



Project Title: Sixth Operational Phase of the GEF Small Grants Programme in Pakistan

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Acronyms

BD	Biodiversity
CBO	Community-Based Organization
CCA	Climate Change Adaptation
CCM	Climate Change Mitigation
CEB	Compressed Earth Block
COMDEKS	Community Development and Knowledge Management for the Satoyama Initiative
CPS	Country Programme Strategy
EE	Energy Efficient
FATA	Federally Administered Tribal Areas
FSP	Full-sized Project
GEB	Global Environment Benefits
GEF	Global Environment Facility
GHG	Greenhouse gases
KP	Khyber Pakhtunkhwa
LD	Land Degradation
MSP	Medium-sized project
NAs	Northern Areas
NAP	National Action Plan to Combat Desertification
NBSAP	National Biodiversity Strategy and Action Plan
NGO	Non-Governmental Organization
NSC	National Steering Committee
PA	Protected Area
SGAN	Small Grants Action Network
SGP	Small Grants Programme
SLR	Sea-Level Rise
UNDP	United Nations Development Programme

Section 1. Background

Part 1. Situation Analysis

1.1 Introduction - GEF-SGP in Pakistan

The Global Environment Facility's (GEF) Small Grants Programme (SGP) in Pakistan was launched as a pilot in 1992 for the purpose of supporting small-scale community initiatives to address global environmental problems. Historically, the SGP in the country has supported community-based activities and interventions intended to reduce or mitigate environmental problems, which fall under the GEF focal areas of biodiversity conservation, sustainable land management, climate change mitigation and others. SGP Pakistan has strengthened the capacities of community-based organizations (CBOs) and non-governmental organizations (NGOs), as well as supporting information exchange and advocacy efforts.

The objectives of SGP Pakistan are (1) the development, implementation, and replication of community-level strategies and technologies, (2) gathering and sharing of community-level strategies and innovations, (3) building of partnerships and networks of stakeholders to support capacities to address global environmental problems, and (4) ensuring that conservation and sustainable development strategies and projects are understood and practiced by communities.

There have been strategic shifts in the way SGP has evolved over the decades in Pakistan. SGP Pakistan devised its first country programme strategy (CPS) for 1996-1998 followed by other strategies which emphasized the importance of building long-term partnerships with all key stakeholders and providing community-based continuity to national initiatives. The key thrusts of these early strategies were clustering of partner CSOs in five specific geographic zones and the development of an integrated approach to developing synergies among projects, allowing greater participation of women, enhancing programme impacts and strengthening the monitoring and evaluation system.

Over time, subtle changes took place in SGP's work with an increasing focus on promoting synergies among stakeholders, and maintaining innovation as the guiding focus for interventions while seeking to consolidate past experiences and enhancing program sustainability, knowledge management, and policy advocacy geared toward broad-scale replication of SGP projects. Past partnerships developed were also leveraged in subsequent phases to ensure ongoing collaboration among CSOs, synergies and a strengthening of the civil society sector. The strategies have also evolved to bring the SGP portfolio in greater alignment of with the GEF global (focal area) and national priorities.

Several key lines of work that have been developed over the years are replication of energy efficient technologies and products that have generated local and national level benefits - especially the successful work in energy efficient housing and cooking technologies - biodiversity conservation and community protected/conserved areas, reintroduction of medicinal plant

species, and land rehabilitation. According to a decision of the GEF Council, Pakistan was upgraded to a full-size project modality (FSP)¹. Since 2006 the SGP National Steering Committee chose to concentrate SGP's work in the Indus Delta, focusing on reforestation, recovery and sustainable use of mangroves and gallery forests, rehabilitation of wetlands, promotion of sustainable fishing practices, and general conservation of flora and fauna.

During implementation, projects are evaluated and modifications made to the design of the next generation of projects. This adaptive management approach helps the strategy to remain responsive to emerging opportunities, new knowledge, greater capacities, and changing environment and development priorities. In particular, there is more recognition to focus thematically to maximize efficiency and effectiveness in strengthening CSO capacities to address their environmental priorities, as well as develop knowledge for sustainable resilient development in their areas.

The SGP has worked with a range of partners and grant recipients and supported a diverse range of projects. SGP has so far supported NGOs and CBOs to implement 273 projects covering all GEF focal areas. SGP projects have attracted global attention and secured international accolades such as the Ashden Award, Alcan Prize, UN Habitat Award and, twice, recognition by Global South-South Expo in 2009 and 2011². The programme also received the Presidential Benazir Bhutto Human Rights Award in 2010. By supporting community level initiatives in the focal areas of the GEF, the Country Programme has assisted Pakistani civil society over the years to become more aware of global environmental problems, how these affect them concretely and what can be done to mitigate or address them through local community based initiatives that produce global environmental benefits. It has successfully proven that small grants, coupled with technical assistance and social support, can lead to the generation of local and global environmental benefits.

The Pakistan Country Programme's National Steering Committee has promoted collaborative arrangements with NGOs and government programmes and institutions to strengthen effectiveness of community-based components in its specific initiatives. It has collaborated with government institutions and supported, for example, early recovery from floods by communities for the restoration of their livelihoods and rehabilitation of damaged infrastructure. Over fifty local community-based organizations received first-ever grants from the SGP and have gradually emerged as capable of acting at the national level. These organizations were a vital local tool for the international humanitarian organizations and the government during the search, rescue and early recovery phases in the wake of the 2010-2011 floods.

Under the fifth phase of the SGP (henceforth SGP-05) the SGP Pakistan Country Programme focused on supporting the testing, demonstration and dissemination of innovations in cooking and housing technologies to reduce reliance on fuelwood as well as reduce associated costs and drudgery. Provincial and district governments have expressed interest in partnering with SGP in support of wider application of these technologies in future phases. Innovations have included fuel efficient cook stoves, energy efficient brick kilns and energy efficient housing. A complementary focus of the SGP-05 Programme was ecosystem restoration in the Delta with reforestation of mangroves and gallery forests. To enhance knowledge and impact, the Pakistan

¹ GEF/C.38/Inf. 5. Update on Upgraded SGP Programs, 2010

² The GEF Small Grants Programme Pakistan website: www.sgppakistan.org

Country Programme's National Steering Committee has promoted collaborative arrangements with NGOs and government programmes and institutions to strengthen effectiveness of community-based components in its specific initiatives. It has collaborated with government institutions and supported, for example, early recovery from floods by communities for the restoration of their livelihoods and rehabilitation of damaged infrastructure.

It was noted during the evaluation of SGP-05 and during the PPG that many of the local community organizations have continued their activities beyond project duration.

1.2 Project Description

Context – Indus Delta

The Indus Delta is the world's fifth largest delta system and possesses the seventh largest mangrove forest system, occupying an area of about 600,000 hectares with mudflats and mangrove forests between Karachi (Pakistan's most populous city) and the Desert of Kutch. 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. This project will not target the entire area of 600,000 hectares, rather only strategic, vulnerable zones in this area, which are elaborated below.

The climate of the Indus Delta is arid and the region typically receives between 25 and 50 centimetres of rainfall in a normal year. The Indus Delta is home to the largest arid mangrove forest in the world (currently receding), as well as migratory birds, and the Indus dolphin³.

Socio-economic and environmental indicators of the Indus Delta are extremely low, 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 due to ongoing degradation. The total population in the three deltaic districts including Badin, Sujawal and Thatta is over three million in addition to one million more from the indigenous coastal communities of Karachi. 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 often been the ones displaced, with corresponding harm to their culture and livelihood practices. These communities have been trying to cope with the natural, as well as man-made, disasters of the last two decades. The Indus Deltaic Districts of Thatta and Badin are considered among the poorest districts of Pakistan.

In recent years, these populations have experienced extreme droughts and floods. The years 2010 to 2014 saw four years of consecutive, disastrous floods. The degradation of the Indus Delta has threatened the food security of fisherfolk, 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.

³ Peter J. Hogarth (2007). *The biology of mangroves and seagrasses*. Oxford University Press

One of the main issues is that the Indus Delta is under great stress from high water salinity. 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.⁴ Such high levels of salinity stunt the growth of trees, negatively impact agricultural yields, and decrease biodiversity. This has also dramatically decreased the variety and numbers of mangroves. There were previously eight recorded species in the Indus Delta, but due to salinization and human activities the *Avicenna* mangrove now accounts for 95 percent of the mangroves. SGP-05 initiated the planting of *Rhizophora* to diversify the types of mangroves found in the coastal zones of the Indus Delta, but additional replanting is required for reach significant coverage. It is estimated that 86 percent of the arid mangrove forest has been lost between 1966 and 2003.⁵

The arid mangrove forests are pivotal for the area's vulnerable and delicate ecosystems. They provide a breeding ground and nourishment for various species of fish and shrimp, which are also form a part of Pakistan's fisheries exports, and provide livelihoods for the majority of the communities. Mangroves also provide fodder for camels—camel raising is also a significant activity in the region. The area also includes the presence of dolphins. The Indus River dolphin (*Platanista minor*) is one of the rarest cetaceans on the planet and highly endangered, as only 1,000 remain today.⁶

Saltwater intrusion has also contaminated streams and lakes leading to decrease and near extinction of various fish species. The *Pallo* (i.e. Shad), for instance, which swims upstream from the sea to spawn, has decreased dramatically due to the decline in Indus water flow. The *Pallo* used to account for 70% of the total catch in the past, but constitutes 12% of the total catch today. The *shark fish*, which was abundant in the past is now almost extinct. Other species that have decreased dramatically include: *Mangar*, *Dangri*, *Paplet Chhodi*, *Phaar*, *Thairi*, *Popri*, *Danbhro*, *Morakho*, *Kurero*, *Singari*, *Mundhi*, *Dangrio*, *Sario*, *Gandan*, *Gangat*, *Loohar*, and *Khago*. This negatively affects livelihoods as most of the coastal communities rely on fisheries, but also levels of nutrition and protein 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 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, Keti 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. Red rice cultivation was one of the main crops in the entire active Delta region, which is also the main source of bread (red rice bread) and a staple of the Sindhi diet. Rice paddies

⁴ WHO

⁵ Reuters

⁶ WWF available online at: http://wwf.panda.org/what_we_do/where_we_work/indus_delta/

were dependent upon freshwater flooding. Recent assessments indicate that due to saltwater intrusion and climate impacts, red rice is grown on only 56 acres. Orchards of banana, papaya and guava which also previously generated income on the lands of the Delta have now virtually disappeared, and products are now imported from the larger cities, negatively impacting people's socioeconomic and health conditions. The lands that once were grazing areas, have turned into non-cultivable wastelands.

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 where a survey in 2000 - sixteen years ago - indicated that over 486,000 hectares land were eroded or lost to the sea, dislocating a quarter million people, and inflicting financial losses of over 2 billion dollars. The seawater has destroyed at least one-third of the land, with more foreseen without adaptation measures.

Ground water aquifers of the region have also degraded. Saltwater intrusion has been witnessed inland up to 100 kilometers north of the sea. 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. A very recent work at Sindh University, revealed Total Dissolved Solids in Indus at levels as high as 42,750 ppm (below Kotri) as opposed to the 1,500 ppm WHO limit.

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 losses of 38 percent of cattle, 45 percent of buffalo, 40 percent of sheep, 37 percent of goats, 40 percent of camels, 57 percent of horses, and 35 percent of donkeys between 1991 and 2000, and it is speculated that the numbers have continued to deteriorate.

Climate change impacts have also wreaked havoc on the region. Although the Indus Delta is composed of low lying areas of the Indus irrigated plain, the changes occurring in the climatic conditions of the extreme north of Pakistan also directly affect the delta through water deficit or surplus. The Himalaya-Karakoram-Hindukush region, which hosts the world's third largest ice mass after the poles, has warmed by more than 1.5 °C, which is almost double than in the remaining parts of Pakistan (0.76 °C) over the last three decades. 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.⁷ Pakistan ranks ninth among countries most affected by floods and is, paradoxically, the seventh most water-deficient country. Flooding and drainage problems are projected to worsen, as silt builds up and narrow embankments force creeks to flow within relatively narrow beds above the level of the land.⁸ As noted during community consultations, seasons are unpredictable and people are not certain

⁷ Vulnerability of the Indus Delta to Climate Change in Pakistan, Pakistan Journal of Meteorology, Vol. 8, Issue 16: Jan 2012

⁸ World Bank:
<https://openknowledge.worldbank.org/bitstream/handle/10986/11746/464690BRI0Box31tionerNote11Pakistan.pdf?sequence=1>

when to plant and harvest given the variations of rainfall that they have been observing over the last few years.

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. The area has practically no coverage of electricity, except for in the cities, with whom they are forced to engage in economic activities based on use of natural resources.

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, grasses and plants. But with the reduction in fresh water and the vanishing of these plants, a large number of local people have become jobless and have migrated. It is estimated that 90,000 people have become displaced and 120 villages uprooted, impacting social conditions in an already tenuous political climate.

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 lives of Mohanas or fisher folks have been enormously disturbed, forcing them to move away from and out of the water to try to find alternative means of livelihood. It has been estimated that about 2.0 million Mohanas have been affected due to water shortage throughout Sindh.

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, particularly in the face of the demand in Karachi for rustic travel, sustainable fishing, and viewing dolphins. 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.

One of the challenges beyond the scope of the SGP, but which must be highlighted, is the national shortage of water. Pakistan is one of the most water-stressed countries in the world and per capita water availability is declining.⁹ This condition is worsening due to climate impacts. Some of the interventions that the government has taken to manage this has had a direct negative impact on the Indus Delta, which in turn is reducing coastal water availability. For instance, the government has built several dams and irrigation systems along the Indus River, which have significantly limited the freshwater supply to the delta. The low flow of the river countered by sea-level rise at the coast is a dangerous combination. This low flow has also decreased the spreading of nutrients and sediments. Further, the dependence of the entire economy solely on the Indus river system¹⁰ is a variable to be considered in this project.

⁹ World Bank

¹⁰ World Bank:

<https://openknowledge.worldbank.org/bitstream/handle/10986/11746/464690BRI0Box31tionerNote11Pakistan.pdf?sequence=1>

Socioeconomic Considerations

The total population in the three deltaic districts including Badin, Sujawal and Thatta is over 3 million in addition to one million more from the indigenous coastal communities of Karachi. According to 1998 Census, the total population of Thatta district is 1.113 million with a population growth rate of 2.26% per annum and a population density of 64/km². The total population of Badin district is 1.136 million with a population growth rate of 3.2% per annum and a population density of 169/km².

The Indus Deltaic region is also the traditional home of *various indigenous communities* including Muhannas, Soomros, Rebaries, Shidis, Jats, Sammas, Mallahs, Joagis and Bheel. All of these groups speak Sindhi. 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. Villages often consist of a "nucleus" of households and then a few or single households scattered around the area may reflect conflicts between kinship groups. Other key factors that determine the power dynamics in Sindh and also in the Indus Delta include different factors like caste, gender, economic status, political influence and education to some extent.

The area is not devoid of *social strife and other ethnic and political discord*. The long-ranging dispute between Rangers and local fishing communities is well documented and there has been much agitation from the civil society and communities against the interference of Rangers in the fish business and auctions and for restoration of the rights of fishermen to freely sell their fish in the open market or at the agreed rates. The exploitative contract system was finally removed and the government renewed the licence system which was viewed as an improvement over earlier arrangements. Progress has been made in terms of revisions and amendments to the Sindh Fisheries Ordinance, but complications remain to date.

The *socio-economic indicators* in the Delta are poor; a majority of people living in the coastal belt of Karachi, Thatta and Badin fall below the poverty line. The poor community groups consist of coastal and inland communities which are comprised of fishermen, farmers and people associated with livestock production. Farming communities living inland, away from the coast consist mainly of sharecroppers, who also own some livestock and inland communities that subsist solely on fishing and agriculture, as well as wage labor.

Around 79% of the population falls under the poverty line, of which 54% is found among the "poorest" category (ADB 2005). Poverty is highly correlated with household economic characteristics such as land ownership and employment opportunities. Landowners are usually among the non-poor. The existing sharecropping tenancy system is pervasive and perpetuates the entrenched poverty of landless tenants within an exploitative revenue-sharing arrangement and working conditions. The poverty of the communities is increasing with the relentless degradation of ecological systems in the Delta. The communities are trapped in a complex of vulnerabilities at community, household and regional levels. Villages that are situated in close proximity to the Arabian Sea are most frequently subject to periodic disasters. The absence of rights (e.g. 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 both districts.

Overall, there are ***low levels of education and health care, high food insecurity and shrinking community livelihood sources*** characterized by the loss of critical ecosystem services due to ongoing degradation. 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 average literacy ratio is around 20% of the total population of the area; male literacy ratio is reported to be much higher than females. There is a very low percentage of educated people at graduate and post graduate levels. 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. These were also identified as the most pressing issues by the communities during the PPG consultations.

Sanitation facilities are poor. 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.

The majority of rural households are landless or sharecroppers. 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 (WB 2005). In the past, fishing formed a major part of the livelihoods in these areas while cropping was also a component. Livestock ownership was an additional strategy for supplementing household consumption and as a source of value. As a result of the decrease in water availability and increased salinity there has been pressure on diverse types of livelihoods¹¹. Households are increasingly becoming dependent upon one or two sources of income.

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. Along the coast fishing has become the single source of income for many families. Over the last few years due to reduced flow of fresh water, changes in weather patterns, and illegal activities like over fishing, many communities have either migrated or changed their source of livelihoods. The

¹¹ According to World Bank estimates of 2005, 65% of the households along the coast depend upon fishing as their main source of income. Farming is the source of income for another 20% of households, and regular employment and wage labour for 6% and 5% of households, respectively. About 4% of households do not have a primary occupation and source of income and have to rely on the extended family and other secondary activities such as wood cutting. Around 81% of households earn no income from agriculture and only 11% earn more than 80% of income from this source.

fishers in the region compete for a share of the dwindling stock and over fish to make ends meet, and fisher folk supplement their low income with wood collection and sale from sparse/dense mangrove patches. The fisher folk in the Delta who are forced to fish near the border in search of better catch also get penalised and detained for straying into Indian waters.

Similarly, traditional merchant clans in the coastal areas dealing with the purchase and sale as well as export of agricultural produce have also converted their livelihood to the fisheries sector. Resource depletion has forced many to migrate. One reason cited for this migration is the loss of local bushes and plants that were used by communities for different products while others have migrated due to lack of basic facilities and clean drinking water.

Environmental degradation in general and the drying up of the lagoons in the Delta (Nurerrin 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. 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. Sea intrusion has inundated more than 0.500 million ha of farmland in the coastal areas of Thatta and Badin. In addition, seawater has intruded as far as 50 kms up the sweet water channels downstream of the Kotri Barrage rendering thousands of hectares of farmland saline.

Production activities in the coastal areas can be divided into three broad classifications; a) aquaculture, b) agriculture and forestry, and c) the service sector, which engages a minimum of the population. Agriculture, livestock and fisheries constitute a major portion of economic activities in the coastal areas, but all stand threatened due to continued degradation of coastal environments and deltaic system. Some of the well-documented threats and losses include loss of agricultural land close to the coast, loss of biodiversity and loss of fisheries which have 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 wind storms 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. Higher air humidity in coastal areas is favourable to the occurrence of certain plant diseases and pests that constrain crop growth.

Other than the farming community, a large number of landless own and manage livestock and work in non-farm employment. Most of the other workers are engaged in casual labour. A large number of communities also earn their livelihood by making grass (Pann) mats and other grass products. The region has unique biodiversity and is home to many migratory birds. Agro-based industries are also operational in the area and a source of employment for some, particularly the sugar and rice industries' husking and milling units. 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 impact of climate change has disturbed social, economic and political conditions of people across the province in urban and rural areas. People in rural areas rely on agriculture or livestock and continuous droughts and floods have affected both sectors. The economic and social losses caused by these disasters have been huge and have adversely affected their access to food, water, energy and livelihood sources. A World Bank's study states that 15 per cent of the total GDP of Sindh is lost yearly due to environmental degradation and climate change, which is much higher than national figures. Sindh is in the lower riparian zone and, hence, both dry weather and floods hit Sindh relentlessly. The extreme droughts in Tharparkar, Achhro Thar, Nara, Kohistan, Kachho and the coastal belt have been wrought largely by climate change. Dry conditions in Sindh have aggravated the condition. About 65 per cent of Sindh's area is classified as arid [drought prone].

Declining fresh water flow continues to pose a grave threat to Indus Delta and coastal communities. Concerns regarding the ecological disasters have also been raised at high legislative forums. In February 2015, experts shared an ominous report before the Senate Standing Committee on Science and Technology, which warned that "if urgent remedies are not employed, Thatta and Badin will submerge by 2050 and Karachi by 2060." An IUCN Report "Coastal Erosion in Pakistan: A National Assessment" has underlined the perils of coastal erosion by revealing that if the current trend persists, sea level in Pakistan will rise by 5 cm in the next 50 years which will have grave implications for coastal areas.¹²

According to the findings of a recent study,¹³ water scarcity in Sindh is on the rise and over 1.1 million people are now below the emergency level thresholds. The "**Sindh Drought Needs Assessment**" (SDNA) was carried out to understand the situation and its impacts on livelihood, food security, nutrition, health, water and sanitation in Sindh and a "Household Economy Analysis" (HEA) field assessment has also been carried out to assess the impact of the 2013-15 drought on livelihoods in some of the worst drought-affected districts of the province. The SDNA revealed that the 2013-15 drought had increased water scarcity in Sindh, causing large reductions in yields and abandonment of cultivation altogether in the most drought-affected zones¹⁴. The report highlights the three categories of households which suffered from the drought and who are also among the poorest of the poor; pastoralists (livestock breeders), sharecroppers and the agricultural labourers, particularly women workers. The report also says that the drought has led to food insecurity.

Context- National Level

Pakistan's Climate Change Ministry has announced during COP22 the passing of the Pakistan Climate Change Act, under which a Pakistan Climate Change Authority would be constituted to tackle climate challenge. According to Pakistan's submissions, Pakistan's GHG emissions will increase from 405 CO₂ Million Tonnes (MT)— equivalent in 2015 to 1600 in 2030. This covers

¹² A Dying Delta, Naseer Memon, [January 26, 2016](http://tns.thenews.com.pk/dying-indus-delta-and-fresh-water/#.Vqb6IU-iTod), <http://tns.thenews.com.pk/dying-indus-delta-and-fresh-water/#.Vqb6IU-iTod>

¹³ Food and Agriculture Organisation (FAO) in collaboration with the Sindh Provincial Disaster Management Authority (PDMA), "Water Scarcity in Sindh Rising, Published in the Dawn, August 27, 2016.

¹⁴ Overall, the report said 17 per cent of households surveyed were found to have poor food consumption, 67.2pc were on a borderline consumption, whereas just 15.8pc were at an acceptable food consumption level. 75% of the population in zones dependent on local rainfall for crop and livestock production lacked the resources to cover basic survival and livelihood protection needs.

energy, agriculture, transport, industrial process, forestry and waste. For it to reduce its emissions by 20 percent, Pakistan will need up to \$40 billion investments. Pakistan estimates a quadrupling of its carbon emissions from five sectors (not including transport) from 400 million MTs currently to over 1.6 billion by 2030. The cost of Pakistan's adaptation requirements range between U\$ 7 to U\$ 14 billion/annum during this period. The country has also been identified as one of the top ten nations most impacted by climate change. These costs fall disproportionately upon the poor and women who suffer due to illnesses and premature mortality caused by air pollution, diarrhoeal diseases and typhoid, due to inadequate and unsatisfactory water supply, and lost livelihoods due to reduced agricultural productivity and fisheries.¹⁵

Hazardous solid waste, industrial effluents and waste, the loss of forest cover and desertification, soil erosion and loss in soil fertility, further exacerbate the vulnerability of women and children.¹⁶

In terms of energy supply and use, at present, Pakistan is short of up to 5000 Megawatts of electricity, and 30 percent of the population have no access to electricity, while 80 percent have no access to piped gas. The resulting load management practices are estimated to incur a cost of \$5.8 billion to the different sectors of the economy and the loss of 400,000 jobs. Shortage in energy supply is a key constraint, along with issues of inefficient use of energy, finance, institutional coordination, and industrial innovations. This has made a number of productive activities impossible, with economic activities outsourced to other countries.¹⁷

In terms of the CO₂ related emissions within the overall GHG emissions of country, the energy sector is the top contributor of carbon dioxide emissions with the highest direct and indirect GHGs produced. Most of the energy is consumed at the household and community level. In the residential sector, most fuel was consumed for cooking, heating and lighting purposes. Almost 85 percent of rural households use wood and woody biomass for cooking. 25 percent of Pakistan's total energy consumption comes from biomass, contributing to 47% of all GHG emissions in the country. Almost 100% of biomass energy consumption and emissions are at the rural and small urban community level.

Energy use in the housing and building sector at community level is growing more rapidly than other sectors of the economy. The housing sector in Pakistan is energy intensive in production of building materials and in energy use (heating and cooling requirements), and because of heat loss through inefficient material and designs. The residential sector in Pakistan is one of the largest consumers of fuel outside the energy sector. Of the total energy usage in the country, 13% is used in manufacturing construction material (cement, bricks and steel) used in 95% of all urban housing.

Energy conservation in the building sector at the community level also provides an opportunity to reduce GHG emissions through reduction of energy consumption in production of the

¹⁵ Pakistan's Intended Nationally Determined Contribution. Available online at: <http://www4.unfccc.int/Submissions/INDC/Published%20Documents/Pakistan/1/Pak-INDC.pdf>. Accessed on December, 17, 2016

¹⁶ Ibid.

¹⁷ Ibid.

building materials and encourage production of less energy intensive and more energy efficient materials.

Forests in Pakistan cover less than 4 million hectares, which is 5 percent of the total land area. More than 50 percent of Pakistan's remaining mangrove forests, more than 66 percent of remaining riverine forests, and more than 90 percent of remaining coniferous forests have less than 50% canopy cover. Consumption for fuelwood exceeds production in all the provinces, and at current rates could totally consume biomass within the next 15 years. 'Tall tree' forests in Pakistan with greater than 50 percent cover encompass less than 400,000 hectares and remaining fragmented and degraded forests are rapidly disappearing.

One of the primary drivers of the continuing loss, fragmentation and degradation of natural habitats in Pakistan is unsustainable land and resource use at the local community level. This is affecting forests, rangelands, freshwater and coastal/marine ecosystems. Some of the underlying causes of biodiversity loss in Pakistan at the community level include: a failure to assign full value to ecosystems and their ecosystem services; inequity in the ownership, management and flow of benefits from both the use and conservation of biological resources; deficiencies in knowledge and its application; legal and institutional systems that promote unsustainable exploitation; and the steadily narrowing spectrum of traded products from agriculture, forestry and fisheries.

Approximately 35 million inhabitants across Pakistan live in extreme poverty, contributing to environmental degradation and loss of biodiversity. Poor people need natural resources to survive: rural people cut trees to use or sell firewood; migrants live as squatters on protected land; slash-and-burn agriculture expands as a result of population growth and low soil productivity; and animals and plants are collected for consumption. These pressures are also compounded by a large population, political strife, and internal displacement, as a result of extreme climate events.

The recurring large-scale floods, earthquakes, droughts, landslides and cyclones are all external shocks that have impacted the population, their livelihoods as well as national infrastructure. The floods of 2010 affected more than 18 million people and caused an estimated \$10 billion in damages. The floods were followed by heavy monsoon rains in September 2011, which affected approximately 9.7 million people in Sindh and Balochistan. Natural disasters have also disproportionately affected the excluded and the vulnerable. More than 1.6 million homes were damaged or destroyed. Education in crisis-affected areas has suffered due to the destruction of 343 and partial damage to 275 schools in Federally Administered Tribal Areas (FATA) and Khyber Pakhtunkhwa (KP).

Access of the poor and vulnerable to health facilities in these areas has also suffered. Peripheral health facilities were shut down leading to the closure of services for birthing, prenatal and obstetric care, immunization, nutrition, and curative services. There have been major damages to the agriculture sector by natural disasters which have exacerbated pre-existing structural problems. This has increased food vulnerability in a country in which around 48.6 per cent of the 177 million people are already food insecure. These crises have affected women's livelihoods disproportionately. Young people (between the ages of 15-29 years), who make up 27 per cent

of the population in crisis affected areas, are particularly vulnerable, especially uneducated youth with limited education and skills.¹⁸

Main Problem to be Addressed

The main problem to be addressed by this project is that the necessary collective action in Pakistan for adaptive management of resources and ecosystem processes, as well as technology development and application, for sustainable development and global environmental benefits is hindered by the organizational weaknesses of the communities living and working in affected urban and rural landscapes to act strategically and collectively in building social and ecological resilience.

Project Description and Proposed Solution

The proposed project takes into account the challenges of saltwater intrusion, lack of safe-drinking water, sea-water rise and the lack of economic opportunities in the Indus Delta. It acknowledges that with climate change and increased frequency of severe climate events, the region will suffer more losses in livelihoods, health, population, biodiversity and land. It also notes that severe land degradation, desertification and erosion in the country has threatened food security for hundreds of thousands of people and added stresses on the already vulnerable natural resources and fragile social structures. To address the challenges listed above, the project will promote a landscape resilience approach.

Indus Delta

SGP-06 acknowledges that in order for concrete impacts to be effected on the Indus Delta region, local communities have to be supported and strengthened to positively impact their immediate environment. To address the challenges highlighted in the section above, the project proposes to support multi-stakeholder, community-based landscape management in the Indus Delta by assisting community organizations and NGOs to develop and implement adaptive landscape management strategies that build social, economic and ecological resilience. The project will address both rural and urban landscapes (noting that the urban cities of the Indus Delta are quite small and under-developed) on the basis that collective action by civil society is required to achieve and maintain socio-ecological resilience.

The interventions will focus on building the resilience of community organizations to face the vagaries of the climate, the erosion of natural resources and biological resources, and the diminishing of food security and livelihoods. Climate change mitigation and adaptation, optimization of ecosystem services through biodiversity conservation, sustainable land management and integrated water resources management will be applied in a cross-cutting manner within the landscape. For results to accrue, the landscape has geographic boundaries within which activities will be carried out. It is anticipated that the accumulation of results will impact the landscape in measurable ways. The project does not intend on achieving all results within the project duration; rather the project will mobilize and strengthen local organizations to maintain and continue their work over the medium-to-long term. Evidence from the evaluation of SGP-05 demonstrates that this is very much possible in the context of the Indus Delta. In fact, SGP-06 will build on the successes of SGP-05 and work adjacent to areas covered

¹⁸ One UN Programme II

in previous phases, so as to increase project coverage, build synergies, strengthen achievements and achieve broader results.

In particular, the project seeks to do the following:

- (1) **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 mindset here is that organizations have the ideas and the knowledge of the local context to respond to environmental degradation, which they experience. The SGP programme 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. The approach will be cross-cutting so as to provide several environmental benefits, as well as promote social cohesion.
- (2) **Mainstream environmental issues** into other livelihood, socio-cultural practices. One of the baseline problems in Pakistan, at the policy level, has been that environmental issues, most notably climate change, have often been treated as a sector separate from agriculture, water management, health, and energy. This project, at the very local level, will promote inclusion of environmental considerations in the day-to-day practices of local communities. One of the results from SGP-05 for instance, demonstrated that beneficiary organizations and associated communities have developed awareness of the role of and the importance of maintaining mangroves. In SGP-06, this approach will be further advanced. For instance, while local communities have started replanting mangroves, many communities allow their camels to use mangroves as food. In SGP-06, halophytes will be planted for fodder, to increase vegetation and provide alternatives for camels in order to preserve mangroves. Similarly, environmental considerations will be folded into fisheries practices, water management and agriculture. SGP-05 demonstrated success in using cultural vehicles (poetry, theatre), spiritual sites, and fairs to integrate environmental information, options and practices. SGP-06 will expand on this and continue working with communities, who traditionally may not be “environmental” organizations, to enhance the breadth of CSOs pursuing sustainable development.
- (3) **Promote re-vegetation, reversal of land degradation**. 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 planting of mangroves, reducing the monoculture of trees and re-introducing native resilient species, providing alternatives to timber use (which contributes to deforestation) through technological innovations, planting gallery forests, and carrying out public awareness activities among others. These activities will also contribute concurrently to supporting biodiversity and adapting to climate change.

- (4) **Strengthen adaptation to Climate Change.** The impact of rising temperatures and extreme weather patterns can be observed all over Pakistan. In the Indus Delta, climate change has been categorized by devastating floods and droughts, weakened marine and terrestrial ecosystems, a dramatic decrease in water resources and increased poverty of coastal communities. As such, the projects under SGP-06 will promote adaptation measures in the areas of agriculture and food security, water resources management, rehabilitation of the coastal zone, and natural resources management and monitoring.
- (5) **Reduce threats to biodiversity.** Biodiversity underpins ecosystem goods and services that will sustain communities. In Pakistan 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-06 will support projects that provide monitoring and protection of endangered species; establish links between economic value and conservation at the local level; mainstream knowledge with regards to biodiversity's role in climate regulation, pollination, disaster protection (particularly in the coastal zone) and nutrient cycling. In SGP-05, one of the unintended consequences, for instance of rehabilitating lagoons, was the return of birds and other animals to the site. Biodiversity considerations will be folded into the following activities: reforestation, planting of mangroves, public awareness activities on deforestation, rehabilitation of lagoons, establishment of gallery forests and nurseries.
- (6) **Mitigate Emissions.** SGP projects will invest heavily in technologies that reduce emissions and are more energy efficient. For the most part, the beneficiaries targeted by this project have little to no access to energy sources. In the cases where they do, the energy sources consist of burning of fuelwood, coal, diesel or waste. Health impacts have been noted in the Indus Delta as a direct result of this. Many women interviewed during the PPG were blind as a result of long hours of cooking over smoky stoves lit by fuelwood. The lack of electric energy further cripples people's ability to take on economic activities that require light or electric power, and as a result communities are trapped in highly limited activities based mostly on natural resources. For the youth that do have access to schools, studies are impacted by the lack of light, and all communities are severely impacted by the hot 40 degrees Celsius plus summers, without adequate ventilation. The lack of energy resources further exacerbates the vulnerability of marginalized groups.
- (7) **Increased access to water.** Given the increase of salinity, droughts, and general lack of infrastructure, the communities in the Indus Delta are in dire need of water for drinking, household, agriculture and livestock. The project will seek to increase access by promoting water conservation methods, rehabilitating lagoons, and piloting sustainable desalination activities.

The project will not solely focus on the Indus Delta. Based on discussions with the National Steering Committee (NSC), government and the UNDP Country Office, it has been determined that forty percent of the budget will be allocated to building landscape resilience in the Indus Delta, forty percent to activities in the other areas of the countries including the Northern areas,

where there are several biodiversity hotspots and indigenous communities, and twenty percent will be allocated to piloting and upscaling innovations at a national level.

Beyond the Indus Delta, the project will also pilot and disseminate innovative technologies nationally that will reduce emissions and/or stresses upon natural resources. Many of these will be developed in collaboration with Mehran University of Engineering and Technology, Jamshoro and CBOs. Some examples include:

- Re-using the bagasse ash waste produced by sugar industries, which currently serves no economic purpose and is simply discarded. Bagasse ash has negative impacts on agricultural lands surrounding sugar mills. The project will include bagasse waste in cement production, reducing the level of concrete being used.
- Rice husks are currently being used by the brick production industry as fuel, which produce rice husk ash. This by-product will also be used in the production of cement
- Plastic bags (polyethylene) dot the rural and urban landscapes and are a cause of pollution and waste. Often these are burned for fuel which also severely impacts people's health and air quality. Under this project, SGP will advance the research of converting bags to a form of fibre that can be used for other purposes.
- Development of briquettes from waste
- Upscaling the production of bricks developed under SGP-05 which have a very low thermal conductivity level and can keep housing cooler
- Technologies to remove arsenic from drinking water
- Water softening/desalination kit

Barriers to achieving the Solution

Barriers to achieving this solution include:

Barrier 1: *Lack of economic opportunities, and high levels of poverty.* The Indus Delta is located in the poorest part of Pakistan where there are few opportunities for residents. The lack of economic opportunities often mean that communities are forced to depend upon depleting natural resources for income and sustenance. This creates a vicious cycle whereby people use more and more resources for less gain, and the depletion of natural resources further exacerbates poverty. The project will take into account the fact that unless and until communities can understand tangible benefits from project initiatives, they will not engage meaningfully. As a result, the project will focus on activities that can either provide alternative livelihoods, directly or indirectly support supplemental revenues, and enhance resources that positively impact quality of life. Public awareness activities that were successful in the previous phase will be updated and upscaled to cover a greater number of communities, and information on the value of maintaining ecosystems will be disseminated.

Barrier 2: *Community organizations in rural landscapes, as well as community organizations in urban areas, lack a larger, more long-term vision and strategy for ecosystem and resource management and suffer from weak management capacities i.e. to innovate, test alternatives, monitor and evaluate results, and adjust practices and techniques to meet challenges and lessons learned.* While there have been notable successes on the ground in previous phases, the fact is in most cases these interventions remain isolated and lack a holistic impact or vision. The

geographic or landscape approach, however, works with communities to create critical mass. Communities' lack of knowledge of ecosystem function and sustainable natural resource management underpins land and resource degradation and the loss of biodiversity. Also, extreme climate variability is affecting these landscapes. The communities' lack of knowledge of the threats and the benefits to be gained from potential new techniques, taking advantage of tangible and intangible ecosystem assets, can be offset or improved by networking among peers and also providing regular capacity building through dialogue with subject specialists and organizations with the required expertise. Communities also hold indigenous knowledge which is equally beneficial, especially when combined or enhanced with scientific knowledge.

Barrier 3: *Community organizations have insufficient organizational capacities to efficiently and effectively plan, manage and implement initiatives and actions of their own design in favor of resilience objectives in urban and rural areas.* Project initiatives need to be disseminated and adapted by other smallholder communities throughout the landscape to create a critical mass of practitioners that will tip production in the landscape to a new standard of sustainable use of biodiversity. As such, it will be necessary to strengthen the capacities of community organizations to innovate, experiment, evaluate results, identify lessons and best practice, and use this knowledge to adapt to changing circumstances and information.

In SGP-05, SGP Pakistan successfully introduced innovative practices and systems that bolster landscape resilience, including agro-forestry and reintroduction of the indigenous "Hurri" system. The Hurri is a sustainable forest management system for timber and fodder. Community organizations were encouraged to adopt new approaches or adapt older indigenous practices for resilience. Networking among peers in a landscape can dynamize this process, as well as through capacity building and showcasing successful pilots.

Barrier 4: *Community organizations lack coordination with other community organizations to pursue collective action for global environmental and landscape management outcomes at a landscape scale.* To achieve long term impacts on natural resource management it is crucial that community organizations act collectively and in synergy. This requires coordination among communities within an agreed strategic framework as well as recognition of the importance of developing social capital through organizational interactions within networks. Creating an enabling environment for community-driven landscape management must be supported by multi-stakeholder partnerships across sectors, involving community organizations and networks, local governments, the private sector, and NGOs. The Pakistan SGP has successfully networked partners from the pilot phase through SGP-05 in a Small Grants Action Network (SGAN). The network has its own elected body and mandate, which focuses on identification and discussions of problems and challenges, analysis of potential solutions and identification of synergies with each other's work. This network has emerged as an effective platform but needs further capacity building and support. In addition to this, multi-stakeholder partnerships in the critical landscapes addressed by this project require further strengthening, particularly in regard to new communities receiving support from SGP for the first time.

Barrier 5: *Knowledge from project experience with innovation/experimentation is not systematically analyzed, recorded or disseminated to policy makers or other communities, organizations and programmes.* The SGP Country Programme secretariat has undertaken several post-project activities to disseminate knowledge originating from successful innovations and project experience. However, at the level of communities in the landscape, dissemination

and analysis is considerably lacking. The conclusions generated from analyses of project experience by communities are rarely disseminated to other communities or to policy makers or opinion leaders, and practice-based evidence for policy development related to sustainable natural resource management is rarely synthesized. The community organizations and their members may experience solid success with innovative practices and systems, but the knowledge gained should provide the foundation for entrepreneurship. The analytical capacities of community organizations should be strengthened to increase understanding of the problems and challenges facing them and build their abilities to identify potential innovations and associated risks, and test them.

Barrier 6: *Community organizations lack sufficient financial resources to lower the risks associated with innovating land and resource management practices and sustaining or scaling up successful experiences.* Community organizations rarely have sufficient financial capital to take risks with innovations of untested or un-experienced technologies, methods or practices. In most cases assets in the form of personal and/or communal property have served as an often tenuous form of security, however, the risk to community organizations is lowered through the strengthening of their human capital, both individual and organizational. Grants to community organizations cover essential inputs to innovations in the form of training and capacity building, as well as necessary equipment and materials. Successful innovations that build the capacities of community organizations through learning by doing provide the foundation for entrepreneurship and small business development. This also enables them to seek micro-credit and other commercial lending available with formal and informal financial institutions.

Barrier 7: *Community-level constraints to producing, testing, adapting, purchasing and/or using less energy intensive and more energy efficient technologies mean that significant energy and emissions savings from using climate friendly technologies are not well known at the community-level in Pakistan, resulting in inefficient use of energy and unnecessary GHG emissions in the land use and construction sectors.* Community organizations usually lack the capacity to identify and adapt new technologies for energy generation or efficient use. However, the growing burden of energy and fuelwood prices is motivating communities to look for energy efficient systems and technologies. Energy efficient products supported by SGP for cooking, housing and lighting have already been very successfully introduced and replicated in areas of the country in addition to the focused thrust in the Indus Delta area. For example, in SGP-05 the newly innovated metallic portable energy efficient cookstove was successfully tested by a significant number of users. To make such solutions available for broader adoption at the grass-roots level, entrepreneurs in strategic locations around the country need to manufacture and market them as a business proposition.

Barrier 8: *Perception issues: Lack of ownership of development process.* There is often a lack of ownership of development projects at the local level in Pakistan. Often many are sceptical of projects that are perceived as benefitting the more established, corporate NGOs in larger cities, or a select few. National initiatives are often seen as being in line with political interests of the day. The benefit of the SGP programme is that it will directly benefit the most local of actors, and gives people a sense of ownership over decisions, direction and shaping of their programmes. By linking local people to other local people, a greater sense of social cohesion and collaboration is achieved.

Methodology

The Community-based Landscape Planning Approach

The project will be based on the lessons learned and methodology of the Community Development and Knowledge Management for the Satoyama Initiative (COMDEKS) programme. The COMDEKS programme seeks to improve landscape-level resilience through community action, while recognizing the inter-connectedness of ecosystem services, local food production, natural resource use, income opportunities and culture¹⁹.

There are three defining aspects of the COMDEKS programme, which the SGP design will integrate into its own programming:

- Community-based organizations are the driving force in rural development strategies and must take the lead in project planning, governance, execution and monitoring
- Participatory landscape governance represents an effective foundation for the organization of community-based, multi-stakeholder approaches to land and resource management
- Integrated solutions are effectively addressed through the landscape level, as the scale is large enough to include various communities, processes and systems that underpin ecosystem services, rural economic production and local cultures.

SGP-06 in Pakistan will build on the experience and lessons learned from the COMDEKS Programme, which has piloted the community-based landscape approach in 20 countries.²⁰ This experience will assist community-based organizations in carrying out and coordinating projects in pursuit of outcomes they will identify in landscape plans and strategies. Coordinated community projects in the landscape will generate ecological, economic and social synergies that will produce greater and potentially longer-lasting global environmental benefits, as well as increased social capital and local sustainable development benefits. Multi-stakeholder groups will also take experience, lessons learned, and best practices from prior initiatives and implement a number of potential scaling up efforts during this project's lifetime.

The concept of the "landscape" is used in this project as it takes into account biodiversity value, land use trends and patterns, opportunities for application of renewable energy technologies, previous SGP-supported initiatives, poverty and inequality levels, disposition of communities and local authorities, and potential partnerships with NGOs, the private sector and others, as well as other factors. Targeting landscape resilience allows for the various types of community action to be catalyzed to advance multiple global environmental and local development goals synergistically in the same geographic space.

The definition of landscape used in this project is that of a biophysical as well as cultural and political entity²¹ with overarching problems of ongoing environmental degradation, economic production, and social cohesion. This allows for a coherent thematic approach to addressing environmental problems in each landscape.

¹⁹ Mock, G. and Tschentscher, T. A Community Based Approach to Resilient and Sustainable Landscapes: Lessons from Phase II of the COMDEKS Programme. 2016

²⁰ Ibid.

²¹ Buck, L.E, Milder, J.C, Gavin, T.A, Mukherjee, I. *Understanding Ecoagriculture: A Framework for Measuring Landscape Performance*. EcoAgriculture Discussion Paper Number 2. 2006

Through a thematic approach, focused on smaller-scale geographic landscapes, the SGP will support community organizations to achieve impacts at the scale of rural and urban landscapes, with the aims of progressively acquiring critical mass to reach a tipping point of adoption by rural and urban constituencies, of adaptive practice and innovation for resilience-building. To achieve this, the project will foster adaptive management capabilities by enhancing technical know-how, developing planning and organizational skills, and promoting innovation and experimentation capacity to enhance their agency in developing plans and priorities and carrying them out for landscape resilience. The project will also invest in strategic projects, which build knowledge, capacity, and allow synergies among other smaller local actions.

The small grants provided through the SGP will support those communities and CSOs that are vulnerable, to develop their capacity to take measured risks in testing new methods and technologies, to innovate as needed, and to build synergies and collaborations as per their comparative advantage. In particular, SGP-06 will support local initiatives that enhance livelihoods while combating environmental degradation, and provide opportunities for vulnerable groups such as indigenous communities, women, youth with little opportunities and the poor.

1.3 Lessons Learned from SGP-05

The project builds heavily on the lessons learned in SGP-05. The history of implementing 273 projects covering all GEF focal areas, has provided experience in what types of projects are effective, what typical barriers are surmountable, best practices and examples of adaptive management. SGP projects have attracted global attention and secured international accolades such as the Ashden Award, the Alcan Prize and the UN Habitat Award²². Innovations have included fuel efficient cook stoves, energy efficient brick kilns and energy efficient housing. The \$2.3 million Benazir Housing Project, financed by the Sindh Government, received national and international accolades and was recognized twice by the Global South-South Expo in 2009 in the Washington and in 2011 in Rome.

According to an independent evaluation carried out in 2007, the implementation of the SGP in Pakistan is highly decentralized and demand-driven. The Pakistan SGP has retained a “lean and mean” structure from its inception to date. A locally recruited National Coordinator has been appointed to carry out day-to-day management of the programme, and serves as secretary to the National Steering Committee (NSC). Grants are awarded directly to NGOs and CBOs, and grant project duration ranges from one to three years. A broadly based NSC serves as the main advisory body for steering programme development and implementation. The SGP works with a diverse range of partners and grant recipients—CBOs, NGOs, and intermediary organizations.²³

The NSC is a voluntary body that provides a major substantive contribution to and oversight of the programme, reviews proposals, gives guidance for programme development, and interprets information and proposals received from the SGP Secretariat. According to the evaluation, the Pakistan NSC is adequate in its composition and balanced in terms of institutional and individual

²² The GEF Small Grants Programme Pakistan website: www.sgppakistan.org

²³ Haider, M. and Stewart, H.M. Joint Evaluation of the GEF Small Grants Programme. Country Programme: Case Study, Pakistan.

representation, gender mix, geographical focus, and technical expertise regarding the GEF focal areas. The NSC has played an important role in providing technical input and advice for improving the quality and consistency of the proposals in accordance with GEF priorities. However, its participation in monitoring has remained minimal, mostly due to lack of funds for travel.

According to the evaluation, the work of the SGP is best characterized by its focus on promoting innovations. Despite some initial failures in the earlier years, the SGP has established a reputation for being open to new ideas and individuals, taking risks, and trying to apply new and cost-effective ways to address problems and opportunities. This sometimes involves new institutional or technological approaches and sometimes new and innovative partnerships. SGP projects have tested new technologies, techniques, and methodologies. Many have demonstrated a potential for and an interest in scaling up.²⁴

According to the evaluation, SGP's effectiveness is demonstrated and documented in projects focused on energy efficient stoves, which have resulted in reducing annual biomass (fuel) use and carbon dioxide emissions. SGP projects have installed energy-efficient housing products and technologies that have reduced annual carbon dioxide emissions. Similarly, through the promotion of alternative sources of fuel, SGP projects have resulted in significant savings of kerosene and biomass fuels. In the area of biodiversity conservation, SGP projects have resulted in the establishment of community game reserves, Deosai National Park, and protection of various species of animals of global significance, including endangered bird and mammal species. Many SGP projects have also successfully established a link between income generation and biodiversity conservation.²⁵

Other SGP impacts, according to the evaluation, include extensive outreach, innovative and cost-effective projects, improved knowledge management, institutional development of partner organizations, and creation of new community institutions at the grassroots level. The local benefits within GEF focal areas are visible and more fully documented; the SGP's greatest success lies in the creation of local institutions and building their capacities for identification, planning, implementation, costing, service delivery, and imparting of new skills.²⁶

According to the evaluation, a major achievement is that many of the institutions supported by the SGP have become viable and self-sustaining. Some of these institutions have mobilized resources at larger scales. For instance the Small Grants Programme to Promote Tropical Forestry funded by the European Union has been mentored and guided by Pakistan's GEF SGP. The SGP has also been able to fill in gaps that are not covered by GEF full-sized projects (FSPs) or medium-size projects (MSPs). For example, SGP was able to support the compressed natural gas and liquefied petroleum gas conversions of three-wheelers in Rawalpindi, because the GEF FSPs on vehicle emissions reduction did not address alternative fuel promotion initiatives in two-stroke engines. Cases also exist where an SGP grant has been recognized as paving the way for a GEF MSP or FSP, such as the Torghar Conservation Project, which received an SGP grant to

²⁴ Ibid.

²⁵ Ibid.

²⁶ Ibid.

protect and stabilize the populations of endangered animal species, and was scaled up to access a GEF MSP with a budget of \$1.2 million for Sustainable Use of Biodiversity in Balochistan.²⁷

With its focus on testing innovations and developing community capacity, the Pakistan SGP has been able to fill in gaps and sustain interest until a GEF FSP or MSP starts up; examples include the Palas Conservation project and the GEF Mountain Area Conservancy Project.

The Central Indus Wetlands Complex and the Salt Range Wetlands Complex (Ucchali Lake) are two of the four wetland complexes selected under the seven-year GEF FSP, Pakistan Wetlands Programme and funded by a number of other donors in collaboration with the Ministry of Environment. The wetlands programme also includes the Central Indus Wetlands Complex (Taunsa) that was the site of the SGP Indus Blind Dolphin Conservation Project. The FSP builds on concepts of ecotourism developed in the earlier SGP and subsequent SGP interventions in support of Indus blind dolphin rescue and conservation and a conservation information resource center.

The SGP's successful experiment with the Aga Khan Planning and Building Services' Building and Construction Improvement Programme (BACIP) in the Northern Areas was approved for GEF project development facility grant. Its purpose was to develop a proposal for reducing pressure on forest resources and reducing carbon dioxide emissions by providing and promoting energy-efficient housing technologies. This initiative was also scaled up to a GEF MSP.²⁸

In the Indus Delta, the evaluation notes that there is a strong partnership base. As partner community organizations are the key strength of such a project, community organizations in Sindh have demonstrated active interest, participation and implementation. In particular activities implemented in the delta region through community organizations have included reforestation of gallery forests, mangrove rehabilitation, community awareness initiatives, construction of water harvesting reservoirs, improvements in rice cultivation, pilots in eco-tourism, distribution of solar lights, and development of resilient housing and sustainable bricks among others.

Some of the **key lessons learned** include the following:

- Working at the very local level allows capacitating organizations sufficiently so that they are organizationally independent to continue their work beyond project duration. Working at the very local level allows those that are most impacted by their immediate environment to play a role in their own futures which creates a sense of ownership and agency. While other projects may collaborate with more established NGOs with larger budgets, the SGP has been successful in strengthening small community groups such as local fishermen, or cameleers, who continue to pursue work beyond project duration. This commitment is also maintained as these groups live the very realities that they are seeking to remedy.

²⁷ Ibid.

²⁸ Ibid.

- There is a demand on the part of provincial and national governments and neighbouring provincial communities to participate and partake in capacity building activities. There is a sense that the SGP can test and pilot technologies that other governments may be unable to do due to institutional weaknesses and financial constraints. As a result, there has been an interest among differing levels of government to replicate practices. The SGP Country Programme's pro bono collaborations with various universities and research centres has given it the opportunity to test out technologies and initiatives that others have not been able to in Pakistan.
- Working at the legislative and policy level as well at the practical, local level can assist in achieving more long-lasting results. For instance, under SGP-05, many of the fishing associations and communities also lobbied at the provincial level and were able to achieve changes in Sindh's Fisheries Act, which now prohibits the capture of small fish (or locally termed as trash fishing) which is sold to manufacturers of chicken feed, as this was negatively impacting fish stocks and the marine ecosystem.
- Including women, youth and indigenous communities are vital to ensure social cohesion and mitigate against any inadvertent marginalization. SGP-05 had been very successful at including marginalized communities such as small fisherfolk communities, ethnic minorities and women. This has allowed these communities to engage with other associations (many of them were present during the facilitation workshop held for the PPG of SGP-06), and allowed them to voice their concerns to other organizations, media and government officials. As a result there has been greater social cohesion among different entities in the Indus Delta, despite them belonging to different social groups. With women, it was apparent during the PPG, that a culture is emerging of women leading their own consultations with consultants so as to voice their gender-specific realities and concerns.
- In areas where innovations are piloted, training must also be provided for the maintenance and usage of said technologies so that they are not rendered obsolete beyond the project duration. As was noted in the case of solar lamps for instance, batteries provided only in a particular spot may have prevented those in far off impoverished areas from timely access. On the other hand, trainings provided for energy efficient bricks have been sufficiently successful that community members conduct activities themselves without project support.
- To bridge some of the ethnic tensions and gaps that may exist, the SGP steering committee accepts applications in all main languages (Urdu, Sindhi, Punjabi, Balochi and Pashto). This has increased confidence in the process and granted access to a greater diversity of communities.

Successful interventions from the previous phase that may contribute to landscape resilience will be scaled up in SGP-06. In particular, technologies and innovative practices that were identified during SGP-05, and are suitable to the proposed landscape under SGP-06, will be applied and disseminated by local organizations. These are described more fully in Section III.

Part II. Strategy

2.1 Baseline Scenario and Associated Baseline Projects

The Indus Delta has not received consistent and focused assistance aimed at enhancing social and ecological resilience of communities at the landscape level for achieving global environmental benefits. There are a number of one-off projects that have implemented community-based interventions in certain areas of the country, but little or no rural socio-ecological landscape management initiatives that have an integrated, participatory, community-based approach. In fact, during the PPG, stakeholders noted that the province of Sindh was left out of development projects. The presence of most international agencies and development partners in Islamabad also means that interest tends to focus in the surrounding Northern areas, rather than trickle to the South of the country which is remote, very impoverished, and carries the stigma of being inaccessible or dangerous.

The focus of project initiatives that are carried out in the Indus Delta region is on individual project interventions without empowering community organizations in the country to take a lead role in decision making in determining strategic land management priorities, which technologies or practices to adopt, how production systems should be designed, how they should be adapted to prevailing community conditions and how to monitor and evaluate the work and ensure efficiency of the interventions. At this time, there are no other small grants programmes in Pakistan specifically focused on testing, demonstrating, deploying and adapting renewable energy and energy efficient technologies at the community level using a participatory approach that builds capacities for community-driven innovation.

There are other larger government and non-governmental organizations and initiatives, including full size projects (FSPs) financed by the GEF, involved in implementing projects related to development of low emissions urban systems, sustainable rural energy and landscape management for climate resilience based on biodiversity conservation and optimization of ecosystem function. These do not necessarily focus on a landscape approach or address the Indus Delta, but provide strategic anchors on which SGP can build, share resources and knowledge, and complement.

In compliance with the 18th Amendment, the Sindh provincial government has recently announced its decision to create a **“Climate Change, Environment and Coastal Department,”** to govern functions relating to environment and climate change. The sections below provide a summary overview of the key government and non-government actors and initiatives in the Indus Delta.

The two subordinate offices of **Environment and Alternative Energy Department, Government of Sindh, Sindh Environmental Protection Agency (SEPA)** and **the Directorate of Alternate Energy** work on the protection, rehabilitation, preservation and improvement of environmental quality and the promotion of alternative energy resources. The Environment and Alternative Energy Department has also been functional to supervise, administer and look after its subordinate directorates including Sindh Environmental Protection Agency and Alternative Energy Wing. At the macro level the department is responsible for the protection, conservation, rehabilitation and improvement of the environment of the province with the support of regulatory documents. Its function is also to promote alternative energy resources with the

judicious use of untapped resources to address the issues of energy shortage. Major initiatives so far have focused on vehicular emissions monitoring and awareness; arsenic contamination in underground water; and public awareness and environmental education. The Sindh EPA works as a monitoring and regulating agency and is responsible for enforcement of relevant environmental standards. The Alternate Energy Wing promotes alternative energy sources and disseminates information and policy advice on alternative energy. SGP-06 will seek collaboration and exchanges with the EPA, particularly on new technologies developed and monitoring practices.

The Sindh Coastal Development Authority (SCDA), created through an Act passed by the Sindh Provincial Assembly in the year 1994, works for overall development and improvement of the Coastal Areas of Sindh Province comprising three Districts (Thatta, Badin, and Sujawal). Some of its interventions have focused on drinking water, communications, development of fisheries, livestock, agriculture, marketing facilities, construction of jetties and harbours and tourism. The SCDA also acts as a coordinating agency and undertakes research in development planning of various activities related to the coastal areas. In addition, other relevant departments in Sindh, working on different aspects relevant to the GEF SGP, include the Fisheries and Livestock Department, Forestry Department, Wildlife Department and Tourism Department, Sindh. The SCDA was consulted during the PPG and it has expressed an interest in collaborating with the SGP. Currently, the capacity of the Authority is low.

The **International Union for Conservation of Nature (IUCN)** has worked on biodiversity conservation and environmental governance and nature-based solutions and has implemented different projects that address themes such as species and biodiversity conservation, climate change and resilience, coastal and marine ecosystems, protected areas, water and wetlands, and nature-based disaster risk reduction. A few of the recent projects that are relevant to GEF-SGP include projects such as **“Natural resource-based conservation management and community livelihood: Possible role of mangroves in curbing sea intrusion in the Indus Delta”** which is being implemented in Thatta district with a project duration of 2012-2019. This project, aimed at replanting mangroves, was designed in response to the Government of Sindh's desire to combat land degradation caused by sea intrusion in the coastal areas of Sindh and to provide alternative sources of livelihoods to largely marginalised communities residing in the area. Expected outcomes from this project include the reclamation of waterlogged and saline agricultural areas on the Sindh coast. In addition, forestry wealth will be enhanced and future threats from cyclones and tsunamis will be reduced. SGP-06 will seek to complement activities and support mangrove plantations in adjacent sites to ensure greater coverage and continuity. Lessons learned will be shared to ensure that both projects have successful outcomes in mangrove rehabilitation.

Another IUCN project is the **“Restoration of Mangroves Ecosystem in Port Qasim Area”** being implemented in the Port Qasim Area, Karachi, but it is due for completion in 2016. While this does not fall within the project site, there are lessons to be drawn from this project, particularly on community sensitization in urban centres. The project plans to restore mangrove forest cover; increase awareness in the corporate sector for making coastal investments and train and sensitise communities on mangrove planting and ecosystem livelihood linkages.

The World Wide Fund (WWF) for Nature has been working in Pakistan since the 1980s and carries out conservation work according to its Global Programme Framework, which includes

biodiversity and human footprint meta-goals. WWF-Pakistan has an average of 30 active projects implemented throughout Pakistan to achieve nature conservation and sustainable development goals. Among other initiatives, it is working on a project titled **“Sustainable management of the mangroves ecosystem and enhanced resilience of communities in Kharo Chan, district Thatta in Indus Delta.”** However, this project is in a very preliminary phase and its feasibility is currently being reconsidered.

Another initiative of the WWF is **“Building Capacity on Climate Change Adaptation in Coastal Areas of Pakistan (CCAP) (2011-2015)** funded by the European Commission (EC) that intends to mitigate the climate change risks faced by vulnerable communities in coastal areas of Sindh (Keti Bunder and Kharo Chan, Thatta District) and Balochistan through the implementation of interventions related to adaptation and capacity building. The project also aims to promote integrated water resource management and river basin management. The project focuses on supporting governance mechanisms to help them become more responsive and robust when addressing impacts from climate variability and change.

WWF also partnered with the Lahore University of Management Sciences (LUMS) on a climate change adaptation and food security project that aims to enable the government and other stakeholders to take informed decisions with regard to cost-effective and politically feasible climate change adaptation interventions in the Indus eco-region. It will be useful for SGP to explore avenues of collaboration with these initiatives.

Action Aid Pakistan's rights-based programmes and policy interventions have also focused on securing peoples' right to food and livelihoods, and promoting peace and human security in emergencies, disaster and conflicts. For the realisation of its objectives, ActionAid Pakistan works across multiple tiers – from grassroots, to district, provincial and national level engagements. In Sindh province, they are working in five districts, namely Badin, Shahdadkot, Umer Kot, Chachro and Thatta. The SGP-06 programming will link environmental conservation with food security and seek opportunities for collaboration with Action Aid.

The **Glacial Lake Outburst Flood Project (GLOF)**, which ran from 2011 to 2015 was implemented under a partnership between the UNDP, the Government of Pakistan and the Adaptation Fund. The Project worked to help vulnerable GLOF prone mountain communities in reducing risks and vulnerabilities from GLOFs in Chitral, Khyber Pakhtunkhwa and Bagrot valley, and Gilgit Baltistan. The Project aimed to increase capacities at all levels ranging from communities to higher level institutions in understanding and addressing GLOF risks by developing human and technical capacities and enabling response and adaptation capacities.

Following the success of the pilot, a second phase of the Project is underway which presents opportunities for SGP OP6 to work in GLOF project area/neighbouring communities. The GLOF project will bring in its knowledge and understanding of local communities that have been sensitised; SGP can capitalise on further building local capacities by providing technical assistance; and GLOF project can replicate SGP's cooking, housing and energy related interventions. Alternatively, SGP can also work with local community based organisations (e.g. GLOF assisted community based disaster risk management groups) in helping enhance local level resilience and traditional coping mechanisms and creating awareness around critical climate change issues through introduction of relevant SGP technologies in these areas.

The **UNDP Country Office** supports the government, institutions and people of Pakistan to improve livelihoods by providing sustainable energy solutions, maintaining the integrity of ecosystems and building capacities for climate change mitigation and adaptation. Its key areas of intervention are climate change - mitigation and adaptation and sustainable natural resource management - conserving and protecting ecosystems. UNDP is implementing projects related to land management and biodiversity conservation, to promote community-based approaches and help to deliver local development benefits.

The Sustainable Land Management to Combat Desertification - Phase II aims to combat land degradation and desertification in Pakistan to protect and restore degraded ecosystems and essential ecosystem services. The Sustainable Land Management Project (SLMP) Phase-I has been designed to implement United Nations Convention to Combat Desertification (UNCCD) and for combating land degradation and desertification in Pakistan with the involvement of key stakeholders. This is a multi-sectoral project which is aimed at creating an enabling environment for mainstreaming Sustainable Land Management (SLM) into sectoral policies and planning; capacity building of line agencies and other implementing partners for SLM; mainstreaming SLM Principles into land use planning and implementation of nine pilot projects to demonstrate SLM practices in nine districts covering 63 villages. The focus of these projects is on combating land degradation and desertification through integrated management of land resources. The major interventions include dry afforestation, rangeland rehabilitation, rain water harvesting, soil conservation works, promotion of rain-fed agriculture and delta crops, establishing shelterbelts, micro irrigation system, plantation forest and fruit tree plantations, etc.

Another UNDP GEF project **“Mountains and Markets: Biodiversity and Business in Northern Areas (NAs)”** develops community and institutional capacity for certified production of biodiversity-friendly non-timber forest products in Northern Pakistan and stimulates market demand for these products, thereby creating new economic incentives for conservation. The project uses voluntary certification of non-timber forest products (NTFP) as a tool to promote biodiversity conservation and strengthen existing conservation efforts with innovative market-based mechanisms. The project objective is the sustainable production of biodiversity goods and services through community ecosystem-based enterprises in demonstration conservancies in the northern mountains of Pakistan.

Interesting aspects of the UNDP Mountains and Markets with SGP’s work in the NAs can explore linkages which can include project focus on community based enterprise development (training of local communities on manufacture and maintenance of SGP technologies), sustainable biodiversity goods and services; enhanced business and technical capacity of local communities; access rights for local communities through collaborative management arrangements and documentation of knowledge and lessons learnt.

UNDP is also promoting the integration of climate-resilient and environmentally sustainable policies into development plans and programmes in Pakistan. Its engagement with the Ministry of Climate Change resulted in the approval and launch of the National Climate Change Policy. It has supported other projects across Pakistan on addressing climate change threats; to mainstream environment concerns into national development planning processes; and to expand access to environmental and energy services for the poor. Also on its agenda is promoting renewable energy and energy efficiency as mitigation measures.

The UNDP SE4ALL initiative in Pakistan—a global initiative of the United Nations—is underpinned by its three main goals: universal access to energy, doubling the rate of energy efficiency and conservation, and doubling the share of renewable energy in the overall energy mix. Pakistan has become one of the 120 countries that have pledged to fulfill these goals by 2030, by addressing the nexus between energy and health, women, food, water and other development issues that are at the core of every country’s development agenda. The Rapid Assessment and Gap Analysis of the Energy Sector conducted by the project provides baseline information regarding the energy situation in the country.

On the whole, the baseline project upon which SGP-06 will be built, is comprised primarily of CBOs and NGOs that have implemented climate change, land degradation, biodiversity, related programming in Pakistan, and have strategic knowledge and ability to mobilize change at the local level. These institutions will provide the co-financing of 1.3 million USD that will allow the SGP programming to be carried out. GEF financing will provide additionality to this support.

2.2 The Alternative Scenario

Investments from the GEF will support the linkages between and collaboration among community groups, NGOs, CBOs, Government, private sector, academic institutions and institutions working in the area of environment and sustainable development in the Indus Delta. Support from the SGP will allow for an exchange of knowledge, experience, technical support, dissemination of successful technologies and strategies and the replication and/or upscaling of successful lessons learned, and measurable results in the Indus Delta. In the alternative scenario, organizations will be capacitated and professionalized to (1) gather, analyze, monitor, systematize and disseminate data for the purposes of meeting broader adaptive landscape objectives; (2) promote resilient ecosystems; (3) rehabilitate and restore degraded ecosystems; and (4) test, pilot and conduct adaptive management practices.

The following table highlights current practices, and the alternative made possible through GEF financing:

Table- GEF Alternative

Outcome	Baseline	GEF Alternative
1.1 Multi-stakeholder platforms/partnerships develop and execute participatory adaptive management plans to enhance socio-ecological landscape resilience in the Indus Delta area	While there are ad-hoc associations such as the Mangroves Cooperative Society, these are mostly issues-based. There is no cross-cutting multi-stakeholder entity that monitors ecological degradation at the landscape level.	GEF financing will establish at least one multi-stakeholder platform at the Indus Delta level that can discuss, assess, plan, manage and convey information about environmental concerns and practices on the landscape. The platform will also serve as a gathering point to discuss various issues (e.g. agriculture, water resources, reforestation, etc.). The multi-stakeholder platform will also allow a cross-cutting analysis so that community

		organizations can note the linkages between different concerns and practices and how to join their efforts for greater resilience. This platform will include various actors, including the private sector. GEF financing will allow this platform partnership to develop one landscape management plan and one landscape strategy.
1.2 Community organizations in landscape-level networks build their adaptive management capacities by implementing community-level projects and collaborating in managing landscape resources and processes to achieve landscape resiliency and resilient livelihoods	While 30 number of projects have been carried out in the Indus Delta, the focus on this landscape only commenced in 2010 and many of those initiatives were pilots and first of their kind. There are currently 2000 ha under biodiversity conservation and sustainable use and four species targeted for conservation in the baseline. There is no real mainstreamed understanding of those residing in the landscape of how to secure sustainable livelihoods and how to address the climate challenges they face. While some individuals and organizations have an understanding of sustainable actions these have yet to be consolidated on the landscape level. The majority of the population in the landscape is highly food and water insecure, whose livelihoods are precarious and dependent upon natural resources, many of which do not survive the droughts and floods the area is prone to.	With GEF financing, the area covered by the project will increase. In this phase, SGP-06 will be able to upscale successful pilots, leverage effective partnerships, and be able to target a greater portion of the landscape. With GEF financing, at least 10,000 hectares will be under management for biodiversity conservation, and 10,000 hectares will be under agro-ecological practices and systems that increase sustainability and productivity and/or conserve crop genetic resources. The project will promote native, resilient species of crops which have disappeared to several decades of mono-cropping. With GEF financing at least 35 new community-based projects will be supported. This will include such activities as agroforestry, sustainable fisheries, eco-tourism, conservation, water resources management and access to new markets.
1.3: Strategic projects are developed and implemented by multi-stakeholder partnerships that catalyze broader adoption of specific successful SGP-supported technologies, practices or systems and are upscaled to a to a wider area and/or groups of stakeholders.	There are currently no strategic projects in place for the purposes of upscaling and promoting SGP sustainable practices at a broader level. There is the presence of smaller community-based organizations promoting SGP successes but this is done pro bono and at the very local level. Given the successes and lessons learned of various interventions it would be useful	GEF financing will support two strategic projects to upscale and promote SGP-supported resilient practices and successes at the national level.

	to leverage them at a higher level.	
2.1: Potential financial partners, policy makers and their national/subnational advisors and institutions, as well as the private sector form multi-stakeholder partnerships to engage in designing, planning and monitoring dissemination and replication of successful energy efficient technologies, practices or systems	While there has been interest in some SGP energy efficient technologies by private and public interests, many of these have been ad-hoc and not organized with specific objectives of dissemination and testing in place. Much of the work of promoting SGP innovations is done by the SGP coordinator, and at times by a partner (Professor - pro bono) with regards to the technology behind these initiatives. A more structured and funded approach is needed if some of these advancements are to be shared at the national level and tested by various communities and scientists.	With GEF financing a multi-stakeholder group will be facilitated to allow potential financial partners and national, and sub-national public partners to pilot, test, support the design and dissemination of SGP-supported energy efficient technologies. This will not only increase the profile of some SGP innovations, but promote collaborative approaches to upscaling these initiatives. With GEF financing the initial interest that has been demonstrated in SGP-05 will be taken to the next level in terms of planning and dissemination.
2.2: Multi-stakeholder partnerships implement strategic projects to expand adoption of energy efficient technologies	There is currently no strategic project in the baseline to expand the adoption of energy efficient technologies. Energy efficient technologies have not yet been mainstreamed at the general public level. Given the size of the populations and the levels of pollution (Lahore has been identified as one of the most polluted cities in the world) caused by open burning, vehicles with high emissions, power generation and factories, the need in the country is dire for energy efficient technologies.	In the GEF alternative, financing would be made available to demonstrate the viability of energy efficient technologies as a step to increase adoption of energy efficient technologies at the sub-national and national levels by capable organizations and partners. GEF financing would focus here on increasing the number of beneficiaries and targeting priority areas.
2.3 Multi-stakeholder partnerships, local policy makers and subnational/ national advisors organized in policy and innovation platforms discuss potential policy innovations based on analysis of project experience and lessons learned.	SGP-05 produced a series of knowledge projects, which forms the baseline. This includes compilation of project profiles, case studies, operational training manuals (housing, EE stove), booklets/guides, video documentaries, books and publications (livestock and agriculture). While these have been useful, it is necessary to continue updating content on innovations and of targeting different audiences. Knowledge	GEF financing will allow the generation and analysis of knowledge gleaned from SGP-06. In particular, four case studies will be generated from strategic project experience, and each smaller grant project will generate its own lessons learned. How these will be applied to policy changes will be determined by the multi-stakeholder platform of experts and policy-makers made possible in the GEF alternative.

	<p>products and lessons learned under SGP-05 was primarily focused on increasing capacity of community-level stakeholders to generate, access and use information and knowledge, as well as for briefings with public officials. In the past, SGP findings have contributed to changing of legislation, most notably the Sindh Fisheries Act.</p>	
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2.3 Global Environmental Benefits

SGP-06 is designed to achieve global environmental benefits (GEBs) in climate change mitigation, land degradation and biodiversity. The project is designed to deliver multiple environmental benefits through its interventions.

On **climate change** for instance, the project will seek the sustainable mitigation of the concentration of anthropogenic greenhouse gases (GHGs) in the atmosphere. Project interventions will promote:

- Mitigation of GHG emissions (through energy efficient technologies introduced, adapted, piloted and disseminated)
- Increased use of renewable energy (alternatives to fuelwood, waste, coal)
- Improved energy efficiency (housing and lighting)
- Increased adoption of innovative technologies and management practices for GHG emission reduction and carbon sequestration; and
- Conservation and enhancement of carbon stocks in agriculture, forest and other land use (reforestation, re-vegetation and rehabilitation of degraded soils)

On **land degradation**, the project will address erosion, desertification and deforestation through:

- Improved provision of agro-ecosystem and forest ecosystem goods and services (through reforestation, dissemination of knowledge on improved grazing/livestock maintenance, planting of mangroves, indigenous resilient trees and nurseries)
- Mitigated and avoided greenhouse gas emissions and increased carbon sequestration in production landscapes (reforestation, increasing plant coverage)
- Conservation and sustainable use of biodiversity in productive landscapes (endangered flora and fauna and species)

On **biodiversity**, the project will seek to promote the conservation of globally significant biodiversity and the sustainable use of globally significant biodiversity (endangered/resilient fauna and flora, including Balochistan Black bear, Woolly squirrel, Snow leopard).

GEBs generated can be estimated over the short term as a result of aggregated impacts from potential future individual grant projects. However, overall benefits over the longer term will be a function of the synergies created between projects through programmatic approaches such as

landscape management, promoting/piloting innovations, reducing land degradation, mitigating emissions, and addressing biodiversity hotspots. Under these approaches, community groups, local authorities and NGOs form multi-stakeholder partnerships and develop and implement landscape strategies based on outcomes linked to biodiversity conservation and ecosystem services, sustainable land management, and climate change mitigation, all of which are shaped and defined by their relation to local priorities for food and water security, income generation and the development of social capital for the global environment and socio-ecological resilience. The landscape strategy will define the types and numbers of community projects required to meet the selected outcomes; at that point, once the strategy has been developed by communities, a more credible, detailed accounting of potential global environmental benefits will be possible. At the same time, the project’s multi-stakeholder partnerships will explicitly develop strategic projects (defined by SGP as up to USD 150,000) to up-scale successful SGP-supported technologies, practices or systems identified from previous phases of the SGP Pakistan Country Programme.

Moreover, given the nature of the SGP programme where individual community projects are approved through an application process and Steering Committee (SC) approval, it is difficult to predict in absolute terms what GEBs will be produced and how. What the design phase does account for are the broad priorities of the landscape and communities interviewed, and estimates of the types and impacts of activities that may be pursued.

It is also anticipated that while all the GEB’s will not be realized within the four-year timeframe of this project, the investment in strategic projects and organizations, and their coordinated actions, will accrue and foster long-term impact.

Corporate Results	Replenishment Targets	Project Targets
1. Maintain globally significant biodiversity and the ecosystem goods and services that it provides to society	Improved management of landscapes and seascapes covering 300 million hectares	15,000 hectares
2. Sustainable land management in production systems (agriculture, rangelands, and forest landscapes)	120 million hectares under sustainable land management	15,000 hectares
4. Support to transformational shifts towards a low-emission and resilient development path	750 million tons of CO _{2e} mitigated (include both direct and indirect)	10,804.5 tons of CO _{2e} over three years ²⁹
	Disposal of 80,000 tons of POPs (PCB, obsolete pesticides)	<i>metric tons</i>
	Reduction of 1000 tons of Mercury	<i>metric tons</i>
	Phase-out of 303.44 tons of ODP (HCFC)	<i>ODP tons</i>
	Development and sectoral planning frameworks integrate measurable targets drawn from the MEAs in at least 10 countries	<i>Number of Countries:</i>
	Functional environmental information systems are established to support decision-making in at least 10 countries	<i>Number of Countries</i>

²⁹ See Annex 4 for calculation rationale

The project will also contribute to the **Aichi Targets** and to twelve **Sustainable Development Goals (SDGs)** and their targets:

Aichi Targets

- Strategic Goal B: Reduce the direct pressures on biodiversity and promote sustainable use. The SGP project will contribute to this by improving ecosystem function and promoting more sustainable ecosystem use and management.
- Strategic Goal E: Enhance implementation through participatory planning, knowledge management and capacity building. The SGP project will contribute to this by promoting multi-stakeholder collaborations and synergies in landscape management.

Sustainable Development Goals (SDG)

- SDG 1 by developing strategies to eradicate poverty,
- SDG 2 protecting seeds and seed banks, endemic species and enhancing food security,
- SDG 4 improving access to education and involving education centers in environmental awareness efforts,
- SDG 5 taking the necessary measures to ensure women’s empowerment and participation in all development efforts,
- SDG 6 improving access to water and sanitation,
- SDG 7 facilitating access to energy services and renewable energy technologies,
- SDG 9 facilitating access to credit and helping small scale producers to add value to commodities,
- SDG 10 promoting social inclusion and income generating activities,
- SDG 12 promoting waste management,
- SDG 13 strengthen community resilience and improve awareness raising on climate change issues,
- SDG 14 designing and implementing conservation measures on coastal zones, and
- SDG 15 restoring ecosystems, reforestation, combating desertification and biodiversity loss.

Part III. Project Objectives, Outcomes and Outputs

3.1 Project Objectives, Outcomes and Outputs

The **Project Objective** is to enable community organizations in Pakistan to take collective action for adaptive management for socio-ecological resilience through design, implementation and evaluation of grant projects for global environmental benefits and sustainable development in key landscapes and rural/urban communities.

The GEF-funded alternative to the baseline will address barriers to community-based climate change mitigation and adaptation, reduction of land degradation, and biodiversity conservation. In doing so, the project will support measures to improve community-based capacities and

resources to promote and build ecosystem resilience through resource management planning at the landscape level and supporting measures to avoid GHG emissions by improving the adoption of energy efficient and renewable energy technologies and sequestering carbon through restoration of natural forests from community-based efforts. By focusing on the Indus Delta, the project seeks cost-effective delivery of community-level investments, processes and tools, within a measurable, limited geographic scope. The project also seeks to build synergies and linkages among various community-level interventions so as to harmonize them, increase the value-added of existing initiatives, promote social cohesion and generate greater impacts and results on the landscape through cumulative interventions. This project's strategy is to build on this by consolidating past gains in community-based conservation and sustainable development and scaling-up efforts to reach more communities across the Indus Delta region, and secondarily, in other parts of Pakistan.

The GEF-funded alternative will be delivered through two Components:

- **Component 1-** Resilient rural landscapes and seascapes of Pakistan's Indus Delta for sustainable development and global environmental protection
- **Component 2-** Demonstration, deployment and transfer of renewable energy and energy efficient technologies, and approaches and promotion of conservation and enhancement of carbon stocks

Individual small grants, strategic grants and other project outputs and activities will deliver the following concrete outcomes:

- **Outcome 1.1** - Multi-stakeholder platforms/partnerships develop and execute participatory adaptive management plans to enhance socio-ecological landscape resilience in the Indus Delta area.
- **Outcome 1.2** - Community organizations in landscape level networks build their adaptive management capacities by implementing community-level projects and collaborating in managing landscape resources and processes to achieve landscape resiliency and resilient livelihoods
- **Outcome 1.3** - Strategic projects are developed and implemented by multi-stakeholder partnerships that catalyze broader adoption of specific successful SGP-supported technologies, practices or systems and are upscaled to a wider area and/or groups of stakeholders.
- **Outcome 2.1** - Potential financial partners, policy makers and their national/subnational advisors and institutions, as well as the private sector, form multi-stakeholder partnerships to engage in designing, planning and monitoring dissemination and replication of successful energy efficient technologies, practices or systems
- **Outcome 2.2** - Multi-stakeholder partnerships implement strategic projects to expand adoption of energy efficient technologies
- **Outcome 2.3** - Multi-stakeholder partnerships, local policy makers and subnational/national advisors organized in policy and innovation platforms discuss potential policy innovations based on analysis of project experience and lessons learned.

Under **Outcome 1.1**, SGP interventions address the lack of a landscape approach in the Indus Delta. While there are some national initiatives, and a WWF project to research the plight of the Indus dolphin, there are no real landscape management initiatives that put community-led initiatives at the heart of large baseline projects, other than those initiated by the SGP.

Initiatives under Outcome 1.1 will be built around the community-based approach to managing natural resources. Interventions under Outcome 1.1 will support communities to foster their own vision for restoring and maintaining the productivity and resilience of local ecosystems, integrating biodiversity conservation, careful stewardship of ecosystem services, and sustainable agricultural and fisheries practices. In supporting community organizations to increase the socio-ecological resilience of their local ecosystems, the project will also seek to enhance capacities, increase knowledge and collaboration, governance and adaptive management. The key aspect of all of the activities under this outcome is that they must be community-driven.

To achieve this the project will implement activities that produce the following three outputs:

- **Output 1.1.1** Multi-stakeholder governance platform in the Indus Delta developed
- **Output 1.1.2** Adaptive landscape management plan and strategies developed and agreed to by the multi-stakeholder governance platform.
- **Output 1.1.3** Civil society representation gap analysis and proposals for amendments to existing governance structures to improve community and local CSO participation, and dialogues with government officials carried out

Under **Output 1.1.1** in the GEF alternative, activities will focus on establishing recognizable, local governance platforms in the Indus Delta. Under SGP-05, a number of organizations came together in a pilot to convene and implement various environmental activities. Under SGP-06, this work will be further enhanced, will cover a greater area and include new partners. The governance platform will serve as a point of collaboration, knowledge-sharing, assessing progress against various environmental indicators and responding to environmental shocks and disasters. Partners will be able to disseminate information through this platform, adapt landscape goals and objectives and collect lessons learned. The platform will also serve a socio-cultural role in bringing together people of different livelihood activities and will include gender considerations. The platform is the site through which local organizations can determine their landscape priorities, objectives and strategies.

Under **Output 1.1.2**, community organizations of the Indus Delta will develop an adaptive landscape management plan and strategy, which are endorsed by the multi-stakeholder governance platform. The interventions under this output will include all the consultations, liaising, information gathering that local community organizations need to derive a set of interventions and identify resilience indicators by which to measure success. This process will be community-led and participatory and will employ the COMDEKS approach, described above. The key steps under this approach are that communities identify desirable ecological, social, and economic outcomes and building blocks of resilience; plan their activities to boost ecosystem and agroecosystem) productivity and sustainability; improve organizational capacity of communities; execute projects and measure results and adapt their planning and management practices to reflect lessons learned. An initial discussion was carried out during the PPG phase; during implementation, more locally focused exercises will be carried out to enrich this process. In sum, the activities carried out under this output include:

- Organize consultations to identify landscape needs, strategic interventions, objectives and resilience indicators
- Carry out public awareness activities in the Indus Delta to ensure shared understanding of landscape resilience, and the landscape strategy

- Use traditional approaches and new technologies (such as Android Apps, photographs) for effective monitoring, data collection, reporting and dissemination.

Under **Output 1.1.3**, a civil society representation gap analysis will be carried out to confirm who the key stakeholders are and their characteristics and priorities, how environmental interests are represented as well as identification of groups or communities that have been underrepresented in past initiatives. Proposals for amendments to existing governance structures to improve community and local CSO participation, and dialogues with government officials, will be carried out to ensure that governance structures are representative of local realities. In order to achieve this Output, the following activities will be carried out:

- Develop maps and conduct analysis of inter-institutional governance frameworks and stakeholder constituencies
- Carry out participatory research and baseline assessments of existing governance structures, lessons learned and best practices
- Identify which vehicles have been most successful in enhancing CSO participation and apply lessons learned.

Under **Outcome 1.2**, GEF financing will provide grants to local, community-based organizations so as to (i) build their adaptive capacities; (ii) implement community-level projects; and (iii) collaborate in managing landscape resources to achieve landscape resiliency and resilient livelihoods. In particular, CBOs and NGOs will apply their grants in the areas of land rehabilitation, biodiversity conservation and mitigation and adaptation to climate change. The funds will allow them to pilot new activities, test initiatives, and replicate successful practices for environmental resilience. Through these initiatives, the area under sustainable management will be increased and the number of community-based projects will be augmented. Projects will be implemented to cover a total target area of 20,000 hectares.

The key outputs under this Outcome, include:

- **Output 1.2.1** Community-level small grants projects that conserve biodiversity and restore ecosystem services in the Indus Delta implemented
- **Output 1.2.2** Community-level small grant projects that enhance productivity and sustainability of smallholder agroecosystems implemented
- **Output 1.2.3** Community-level small grant projects for alternative livelihood options, innovative products and improved market access implemented
- **Output 1.2.4** Community organizations' organizational, financial and administrative capacities are strengthened

Under **Output 1.2.1**, community groups will implement projects that target biodiversity conservation and restoration of ecosystem services in the Indus Delta. The region is threatened by monoculture, extinction of native species of fauna and flora, particularly birds and dolphins. Indigenous reptiles and fish species are also under threat. Given the dependency on fisheries, livelihoods are tied to dwindling fish stocks.

Project activities will have a three-tiered approach: (i) enhancing people's awareness of the biodiversity that surround them, and the risks this biodiversity faces; (ii) initiating biodiversity-protection measures which also offer multiple environmental benefits; and (iii) linking sustainable use to livelihoods generation.

Given the level of poverty in the Indus Delta, it is vital that conservation efforts be associated with benefits to the population's socioeconomic conditions. This is also why activities under this output will be supported by public awareness and knowledge sharing, along with concrete conservation efforts. Further, activities that enhance people's livelihoods and opportunities with the added benefit of biodiversity conservation will be pursued. Examples of projects that may receive grants include:

- Rehabilitation of lagoons. Previous small-scale examples have attracted wildlife, promoted the growth of local grasses and reeds, as well as protected migratory birds, which pass through the delta region. In this phase, several sites for lagoons have been identified which would increase water access for communities as well as contribute to biodiversity.
- Establishing public awareness campaigns to reduce deforestation. Deforestation has been one of the main threats to habitat loss. In addition to campaigns, activities will be complementarily carried out to provide alternatives to timber, wood products for construction and fuelwood. For instance, activities under Component 2 will promote innovations such as briquettes and more efficient stoves. Such innovations will complement public awareness initiatives in a complementary approach.
- Planting of diverse mangroves, with benefits to flora and fauna. One of the challenges in the Indus Delta has been a trend towards a single species. The project will support initiatives seeking to diversify and plant more resilient varieties.
- Use wastewater, which currently is dumped into nearby areas and waterways without being treated, for secondary purposes. Given the shortage of water in the region and the impacts of waste from industrial mills (in particular sugar mills), waste will be better managed so as not to impact the environment negatively, and used for other purposes to be innovated during project implementation.
- Conduct pilot activities for the protection of either the endangered Woolly squirrel, Himalayan ibex, Musk deer, Snow leopard, Urial or Markhor. These are highly endangered species and also indigenous to Pakistan. For that reason, grants will be provided to community groups working on protecting species. The species will be identified during the inception workshop and the landscape prioritization exercises.
- Promotion of rare and endangered livestock breeds. In the areas of the Indus Delta, there have been significant losses of indigenous goats, camels and horse breeds. The project may support interventions that encourage improved husbandry, conservation of rare breeds, and development of market incentives to sustain improved husbandry practices.
- Piloting the removal of arsenic from water through a hand-pump. The presence of arsenic is a threat not only to humans but to biodiversity. SGP-06 will support initiatives that seek local solutions to arsenic presence.

Under **Output 1.2.2**, those community initiatives that enhance productivity and sustainability of smallholder agro-ecosystems will be supported. Given the decreasing productivity of agricultural lands, the situation is dire to improve agricultural output and productivity in a sustainable way. Some potential project ideas that could be financed by the SGP include:

- Piloting a tree bank of indigenous and resilient species. Nurseries can be established in different parts of the region so that a large acreage of land in the region and beyond the

delta can be planted. This would address issues related to monoculture (agroforestry systems), deforestation, increasing forest cover, and food security and biodiversity.

- Providing alternatives to fodder, which may erode the productivity of land. For instance, camels often feed on mangroves, which undoes some of the efforts of community members in planting and sustaining mangroves. SGP may support initiatives that identify alternative halophytes that can be used as fodder.
- SGP will also support interventions that improve soil fertility. This includes activities such as increasing soil cover, green manures, disseminating natural nutrients, fighting pest invasions, decreasing overgrazing and providing viable alternatives to slash and burn and other disruptive farming techniques.
- Piloting resilient crop seed banks. Seed banks are one of the most efficient ways of crop genetic resource conservation, which helps to provide food security in the face of climate change. Support for seed banks could potentially allow opportunities to test participatory plant breeding.
- Increasing drip irrigation, reservoirs and access to treated wastewater for agricultural purposes.
- Piloting low-cost desalination methods to render water usable for agricultural purposes.

Under **Output 1.2.3**, the SGP, through GEF financing, will support the development of alternative livelihoods, innovative products and improved market access. As mentioned previously, the residents of the Indus Delta are highly dependent upon decreasing natural resources. In order to see viable results on the landscape, it will be necessary to support projects that enhance people's livelihoods and provide them with opportunities to better their socioeconomic conditions, all the while producing global environmental benefits.

Some initiatives that may be considered for support by the SGP programme, include:

- Introducing and promoting high value local livestock breeds
- Introducing and promoting innovative products and services such as micro-mills, fruit collection and/or processing factories of products such as the *Moringa olifera* and seed oil.
- Developing and promoting sustainable tourism services in historical and spiritual sites in the Indus Delta. The Indus Delta hosts a plethora of historical sites which include sites where Alexander the Great embarked upon his return journey home, archaeological sites of Indus Valley civilizations, shrines of Sufi mystics, etc. The Indus Delta also houses unique wildlife, wetlands, beaches, and indigenous cultures and cuisine. The tourism sector, however, is completely underdeveloped. This provides the opportunity to commence eco-tourism initiatives that respect both the environment and local cultures and provide other Pakistanis the opportunity to experience the riches of the region.
- Strengthening the market links for agro-ecological products. One of the challenges for the little production that does happen in the region is that many agricultural products are imported from Karachi and market links are not in place for smallholder farmers to sell products. As such, the SGP will support initiatives that seek to enhance market links through organic fairs, fair-trade, and/or sustainable certification schemes.
- There may be interest in other southern countries for Pakistani products produced/harvested sustainably. As such the SGP may support initiatives that seek South-South collaborations and market exchanges.

Under **Output 1.2.4**, the SGP will seek to support strengthening of community organizations' organizational, financial and administrative capacities. This output targets some of the issues that plague community organizations, such as:

- community organizations have insufficient organizational capacities to efficiently and effectively plan, manage and implement initiatives and actions of their own design in favour of landscape resilience objectives
- community organizations do not have access to ongoing funding which would allow innovating and testing of new ideas, and conducting adaptive management.
- knowledge from project experience with innovation/experimentation is not systematically analyzed, recorded or disseminated to policy makers or other communities, organizations and programmes; and
- community organizations are not yet recognized for the catalytic role they can play in achieving broader landscape outcomes.

Many community organizations are unable, due to the aforementioned issues, to implement a longer-term vision and strategy for ecosystem and resource management and suffer from weak adaptive management capacities. They are unable to innovate, test alternatives, monitor and evaluate results, adjust practices and techniques to meet challenges and incorporate lessons learned. Moreover, many community organizations are unaware of what other CBOs are doing, which causes them to miss opportunities for collaboration, synergies and leveraging/sharing of resources. Most local organizations do not have the basic administrative or organizational capacities to be recognized by provincial or national entities or to provide input to policy processes. The activities under this Output will ensure that adequate institutional support is provided to NGOs to render them as effective as possible in fulfilling their roles and objectives, and also providing them capacities that will serve them beyond project duration. NGOs may also require some capacity-building to understand landscape resilience, how to assess their impacts, and for adaptive management, as needed. SGP-06 will support organizations in the Indus Delta to become effective agents for coordinated, long-term development and maintenance of landscape resilience. This will limit haphazard, uncoordinated interventions without shared goals. This project will seek to enhance coordination, synergies, and collaboration among civil society, governments, and non-governmental organizations through grant projects reviewed and approved by the SGP National Steering Committee. In particular, activities under this output include:

- trainings on organizational behaviour, administrative tools and resources and enhance interactions among and between CSOs to build their capacities
- provision of technological inputs to enhance strategic CSO capabilities
- regional consultations among organizations to enhance synergies, collaborations and reinforce a common vision for landscape outcomes

Under **Outcome 1.3** strategic projects will be developed and implemented by multi-stakeholder partnerships that catalyze broader adoption of specific successful SGP-supported technologies, practices or systems and are upscaled to a wider area and/or groups of stakeholders. The main focus under this outcome is to promote the research, development, replication and dissemination of successful innovations, systems and technologies emerging from the SGP Programme. While the focus will be the Indus Delta, the dissemination and replication of

successes will be nation-wide so as to target a large number of potential community actors, and the Indus Delta can serve as a useful pilot and demonstration site. This Outcome will be delivered by two key Outputs which include:

- **Output 1.3.1** Detailed analysis of successful grant project portfolios and lines of work (e.g. community agro-forestry) from previous phases to identify lessons learned/best practice and market opportunities
- **Output 1.3.2** Development, dissemination and replication of successful technologies, practices or systems through strategic projects in the Indus Delta and beyond

Under **Output 1.3.1**, a study will be carried out of SGP-developed innovations, systems, practices and technologies that can be success adopted/adapted in the Indus Delta and beyond and have the potential to be up-scaled. While there are lists of past SGP innovations, activities under this output will take the analysis further by examining the feasibility of adoption, by identifying the most vulnerable areas that are in greatest need of said innovations, as well as through an analysis of communities that will be most likely to adopt innovations and sustain them. The research under this output will also examine market opportunities in project portfolios to ensure that beneficiaries have markets for sustainably produced goods and services.

Under **Output 1.3.2** a whole host of activities will be carried out on the ground for upscaling and adoption of innovative and sustainable practices. These include the following:

- Identify and engage potential financial private partners and public institutions in upscaling and replication of successes. This is a key activity that will leverage their talents, abilities and networks to mainstream SGP innovations.
- Research and development of effective innovations, systems, strategies, practices and technologies. Before disseminating and replicating innovations, investments may require further research and development so as to limit any negative consequences on communities.
- Development of collaborations with research institutes to provide access by the SGP-06 programme to a laboratory where innovations can be tested. In the baseline scenario, SGP tests products, innovations and practices on the rooftop of a science professor that has provided the space pro bono. The rooftop is subject to the elements, not enclosed, and given the breadth of technologies and systems that are tested, the SGP requires access to a more professional lab. The programme has achieved a great deal in the baseline without adequate testing facilities, but to advance the programme at a higher level, and to increase the uptake of sustainable innovations, the SGP will require access to and collaborations with professional testing facilities. This could be managed through partnerships with laboratories and appropriate researchers, or creating test fields; regardless of the scope it is necessary for further proliferation of project successes.
- Pilot/demonstrate innovative practices and projects for endorsement. Many of the practices and innovations will require technical demonstrations and consultations so as to attract financial partners, beneficiaries and to promote uptake. The project will have to provide these in various regions.
- Developing marketing strategies for mainstreaming sustainable innovations for different audiences. Regardless of how successful SGP technologies and systems are in a single community, they will not be up-scaled if the appropriate marketing/information-sharing

is not conducted. One of the items noted in the most recent SGP evaluation (and SGP Pakistan case study) was a need to tailor communications content to various audiences. Activities under this output will support mechanisms and communications that reach wider audiences, promote greater knowledge on sustainability and attract the attention of potential financial partners.

The Outcomes under **Component 2** focus on the deployment of renewable energy and energy efficiency that promote conservation and enhancement of carbon stocks. While initiatives were piloted and successful under SGP-05, there is the opportunity to carry these out on a much larger scale for broader impact. Some of these examples include fuel-efficient stoves, fuel-efficient brick kilns and energy efficient housing.

Under **Outcome 2.1** potential financial partners, policy makers and their national/subnational advisors and institutions, as well as the private sector parties will be engaged to support broader adoption of energy efficient practices. Experiences from previous SGP phases indicate that broad-based upscaling can occur when key stakeholders in other sectors engage with pilots conducted by CBOs. As such, these other stakeholders will be engaged to support the design, planning, monitoring dissemination and replication of successful energy efficient technologies, practices or systems. This will be carried out through three main outputs.

Under **Output 2.1.1**, detailed analyses of successful grant project portfolios and lines of work from previous phases and from the current phase will be carried out to identify lessons learned/best practices, new market opportunities, feasibility, and upscaling requirements. The project will also support a feasibility study on the adoption of fuel-efficient technologies so as to guide the viability of interventions. A marketing analysis will also be carried out to identify how best to market innovations under SGP, so as to attain a greater number of people.

Under **Output 2.1.2**, the project will engage potential financial partners and public sector institutions for development and mainstreaming of renewable energy and energy efficient technologies. As can be noted in the list of co-financiers of SGP-06, there is considerable interest in the part of the private sector to have the SGP pilot and replicate initiatives. The uptake of larger private partners will promote greater adoption of technologies, which will likely mean sustainability of project results beyond project duration. To achieve this output, workshops will be held where energy efficient technologies are demonstrated and discussed.

Under **Output 2.1.3**, multi-stakeholder partnerships, local policy makers and subnational/national advisor platforms for policy and innovation will be formed. These platforms will not be restricted to the Indus Delta but will have national coverage and engagement. One of the main activities under this output will be to systematize and codify relevant project and portfolio experiences for dissemination to policy and innovation platform participants, as well as community organizations and networks and second-level organizations

Under **Outcome 2.2**, GEF-financing will support the implementation of strategic projects to expand the adoption of energy efficient technologies. This will be carried out through two outputs. Under **Output 2.2.1**, a strategy for the development and adoption of energy efficient technologies will be established. Key gaps and needs in mainstreaming a particular energy efficient technology will be identified and results from the corresponding feasibility study conducted under Outcome 2.1 will be applied.

Under **Output 2.2.2**, grants will be provided to CBOs and NGOs to pilot renewable energy and fuel efficient technologies in the Indus Delta and elsewhere in the country. While the specific technologies will only be known during grant applications during project implementation, it is anticipated that the following activities will be carried out:

- Piloting and dissemination of solar lamps. Parallel training will also be provided to local individuals on the maintenance and repair of solar lamps to ensure long-term usage and development of skills.
- Piloting and disseminating climate-resilient bricks made with waste by-products. The Indus Delta region is arid and susceptible to very high heat particularly in the summer. As the majority of the population does not have the means for electricity or fans, the SGP has worked on housing to be more heat-resistant. Research for this has already been initiated in SGP-05; production and dissemination is to be carried out in this phase.
- Development and dissemination of high strength Compressed Earth Blocks (CEB) for roof and floor tiles (construction) by using a hydraulic press. The pilots suggest that these bricks are more resilient to storms and floods and retain less moisture and heat. Finding alternatives to wood-based construction also supports biodiversity and land degradation focal area objectives. These bricks can also be produced by local labourers, thereby opening up opportunities in the construction sector, for local workers.
- Rice ash and bagasse ash are a result of industrial waste by sugar mills. Initiatives in SGP-06 will seek to use this waste in brick production.
- Development of alternative sources for fuel briquettes to reduce pressures on forestry products, coal and other substances.
- Testing devices that convert thermal energy to electric energy to create more power sources.

Finally, under **Output 2.2.3**, the project will put in place knowledge management mechanisms. These will be established to produce case studies, produce publications on successes, and systematize and codify lessons learned. This will also strengthen the institutional memory of innovations tested, issues in feasibility adoption and technical challenges.

3.2 Gender Considerations

The COMDEKs approach recognises that inequalities, social exclusion and marginalization can hinder the ability of women, indigenous groups and others to strengthen the resilience of their landscapes. In line with approach, SGP OP-6 will pay close attention to issues of gender and social inclusion recognising that gender equity is vital to increase social resilience.

Specifically, grants will be reviewed through a gender lens and ensure that at a minimum they:

- Are non-discriminatory and allow for women's participation in different stages of the project cycle
- Allow for identification and capacity building of local women leaders
- Explore mechanisms for providing women opportunities for women to network and participate in key decision making forums
- Allow for increased access to assets and resources e.g. in the case of energy efficient (EE) stoves, solar products and small-scale agriculture or livestock

- Target women in any trainings and awareness raising campaigns
- Wherever feasible, include among primary beneficiaries, specialised groups of vulnerable women e.g. widows, women with disabilities, women smallholders and other marginalised/disadvantaged groups of women
- Aim to capacitate women-focused or women-led community organisations and institutions that do not have other opportunities for accessing external resources
- Adequately captures and documents gender knowledge as part of monitoring and reporting, as well as lesson learning for the future
- Provide gender disaggregated data on indicators.

OP-6 will specifically seek to support projects that are managed by women’s groups within the landscape and encourage women’s participation in community-based institutions. Moreover, the multi-stakeholder platform will be employed to further strengthen women’s capacities and leadership abilities and help them to advance their involvement in key decision making processes. A system of peer-mentoring and capacity building can be put in place utilising this forum that facilitates need-based capacity development amongst other partners/individuals. These aspirations and directions are also consistent with partner level findings that have emerged from the PPG National Consultation Workshop. The SGP NSC has a designated gender focal person who is responsible for appraising projects with a gender lens and who will be essential for mainstreaming gender issues during OP-6.

Rapid gender appraisals and gender analyses will be conducted to ensure that specific interventions are tailored to identified gender needs and concerns. More importantly, gender will be mainstreamed under relevant project related outputs and outcomes, and projects will be required to identify, track and report on gender disaggregated indicators.

In biodiversity projects, there will be special focus on involving women so that their specific traditional knowledge and skills are honed and can contribute towards improving overall resilience. In the Indus Delta, women are involved in playing a major role in producing and harvesting of several crops and livestock, and past experiences have also confirmed their vital link and contributions to local economies. Historically, most of the SGP projects can be termed as gender-neutral with specific interventions and benefits for both men and women. A few, however, are geared specifically towards addressing women’s needs and priorities. SGP has identified and nurtured many small women-centred CBOs who were deemed too risky by others but were offered their first breakthrough by SGP.

There are many inspiring stories under the SGP portfolio whereby small women-led/focused CBOs were supported which have emerged as leading women-focused NGOs operating at a national and sub-national level. These include the Pakistani Hoslamand Khawateen Network (PHKN)—also one of SGP’s grantees in OP-5—which was supported by the SGP in an earlier phase and which has now emerged as a leading women-led NGO based in Khyber Pakhtunkhwa (KP) working for women’s poor communities through integrated interventions in Natural Resource Management (NRM), enterprise development and micro-credit. Another women-led partner of SGP is TRUCE, which has implemented an innovative project by constructing 10 women’s shelters in Badin, which can be utilised as emergency shelters when faced with climate disasters.

In terms of most relevant technology under SGP-05, the energy efficient stove was cited as having important tangible benefits for women. Women users of stoves claimed great benefits and ease of burden due to these user-friendly stoves which allows them comfort, hygienic cooking conditions and time saving from reduced fuel wood collection. Past evaluations note that women have reportedly benefitted from general improvement in their health conditions and less physical exertion due to ease of cooking. The dual-purpose stove now allows them to cook two things simultaneously. The PPG field-work confirmed the finding that some of the most pressing issues faced by women are related to food, water, fuel-wood/cooking, as well as access to health and education.

3.3 Knowledge Management

Knowledge management has remained a strong focus for SGP from its very inception as evidenced by the diverse number of knowledge products that the SGP has produced and disseminated over the years. It has invested in strong knowledge products that capture and share results with a wider audience and also act as tools for resource mobilization. SGP has pursued knowledge management with the aim of facilitating cross cutting capacity development, learning and promoting uptake and replication of community models and pilots across a broader area. Efforts have also focused on increasing capacity of community-level stakeholders to generate, access and use information and knowledge. SGP has invested in the creation of a vast number of knowledge products, which include: compilation of project profiles, case studies, operational training manuals (housing, EE stove), booklets/guides, video documentaries, books and publications (livestock and agriculture).

The knowledge generated therein can be said to serve both purposes; knowledge for management as well as advancement of environmental knowledge in a context where baseline knowledge on sustainability is very low. Knowledge products have assisted in promoting knowledge management so that it aids in publicity, resource mobilisation, awareness raising, training, grants implementation and developing lessons learned. Keeping this in view, there is a continuing need for SGP to have such communication products that are *promotional, operational and inspirational for a differentiated audience* be they project designers and implementers, beneficiaries and decision makers and donors.

As in the past, SGP will continue to participate in relevant national conferences and seminars where it can exchange information, network and showcase its knowledge products. Print and electronic media and other social networking tools (website, Facebook and Twitter) are employed to increase outreach and visibility. This phase will build further upon these efforts. SGP partners will also need additional support in knowledge management, media communication, report writing, and documentation.

The technical manuals produced during SGP-05 can contribute towards promoting compliance with established technical standards of the SGP products that have been refined over a long process of experimentation and refinement and can be further expanded and updated during the current phase. A few of the new themes for future illustrative products could include documentation of participatory approaches; community guidelines; extension leaflets for small farmers etc. The Programme feels that it could also do more in the areas of publicising SGP achievements in support of lobbying and advocacy for inspiring a thinking process and supporting key causes e.g. the Fisheries Act, conservation, sustainable resource management.

Websites, brochures, press releases, case studies and special publications of the Programme are some ideas of how this can be done as a regular feature.

As mentioned in the PIF, the landscape planning experience will produce one case study and summary of lessons learned based on evaluation of implementation results and their contributions to GEB, local development objectives and landscape level outcomes, including the development of social capital. This knowledge will be further systematized and codified for dissemination at the landscape level through policy and innovation platforms, community landscape management networks and multi stakeholder partnerships, knowledge fairs and other exchanges; at the national level through the National Steering Committee, strategic partnerships and their networks, and national knowledge fairs where appropriate; and globally through the SGP global network of SGP Country Programmes and UNDP's knowledge management system. At the same time, sub-programmes focused on development and application of energy efficient and renewable energy technologies will be studied to identify lessons and best practices for further dissemination to policy and innovation platforms and onward transmission to the network of communities, NGOs and government stakeholders.

Each grant project will have as a primary product a case study or summary of lessons learned based on evaluation of implementation results and their contributions to GEB, local development objectives and landscape level outcomes, including the development of social capital. This knowledge will be further systematized and codified for dissemination at the landscape level through policy dialogue platforms, community landscape management networks and multi-stakeholder partnerships, and knowledge fairs and other exchanges; at the national level through the National Steering Committee, strategic partnerships and their networks, and national knowledge fairs where appropriate; and globally through the SGP global network of SGP Country Programmes and UNDP's knowledge management system

Knowledge products will focus on some of the following themes in addition to any others that emerge: sharing land restoration processes; operational knowledge of converting and enhancing productivity while contributing to sustainable landscapes; strengthening community participation in governance schemes in areas vulnerable to climatic variability and climate change; water management practices; soil management practices; construction and use of innovative energy efficient and renewable energy technologies; and scaling up innovative businesses.

Project funding has been set aside for potential "strategic projects", in line with SGP's global guidelines. Strategic projects aim to bring broader adoption of specific successful SGP-supported technologies, practices or systems to a tipping point in each landscape through engagement of potential financial partners, policy makers and their national/subnational advisors and institutions, as well as the private sector. These projects will be defined in the first year of FSP implementation, as feasible, and may focus on such things as improving the production and marketing of products, ecotourism, or improving the production of endangered crop genetic resources. Case studies highlighting the process, obstacles to and opportunities for upscaling through the strategic projects will be produced with the costs of external experts and participatory analysis workshops incorporated into each strategic project's budget.