

LANDSCAPE STRATEGY FOR BUILDING SOCIAL, ECONOMIC AND ECOLOGICAL RESILIENCE

INDUS DELTA LANDSCAPE
GEF Small Grants Programme
PAKISTAN

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Abbreviations and Acronyms

CBO	Community Based Organisation
COMDEKS	Community Development and Knowledge Management for the Satoyama Initiative
FGD	Focus Group Discussion
GEF	Global Environment Facility
GEB	Global Environment Benefit
KM	Knowledge Management
KPIs	Key Performance Indicators
LS	Landscape Strategy
M&E	Monitoring and Evaluation
NGO	Non-Government Organisation
NSC	National Steering Committee
NPM	National Programme Manager
OP	Operational Phase
SGP	Small Grants Programme
SEPLS	Socio-ecological Production Landscapes and Seascapes
SGAN	Small Grants Network
SMART	Specific, Measurable, Articulate, Realistic, Time-bound
UNDP	United Nations Development Programme

Summary

The Sixth Phase of the Pakistan Small Grants Programme (SGP) seeks to build resilience through community action, while recognising the inter-connectedness of ecosystem services, local food production, natural resource use, livelihoods and culture. As such, the project will support community-based organisations, which are the driving force in rural development strategies, to take the lead in role managing natural resources sustainably for social and ecological resilience and global environmental benefits, and in concert with other stakeholders and communities so as to multiply results. The Project will integrate the landscape approach in the Indus Delta, by focusing 40 percent of the GEF financing in this area. The landscape will provide a limited geographic focus in which small grants and their results can accrue to generate broader global environmental benefits. SGP Pakistan has used a COMDEKS driven approach to formulate its landscape strategy for OP-6.

The Community Development and Knowledge Management for the Satoyama Initiative Project (COMDEKS) was launched in 2011 as the flagship of the International Partnership for the Satoyama Initiative, and is implemented by UNDP in partnership with the Ministry of Environment of Japan, the Secretariat of the Convention on Biological Diversity and the United Nations University – Institute of Advanced Studies. The Project is designed to support local community activities to maintain and rebuild socio-ecological production landscapes and seascapes (SEPLS) and to collect and disseminate knowledge and experiences from successful actions for replication and up-scaling in other parts of the world. The project aims to develop sound biodiversity management and sustainable livelihood activities with local communities by providing direct and flexible funding opportunities to willing communities.

The cornerstone of the COMDEKS community-based landscape management approach is supporting community organizations to revitalize their landscapes and seascapes through participatory land use planning that builds their awareness and capacities for governance and innovation. Communities practice an adaptive management cycle in which they first assess socio-ecological conditions, trends, problems, and potential opportunities in their landscape; identify desirable ecological, social, and economic outcomes as dynamic building blocks of resilience; plan activities in pursuit of these outcomes by boosting ecosystem productivity and sustainability and improving organizational capacities of communities to execute projects and measure results; and finally adapt their planning and management practices to reflect lessons learned and new conditions and opportunities.

The target landscape for the SGP Country Programme in Pakistan during its Sixth GEF Operational Phase (OP6) comprises the *Indus Delta in general, and the three coastal deltaic districts, Thatta, Sujawal and Badin*, in particular. The *rationale for the selection of this landscape* is based on a number of factors: the richness of natural and cultural assets, threats and opportunities in the area, unique and diverse biodiversity and the willingness of communities and other stakeholders for long-term engagement and to facilitate the landscape management effort. This is also consistent with the *past geographic programmatic focus of SGP OP-4 to OP-5*. The landscape covers *inter-tidal, supra-tidal and rangeland zones of the Indus*

Delta, and while the specific target landscape (3 districts, thirteen talukas/tehsils and 10 villages) provides a diversity of communities, land uses and assets, it is inter-connected enough in terms of key ecological, economic, cultural and social processes and properties for the implementation of a strategic landscape approach.

Home to many Ramsar sites and other ecologically important wetlands and ecosystems, the target landscape thus provides a suitable mosaic of land and water uses. The serious and dangerous threats to the landscape are also well-documented and detailed in the sections below. The socio-economic indicators rank poorly, but communities are well-equipped, and eager and committed to undertake development and conservation-based work. The community based baseline-assessments carried out in June-July 2017 for the preparation of the landscape strategy engaged 130 participants in analysis and discussion of the SEPLs indicators using the Satoyama Indicators Scorecard. A smaller section of this sample was again involved during the overall consolidation workshop. In addition, the baseline included interviews with other stakeholders.

The main problem to be addressed by this project is building social and ecological resilience and addressing challenges of degradation of ecosystems, loss of biodiversity and habitats, salt-water intrusion and lack of economic opportunities while capacitating local grassroots organisations. The overall objective of the Indus Delta Landscape Strategy is to “build the social, economic and ecological resilience of the landscape through community-based activities.” The strategy is recognised as a living document. It includes four outcomes and defines key performance indicators for each. Also included is a typology of projects, M&E arrangements and selection criteria for SGP grantees.

1. Priority Area: The Landscape, Issues and Assets, Boundaries and Biodiversity

The target landscape for the Sixth Operational Phase of the Small Grants Program is the **Indus Delta in general, and the three coastal deltaic districts, Thatta, Sujawal and Badin**, in particular. The **rationale for the selection of this landscape** is based on a number of factors; the richness of natural and cultural assets, threats and opportunities in the area, unique and diverse biodiversity and the willingness of communities and other stakeholders for long-term engagement and to facilitate the collaborative landscape management effort. Also important for selection is the **past programmatic focus when the SGP adopted a geographic focus in 2006** for OP-4 and OP-5 by preparing a country program strategy for 2006-2009, under which there was a distinct focus on the Indus Delta.

Indus Delta at a Glance

- Ranked as the 7th largest Delta in the world
- Spreads over 600,000 ha
- Comprises 17 major and numerous small creeks
- Length 240 Km
- It holds 97% of the total mangrove forests of Pakistan
- Home to over one million people of which 135,000 depend on mangroves for their livelihood

For OP-6, which is replicating lessons learned from the COMDEKS community-based landscape approach and methodology, these and other parameters were revisited and validated during consultations with stakeholders. The landscape covers **inter-tidal, supra-tidal and range-land zones of the Indus Delta** and while the specific target landscape (three districts, thirteen talukas/tehsils and ten villages) provides the kind of diversity in terms of communities, land uses and assets, it is connected enough in terms of key ecological, economic, cultural and social processes and properties needed for implementing a landscape approach. The section below summarises the landscape issues, assets and biodiversity within the landscape.



The Indus Delta is the sixth largest delta in the world and possesses the seventh largest mangrove forest system, occupying an area of about 600,000 hectares with mudflats and mangrove forests between Karachi and the Desert of Kutch. Emerging from the Tibetan Plateau, the Indus River flows for 3,000 kilometers before meeting the Arabian Sea.

The Indus Delta is rich in biodiversity and natural resources including mangrove forests, fisheries, wetlands, coastal creek systems, flora and fauna as well as cultural and historical heritage. The climate of the Indus Delta is arid and the region typically receives between 25-50 centimetres of rainfall in a normal year. The Indus Delta is home to the largest arid mangrove forest in the world, as well as migratory birds and the Indus dolphin.

The over 3,000-km-long Indus river is a lifeline for countless farming and fishing communities in Pakistan, but the once prosperous and fertile region of the Delta is now faced with severe threats. Over time, a drastic decrease in the flow of water into the Delta has become the main reason of its degradation; farms have been abandoned, crops dried up and the soil turned saline. These changes have been negative for the indigenous communities and the region's biodiversity. The stoppage of the required water flow to the region has created other social, economic, and environmental crises. Many official documents and studies have noted the **"slow and dangerous death"** of the Delta due to climate change, bad policies and other factors. Today, its major creeks are drying up, and salty water from the sea is steadily entering the basin.

Home to many Ramsar sites and other ecologically important wetlands and ecosystems, the reduced river flows to the Delta are threatening the survival of many key species found there. Dams along the river reduce flows and limit the transport of much-needed nutrients and sediments downstream into the delta. They also fragment freshwater habitats, posing a serious threat to the survival of many species. Water extraction for irrigation and runoff of chemicals into the river also threaten the delta's freshwater species. Other reasons for the Indus Delta degradation include high water salinity, pollution from river and Karachi Harbour and the direct reclamation of Indus delta, which has led to loss of wetlands. It is estimated that approximately 10% of the wetlands in the Indus River delta has been converted from wetlands to open water or agricultural use.

The rising sea level rise is destroying the delta communities of River Indus, reshaping the lives of the coastal communities drastically and experts predict a further rise of up to 4 degrees centigrade by the end of this century. The rising level of seawater has already engulfed vast stretches of dry land and has intruded into once rich fertile lands of Indus Delta. The annual rate of sea level rise in coastal areas of the Indus Delta is 1.7 mm. About 2.2 million acres of land have been inundated by sea level rise in Thatta, Sujawal, and Badin districts. The Senate's Standing Committee on Science and Technology has recently expressed grave concerns over sea intrusion along the coastal areas of Sindh and Balochistan, which can result in the sinking of Badin and Thatta within the next 30 years. Pakistan's National Institute of Oceanography has also warned that rising sea levels in the Indus delta and along Pakistan's coastlines could submerge three major cities in Sindh in less than five decades.

Salinity levels are as high as 40,000-45,000 ppm in the region targeted by the project, which is well above saline levels in regular seawater. Such high levels of salinity and reduced fresh water stunt the growth of trees, negatively impact agricultural yields, and decrease biodiversity. This has also dramatically decreased the variety and numbers of mangrove forests, which are pivotal

for the ecosystems in the area. Mangrove forests play dual role of protecting coastal areas from sea intrusion and providing subsistence to communities by serving as a breeding ground for marine fish and other species of commercial value.

Mangrove forests have remained a key source of fuel, timber, and fodder for coastal communities. There were previously eight recorded mangrove species in the Indus Delta, but due to salinization and human activities the *Avicenna* mangrove now accounts for 95 percent of the mangroves. Reportedly, the mangrove area has been reduced to 86,000 hectares from 600,000 hectares. Other threats to mangroves stem from lack of knowledge, mismanagement, over exploitation, grazing, as well as less frequent and low tides over the deltaic region.

One of the predominant sources of the degradation of the delta is low fresh water discharge from downstream Kotri barrage. Before 1930 the downstream Kotri Barrage discharge was 150 MAF, which came down in 50s to 80 MAF after the new barrages and dams. This discharge was further reduced to a record low of 1.5 MAF in 2001-2. Although now the new consensus is that at least 10 MAF should be discharged downstream Kotri Barrage, this does not actually happen all the time. This marked low inflow to the delta area for over a century has decreased silt deposits and resulted in the decaying mudflats. The silt deposit in the delta at the flow of 150 MAF was over 400 million tons. The delta was under crisis already since the reduction of water flow was reduced to half in 1950s, however, it was further degraded when the silt deposits dropped to 26 -30 million tons per year. A shortfall from 150 MAF to 10 MAF is very significant and the silt-deposit deficit that has developed over the period is almost irreparable.

Saltwater intrusion has also contaminated streams and lakes leading to decrease and near extinction of various fish species e.g. *Pallo* and *shark fish*. Other species that have decreased dramatically include: *Mangar*, *Dangri*, *Paplet Chhodi*, *Phaar*, *Thairi*, *Popri*, *Danbhero*, *Morakho*, *Kurero*, *Singari*, *Mundhi*, and *Dangrio*. This negatively affects livelihoods as most of the coastal communities rely on fisheries, but also levels of food intake by the local populations. Saltwater intrusion and drainage has also turned freshwater lakes into saline bodies of water. Given the arid landscape in the delta where there is already a severe shortage of water, the loss of lakes further exacerbates the shortage of drinking water, water for household uses, agriculture and biodiversity.

The lakes were traditionally host to many species of birds, flora, and fauna. Some of the ***specific lakes and wetlands of the Indus Delta that have been badly degraded or are threatened*** include, Badin/Golarchi Wetlands: Jubho, Nurrehri, Dahee, Shaikh Keerio Peer; Tando Bago Lakes: Phoosna, Chareno, Khanjo, Jari, Jaffarali, Nira Dhand Dhabka lake, Soomar lake, Soomro Lake; and the Haleji Wetland Complex: Haleji, Hadereo, Keenjhar, Jafri Mahboob Shah, Karo jo Chatch, Ghungri, Shah Bunder, and Ketu Bunder.

In addition to depletion of fish, the Delta and coastal region has become vulnerable to the onslaught of sea intrusions and desertification. Cultivation of agricultural crops in the flood plains has decreased as a result of reduction in the flooded areas and deposition of fresh alluvium. The rising salt content of the groundwater has also made it unsuitable for irrigation,

and salt depositions on the land have affected yields and overall production. Red rice cultivation has drastically declined, which was one of the main crops in the entire active Delta region, and also a staple of the Sindhi diet. Orchards of banana, papaya and guava, which also previously generated income, have now virtually disappeared, and products and hybrid seeds importation is on the rise negatively impacting people's socioeconomic and health conditions. The lands that once were grazing areas, have turned into non-cultivable wastelands. Ground water aquifers of the region have also degraded.

Vast areas of Thatta and Badin districts, where previously fertile crops existed, are now under seawater or eroded due to sea currents. Desertification is visibly seen in vast areas of Badin district. Millions of people have been dislocated over the years. Due to fresh water decline and salinity prevailing in the Delta region, the grasses and pastures around lakes and mangrove forests have also been lost. The local communities have started losing their livestock, who without proper fodder have been weakened and vulnerable to disease. The Sindh Government reports huge losses of livestock as well.

Climate change impacts have also wreaked havoc on the region. Increased frequency of torrential rains, prolonged heat waves, frequent tropical cyclones, recurring flooding and persistent drought are the changes experienced in this deltaic region. Rapid melting of glaciers in the north is not only contributing to floods downstream, but also contributing to sea level rise, which exacerbates the vulnerability of coastal communities.

The degradation of the Indus Delta has threatened the food security of fisher-folk, agricultural communities and the biodiversity of the area. It has also resulted in poor health and socioeconomic indicators and led to the displacement and migration of people, exacerbating social tensions and placing stress on limited resources. The details of socio-economic characteristics of the communities in the Indus Delta are given in Annex III. The population can be divided into three main groups; (i) coastal and island communities, which comprise fishermen with some subsistence farming, especially animal husbandry (camels, cows, goats); (ii) the agrarian communities living inland from the coast comprising mainly sharecroppers, who also own animals; and (iii) inland communities that subsist by fishing, agriculture as well as wage labour. The primary sources of water include the untreated canal water and bore holes. Most communities take water directly from the irrigation canals and collecting the water is the responsibility of women and children. Diseases are rampant and majority of diseases in the area are caused by malnutrition, due to the use of unsafe and contaminated water. Most of the ponds are simultaneously used as bathing pools for the animals as well as a source of drinking water for the communities. The farmers still use traditional methods of farming. They have little awareness about the modern farming techniques and no access to agricultural extension program. The villages lack most of the basic facilities needed for living normal life. Health facilities are at minimum scale and in the rural areas literacy rate is low as compared to the urban settlements.

Concerns regarding ecological disasters have also been raised at high legislative forums. Experts from the Senate Standing Committee on Science and Technology have warned that "if urgent

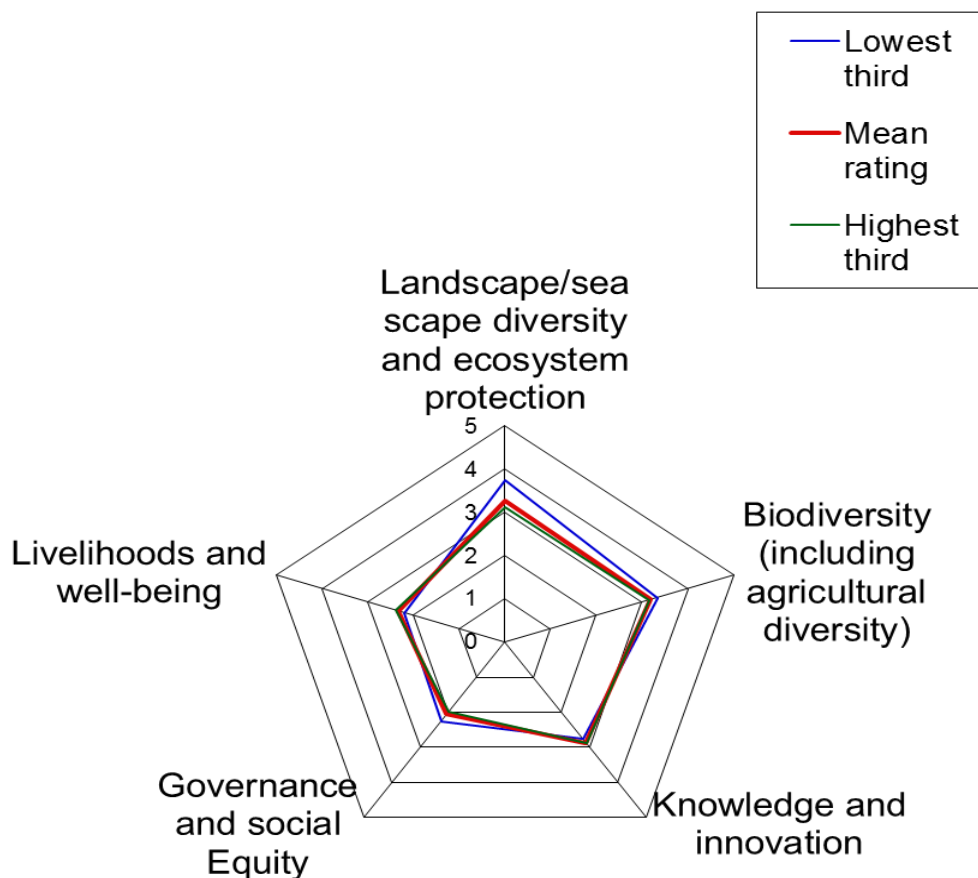
remedies are not employed, Thatta and Badin will submerge by 2050 and Karachi by 2060.” The perils of coastal erosion are also highlighted by the statement that if the current trend persists, the sea level in Pakistan will rise by 5 cm over the next 50 years.

2. Situation Analysis

Table 1 below provides the details of the community based baseline-assessments carried out for preparing the landscape strategy. For the community-based consultations, all 130 participants were also directly engaged in the SEPLS indicators using the Satoyama Indicators Scorecard. Community-based participants comprised of community locals, notables, farmers, fisher-folk, daily wage laborers and community women. A smaller section of this sample was again covered under the overall consolidation workshop. Full details of the participants are provided in Annex II.B. As mentioned below, other government and private sector individuals were involved through stakeholder consultations/interviews (Annex II.A).

Table 1: Community Sample for Baseline Assessment, Landscape Strategy OP-6			
District	Tehsils Covered	Name of Village	Total No. of Groups (M, F)
Thatta	<ul style="list-style-type: none"> Mirpur Sakro Keti Bandar 	<ul style="list-style-type: none"> Abdul Qadir Lashari Ali Buksh Murgher 	<ul style="list-style-type: none"> 2 (1 M, 1 F) 1 M
Sujawal	<ul style="list-style-type: none"> Kharo Chan 	<ul style="list-style-type: none"> Yousuf Katyar 	<ul style="list-style-type: none"> 2 (1 M, 1 F)
	<ul style="list-style-type: none"> Shah Bander 	<ul style="list-style-type: none"> Ali Kuhmmad Jat Haji Umar Jat 	<ul style="list-style-type: none"> 1 M 3 (2 M, 1 F)
	<ul style="list-style-type: none"> Jaati 	<ul style="list-style-type: none"> Raj Malik Ibrahim Mallah Haji Ahmed Jat Haji Dongar Jat 	<ul style="list-style-type: none"> 1 M 1 M 1 mixed 1 M
Badin	<ul style="list-style-type: none"> Badin 	<ul style="list-style-type: none"> Shaikh Kiriyo Bhandharyo 	<ul style="list-style-type: none"> 2 (1 M, 1 F)
3	6	10	15 (10M, 5 F) Total pax: 130

In addition, the baseline included interviews with other stakeholders including government, local NGO/CBO representatives and other key individuals such as sector/thematic experts, journalists and media persons, academics, religious leaders and others. According to the COMDEKS guidelines, an attempt was made to identify common issues and agreement on various aspects of the proposed strategy. This section consolidates issues and findings at the landscape level (district level information is provided in Annex III). To consolidate results at the overall landscape level, the results from individual participants were again entered into the COMDEKS excel template to derive the SEPLS radar diagram and was supplemented by additional information gleaned from the FGDs and other consultations. The results are given in the table below followed by the radar diagram:



The scores above indicate that a perfect convergence was not reached for any theme/category. A relatively better status and performance was reported in the three themes: landscape/seascape diversity and ecosystem protection, biodiversity (including agricultural diversity), and knowledge and innovation. Highest stress (with lowest score) on two themes, governance and social equity and livelihoods and well-being, indicates low performance and low resilience. Highest divergence in views appeared in landscape/seascape diversity and ecosystem protection theme, indicating that it is one of the most debated issues in the area. The district scores for the first two categories are higher and more closely co-related.

The baseline assessment identified many issues and threats in the Delta amongst, for which the vulnerability of and losses to the area through natural disasters remained a recurring theme. The Indus Delta has been prone to **natural disasters** including cyclones, floods, drought, earthquakes and sea-intrusion. The delta region has always been drastically affected by heavy rainfall and cyclones, which have caused colossal damages to human life, property and assets. The recent cyclones PHET 2010 and KHET 2011 majorly impacted Thatta and Sujawal. The frequency of cyclones in the previous 20 years has increased due to deforestation of mangroves. Floods are aggravated also by the Left Bank Outfall Drain (LBOD) in Badin and the Right Bank Outfall Drain (RBOD) in Thatta. The issue of sea intrusion has become more severe with a low flow of water downstream from Kotri Barrage and decreased silt deposit. Droughts can be prolonged and salinity and waterlogging has decreased the agricultural land in the area.

In terms of **biodiversity, experts and communities mentioned diverse wildlife that has either almost all disappeared or been reduced to rare sightings.** These include chinkara, antelope, foxes, hyenas, Asiatic wolf, Bonalise eagle, hog-deer, vultures, Sindh Ibex, leopards, urial, Sindh Kret and other species of migratory birds and raptors.

Some of the other key issues highlighted during the baseline assessment by various stakeholders are summarised below:

- 80% of the coastal population of Sujawal/Thatta and Badin lives below the poverty line.
- Sea intrusion has increased and worsened the situation by turning cultivable land into barren patches.
- Rapid sea erosion in the delta has resulted in the unexpected expansion of creeks such as Gareli, Kajhar, and others.
- The livestock trend is declining due to extreme poverty and climate change and it falls to 8%.
- If a cyclone were to develop again in the area of delta will first hit *Garelli* creek.
- Mangroves can contribute to risk reduction in coastal areas and in some places, this role of mangroves can be enhanced by combining such benefits with other risk reduction measures, making them part of a wider coastal disaster risk reduction strategy. Mangroves also contribute to resilience; they generate valuable fish, timber, fuel and fiber, which help recovery after disasters. To ensure maintenance of these valuable services, it is critical to engage coastal communities to plant, rehabilitate and restore degraded mangroves on an immediate basis.
- There is no proper management or conservation agency to protect interfaith places. Lakes, and lagoons are becoming more degraded and saline over time (e.g. *Makkhar jheel, Sanhri, Gunghri, Manthi and Budanwari lakes in Sujawal district*). The local community tries to take this responsibility at their own cost.
- Depleting fish-stock has forced a vast majority of the fisher-folk to turn to unsustainable fishing practices and livelihood sources have drastically reduced.
- Increasing reliance on hybrid seeds and varieties is replacing indigenous seeds, thereby causing disease spread.
- The right and left bank of the Indus river is occupied by influential landlords and other powerful people who played a big role in destroying riverine forests. Forest land is leased out without due process and attention to tree plantation rules (10 percent forest trees to be planted on leased lands). Official figures are not representative of the diminished riverine forests on the ground. 52 forests from Kharo Chan to Hyderabad as recorded in 1990 have been cut down.
- Middle NGOs who are often divorced from ground realities, add another layer of overhead costs and thus divert resources which could have been spent on beneficiaries. One observation during the assessment was the alleged role of middle NGOs in the coastal belt as middlemen vendors for trash fishing and unsustainable crab hunting. The dynamics at the grassroots level have totally changed thanks to the cellular phone networks and social

media. The communities on-the-ground are well equipped and mobilised to implement any project with any reasonable motivational training.

The total population in the three deltaic districts including Badin, Sujawal and Thatta is over 3 million. The Indus Deltaic region is the traditional home of various indigenous communities including *Muhannas, Rebaries, Jats, Samees, Joagis* and *Bheel*. These isolated and marginalized communities have suffered greatly in the wake of disasters and have been displaced, with corresponding harm to their culture and livelihood practices. The districts of Thatta, Sujawal, and Badin are considered among the poorest districts of Pakistan and are most vulnerable in terms of high levels of degradation and socio-economic characteristics.

The societal structure is characterized by a few powerful landlords and a large peasantry, within which there are tenant farmers (*hari*) and landless labourers. Large landholding *jagirdars* have control in areas where they have lands and political influence. This system guarantees the supremacy of a feudal class with a highly skewed pattern of distribution of assets, notably land. The *haris* remain indebted to the landlords for all their monetary and other needs and live their lives as bonded labour. Key factors that determine the power dynamics in Sindh and also in the Indus Delta include different factors like caste, economic status and political influence. The poorest of the poor include pastoralists (livestock breeders), sharecroppers and the agricultural labourers, particularly women workers. The absence of rights (over land), lack of access to other productive resource and non-availability of formal protection and social safety nets reduce the social resilience and coping capacities of communities in all three districts.

The livelihoods of the deltaic people revolved around three areas: fishing, agriculture, and raising livestock. Other than the farming community, a large number of landless own and manage livestock and work in non-farm employment. The poor not only tend to be landless or small landowners, they also have more difficulty in managing risk and are unable to diversify their production. Most of the other workers are engaged in casual labour. Agro-based industries are also operational in the area and a source of employment for some, particularly the sugar and rice industries. Badin and the surrounding areas also have rich oil and gas reserves, and a number of oil and gas exploration activities have taken place. Women are employed both in on-farm and off-farm activities. Apart from fieldwork, sewing and embroidery are the predominant non-farm activities for females. Women are also primary collectors of timber and engaged in activities such as processing/sorting of fish/shrimps.

The disturbances in the natural ecosystems have affected human health, safety and livelihoods of the deltaic communities. The decrease of fresh-water and the resultant degradation of the deltaic system have drastically altered livelihood patterns. The people engaged in traditional livelihoods of agriculture, fisheries and livestock rearing have largely changed their profession after the reduction in their incomes from such livelihoods. The loss of agricultural land, loss of biodiversity and loss of fisheries has led to dislocation of coastal communities and loss of livelihoods. Agricultural land is subject to severe drainage and soil salinity problems caused by high, saline water-tables and flooding. There is also physical damage from windstorms and tidal

waves. Low-lying agricultural lands are also susceptible to shoreline retreat and flooding as a result of coastal erosion or a rise in sea levels.

The ***impact of drought on livelihoods and food security has been alarming***, causing large reductions in yields and abandonment of cultivation. The years 2010 to 2014 saw four years of consecutive, disastrous floods, which caused huge economic and social losses and have adversely affected the access to food, water, energy and livelihood resources. Villages that are situated in close proximity to the sea are most frequently subject to periodic disasters.

Internal displacement and out migration of deltaic people is massive; ground aquifers have become saline and residents are forced into involuntary migration. Drinking water supplies are shrinking for local communities due to depletion of surface water bodies and degradation of groundwater with salt-water intrusion. 14 out of 17 creeks have dried up. Channels, lakes and creeks have become inundated with seawater. A large number of people have been deprived of potable water. With a rising sea level, the low lying areas are likely to get submerged and the sea line is expected to move further inland resulting in flooding and loss of productive land due to seawater ingress as well as damage to settlements. This may also cause displacement of communities and their eventual mass migration in search of livelihood.

A large number of people have been displaced from Kharochan, Keti Bandar and Shah Bander to Karachi and other places. Resource depletion has also forced many to migrate. Hundreds of villages in the Badin and Thatta districts have been deserted and people have been forced to migrate to other areas of Sindh due to saltwater intrusion and lack of economic activities. The economic dependence of a large number of people, especially of those belonging to *Jat* communities, is based on preparing traditional materials of daily use from local bushes and plants but a large number of local people have become jobless and have migrated.

The changing demographic patterns also add significant pressure on the ecosystem. In the absence of infrastructure and disposable income, people are compelled to heavily depend on the renewable resources around them. A process of progressive degradation and a number of threats stemming from unsustainable land and resource use have changed the dynamics completely: agriculture; fuel wood harvesting for cooking; poaching and overhunting; salt extraction; cattle grazing; habitat destruction (particularly mangroves); and overfishing.

Environmental degradation in general and the drying up of the lagoons in the Delta (Nurerri and Jubho) has also forced a large number of communities and fishermen to migrate to bigger towns and cities in search of alternative livelihoods. Much of this migration is permanent. Others have been forced into becoming agro-labour or daily wage earners. The Left Bank Outfall Drain (LBOD) project has also caused environmental degradation and loss of aquatic life and fertile lands.

A significant reduction in the river water supply and increased marine water pollution in the Indus Delta from industries as well as over harvesting of mangroves by the local communities, sedimentation, and coastal erosion and over harvesting of fish are threats that have exposed

this complex ecosystem to severe environmental and social stresses in the form of loss of habitat and biodiversity, decline in fish productivity and social problems for coastal communities. As a result, the deltaic people in general and the fisher-folk in particular are facing severe food crises.

The drastic decrease in fresh water flow has badly harmed biodiversity and marine resources. As a result, various fish species have become extinct. The drying creeks and rising salinity and disappearing forests have drastically reduced the amount of fish and shrimp stocks available. Although there is continued dependence of many on fishing or farming, the decline in fish and the increasing salinity of the land have placed people in a huge crisis. The crop yield is low, mainly because of soil erosion. Besides this, farm inputs are costly, quality seeds are not available, fertilisers are adulterated and pesticides spurious.

Many fisher-folk have also resorted to trash fishing over the years as an easy source of income but at the expense of great damage to the ecology of lakes. The shortage of fresh water discharge and rising salinity have also damaged mangroves and led to serious depletion of fish species and shrimp, major sources of livelihood for the communities. Many fisher-folk in the Delta, forced to fish near the border in search of better catch, also get penalised and detained for straying into Indian waters. ***A large number of fisher-folk and other people are now solely dependent upon unsustainable ways of catching crabs.***

The ***socio-economic indicators*** in the Delta are poor; with high levels of poverty, low levels of education and health care, high food insecurity and shrinking community livelihood sources characterized by the loss of critical ecosystem services. The situation with respect to ***access to infrastructure and basic services*** is abysmal. The overall quality of public services is poor with few functional health and educational facilities. People have relatively lower access to safe drinking water and sanitation facilities. Official statistics claim that less than 10 percent of people have access to proper sanitation facilities. Solid waste management is non-existent and infectious and water-borne diseases are widespread such as typhoid, cholera, dysentery, and hepatitis.

The general health of the population is very poor. One of the main causes of ill-health is lack of clean drinking water and prolonged consumption of saline water. The state of public health facilities is inadequate and are understaffed and under resourced. The overall state of infrastructure is largely poor and underdeveloped. Drinking water is scarce and the majority of the coastal communities either travel large distances to collect water from wells, ponds or depressions or purchase water cans at heavy prices. Some sporadic efforts have been made to provide water storage facilities and small-scale solar installations for power generation but the area suffers from overall shortages of water, electricity, schools, and health facilities. In rural areas, most housing units have open air kitchens in which firewood is the main source of fuel. Smoke, as well as food waste, causes serious health and sanitation problems. A majority of rural households lack electricity and gas, and fuel wood is used as the main source for cooking and heating purposes. Island communities have least access to infrastructure facilities, health and education.

Flooding and drainage problems have worsened. Seasons are unpredictable and people are not certain when to plant and harvest given the variations of rainfall. Given the propensity for extreme storms and droughts, housing is also a practical matter of concern for local residents, many of whom suffer losses year after year. Traditional housing cannot withstand strong rains and winds.

Official figures suggest that poverty is on the rise in Badin, Thatta, and Sujawal districts due to sea intrusion, which is causing a permanent or seasonal submerging of irrigated cultivable lands. A report says that more than 70 percent of the population of rural areas lives below the poverty line, and suffers from low per capita incomes and calorie intake, as well as unemployment and inadequate access to basic services. Poverty is highly correlated with household economic characteristics such as land ownership and employment opportunities. There is a high prevalence of absolute landlessness, high incidence of leasehold lands, and low overall land ownership. Poverty is increasing with the relentless degradation of ecological systems in the Delta. The concentration of the poor is highest among households that have at their head an unpaid worker, share-cropper, or small cultivator owning less than two hectares of land.

While the Indus Delta has great promise of domestic and even international tourism, the infrastructure is not present to support this. Local communities are unaware of the potential that surrounds them. The very biodiversity and wildlife that is threatened can attract tourists to the Indus Delta. However, without water, electricity or resilient lodgings, and with the rapid decline of wildlife, it is difficult for the region to attract visitors.

The **main problem to be addressed by this project** is that the necessary collective action in the Indus Delta for adaptive management of resources and ecosystem processes for sustainable development and global environmental benefits is hindered by the lack of an integrated and landscape focused approach and weak organizational capacities to act strategically and collectively in building social and ecological resilience. The project will address both rural and urban landscapes and takes into account the challenges of degradation of ecosystems, loss of biodiversity and habitats, salt-water intrusion and lack of economic opportunities in the Indus Delta. It acknowledges that with the present challenges and threats, the region will suffer more losses in livelihoods, health, population, biodiversity, and land. It also recognises the need for immediate efforts to capacitate and empower local grassroots organisations to work for issues they best understand and are confronted with on a daily basis. To address these challenges, the project will promote a landscape resilience approach. SGP-6 will build on the successes of SGP-5 and attempt to increase project coverage, build synergies, strengthen achievements and achieve broader results. SGP has implemented similar projects in the past and has a base of 43 project partners in the target area. It also worked with the Government of Sindh and British Petroleum.

3. Landscape Strategy (Outcomes and Impact Indicators)

In line with the vision of the Satoyama Initiative to realise *“societies in harmony with nature”* this Landscape Strategy endeavours to address the major challenges of the target landscape through participatory and community-based activities in order to maintain, rebuild and revitalise the socio-ecological production landscapes within the Indus Delta.

The overall long-term objective of the SGP Pakistan Landscape Strategy during its Sixth Operational Phase is to *“build the social, economic and ecological resilience of the landscape through community-based activities.”* The landscape strategy is recognised as a living document, which will continue being refined in view of the experiences and lessons learnt over time. This Landscape Strategy for the Indus Delta adopts the following four outcomes and defines key performance indicators for each outcome. ***These are consistent with and contribute towards the outcomes, indicators and targets in the OP-6 Project Document.*** The targets, however, will be finalized after finalization of grantee proposals. The SGP projects selected within the Indus Delta Landscape will be expected to contribute to one or more of these outcomes along with relevant indicators.

Outcome 1: Degraded landscapes and ecosystems of the landscape area strengthened or restored for enhanced ecosystem services and conservation of biodiversity

Biodiversity underpins ecosystem goods and services that will sustain communities. In the delta, the loss of biodiversity can broadly be attributed to habitat loss, overgrazing, soil erosion, salinity, water logging, deforestation, and increasing poverty and population. In order to respond to some of these factors, SGP-6 will support projects that provide protection of endangered species; establish links between economic value and conservation at the local level; mainstream knowledge with regard to biodiversity’s role in climate regulation, natural resource management and monitoring, promoting adaptation measures in the areas of agriculture and food security, and water resources management. Biodiversity considerations will be folded into the following activities: reforestation, planting of suitable varieties of indigenous plants and trees and mangroves, public awareness activities on deforestation, rehabilitation of lagoons, establishment of gallery forests and nurseries. SGP will attempt to strengthen adaptation to climate change. The project will promote water conservation methods and invest in rehabilitating lakes and lagoons.

Indicator 1.1: Number of hectares within the landscape restored or protected for their ecological importance

Indicator 1.2: Number of hectares brought under mangroves plantations

Indicator 1.3: Number and types of lakes and lagoons restored, rehabilitated

Indicator 1.4: Number and area of ecosystems brought under improved management

Outcome 2: Pressure on ecosystems, landscapes and natural resources reduced by increasing productivity and sustainability of agro-ecosystems resulting in increased food security

The project will support community organizations to promote appropriate land management systems and practices that enable users to maximize the socio-economic benefits to the land, while enhancing ecological support functions of resources. The project will do so through re-forestation activities, promoting resilient agriculture, impacting crop and livestock production, and supporting water resources management. This includes plantations, reducing the monoculture of trees and re-introducing native resilient species, providing alternatives to timber use through technological innovations, agro-forestry, and public awareness activities, among others. These activities will also contribute to supporting biodiversity. SGP projects will invest heavily in technologies that reduce emissions and are more energy efficient.

Indicator 2.1: Number and types of interventions promoted for improved agricultural practices and/or agriculture biodiversity management

Indicator 2.2: Number of hectares within target landscape brought under improved practices (plantation, species conservation/protection, agriculture practices)

Indicator 2.3: Number of plant/tree species, livestock and wildlife protected or promoted

Indicator 2.4: Number of improved energy efficient options promoted and adopted

Outcome 3: Livelihoods and income generation opportunities for communities enhanced and community-based enterprises promoted

To the extent possible, this outcome will combine the thrusts under all other outcomes with a view to linking biodiversity conservation and landscape management practices with improvements in communal assets and improved quality of life. An emphasis will be placed to encourage communities to pursue sustainable livelihood options, promote on and off-farm income generation opportunities and capitalise on available resources, products and practices. Gender specific opportunities will be explored and promoted.

Indicator 3.1: Number and types of alternative livelihoods and income generation opportunities adopted

Indicator 3.2: Number of people practising income-generating activities in agriculture and non-agriculture activities

Indicator 3.3: increase in household and/or communal assets created as a result of supported activities

Outcome 4: Organisational, governance and knowledge management capacity of community and landscape level institutions strengthened for enhanced landscape and community resilience

SGP-6 acknowledges that in order for concrete impacts to be achieved on the Indus Delta region, local communities have to be supported and strengthened to positively impact their immediate environment. Under this outcome, SGP will assist community and local organizations to build their capacities, apply their knowledge and administrative skills to work individually and collectively, pilot, innovate and test tools and technologies, for greater landscape resilience. The approach here is to empower local organisations—bound by common issues and interests—to address the problems they best understand and experience directly. SGP will provide the resources and technical support to allow these entities to test alternatives, monitor and evaluate results, adjust practices and techniques, and work with other organizations according to comparative advantage and also complementing skills and capacities. The approach will be cross-cutting so as to provide several environmental benefits, as well as promote social cohesion. SGP-6 will continue using cultural vehicles (poetry, theatre), spiritual sites, and fairs to integrate environmental information, options, and practices.

Indicator 4.1: Number of institutions and community groups engaged in integrated landscape management strengthened or established [Target: At least one multi-stakeholder governance platform strengthened or developed in Indus Delta]

Indicator 4.2: Number of case-studies, best practices and other knowledge management products developed and disseminated among landscape stakeholders [Target: Develop 1 case study for Indus Delta, 35 lessons learned documents prepared]

Indicator 4.3: Number and type of partnerships and linkages promoted or established at local or landscape level for enhanced resilience

Indicator 4.4: Number and type of policy level inputs/contributions at the local, landscape and national level

4. Typology of Potential Community-based Projects

- Plantation of resilient mangrove species and awareness raising and capacity building for mangroves as a conservation, protection and livelihood generation strategy (community cooperatives and business).
- Rainwater harvesting by improving the retention capacity of the deltaic depressions, lagoons and lakes; improving water access for communities, and promoting and protecting wildlife (leopard gecko, Sindh Krait) and biodiversity. Promote/establish sustainable fish and crab farming models.
- Protection and promotion of indigenous rare or high value livestock breeds (e.g. Kharai camels, Kamori goats, horses, Maliri Red cows, Kundi buffaloes) with a view to improved husbandry, protection of rare breeds and livelihoods generation.
- Support for measures/activities that reduce deforestation and providing suitable alternatives for timber and wood products, and linking conservation to income generation. Promotion of SGP's energy efficiency products and technologies.
- Agro-forestry/agro-afforestation, inland forestry; enhancing sustainability and productivity of smallholder agro-ecosystems for improved agriculture output, food security and biodiversity, and resilience through piloting, promoting and diversifying interventions; indigenous tree banks and nurseries, fodder alternatives, soil fertility improvement techniques, crop seed banks and low-cost desalination methods. Exploring possibilities for fruits, timber, apiculture, sericulture and game-conservation.
- Exploring development of alternative livelihoods through innovative local products and improved training, market access and linkages with particular emphasis on expanding opportunities (training/skill development) for women, women focused products/activities.
- Support and promote community based climate change adaptation and mitigation technologies such as high strength compressed earth block (CEB) for roof and floor tiles; Bagasse Ash cement and rice husk cement to replace ordinary Portland cement (OPC); reuse of polyethylene bags in the form of fibre; paper solid waste as fuel brick/housing element; hollow CEB with infill insulation material; household level water treatment and desalination methods etc., while exploring possibilities for developing local-level entrepreneurship.
- Support for measures that build upon and replicate prior SGP innovations/models such as energy efficient (EE) stoves, brick kilns, solar products and eco-tourism.
- Establishment, strengthening and capacity building of grassroots organisations in participatory planning, decision making, implementation, monitoring, and reporting.
- Capacity building of grassroots organisations on local governance and on issues related to landscape problems and opportunities through direct and indirect measures and promoting exchanges/networking for enhanced landscape and community resilience.
- Documentation of knowledge (including traditional knowledge and practices); promotion and appropriate dissemination of knowledge (technical, operational, and policy level), best practices, lessons learned for improving project implementation and wider landscape planning and governance.

5. Criteria for Project Selection

SGP OP-6 Pakistan grant-making design and programming will adhere to the defining aspects of the COMDEKS programme, i.e. the centrality of “community-based” organisations in rural development strategies and taking the lead role in project planning, landscape governance, execution and monitoring. This approach is also consistent with SGP’s historical focus, organisational mandate and the spirit of the Small Grants Programme philosophy. There is recognition, however, that partners will need additional orientation and support on landscape management-related issues and methodologies.

SGP will respond to this new requirement through increased focus on training, orientation and on-going mentoring of grantees. As a starting point, the SGP website will be used for providing basic awareness raising and guidelines for understanding and responding to the call for proposals.

Project Review and Approval Process:

The call for proposals will be made through newspapers and the SGP Pakistan website. The document will include background information and guidelines for submitting technical and financial proposals. The proposals will be screened by the National Steering Committee. Field visits by the NSC and the SGP National Programme Manager may be undertaken to actual sites/offices for validation and/or additional information.

NSC meeting(s) will be held for finalisation of short-listed proposals. After receipt and short-listing of proposals, potential partners may be provided additional information and/or support to refine proposals, if needed. Additional NSC meetings may be organised to expedite the process for COMDEKS grantees, if required. Written scoring/rating criteria for proposals will be shared amongst all members of the proposal selection committee (refer Table 2 below).

The following criteria will be adhered to for reviewing and appraising the organisations and proposals for implementing SGP projects in the Indus Delta landscape (which may differ from other SGP projects outside the landscape):

Eligibility Criteria for Partners/Organisations

- The community-based organisation should be registered under the laws of Pakistan with an established presence within the boundaries of the landscape. A permanent location/office at the project site will be an advantage, but not mandatory.
- The organisation proposing work related to the GEF SGP priorities or themes should demonstrate a strong ability to deliver such projects, which includes a strong permanent presence/roots within the beneficiary community.
- Possessing inclusive and broad-based membership/affiliation with community-based groups, youth groups/committees or indigenous groups will be an advantage.

- The project team should include at least one technical staff proposed for implementation, who will also act as focal person and assume responsibility for reporting.
- Adequate gender balance within the team will be desirable.

Criteria for Project Proposals

- Project proposals should be aligned with the Landscape Strategy and should directly contribute to one or more of the outcomes of the Landscape Strategy
- Project proposals that respond to additional areas will be given preference such as those addressing multiple threats/needs, innovations, replication potential, and policy inputs.
- The proposed project site should be within the target landscape benefitting multiple more than 15 households (in one or more villages).
- Each project should allocate at least 10 percent of the budget to knowledge management products at the landscape level, e.g. case study, audio-video documentation, best practices.
- Project proposals should include a time-bound work-plan, M&E section, and simple log-frame.
- Gender considerations should be mainstreamed as appropriate e.g. collection of and reporting on gender disaggregated data, gender analysis etc.
- Project proposals should explicitly state any capacity development inputs/gaps/requirements pertaining to implementation

Suggested Scoring Matrix for COMDEKS Proposals

Table 2: Criteria for Assessing Proposals		
Criteria	Evaluation Elements	Score
Organisation	<ul style="list-style-type: none"> • Registered local organisation with no known conflicts/risks • Maintains some local presence 	30
Technical Approach	<ul style="list-style-type: none"> • Aligned and responsive to OP-6 Prodoc and LS • Contributes to more than 1 outcome of the LS 	20
Budget/M&E Arrangements	<ul style="list-style-type: none"> • Within permissible budget • Includes measurable KPIs • Includes KM products • Includes co-financing (cash/in-kind) 	20
Scope/Innovation	<ul style="list-style-type: none"> • Demonstration of new technology/innovations • Possesses scope for replication 	20
Team composition	<ul style="list-style-type: none"> • Technical focal person • Includes gender-balanced team 	10
Note: <ul style="list-style-type: none"> • Total score of 50 and above – shortlisted and recommended for NSC consideration • Total score below 50 points – not recommended for NSC consideration 		

6. Monitoring and Evaluation Plan at the Landscape Level

Landscape Wide Baseline Assessment Process

The pre-workshop design phase and baseline assessment process included meetings with a large number of individuals and organisations, including sectoral experts, organisational heads, CBO and NGO representatives, government officials and community groups/organisations and community notables and elders, all of whom provided invaluable suggestions and insights on key issues and nuances to be addressed in the landscape strategy. The government officials include the Minister of State and heads of leading organisations/Authorities such as the Coastal Development Authority, Ministry of Fisheries and Livestock and Ministry of Forest and Wildlife.

The NGO partners included past SGP partners as well as non-partners working within and outside the core landscape target areas. It is important to note that some of the stakeholder meetings were also conducted with a view to *validate* the boundaries of the target landscape as well as emerging issues and priorities from other consultations such as those conducted with the Forest and Wildlife department representatives.

Local Stakeholder Participation

Around 130 community members were reached directly (respondents for the SEPLS indicators) through 15 community group meetings covering 10 villages and three districts as part of the baseline assessments. The number of indirect participants (covered through informal group and corner meetings, quick interviews etc.) was more than 1,000 people. An unexpected outcome of the process was identification of old and new community actors/activists and potential leaders who became landscape supporters and facilitators and could be instrumental in the future for ensuring Project success.

Two central “consolidation” workshops were conducted from 27-29 July 2017 to finalise the baseline assessment and to share the broad contours of the landscape strategy. The first workshop comprised only CBO and NGO representatives while the second workshop included a smaller sample of communities covered under the baseline assessments. Both workshops were used as an opportunity to agree upon the broad thrusts of the landscape strategy and where COMDEKS approach and next steps were also shared. SGP will continue such interactions in the future to update partners on the landscape strategy and on M&E aspects for grantees. More specifically, at this early stage, participants were more forthcoming on discussing key issues, sectoral and thematic thrusts, and typology of projects. The section below on the M&E plan is indicative and will be refined at the stage of project proposal submission and approval.

M&E Plan for Individual SGP Projects

The regular on-going M&E for SGP Pakistan will be conducted in accordance with the established UNDP and GEF procedures. Quarterly and annual progress reviews and monitoring will be carried out as required and outlined in the OP-6 Prodoc. Periodic monitoring visits will

be carried out by the SGP Pakistan National Programme Manager members of the NSC, as needed. An ex-post baseline assessment and final workshop will be conducted as the final program evaluation. The schedule and frequency of the individual SGP projects will be defined in the proposals.

Each SGP grantee will indicate the specific Landscape Outcome(s) that it is contributing towards and the M&E plan will be tailored according to the outcomes and KPIs in the Strategy thereby making explicit which of the key performance indicators it is contributing towards and how. The applicants will require additional guidance and details for this purpose and it is expected that short-listed partners will be coached accordingly. A key lesson learnt for SGP is that the M&E plan at the project level has to adhere to the SMART standards. Partner progress reports will be used to track progress against overall outcomes and identify gaps. Partners will also be required to document best practices, case studies and lessons learnt as relevant, which will be compiled at the end for the entire SGP portfolio. SGP will also build on and promote innovations in monitoring and effective reporting through use of new technologies (Android Apps for monitoring/data collection) and using drone/air camera technology for monitoring, especially in hostile and rugged terrain for mangroves and spotting of inland forestry.

The overall M&E report of SGP will aggregate results at the level of the overall outcomes and indicators specified in the Prodoc. Table 3 provides an indicative M&E plan at the individual project level:

Table 3: M&E Plan at the Individual COMDEKS Project Level		
Activity/Stage	Responsible Party	Timeframe/Frequency
Proposed M&E plan indicating outcomes, activities and KPIs	Grantee	At time of proposal submission
NC project site visit	Grantee and NPM	Before final approval and incorporating suggested changes
Project work-plan	Grantee, NPM, NSC	Project duration (quarterly)
On-site monitoring visits	NPM, NSC	At-least once per year and as-needed
Participatory project monitoring/review and capacity building	Grantee, NPM, NSC other stakeholders	Once per year (can include partners' meetings, network exchanges)
Updating of baseline assessment/data	Grantee, NPM	Once towards project end
Project progress reports (physical and financial)	Grantee, NPM	As agreed (ideally linked to disbursement schedule)
Project final report	Grantee, NPM	Project completion
Project evaluation report	Grantee, NPM, NSC, third party	1 month prior to project completion
Lessons learnt and knowledge generated	Grantee, NPM and third party	Mid-term and end

The plan above provides a basis for continuous improvement and refinement of the planning and management of individual projects as well as helping communities to assess and adapt their approaches for rebuilding SEPLS, and in identifying gaps and collecting and disseminating experiences in target areas through periodic reviews. In line with COMDEKS guidelines, it is also

proposed that at least two partner organisations – who are identified as “lead” partners for capacity building on COMDEKS – can be given a proactive role in mentoring and steering the M&E and knowledge management processes.

7. Knowledge Management Plan at the Landscape Level

SGP Pakistan will employ a mix of knowledge management approaches and tools for documenting and disseminating knowledge and lessons learnt at the landscape level as done in the past. The COMDEKS approach has placed particular emphasis on identifying good practices and lessons learnt during implementation that will help in replicating and upscaling successful on-ground experiences for revitalisation of SEPLS, and the remaining period of OP-6 will focus more deeply on this aspect.

A few useful knowledge products that have already been developed are the Sindhi and Urdu translations of COMDEKS related materials, which were partly made to facilitate the baseline assessment and will be used further for the purposes of knowledge sharing and agreeing upon common concepts and definitions at a wider landscape level. NGO partners have expressed interest in the approach and SGP intends to use it further for advocacy purposes.

Some of the other knowledge products that will be completed/refined during the course of project implementation include publications and brochures; videos/documentaries; operational “how-to” manuals; inspirational and promotional case studies and stories. A targeted dissemination strategy will be developed for sharing these knowledge products with diverse stakeholders for multiple objectives ranging from awareness raising, training, resource mobilisation, policy contributions/advocacy and replication. Print and electronic media will be employed for disseminating knowledge products such as newspapers, television and social networking sites (Facebook, websites, twitter) that have worked well in the past. The SGP partners network—SGAN—is another strong platform, which will be employed for this purpose. In addition, the review meetings, partner meetings, NSC visits, and meetings and participation in national events and seminars organised under the UN offices and other donors are useful for dissemination.

Initial contacts with key government officials (see Annex II.A) indicates that there is high-level interest from the Government of Sindh to learn from the successful experiences of SGP in the Indus Delta, e.g. those on energy efficient approaches, saline agriculture, mangroves plantations, and wildlife conservation. SGP will tailor its KM products with a view to enabling other players for capacity building and replication of successful community-based models and pilots. As mentioned in the Prodoc, SGP will encourage each grant project to have as a primary product a case study or summary of lessons learned based on evaluation of implementation results and their contribution to landscape level outcomes. Such case studies will highlight the process and opportunities for up-scaling, will be produced through external experts and participatory analysis workshops built within the strategic projects. Finally, in accordance with the COMDEKS guidelines, SGP will develop a case study at the overall landscape level, its

reflections on strategy implementation and portfolio of grant projects, and lessons learned after conducting the ex-post baseline assessment towards the end of the project cycle.

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Annex II: Details of Stakeholder Meetings and Community Consultations

II.A: Individual Interviews

- Mohammad Ali Malkani, Provincial Minister, Livestock, Fisheries and Environment
- Iqbal Nafees Khan, Director General, Sindh Coastal Development Authority, Planning and Development Department, Government of Sindh
- Saeed Baloch, Chief Conservator, Chief Wildlife Department, Government of Sindh
- Siakndar Brohi, Executive Director, Participatory Development Initiatives (PDI), Hyderabad
- Riaz Waghan, Ex-Chief Conservator Forest, Project Director, Green Pakistan, Forest Department, Government of Sindh
- Iqbal Khwaja, Ex-Editor/Reporter, Dawn News, Thatta

II.B: Participants of NGO/CBOs Consultation – 27th July, 2017

SN	Name	Age	Village / Organization	Taluka and District	Occupation/Job	Contact No.
1.	Ghulam Dastgeer	35	Aagi Dino Shah/ Dastgeer Welfare Development Organization	Shahbander/ Sujawal	Landlord/ President	03133164833
2.	Nissar	36	Aagi Dino Shah/ Dastgeer Welfare Development Organization	Shahbandar / Sujawal	Landlord	
3.	Allah Dino Babro	57	Aagi Dino Shah/ Dastgeer Welfare Development Organization	Shahbandar / Sujawal	Landlord	
4.	Ehsan Ali Shah	42	Aagi Dino Shah/ Dastgeer Welfare Development Organization	Shahbandar / Sujawal	Landlord	03048076786
5.	Farooq Jafrani	49	Organization for Sustainable Dev and Ed (OSDE)	Sujawal	Social Worker	03454831958
6.	Akhter Ali Jat	30	Shahbunder Development Society	Shahbandar/ Sujawal	Social Worker	03333366277
7.	Abdullah Jat	47	Sindh Coastal Development Org	Shahbandar/Sujawal	Social Activist	03243038003
8.	Muhammad Saleh	35	SSA	Shahbandar/Sujawal	Social Worker	
9.	Rubina Lashari	35	Bakhtawar Women Development Org (BWDO)	Mirpur Sakro/ Thatta	General Secretary	03332565593
10.	Mansoor Qadir	31	Karampur Welfare	Mirpur Sakro/ Thatta	President	0321-3821946

			Development Org (KWDO)			
11.	Shoaib Hussain	27	Larr Development Association	Badin	Account Officer	03332504818
12.	Ghulam Hussain	50	Larr development Association	Badin	President	03323884284
13.	Irfan Samoo	33	Sindh Radiant Organization	Thatta	Project Coordinator	03132336903
14.	Asghar Ali	35	Sindh Radiant Organization	Thatta	Finance Manager	03002811180
15.	Zafar Iqbal Soomro	37	Behar Al Sindh Foundation	Jaati / Sujawal	Social Worker	03332603471
16.	Nawaz Khatti	39	Larr Environmental Awareness Forum	Badin	Social Worker	03332522987
17.	Fayaz Hussain Abro	42	Pakistan International Peace & HRs Organization (PIPHRO)	Badin	Social Activist	0333-2668296
18.	Ameer Mandhro	39	Mandhar Development Society MDS	Badin	Social Activist	03000356249
19.	Dr. Abdul Aziz	38	Hassrat Development Organization	Badin	Doctor	03363296230
20	Asghar Khoso	41	Integrated Rural Org	Jaati / Sujawal	Social Worker	03003001723
21.	Masood Lohar		GEF SGP		NPM	03000300503
22.	Prem Parkash		GEF SGP		IT Assistant	03000300599

II.C: Participants at Community Consultation Workshop – 28th July, 2017

SN	Name	Age	Village / Organization	Taluka and District	Occupation/Job	Contact No.
1.	Munner Ahmad	28	Shaikh kiryo Bhandhariyo	Badin	Fisherman	
2.	Javed Jat	35	Haji Ahmad Jat	Jaati/ Sujawal	Fisherman	03113355361
3.	Ejaz Ali Jat	22	Haji Umar Jat	Shahbandar/ Sujawal	Fisherman	03213358054
4.	Muhammad Saleh	30	Ibrahim Mallah	Jati/ Sujawal	Fisherman	03242253797
5.	Zulekha Khan	60	Ali Muhammad	Shahbandar/ Sujawal	Social Dev	03447256928
6.	Muhammad Slaeem		UNDP			03335124029
7.	Shafi Murghar	50	Ali Bux Murghar	Keti Bandar/ Thatta	Social Worker	03062867464
8.	Nizam Uddin Malkani	39	RaJ Malik	Jaati/ Sujawal	Landlord	03213157088
9.	Akhter Jat	30	Shahbandar Development Society	Shahbadar/Sujawal	Social Worker	03333366277
10.	Muhammad Arif	32	Haji Dongher	Jaati / Sujawal	Farmer	

11.	Abdul Ghani Katyar	52	Haji Yousuf Katyar	Kharro Chhan/Sujawal	Fisherman	03042348738
12.	Yaqoob Katyar	80	Haji Yousuf Katyar	Kharro Chhan/Sujawal	Fisherman	
13.	Muhammad Katyar	45	Haji Yousuf Katyar	Kharro Chhan/Sujawal	Fisherman	
14.	Muhammad Katyar	35	Haji Yousuf Katyar	Kharro Chhan/Sujawal	Fisherman	
15.	Muhammad Hanif Katyar	40	Aathoki	Kharro Chhan/Sujawal	Fisherman	
16.	Samina	22	Bakhtawar Women Development Organization	Mirpur Sakro/Thatta	Member	
17.	Rubina	35	Bakhtawar Women Development Org	Mirpur Sakro/Thatta	General Secretary	03322565593
18.	Bakhtawar	25	Bakhtawar Women Development Org	Mirpur Sakro/Thatta	Member	
19.	Bhaghi	45	Shaikh Kiryo Bhandhariyo	Badin	Social Activist	
20.	Sobi	40	Shaikh Kiryo Bhandhariyo	Badin	Social Activist	
21.	Mansoor Qadir	31	Karampur Welfare Development Org (KWDO)	Mirpur Sakro/Thatta	President	0321-3821946
22.	Nazir Ahmad	26	Karampur Welfare Development Org (KWDO)	Mirpur Sakro/Thatta	Member	03223096618
23.	Khuda Bux	40	Karampur Welfare Development Org (KWDO)	Mirpur Sakro/Thatta	Member	
24.	Tamoor Qadir	21	Karampur Welfare Development Org (KWDO)	Mirpur Sakro/Thatta	Member	03133220337
25.	Uziz Ahmed	22	Ali Muhammad	Shahbandar / Sujawal	Student	03142727302
26.	Sajan Shaikh	54	Shaikh Kiryo Bhandhariyo	Badin	Fisherman	
27.	Sakina Jat	40	Umar Jat	Shahbandar / Sujawal	House Wife	03243038003
28.	Ezzat Banoo Jat	19	Umar Jat	Shahbandar / Sujawal	Student	
29.	Walan Malah	55	Ibrahim Malah	Jaati / Sujawal	House Wife	
30.	Porreh Malah	50	Ibrahim Malah	Jaati/ Sujawal	House Wife	
31.	Zulekhan Katyar	65	Yousuf Katyar	Kharro Chhan/Sujawal	House Wife	
32.	Qalsoom Katyar	68	Yousuf Katyar	Kharro Chhan/Sujawal	House Wife	
33.	Aamant Katyar	35	Yousuf Katyar	Kharro Chhan/Sujawal	House Wife	
34.	Prem Parkash		GEF SGP		IT Assistant	03000300599
35.	Masood Lohar		GEF SGP		NPM	03000300503

Annex III: District Profiles and Key Issues – Thatta, Sujawal and Badin

Thatta: Lying between 23°43' to 25°26' north latitude and 67°05' to 68°45' east longitude, Thatta is one of the southern and border districts of Pakistan. It is bounded by District Jamshoro in North, Karachi in North West, Hyderabad, and Tando Muhammad Khan in North East, Sujawal in East, Arabian Sea in the South and Rann of Kutch in South East. District Thatta spreads over a vast area of 17,355 square kilometers and is the second largest district of the Sindh province following District Tharparkar. It covers 12.3% area of the province and 2.18% of Pakistan. Administratively, District Thatta is divided into 9 Talukas or Tehsils, 55 Union Councils and 652 Mauzas/Dehs (Revenue Units). 3/4th or 77% area of the district is covered by its four talukas namely Thatta, Jati, Shah Bunder and Mirpur Sakro. Rest of the five talukas cover smaller areas and make 1/4th of the district.

Termed as mini Sindh, it carries all the environmental features of the province. It has desert, hills/gravel rocks, rangelands, water bodies, delta, tidal flats, creeks, lakes, and mangrove and riverine forests, irrigated agricultural lands. ***Thatta is also rich in bio diversity and an abode of some of the most important environmental resources of Pakistan. Out of the six RAMSAR wetland sites in Sindh, 3 lies in Thatta, out of 34 protected areas of the province, 16 are in Thatta, and of 13 game reserves of Sindh, 3 are in this district. 17% area of the district is under forest cover. The famous lakes Keenjhar and Haleji are situated here as well as the UNESCO listed Makli necropolis.*** According to 2012 census, the population is 1,508,000. The district has great historical significance and the old ports of Sindh were mainly located over here. The livelihood of the people depends upon fishing, timber, farming and hunting birds. The mangrove forests of Thatta are under serious threat owing to reducing fresh water availability from Indus and deforestation for fuel-wood and timber. The depletion of mangroves has resulted in degradation of delta, fish reproduction, sea intrusion, and increasing vulnerability to cyclones. Lakes are badly polluted and biodiversity is shrinking rapidly.

Sujawal: Sujawal is on the East of Thatta and West of Badin District in the same coastal belt of Sindh that links with Arabian Sea. It is located at 24 36'23" N and 68 4'19" E. Sujawal has an area of 7335 square kilometers. Till 2013 Sujawal was a part of Thatta District. There are 4 Talukas: (i) Sujawal, (ii) Mirpur Bathoro, (iii) Jati, and (iv) Shah Bandar. The population of Sujawal is 383,194 according to the 2012 census. Sujawal is also historically a place of ports. Mainly the population is involved in fishing and small-scale arable farming. Sujawal district was established in 2013, formerly part of district Thatta. District Sujawal is divided into four Talukas Jaati, Bathoro, Shah Bandar, and Sujawal. The agricultural land is very limited, yet productive. Wheat, rice, and sugarcane are major crops of this district. District Sujawal is irrigated by river Indus and canals. The livestock present in this region are cattle, buffaloes, goats, sheep, camel, horses, and domestic poultry.

Badin: Badin is the last province on the eastern part of Sindh that is linked with Arabian Sea and the Kutch District of India in the South. With an area of 6,726 square Kilometers and 24 5' N to 69 20' E and is bounded on the north by Hyderabad District on the east by Mirpurkhas and Tharparkar districts, on the south the Arabian Sea and Rann of Kutch, which also forms the

international boundary with India, and on the west it is bounded by Thatta and Hyderabad districts. ***It is famous for RAMSAR lagoons including Narheri and Jubho.*** Badin has 5 Talukas: (i) Badin, (ii) Matli, (iii) Golarchi, (iv) Talhar, and (v) Tando Bago. The number of revenue/administrative units is 14 circles, 111 tapas, 535 Dehs and 49 Union Councils. Total area of Badin District is 6726 Sq km. It has a mild climate. Rainfall is highly erratic and unpredictable. Badin has a population of 1,136,044.

Badin is one of the most vulnerable districts in Sindh Province. Local communities have low adaptive capacity with limited knowledge. Improper drainage schemes, especially the Left Bank Outfall Drainage (LBOD) and the Right Bank Outfall Drainage (RBOD), have exacerbated sea intrusion and environmental degradation in the fishing areas of Badin and Thatta districts. Wetlands drying up in Badin are making local communities more vulnerable. Badin has two forests, but the coastal UCs of Ahmed Rajo and Bhugra Memon have areas that lie completely barren. This is due to sea intrusion, scarcity of fresh water, rising temperature, frequent floods, and cyclones that inundate and wash away whatever vegetation may have started to grow.

Similarly, a rise in sea levels and the reduction of fresh water flow and its associated silt deposit has affected the mangrove forest on the Badin coastline. Livelihoods source comprise predominantly of fishing and agriculture. The main crops grown over here are cotton, sugarcane, sunflower and rice. The other means of livelihood include hunting the migratory birds that come in winter on the lagoons. Fish farming is also done in private ponds and lakes. Livestock population has also decline significantly. The average monthly incomes in the targeted UCs of Badin have been reported as PKR 7,500. Income disparity is generally high. In the last decade, catastrophic floods have ravaged the district.

It emerged during baseline assessments that the area is experiencing a continuous change, as the sea erosion, tropical cyclones and typhoons, climate change, mass migration, declining of fresh water, salinity, depletion of fresh water reservoirs, reduction in marine fisheries and other anthropogenic activities are causing major destruction of the delta. Climate change and bad government policies are recognised facts, and their impacts on water, agriculture, health, biodiversity, forest and socio-economic sectors are quite visible in Indus Delta and need to be addressed through immediate short- and long-term measures.