnes of Carbon Dioxide Equivalent
USD	United States Dollar
VCS	Verified Carbon Standard
WWF	World Wildlife Fund

I. INTRODUCTION

Balochistan, spanning over 347,000 square kilometers, is Pakistan's largest and most ecologically diverse province.³ It features a mosaic of landscapes ranging from arid deserts and semi-arid rangelands to critical wetland and coastal ecosystems. Among its valuable ecological assets are its mangrove forests distributed across the coasts of Lasbela and Gwadar districts.⁴ While they are increasingly significant ecologically, and for their provisions to local communities, mangrove ecosystems face significant threats from both human and natural issues such as climate change, unsustainable resource use, and inadequate institutional management. At the same time, Balochistan's socio-economic landscape remains fragile which prompts coastal communities to increasingly rely on the mangrove ecosystems to ensure their livelihoods.

Mangroves ecosystems—dominated by species such as *Avicennia marina*, *Rhizophora mucronata*, and *Ceriops tagal*—serve as essential carbon sinks⁵ noted to sequester four times more carbon than rainforests⁶, offer habitat for marine biodiversity, and protect coastlines from erosion, while holding significant benefits for local communities. Cognizant of the importance of mangroves and environmental resilience, the proposed Balochistan Carbon Offset Project aims to reforest and regenerate critical mangrove ecosystems across the coastal districts of Gwadar and Lasbela, across 06 sites: Sonmiani Khor, Jiwani Khor, Kalamat Khot, Shabi and Ankara Creeks, Sahidi Khor and Sawar Khor. Afforestation, Reforestation, and Revegetation (ARR) efforts—such as those focused on mangrove and rangeland restoration—present a viable opportunity not only for enhancing carbon sequestration and mitigating climate impacts, but also for delivering tangible socio-economic co-benefits. ARR and Nature-based Solutions (NbS) have demonstrated significant growth and potential across carbon markets, accounting for nearly two-thirds of all carbon credits issued in 2023.⁷

This document, attached with the supplementary report (HCV and Biodiversity Report for biodiversity and environmental assessment) encapsulates a comprehensive assessment that aims to provide an understanding of the local communities living across the identified 06 sites in Balochistan, assessing their socio-economic status, livelihoods, how they can participate in the ARR project and how it may can benefit them. The primary aim of this report is to guide the Government of Balochistan in tailoring the proposed carbon market project for the mangroves of Balochistan, to the local socio-economic context and need, ensuring a collaborative and inclusive way forward. This report has been developed through extensive community consultations, site visits and assessments, supported by secondary desk review and stakeholder engagement, in alignment with the Balochistan Public-Private Partnership Authority (BPPA) and Balochistan Forest Department.

³ IUCN, Balochistan Conservation Strategy, <https://portals.iucn.org/library/sites/library/files/documents/WCS-PK-034.pdf>

⁴ IUCN, Balochistan Conservation Strategy, <https://portals.iucn.org/library/sites/library/files/documents/WCS-PK-034.pdf>

⁵ IUCN, Balochistan Conservation Strategy, <https://portals.iucn.org/library/sites/library/files/documents/WCS-PK-034.pdf>

⁶ Sanderman, J. (2018). A global map of mangrove forest soil carbon at 30 m spatial resolution. Environmental Research Letters, 8. Retrieved from <https://doi.org/10.1088/1748-9326/ab61c>

⁷ Climate Focus, 2023 H1 Overview, A Period of Market Consolidation, <https://climatefocus.com/wp-content/uploads/2023/08/VCM-Dashboard-2023-H1-FINAL.pdf>

1.1 OBJECTIVES

This document aims to attain the following objectives:

- **Establish a standardized framework** for community engagement and inclusion across all project sites, ensuring consistency in alignment with the local and national regulations such as Government of Balochistan's Community-Led Local Governance Policy, and international best practices and guidelines as per the standard-setting bodies (e.g Verra and Gold Standard)
- **Assess and examine the local socio-economic landscape** across the project sites, understanding the relationship between mangrove forests and local livelihoods, identifying how communities make a living, whether they have access to basic services, and more
- **Identify and understand community challenges, priorities, and aspirations**, including gender-specific perspectives, to ensure inclusive, equitable participation in project planning, implementation, and benefit-sharing.
- **Assessing the need for the proposed project** to inculcate socio-economic upliftment by reviewing with- and without-project scenario, and assessing community willingness to participate
- **Propose a benefit-sharing mechanism** to identify how the project may benefit local communities and align with their needs and requirements as identified by the socio-economic assessment.
- **Review the Delta Blue Carbon (DBC) project to provide a holistic and informed understanding** of how carbon market project development in Pakistan has been implemented in Pakistan with a specific focus on community engagement.
- **Identify potential risks** to communities due to the proposed project, and assessing risk mitigation strategies
- **Outline and assess Free, Prior and Informed Consent (FPIC)** to align the project with global requirements for carbon market projects that ensure community inclusion and high-quality credit generation
- **Align with global best practices and guidelines** on ensuring environmental and community inclusion and benefits, as per the global standard-setting bodies, Verra and Gold Standard. This includes alignment with key bodies who ensure maintenance of high-integrity carbon market projects such as the Core Carbon principles (CCP) by international Council on Voluntary Carbon markets (ICVCM), Climate , Community and Biodiversity Standards (CCBS) by verra, and Gold Standard for Sustainable Development Goals by Gold Standard. This approach is further reinforced by the Government of Balochistan's commitment to community-led development, as outlined in its Community-Led Local Governance Policy⁸, which aims to institutionalize community participation in local governance and development processes

⁸ Government of Balochistan. (2023). COMMUNITY LED LOCAL GOVERNANCE POLICY - INSTITUTIONALIZING COMMUNITY ENGAGEMENT IN LOCAL GOVERNANCE. <https://brac.org.pk/wp-content/uploads/2023/06/Government-of-Balochistan-Community-Led-Local-Governance-Policy.pdf>

2. PROJECT OVERVIEW

The Balochistan Carbon Offset Project focuses on 06 mangrove sites across the coasts of Gwadar and Lasbela districts. The study focuses on coastal regions of Balochistan, specifically within the districts of Lasbela and Gwadar, covering a total area of approximately 141,958 hectares.

Table I - District Area

Forest Area	District	Area (Ha)
Sonmiani Khor	Lasbela	82,503
Kalimat Khor	Gwadar	55,869
Sahidi Khor	Gwadar	617
Sawar Khor	Gwadar	200.5
Shabi & Ankara Creeks	Gwadar	707
Jiwani	Gwadar	8,062
Total		147,958.5

These rich coastal ecosystems are being evaluated for potential and suitability for large-scale ARR interventions under the carbon markets.

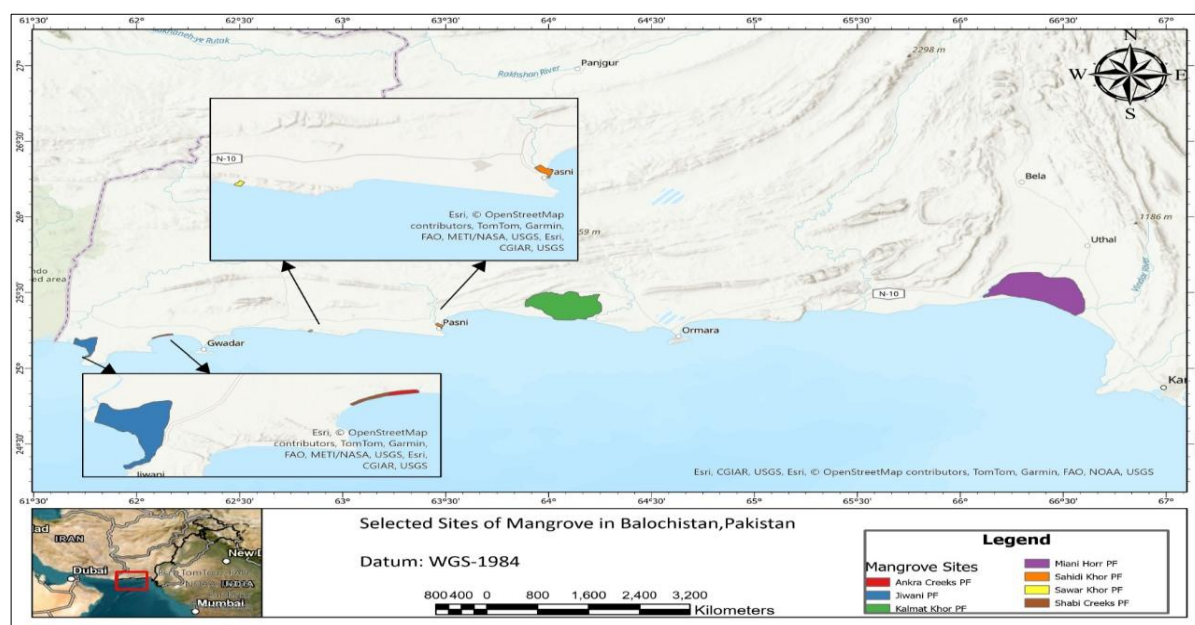


Figure I - Map of Selected Sites (06)

3. METHODOLOGY

This report encompasses a comprehensive socio-economic mapping of the local communities and landscape across the sites, followed by a project impact assessment. The environmental assessment is attached in the supplementary document (See HCV Assessment Report).

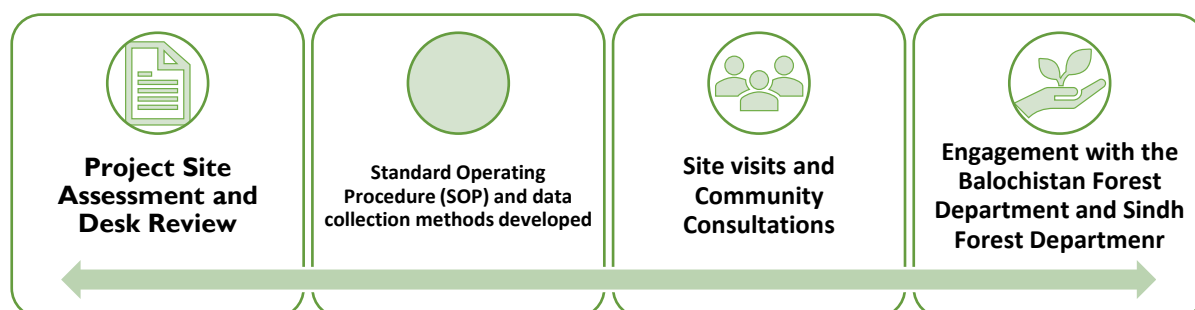


Figure 2 Methodology

The methodology utilized to develop this report and the supplementary document (See HCV Assessment Report) comprises of a multi-tiered approach, combining desk research, site visits and surveys, and stakeholder engagement. The process began with an extensive desk review of published information, especially those published by the government and Balochistan Forest Department to understand the socio-economic and environmental context of Gwadar and Lasbela districts. This included an analysis of existing livelihoods, land use, biodiversity, and climate vulnerability, as well as a review of relevant policies such as the Government of Balochistan's Community-Led Local Governance Policy (CLLGP). Case studies of successful community-based projects were also examined to draw practical insights.

This was followed by the development of a robust standard Operating Procedure (SOP), drawing upon global best practices and guiding the site visits and surveys (Annex A). The surveys (See Annex B) were also tailored to the local socio-economic context of Balochistan aiming to gauge the landscape and willingness of locals to engage with the proposed project. The process was further informed through stakeholder engagement with BPPA, Balochistan Forest Department, and Sindh Forest Department to gain insights on the Delta Blue Carbon project, ensuring a collaborative and locally-informed approach.

The process acknowledges that the global carbon market landscape is governed by key guidelines and frameworks that ensure social engagement and inclusion and has remained cognizant of drawing key conclusions that will assist project proponents in designing the project in compliance with these requirements. Hence, the team has also outlined the Free, Prior and Informed Consent (FPIC) procedure which is a critical tool to gain and secure community consent and engagement, and a key requirement for projects developed under Verra and Gold Standard.

4. SOCIO-ECONOMIC BASELINE AND SITE PROFILES

The six coastal and near-coastal mangrove sites under study—Sonmiani Hor, Kalamat Khor, Jiwani, Shabi and Ankara Creeks, Shahidi Khor, and Sawar Khor—are located within Lasbela and Gwadar districts of Balochistan.

- **Lasbela District** spans 15,153 km² with a population of approximately 680,977 as per Pakistan Population Census 2023. Its economy is primarily based on agriculture, forestry, fishing, and related services. The district includes significant forested areas, including mangroves in Sonmiani Khor.
- **Gwadar District** covers 12,637 km² and has a population of 305,160 as per Pakistan population Census 2023. The economy revolves around fishing, agriculture, and livestock, with key mangrove sites including Kalamat Khor (9.33 km²), Jiwani (2.33 km²), and several smaller patches in Shabi, Ankara, Shahidi, and Sawar Khor.⁹

The following subsection offers an in-depth analysis of the six (06) study sites through desk reviews and field observations —Sonmiani Hor, Kalamat Khor, Jiwani, Shabi and Ankara Creeks, Shahidi Khor, and Sawar Khor. Each profile includes information on ethnic composition, livelihood patterns, environmental characteristics, and multiple other aspects. The analysis identifies key challenges and opportunities to support sustainable development and conservation strategies across the region. The site profiles and community economic baselines highlight site-specific conditions and inform targeted interventions to enhance resilience and resource management in Balochistan’s coastal zones.

4.1 SONMIANI HOR

Sonmiani is situated in Lasbela district of Balochistan. The district is situated on the southern coast of Balochistan. It is bounded on the north by Khuzdar district, on the east by Dadu, Malir and Karachi districts of Sindh province, on the south by the Arabian Sea, and on the west by Gwadar and Awaran districts.¹⁰ Figure 3 provides pictures captured during the Sonmiani Hor site visit.

⁹ Pakistan Almanac. (n.d.). Balochistan-Gwadar. Retrieved from <https://pakistanalmanac.com/balochistan-gwadar/>

¹⁰ WWF. (2005). Sonmiani - Final Report. http://www.wwf.org.pk/pdf/tp_kap_sonmiani.pdf



Figure 3 - Sonmiani Site Visit Highlights

i. Overview of Site

- **Ethnic Composition**¹¹: Sonmiani Hor is predominantly inhabited by Baloch ethnic groups, including the *Kalmati Baloch*, *Rajput*, and *Soomra* tribes. The village is divided into eight caste-based localities, known locally as *Para: Wandani, Tipaee, Rajput, Raeesani, Soomra, Saman, Mahairi, and Channa/Wadda*. Each *Para* has its own leader or influential figure. Social interactions between *Paras* are limited due to cultural norms and a strict *Pardah* system, though villagers unite on collective issues. The majority of residents in and around Sonmiani speaks Sindhi. Prior to the 1947 partition, the area was predominantly Hindu, but the community migrated, and settlers from nearby regions moved in. Communities here maintain a close connection to both coastal and inland ecosystems, reflecting traditional ties to marine resources and forest lands.
- **Environmental Features**^{12 13} (See HCV Assessment Report for further details): Sonmiani Hor hosts significant mangrove cover, primarily comprising *Avicennia marina*, *Rhizophora mucronata*, and *Ceriops tagal*. These mangroves provide critical ecosystem services including shoreline stabilization, fish nursery habitats, and carbon sequestration. The region also serves as a habitat for the Humpback Dolphin (*Sousa plumbea*) and migratory birds like flamingos and herons. It was designated as a Ramsar Site in 2001.¹⁴ Land use historically included open grazing and fishing; however, mangrove expansion and afforestation efforts are transforming degraded mudflats into green buffers.

¹¹ WWF. (2005). *Sonmiani - Final Report*. http://www.wwf.org.pk/pdf/tp_kap_sonmiani.pdf

¹² Saifullah, S. M., & Rasool, F. (2002). MANGROVES OF MIANI HOR LAGOON ON THE NORTH ARABIAN SEA COAST OF PAKISTAN. Pak. J. Bot. [https://www.pakbs.org/pjbot/PDFs/34\(3\)/PJB34\(3\)303.pdf](https://www.pakbs.org/pjbot/PDFs/34(3)/PJB34(3)303.pdf)

¹³ Misal Brief on Miani Hor: Visit

¹⁴ Miani Hor | Ramsar Sites Information Service. (n.d.). <https://ris.ramsar.org/ris/1068>

ii. Community Socioeconomic Baseline

- **Demographics:** There are about 1110 households in the town with the total population of 19500, making the household sizes up to 17 individuals.¹⁵ A relatively balanced gender distribution is observed, with significant engagement of both men and women in livelihood-related activities.¹⁶
- **Infrastructure and Services:** Healthcare remains limited, with only one basic healthcare unit,¹⁷ and basic services often dependent on government or NGO interventions. Water for drinking and irrigation is sourced from hand pumps and some groundwater wells with 40% respondents purchasing water tankers, though quality and reliability vary. However, electricity access is present through thermal sources.¹⁸
- **Education and Housing**¹⁹: Male literacy rate in Sonmiani is 45.58%, and female literacy rate is 25.89%²⁰. Education facilities are available within a 5-kilometer radius, with access to education up to 12th grade.²¹ 60% of the respondents reported having completed their higher education while 20% reported being uneducated. However, these respondents fall in the age bracket of 40-50 years, which shows a rising trend of acquiring education in the youth. The village has separate middle schools for boys and girls; the girls' school, established in 1982, serves 190 students with nine teachers. The overall socio-economic condition and living standard of the local communities of Sonmiani is far better than other coastal areas. Almost 90% of the houses in Sonmiani are made of cemented blocks, with all the respondents reporting residing in *pucca* housing structures. The survey reveals 60% of the respondents residing in below 10 marla while the remaining below 5 marla housing size.
- **Livelihoods and Income**^{22 23}: The local community primarily depends on fisheries (90%) for their livelihood, with the surveys revealing average earning about 30,000 PKR per month (approximately US \$107) for males and 10-15,000 PKR per month (approximately US\$35-53.5) for females and a daily wage rate of 1,200 PKR in males and 1,000 PKR in females. Survey also reveals less than 5 earning individuals per household with only a few people working for government departments (e.g. fisheries, electricity and education) or involved in trade. More than 20% households of Sonmiani are categorized as poor, 60% belong to middle class and only 20 percent are rich.²⁴ Community members are often engaged in afforestation activities and receive financial compensation for their work in planting and maintaining

¹⁵ Forest Department, Balochistan, (2022). Participatory Forests Management Plan (PFMP) - Miani Hor, District Lasbela, Balochistan 2022-2031.

¹⁶ WWF. (2005). Sonmiani - Final Report. http://www.wwf.org.pk/pdf/tp_kap_sonmiani.pdf

¹⁷ WWF. (2005). Sonmiani - Final Report. http://www.wwf.org.pk/pdf/tp_kap_sonmiani.pdf

¹⁸ WWF. (2005). Sonmiani - Final Report. http://www.wwf.org.pk/pdf/tp_kap_sonmiani.pdf

¹⁹ WWF. (2005). Sonmiani - Final Report. http://www.wwf.org.pk/pdf/tp_kap_sonmiani.pdf

²⁰ PBS. (2023). Population. https://www.pbs.gov.pk/sites/default/files/population/2023/tables/table_12_balochistan_district.pdf

²¹ Data gathered through community consultations and visit

²² WWF. (2005). Sonmiani - Final Report. http://www.wwf.org.pk/pdf/tp_kap_sonmiani.pdf

²³ Data gathered through community consultations and visit

²⁴ Forest Department, Balochistan, (2022). Participatory Forests Management Plan (PFMP) - Miani Hor, District Lasbela, Balochistan 2022-2031.

the forest. This engagement not only provides employment but also fosters a sense of environmental stewardship. Additionally, there is significant potential for value addition in seafood, particularly in processing jellyfish and crabs for export to China, which already has an established market link. Strengthening these value chains can enhance economic resilience while ensuring sustainable resource management. Beyond fisheries, alternative income-generating opportunities include small-scale eco-friendly enterprises such as mangrove honey production and seaweed harvesting. In mangrove restoration projects, mangrove planting is done by both men and women, for which they are paid directly PKR 1,000-3,000 per day according to the difficulty of accessing planting sites is; also, the availability of funding, which is mainly project-supported.²⁵ Awareness programs and skill development initiatives can help communities capitalize on these emerging economic avenues.

- **Land Ownership**²⁶: Although communities have been settled in the area for centuries, many had historically not been granted official leases for the land they occupied as it is owned by the Government, but they retain the right to construct homes on this land. Our recent survey identified that respondents noted owning residential property or agricultural land, while others did not retain any property.
- **Natural Resource Use**²⁷: Traditional gillnets and hand lines are the most common gear. Forest products include mangrove wood (used sparingly), honey, mushrooms, and fodder from inland *Prosopis* trees. Communities demonstrated strong awareness of local biodiversity, identifying species like *Sousa plumbea*, flamingos, and mangrove-associated fish.
- **Gender Dynamics**²⁸: In Sonmiani, gender roles were traditionally restrictive, with men holding social and economic authority and women facing limited access to education, healthcare, and property rights. Female literacy was extremely low, hardly 3%, due to socio-cultural norms, with women often relying on traditional healers due to inadequate medical facilities. While *purdah* remains common, women gradually gained mobility for essential needs like treatment and shopping. Early marriages and son preference persist, though a few families now value daughters equally.

However, Sonmiani has witnessed a sharp improvement in gender dynamics with the literacy level in women rising to 25.89%, as discussed earlier. Traditionally, most women were housewives, with some contributing economically through sewing, embroidery, *Rilhi* making and fuelwood collection. Nonetheless, the survey reveals a shift in dynamics amongst males with all the respondent's allowing women participation. Hence, the work contributions by women now extend to agriculture

²⁵https://icnhq-my.sharepoint.com/personal/saeedh_jucn_org/_layouts/15/onedrive.aspx?id=%2Fpersonal%2Fsaee%2Fsaee%2FDocuments%2FMangroves%20assessment%20report%2FAssessment%20of%20Mangroves%20in%20Pakistan%2Epd&parent=%2Fpersonal%2Fsaee%2FDocuments%2FMangroves%20assessment%20report&ga=1

²⁶ WWF. (2005). Sonmiani - Final Report. http://www.wwf.org.pk/pdf/tp_kap_sonmiani.pdf

²⁷ Data gathered through community consultations and visit

²⁸ WWF. (2005). Sonmiani - Final Report. http://www.wwf.org.pk/pdf/tp_kap_sonmiani.pdf

and livestock with 20% respondents reporting additional roles as female health workers for polio eradication and as vaccinators. Also, all the respondents well-receive the importance of education and representation with the survey suggesting an allowance to the right to vote and education for females.

- **Capacity and Awareness^{29 30}:** Many households still use hooks as fishing technology, with 20% also making use of encircling nets. However, there is an increasing interest in modern gear and training. 40% of the respondents claim livestock ownership with 40% having cattle sheds with no other assets reported. The community is aware of mangrove-related ecosystem services, and climate threats such as flooding and erosion. They are eager for conservation-linked livelihood diversification.
- **Community Institutions³¹:** There is one CBO in Sonmiani named Sonmiani Development Organization (SDO), which is actively involved in the social work as well as natural resource protection of the village. However, there is seen active involvement of WWF in supporting natural resource conservation in the area.

iii. Land-Use Change and Community Dependence

- **Community-Forest Relationship³²:** Local dependence on forests includes fuelwood extraction, fodder collection, and traditional use of mangrove areas for grazing. *Prosopis cineraria* is a vital inland species providing fodder and fuelwood. Local community members harvest small timber for boat making or other implements from the Mangrove forests of Miani Hor area. However, this practice is not prevalent on largescale. Balochistan Forest and Wildlife Department discourages this kind of practices. No commercial timber is extracted from Mangrove forests. Local community members sometime harvest dead, dry and fallen wood for fuel wood. However, this practice is also not prevalent on larger scale. In some areas of mangrove forests that are close to the land, camels browse upon the trees, otherwise no grazing has been reported in these forests. However, community members do harvest Mangrove leaves from these forests for feeding to the camels and goats. Only leaves and succulent branches are harvested by local community members for feeding to their camels and goats. As such no grass is available in Mangrove forests. Local community members are using the Mangrove area for fishing. Damb and Sonmiani are very famous areas for fishing activities.

²⁹ WWF. (2005). Sonmiani - Final Report. http://www.wwf.org.pk/pdf/tp_kap_sonmiani.pdf

³⁰ Data gathered through community consultations and visit

³¹ WWF. (2005). Sonmiani - Final Report. http://www.wwf.org.pk/pdf/tp_kap_sonmiani.pdf

³² Data gathered through community consultations and visit

- **Climate Vulnerability and Land Use Change³³**: Communities report visible signs of coastal erosion, reduced freshwater availability, and increased flooding during high tides. Mangrove afforestation is perceived as a buffer against climate impacts. Degradation drivers include overgrazing, untreated wastewater discharges, and clearing for fuelwood. There is an increase in the mangrove cover in the 2022 study, where it is expanded by 665 hectares (2010–2020) at 66.5 ha/year.³⁴ Suggested interventions from the community include expansion of mangrove cover more, livestock management strategies, and sustainable fisheries development. Carbon sequestration in the updated study of Sonmiani hor are 3,457 tonnes CO₂-eq/year (potential to increase by 50% with REDD+ interventions).³⁵

iv. **Benefit Sharing and Community Willingness^{36 37}**

Site visits revealed significant willingness to engage in the project activities, by both males and females, particularly if livelihoods or training opportunities are included. Preferred compensation modes include cash payments, job creation, and skills training. The project activities are perceived as beneficial by all the respondents with no respondent foreseeing any negative impacts them. The community members are willing and community consultations revealed that women would also be willing to participate.

4.2 KALMAT KHOR

Kalamat Khor is basically a coastal plain of *Tehsil Pasni*, Balochistan. It consists of mud and salt flats and tidal channels. Kalamat coastal plain is 55 km long and 19 km wide. It has a tidal lagoon consisting of mud and salt flats and tidal channels. This lagoon supports mangroves consisting of *Avicennia marina*. Also, the area comes under the protected area category of Balochistan since 2022³⁸.

i. **Site Overview**

- **Ethnic Composition³⁹**: Kalamat Khor, situated in *Gwadar District*, where the families living in the villages are *Baloch* belonging to two separate clans i.e. *Sanghoor and Jaurak Baloch*. These tribal communities have strong maritime traditions and also depend heavily on fishing for their sustenance and income.
- **Environmental Features** (See HCV Assessment Report for further details): Kalamat Khor's estuarine and mangrove habitats are moderately degraded but still support fish breeding and coastal stabilization.⁴⁰ Mangrove cover, mostly *Avicennia marina*, is

³³ Data gathered through community consultations and visit

³⁴ Forest Department, Balochistan, (2022). Participatory Forests Management Plan (PFMP) - Miani Hor, District Lasbela, Balochistan 2022-2031.

³⁵ Forest Department, Balochistan, (2022). Participatory Forests Management Plan (PFMP) - Miani Hor, District Lasbela, Balochistan 2022-2031.

³⁶ WWF. (2005). Sonmiani - Final Report. http://www.wwf.org.pk/pdf/tp_kap_sonmiani.pdf

³⁷ Data gathered through community consultations and visit

³⁸ IOSEA Marine Turtles - Pakistan. (n.d.). <https://www.cms.int/iosea-turtles/en/country/pakistan>

³⁹ WWF. (2005). Kalamat Khor - Final Report. https://www.wwf.org.pk/pdf/tp_kap_kalamat.pdf

⁴⁰ Commissioner Kalat Division. (n.d.). Lasbela District. Retrieved from <https://commissionerkalat.gob.pk/lasbela-district/>

thinner compared to Sonmiani. Siltation, pollution, and illegal cutting have compromised ecological resilience. However, it remains important for migratory birds and marine biodiversity.⁴¹

ii. Community Socioeconomic Baseline

- **Demographics**⁴²: There are about 130 households in the one village of Kalamat Khor. The total population of the village is about 1130 which includes 630 men and 500 women, making average household sizes of up to 10 similar to Sonmiani Horr. All the households are indigenous fishermen. Before the separation of India and Pakistan, Muslims and Hindus lived together in a peaceful manner. Presently, not a single Hindu family lives in the village.
- **Infrastructure and Services**⁴³: The area has limited basic healthcare infrastructure, and education is limited to primary levels. There is one Government civil dispensary in the Gur Sant Village, which was established in 1961. There is only one male MBBS (Bachelor of Medicine, Bachelor of Surgery) doctor in dispensary with one dispenser. As both, the doctor and the dispenser are the residents of the village, they are fulltime present in the clinic. However, there is no lady doctor in the village. The number of patients visiting hospital ranges from 10 to 30 per day. These patients come from Gur Sant and nearby villages of Kalamat Khor. Households rely on hand pumps or fetch water from distant sources, with energy access largely unmet or dependent on biomass. There is minimal fishing infrastructure—no cold storage, drying platforms, or jetty—impacting post-harvest quality and incomes. Drinking water is either hand-pumped or accessed from distant sources. Electricity remains a major issue in Kalamat Khor, with both Gur Sant and Chandi villages lacking power and remaining in darkness at night. Although a grid station with two oil-run engines has been completed to supply electricity for 12 hours daily, power has not yet been provided due to villagers' inability to afford meter installation costs demanded by WAPDA. Given the extreme poverty, residents cannot even afford basic needs like drinking water, making it difficult for them to pay for electricity access without government support. Fishing infrastructure is in poor condition—no cold storage, jetties, or auction facilities.⁴⁴
- **Education and Housing**⁴⁵: At present, there are 9 schools in the Miani Hor area. In all three villages of Miani Hor area, government educational institutions are present both for boys and girls. In *Gur Sant* village of Kalamat Khor, male literacy is just 5%, with only three matriculates, and female literacy is nearly zero. However, some progress has been made as girls have started attending the Government Boys' Primary School in the past two years. Similarly, in Chandi village of Kalamat Khor, literacy

⁴¹ WWF. (2005). Kalamat Khor - Final Report. https://www.wwf.org.pk/pdf/ftp_kap_kalamat.pdf

⁴² WWF. (2005). Kalamat Khor - Final Report. https://www.wwf.org.pk/pdf/ftp_kap_kalamat.pdf

⁴³ WWF. (2005). Kalamat Khor - Final Report. https://www.wwf.org.pk/pdf/ftp_kap_kalamat.pdf

⁴⁴ WWF. (2005). Kalamat Khor - Final Report. https://www.wwf.org.pk/pdf/ftp_kap_kalamat.pdf

⁴⁵ WWF. (2005). Kalamat Khor - Final Report. https://www.wwf.org.pk/pdf/ftp_kap_kalamat.pdf

remains below 6%, with no literate females, though a few girls have recently enrolled in primary school. Only four individuals have completed matriculation, and around 50 villagers have studied up to grade five. The primary school, established in 1983, currently has 41 students, with Urdu as the medium of instruction. Access to female education is very limited. In the *Gur Sant* Village, about 90% percent of houses are Pucca (concrete), while the remaining 10% are half Pucca (semi-concrete).

- **Livelihoods and Income**⁴⁶: In Kalamat Khor, particularly in the villages of *Gur Sant* and *Chandi*, fishing is the dominant source of livelihood, engaging around 95% of the population. A small proportion—about 1%—is involved in fish trading through locally run *Chhapras* (fish trading units), while others work as drivers or boat repairers. Livestock rearing, once common, has declined significantly due to drought, water scarcity, and loss of grazing grounds. At present, only a few camels, goats, and hens are kept. It is critical to note that camels feed on mangroves in the area. Women contribute to the fishing economy by cleaning fish, peeling shrimp, mending nets, and engaging in embroidery work, which serves as a supplementary income source. Wealth distribution in *Gur Sant* indicates a mix of economically disadvantaged classes: about 20 households are considered wealthy, 10 are poor, and the rest fall into a middle-income group. Ownership of boats and alternative income sources determines economic status, with laborers (*khalasis*) on others' boats seen as the most economically disadvantaged population. Around 50% of households own motorcycles, and many have *Pucca* houses, though basic sanitation is lacking. In *Chandi* village, roughly 80% of households are classified as poor, with only a small minority seen as middle income or wealthy based on food security and savings.
- **Natural Resource Use**⁴⁷: Kalamat Khor is rich in natural resources, primarily fisheries and mangrove forests, which are vital to local livelihoods. Key fish species include *Paplet*, *Mushk*, and *Sunheri*, along with shrimp varieties like *Tiger*, *Jairo*, and *Kiddi*. However, overfishing—both by local and external trawlers using destructive gear—has led to a sharp decline in fish stocks, with some species now extinct or at risk. Mangrove forests, covering about 2,160 hectares and dominated by *Avicennia marina*, are degraded but still serve as fish nurseries and sources of fuelwood, fodder, and honey. Persistent drought has diminished past grazing land and rendered agriculture nearly impossible, forcing greater reliance on already stressed marine resources.
- **Gender Dynamics**⁴⁸: Gender dynamics in Kalamat Khor, particularly in *Gur Sant* and *Chandi* villages, reflect a traditional and patriarchal social structure where men dominate decision-making, property ownership, and livelihood activities like fishing. Women have limited rights, with ownership typically restricted to hens, goats, ornaments, and embroidery materials. Their mobility is highly restricted and dependent on male accompaniment, mainly for social visits or spiritual reasons. While

⁴⁶ WWF. (2005). Kalamat Khor - Final Report. https://www.wwf.org.pk/pdf/ftp_kap_kalamat.pdf

⁴⁷ WWF. (2005). Kalamat Khor - Final Report. https://www.wwf.org.pk/pdf/ftp_kap_kalamat.pdf

⁴⁸ WWF. (2005). Kalamat Khor - Final Report. https://www.wwf.org.pk/pdf/ftp_kap_kalamat.pdf

men manage income-generating assets such as boats and motorcycles, women contribute through household chores, embroidery, and collecting fuelwood and fodder. Despite their significant workload, women have minimal say in resource control or financial decisions, and suffer disproportionately from resource degradation and poverty-related impacts.

- **Capacity and Awareness⁴⁹**: In Kalamat Khor, traditional knowledge remains the primary foundation for livelihoods, particularly in fishing and resource use, with minimal exposure to modern fishing gear, techniques, or marketing strategies. Most community members continue to rely on inherited practices passed down through generations, lacking access to contemporary innovations that could enhance productivity or income. Awareness of the ecological value and services provided by the mangrove ecosystems—such as coastal protection, nursery grounds for fish, and fuelwood—is still limited among the villagers, though recent community engagement and educational efforts have begun to improve understanding. Similarly, awareness of climate change and its impacts exists but remains largely informal, shaped by personal experiences of changing weather patterns, declining fish stocks, and prolonged droughts rather than structured education or outreach programs.
- **Community Institutions⁵⁰**: No government institution is functioning in the area, except a primary school in Chandi village, and a primary school and a dispensary at Gur Sant village. There is no local CBO in the area. National level NGOs have also not initiated any substantial work in the area. However, WWF is active in the area for natural resource conservation.

iii. Land Use Change and Community Dependence

- **Community-Forest Relationship⁵¹**: There is some reliance on mangrove wood for fuel and occasional use of land for small-scale salt-tolerant crop cultivation. Community members have not been deeply involved in afforestation activities, though interest exists if linked to livelihoods and training programs.
- **Climate Vulnerability and Land Use Change**: Frequent cyclones, storm surges, and loss of mangrove cover have exposed Kalamat Khor to greater climate risks. In Kalamat Khor, mangrove forests have undergone major changes over time. In 1990, the mangrove cover was 3.78 km², but by 1995, it had declined to 2.77 km², reflecting habitat loss and hydrological changes.⁵² Communities highlight increased shoreline retreat and sedimentation in fishing zones as key concerns. Deforestation,

⁴⁹ WWF. (2005). Kalamat Khor - Final Report. https://www.wwf.org.pk/pdf/ftp_kap_kalamat.pdf

⁵⁰ WWF. (2005). Kalamat Khor - Final Report. https://www.wwf.org.pk/pdf/ftp_kap_kalamat.pdf

⁵¹ WWF. (2005). Kalamat Khor - Final Report. https://www.wwf.org.pk/pdf/ftp_kap_kalamat.pdf

⁵² Commissioner Kalat Division. (n.d.). Lasbela District. Retrieved from <https://commissionerkalat.gob.pk/lasbela-district/>

unsustainable fishing, and lack of land use planning are major drivers of degradation. Restoration interventions suggested include afforestation, improved fisheries regulation, and construction of protective embankments.⁵³

iv. **Benefit Sharing and Community Willingness**⁵⁴

There is strong willingness to engage in restoration or conservation, provided tangible livelihood benefits are offered. Training and employment are preferred forms of compensation.

4.3 JIWANI

Jiwani (Gwadar Bay) in Gwadar District, Balochistan, with central coordinates at 25.1678N latitude and 61.7558E longitude, has a geographical area of 80 km².⁵⁵ With 515Km apart from Karachi, Jiwani lies near the border with Iran and is part of the Daran-Jiwani coastal zone. The majority of the population resides in fishing communities scattered across natural landscapes, with over 85% of the Daran-Jiwani area still in its natural form and minimally impacted by human activities.

i. **Site Overview**

- **Ethnic Composition**⁵⁶: Jiwani's population comprises Baloch ethnic groups, with the majority engaged in traditional livelihoods such as fishing.
- **Environmental Features**: Jiwani's coast is ecologically significant and was designated a Ramsar Site in 2001.⁵⁷ It features two critical habitats: mangrove swamps (dominated by *Avicennia marina*) and Sandt beaches, both supporting endangered species such as the Olive Ridley and green turtles, with four known turtle nesting beaches. The Dasht River and seasonal streams sustain the mangrove forests, though freshwater flow has declined due to the Mirani Dam, resulting in habitat degradation.⁵⁸ Coastal erosion and sea-level rise are major threats to the ecosystem and local infrastructure.⁵⁹

ii. **Community Socioeconomic Baseline**

- **Demographics**: Jiwani has a population of 26,991⁶⁰ with a primarily Baloch ethnic base. Most households are organized around fishing activities, with limited internal

⁵³ WWF. (2005). Kalamat Khor - Final Report. https://www.wwf.org.pk/pdf/ftp_kap_kalamat.pdf

⁵⁴ WWF. (2005). Kalamat Khor - Final Report. https://www.wwf.org.pk/pdf/ftp_kap_kalamat.pdf

⁵⁵ Hameed-Baloch, A., Haneef-Ur-Rehman, M.S., Kalhor, M.A. and Buzdar, M.A., The Curious Case of Mangroves Forest at the Sonmiani bay Area, Lasbela District, Pakistan: A review.

⁵⁶ Hafeez, M., & Hussain, N. (2023). PERCEPTION MAPPING OF COASTAL COMMUNITIES OF BALOCHISTAN ON SOCIOECONOMIC ISSUES IN RELATION TO CPEC. Pakistan Journal of Humanities & Social Sciences Research, 06(01). <https://journals.wumardan.edu.pk/papers/70%20-93%20Hazar%20Hussain.pdf>

⁵⁷ Jiwani Coastal Wetland | Ramsar Sites Information Service. (n.d.). <https://ris.ramsar.org/ris/1066>

⁵⁸ Rasool, F., Tunio, S., Hasnain, S. and Ahmad, E., 2002. Mangrove conservation along the coast of Sonmiani, Balochistan, Pakistan. Trees, 16(2), pp.213-217.

⁵⁹ Hafeez, M., & Hussain, N. (2023). PERCEPTION MAPPING OF COASTAL COMMUNITIES OF BALOCHISTAN ON SOCIOECONOMIC ISSUES IN RELATION TO CPEC. Pakistan Journal of Humanities & Social Sciences Research, 06(01). <https://journals.wumardan.edu.pk/papers/70%20-93%20Hazar%20Hussain.pdf>

⁶⁰ Jiwani (Tehsil, Pakistan) - Population statistics, charts, map and location. (n.d.). https://www.citypopulation.de/en/pakistan/balochistan/admin/gwadar/20604_jiwani/

migration but growing concern about demographic changes due to external development pressures.⁶¹

- **Infrastructure and Services⁶²**: Infrastructure is underdeveloped. Jiwani has a desalination plant, but it is non-operational. There are no major hospitals; for serious medical cases, residents must travel to Karachi. Fishery workshops in the area are in poor condition, and the local fisher association is not functional. Education facilities are limited, and the local population lacks access to technical training and higher education opportunities. A few fish processing units provide some economic engagement, but broader industrial activity is lacking.
- **Education and Housing⁶³**: Educational levels are low, particularly among fisherfolk, hindering access to alternative livelihoods or skilled employment. Housing in fishing villages is basic and vulnerable to extreme weather. The absence of technical institutions hampers skill development.
- **Livelihoods and Income^{64 65}**: Fishing is the primary income source, with limited supplementary employment in fish processing or small business. 66 Most fishermen use speedboats and traditional gear such as gill nets, cast nets, and hand lines. Fishing trips vary from a few hours to a full day. Income is often seasonal and volatile, with little insurance or safety nets.
- **Land Ownership⁶⁷**: Specific land tenure data is limited.
- **Natural Resource Use^{68 69}**: Fishing and mangrove wood collection are the key uses. Overexploitation and poor regulation are leading to ecosystem degradation. Bottom trawling, although banned, occasionally occurs through illegal activity. Community dependence on fragile ecosystems necessitates improved conservation and management.

61 Hafeez, M., & Hussain, N. (2023). PERCEPTION MAPPING OF COASTAL COMMUNITIES OF BALOCHISTAN ON SOCIOECONOMIC ISSUES IN RELATION TO CPEC. Pakistan Journal of Humanities & Social Sciences Research, 06(01). <https://journals.wumardan.edu.pk/papers/70%20-93%20Nazar%20Hussain.pdf>

62 Hafeez, M., & Hussain, N. (2023). PERCEPTION MAPPING OF COASTAL COMMUNITIES OF BALOCHISTAN ON SOCIOECONOMIC ISSUES IN RELATION TO CPEC. Pakistan Journal of Humanities & Social Sciences Research, 06(01). <https://journals.wumardan.edu.pk/papers/70%20-93%20Nazar%20Hussain.pdf>

63 Mangroves for the future. (2019). Study on Governance Value Chain of Fisheries Resources at Gwatar Bay and Jiwani, Balochistan. <http://www.mangrovesforthefuture.org/assets/Repository/Documents/Study-of-Governance-and-Value-Chain-of-Fisheries-Resources-at-Gwatar-Bay-and-Jiwani2.pdf>

64 Hafeez, M., & Hussain, N. (2023). PERCEPTION MAPPING OF COASTAL COMMUNITIES OF BALOCHISTAN ON SOCIOECONOMIC ISSUES IN RELATION TO CPEC. Pakistan Journal of Humanities & Social Sciences Research, 06(01). <https://journals.wumardan.edu.pk/papers/70%20-93%20Nazar%20Hussain.pdf>

65 Mangroves for the future. (2019). Study on Governance Value Chain of Fisheries Resources at Gwatar Bay and Jiwani, Balochistan. <http://www.mangrovesforthefuture.org/assets/Repository/Documents/Study-of-Governance-and-Value-Chain-of-Fisheries-Resources-at-Gwatar-Bay-and-Jiwani2.pdf>

66 Hafeez, M., & Hussain, N. (2023). PERCEPTION MAPPING OF COASTAL COMMUNITIES OF BALOCHISTAN ON SOCIOECONOMIC ISSUES IN RELATION TO CPEC. Pakistan Journal of Humanities & Social Sciences Research, 06(01). <https://journals.wumardan.edu.pk/papers/70%20-93%20Nazar%20Hussain.pdf>

67 Hafeez, M., & Hussain, N. (2023). PERCEPTION MAPPING OF COASTAL COMMUNITIES OF BALOCHISTAN ON SOCIOECONOMIC ISSUES IN RELATION TO CPEC. Pakistan Journal of Humanities & Social Sciences Research, 06(01). <https://journals.wumardan.edu.pk/papers/70%20-93%20Nazar%20Hussain.pdf>

68 Wikipedia contributors. (2025, June 13). Jiwani Coastal Wetland. Wikipedia. https://en.wikipedia.org/wiki/Jiwani_Coastal_Wetland

69 Raza, S.A., Zhang, L., Zuo, J. and Chen, B., 2024. Time series monitoring and analysis of Pakistan's mangrove using Sentinel-2 data. Frontiers in Environmental Science, 12, p.1416450.

- **Gender Dynamics:** Women play a limited role in the fisheries sector, mostly involved in post-harvest handling within the household. Their access to education, employment, and decision-making remains constrained by traditional roles and lack of services.
- **Capacity and Awareness⁷⁰:** Community awareness of conservation is growing due to past NGO interventions, but institutional support remains weak. The fishermen's association is largely inactive, and training facilities are lacking. The Fisheries Department lacks resources and trained staff, particularly in Jiwani.

iii. Land Use Change and Community Dependence

- **Community-Forest Relationship^{71 72}:** Mangroves are vital to the community, providing fishing grounds and domestic resources such as wood. However, unsustainable extraction and reduced freshwater inflow are degrading the ecosystem. Conservation initiatives like WWF's Mangrove and Turtle Conservation Projects such as Conservation of Coastal Ecosystems for a Sustainable Future on Guatemala's Pacific Coast (2024-2027)⁷³ have aimed to raise awareness and promote sustainable resource use.
- **Climate Vulnerability and Land Use Change^{74 75}:** Jiwani is highly vulnerable to climate-related hazards. It has experienced typhoons (e.g., 2007), flash floods, and heavy rains, with disasters damaging infrastructure and fishing vessels. It ranks as high priority for disasters related to floods and earthquakes, and medium priority for drought. Coastal erosion and seawater intrusion threaten local settlements. Changes in land use, including development and increased human encroachment, are putting pressure on natural habitats.

iv. Benefit Sharing and Community Willingness⁷⁶

The community demonstrated strong willingness to engage in conservation and alternative livelihoods, especially coastal tourism. Receiving benefits in the form of training and capacity-building was welcomed.

⁷⁰ Hafeez, M., & Hussain, N. (2023). PERCEPTION MAPPING OF COASTAL COMMUNITIES OF BALOCHISTAN ON SOCIOECONOMIC ISSUES IN RELATION TO CPEC. Pakistan Journal of Humanities & Social Sciences Research, 06(01). <https://journals.wumardan.edu.pk/papers/70%20-93%20Nazar%20Hussain.pdf>

⁷¹ Wikipedia contributors. (2025, June 13). Jiwani Coastal Wetland. Wikipedia. https://en.wikipedia.org/wiki/Jiwani_Coastal_Wetland

⁷² Raza, S.A., Zhang, L., Zuo, J., and Chen, B., 2024. Time series monitoring and analysis of Pakistan's mangrove using Sentinel-2 data. Frontiers in Environmental Science, 12, p.1416450.

⁷³ Conservation of coastal ecosystems for a Sustainable Future on Guatemala. (n.d.). https://www.wwf.org/en/conservation_of_coastal_ecosystems_for_a_sustainable_future_on_guatemala_pacific_coast/

⁷⁴ AASA Consulting. (2015). Situation Analysis & Baseline Surveys For Poverty Reduction through Rural Development in KPK, FATA & Balochistan. <https://www.ppaf.org.pk/doc/programmes/Situational%20Analysis%20Report%20of%20PPR%20-%20District%20Profile%20Gwadar.pdf>

⁷⁵ Raza, S.A., Zhang, L., Zuo, J., and Chen, B., 2024. Time series monitoring and analysis of Pakistan's mangrove using Sentinel-2 data. Frontiers in Environmental Science, 12, p.1416450.

⁷⁶ Hafeez, M., & Hussain, N. (2023). PERCEPTION MAPPING OF COASTAL COMMUNITIES OF BALOCHISTAN ON SOCIOECONOMIC ISSUES IN RELATION TO CPEC. Pakistan Journal of Humanities & Social Sciences Research, 06(01). <https://journals.wumardan.edu.pk/papers/70%20-93%20Nazar%20Hussain.pdf>

4.4 SHABI AND ANKARA CREEKS

Shabi Creek receives saline water from the west bay of Gwadar and fresh water from Ankara River and its associated watershed. In Shabi Creek only *Avicennia Marina* is found out of three reported species of mangrove in Pakistan⁷⁷.

- **Climate Vulnerability and Land Use Change:** Sahidi Khor and Shabi & Ankara Creeks have seen substantial mangrove expansion, largely due to natural regeneration and limited human interference. Ankara creek is a newly planted site by forest department that receives inflow from Chatti lake reservoir and provides coastal protection and habitat. The area consists of sand, mixed vegetation with sand, mudflats, dry soil, other vegetations and algae⁷⁸. It saw a rise in mangrove cover from 35.4 ha in 2016 to 40.53 ha in 2024⁷⁹. Also, the area comes under the protected area category of Balochistan since 2022.⁸⁰ Significant mangrove expansion has been observed in the Shabi & Ankara Creeks, primarily driven by natural regeneration processes and minimal human disturbance.

4.5 SAHIDI KHOR

Shahidi Khor is a newly planted region near Pasni city, which receive freshwater flow from Shadi kor region. *Avicennia marina* species is found in these areas. The area consists of sand, mixed vegetation with sand, mudflats, dry soil, other vegetations and algae. It saw a rise in mangrove cover from 7.29 ha in 2016 to 83.38 ha in 2024⁸¹. Also, the area comes under the protected area category of Balochistan since 2022⁸².

4.6 SAWAR KHOR

Sawar Khor is rather a narrower patch depicting existence of mangroves in the Balochistan region and much smaller to be detected by 10-m spatial resolution⁸³. However, the area comes under the protected area category of Balochistan since 2022⁸⁴.

For **Shabi and Ankara Creeks, Shahidi Khor, and Sawar Khor** very limited research is presently available needing a more targeted intervention to understand the socioeconomic profiles of these areas. However, it would be fair to assume that these sites would be sharing the same dynamics as Sonmiani, Kalamat Khor and Jiwani since they all are protected sites and lie in similar geographical areas.

77 Haroon et. al. (2019). Occurrence and biodiversity of marine yeast in mangrove ecosystem of Shabi Creek, Gwadar- Pakistan. https://www.researchgate.net/figure/a-Shabi-creek-mangrove-area-and-the-yellow-spot-showing-sampling-site-b-Avicennia-Marina_fig1_331702378

78 Sanaullah et. al. (2025). Original Articles Mangrove dynamics in Pakistan: A long-term study of coastal ecosystem shifts over more than three decades. Ecological Indicators https://www.researchgate.net/publication/390733107_Original_Articles_Mangrove_dynamics_in_Pakistan_A_long-term_study_of_coastal_ecosystem_shifts_over_more_than_three_decades

79 Sanaullah et. al. (2025). Original Articles Mangrove dynamics in Pakistan: A long-term study of coastal ecosystem shifts over more than three decades. Ecological Indicators https://www.researchgate.net/publication/390733107_Original_Articles_Mangrove_dynamics_in_Pakistan_A_long-term_study_of_coastal_ecosystem_shifts_over_more_than_three_decades

80 IOSEA Marine Turtles - Pakistan. (n.d.). <https://www.cms.int/iosae-turtles/en/country/pakistan>

81 Sanaullah et. al. (2025). Original Articles Mangrove dynamics in Pakistan: A long-term study of coastal ecosystem shifts over more than three decades. Ecological Indicators https://www.researchgate.net/publication/390733107_Original_Articles_Mangrove_dynamics_in_Pakistan_A_long-term_study_of_coastal_ecosystem_shifts_over_more_than_three_decades

82 IOSEA Marine Turtles - Pakistan. (n.d.). <https://www.cms.int/iosae-turtles/en/country/pakistan>

83 Raza et. al. (2024). Time series monitoring and analysis of Pakistan's mangrove using Sentinel-2 data - Frontiers in Environmental Science. <https://www.frontiersin.org/journals/environmental-science/articles/10.3389/fenvs.2024.1416450/full>

84 IOSEA Marine Turtles - Pakistan. (n.d.). <https://www.cms.int/iosae-turtles/en/country/pakistan>

4.7 KEY TAKEAWAYS

The socio-economic and community assessment, supplemented by surveys and community engagements, reveal that communities residing across the 06 project sites face significant challenges ranging from poverty, to unemployment, a lack of access to basic facilities and services, all of which are further burdened by the climate crisis and rampant environmental degradation. Key takeaways include:

i. **Livelihood and Revenue**

In terms of livelihood and income, fishing is the primary source of employment for the communities residing across project sites, denoting their dependence on coastal and marine resources. However, overfishing, resource exploitation, reliance on unsustainable fishing practices, and presence of trawlers has led a depletion and decline of marine resources, directly impacting the socio-economic landscape of the communities due to reduced earnings, especially in Kalamat Khor and Jiwani where market access is limited. Furthermore, communities also rely on mangroves for fuel wood, upon which they are increasingly reliant as marine resources decline. Other uses include use of mangroves for honey collection, sea weed farming and grazing. This highlights the need to conserve and regenerate marine resources, while diversifying streams of revenue by developing existing interventions such as mangrove honey, seaweed cultivation, and value-added fisheries can provide alternative income sources that reduce pressure on fish stocks and enhance economic resilience.

ii. **Education & Literacy**

Literacy rates vary across communities, with those in Sonmiani showing moderate progress but Kalamat Khor and Jiwani suffering from extremely low literacy levels, particularly among women, which limits opportunities for skill development and empowerment. Expanding access to education, especially for girls and women, alongside vocational training, can improve community capacity, enhance livelihoods, and support long-term sustainable development.

iii. **Gender Dynamics**

Across the communities, patriarchy and male leadership dominates. While agency of women is limited, they are permitted to participate in certain revenue-generation activities. While men manage income-generating assets such as boats and motorcycles, women contribute through household chores, embroidery, and collecting fuelwood and fodder. Female literacy rate across communities is lower than that of male counterparts, however, they contribute significantly to certain activities. Women were noted to be involved in crafting *rihli* (textile crafts), collecting fuelwood, rearing livestock, working as polio health workers or vaccinators. Hence, it is critical to note that participation of women outside of the domestic sphere is prevalent across the

communities despite glaring gender disparities and challenges such as 1200 PKR/day for men and 1000 PKR/day for women.⁸⁵ Addressing these gender disparities through inclusive policies and programs that promote female education, leadership, and entrepreneurship is crucial for equitable community development and poverty reduction.

iv. Infrastructure & Basic Services

Across the community areas, basic facilities and infrastructure such as schools, health units, and provision of services such as access to water and electricity was lacking. Inadequate infrastructure in Kalamat Khor and Jiwani—such as lack of electricity, clean water, and healthcare—significantly hampers quality of life and development prospects. Improving essential services, including expanding access to potable water, healthcare facilities, and electricity, is necessary to support healthy, productive communities and to complement conservation efforts.

v. Climate Change and Environmental Degradation:

Degradation of mangroves is visible and noted across project localities due to both natural and human factors. Resource exploitation, economic dependance such as reliance on mangroves for fuelwood and grazing, and depletion of marine resources due to unsustainable fishing are key concerns. These issues are further burdened due to the climate crisis as rising coastal erosion, freshwater scarcity, sea level and frequent natural disasters have burdened the mangrove ecosystem. This has further directly impacted marine life which depends upon the health of mangroves. Communities are increasingly reliant upon mangroves as they strive to secure socio-economic livelihoods and rely on mangroves for fuelwood, grazing, leaves and other resources such as honey or seaweed farming, hence, strengthening community-led mangrove restoration and conservation, alongside climate adaptation strategies, can safeguard ecosystems and sustain the natural resources that communities depend on.

vi. Community Dependence on Mangroves and Area

Community reliance on mangrove ecosystems encompasses both direct and indirect factors. In terms of direct dependance, communities utilize mangroves for various purposes such fuelwood collection, honey farming, mangrove leaves and grazing. *Prosopis cineraria* is a vital inland species providing fodder and fuelwood. In terms of indirect dependance, with the main sources of employment being fishing, the communities are increasingly dependent upon mangrove ecosystems to ensure high-quality catches. Additionally, communities have resided in nearby villages historically, emphasizing the consideration that is needed in any plans that impact this area, acknowledging them as citizens whose livelihoods depend on the land.

85 WWF. (2005). Sonmiani - Final Report. http://www.wwf.org.pk/pdf/tp_kap_sonmiani.pdf

vii. Community Capacity and Willingness to Participate in the Proposed Intervention

Communities expressed strong willingness to engage in the project and participate in project activities. They expressed an understanding of the current state of environmental degradation, noting how erratic climate patterns have impacted their locality and mangrove ecosystems. Members also expressed willingness to promote female participation in the project. Additionally, community members expressed willingness to receive training and capacity-building through the project, enabling them to diversify their streams of revenue and reduce reliance on mangrove ecosystems.

It is important to note that at present, communities possess certain capacities and awareness of mangrove regeneration and reforestation projects as they have participated in similar projects in the past. Notable interventions include Conservation initiatives such as WWF's Mangrove and Turtle Conservation Projects such as Conservation of Coastal Ecosystems for a Sustainable Future on Guatemala's Pacific Coast (2024-2027).⁸⁶

viii. Potential Sources of Revenue

Across mangrove sites, there exists potential of working towards diversifying economic livelihoods of locals while working towards sustainable mangrove management. Mangrove honey collection and seaweed farming are such interventions that may be developed. Additionally, for women, the development of craft as a small business is also, a critical avenue that must be explored. Additionally, there is significant potential for value addition in seafood, particularly in processing jellyfish and crabs for export to China, which already has an established market link. Strengthening these value chains can enhance economic resilience while ensuring sustainable resource management.⁸⁷

These key factors highlight the need for integrated approaches that balance livelihoods with conservation. The next section outlines key challenges and proposes practical strategies for sustainable development and resilience in these fragile ecosystems.

⁸⁶ Conservation of coastal ecosystems for a Sustainable Future on Guatemala. (n.d.). https://www.wwf.org/en/conservation_of_coastal_ecosystems_for_a_sustainable_future_on_guatemala_pacific_coast/

⁸⁷ Data gathered through community consultations and visit

5. KEY CHALLENGES AND POTENTIAL PROJECT IMPACTS

The socio-economic and environmental assessments of Lasbela (Sonmiani Hor) and Gwadar (Kalamat Khor, Jiwani, Shabi and Ankara Creeks, Shahidi Khor, and Sawar Khor) districts highlight several interlinked challenges that continue to hinder inclusive and sustainable socio-economic development. These challenges span across livelihood insecurity, infrastructure deficits, environmental degradation and climate change, gender inequality, and governance weaknesses. Drawing from site visits, surveys and secondary sources, the following key socio-economic challenges are revealed:

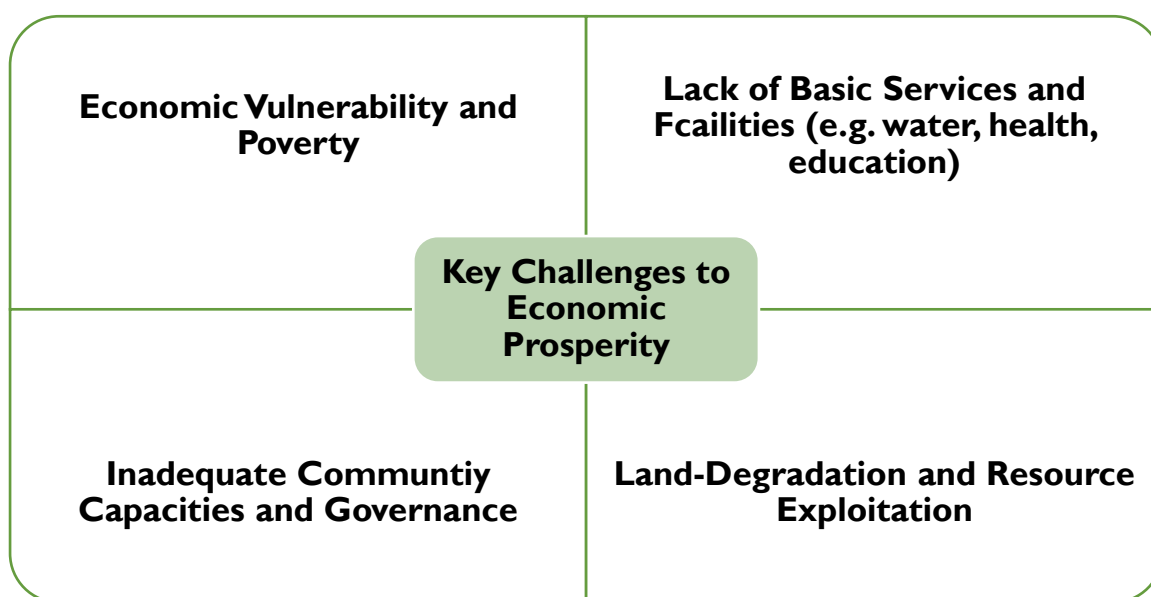


Figure 4 - Key Socioeconomic Challenges

It is critical to note that these challenges may impact the project, however, this potential is to be turned into an opportunity through the proposed intervention as the project design may inculcate key measures to enhance socio-economic resilience and enhance capacities for sustainable development and environmental regeneration, inculcating a transformational change and shifting away from the current landscape

5.1. AVENUES FOR SOCIO-ECONOMIC UPLIFTMENT

This section presents key solutions to tackle the socio-economic and environmental challenges across project sites. Focusing on sustainable livelihoods, ecosystem restoration, gender equity, and strong governance, these community-driven strategies aim to enhance resilience, diversify incomes, and promote long-term sustainability in Balochistan's coastal areas, and are key considerations for the development of the proposed carbon market project.

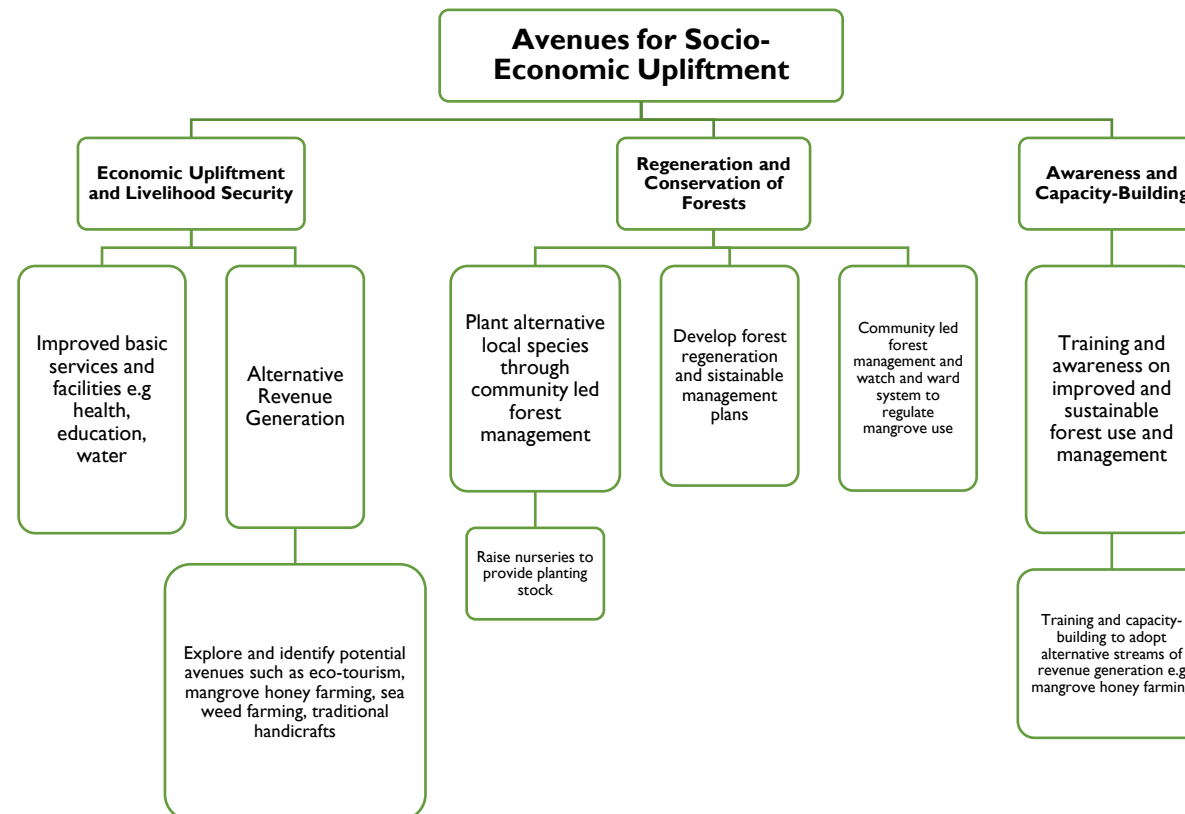


Figure 5 Potential Interventions

i. Economic Upliftment and Livelihood Security

To reduce economic vulnerability, it is essential to promote diversified, nature-based livelihoods that complement existing fishing practices. Community-led initiatives such as honey production from mangrove areas, eco-tourism, and seaweed farming offer viable alternatives. Establishing small-scale fish processing units and improving market linkages—including for underutilized products like jellyfish in Sonmiani—can enhance income stability. Vocational training programs focused on boat repair, handicrafts, and sustainable enterprises should be introduced to equip local youth and women with employable skills beyond fisheries.

- **Infrastructure & Service Improvements:** Investments in renewable energy and essential services can significantly enhance living conditions and productivity. Solar-powered water pumps and microgrid systems can provide reliable electricity to remote communities like Kalamat Khor. Healthcare access must be expanded through mobile clinics and deployment of female health professionals. Education initiatives should include flexible community schooling, adult literacy programs, and scholarships to increase female enrollment. Upgrading fishing infrastructure—such as constructing jetties, establishing cold storage, and building fish drying platforms—would reduce post-harvest losses and improve value chains.
- **Women's Empowerment & Inclusive Development:** Empowering women through targeted interventions is critical for equitable development. Gender-sensitive programs should train women in mangrove restoration, handicraft production, and microenterprise development.. Awareness campaigns and institutional reforms should actively promote women's participation in natural resource management and local governance.
- **Strengthened Governance & Community Engagement:** Local fishermen associations should be restructured and supported through training and as agents of protecting mangrove ecosystems. Development planning must adopt a participatory approach, ensuring that communities are meaningfully engaged in decision-making processes.
 - Solutions for enhancing community involvement and ownership will be designed in accordance with the participatory frameworks outlined in the Government of Balochistan Community-Led Local Governance Policy, reinforcing the establishment of empowered community institutions and transparent decision-making processes.

ii. Regeneration and Conservation of Forests

- **Sustainable Management Plans⁸⁸**: Sustainable forest management plans may be developed for collaborative management of mangrove forests with a key consideration for environmental resilience and biodiversity.
- **Community-Based Natural Resource Management and Degradation Control**: Complementing livelihood and governance reforms, this solution targets unsustainable local practices—such as mangrove logging, overgrazing, and illegal fishing—that accelerate land and biodiversity loss. Initiatives should focus on affordable fuel alternatives, regulated livestock access to mangroves, and strict enforcement against destructive fishing methods. Local conservation awareness, inclusive community monitoring, and incentivized restoration programs (e.g., paid afforestation) will strengthen stewardship and reduce ecosystem stress.

iii. Awareness and Capacity-Building

- **Diversification of Livelihoods and Sustainable Practices**: Locals may receive guidance and training on development of alternative forms of revenue as revealed through the assessment, including honey farming, sea weed farming and for women, the making of traditional crafts. Additionally, further awareness on sustainable fishing and other aspects may be provided to locals to enhance their capacities.

Addressing the multifaceted challenges facing mangrove ecosystems requires a holistic and inclusive strategy. Integrating livelihood diversification, ecosystem restoration, gender equality, and participatory governance will be essential to foster climate-resilient and community-driven development in Balochistan's coastal regions. Strengthening local ownership and aligning development efforts with ecological sustainability will help safeguard the future of both the environment and the people who depend on it.

88 Verra. (2024, August 23). CCB Program details - verro. <https://verra.org/programs/ccbs/ccbs-program-details/>

5.2 POTENTIAL PROJECT IMPACTS

The proposed mangrove afforestation and regeneration project possesses significant potential to inculcate environmental and socio-economic resilience across the project areas while targeting business-as-usual interventions and scenarios. The matrix below identifies a with and without project overview that has been informed through extensive stakeholder and community consultations along with desk assessments:

Project Interventions and Focus Areas	With and Without Project Scenarios		Community Impacts	
	Without	With	Positive Impacts	Negative impacts
Mangrove ecosystems	At present, mangrove ecosystems are challenged due to human and natural pressures such as climate change, unsustainable fishing practices, resource exploitation, and more. This trend will continue if the situation is not addressed.	The proposed project will focus on mangrove afforestation and conservation, ensuring environmental resilience and reversing the land degradation scenario that has been caused by both human and natural factors. By promoting mangrove restoration, the project will work towards ecosystem regeneration and improvement of marine resources. The project will also aim to ensure sustainable resource use by developing alternative forms of livelihood for	• Environmental resilience to climate change through improved mangrove cover • Improved ecosystem services • Reversal of land degradation • Employment for locals	• Community sustenance from forests will be impacted (e.g. collection of fuelwood from mangrove forests)

		communities leveraging mangrove forests.		
Socio-economic Challenges	Communities report a lack of economic security they depend on fishing which is impacted due to the depletion of marine resources. The climate crisis has also impacted this issue. Communities rely on other activities as well such as livestock and agriculture, and utilization of mangroves for fuel wood, honey and sea weed farming.	The project integrates regeneration of mangrove ecosystems, aiming to enhance marine resources. Furthermore, the project will provide direct employment to locals through activities. It also aims to provide training and capacity-building to locals to diversify streams of revenue and reduce reliance on marine resources.	• Avenues for employment and alternative livelihood streams • Equitable female participation and empowerment • Improved access to social services such as health, water and sanitation, education	• Potential disparities amongst communities in regards to involvement in the project
Fiscal Challenges	At present, despite institutional and government ambition, fiscal challenges are a key concern impacting the inculcation of environmental resilience through mangrove regeneration and socio economic upliftment.	Through the afforestation and regeneration of mangroves, carbon sequestered will allow the generation of carbon credits, leading to a form of revenue for the province to sustain action and direct this revenue towards similar interventions and community upliftment across project areas.	• Improved socio-economic landscape • Regeneration, afforestation and protection of mangrove ecosystems	• Potential misuse of funds

Overall, the project presents significant potential to generate key benefits that may not occur without the implementation of this intervention. This project is innovative and unique as it leverages the opportunities offered by the global carbon markets, unlocking a stream of climate finance and co-benefits that are critical to the sustainable development and environmental regeneration in Balochistan.

6. DELTA BLUE CARBON MODEL

The Delta Blue Carbon (DBC) Project spearheaded by Sindh to afforest and regenerate mangroves. The DBC Project is a 60-year project initiated in 2015 and will run until 2075, restoring 350,000 hectares of mangroves and resulting in an estimated 142 million tCO₂e over the project lifetime.⁸⁹ Over two phases the project will restore degraded mangroves across 600,000 hectares of the Indus River Delta in Pakistan's Sindh Province, resulting in over 250 million tonnes of CO₂ sequestered over the project's lifetime. The project has already restored 73,000 hectares of degraded mangrove forests and tidal wetlands. DBC is registered in Verra's Verified Carbon Standard (VCS) Program and the Climate, Community & Biodiversity Standards (CCBS) Program.

The project prioritizes broad and extensive stakeholder collaboration and engagement, especially the local communities. Building upon over 30 years of engagement between the Sindh forest Department and local communities, the project has included various avenues of engagement which focus on provision of improved social services, capacity building and training, economic upliftment, and improved quality of life, along with a robust benefit-sharing mechanism based on cash and non-cash benefits.

The project has demonstrated significant success as the first tranche of carbon credits were issued in late 2022 and buyers expressed immense ambition for this initiative. Notable buyers included Microsoft, Carbon growth Partners, Respira and more. In 2023, credits from Pakistan's Delta Blue Carbon Project were auctioned at 29.72\$ per tonne. The exchange reflected that more than 60% of successful bid volumes were priced at over \$30 a ton, with some bid prices as high as \$50 a ton. Nonetheless, all the credits were sold at \$29.72 a ton.⁹⁰ DBC reflected the ambition and potential for nature-based initiatives as the demand for carbon-removal credits generated and issued exceeded available supply by more than 50%¹¹, signaling to the country to harness this momentum.

6.1 BENEFIT SHARING MECHANISM

The project takes place on land categorized as government land, however, prioritizing the socio-economic upliftment of the communities in Indus Delta is a key priority. The Project's key focus is to drive long-term, sustainable development that is underpinned by the regeneration of natural capital and to provide enhanced economic opportunities through project activities. To do so, the project's benefit-sharing mechanism comprises of both direct payments made to communities employed in restoration or conservation activities, as well as indirect payments in community development and livelihoods improvements (As detailed in Community Engagement Strategies).

⁸⁹ About – Delta Blue Carbon – Mangrove restoration in Sindh. (n.d.). <https://deltabluecarbon.com/about-v2/>

⁹⁰ REUTERS. (2023, June 16). Carbon credits auction for Pakistan mangrove project oversubscribed. The Express Tribune. <https://tribune.com.pk/story/2422073/carbon-credits-auction-for-pakistan-mangrove-project-oversubscribed>

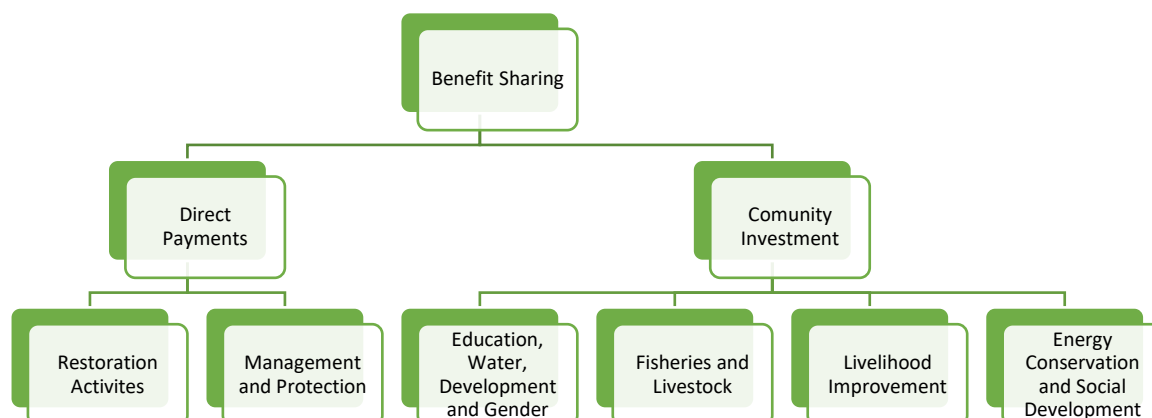


Figure 6 DBC Benefit Sharing

DBC's benefit-sharing is a multi-faceted approach by focusing on participation and inclusive decision-making, equity, effectiveness and efficiency, and accountability and transparency. DBC's benefit-sharing mechanism is based upon 4 key pillars (Figure 2). The mutually reinforcing pillars are embedded in the operations of the project, enabling its success. Through direct employment of locals in project implementation and monitoring, the project is operated and revenue is generated for community programs and interventions. Furthermore, revenue also ensures funding for sustainable and development initiatives. Through this system, the project impacts on biodiversity and fisheries directly supports socio-economic livelihoods of communities.

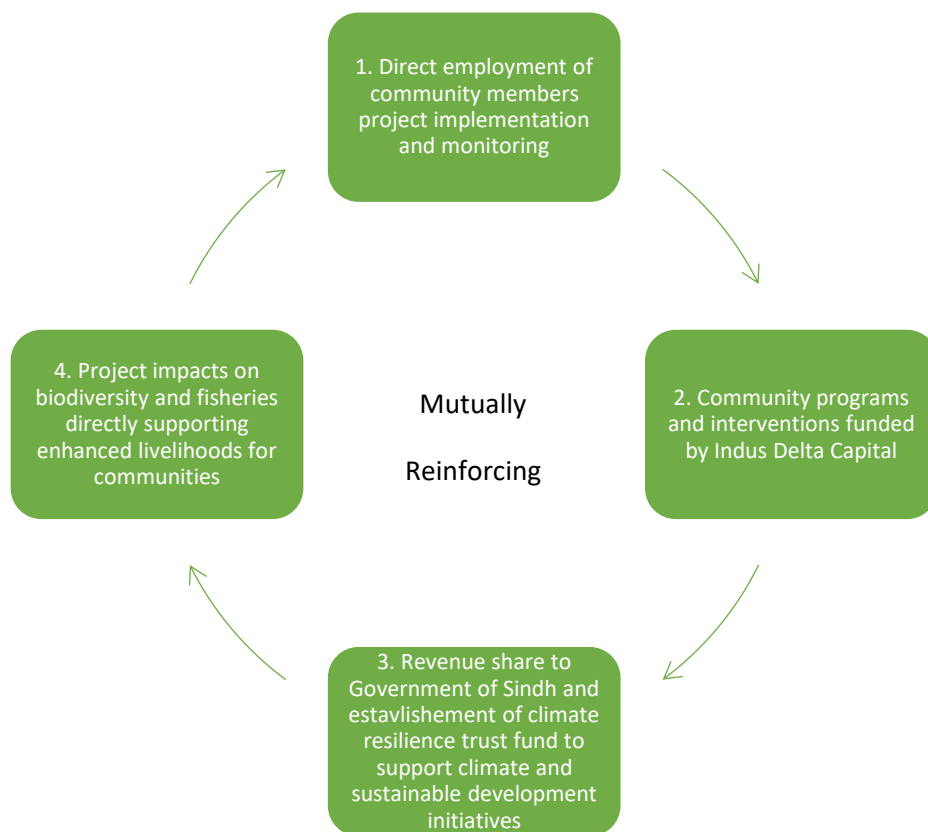


Figure 7 DBC Benefit Sharing and Community Engagement

6.2 Community Engagement Strategies

PARTICIPATORY RURAL APPRAISALS AND COMMUNITY CONSULTATIONS

To ensure social inclusion, village development committees and women organizations have been formed to determine the fair distribution of benefits generated by the project. These village-level organizations are socially inclusive and include representation and participation from marginal and vulnerable groups that are traditionally excluded from decision-making. In this manner, all relevant stakeholders are able to contribute to, and advocate for benefits that are most aligned with community priorities. Stakeholder identification for DBC was conducted through participatory rural appraisals and comprehensive.

PARTNERSHIP WITH LOCAL COMMUNITY

The restoration efforts are implemented in partnership with local communities and employ ecological practices that utilize the natural regeneration processes of mangrove ecosystems. Through institutional arrangements such as Mangrove Stewardship Agreements, Biodiversity Stewardship Agreements, and Fish and Sustainable Fishing Stewardship Agreements, local communities are empowered as stewards of mangroves and biodiversity conservation, ensuring their protection and sustainable management. The Mangrove Stewardship

Agreements comprised of ward and watch system, formalized through community groups and making the local communities custodians of restored as well as existing natural forest and biodiversity. This also provides additional income to these communities. The Stewardship groups increase community interaction with the project while enhancing a sense of ownership for the land and resources. Fishing Stewardship Communities ensure that all fishermen are compensated, provided market access and utilize sustainable fishing practices.

CAPACITY BUILDING AND SKILLS

The project prioritizes capacity-building and skill development in small business development, alternative livelihoods, and support of sustainable production and harvesting of fisheries, forestry, agriculture, livestock and other products including their value chain promotion and diversification. The project has trained local community of 24,000 members for natural resource management including agriculture, forestry and livestock management, crab farming and fisheries sorting/processing. The project is now expected to expand and in collaboration with Pollination, workshops have been designed to assess the social and biodiversity impact in the delta. This initiative has achieved to acquire information about the challenges faced by the community such as lack of transportation infrastructure, electricity, education etc.⁹¹ An initiative by the project provided new fishing nets with wider cast to the local farmers along with ice boxes. The objective is to encourage younger generation to carry forward the fishing traditions for self-sufficiency and resilience.⁹²

GENDER INCLUSION

The training session have been organized for local communities with a major focus on gender inclusion leading to the training of 6000 females equipping them with skills such as natural resource management. Job creation through various programs under the Delta Blue Carbon Project have also been inclusive in terms of the female gender. Women held a major 50% participation in land-use planning and awareness programs and also experienced an improved access to healthcare facilities.⁹³

Empowering Coastal Zone Women in Sindh Province is another initiative under the project that has been designed in collaboration with Women's Studies Department of Karachi University. This program included a one-day research trip to the coastal town in the village Muhammad Hashim Mirbahar. Mixed method research with around 200 households was aimed at improving the role of women in socio-economic activities and their value chain. The techniques introduced were focused on reducing the reliance of women on low income and climate vulnerable sources of revenue generation. Alternative livelihood options were communicated to the local community especially women through skill development and provision of leadership opportunities.⁹⁴

⁹¹ Pollination Group. (n.d.). The largest mangrove restoration project in the world enters phase two. Pollination Group. <https://pollinationgroup.com/global-perspectives/the-largest-mangrove-restoration-project-in-the-world-enters-phase-two/>

⁹² Delta Blue Carbon. (2023, September 5). Fishing nets and ice box distribution. Delta Blue Carbon. <https://deltabluecarbon.com/2023/09/05/fishing-nets-and-ice-box-distribution/>

⁹³ Compensate. (n.d.). Delta Blue Carbon. Compensate. <https://www.compensate.com/projects/delta-blue-carbon>

⁹⁴ Delta Blue Carbon. (2024, August 7). Empowering coastal zone women in Sindh Province, Pakistan. Delta Blue Carbon. <https://deltabluecarbon.com/2024/08/07/empowering-coastal-zone-women-in-sindh-province-pakistan/>

6.3 COMMUNITY DEVELOPMENT AND IMPROVEMENT UNDER DBC

As deforestation is the major cause of mangrove degradation, one of the aims of the Delta Blue Carbon Project is to improve the well-being of the community in order to reduce the social and economic dependency of people on the cut down forests and the burden on mangrove forests. This has been compensated by employing people for plantation activities further diversifying their income and increasing access to social services. Some of the community development and improvement outcomes are noted below:

SAFETY FROM NATURAL DISASTERS AND BIODIVERSITY CONSERVATION

The DBC project promises improved coastal and marine biodiversity conservation. This is ensured through the establishment and adaptive management of Marine Protected Areas (MPAs) in the Project Area/Project Zone. The project employs nature-based tools and solutions such as the use of green infrastructure, conserving and building/expanding climate resilient mangrove ecosystem which are better adapted to high salinity, increased temperatures, and other extreme weather events.

According to Earthly Rating⁹⁵, the project has protected 24,099 people from storm surges and coastal hazards. This includes an emergency relief and aid distribution program for the potential risk of cyclone storm in Keti Bandar, shah bandar and Kharochan village. Evacuating 15,700 people from the project zone area, the Government of Sindh has provided water, food supplies and mosquito nets.⁹⁶ However, the floods of 2022, despite its positive impacts on soil fertility, freshwater influx and hence mangrove growth, had a devastating effect on the local people. The project reached out in support of these people by providing amenities, healthcare facilities against flood related diseases and building material for protection against rain. Further support is provided to livestock in terms of vaccination and assistance in arranging for alternative sources of food other than the fodder provided by planted areas.⁹⁷

WATER, SANITATION AND HYGIENE

The Indus Delta Capital is particularly focused on improving the water and sanitation conditions of the region through the provision of safe drinking water in 60 villages with 49,000 people. Locations such as Ahmed Dablo, Haji Pandhi Jatt Goth, Haji Wario Jatt, Keti Bander, Muhammad Khan Jatt Goth and Peerabad have been selected where the focus is on improving the existing infrastructure. By partnering with the local communities' lack of access to safe drinking water was identified as one of the major problems in the villages and hence a cause of poor living standards. The Delta Blue Carbon has not only installed 5 reverse osmosis plants treating brackish water at the capacity of supply for 50,000 people per day but is also responsible for the management and operations with prospects of increasing the number of plants.

⁹⁵ Earthly, (n.d.). Mangrove restoration: Delta Blue. Earthly, <https://earthly.org/projects/mangrove-restoration-delta-blue>

⁹⁶ Delta Blue Carbon, (2023, June 15). Emergency relief and aid distribution in Cyclone Storm Biparjoy potential affected areas in the Indus Delta area, Shah Bandar. Delta Blue Carbon, <https://deltabluecarbon.com/2023/06/15/emergency-relief-and-aid-distribution-in-cyclone-storm-biparjoy-potential-affected-areas-in-the-indus-delta-area-shah-bandar/>

⁹⁷ Compensate, (n.d.). Delta Blue Carbon. Compensate, <https://www.compensate.com/projects/delta-blue-carbon>

JOB OPPORTUNITIES

Supporting the livelihood of 60 villages with majority of the people being farmers by profession, conservation of mangroves and the biodiversity it holds sustains the source of revenue for people living in the creeks.⁹⁸ Through its resource management activities, conservation initiatives and carbon sequestration projects, the project has provided job opportunities for 21,000 local community members

BASIC HEALTHCARE

The project is also focused on improving basic healthcare facilities in the region where the current achievements include increasing the access of local communities to all seven Basic Health Units (BHUs) through provision of ambulances and mobile healthcare facilities. With an aim to address the issue of the spread of communicable, non-communicable and preventable diseases along with problems related to malnutrition. Community Health Workers have been engaged for efficient services in villages of Muhammad Moosa Jatt, Ketī Bandar and Ahmed Khan Memon. One of the projects also included the renovation of a healthcare Centre in Ketī Bandar donated by the Indus Delta Capital. This also included the provision of an ambulance, hospital linen, medical equipment and a solar power system for electricity generation. Free medical camps on skin diseases were conducted in Shah bandar where qualified health care professionals provided their consultation and medicines for this commonly occurring health problem for local people.

ENERGY

The project prioritizes improved access to affordable and sustainable energy sources. Local communities use mangrove and other wood as a source of energy. To meet their energy needs, the project promotes the planting of other tree species for fuelwood purposes in the adjoining areas outside the Project Area so as to cater to their energy needs. It also promotes the use of solar energy and other energy sources besides various energy conservation.

EDUCATION

For the improvement of access to education for children in the region, the project has initiated programs to increase primary and secondary education enrollment and upgrades in the learning environments. This is likely to have a significant impact on villages such as Arab Jatt, Karam Ali Jatt, Gul Hassan Samoon village with 0 to 4% literacy rate and 0 to 2 schools in the area. Another source observes that 31 villages in the project zone have less than 0.1% of literacy rate whereas only 10 villages show a literacy rate up to 0.6%.⁹⁹

⁹⁸ Compensate. (n.d.). Delta Blue Carbon. Compensate. <https://www.compensate.com/projects/delta-blue-carbon>

⁹⁹ Delta Blue Carbon. (n.d.). Villages. Delta Blue Carbon. <https://deltabluecarbon.com/villages/>

6.4 PROJECT PAYMENT MECHANISM

The DBC project consists of a comprehensive mechanism to disseminate cash benefits to its local communities. Previously, the Rainforest Officer used to receive a cheque and would then distribute the payments to others. However, this raised accountability issues, especially when cash was handed over using CNICs (e.g., the Hyderabad–Sukkur highway case in Sindh). Due to this, the method was updated and payments are now made to a Labour Headman, whose account is pre-qualified. He is also a taxpayer, ensuring accountability, and is considered an expert in the process. The cheque is issued to him, and he then distributes the payments to the workers.

Payments are done through bank accounts or EasyPaiza (mobile transfers), and are considered third-party payments. Cash payments are permissible but only for amounts less than PKR 25,000 (88 USD). For amounts above PKR 25,000, payment must be made via a bank account only. This process demonstrates that the project evolved, drawing upon its experience, and adopting best practices to ensure equitable, transparent and accountable payment dissemination to local communities.

6.5 KEY TAKEAWAYS

The benefit-sharing and community engagement avenues utilized in the DBC project highlight key takeaways that provide a model for nature-based projects and interventions to draw and build upon:

1. Community engagement is critical to ensuring the sustainability and success of nature-based projects as they build upon the efforts of locals who possess rich expertise and relationships with the land, viewing them as not only beneficiaries and agents of change allows for sustainable collaboration amongst all stakeholders. DBC has done so through various suitable channels and avenues, targeting each member of society, including women.
2. DBC aims to inculcate improvement not only through improved mangrove management, but through efforts focusing on socio-economic upliftment of the target communities focusing on improved education, health, and other services, demonstrating that the project's success relies not only on improved mangrove cover, but also on the outcomes it is able to provide for locals. It is important to note that this also leads to the generation of high-quality credits that perform well in the market due to the extent of community engagement and benefits the project has generated.
3. Interventions that prioritize fostering of ownership, awareness and interaction between the project and locals, such as the Mangrove Stewardship Program, which promotes community based restoration, conservation and sustainable management, allows locals to become custodians of species and engage with the land which supports their livelihoods. It provides them the opportunity to be a part of the intervention and a stakeholder in its success.

4. During the feasibility stage, it is critical to engage with locals and analyze potential opportunities within the project area that may be a source of additional revenue. In the case of DBC, training was provided for interventions such as detergent and candle making for women, among other initiatives. This ensures that the community is equipped with the ability to diversify their income sources and sustainable practices are broadened.
5. Training and education are critical components of the proposed benefit-sharing mechanism as community visits highlighted the willingness of locals to not only work for the project, but to also learn and improve their socio-economic conditions. This will enable them to protect the environment, while capacitating them with skills to develop the identified alternative sources of revenue.
6. Any type of cash and payment transfer to communities must be done through an electronic payment system as it ensures efficiency, transparency and accountability. This is integral in ensuring that the benefits are recorded, verified and disseminated in an equitable manner. In global projects assessed, many of those implemented in developing nations prioritize digital and electronic forms of payments, particularly through bank accounts, ensuring efficiency and transparency.
7. The benefit-sharing mechanism must ensure the possible maximum revenue re-investment to be directed towards the needs of local communities. Across the identified project sites, improved access to water and sanitation, education, and health facilities was a key concern and need. As witnessed through DBC, revenue re-investment has the potential to transform lives. The DBC project enabled the installment of a reverse osmosis plant in one of the target villages, allowing locals access to clean water.
8. Development of alternative forms of revenue must be ensured. Across project sites, potential interventions include honey and mushroom collection, textile products made by female artisans, traditional medicinal products derived from forests. The proposed benefit-sharing mechanism must build upon these potential opportunities to inculcate economic growth across sites. Engaging communities in these interventions and maintaining constant communication will also allow project proponents to identify avenues to mitigate potential leakages in collaboration with locals.

7. PROPOSED BENEFIT-SHARING MECHANISM

The proposed intervention for mangroves regeneration and afforestation, and its development as a carbon market project, offers a plethora of benefits and improvements for local communities. To structure the provision of benefits for local communities, and ensure socio-economic upliftment, the following benefit-sharing mechanism is proposed. The project will encompass an inclusive, equitable and informed benefit-sharing mechanism aiming to ensure dissemination of benefits across project stakeholders, especially local communities. Grounded in findings from the socio-economic assessment across six target sites—including Sonmiani Hor, Kalamat Khor, Jiwani, Shabi and Ankara Creeks, Shahidi Khor, and Sawar Khor—this mechanism ensures communities actively participate in and benefit from the project. The mechanism includes **two primary benefit streams**:

- **Direct Benefits:** These include local employment opportunities in nursery management, plantation activities, monitoring, and ecosystem protection. Inclusion and community mobilization will be a key priority. This not only builds local capacity but fosters a sense of ownership and responsibility for long-term stewardship.
- **Indirect Benefits:** A defined portion of revenue generated from carbon credit sales will be provided to project proponents, and reinvested into community-driven development priorities, such as access to clean water, renewable energy, health services, education, and livelihood diversification. These interventions will be determined through participatory planning in line with the Government of Balochistan’s Community-Led Local Governance Policy (CLLGP), and conforming to international guidelines and best practices for development of carbon market projects.

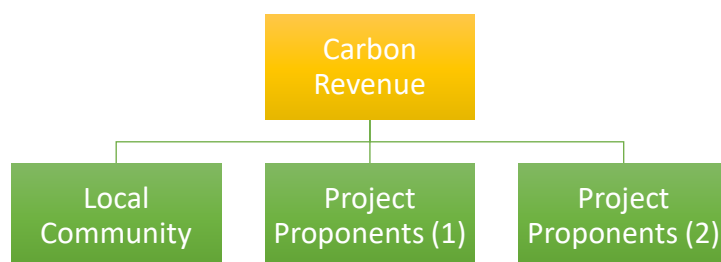


Figure 8 Carbon Revenue Beneficiaries

This approach reinforces accountability and supports a just transition to climate-resilient, community-centered development in Balochistan’s fragile coastal ecosystems.

Once the carbon credit sales are received, the community share will be directed as follows through the direct and indirect streams:

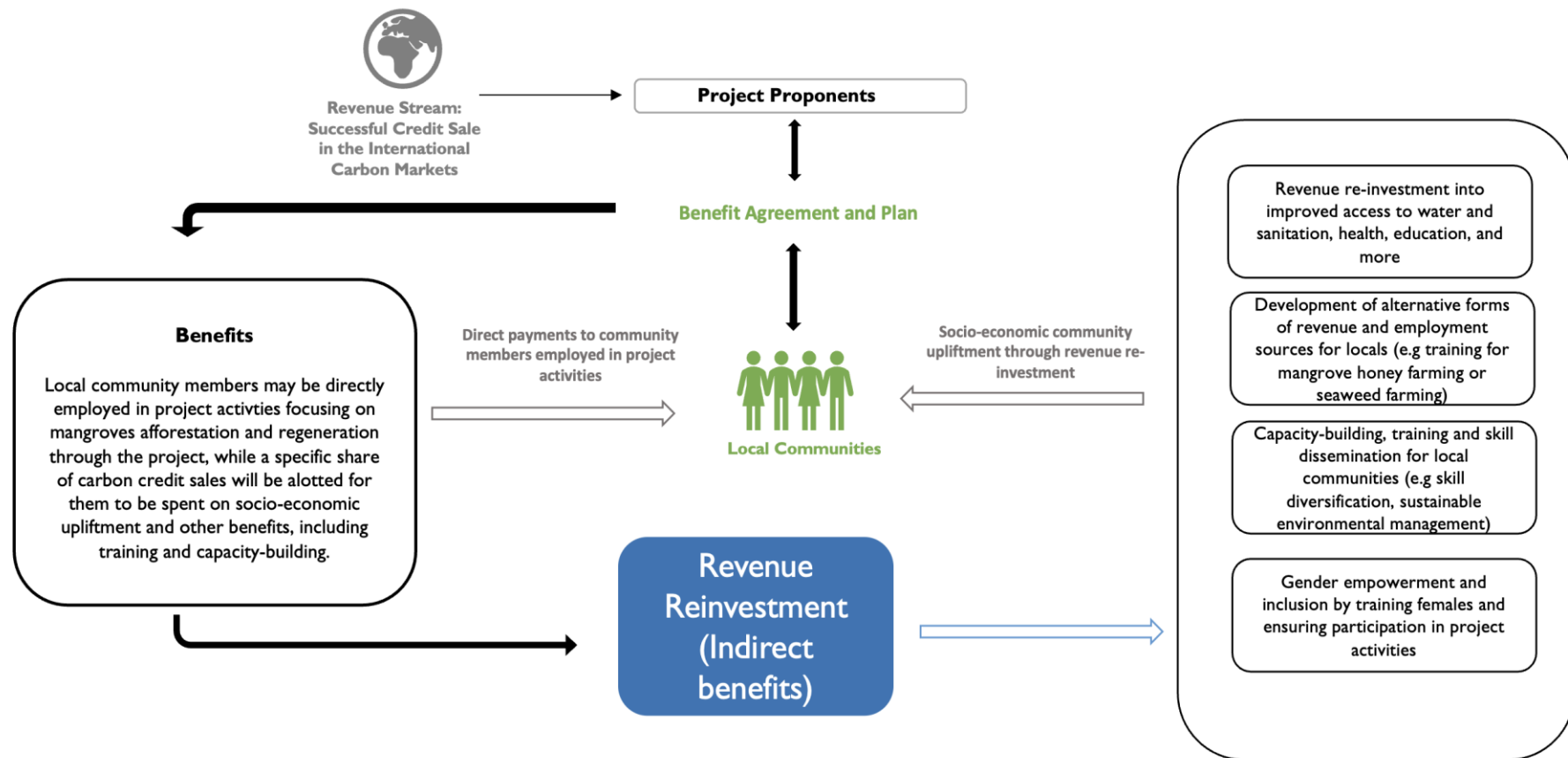


Figure 9 Tentative Benefit Sharing Plan

8. POTENTIAL PROJECT RISKS

Community engagement and inclusion are central pillars determining the sustainability and success of projects. However, potential risks exist that may be addressed to ensure successful project delivery. This section identifies and assesses potential risks in terms of the community aspect of the proposed intervention. At present, there is no risk rating criteria outlined by Verra except for the Results-Based Risk Assessment (RBA), which is for its internal review, hence, lays out a general risk rating criteria used to define the levels of risks and provide an idea of the associated severity:

Table 2 Risk Rating and Descriptions

Risk Rating	Description (Likelihood of occurrence)	Description (Likelihood of impact)
High	Immediate Action is needed	Severe impact and consequences
Medium	Frequent observations and measures required	Moderate impact causing noticeable disruption
Low	Annual observation needed; measures can be taken	Minor impact with limited consequence

The risks identified, along with mitigation measures are outlined below:

Table 3 - Risk Identification and Mitigation Matrix

Risk identification and Mitigation Matrix						
Risk Type	Risk	Risk Level (High, Medium, Low)- Likelihood of Occurrence	Risk Level (High, Medium, Low)- Impact of Occurrence	Description	Mitigation Measure	Responsible Authority
Environmental Risk	Climate change	Medium	High	Due to climate induced natural disasters such as torrential downpours or flooding, droughts, project activities may be impacted and delayed.	• Development of an Emergency Response Plan (ERP) • Consultation with the community and training including regular evacuation drills	Project proponents
Technical Risk	Lack of community participation and/or refusal to participate	Low	High	There may be a risk of reluctance or lack of participation from the local communities or they may refuse to be engaged in the project. This may be due to differing opinions whereby the community would not consent to the project activities if they believe it would not be beneficial for them.	• Engagement with Balochistan Forest Department as they have been historically active and present in target communities and have built a strong relationship with them. • Following FPIC process and revisiting process regularly	

					• Ensuring engagement with communities in setting and achieving project goals and activities • Development of a Grievance Redressal mechanism (GRM) for any community complaints	
	Lack of capacity or awareness of locals	Low	High	Local communities may lack awareness and/or capacities pertaining to project activities, impacting effective participation. However, locals have been part of mangrove restoration initiatives, hence, are expected to possess capacity	• Training and capacity-building may be conducted for locals • Ensuring a constant line of communication with local communities • Development of a Grievance Redressal mechanism (GRM) for any community complaints	
	Misuse of funds	Low	High	There may be a risk of misuse of funds at management level by responsible individuals. This may also impact the accountability and transparency of transfer of cash to communities.	• Electronic payment system may be set up, ensuring transparency of payments and cash transfers • For community members to receive cash benefits, an electronic payment system and ledger will	

					be set up to ensure transparency • Development of a Grievance Redressal mechanism (GRM) for any community complaints	
Social Risk	Exclusion of women and/or vulnerable social groups such as minorities	Low	High	Across the project sites, due to regressive socio-cultural norms and a lack of education, women are retained to the domestic sphere while men are the main decision makers and breadwinners of the household. Hence, there is a risk of exclusion of women. However, community consultations revealed that women are engaged in certain tasks such as collection of fuelwood, livestock and agricultural activities, and are also working as artisans. Hence, these avenues may be leveraged. There is also a risk that females consciously choose to retain their right of participation to their husbands or male counterparts as traditionally males are the head of the household.	• Development of a Gender and Social inclusion Plan • Development of specific indicators to monitor gender and social inclusion • Set up a grievance redress mechanism • Training and awareness of community participation • Training for women to work in nurseries and participate in project activities • To empower women and ensure they participate and receive benefits, community sensitization will be conducted • Development of a Grievance Redressal	

					mechanism (GRM) for any community complaints	
	Disregard for social and/or cultural norms	Low	High	Disregard for social and cultural norms may shape the project design in a manner that is unsuitable for local communities leading to a refusal to participate.	- Engagement with local communities and acquisition of a Free, prior, Informed Consent (FPIC) to ensure an inclusive process and gain consent - Tailoring the project to the local social and traditional landscape and social considerations - Development of a Grievance Redressal mechanism (GRM) for any community complaints	
	Loss of revenue streams	Low	High	When the project commences, collection of fuelwood and/or other uses of mangroves may be halted to ensure regeneration which may cause the risk of loss of economic support streams for locals.	- Provision of green jobs through project activities such as forest guardians, labourers, and more. - Development of alternative forms of livelihood as revenue streams	

					• Provision of training and capacity-building • Development of a Grievance Redressal mechanism (GRM) for any community complaints	
	Threat to Labor Safety and Occupational Health	Low	High	There may be a risk of labor safety when project activities are on-going, this could be attributed to climate induced disasters.	• Development of a Community Health and Safety Plan • Development of a Grievance Redressal mechanism (GRM) for any community complaints	
	Threat to Community Safety and Health	Low	High			
	Child Labor	Low	High	During community consultations, involvement of children to collect firewood was noted and observed, hence, there may be a risk whereby community involves children in project operations.	• Complete ban on child labor will be ensured • Development of a Grievance Redressal mechanism (GRM) for any community complaints	

The identification of risks pertaining to community provides critical insights into factors that may be considered. Additionally, project risk mitigation measures may also inculcate

Globally, carbon market projects have demonstrated and considered various risks due to the potential of critical issues when it comes to community engagement and participation. In some cases, some actors have looked to carbon credits as potential profit-making ventures and have attempted to secure the rights to forest carbon credits with little consultation or consent from the communities that would be most affected by these projects. For instance, in the Democratic Republic of Congo, an India-based company called Kanaka Management Services (KMS), with little apparent experience in carbon markets or REDD+, began soliciting local communities for permission to market carbon credits from their forests in late 2021. The people hired to gather signatures were spending as little as 35 minutes speaking with people about the project.¹⁰⁰ In another example from Indonesia, the project spanned half a million hectares, an area that has been home to the indigenous Chong people for centuries. The project operated for two years without consulting local communities and without a benefit-sharing agreement, leading to the project being halted.¹⁰¹

Furthermore, inadequate transparency in MRV activities, carbon accounting, carbon credit sales, and benefit sharing, which can lead to local communities being overlooked. A review of 47 project design documents revealed disappointing results regarding benefit sharing. Only 15 projects mentioned benefit sharing arrangements, and of those, only four provided evidences of actual benefit sharing with local communities and/or Indigenous Peoples.^{102 103} The lack of meaningful benefit sharing has led to significant consequences, including project delays, cancellations, and community opposition—particularly in regions with strong Indigenous rights. Carbon credits from such projects often trade at 15-30% discounts, as buyers prioritize verified social co-benefits. Poor benefit sharing also triggers reputational risks, with verifiers and rating agencies now rigorously scrutinizing social impacts. Effective stakeholder engagement is crucial, as projects that fail to involve local communities in decision-making processes often face challenges in implementation and sustainability.¹⁰⁴

The absence of conflict resolution mechanisms is also a key concern, as risk of conflict among stakeholders during implementation, MRV, carbon credit sales, and benefit sharing. Conflicts may arise if local communities are excluded from the project. Conversely, developers and funders might perceive mismanagement of funds and unmet targets by local actors. Anticipating these conflicts and establishing a fair conflict resolution plan is crucial.¹⁰⁵

It is critical to note that these risks severely impact the delivery of the project, and the quality and integrity of generated carbon credits. As the global carbon market landscape develops and progresses, community considerations, inclusion and engagement are key pillars and metrics of the viability of a carbon market project. While this report observes the risks specific to the community based on desk research and surveys, the **Project Risks and Options Analysis Report** provides a comprehensive risk assessment complemented with the

¹⁰⁰ Daniel. (2025, April 4). Do carbon credits really help communities that keep forests standing? Mongabay Environmental News. <https://news.mongabay.com/2024/01/do-carbon-credits-really-help-communities-that-keep-forests-standing/>

¹⁰¹ Human Rights Watch. (2024, February 28). Cambodia: Carbon offsetting project violates Indigenous group's rights. Human Rights Watch. Retrieved from <https://www.hrw.org/news/2024/02/28/cambodia-carbon-offsetting-project-violates-indigenous-groups-rights>

¹⁰² Daniel. (2025, April 4). Do carbon credits really help communities that keep forests standing? Mongabay Environmental News. <https://news.mongabay.com/2024/01/do-carbon-credits-really-help-communities-that-keep-forests-standing/>

¹⁰³ Karpowicz et. al. (2024). Mangrove-Based Carbon Market Projects: 15 Considerations for Engaging and Supporting Local Communities. Diversity, 16(9), 574. <https://doi.org/10.3390/d16090574>

¹⁰⁴ Pham et. al. (2015). Adapting Free, Prior, and Informed Consent (FPIC) to Local Contexts in REDD+: Lessons from Three Experiments in Vietnam. Forests, 6(7), 2405-2423. <https://doi.org/10.3390/f6072405>

¹⁰⁵ Karpowicz et. al. (2024). Mangrove-Based Carbon Market Projects: 15 Considerations for Engaging and Supporting Local Communities. Diversity, 16(9), 574. <https://doi.org/10.3390/d16090574>

responsible entity for the risk and subsequently presenting a mitigation pathway for all the identified risks. This section focuses on the social and community dimensions of project risks. Together, both reports present a holistic view of the risk landscape, offering detailed mitigation pathways including safeguards, consent protocols, and conflict resolution mechanisms.

9. FREE, PRIOR, AND INFORMED CONSENT: INCLUSIVE AND PARTICIPATORY COMMUNITY ENGAGEMENT

To ensure inclusive, structured and collaborative community engagement that is cognizant of community rights and priorities, a Free, Prior, and Informed Consent (FPIC) is a key tool utilized in projects across the world, including carbon market projects. The FPIC principle was adopted by the UN General Assembly in 2007 as part of the United Nations Declaration on the Rights of Indigenous Peoples and centers on obtaining consent from Indigenous Peoples (IPs) for any activities undertaken on their land. It mandates that governments cannot implement a policy or project on, or concerning, Indigenous Peoples' lands unless there is prior consultation and consent from the Indigenous community.^{106 107} FPIC is a principle protected by international human rights standards that state, 'all peoples have the right to self-determination' and – linked to the right to self-determination – 'all peoples have the right to freely pursue their economic, social and cultural development'.¹⁰⁸ **FPIC is a key tool to ensure community participation in Balochistan and identify the importance of their engagement as they have resided in the area historically and depend on it for their livelihoods.**

9.1 GLOBAL CARBON MARKET LANDSCAPE AND FPIC

FPIC is one of the key requirement by credible and accalimed standard setting bodies such as Verra and Gold Standard for project development and implementation processes that ensure community inclusion and engagement. Gold Standard's Core Document for Safeguarding Principles and Requirements notes that Projects which may impact indigenous peoples and local farmers are designed in a spirit of partnership with them, with their full and effective participation, with the objective of securing their free, prior, and informed consent (FPIC) where their rights, lands, resources, territories, traditional livelihoods may be affected.¹⁰⁹ Similarly, Verra's *Nature Framework* acknowledges the critical role that Indigenous Peoples and local communities have in stewarding global biodiversity, and one of its central goals is to reward them for their efforts to protect and restore nature. The framework requires projects to follow a comprehensive set of social safeguards to obtain FPIC, establish mutually agreed benefit-sharing mechanisms, and ensure genuine stakeholder participation throughout project design and implementation.¹¹⁰

The Integrity Council for Voluntary Carbon Markets (ICVCM), a key governance body working to ensure and maintain high integrity in the global carbon markets, outlines FPIC as a critical requirement as per its Core Carbon Principles (CCP) and Assessment Framework.¹¹¹

¹⁰⁶ What is Free, Prior and Informed Consent (FPIC)? (2015, January 15). IHRB. <https://www.ihrb.org/resources/what-is-free-prior-and-informed-consent-fpic>

¹⁰⁷ FAO. (2016). Free, Prior and Informed Consent. <https://openknowledge.fao.org/server/api/core/bitstreams/84bc655-3cf6-44b5-b6bb-ad2aeed5863/content>

¹⁰⁸ FAO. (2016). Free, Prior and Informed Consent. <https://openknowledge.fao.org/server/api/core/bitstreams/84bc655-3cf6-44b5-b6bb-ad2aeed5863/content>

¹⁰⁹ Gold Standard. (2023). Safeguarding Principles & Requirements. https://globalgoals.goldstandard.org/standards/103_V2.0_PAR_Safeguarding-Principles-Requirements.pdf

¹¹⁰ Verra. (2024b, December 2). Verra launches Nature Framework. <https://verra.org/verra-launches-nature-framework/#~:text=The%20framework%20requires%20projects%20to%20follow%20a,Stakeholder%20participation%20throughout%20project%20design%20and%20implementation.&text=Verra%20strives%20to%20help%20define%20this%20ascent,consistent%20principles%20that%20will%20highly%20improve%20programs%20meets>

¹¹¹ The Integrity Council. (2021). Integrity Council launches global benchmark for high-integrity carbon credits. <https://icvcm.org/integrity-council-launches-global-benchmark-for-high-integrity-carbon-credits/>

FPIC is a key component of ensuring that carbon market projects and generated credits retain high-integrity, quality and transparency and have been produced through community consent and inclusion. This is also a key factor determining pricing and market performance of credits as buyers are increasingly committed to buying credits that secure social considerations among other factors such as robust project emissions accounting. Buyers could expect, on average, to pay a higher price for credits that come from projects with lower risks.¹¹² From 2021 to 2024, projects that contributed to Sustainable Development Goals (SDG) had average per-credit prices that were 31% higher than those without SDG claims.¹¹³ There exists tremendous potential for action as the current carbon markets face a significant mismatch between supply of integrity carbon credits and buyer demand- a gap estimated at 40%.¹¹⁴ Hence, FPIC is a key resource to work towards high-integrity and transparent carbon credits that fetch a viable price in the international market while ensuring community inclusion.

9.2 IMPLEMENTING FPIC

The first three elements (free, prior and informed) qualify and set the conditions of consent as a decision-making process. In short, consent should be sought before any project, plan or action takes place (prior), it should be independently decided upon (free) and based on accurate, timely and sufficient information provided in a culturally appropriate way (informed) for it to be considered a valid result or outcome of a collective decision-making process.

The FPIC is to be acquired at the start of the project by attaining consent of communities and agreement to participate in the project. It is then required to be maintained over the project duration. In Pakistan, the World Wildlife Fund (WWF) operationalizes these principles through its Complaint Resolution Mechanism, ensuring that community voices remain central to natural resource management. The DBC project has also developed and ensured FPIC through its project duration.

Through this, the project proponents recognize the rights of local communities and stakeholders in implementing and informing the project, especially in decision-making and benefit-sharing, and aim to ensure a collaborative and process to undertake the project. The following figure identifies FPIC considerations across project processes:

¹¹² The state of Carbon Credits 2024. (n.d.). <https://www.sylvera.com/reports/state-of-carbon-credits-2024-report#text=2024%20witnessed%20a%20dynamic%20year%20shifts%20are%20reshaping%20the%20market>.

¹¹³ Wong, A., Mackey, J., & Sanseverino, T. (2024, September 26). *Buyers pay more for carbon credits with SDG claims*. BeZero Carbon. <https://bezercarbon.com/insights/buyers-pay-more-for-carbon-credits-with-sdg-claims>

¹¹⁴ Sylvera. (2025, May 19). *How to increase carbon credit quality and price: What's important for project developers*. Sylvera. <https://www.sylvera.com/blog/increase-carbon-project-quality-price>

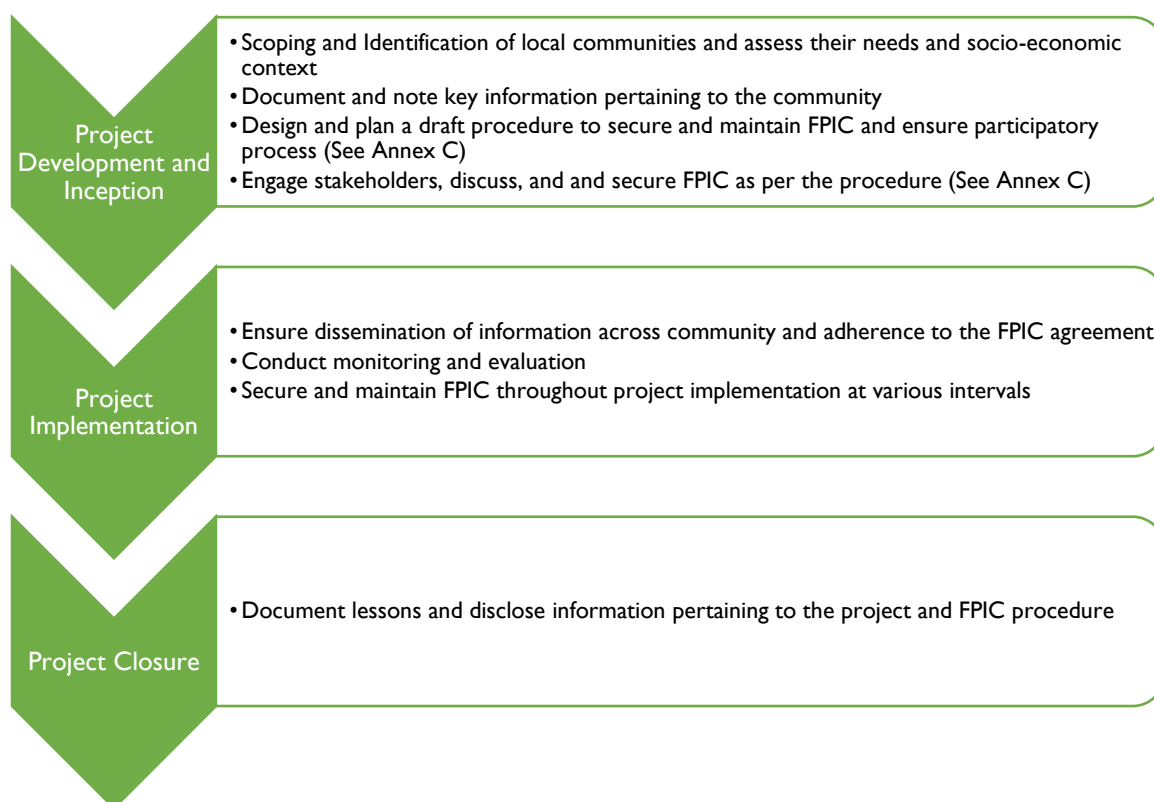


Figure 10 FPIC Steps and Project Process

By following these steps, project developers can better ensure that communities are fully informed, consulted, and empowered throughout the intervention. The FPIC process follows a structured approach, as detailed below:^{115 116}

¹¹⁵ RainForest Alliance. (2022). Free, Prior and Informed Consent (FPIC) Processes. <https://www.rainforest-alliance.org/wp-content/uploads/2022/07/SA-G-SD-45-V1-Guidance-T-Free-Prior-And-Informed-Consent-FPIC-Processes.pdf>

¹¹⁶ FAO. (2016). Free, Prior and Informed Consent. <https://openknowledge.fao.org/server/api/core/bitstreams/844bc655-3cf6-44b5-b6bb-ad2aeede5863/content>

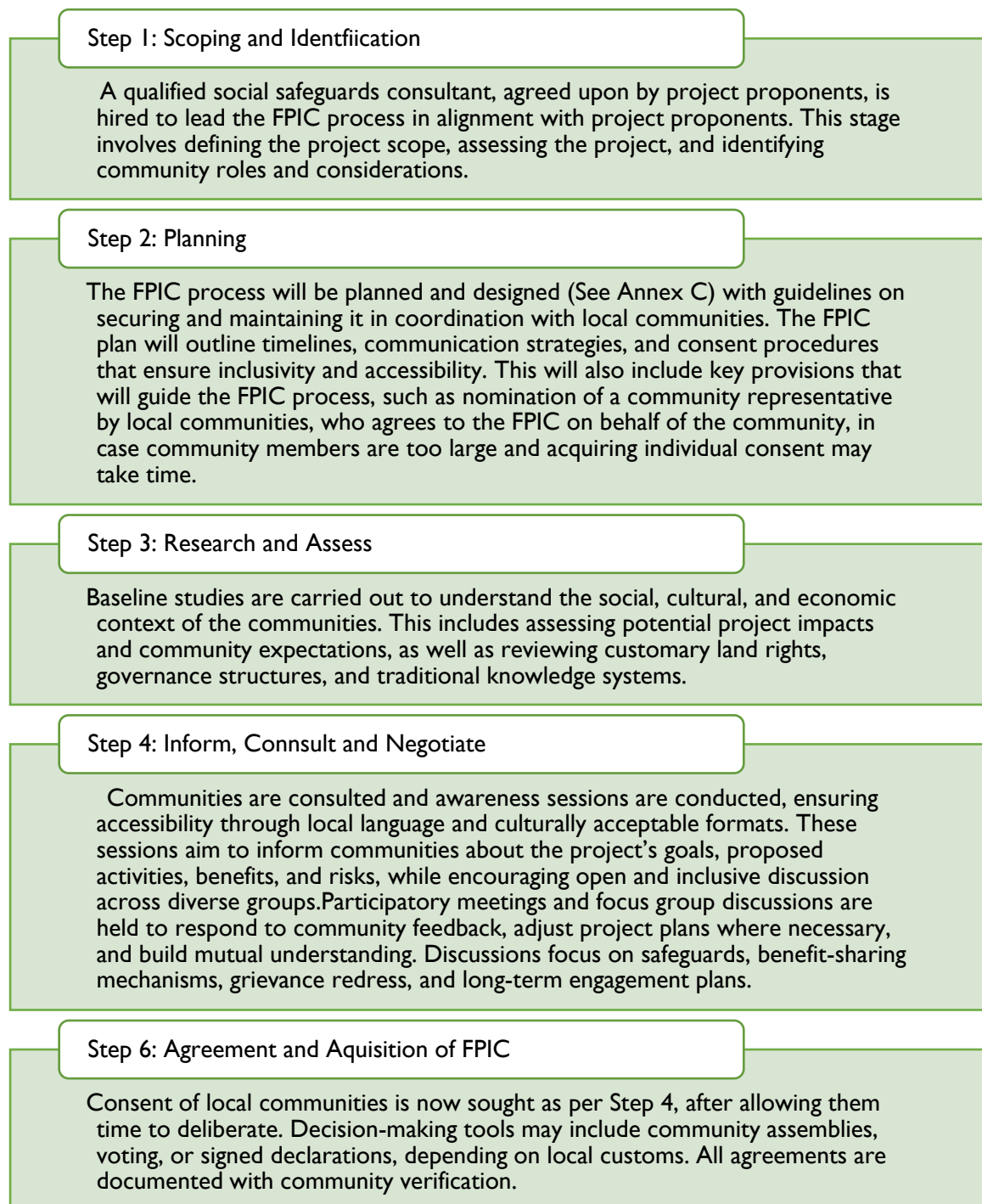


Figure 11 Steps for FPIC

Once acquired, the FPIC is to be secured and maintained across the project durations through community engagements structured as per a schedule aligned with the project duration. Additionally, it is supplemented by monitoring, review and verification (MRV) and set up of Grievance Redressal Mechanisms (GRM). In the case of the proposed project, the FPIC

process will be tailored and localized to the identified project sites. Annex C identifies a draft FPIC procedure the project proponents may follow to acquire FPIC at project inception.

Several case studies collectively reveal that FPIC is crucial for safeguarding community rights and ensuring project legitimacy, its effectiveness hinges on how well it is implemented. Projects in Indonesia¹¹⁷ and Vietnam¹¹⁸ illustrate that inadequate communication, misinformation, and lack of cultural sensitivity can undermine FPIC, leading to mistrust and project failure—even when initial consent is obtained. In contrast, successful initiatives like the Delta Blue Carbon Project in Pakistan^{119 120}, MAP's work in Mozambique¹²¹, and Yagasu's coastal greenbelt in Indonesia¹²² show that meaningful engagement, clear communication, and tangible benefits—such as livelihood opportunities, healthcare, education, and empowerment—are key to building trust, securing long-term community participation, and ensuring project sustainability. These examples demonstrate that FPIC must go beyond formal procedures to become a dynamic, inclusive process rooted in transparency, trust, and shared value.

¹¹⁷ UNREDD PROGRAMME. (2011). *FPIC IN REDD+*. [https://www.un-redd.org/sites/default/files/2021-10/Lessons Learned FPIC for REDD%2B in the Asia Pacific region August 2012.pdf](https://www.un-redd.org/sites/default/files/2021-10/Lessons%20Learned%20FPIC%20for%20REDD%2B%20in%20the%20Asia%20Pacific%20region%20August%202012.pdf)

¹¹⁸ UNREDD PROGRAMME. (2011). *FPIC IN REDD+*. [https://www.un-redd.org/sites/default/files/2021-10/Lessons Learned FPIC for REDD%2B in the Asia Pacific region August 2012.pdf](https://www.un-redd.org/sites/default/files/2021-10/Lessons%20Learned%20FPIC%20for%20REDD%2B%20in%20the%20Asia%20Pacific%20region%20August%202012.pdf)

¹¹⁹ Market-based solutions for sustainable development: Lessons from the Delta Blue Carbon project in Pakistan. (2023, June 5). International Growth Centre. <https://www.igc.org/blogs/climate-priorities-developing-countries/market-based-solutions-sustainable-development>

¹²⁰ Community – Delta Blue Carbon – mangrove restoration in Sindh. (n.d.). <https://deltabluecarbon.com/community/>

¹²¹ Mangrove Action Project. (2024, September 25). Strengthening mangrove restoration in Mozambique - Mangrove Action Project. <https://mangroveactionproject.org/case-study/strengthening-mangrove-restoration-in-mozambique/>

¹²² South Pole. (2022). Case Study - Mangrove Restoration and Coastal Greenbelt Protection. https://www.wwf.org.uk/sites/default/files/2022-07/case_study_livelihoods_yagasu_mangrove_restoration.pdf

10. RECOMMENDATIONS

Building on the socio-economic and environmental assessments as well as the sustainable management plan, the following strategic recommendations aim to strengthen long-term sustainability and resilience in Balochistan's coastal regions. These focus on systemic approaches, inclusive governance, risk management, and capacity enhancement that complement community-level interventions without duplicating earlier solutions.

- I. **Inclusive and Adaptive Engagement Models:** Ensure inclusion and engagement for all project stakeholders, especially local communities, to ensure a viable project design that builds upon the capacities and ambitions of each partner. Proponents may explore opportunities for broad community inclusion by engaging local communities across the sites, especially women, youth and children, and fostering an atmosphere focused on environmental regeneration and progress.
- II. **Enhancing Co-Benefits and Socio-Economic Upliftment:** While promoting environmental solutions like mangrove restoration and sustainable aquaculture that generate multiple benefits including carbon sequestration, develop avenues for livelihood diversification based upon existing potential across the sites. Assessments revealed the potential for mangrove honey and sea weed farming. Furthermore, other interventions such as promotion of integrated value chains linking fisheries, eco-tourism, and artisanal products to expand market opportunities; and coordinate interventions across health, education, and environment sectors to improve overall well-being. Additionally, revenue re-investment may also focus on provision of improved services such as health and education, and capacity-building and training opportunities for locals.
- III. **Gender Inclusion and Social Equity:** Leverage the project design and tailor it to enhance the socio-economic landscape for female participation by promoting engagement in the project activities. Mainstream gender-responsive programming to support women's education, health, economic empowerment, and leadership; design culturally sensitive engagement processes that create safe spaces for marginalized groups. Additionally, women are involved in development of crafts which may be upscaled.
- IV. **Equitable Benefit-Sharing:** Develop and propose an inclusive and equitable benefit sharing mechanism which prioritizes the needs and challenges of local communities, identifying them as a key beneficiary of the project.
- V. **Risk Mitigation and Resilience Building:** Identify potential risks to local communities and viable mitigation strategies to ensure a sustainable and inclusive process.

- VI. **Capacity-Building and Knowledge Empowerment:** Prioritize tailored training programs to build technical and leadership skills aligned with local livelihoods and governance; conduct sustained awareness campaigns on environment, climate, health, and social rights. Capacity building and training will promote the adoption of diverse livelihood opportunities, reducing reliance on marine resources.
- VII. **Community Led Governance:** All interventions may adhere to the principles laid out in the Government of Balochistan Community-Led Local Governance Policy for fostering robust community participation and inclusive governance. Furthermore, continuous alignment with the guidelines set by standard-setting bodies, such as Climate, Community & Biodiversity (CCB) Standards, if adopted for the project, will be maintained to ensure the project's global credibility, maximize its environmental and social co-benefits, and facilitate its participation in the voluntary carbon market.
- VIII. **Mainstream Local Knowledge into Planning:** Involve traditional knowledge holders in planning and monitoring to align restoration activities with seasonal, cultural, and ecological realities.
- IX. **FPIC Processes:** Designing and leading an inclusive FPIC process to engage local communities and contributing to the development of a high-quality project, providing a global example for community engagement and collaboration for sustainable mangrove management.

These strategic recommendations provide a framework for creating enabling conditions that reinforce community resilience, promote equity, and safeguard coastal ecosystems. When combined with localized management plans and community actions, they can drive inclusive and sustainable development in Balochistan's vulnerable coastal regions.

II. CONCLUSION

The report provides a socio-economic assessment (Part of the Initial Environmental Assessment) of the identified project sites, assessing and identifying the community landscape, socio-economic realities, and community dependance on forests. The report also delves upon the key challenges faced by local communities and potential strategies and interventions to inculcate socio-economic upliftment by integrating findings as part of the design of the proposed carbon market project for mangrove afforestation and regeneration. The proposed interventions—including livelihood diversification, gender empowerment, infrastructure investments, and community-led ecosystem restoration.

The assessment finds that a majority of community members living around the sites depend on fishing as a primary source of employment. Infrastructure such as presence of educational or health facilities is inadequate while provision of services such as water or electricity is also dire. Education levels are critically low, especially amongst females and gender inequality persists, while women do retain participation in the economic sphere through participation in activities such as livestock rearing, fuelwood collection, and making traditional crafts.

Environmental degradation, fueled by human and natural factors, was noted across sites. Mangrove ecosystems face degradation due to unsustainable and rampant fishing practice, illegal trawling, impacts of the climate crisis such as coastal erosion, floods and droughts. Additionally, assessments reveal a strong willingness of locals to participate in the project and gain the associated benefits. The report builds upon this assessment to identify the key challenges faced by local communities and identify mitigation options that may be integrated into the development of the proposed carbon market project, as part of the benefit-sharing mechanism. To further expand the understanding of community considerations, the report also provides an insight into the Delta Blue Carbon (DBC) project, assessing how they have mainstreamed and implemented community upliftment and integration strategies.

The report further draws upon with-and without- project impacts to identify the need of the potential intervention and assesses potential risks that may threaten communities. It also identifies mitigation measures. To further align the development of this intervention with global best practices and the guidelines set out by carbon market standard-setting bodies such as Verra and Gold Standard, the report explores and outlines a Free, Prior and Informed Consent (FPIC) procedure the proponents must ensure to demonstrate community consent, inclusion, and engagement. Finally, the assessment outlines key recommendations to pave the way forward.

In conclusion, the assessment establishes a strong case for community-driven, environmentally sound, and socially inclusive carbon offset interventions. It underscores the importance of local participation, gender inclusion, and institutional support in building long-term climate resilience and livelihood security. With targeted investments and multi-stakeholder collaboration, the project has the potential to position Balochistan as a model for carbon offset development rooted in equity, sustainability, and ecological integrity.

The primary aim of this report is to guide the Government of Balochistan in tailoring the proposed carbon market project for the mangroves of Balochistan, to the local socio-economic context and need, ensuring a collaborative and inclusive way forward. By linking ARR-based carbon offset initiatives with the region's socio-economic and ecological needs, the project holds the potential to inculcate critical change through socio-economic upliftment, boosted by the stream of revenue generated through carbon credits, while ensuring environmental resilience.

ANNEX-A: STANDARD OPERATING PROCEDURE FOR SOCIO-ECONOMIC DATA COLLECTION

Across the identified sites (Sonmiani Khor (Miani Horr), Kalamat Khor (Kalamat Horr), Shabi and Ankara Creeks, Sawar Khor, Sahidi Khor, Jiwani (Gwater Bay)), mangroves are a critical natural fortress providing a multitude of services ranging from the provision of livelihood opportunities, necessities such as fisheries, and disaster risk resilience, among others. For coastal communities, mangrove species play an important role in providing fuel, house construction, firewood, timber and fodder for livestock.¹²³ The socio-economic issues of coastal regions of Balochistan include water scarcity, inadequate healthcare facilities and infrastructure, while issues specific to the coastal region include coastal erosion, siltation and illegal trawling.^{124 125}

Among coastal communities, poverty is widespread and literacy levels are low, while health issues are rampant.^{126 127} The coastal communities' predominant source of livelihood is from fishing and fishing associated businesses such as boat building/repair and net manufacturing, grazers, and agriculturalists.^{128 129} Women also participate in tasks like cleaning fish, peeling shrimp, and repairing fishing nets. Community members in the identified sites primarily depend on fishing for their livelihoods, which is increasingly under threat due to over-fishing and unsustainable methods, mangrove deforestation and climate change.¹³⁰ Through this socio-economic assessment we aim to collect further data on the socio-economic landscape in the project sites. Our key goal is to understand community willingness to participate in the forestry project, potential benefits and livelihood opportunities that may be developed through this project, and how it can benefit them.

1. Objective

To collect socio-economic data from the identified sites and resident communities in Balochistan to assess the feasibility for the Balochistan Carbon Offset project.

2. Scope

This SOP covers the procedures for conducting socio-economic surveys, including household interviews, focus group discussions, and key informant interviews of the target communities residing in project areas.

3. Equipment and Tools

- Survey questionnaires
- GPS device
- Notebooks and pens
- Camera (optional)

¹²³ Saifullah, S. M., Rasool, F., & Kamal, A. (2003). Mangrove conservation along the coast of Sonmiani, Balochistan, Pakistan. *Wetlands Ecology and Management*, 11(6), 483–491. <https://doi.org/10.1023/B:WETL.0000007196.18184.61>

¹²⁴ Hanif, S., & Shah, M. H. (2020). *Coastal communities of Balochistan vis-a-vis CPEC: Mapping perceptions and socioeconomic issues*. ResearchGate. https://www.researchgate.net/publication/342904948_Coastal_Communities_of_Balochistan_vis-a-vis_CPEC_Mapping_Perceptions_and_Socioeconomic_Issues

¹²⁵ MFF Pakistan (2014). Pakistan National Strategy and Action Plan. MFF Pakistan, Pakistan. 56 pp. Retrieved from <http://w.mangrovesforthe future.org/assets/Repository/Documents/MFF-NSAP.pdf>

¹²⁶ WWF-Pakistan. (2005). Technical paper: Knowledge, attitudes, and practices (KAP) survey in Kalamat Khor, Balochistan. WWF-Pakistan. https://www.wwf.org.pk/pdf/ftp_kap_kalamat.pdf

¹²⁷ Nassir, M. B., Hussain, A., Bano, A., Qamar, J., & Tahir, F. (2019). Efficacy of Mela Azedarach for Gastrointestinal Nematodes Control in Sheep. *International Journal of Environmental Sciences & Natural Resources*, 18(2), 556053. Retrieved from <https://juniperpublishers.com/ijesnr/IJESNR.MS.ID.556053.php>

¹²⁸ WWF (2005) Study on Knowledge, Attitudes and Practices of Fisherfolk Communities about Fisheries and Mangrove Resources

¹²⁹ MFF Pakistan (2014). Pakistan National Strategy and Action Plan. MFF Pakistan, Pakistan. 56 pp. Retrieved from <http://w.mangrovesforthe future.org/assets/Repository/Documents/MFF-NSAP.pdf>

¹³⁰ MFF Pakistan (2014). Pakistan National Strategy and Action Plan. MFF Pakistan, Pakistan. 56 pp. Retrieved from <http://w.mangrovesforthe future.org/assets/Repository/Documents/MFF-NSAP.pdf>

- Mobile device with data entry software (optional)

4. Procedures

4.1. Survey Design

1. Sampling Strategy:

- Cluster sampling will be conducted as villages and areas are geographically dispersed, hence, geographic areas will be clustered to reduce complexity
- Stratified Random sampling will be conducted select respondents for interviews as the population will be diverse, geographical location and gender will be utilized as a subgroup.
- Out of this subgroup, participants will be selected at random and engaged in Focus Group Discussions (FGDs)
- FGDs will include a group of 7-8 people
- Given the local traditions and cultural norms, we will keep the option open for meeting community representatives where appropriate. In such cases, a representative sample will be collected that ensures that those consulted (representatives or selected individuals) reflect key characteristics of the larger population (e.g., land ownership, or forest usage patterns).

2. Questionnaire Development:

- Develop a structured questionnaire covering key socio-economic indicators
- The questionnaire will gauge information on socio-economic indicators such as age, gender, household size, assets, employment, education
- The questionnaire will also assess other aspects such as land use, income sources, forest dependency, and willingness to participate in the potential project.

4.2. Data Collection

1. Household Interviews:

- Conduct face-to-face interviews with selected households.
- Record responses in the survey questionnaire.

2. Focus Group Discussions (FGDs):

- Organize FGDs with community leaders, women, and youth groups.
- Discuss community perceptions of forest resources and forestry projects.

3. Key Informant Interviews (KIIs):

- Interview key stakeholders such as forest department officials, local NGOs, and community elders.
- Gather insights on historical land use changes and potential forestry sites.

4.3. Data Recording

1. Field Notes:

- Take detailed notes during interviews and discussions.
- Record GPS coordinates of each household or community visited.

2. Photographs:

- Take photographs of community activities, land use, and forest areas (with consent).

4.4. Data Analysis

1. Data Entry:

- Enter survey data into a digital database (e.g., Excel or SPSS).
- Perform data cleaning to remove inconsistencies.

2. Data Analysis:

- Analyze data to identify trends in forest dependency, income sources, and community willingness to participate in forestry projects.
- Use statistical tools to generate descriptive statistics and cross-tabulations.

4.5. Reporting

1. Report Preparation:

- Prepare a detailed report summarizing the socio-economic findings.
- Include recommendations for forestry project feasibility based on community feedback.

4.6. Ethical Considerations

1. Informed Consent:

- Verbal consent will be acquired from participants prior to engagement.
- Participants will be informed of the nature and goal of the engagement.

2. Cultural Sensitivity:

- It will be ensured that the engagement remains respectful of local customs.

4.7. Quality Assurance

1. Quality Assurance Review

- For quality assurance, the questionnaire developed for socio-economic community assessment will be shared with all stakeholders prior to activation
- Once the final report is prepared, it will be shared with stakeholders such as the Balochistan Forest and Wildlife Department to gather any feedback on data quality.

ANNEX-B - SOCIO ECONOMIC BASELINE SURVEY

4/14/25, 1:20 PM

Balochistan - Socio Economic Baseline Survey

Balochistan - Socio Economic Baseline Survey

Demographics

Name

Gender

- ☐ Male
☐ Female

Ethnic Background

District and Village Name

Mangrove Site

- ☐ Sonmiani Khor
☐ Sawar Khor
☐ Sahidi Khor
☐ Kaimat Khor
☐ Jiwan Khor
☐ Shabi Khor
☐ Ankara Creeks

Social Baseline

Age

- ☐ 20 - 30 y
☐ 30 - 40 y
☐ 40 - 50 y
☐ 50 above y

Education Level

- ☐ Uneducated
☐ Primary
☐ Secondary
☐ Higher

Household Size

- ☐ Less than 5
☐ Less than 10
☐ Other

If 'other', please specify

How many earning individuals in the family

- ☐ Less than 5
☐ Less than 10
☐ Other

If 'other', please specify

Housing Structure

- ☐ Kacha
☐ Pucca
☐ Semi-pucca

Cattle related infrastructure

- ☐ Cattle shed
☐ Boundary wall
☐ More

If 'More', please specify

<https://ee.kobotoolbox.org/x/c5IWzhcD>

1/3

Fishing related equipment

- ☐ Gillinets
☐ Line gears
☐ Encircling nets
☐ Hooks
☐ Boats
☐ Lines
☐ Others

If 'Others', please specify

Source of drinking water

- ☐ Ground water
☐ Surface water
☐ Sea water

Access to drinking water

- ☐ Hand pump
☐ pipeline
☐ Solar/ Electric Pump
☐ None
☐ Others

If 'Others', please specify

Do you have access to energy in your homes?

- ☐ Yes
☐ No

Source of energy?

- ☐ Solar
☐ Natural gas
☐ Thermal power
☐ Tidal energy
☐ Others

If 'Others', please specify

Do you face any health complications?

Economic Baseline**Primary occupation**

- ☐ Fishing
☐ Agriculture
☐ Livestock
☐ Ship breaking
☐ Others

If 'Others', please specify

Monthly income

What is the daily wage rate

Secondary Occupation

Livestock Ownership

Land Ownership

- ☐ Agriculture
☐ Residential
☐ Commercial
☐ Work for a Land Lord

Do you own any other assets? (e.g. boats)

Source of irrigation

- ☐ Well
☐ Tubewell
☐ Karez
☐ Others

If 'Others', please specify

Gender Baseline

Are women allowed to work in your area?

- ☐ Yes
☐ No

Type of work done by women

- ☐ Agriculture
☐ Livestock
☐ Fuelwood collection
☐ Artisanship
☐ Others

If 'Others', please specify

Monthly Earning

What is the daily wage rate

Are women allowed to vote?

- ☐ Yes
☐ No

Are women allowed right to education?

- ☐ Yes
☐ No

Willingness

Are you willing to participate in the project?

- ☐ Yes
☐ No

Will women in your area participate in the project?

Do you see this project as beneficial?

- ☐ Yes
☐ No

Do you foresee any negative impacts?

- ☐ Yes
☐ No

THANK YOU

Balochistan - Focus Group Discussions

Social and Economic Indicators

What are the main social challenges you face?

What are the main economic challenges you face?

Relationship with Forests

Please name the mangrove forest located in your area?

Do you depend on forests for your livelihood? How do you use forests?

Are there any restrictions on your utilization of the forest?

Have you utilized forest lands for agricultural purposes?

How are the forests in your area managed? Please specify.

Have you been involved in the management of forests in your area?

Are there any specific sites of traditional, religious, socio-cultural or tourism significance in your area?

Biological Diversity

Are you aware of specific species in your forest area that may be categorized as endemic, rare, migratory, threatened or endangered?

What are the main ecosystems in your locality and what services does it provide? (e.g mangroves for flood risk mitigation)

Are there any sites in your locality which the community utilizes for basic needs, such as water?

Are poachers and trawlers a threat to the biodiversity of your region?

Have there been any global/international interventions for biodiversity that have employed community participation as an implementing instrument?

If yes, have women been included in these initiatives?

Land-Use, Drivers and Site Intervention

Have you experienced vulnerability to climate-related impacts over the years, particularly in terms of the increased frequency of disasters?

Since you have been here, what are the key environmental and land-use changes you have witnessed in the utilization of forest land?

How do you utilize land in your locality?

How has land been utilized historically in your locality?

What are the causes of land degradation?

How has deforestation impacted the water and soil quality of area where the forest existed?

How frequent has coastal flooding become as a result of mangrove deforestation?

Would you suggest any local interventions to halt land degradation?

Capacity of Vulnerable Groups

What equipment do fishermen use for their catch and is it efficient and effective? Do you use any modern technology? Please expand.

How do the fishermen market their catch?

Are the present infrastructure facilities well-structured for the fishing industry?

Has there ever been any training or awareness program offered in your area to guide ecosystem conservation or ethical practices?

Alternate Interventions and Revenue Generation

Aside from the primary utilization of forests, what are additional interventions that have been developed to generate revenue? (e.g. honey bee farms)

Have you been involved in this intervention? If yes, please share your experience and the revenue generated

Benefit-Sharing Mechanism and Willingness to Participate

Would you be willing to be involved in this forestry project as a stakeholder?

- ☐ Yes
☐ No

If ever engaged by the forestry and government departments, what was the mode of payment for prior engagements?

Rate per day

Would you be willing to receive non-cash benefits such as capacity-building and training?

What are some considerations you believe should be prioritized in the development of this project?

Will women be allowed to work?

THANK YOU

ANNEX-C - DRAFT FPIC PROCEDURE

Purpose

This document outlines the Free, Prior, and Informed Consent (FPIC) agreement procedure and plan for the Balochistan Carbon Offset Project. The project proponents recognize the rights of local communities and stakeholders in implementing and informing the project, especially in decision-making, and aim to ensure a collaborative and process to undertake the project.

Scope

The procedure covers activities relating to the design, implementation and operation of the Project across the identified project sites in Balochistan, Pakistan: Sonmiani Khor, Jiwani Khor, Sawar Khor, Sahidi Khor, Shabi & Ankara Creeks, and Kalamat Khor. The FPIC procedure will be used for community inclusion and engagement during the project design and operation phases.

i. Project Development Phase

- Project proponents will engage and develop an agreement to develop and secure FPIC, outlining their role in developing and securing FPIC, and mandating responsibility for coordination and alignment with project proponents to facilitate access to the site and communities, and other relevant matters.
- Project proponents will then hire and appoint an officer/consultant as per the agreement to coordinate, finalize and oversee the acquisition and maintenance of FPIC throughout the project.
- The official/consultant should be familiar with the identified locations and proficient in the local language of the region.
- The FPIC will remain cognizant of the fact that that dependent communities are native to the region and have resided across forest sites historically, acknowledging their dependance on the forest for their livelihoods and engaging their consent and participation.
- The appointed consultant will develop an FPIC workplan and guidelines along with a stakeholder engagement plan detailing the frequency and types of engagement, and a monitoring plan to oversee maintenance of FPIC.
- A portal and/or website will be developed to ensure access to data.
- A data collection and publication plan will be developed, ensuring translation of data in English, Urdu and Balochi languages.
- Set up a line of communication with local communities to ensure coordination and timely delivery of project related information and events

- A FPIC document will be drafted in English, Balochi and Urdu languages to be shared with the community.
- Community consent will be recorded and published for public access.
- FPIC official, in accordance with project proponents, will develop guidelines and agenda for FPIC meetings with community members.
- FPIC Meetings will be set up with the community to acquire FPIC through forms which will require signatures of community members to record consent.
- A grievance redressal mechanism will be developed ensuring community concerns and grievances are noted and addressed.
- Community members will be informed of this process and familiarized to it.

ii. **Project Implementation Phase**

- The FPIC official will develop agendas for every event and/or meeting and share them with community members at least 05 days prior.
- The FPIC official will ensure public availability of project documents with translations in English, Urdu and Balochi languages..
- The FPIC official will maintain an attendance log to track participation of community members.
- The FPIC official will maintain and monitor the grievance redressal mechanism, keeping a log of concerns and grievances that may arise.

Monitoring and Evaluation

- The FPIC official will develop a Monitoring and Evaluation (M&E) plan to track FPIC and oversee maintenance.
- The M&E Plan and guidelines will be published for public access.
- The grievance redress mechanism will be operationalized by project proponents, ensuring community concerns are addressed.
- Monitoring of the grievance redress mechanism will be ensured by project proponents and third-party bodies to ensure community concerns are addressed, maintaining inclusion.