



United Nations Development Programme

Country: Pakistan

PROJECT DOCUMENT

Project Title: <i>Sustainable Land Management Programme to Combat Desertification in Pakistan</i>
One UN Programme Outcome(s): Outcome 3.2: Vulnerable populations benefit from improved sustainable environmental management practices, including climate change mitigation and adaptation
UNDP Strategic Plan Primary Outcome: Mainstreaming Environment and Sustainable Development
UNDP Strategic Plan Secondary Outcome: Promoting Adaptation to Climate Change
One UN Programme Output(s): <u>Output 3.2.1</u> : Gender-sensitive climate change adaptation and mitigation strategies and action plans developed and piloted at local level by federal and provincial governments, private sector, academia and civil society, including women’s groups; <u>Output 2.2.3</u> : Community groups, particularly women, sensitized and actively engaged in the sustainable management of critically threatened ecosystems.
Executing Entity/Implementing Partner: Climate Change Division, Cabinet Secretariat, Government of Pakistan
Other Partners: Provincial Planning and Development Departments [Punjab, Sindh, Balochistan and Khyber Pakhtunkhawa]
Brief description: This project will assist the Government of Pakistan to achieve the long-term goal – “to combat land degradation and desertification in Pakistan” with the primary objective - “To promote sustainable management of land and natural resources in the arid and semi-arid regions of Pakistan in order to restore degraded ecosystems and their essential services, reduce poverty, and increase resilience to climate change”. The project will depend on the strong commitment of the provincial and federal Governments of Pakistan and the involvement of key stakeholders, in particular those at the community level. The project will deliver three outcomes: <u>Outcome 1</u> : Strong enabling environment at national and provincial levels supports up-scaling of SLM practices; <u>Outcome 2</u> : Effective, targeted and adaptive implementation of SLM Land Use Planning & Decision Support System; <u>Outcome 3</u> : On-the-ground implementation of climate-resilient SLM activities is up-scaled across landscapes. The project will result in successful application of SLM over an area of 800,000 ha in 15 districts covering more than 200 villages.

Programme Period:	60 months	Total Resources:	US\$ 20,421,000
Atlas Award ID:	00075848	GEF:	US\$ 3,791,000
Project ID:	00087529	Co-Financing:	
PIMS #	4593	Government:	US\$ 15,000,000
Start date:	1 November, 2013	UNDP (parallel funds):	US\$ 1,500,000
End Date	30 October, 2018	Other	US\$ 130,000
Management Arrangements:	NIM		
PAC Meeting Date	tbd		

Agreed by (Government): _____

Date/Month/Year

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Date/Month/Year

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Date/Month/Year

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ACRONYMS

ADB	Asian Development Bank
AFA	Admin & Finance Assistant
AFO	Admin & Finance Officer
AusAID	Australian Agency for International Development
AZRC	Arid Zone Research Centre, Quetta
AZRI	Arid Zone Research Institute
BARI	Barani Agricultural Research Institute- Chakwal
C&I	Criteria and Indicators
CBD	Convention on Biological Diversity
CBO	Community-Based Organisation
CCB	Citizen Community Board
CCD	Climate Change Division
CMDO	Community Motivation and Development Organization
CO	Community Organization
DI Khan	Dera Ismail Khan
EAD	Economic Affairs Division
EU	European Union
FAO	Food & Agriculture Organization
FD	Finance Division
FEC	Foreign Exchange Component
GEF	Global Environment Facility
GHG	Green House Gas
GIS	Geographic Information System
GM	Global Mechanism
GoP	Government of Pakistan
GPS	Global Positioning System
HEC	Higher Education Commission
ICIMOD	International Centre for Integrated Mountain Development
IDB	Islamic Development Bank
IGF	Inspector General of Forests
INRM	Integrated Natural Resources Management
IP	Implementing Partner
IUCN	International Union for Conservation of Nature
IWRM	Integrated Water Resources Management
KP	Khyber Pakhtunkhwa
LUP&I	Landuse Planning and Implementation
M&E	Monitoring and Evaluation
MDGs	Millennium Development Goals
MoNFS&R	Ministry of National Food Security and Research
MoWP	Ministry of Water & Power
MTDF	Medium-Term Development Framework
NAP	National Action Programme
NCCCCD	National Coordination Committee to Combat Desertification
NCU	National Coordination Unit

NGO	Non-Governmental Organization
NPC	National Programme Coordinator
NPD	National Programme Director
NRM	Natural Resource Management
NRSP	National Rural Support Programme
NTFP	Non-Timber Forest Products
P&D	Planning and Development
PARC	Pakistan Agriculture Research Council
PCCCD	Provincial Coordination Committee to Combat Desertification
PCOM	Project Cycle Operations Manual (UNDP-Pakistan)
PCRWR	Pakistan Council of Research on Water Resources
PCU	Provincial Coordination Unit
PFI	Pakistan Forest Institute
PFRI	Punjab Forestry Research Institute- Faisalabad
PPAF	Pakistan Poverty Alleviation Fund
PPD	Provincial Programme Director
PPU	Project Preparation Unit
PR&CB	Policy Reform & Capacity Building
PRSP	Poverty Reduction Strategy Paper
PSC	Programme Steering Committee
PSDP	Public Sector Development Programme
QPR	Quarterly Progress Report
RS	Remote Sensing
RSPN	Rural Support Programme Network
SAWCRI	Soil and Water Conservation Research Institute- Chakwal
SCOPE	Society for Conservation and Protection of Environment
SLM	Sustainable Land Management
SMEDA	Small and Medium Enterprise Development Authority
SPO	Strengthening Participatory Organization
SUNGI	Sungi Development Foundation
TVO	Trust for Volunteer Organizations
UNCCD	United Nations Convention to Combat Desertification and Drought
UNDP	United Nations Development Programme
UNEP	United Nations Environment Programme
UNEP	United Nations Environmental Programme
UNFCCC	United Nations Framework Convention on Climate Change
USAID	United States Agency for International Development
VDO	Village Development Organization
VO	Village Organization
WAPDA	Water and Power Development Authority
WWF-P	World Wide Fund for Nature-Pakistan
ZTBL	Zarai Taraqati Bank Ltd.

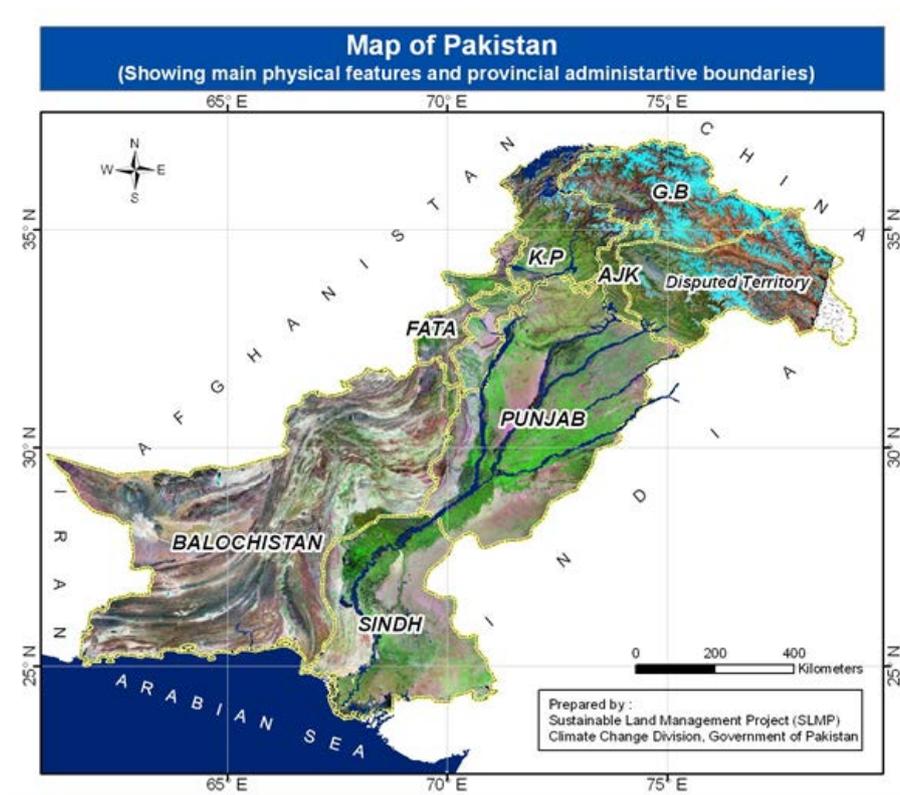
SUSTAINABLE LAND MANAGEMENT PROGRAMME TO COMBAT DESERTIFICATION IN PAKISTAN

PART I: SITUATIONAL ANALYSIS

1.1 BACKGROUND

Pakistan's diverse geography contributes to the wide diversity in climatic conditions in different agro-ecological zones of the country. The far north of Pakistan reaches into the Karakorum Himalayan ranges, whilst the southern and western, and coastal regions are lowland plains of the River Indus. Two smaller mountain ranges (the Safed Koh and Sulaiman ranges) run along the western border of Pakistan. Pakistan is situated between the latitudes of 24° and 37° north and longitudes of 61° to 75° east, stretching over 1,600 km from north to south and 885 km from east to west, forming a rectangular territory covering about 880,000 km² with a coastline of 1,046 km. Due to its highly diverse physiographic and climatic conditions, Pakistan has been classified into 11 geographical, ten agro-ecological, and 9 major ecological zones. Given its borders with Iran, Afghanistan, China and India, Pakistan occupies a geopolitically important location at the crossroads of South Asia, the Middle East and Central Asia.

Figure 1. Map of Pakistan showing the main geographical features



Around 80% of the Pakistan's land is arid and semi-arid, 12% dry sub-humid, and 8% humid. Forests cover only 42,000 km², or 5.2% of the total land area. The country has a fast growing population of about 180 million people, over 60% of whom depend on agriculture for their livelihoods. About 50% of the country by area is under some type of agricultural land use. Nearly 300,000 km² is used as rangelands and 200,000 km² is cropland of which 160,000 km² is irrigated. Most of the rural population survives on fragile rain-fed lands prone to desertification, drought, flood and severe climate change impacts.

Rural landscapes across the country are characterized by moderate to severe erosion, deforestation, overgrazing, depleted ground water reserves, reduced surface water quantity and quality, raised salinity, low levels of soil fertility, and the loss of biodiversity. All of these are linked to unsustainable land use practices. Many endemic plant and animal species of global significance are threatened due to unsustainable and competing natural resource uses. Land degradation is depleting the gene pool of native plant species while clearing a path for invasive species. It is undermining ecosystem functions and services and reducing the household income of rural people. Nearly 40% of people inhabiting dryland areas now live below the poverty line. Land degradation is upsetting traditional land management practices with forced migrations resulting in conflicts between nomadic and sedentary populations competing for limited water and grazing land. Climate change and population growth have emerged as the major drivers of large-scale land degradation, posing great threats to food and economic security in the country.

Pakistan is faced with daunting challenges of combating desertification, with more than 80% of the arid and semi-arid landscape severely affected by desertification, land degradation and drought. The drylands of Balochistan, Sindh, Khyber Pakhtunkhwa, and Punjab face increasing land degradation and desertification, being severely affected by climate change impacts, improper land use practices, over-grazing, deforestation and excessive removal of vegetation for fuel. Poverty, illiteracy, water scarcity, hot and dry spells, dust and wind storms, moving sand dunes, hill torrents, flash floods, subsistence rain-fed agriculture and livestock-based economy are distinctive features of dryland ecosystems in Pakistan. Heavy dependence of dryland communities on slow growing xerophytic vegetation in desert areas has rendered many areas devoid of vegetation, triggering the threat of shifting sand dunes. Underground water resources in the western dry mountains of Sindh and Balochistan are shrinking due to heavy exploitation of aquifers without any natural recharge. Irrigated areas are plagued with water logging, salinity and sodicity, reducing the productive capacity of soils and consequently leading to loss of soil fertility, crop yields, and agro-biodiversity.

1.2 SOCIOECONOMIC / NATIONAL DEVELOPMENT CONTEXT

Pakistan has important strategic endowments and development potential. The country is located at the crossroads of South Asia, Central Asia, China and the Middle East and is thus at the fulcrum of a regional market with a vast population, large and diverse natural resources, and untapped potential for trade.

Tables 1 and 2 provide some population and social indicators for Pakistan. The increasing proportion of Pakistan's working-age population provides the country with a potential demographic dividend, but also with the critical challenge to provide adequate services and increase employment. Pakistan faces significant economic, governance, and security challenges to achieve durable development outcomes. The persistence of conflict in the border areas and security challenges throughout the country is a reality that affects all aspects of life in Pakistan and impedes development. A range of governance and business environment indicators suggest that deep improvements in governance are needed to unleash Pakistan's growth potential.

Table 1: Population and social indicators for Pakistan

Population Size	190,291,129 (July 2012 est.)				
Age structure	0-14	years: 34.7%	(male	33,941,828/female	32,130,001)
	15-24	years: 21.7%	(male	21,283,907/female	19,951,750)
	25-54	years: 34.5%	(male	34,171,096/female	31,564,622)
	55-64	years: 4.8%	(male	4,539,939/female	4,633,292)

	65 years and over: 4.2% (male 3,808,536/female 4,266,158) (2012 est.)
Population growth rate	1.551% (2012 est.)
Urbanization	Urban population: 36% of total population (2010) Rate of urbanization: 3.1% annual rate of change (2010-15 est.)
Gender Ratio	1.06 male(s)/female (2011 est.)
Life expectancy at birth	Total population: 66.35 years Male: 64.52 years Female: 68.28 years (2012 est.)
Sanitation facility access	Urban: 72% of population Rural: 29% of population Total: 45% of population
Literacy	Total population: 54.9% (Definition: age 15 and over can read and write) Male: 68.6% Female: 40.3% (2009 est.)
Education expenditures	2.7% of GDP (2009)
Health expenditures	2.6% of GDP (2009)

Source: CIA World Factbook as of February 21, 2013

Table 2: Trends in Pakistan's population per province

<u>Name</u>	1972-09-16	1981-03-01	1998-03-01	2011-09-12
Balochistan	2,428,678	4,332,376	6,565,885	13,162,222
Federally Administered Tribal Areas	2,491,230	2,198,547	3,176,331	4,452,913
Islamabad Capital Territory	237,549	340,286	805,235	1,151,868
Khyber Pakhtunkhwa	8,388,551	11,061,328	17,743,645	26,896,829
Punjab	37,607,423	47,292,441	73,621,290	91,379,615
Sindh	14,155,909	19,028,666	30,439,893	55,245,497
Pakistan	65,309,340	84,253,644	132,352,279	192,288,944*

Source: Population Census Organization, Pakistan (web).

*Please note the difference in total population in Tables 1 & 2 is due to different dates & sources of data

Pakistan also faces significant economic challenges. The sharp rise in international oil and food prices, combined with recurring natural disasters like the 2010, 2011 and 2013 floods had a devastating impact on the economy. As Pakistan recovered from the 2008 global crisis, its gross domestic product (GDP) grew 3.8% in Fiscal Year 2009/2010 (FY09/10). The 2010 floods, with an estimated damage of over US\$10 billion, caused growth to slow down to 2.4% in FY10/11. The Pakistan economy grew by an estimated 3.7% in 2011/12, against the pre-flood targeted growth rate of 4.2%. Inflation declined, but continued its four-year run in double digits, and the fiscal deficit is also estimated to have reached about 8% of GDP, double than budgeted, fueled in part by continuing energy subsidies. On a more positive side, exports remained mildly positive and strong remittances crossed the US\$13 billion mark for the first time. In addition, recent efforts to remove tax

exemptions and broaden the tax base contributed to higher tax revenues, though the revenue to GDP ratio remains low at about 10%.

Accelerating progress in human development remains the key requirement for underpinning sustained economic gains. The Net Enrollment Rates in education have been increasing in Pakistan but still lag behind other South Asian countries. Infant and under-five mortality rates represent a similar story. Gender disparities persist in education, health and all economic sectors. Pakistan has one of the lowest female labour force participation rates in the region. Nutrition also remains a significant cross-cutting challenge, as 44% of children under five are stunted. Despite the worrying state of education and health, especially amongst the poor, the resource allocation as a percentage of the GDP remained low. Pakistan is ranked as one of the lowest spenders on education and health in the region (at about 2% of GDP). At the current rate of progress, it will be difficult for Pakistan to meet the MDG targets on health and education by 2015. Progress against poverty over the past decade has been impressive but may be difficult to sustain. Pakistan saw a decline in poverty, with the poverty rate falling from 34.5% in 2001/02 to an estimated 17.2% in 2007/08. Over the past few years there have been signs that poverty levels may have further decreased, despite the downturn in the economy, floods and inflation. These gains might have been supported primarily through remittances, faster than expected recovery of the agricultural output and exports following the floods, and broad economic growth. While Pakistan's overall level of inequality remains steady and relatively low compared to other developing countries, some of the volatile border regions and some rural areas within the other provinces have a higher than average level of poverty.

The country has four provinces: Punjab, Khyber Pakhtunkhwa (KP), Sindh, and Balochistan. The provinces are divided into a total of 125 districts. Over the past couple of years, greater decision-making authority has been assigned to provincial governments. The Eighteenth Constitutional Amendment has devolved a number of key functions to the provinces. In total, functions in seventeen federal ministries have been devolved, including Agriculture, Education, Environment, and Health. In addition a greater share of revenues has been passed to the Provinces through the National Finance Commission Award in order to enable them to perform these functions. As expected, the devolution has posed institutional and capacity challenges at the provincial level, and meeting these challenges will require concerted efforts to enhance sub-national capacity and institutional development, which varies across provinces.

Agriculture is the largest contributing sector of Pakistan's economy. It employs more than 45% of the country's total workforce and contributes about 56% to the total foreign exchange earnings including raw material, semi-processed and processed agro-based products. About 64% of the country's population resides in rural areas and is dependent directly or indirectly upon agriculture for their livelihood. This sector largely meets the ever-growing food requirements of the country and also provides feed to very large population of livestock, which is the source of protein-rich food such as milk, meat, beef and eggs. At the time of independence in 1947, the agriculture sector contributed about 53% of GDP, but this has gradually declined to a level of 22.8% during the first decade of the 21st century. However, this sector is still the largest single contributor to GDP. Therefore, efficient harnessing of agricultural resources is critically important for sustainable development and meeting basic needs of the fast growing population.

Agriculture has strong linkages with industry as it is the largest purchaser of finished products of several industries such as chemicals, fertilizers, pesticides and machinery. At the same time, this sector provides all the raw material to agro-based industry such as textile, sugar, solvent extraction, tobacco and food processing. Due to these linkages, accelerated progress in the agriculture sector triggers the growth in the non-agriculture sector by one and one half times. Increased agricultural income is usually spent on locally produced goods and services as it has higher income elasticity of

demand. Thus increased agricultural productivity, which is correlated with overall economic growth, tends to increase employment opportunities in rural areas and help alleviate poverty.

The performance of agriculture mostly depends upon climatic conditions, health and availability of two natural resources - land and water. Unfortunately, both land and water resources are deteriorating rapidly. In the country, about 6.8 million hectares of land are affected by water-logging and salinity ranging from moderate to high levels. Around 6 million hectares are prone to wind erosion whereas 11.2 million hectares are affected by water erosion. In this way, the very precious land resource is under severe threat of desertification, land degradation and loss of soil fertility. In Pakistan, agriculture consumes about 92% of the fresh water resources. On the one hand, water resources are shrinking with the increase in population and impact of climate change and on the other, demand for water is increasing due to growing population and increasing cropping intensity for meeting food requirements of the country.

1.3 ENVIRONMENTAL CONTEXT

Pakistan is rich in environmental diversity as a consequence of its diverse geography and agro-ecological regions. Topography ranges from high mountains in Northern area and Balochistan to the contiguous alluvial plains of the Indus valley extending from northern Punjab to KP and up to the coastal area of Sindh. Of the total geographical area of the country (about 88million hectares if Gilgit-Baltistan area and AJK is included), about 20.6 million hectares are plains, 66.5 million hectares are mountains and 0.9 million hectares are under water bodies. About 57.1 million hectares are reported for land use, while 22.5 million hectares are not yet listed for land use purposes. Out of the total geographical area, 32 million hectares (40%) are classified as unusable for agricultural and forestry purposes. Such area mostly includes deserts, mountain slopes, and urban settlements. About 21.2 million hectares are under cultivation of which 19.4 million hectares (91%) are irrigated with canals, tube-wells and other sources; the remaining 1.8 million hectares (9%) are rain-fed. Around 59% of the cultivated land is in Punjab, 23% in Sindh, and 9% each in Khyber Pakhtunkhwa (KP) and Balochistan. There are about 8.2 million hectares of un-used land which can be brought under cultivation by providing irrigation. About 4.2 million hectares (5.3%) are under forest cover and 60% of the total geographical area (48 million hectares) is classified as range land. There is no firmed up estimate for grazing/range lands with different reports give assessments varying from 20 to 56 million hectares.

Geologically, Pakistan overlaps the Indian tectonic plate in its Sindh and Punjab provinces; Balochistan and most of Khyber Pakhtunkhwa are within the Eurasian plate, mainly on the Iranian plateau. Gilgit-Baltistan and Azad Kashmir lie along the edge of the Indian plate and hence are prone to violent earthquakes. Pakistan's landscapes vary from plains to deserts, forests, hills and plateaus, ranging from the coastal areas of the south to the glaciated mountains of the north.

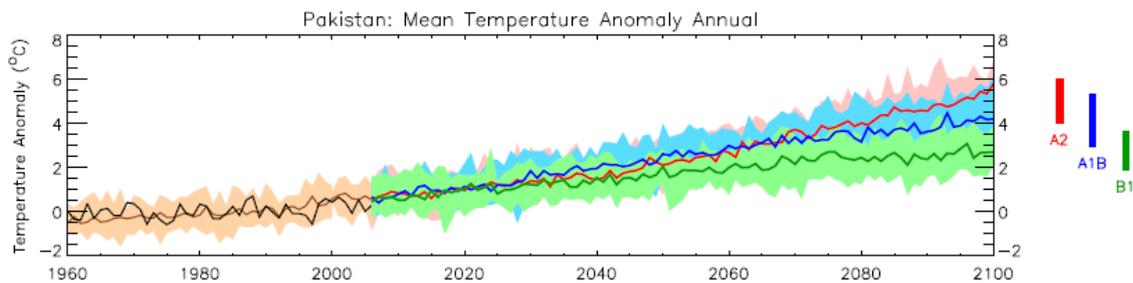
Pakistan is divided into three major geographic areas: the northern highlands, the Indus River plain and the Balochistan Plateau. The northern highlands contain the Karakoram, Hindu Kush and Pamir mountain ranges, which contain some of the world's highest peaks, including five of the fourteen "eight-thousanders" (mountain peaks over 8,000 metres), which attract adventurers and mountaineers from all over the world, notably K2 (8,611m) and Nanga Parbat (8,126m). The Balochistan Plateau lies in the west and the Thar Desert in the east. The 1,609 km Indus River and its tributaries flow through the country from the Kashmir region to the Arabian Sea. There is an expanse of alluvial plains along it in Punjab and Sindh.

The climate varies from tropical to temperate, with arid conditions in the coastal south. There is a monsoon season with frequent flooding due to heavy rainfall and a dry season with significantly less rainfall or none at all. There are four distinct seasons: a cool, dry winter from December through

February; a hot, dry spring from March through May; the summer rainy season, or southwest monsoon period, from June through September; and the retreating monsoon period of October and November. Rainfall varies greatly from year to year, and patterns of alternate flooding and drought are common.

The mean annual temperature has increased by 0.35°C since 1960, an average rate of 0.08°C per decade. The frequency of hot days and hot nights has increased significantly, annually, since 1960. The average number of ‘hot’ days per year in Pakistan has increased by 20 (an additional 5.5% of days) and the average number of ‘hot’ nights per year increased by 23 (an additional 6.4% of nights) between 1960 and 2003. The frequency of ‘cold’ days and nights, annually, has decreased significantly since 1960. The average number of ‘cold’ days per year has decreased by 9.7 (2.7% of days) and the average number of ‘cold’ nights per year has decreased by 13 (3.6% of days) between 1960 and 2003. The mean annual temperature is projected to increase by 1.4 to 3.7°C by the 2060s, and 1.9 to 6.0°C by the 2090s. The range of projections by the 2090s under any one emission’s scenario is 1.5-2°C. The projected rate of warming is most rapid in the most northern regions of Pakistan. All projections indicate substantial increases in the frequency of days and nights that are considered ‘hot’ in current climate. Annually, projections indicate that ‘hot’ days will occur on 16-25% of days by the 2060s, and 18-38% of days by the 2090s. All projections indicate decreases in the frequency of days and nights that are considered ‘cold’ in current climate, and in much of the country, do not occur at all by the 2090s.

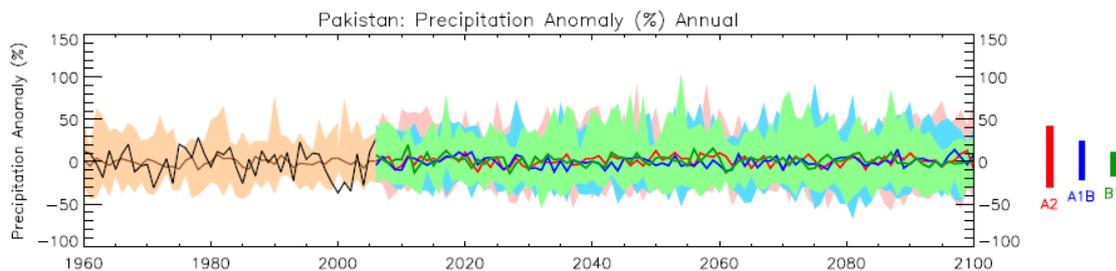
Figure 2. Mean annual temperature anomaly



Source: UNDP Climate Change Country Profiles

The mean annual precipitation anomaly does not show signs of significant change under different climate change scenarios.

Figure 3. Mean annual precipitation anomaly.



Source: UNDP Climate Change Country Profiles

Crop Area: A large variety of crops are grown throughout the year ranging from cereal grains to fibre and sugar crops, to oilseeds, pulses, vegetables, fruits, fodders, grasses, medicinal herbs, condiments, etc.. During Rabi season (mid November to April), wheat, gram and sugar is grown on 55.0%, 6.5% and 5.8%, respectively of the cultivated area, while cotton, rice and maize are sown on 19.1%, 17.7% and 5.8%, respectively during Kharif season (mid-April until mid-October). Due to the low rainfall, crop cultivation is mostly dependent on irrigation. 7.0, 3.9 and 8.0 million hectares are irrigated by canal water, tube-wells, and canal plus tube-well, respectively. The remaining, 1.8 million hectares of cultivated land, largely in northern Punjab, and KP are dependent on rainfall.

Forest Area: The forest area of Pakistan is also diverse and stretches from the northern Himalayan high mountain ranges to the Balochistan mountains and plateaus, to the riverain plains of Punjab and Sindh, to the mangrove forests of the Indus delta. The total area under forests in Pakistan is 4.21 million hectares which is 5.28% of the total land area of country. Out of the total forest area, 482,000 ha are railway-side and canal-side plantations. In addition, 155,000 ha come under miscellaneous plantations, mostly farmland trees. If these three types of plantations are excluded, net forest area comes to 3.573 million hectares which is 4.4% net forest cover in the country. Forests are largely concentrated in KP province and AJK state. Forest cover is 20.7%, 16.6%, 9.5%, 2.9%, 2.8%, and 1.7% in AJK, KP, Gilgit-Baltistan, Punjab, Sindh and Balochistan, respectively. Comparison of land use in Pakistan with the world and South Asian region (Table 3), shows that Pakistan is one of the countries with the lowest forest cover.

Table 3: Comparative land use (% area) in Pakistan, South Asia and the world

Land use	Percent area		
	Pakistan	South Asia	World
Arable lands	28	39	11
Permanent rangeland	40	11	26
Forest and woodland	5	17	32
Other lands	27	33	31

Rangelands: Rangelands in Pakistan usually have natural vegetation that mostly comprise of grasses, grass-like plants, herbs and shrubs. These lands are not good for crop cultivation due to soil and water limitations; however, they provide forage plants, wood products and support wildlife. The largest rangeland area is located in Balochistan. It has 30 million hectares of rangeland out of a total geographical area of 34.7 million hectares. The United Nations broadly classifies these rangelands as poor (62%), medium (25%) and high (13%) potential ranges. 90% of the small ruminant's (sheep and goats) population of the province get their forage from grazing these lands. The province of Punjab contributes the second largest rangeland area of 9.5 million hectares. Sindh province has 8.5 million hectares of rangelands and KP 6.0 million hectares. In Gilgit-Baltistan, the rangelands are spread over 2.1 million hectares and serve as the primary source of forage for grazing livestock. Alpine pastures are also found above 3500 meters in Gilgit, Skardu and Diamer districts. The area of these pastures is 1.68 million hectares. Vegetation of these pastures mainly consists of perennial, herbaceous plants and shrubs, mosses and lichens.

Table 4: Rangeland area in Pakistan, per province

Province	Area (million ha)	
	Total	Rangeland
Punjab	20.63	9.5
Sindh	14.09	8.5
KP	10.17	6.0
Balochistan	34.72	30.0
Total	79.61	54.0

In terms of ownership of the land, the following table shows classification of forested land by ownership in Pakistan.

Table 5. Classification of forested land ownership in Pakistan

Category of Forest Land	Area (000 ha)
State Owned	
Reserved	1682
Protected	994
Un-Classed	43
Municipal	208
Resumed	100
Sub-total	3027 (66%)
Privately Owned	
Guzara ¹	622
Chos ²	3
Section 38 ³	48
Communal	878
Sub-total	1551 (34%)
Total	4578 (100%)

Source: FAO 2010 - Global Forest Resources Assessment 2010 Country Report, Pakistan

Biodiversity: The diversity of landscapes and climates in Pakistan allows a wide variety of trees and plants to flourish. The forests range from coniferous alpine and subalpine trees such as spruce, pine and deodar cedar in the extreme northern mountains, through deciduous trees in most of the country (for example the mulberry-like shisham found in the Sulaiman Mountains), to palms such as date in southern Punjab, southern Balochistan and all of Sindh. The western hills are home to juniper, Tamarix, coarse grasses and scrub plants. Mangrove forests occur at different locations along the coast in the south.

Coniferous forests are found at altitudes ranging from 1,000 to 4,000 metres in most of the northern and northwestern highlands. In the xeric regions of Balochistan, dwarf date palm and Ephedra are common. In most of Punjab and Sindh, the Indus plains support tropical and subtropical dry and moist broadleaf forestry as well as tropical and xeric shrublands. These forests are mostly of Mulberry, Acacia, Olea, Zizyphus, Prosopis, and Tamarix.

The fauna of Pakistan also reflects its varied geography and climates. Around 668 bird species occur, including many migratory species coming from Europe, Central Asia and Russia.

The southern plains are home to mongooses, civets, hares, the Asiatic jackal, the Indian pangolin, the jungle cat and the desert cat. There are mugger crocodiles in the Indus, and wild boar, deer, porcupines and small rodents are common in the surrounding areas. The sandy scrublands of central

¹ The forest areas to meet *bona fide* domestic needs of local communities. These forests are managed by the Forest Department.

² Private lands, subject to erosion, taken over by the government for the purpose of soil and water conservation under the Punjab Land Preservation (Chos) Act, 1900. The ownership remains private.

³ Privately owned lands voluntarily and temporarily put under the control of Punjab Forest Department for conservation and preservation of soil and vegetation. The ownership remains private.

Pakistan are home to Asiatic jackals, striped hyenas, wildcats and leopards. The lack of vegetative cover, the severe climate and the impact of grazing on the deserts have left wild animals in a precarious position. The chinkara (gazelle) is the only animal that can still be found in different patches of Cholistan desert. A small number of nilgai are found along the Pakistan-India border and in some parts of Cholistan. A wide variety of animals live in the mountainous north, including the Marco Polo sheep, the urial (a subspecies of wild sheep), Markhor (a type of wild goat) and Ibex goats, the Asian black bear and the Himalayan brown bear. Among the rare animals found in the area are the snow leopard, the Asiatic cheetah and the blind Indus river dolphin, of which there are believed to be about 1,100 remaining, protected at the Indus River Dolphin Reserve in Sindh. In total, 174 mammals, 177 reptiles, 22 amphibians, 198 freshwater fish species and 5,000 species of invertebrates (including insects) have been recorded in Pakistan.

The flora and fauna of Pakistan suffer from a number of problems – many linked to habitat change and land degradation. Pakistan has the second-highest rate of deforestation in the world. This, along with hunting and pollution, is causing adverse effects on the ecosystem. The government has established a large number of protected areas, wildlife sanctuaries, and game reserves to deal with these issues, but many of these areas lack proper management regimes.

1.4 THREATS TO SUSTAINABLE LAND MANAGEMENT

Unsustainable land management practices in Pakistan are causing significant environmental problems, including soil erosion, loss of soil fertility and associated crop productivity, flash floods, sedimentation of water courses, and deforestation and the associated loss of carbon sequestration capacity and biodiversity assets. The northern mountain regions are subject to heavy soil erosion caused by large-scale deforestation in the catchments leading to siltation of major water reservoirs, thus reducing the capacity of power generation and availability of irrigation water.

Similarly, the dry land areas of Balochistan, Sindh, KP, and southern Punjab are faced with increasing desertification challenges, primarily due to improper land use practices, over-grazing, and illegal removal of vegetation. Desert areas are subject to the acute problems of shifting sand dunes. Underground water resources in the western dry mountains of Balochistan are shrinking, due to low recharge and over-exploitation of meagre water resources. Irrigated areas are plagued with water-logging, salinity and sodicity, reducing the drainage capacity of soils and consequently leading to loss of soil fertility, crop yields, and biodiversity. Eleven million ha are affected by water-logging and 3 million ha by salinity/sodicity. There is also tremendous pressure on rangelands as a result of serious overgrazing by livestock. The dry land areas of Pakistan are sufficiently large that preventing vegetative loss and restoring cover could make a major contribution to combating climate change.

The causes of land degradation in Pakistan include poor irrigation and drainage practices, overgrazing, deforestation, increasing competition for water, drought, migration/permanent settlement, intensification of agriculture, flooding, population pressures and persistent poverty (of course some of these threats, especially poverty, are both a consequence of land degradation as well as a barrier to SLM). Land degradation problems are often severe in areas where there are strong interactions between different causes of land degradation. This is especially the case between anthropogenic and natural causes (e.g. drought).

Furthermore, some threats are greater than others in terms of their manifestation: water-logging and salinity as a result of poor irrigation practices affects 6.8 million ha, while deforestation and overgrazing affect 11 and 24 million ha, respectively. While the former is the cause of the most widespread land degradation in river basins (in Sindh and the Punjab), the latter combine (mostly deforestation, water and wind erosion) to affect the greater dry land and upland areas (Balochistan,

KP and parts of Punjab) and do considerable damage to the integrity of ecosystems and provision of essential ecosystem services – soils, trees, water and biodiversity (see Table, below).

Table 6: Causes and effects of land degradation in Barani (rain-fed) lands

Causes of land degradation	Effects and implications
Siltation of rivers, irrigation systems and small dams, debris flow and landslides on hill slopes	These factors all result in soil erosion impairing the texture and structure of soil and loss of soil nutrients, causing excessive water runoff, rise in frequency of floods and decrease in water retaining capacity of soils.
Cultivation on slopes	Clearing of forest land for crop cultivation, as well as cultivation on slopes leads to soil erosion and increased run-off
Over-grazing by livestock and cutting and lopping of forage trees	Damage to young forest crop and nurseries, disturbance or compaction of soil, causes increase in soil erosion, reduction in wildlife habitat quality and quantity, less regeneration of natural vegetation, and compaction of soil.
Deforestation through logging and harvesting of firewood	Deforestation and illicit cutting of trees for firewood and agricultural implements results in excessive soil erosion, drying of aquifers, reduced carbon sequestration, aridity in climate, reduction in water retaining capacity of soil, excessive water runoff, destruction and deterioration of wildlife resulting in lower numbers of wild animals and birds.
Land tenure issues	Fragmentation of land holdings
Poor management of natural resources/forests	Illegal cutting of trees in forests and watersheds, reduction in scrub forest cover, inadequate reforestation due to insufficient resources, and planting of non-native species has increased soil erosion and siltation of rivers. Weak law enforcement to check theft and illegal removal of vegetation is quite evident.

Poor Irrigation and Drainage Practices: Irrigation utilizes some 90-95% of freshwater resources in Pakistan. The country has one of the largest canal irrigation systems in the world operating on the principles of flood irrigation and utilizing an estimated 51.3 million cubic metres (41.6 million acre feet) of groundwater pumped through more than 600,000 tube wells (mostly private). The overall poor management of irrigation, both at the system and farm levels, is contributing to water-logging and salinity in cultivated areas. Human activities such as the obstruction of natural drainage through construction of roads, improper alignment and poor maintenance of irrigation channels, insufficient drainage of excessive rainwater etc. all add to water-logging problems. About 11 million ha of arable land in Pakistan is affected by water-logging, with water table depth of 5-10 feet (1.5-3m). Salinity and sodicity are often associated with the poor management of irrigation. At present over 3 million ha in Pakistan are affected by salinity and sodicity (close to 14% of the total cropped area). Water-logging, salinity, and sodicity are major problems in the irrigated areas of Punjab, Sindh, and Balochistan. These have reduced the drainage capacity of the soils resulting in low fertility of land, decline in crop yields and loss of biodiversity.

Deforestation: Only 5.2% (4.2m ha) of Pakistan's total area is under forests, whereas both environment and economic considerations suggest that 20-25% of the country's land area should be forested (NAP). Pakistan is also losing forests at 3 times the rate of other South Asian countries. About 3.1% of forest cover is being lost every year and woody biomass is disappearing at an annual rate of 5% as the majority of households continue to use firewood for cooking and heating (NAP). More than 50% of domestic energy needs are met through fuel wood. Fuel wood consumption in 1992-93 was estimated at 25.95 million m³, rising to 31.52 million m³, of which 90% came from the farmlands and the rest from the State forests.

Illegal and excessive chopping of trees has resulted in severe soil erosion, flood damage and desertification in many areas. This activity leaves the soil exposed and less able to absorb rainfall. Water therefore runs off and causes soil erosion, speeding-up the process of denudation and eventually leading to desertification. The removal of top soil is also resulting in low production of forage, fodder, fuel wood, timber, cereal crops and grains and, as a result, exacerbating poverty in the rural areas. Removal of vegetative cover from steep slopes also causes flash floods and increasing sedimentation load in rivers. About 11 million ha of the northern mountain regions are affected by water erosion bringing about 40 million tons of sediments into the Indus water basin every year. This reduces land productivity, shortens the lifespan of major upstream reservoirs like Tarbela and Mangla, and reduces the efficiency of hydropower generation and irrigation systems in Punjab, KP, Sindh and Balochistan.

Over-grazing: Almost a third of Pakistan's total area is classified as rangeland. Livestock are an important component of Pakistan's farming system and a major source of cash income as well as consumption. The livestock population has doubled since 1976 and numbers exceed the carrying capacity of most ranges. The population of buffalo has increased from 6.3 million in 1955-56 to about 31.7 million in 2011. The cattle population followed a similar trend, with sheep and goats registering a 4-5-fold increase over the past 50 years to a combined total of 29.5 million in 2006.

Over-grazing reduces productivity of rangelands because of soil compaction, removal of vegetation from fragile slopes and subsequent destruction through water and wind erosion. All the major rangelands/pastures in the county are in some state of degradation. A reliable estimate indicates that 48.3% of rangelands are completely degraded.

Communities in dry land areas largely depend on the pastoral economy; degradation of rangelands affects their livelihoods and increases rural poverty. Such degradation also reduces ecosystem functions and services. For example, over-grazing and the collection of firewood in arid regions of Punjab, Sindh and Balochistan have led to severe wind erosion, reducing ecosystem functionality. Almost 2m ha of land are affected by wind erosion.

Water Scarcity: Water is a scarce resource in Pakistan and a sensitive political issue, especially between the provinces which compete for water in the growing seasons. Within the next 50 years, over 90% of all available sources of water will be fully utilized. Per capita water availability is declining at an alarming rate, from 5,300 cubic meters in 1951, to 1,105 cubic meters today (ie. water scarcity level (Pakistan Council for Research in Water Resources, 2004)). Estimates by the International Water Management Institute indicate that Pakistan is among the 17 countries that are likely to face the most severe water scarcity by 2025.

Drought, Migration and Permanent Settlements: From 1997-2003, Pakistan suffered from drought, causing severe water shortages for humans, livestock, and agriculture. Many areas of Balochistan, Sindh and southern Punjab were badly affected, impacting some 3 million people and 7.2 million head of livestock. Hundreds of lives were lost and thousands of livestock and wild ungulates perished. Persistent drought has also severely affected local livelihoods (cumulative drought over the last few years has culminated in output losses equivalent to about 12% of agricultural GDP - World Bank, 2005) and forced local people to migrate toward more agriculturally productive areas as well as cities. Migration has disrupted traditional land use patterns, resulting in loss of traditional and in many cases more sustainable, land use practices.

Intensification of Agriculture: By the end of 2010, agriculture was contributing about 22% of Pakistan's GDP and 56% of foreign exchange earnings. Agricultural growth will be critical in the coming years as Pakistan will have to double its cereal production, particularly wheat, to meet the food demands of a growing population. Sixty-eight percent of the population also depends on the sector for their livelihoods and 46% of the labour force is employed directly in it.

Intensification of arable land has been necessary because some 96% of cultivable soil has inadequate organic matter content. Economic pressures leading to the spread of commercial agriculture (cash crops) exacerbates the situation by encouraging monoculture and short fallows. In order to boost productivity, farmers rely on heavy use of chemical fertilizer and frequent watering. For several years, there has been no significant increase in the cropped area due to a paucity of new water supplies and inefficient use of available irrigation resources. However, intensification has failed to increase the productivity of the land. As in other countries, there has been a levelling-off in the crop yield increases which took place in the 1960s and 1970s despite increases in the use of fertilizer. According to the World Bank (2005), Pakistan uses about 3m metric tons of fertilizer annually with a use intensity of 129kg/ha of crop. Intensification, and the production practices that go with it, are also leading to the loss of local, sustainable production systems as well as traditional and highly valuable crop varieties.

Flash Floods: Flooding is a regular feature in arid and semi-arid regions of the country, usually caused by heavy downpour during the monsoon season. Deforestation, soil erosion and compaction contribute to flooding. Excessive flooding buries top soil under the infertile sediments and inhibits cultivation, hence contributing to land degradation and loss of biodiversity. In 2010, 20 million people were affected by the largest floods in living memory, many of the victims of the 2010 floods were still in the recovery phase when the 2011 floods struck. The 2011 floods compounded the damage of the previous disaster. In severely affected areas, food insecurity and malnutrition were already at critical levels before this year's new wave of rains and flooding. The minimum reconstruction cost amounts to a total of Rs. 239 billion (US\$ 2.747 million).

Population Pressure: Pakistan's rapidly growing population is putting more pressure on land resources; more people need more land to grow crops and more wood for fuel and timber. Pakistan is the 7th most populous nation in the world and its 153 million people are growing at the rate of almost 2% a year. At this rate the population will reach 217 million by 2020 and will double in next 32 years. Such a rapidly growing population means greater fragmentation of farmlands, greater competition for water, further pressure on fragile and marginal lands and the denudation of natural forests and rangelands.

Poverty: The poor are overwhelmingly concentrated in rural areas. Poverty headcount rate in rural areas is 27%, more than double that of urban areas. Furthermore, 80% of the total poor population lives in rural areas (PRSP II 2009). Poor people tend to exploit their limited land resources more intensively to meet immediate needs, even if exploitation compromises the long-term stability and viability of the land and its natural resources. Of course, further degradation of land and natural resources leads, in a vicious circle, to even more poverty.

1.5 POLICY AND LEGISLATIVE FRAMEWORK FOR SLM

Pakistan signed the United Nations Convention to Combat Desertification (UNCCD) in 1994 and ratified it in 1997. It has also constituted a National Coordination Committee to Combat Desertification (NCCCD) to facilitate and coordinate implementation of the convention and has established a task force for creating a National Desertification Fund (NDF). Pakistan continues to uphold its obligations, including commitments to implement the 10-Year Strategy of the UNCCD. Pakistan formulated a National Action Programme (NAP) to combat desertification in 2002.

This project is designed to implement specific measures to combat desertification identified in the NAP, including the adoption of integrated and participatory approaches to SLM/INRM. The National Environment Policy (2005) calls for Pakistan to "develop strategies and programs to tackle desertification in line with the NAP". The Biodiversity Action Plan (BAP (2000)) stresses the need to take measures to protect and conserve indigenous species. The project is designed to support

implementation of the draft 10th Five Year Peoples' Plan 2010-15, one of the core objectives of which is "to ensure sustainable management of land". It stresses the need to address desertification, land degradation and drought (DLDD). The draft National Forest Policy 2010 highlights the problem of land degradation and desertification in the country and recognizes SLM as a viable means to address these problems. Similarly, the draft National Agriculture Policy 2010 emphasizes the importance of enhancing land productivity through the effective management of land resources, whereas the draft National Water Policy 2006 calls for the adoption of a holistic approach to water resource management. In addition the draft National Rangeland Policy 2010, draft National Climate Change Policy 2011, and Poverty Reduction Strategy Paper II call for concrete measures to combat land degradation. These documents identify community-based SLM/INRM as key to addressing land degradation – especially in the spectre of climate change to which Pakistan is particularly vulnerable (as evidenced by the 2010 and 2011 floods).

Pakistan signed the Convention on Biological Diversity (CBD) in 1992 and ratified it in 1994. It has developed and adopted a National Biodiversity Strategy and Action Plan to meet the requirement of Article 6 of the convention.

Pakistan was also one of the first signatories to the United Nations Framework Convention on Climate Change (UNFCCC), which was signed in 1992 and ratified in 1994. To implement the convention, Pakistan has completed a number of major studies and projects focusing on climate change and GHG reduction. Recently, Pakistan prepared the First National Communication for the UNFCCC, which also gives high priority to SLM interventions.

A National Action Plan (NAP) to combat desertification in Pakistan has been developed through a participatory process and with broad-based consultation involving the relevant national and provincial government institutions/agencies, professionals, NGOs and other civil society organizations. The NAP identifies the factors contributing to desertification in Pakistan and suggests strategies and measures to combat desertification and mitigate the effects of prolonged drought by emphasizing integrated and bottom-up approaches.

Pakistan's Poverty Reduction Strategy Paper (PRSP) also emphasizes the need to address issues of deforestation, soil erosion, desertification, and excessive use of pesticides, and to minimize the impact of these on local livelihoods. The provinces have also initiated the preparation of PRSPs, to identify priority steps for providing alternative economic opportunities for the rural poor, focusing on agriculture, livestock and rangeland development.

Federal and Provincial Legislations:

During the pilot phase of SLMP, efforts were made to compile a list of Federal/Provincial Acts/Laws related to food and agriculture, land, water, forests, irrigation and drainage in Pakistan. Out of 68 laws, 31 are federal and 47 are Provincial. 62 laws and acts related to water, land, forests, irrigation and drainage were also reviewed. Among these, 9 belong to the Punjab, 5 each to Sindh and Balochistan, 17 to Khyber Pakhtunkhwa, 2 to Federal Administered Northern Areas (FANA)/Federal Administered Tribal Areas (FATA), 7 to Gilgit-Baltistan, 5 to AJK and 12 to federal government. Federal laws mostly deal with subjects such as Cess, plant and animal quarantine, seed, pesticides, agriculture credit, fisheries and cotton quality; whereas most of the provincial acts and rules deal with food, cotton control, slaughter, cooperatives, registration of importers and exporters, consumers' protection, tobacco, fertilizer, marketing, land acquisition, land revenue and grain procurement. The governments perform their regulatory functions through these legal instruments. For example, the province of Punjab has "Agricultural Produce Markets Ordinance (XXIII of 1978) Amended-2001. Market committees monitor 132 agricultural markets in the province under this Act. The committees on one hand facilitate market functions, and on the other perform their regulatory role. Department of Pest Control and Early Warning of the Punjab basically helps the farming community in pest control by keeping close watch on epidemic spread, recommends prompt control

measures to the farmers and also works as a watchdog against the pesticide adulterators and black marketers.

Policy / Strategy Gaps: The existing laws, rules and legal framework are not very well complementing the concept, principles and practices of SLM, and sustainable maintenance of water and land quality, particularly because they are sectoral and lack focus on integrated ecosystem management. Therefore, a good deal of legislative work would be required at federal and provincial levels to cover agriculture, livestock, forestry, rangelands, conservation of biodiversity, genetic engineering, and fisheries sectors.

1.6 GOVERNMENT'S INSTITUTIONAL FRAMEWORK FOR SLM

At the federal level, the Climate Change Division (CCD) is the focal ministry for implementation of the UNCCD, CBD and UNFCCC. It is also responsible for the alignment of the NAP with the 10-Year Strategic Plan and indicator-based UNCCD reporting process, the Plan for Combating Desertification as well the Biodiversity Action Plan for Pakistan. It has the overall responsibility for coordinating efforts related to natural resources and environmental management. The Forestry Wing of the Ministry is headed by the Inspector General of Forests (IGF) who is the national focal point for the UNCCD. The main function of the Office of IGF is to facilitate inter-provincial and inter-ministerial coordination on the issues related to forestry, wildlife, biodiversity conservation, and desertification control as well as ensuring national compliance with international conventions to which Pakistan is a party. Therefore, the CCD is the most appropriate institution to coordinate implementation of the proposed Project at the national level.

With the recent adoption of Amendment 18 to the Constitution, the national government dramatically increased provincial autonomy. Under this Amendment, many of the federal ministries such as the Ministries of Environment and of Food Agriculture and Livestock have now been dissolved and their functions at the federal level have been absorbed under the Planning Commission, and other federal ministries relevant to SLM, such as CCD, Ministry of Food Security and Research, and Ministry of Inter-Provincial Coordination. These federal institutions have enhanced roles and mandate related to sustainable management of land and other natural resources. The Planning Commission is the main coordinating body for cross-sectoral investment programs and for making budgetary allocations. A number of federal ministries are responsible for coordinating and facilitating policy-making. The Ministries most relevant to SLM include the Ministry of Disaster Management, Ministry of Food Security and Research, and Ministry of Water and Power.

A high level of governance responsibility has recently been devolved to the provincial level Planning and Development Departments which are responsible for overseeing planning, development and coordination of all sectoral projects. Given their inter-sectoral responsibilities, the provincial P&D Departments will be responsible for coordination of implementation of the up-scaling SLM project in their respective provinces. Further, provincial and district authorities are now empowered to also decide on the composition of local development plans and resource allocations to different elements of the plan. This provides a tremendous opportunity to directly engage with planning and financing agencies at the provinces to mainstream SLM into local plans and programmes. The provincial Forestry Departments are responsible for sustainable management of forest resources, regulating the commercial harvest of trees, afforestation and reforestation programmes, regulating the use of rangelands and overseeing the extraction of non-timber forest products. Similarly, Agriculture departments provide agriculture extension services (including research), while provincial Livestock Departments provide advice for raising livestock, veterinary services, control disease outbreak. The provincial Irrigation Departments are charged with managing the network of irrigation head-works, canals, small dams and other irrigation works in the country.

1.7 LONG-TERM SOLUTION AND BARRIERS TO ACHIEVING THE SOLUTION

The long-term solution to the above issues proposed by this project is **to promote the sustainable management of land and natural resources in the arid and semi-arid regions of Pakistan in order to restore degraded ecosystems and their essential services, reduce poverty and increase resilience to climate change**. The project is organised on the general assumption that: if (1) there is a strong enabling environment at national and provincial levels that supports up-scaling of SLM practices; and (2) there is effective, targeted, and adaptive implementation of SLM Land Use Planning & Decision Support System; and (3) on-the-ground implementation of climate-resilient SLM activities is up-scaled across landscapes; then these landscapes will be much less vulnerable to land degradation and climate change impacts, with significant benefits to local communities and broader ecosystem services.

Despite considerable efforts in recent years, a number of important barriers continue to prevent the government from achieving the above solution on its own.

Several international studies (Daniel, D., *et al.*, (1996)¹⁵; Auburn, J.S. (1994)¹⁶; and Taylor, D.C. & Dobbs, T.L. (1990)) document barriers which obstruct adoption of sustainable management practices. Lack of funds for investment, and lack of availability of information were the two primary constraints limiting adoption of sustainable practices. Mostly, farmers adopted those practices with which they were comfortable and having minimum production risk associated with crop failure or yield reductions. It was noted that environmental constraints and perception problems also often limit adoption of many sustainable practices.

In Pakistan, specific barriers to adopting SLM practices include:

- i. lack of policy for land use as per land capability classification and non-existence of effective land use plans;
- ii. existing law of state ownership of uncultivated land discourages the communities to protect and develop the communal lands on a long-term basis;
- iii. land management/use as a subject, discipline and issue is given low priority in all the bureaucratic, technical and managerial setup;
- iv. weak institutional capacity and system gaps for proper planning and monitoring of SLM initiatives;
- v. lack of well documented knowledge of land management practices and technologies for rehabilitation of degraded lands;
- vi. low awareness of farming communities (lack of sufficient information and knowledge) regarding sustainable land management;
- vii. vulnerability to natural hazards such as floods and earthquakes has increased during the last decade and the country remains under heavy threat of economic, life and property losses;
- viii. safety nets designed to support the vulnerable, marginalized and destitute people have serious limitations;
- ix. poverty prevents poor people investing in land and agricultural development;
- x. land fragmentation, due to inheritance, has reduced the size of most landholdings to less than one acre especially in AJK, KP and Punjab. That has caused resource poorness, low productivity and poverty. It has also made application of new techniques and farm machinery difficult and constrains land improvement;

- xi. the existing land tenure system in its all forms acts as a barrier for any kind of investment by tenants for improving land and soil quality and farm capacity;
- xii. mainstreaming the process of SLM at federal level is slow, therefore, the provincial governments are not yet on board; and
- xiii. finally, there is a lack of government funds for sustainable land management/improvement related projects.

The following three broad *barriers* are preventing the proposed long-term solution from emerging:

Barrier 1: Landscape level policies, partnerships, coordination mechanisms and strong capacities for adopting landscape wide climate resilient SLM practices and approaches:

The legally enforceable policies and mechanisms required for creating the "carrots" and "sticks" necessary to ensure the adoption of the SLM practices are still not in place. Recent decentralization of powers to provinces following the 18th Amendment of the Constitution has placed responsibilities for implementing sustainable land use management initiatives in the hands of the provinces. However, the capacity of the provinces to make decisions, and coordinate and plan SLM is generally weak. Laws regulating the use of water, soil, forests, grasslands, and water resources do not fully reflect SLM principles. These laws and regulations have gaps in both content and application.

The substantial financial and human resources earmarked for baseline programmes related to agriculture and forestry are deployed and managed by sectoral departments working in silos. There is a need to harmonize and coordinate efforts across sectors, and apply innovative ways of enhancing ecosystem functioning and resilience in an integrated and coordinated way over and beyond their existing development objectives. In addition, many existing and proposed activities under the federal PSDP across a number of sectors have two main shortcomings: first, a dis-proportionately large share of the investment resources are dedicated to construction of irrigation and water management infrastructure; second, these federal investment resources are traditionally planned by central sectoral agencies with very little involvement of provinces and more importantly with little coordination that leads to both duplication and sometimes contradictory objectives. Likewise, the provincial level investment projects have a heavy focus on high-cost engineering solutions to water and land management problems. Although many of these projects are approved by the Provincial Planning Departments, there is little coordination between the line departments. There is also a need to ensure that the huge investments allocated for irrigation infrastructure undergo adequate environmental assessment and properly consider the overall environmental impact.

These baseline investments will benefit from an integrated cross-sectoral approach to sustainable land management, addressing land degradation issues in a holistic way (such as recognizing the integrated relationships between various land uses in the landscape) that sustains and restores critical ecosystem services. This approach must be based on a bottom-up, participatory working that will require capacities and awareness of SLM approaches and practices to be raised at all levels.

Barrier 2: Systems for land use planning and decision-making for instituting climate-resilient SLM:

The current top-down and un-coordinated approach to land use planning in Pakistan is a major driver of land degradation. Because of this governance barrier identified above, inappropriate land-use, over-exploitation of plant and forest cover, and random development march forward with little consideration for their environmental impacts. Urban developments are taking place on some of the most productive lands, forcing rural communities to exert even greater pressure on lands vulnerable

to desertification and degradation. For instance, the number of livestock in Pakistan has increased from approximately 60 to 160 million heads within the last thirty years causing severe problems of over-grazing.

The Pilot Phase helped to generate detailed baseline land use information for the target districts, establishing a useful foundation for SLM decision-making. This information now needs to be used to demonstrate a sound approach to land use planning that balances economic, social and environmental factors in land use allocation. The development and implementation of such land use plans, starting at the village level and progressing to districts and provinces requires strong political endorsement, oversight and adaptive management by appropriate inter-sectoral committees, and strong mechanisms to ensure community level participatory planning and support.

Such land use planning needs to be adaptive to cope with climate change which is a critical, but poorly understood driver of land degradation in Pakistan. During the Pilot Phase, the project identified that shifting weather patterns, rain events, and glacier loss will impact the sustainability of traditional vulnerable livestock and cropping methods. Major stakeholders recognize that the nation's landscape is already highly vulnerable and pushed to the brink by a growing population that continues to pursue ever-less sustainable land use practices. As climate change continues to unfold, decision-makers and resource users will require tools and understanding to build resilience; sustainable land management provides a vehicle for achieving this. This amplifies the need to address the provincial level-decision-making system for sustainable land management. The project will support the necessary information and Decision Support Systems to make this happen.

Barrier 3: On-the-ground models of successful climate-resilient SLM implementation that are reducing land degradation, enhancing ecosystem services and supporting rural livelihoods:

Local communities and decision-makers across Pakistan require working demonstrations of the benefits of applying SLM at the landscape level that enhance the integrity and productivity of land and water, and protect biodiversity and ecosystem processes that underpin ecosystem services. Effective mechanisms that help communities to organise and empower themselves to achieve these benefits through SLM practices are required. Furthermore, successful working models of SLM practices that address such issues as soil erosion, overgrazing and land degradation, and over-exploitation of dryland forests are needed that can be shared between communities. For example, open access grazing, particularly on government lands, and associated land degradation continues unabated largely because the country does not have a coherent and workable framework for regulating livestock management. Ideally, these models will blend traditional knowledge and practices with innovative contemporary technologies that alleviate land degradation and develop resilience to climate change impacts. They must also be able to provide decision-makers and SLM advocates with tangible evidence of the long-term economic and social costs/benefits of selecting sustainable practices rather than unsustainable practices at a meaningful scale. Finally, there is a need for working examples of economic incentives such as subsidies, tax credits, lower interest rates, community-based funds and/or government funding that is predicated upon district's adopting SLM practices.

1.8 BASELINE

The baseline for this project is the normal sectoral approach “**business-as-usual**” scenario that would continue during the next 5 years in absence of the interventions planned under the project. Under the project baseline state, a limited range of activities relating to sustainable land management would be undertaken. These would have some positive impacts on land degradation and desertification. However this baseline scenario alone (on-going and planned projects and

programmes) would not greatly reduce any of the major barriers identified above, and it is most unlikely that the required step-change planned by this project would be achieved that is necessary to see the recovery in landscapes and ecosystem services. Nonetheless the baseline, and particularly those aspects resulting from the Pilot Phase does provide a useful platform for upon which this project can build, and upon which new synergies for the SLM (through stronger inter-sectoral coordination and participatory community-based management) can be trialled, developed and applied across different landscapes. However, all the barriers listed above would remain largely unaddressed resulting at best in the *status quo* being maintained in the face of increasing pressures and driving forces. Specific levels of activity in relation to pertinent issues that can be expected without this GEF intervention are summarized below under five broad categories of programmes and resources namely a) programmes planned and funded under the country's 10th Five Year Plan; b) on-going investments under the federal Public Sector Development Plan; c) sectoral investments in the provinces; d) other donor supported programmes; and e) NGO investments.

Programmes under the 11th FYP: The under preparation 11th Five Year People's Plan (2014-19) is the overarching planning tool of the Government of Pakistan to chart the country's development trajectory. This Plan is likely to consider sustainable land and natural resource management an important concern and allocate a substantial financial layout for various projects and programmes related to sustainable management of land and natural resources such as: forestry (for reforestation and afforestation, integrated watershed management and rangeland rehabilitation), natural resources (integrated water resource management, soil conservation, and climate change adaptation), and also specifically SLM.

Investment plans under the federal PSDP: In addition a number of on-going and new projects financed under the Public Sector Development Plan (PSDP) focus on improving management of land and water resources. These include federal spending under programmes such as the National Programme for Improvement of Water-Courses, Land and Water Resource Development Projects for Poverty Reduction, Water Conservation and Productivity Enhancement through High-Efficiency Irrigation, Improving Conventional Farming through provision of Farm Machinery to Farmers, National Agriculture Land Use Plan, Enhancement and Management of Ground Water Resources in Balochistan, Improvement of Water Conservation Practices, Combating Desertification in the Thar Desert through effective management of water resources. An allocation of US\$ 66.59 million has been made under federal PSDP for 2013-14 for the implementation water, agriculture and forestry projects containing SLM related activities.

Sectoral investments of Provinces: Similarly each province has planned considerable investment outlays pertaining to water management, agriculture, forestry and livestock. The water sector has on-going programme with a total outlay of around US \$ 125.2 million that include construction, extension and maintenance of irrigation and other related infrastructure such as flood protection check dams, bunds and rehabilitation of irrigation channels (Punjab -\$ 87.1m; Balochistan - \$ 10.98m; Sindh - \$ 1.0m; Khyber Pakhtunkhwa (KP) - \$ 26.0). The major investment under water sector in Punjab is for two project namely 1) Water Resource Development through construction of 400 mini dams with Command Area Development and Provision of Solar tube-wells for Agriculture. Another sector that receives considerable investment budgets across the provinces is forest management (afforestation and reforestation). The four provinces together have a budget outlay of US \$ 21.72 million (Balochistan - \$2.55m; Sindh - \$ 8.85; KP - \$ 4.92m; and Punjab - \$ 4.92). Research, monitoring and evaluation of water resources (such as evaluation of flood plains; research on drainage, land reclamation, water management; strengthening research capacities) receive funding of around US\$ 4.3 million (Balochistan - \$0.6m; Sindh - \$0.6m; KP - \$0.2m; Punjab - \$2.9m). Agriculture sector investments in agricultural farm management (improving productivity, post-harvest technologies, farm mechanization, introduction of technologies such as drip irrigation, tub wells, integrated soil fertility management) is also significant in Balochistan (\$ 5.1m) and Punjab

(\$20.4m) with a total investment of US\$ 98.3 million. Similarly spending on livestock and rangeland management (pasture management, dairy development) particularly in Sindh amounts US \$17.2 million, KP \$5.16million and \$0.4 million in Balochistan. The two provinces of Balochistan and Punjab also have expenditures on integrated management of water and land resources including community involvement and projects to improve community livelihoods. Punjab is unique among the provinces in that it is also spending a moderate amount of US \$ 1.8 million) towards the establishment of institutions and mechanisms for coordinating management of water, land and forests resources. Only Balochistan has planned investments that aim at promoting soil and water conservation measures (demonstrations in the field, distribution of inputs, increasing vegetation cover, and also bund improvement), the investment amounting to a total of approximately US \$ 4.2 million. Another set of baseline is the various activities of the Animal Husbandry/Veterinary, Agriculture, and Horticulture Departments aimed at providing extension services to farmers.

Other donor supported programs: A number of external development partners are also supporting land management, mostly through NRM related activities and livelihood programmes geared toward alleviating poverty. For example, the World Bank is providing funding through the Pakistan Poverty Alleviation Fund (PPF) for community-based projects. World Bank is also providing US\$208.9 m to Government of Punjab for Punjab Irrigated-Agriculture Productivity Improvement Project. Most of the interventions related to land include development of water resources for drinking and agriculture production, lining of water courses, construction of wells, flood protection bunds, water ponds, high-efficiency irrigation schemes and introduction of solar pumps. Thus far, they have invested around Rs.2000 million (US\$23.5 million). Similarly, others such as Asian Development Bank, USAID, FAO, and World Food Programme (WFP) are supporting the National Rural Support Programme (NRSP) for NRM related on-the-ground interventions, community loans (for agriculture, livestock and enterprise development) and community training. Presently, NRSP is implementing a US\$50.0 million small-grant programme, most of which relates to NRM and poverty reduction. FAO and WFP are also implementing several projects and programmes for agriculture and livestock development as well as food security and emergency livelihood assistance to flood affected farmers. Recently, IFAD has planned another important initiative on “livestock access to market” covering 4 dryland districts of Punjab with the investment of US\$43.45 m.

International and local NGO programmes: Other local NGOs and partners are also actively investing in SLM related interventions. A leading NGO namely Thardeep Rural Development Programme (TRDP) is working on NRM related activities in 5 dry land districts of Sindh, 3 of these are also SLMP target districts (Tharparkar, Dadu, and Umer Kot). The major focus of their activities is on agriculture development, afforestation, provision of low-delta crop seeds, livestock development and water conservations measures. TRDP’s current financial layout for these activities is about US\$3.0 million. Inter-Corporation a Swiss international NGO is implementing a US\$11.7 million programme in 5 districts, including 2 target districts of the SLMP namely D. I. Khan and Karak. The land resources related activities of their programme include rainwater harvesting, strengthening hill torrent irrigation system, and provision of agriculture input for local farmers.

While impressive, the existing baseline initiatives suffer from a number of gaps. First these initiatives are not sufficiently coordinated and do not specifically take global environmental concerns into account. Many sectoral initiatives have a narrow focus: for instance forestry activities focus solely on increasing tree cover, without addressing rangeland management as would be needed under a landscape-wide SLM strategy. Moreover they do not necessarily use indigenous trees, nor take into account the effect of tree monocultures on biodiversity or for that matter stream flow. By failing to address livestock husbandry, they can actually undercut their own success, given that cattle and goats can damage seedlings. Likewise, agriculture sector investments are focused on enhancing food security by increasing agricultural production through intensive agriculture based on heavy use of fertilizer and weak land husbandry. These can have adverse effects, including clearance of native

vegetation, with an impact on biodiversity and soil erosion, where these parameters have not been taken into account in planning.

Nevertheless, the baseline is large. There is considerable scope for tapping it, to ensure that it addresses social and economic needs, which they are designed to do, while also addressing environmental concerns. There is a need to balance objectives - indeed this would be a cost-effective solution for achieving sustainable land management compared against stand-alone SLM investments. The long-term solution will therefore build the necessary enabling environment mainly consisting of a comprehensive decision-making and monitoring system at the provincial and district levels to mobilize the large baseline towards large-scale application of sustainable land management practices that address land degradation while improving the livelihoods of the farming communities.

1.9 STAKEHOLDER ANALYSIS

A wide range of stakeholders will be involved in the implementation of the Project, including relevant federal ministries, provincial Planning and Development departments and line departments, local communities (farmers, livestock herders, forest communities and nomad pastoralists), arid-zone research institutions, NGOs, Citizen Community Boards (CCBs), Community Based Organizations (CBOs), private sector and the donor community. Several NGOs and Community-Based Organizations (CBOs) also operate on the ground and have been active in creating awareness among local communities on land degradation and desertification and providing assistance for various SLM-related initiatives. Over the years some of these NGO's have acquired considerable experience and skills of working in the rural environment and are particularly specialized in fields such as community organization, capacity building and promoting networking among many organizations working at the grass-roots level. Because of this consideration, some of these organizations could also be involved in the field implementation of project interventions in the selected districts under the up-scaling project.

Detailed consultations with the major stakeholders have been undertaken during the preparation of the provincial component of the Up-scaling Programme and this Project Document through national and provincial consultative workshops. The purpose of these consultations was to evolve consensus on the nature of the SLM interventions and the new target districts.

The proposed project follows a cross-sectoral and participatory approach, requiring involvement of different stakeholders in implementation at national, provincial, district and local levels. Simultaneous to the launch of the up-scaling project, a comprehensive "stakeholders' participation strategy" defining roles and responsibilities of the project partners will be defined which will include: a mechanism for effective coordination among different stakeholders; a strategy for mobilization of local communities and their involvement in preparation and implementation of site-specific land use plans; a mechanism for providing technical assistance to the local communities through line agencies, district governments, and contracted NGOs for implementation of SLM interventions; a system for participatory monitoring and evaluation of the impact of the project activities; a complete road map for stakeholders' participation in project activities based on what, how, who, when and where, as well as sustainability and affordability; and a mechanism for involvement of local groups of both men and women for participatory resource assessments and identification of local priorities. The key stakeholders and their proposed roles are described in the following table:

Table 7: Key stakeholders and their roles and responsibilities in the project

Stakeholder	Relevant Role
Climate Change Division (CCD): National Coordination Unit and Forestry Wing/Inspector General of Forests (IGF)	At the federal level, CCD will be responsible for coordinating implementation of the programme through the National Coordination Unit established during the project's pilot phase. This Unit will primarily be responsible for overall project execution, coordination and mobilizing project inputs. IGF is the national focal point for the UNCCD. The main function of the Office of IGF is to facilitate inter-provincial and inter-ministerial coordination on the issues related to forestry, wildlife, biodiversity conservation, and desertification control as well as ensuring national compliance with international conventions to which Pakistan is a party.
<ul style="list-style-type: none"> Economic Affairs Division, Ministry of Finance Planning Commission, Ministry of Planning, Development & Reforms 	The EAD and Planning Commission will be responsible for providing and promoting effective donor coordination and timely releases of funds for the Project. The Planning Commission is the main coordinating body for cross-sectoral investment programs and for making budgetary allocations.
<ul style="list-style-type: none"> Ministry of National Food Security and Research Ministry of Water and Power Ministry of Science & Technology Ministry of Inter-Provincial Coordination 	<p>With the recent adoption of Amendment 18 to the Constitution, the national government dramatically increased provincial autonomy. Under this Amendment, many of the federal ministries such as the Ministries of Environment and of Food Agriculture and Livestock have now been dissolved and their functions at the federal level have now been entrusted to the CCD and MoNFSR, and other federal ministries relevant to SLM as stated in the stakeholder column.</p> <p>These federal Ministries will help in creating a conducive enabling environment and support by sectoral policy reforms through integration of SLM principles and practices into respective policies and plans.</p>
Provincial Planning and Development Departments	Provincial P&D departments will be responsible for leading the implementation of the programme activities in their respective provinces and coordination of on-the-ground interventions. They will also provide support to integrate SLM into their policy, planning and budgetary processes.
Provincial Line Departments	They will provide the necessary technical and extension services for undertaking SLM activities at the level of local communities. In addition these departments will also participate as members of the Provincial Coordination Committees (PCCs) at the provincial levels.
Research and Academic Institutions	A degree level SLM course will be initiated through an academic institution strong in dryland agriculture. The R & D institutions will provide technical support to identify climate resilient SLM interventions to dryland communities, targeted research studies, and will also be the responsible parties to deliver programme results on documentation of on-the-ground SLM innovations particularly in relation to climate change mitigation and adaptation needs including local knowledge.
NGOs and CBOs	They will provide necessary technical and financial support and will be critical in mobilization of local communities. They will also be enlisted to support the field level implementation of programme activities. Key NGOs/CBOs include: the Society for Conservation and Protection of Environment (SCOPE), Baanhan Beli, Sindh, Sungi Development Foundation, Aga Khan Foundation, Aurat Foundation, Pakistan Poverty Alleviation Fund (PPAF), National Rural Support Programme (NRSP), Rural Support Programme Network (RSPN), Trust for Volunteer Organizations (TVO), Strengthening Participatory Organization (SPO)), and the Taraqee Foundation Balochistan.
Chambers of Commerce and multinational companies	These organizations will assist the project in promoting public private partnerships for SLM and will be key partners in this regard.
Local communities (women,	The main beneficiaries of SLM interventions and improvements are the local farmers,

men, youth)	herders, pastoralists. They will actively be engaged in planning and implementation of village land use plans and other field activities and following on existing good practice of providing community co-funding for project activities.
Media	Outreach and awareness raising will be a priority of the SLM Programme in order to mobilize commitment for conservation and sustainable management of natural resources. This will be achieved through developing and implementing an “awareness raising strategy”. Such a strategy will help in highlighting desertification issues as a major threat to humanity, biological diversity and contributor to rural poverty, as well as promoting best SLM options by targeting print and electronic media. The key elements of the strategy would include: (i) Awareness raising mechanism at national, provincial, district and local levels; (ii) Complete print and electronic media plan including timing and costs of activities to be undertaken for raising awareness on desertification and SLM; and (iii) Dissemination of best SLM practices.

A more detailed plan of which stakeholders will be engaged for each of the project’s three Outcomes and 10 Outputs is given in Annex 2. This will be finalised at the project inception workshop, together with a gender strategy to ensure that this issue is mainstreamed in work with all stakeholders.

PART II: STRATEGY

2.1 RATIONALE

Unsustainable land management practices in Pakistan are causing significant environmental problems, including soil erosion, loss of soil fertility and associated crop productivity, flash floods, sedimentation of water courses, and deforestation and the associated loss of carbon and biodiversity assets. The northern mountain regions are subject to heavy soil erosion caused by large-scale deforestation in the catchments leading to siltation of major water reservoirs, thus reducing the capacity of power generation and availability of irrigation water. Dry land areas of Balochistan, Sindh, KP, and southern Punjab are faced with increasing desertification, primarily due to improper land use practices, over-grazing, and illegal removal of vegetation. Desert areas are subject to the acute problem of shifting sand dunes. Underground water resources in the western dry mountains of Balochistan are shrinking, due to low recharge and over-exploitation of meagre water resources. Irrigated areas are plagued with water-logging, salinity and sodicity reducing the drainage capacity of soils and consequently leading to loss of soil fertility, crop yields, and biodiversity.

Unless these issues are addressed, land degradation will continue at an accelerated pace with adverse impacts on the structural and functional integrity of ecosystems, biodiversity and people’s livelihoods. Many current and proposed baseline actions will make a significant impact on land degradation at a sectoral level and in limited geographic areas. However, GEF support is required to help remove generic barriers to the implementation of sustainable land management nationally and within and across a number of ecosystems, specifically through integrating SLM considerations in land use planning, promoting cross-sectoral and participatory planning, and conducting feasibility studies and pilot activities that demonstrate the benefits of good SLM practices.

The project builds on the important lessons drawn from the GEF’s earlier investment “Sustainable Land Management Pilot- Phase”. Approved in late 2007, the initiative commenced in 2009 and is scheduled to be completed by the end of 2011. It received US\$ 2 million from the GEF and was co-financed by UNDP (US\$ 1.35 million) and the Government of Pakistan (US\$ 1.25 million). Accomplishments to date include the piloting of SLM measures in nine districts and sixty-three villages in four provinces. This has successfully rehabilitated over 12,000 ha of degraded rangelands through reseedling and introducing a community-based rest-rotation grazing management system. Around 8,000 ha of land have been brought under sustainable rain-fed agriculture and improved soil

and water conservation measures have been introduced at the local level. These included high-efficiency irrigation (e.g. drip irrigation; hill-torrent irrigation), development of woodlots/shelter belts, and dry afforestation in watersheds. It piloted technologies to address water scarcity and drought mitigation through rainwater harvesting and integrated water management approaches. Technologies tested include dug wells, water ponds, dikes, and micro-catchment management. Further it has reviewed sectoral policies and Pakistan's NAP in the context of UNCCD's current 10-Year Strategy, in the process generating a detailed land use baseline data set. It completed a comprehensive assessment of land degradation in the nine districts (covering 12.5 million ha) - that indicates that more than 6.4 million ha faces moderate to severe soil erosion. This underscores the scale of the challenge Pakistan faces in addressing land degradation. Finally, it strengthened coordination amongst a diverse set of national, provincial, and district level stakeholders with a stake in SLM, including government, NGO, CBO and private interests.

The SLMP – Phase I has therefore paved the way towards pursuing a long-term programmatic and result-based approach to combat desertification and land degradation over wider landscapes. The up-scaling phase will build on these achievements to ensure the sustainable management of land and natural resources in the arid and semi-arid regions of Pakistan so that ecosystem functionality and critical ecosystem services are enhanced. It will promote the application of climate resilient SLM methods and technologies through integrated approaches that cover an area of 800,000 hectares. A legal basis for land use planning will be established making land management decision-making more informed and binding. This will balance competing environmental, social and economic objectives—to improve the sustainability of land management. The programme will mobilize a large baseline investment to support implementation of SLM practices at scale across the target areas, thus transforming land use. It will facilitate the generation of community-level SLM funds and other means to incentivize rural farmers to adopt SLM practices. The project will also put in place an effective and comprehensive decision-support system for planning, monitoring and adapting climate-resilient SLM at the provincial and district levels—critical to mobilizing the investment needed for implementation. Further it will support the documentation of lessons, linking SLM actions to climate change adaptation and build capacities for provincial and local government functionaries and local communities to advance SLM. More importantly, SLM programme will assist the CCD in implementation of the UNCCD and Pakistan's aligned NAP.

2.2 POLICY CONFORMITY

The country strategic policy and planning documents such as the National Sustainable Development Strategy (NSDS), Pakistan's Poverty Reduction Strategy Paper (PRSP), Growth Strategy and sectoral policies call for an integrated and holistic management of land and water resources through SLM, INRM and IWRM. The project will contribute to Pakistan's sectoral policy frameworks to combat DLDD issues and also contribute towards sustainable development and poverty alleviation.

According to the NSDS, environmental degradation costs Pakistan 6% of GDP per annum. Launched in 2012, the NSDS enlists detailed strategic goals for addressing air and water pollution, land degradation and forestry issues, waste management, improving environmental governance and protection of the country's unique biodiversity. The strategy emphasizes adoption of SLM as a cost effective tool for adapting to, as well as mitigating, climate change impacts in dryland ecosystems and to meet the associated challenges of efficient management and utilization of natural resources, combat forest and land degradation. The project is aligned with the NSDS in introducing and promoting land use planning for SLM at village, district, provincial and national levels and mainstreaming SLM principles and best land use practices as well as technologies into sectoral policies, strategies, programmes and development plans.

Pakistan's Poverty Reduction Strategy Paper (PRSP) – II is built upon nine pillars, of which one is increasing Productivity and Value Addition in Agriculture. Agriculture has been a high priority in the PRSP-II as the bulk of the poor are concentrated in rural areas. Part of this pillar's focus is to promote self-reliance in commodities, food security through improved productivity of crops through development of new technologies such as under SLM, more productive use of water through precision land levelling, creating necessary infrastructure and ensuring availability of agricultural credit.

The project has also been designed to implement specific measures to combat desertification identified in the NAP, including the adoption of integrated and participatory approaches to SLM/INRM. Additionally, community-based SLM/INRM has been recognized as key to addressing land degradation under the National Forest Policy and the National Agriculture Policy.

The project will address two of the GEF land degradation focal area objectives:

- LD2 “Generate sustainable flows of forest ecosystem services in drylands, including sustaining livelihoods of forest dependent people”. This will be achieved through the restoration of dryland forests and rangelands and stabilisation of shifting sand-dunes, which will contribute to carbon sequestration, reduced vulnerability to climate change, biodiversity conservation and restoring and creating livelihood opportunities for local people such as through sustainable grazing and the use of NTFPs.
- LD 3 “Reduce pressures on natural resources from competing land uses in the wider landscape”. Improved SLM practices and technologies will “maintain or improve the flow of agro- ecosystem services to sustain the livelihoods of local communities” across 400,000 hectares of rain-fed farm lands, 300,000 ha of rangelands, and some 100,000 ha of dry forests. This will reduce their vulnerability to the impacts of climate change and other human induced impacts, as well as increasing carbon sequestration.

2.3 COUNTRY OWNERSHIP AND DRIVERS

The Medium Term Development Framework (MTDF) 2005-10 identified Desertification and Land Degradation & Drought (DLDD) as one of the major environmental challenges and called for launching a national umbrella project in dryland districts focusing on testing sustainable land management interventions with community participation. An amount of Rs 625 Million (including future environment conservation (FEC) of Rs 525 Million) was earmarked under MTDF for SLMP. As such, the Sustainable Land Management Programme (SLMP) to combat desertification was conceived as a two-phase process in Pakistan. Following the success of SLMP Phase-I, and given the high vulnerability of drylands to climate change impacts in the country, the up-scaling SLM Programme (2013 – 2018) is high on the agenda of the Federal and Provincial Governments. Since the provincial Planning & Development Departments have remained the key stakeholders in the implementation of the SLMP pilot phase, the up-scaling programme has emerged as a joint programming initiative of the provinces to combat DLDD. The recently developed national level strategic policy documents like the National Sustainable Development Strategy (NSDS, 2011) and the Climate Change Policy approved in 2012 recognize the need to address DLDD issues being caused by improper land use, over-grazing, deforestation, water logging, salinity and over-exploitation of ground water resources. Moreover, the impacts of global climate change are significantly affecting the land and water resources in the country, particularly arid drylands. Under the Up-scaling Programme, in addition to the committed GEF & UNDP donor funding, Federal Government and the provincial P & D Departments will allocate funds for large-scale SLM investments in more than 200 villages.

2.4 DESIGN PRINCIPLES AND STRATEGIC CONSIDERATIONS

In addition to conformity with national priorities and the GEF strategy, a number of other strategic considerations have played a role in this project's formulation. These include gender equity, coordination with relevant initiatives, UNDP's comparative advantages, and balance between national policy and local actions which are discussed below. The additional considerations for cost effectiveness, sustainability and replicability are discussed later in the document.

Gender Considerations

In many cases, in research and in policy-making, women's knowledge and abilities are "simply" forgotten or neglected. Women's participation in NRM, decision-making and implementation needs to be recognized fully and their contributions valued. In many cases, women's knowledge and abilities are left out of NRM. Women may also need help and special attention in training activities and their decision-making roles will be supported under the project.

The project's underlying principle embraces cultural diversity and gender equity because land degradation is very much cross-cutting and a multi-sectoral problem. The project recognizes that sustainable land management needs strong participation of all members of the community – all men, women and youths. Given the strong roles women also play in sustainable land management, the project will ensure equitable participation of women, men and the youth in project activities.

Sustainable land management and integrated management of natural resources requires participation and empowerment of local communities (both men and women) in order to promote equity and maintain economic prosperity. Therefore, the project will support gender sensitive and environmentally sound land management practices based on thorough analysis of local land use systems and the roles played by men and women at the local level. Gender issues will therefore be mainstreamed into all components of the project. The aspect of gender mainstreaming in promoting SLM will be given high priority under the project. Community participation will be the key with the aim of minimum 20% female participation in implementation of the pilot interventions under community driven components of the project.

Linkages to UNDP Activities and other Programmes

UNDP is leveraging co-financing of US\$ 22.2 million for the project including US \$1.5 million from its own core resources. The project is in line with UNDP Pakistan's Country Programme Action Plan (CPAP) and fits well under the "One UN Joint Programme on Environment", specifically addressing components JPC-I "Strengthening operational and institutional mechanisms for integrated environmental management", and JPC-III "Integrated natural resources management in demonstration regions". UNDP has extensive experience in providing assistance to Pakistan and is ideally placed to facilitate the planned multi-stakeholder / sectoral SLM interventions. UNDP Pakistan has proven capabilities in mobilizing technical support and financial resources for country-specific sectoral development programs. The proposed project will take full advantage of UNDP's comparative advantage in the areas of human resource development and institutional strengthening related to natural resource management. The agency successfully supported effective implementation of the SLM project's Pilot Phase. A number of other full-scale and medium-sized GEF projects are under implementation with UNDP's technical and financial support. UNDP helped pioneer community-based conservation projects in the region - working closely with civil society groups. UNDP enjoys strong relationships with diverse institutional actors at all levels in both the public and private sectors. UNDP has an established and fully staffed Country Office. The Environment and Climate Change Unit of the UNDP- Country office is well-staffed and comprised of an Assistant Country Director with Masters in Agriculture Engineering and 2 Program Officers with Masters in

forestry and natural resources management and many years of experience, as well as 3 Programme Associates.

A key accomplishment of the project's Pilot Phase was facilitating coordination between related agencies through establishment of national and provincial coordination units and committees. The current project will draw upon and build on experience gained from implementation of a variety of projects being implemented by line ministries/departments in different agro-ecosystems, particularly in the target areas as described below:

a) *Mountain and Markets: Biodiversity & Business in Northern Pakistan*: The objective of this GEF project is to ensure sustainable production of biodiversity goods and services through community ecosystem-based enterprises. The project will use 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. It will also develop community and institutional capacity for certified production of 'biodiversity-friendly' NTFPs in northern Pakistan and stimulate market demand for biodiversity-friendly NTFPs thereby creating new economic incentives for conservation. The current project will draw lessons and coordinate with this project on marketing and value addition of NTFP to increase benefits to local communities from alternative livelihoods such as NTFPs thereby reducing pressures on degraded areas. Mechanisms for sharing lessons and cross-fertilization of ideas will be agreed and made operational during implementation between the two projects.

b) *Small Grants programme (SGP) of the GEF-UNDP*: The SGP has been working in Pakistan for the last two decades supporting community level initiatives to help manage natural resources sustainably and reduce GHG emissions through the adoption of appropriate community level technologies. As part of the global SGP scale-up countries, Pakistan will also implement in GEF 5 a full scale project that aims to ensure a mosaic of land uses and community practices across the rural landscape that provide sustainable livelihoods while generating global benefits in terms of biodiversity conservation, reduced greenhouse gas emissions and increased carbon storage. The current project will draw lessons at the community level on engaging local communities on sustainable natural resource management and will also ensure sharing of experiences with the SGP national team on various best practices and approaches that the project will implement including the local SLM funds and village land use plans.

c) *Land Degradation Enabling Activity*: Entitled "Pakistan - National Action Programme (NAP) Alignment and Strengthening National Reporting Processes" this GEF Enabling Activity project aims: to revise and align Pakistan's National Action Programme (NAP) with the 10-Year Strategy of the UNCCD; develop and integrated investment framework for the implementation of the aligned NAP; and improve national reporting and review processes. The current project will benefit from the various studies and assessments that will be commissioned under the EA and it will be pertinent for the project interventions to be informed by the priority actions that will be defined under the new aligned NAP. Similarly the project will benefit from the measures and strategy developed under the integrated investment framework and will co-opt efforts to ensure project sustainability. Finally the two initiatives will cross-inform each other in terms of the information and knowledge generated on the assessment and monitoring of land degradation and ecological status in the country, including establishing effective and joint coordination mechanisms to ensure this. Both initiatives are led by the Ministry of Climate Change and this makes the required coordination much easier.

d) *Glacier Lake Out-burst Floods (GLOF)*: The project will reduce risks and vulnerabilities from GLOFs and snow-melt flash floods in Northern Pakistan. The main objectives of the project are: to develop the human and technical capacity of public institutions to understand and address immediate GLOF risks for vulnerable communities in Northern Pakistan; to enable vulnerable local communities in northern areas of Pakistan to better understand and respond to GLOF risks and

thereby adapt to growing climate change pressures. The current project will learn from this project particularly in terms of knowledge and information on climate change and climate change impacts that will be generated. There will also be important lessons to build on in terms of establishing monitoring and early warning systems – useful during the design of a similar activity for monitoring and assessment of ecosystem integrity and function in the face of changing climate.

In addition, the project will also establish working linkages and coordinate with projects and programmes funded by other international donors such as Royal Netherlands Embassy, GIZ, FAO, USAID, World Bank, JICA, SDC, IFAD, and ADB. Some of the relevant projects include Area Development Programme Balochistan (UNDP); Water Sector Capacity Building, Small-scale Irrigation Project Balochistan, Sindh On-Farm Water Management Project (World Bank); and Improvement of Agriculture Practices in Balochistan (USAID/FAO). With the GIZ implemented biodiversity project, the current project will establish mechanisms at the Province level to share experiences and lessons on natural resource management strategies and approaches and also facilitating cross-fertilization of ideas and ensuring synergies related to land use planning – a key output for both the projects.

Building on UNDP’s comparative advantages

UNDP has been working globally to strengthen governance and markets for SLM—taking a multi-sectoral approach at the landscape level in Pakistan and in many other countries around the world. This project fits well under UNDP’s Biodiversity and Ecosystems Global Framework 2012-2020 (“The Future We Want: Biodiversity and Ecosystems - Driving Sustainable Development”), and specifically signature programme 1 “integrating biodiversity and ecosystem management into development planning and production sector activities to safeguard biodiversity and maintain ecosystem services that sustain human wellbeing”.

UNDP offers policy advice to the government on environmental issues while engaging civil society and communities to address these issues at the grassroots level. Core areas of interventions include natural resources management, urban development, biodiversity and climate change. In Pakistan, UNDP has supported the formulation of the National Climate Change Policy and initiated the first-ever UNFCCC Adaptation Fund project. In support of sustainable development in this sector, UNDP Pakistan has played key roles in the formulation of the National Policies on Climate Change, Forests and Wetlands. The agency has involved communities in environmental management and has supported sustainable conservation initiatives contributing to the wellbeing of the communities.

UNDP has played a critical role in maintaining a high profile for environmental and climate change initiatives in Pakistan, creating a “visibility” for them. UNDP has managed to engage and facilitate all of the key players in this theme in a widespread manner throughout Pakistan. Given the relatively large size of the programme, it has been able to activate stakeholders at the Federal level, Provincial level, NGOs, in the private sector, and in local communities. The E&CC Programme has supported preparation of policies, development of guidelines and regulations, and community-based initiatives at the local level, in habitat management and biodiversity conservation, energy efficiency, and climate change adaptation. UNDP has been able to source funds for all these initiatives, serve as a hub for all the Implementing Partners and project participants, and develop and maintain the relationships and dialogue between key stakeholders.

2.5 PROJECT OBJECTIVES, OUTCOMES, OUTPUTS AND INDICATIVE ACTIVITIES

This project will assist the Government of Pakistan to achieve the long-term goal – **“to combat land degradation and desertification in Pakistan”** with the primary objective - **“To promote sustainable management of land and natural resources in the arid and semi-arid regions of Pakistan in order to restore degraded ecosystems and their essential services, reduce poverty,**

and increase resilience to climate change”. The project will depend on the strong commitment of the Government of Pakistan and the involvement of key stakeholders, in particular those at the community level.

In order to achieve the above objective, and based on a barrier analysis (Part I) which identified: (i) the problem being addressed by the project; (ii) its root causes; and (iii) the barriers that need to be overcome to actually address the problem and its root causes, the project’s intervention has been organised such that three high-level ‘outcomes’ are expected from the project:

Outcome 1: Strong enabling environment at national and provincial levels supports up-scaling of SLM practices.

Outcome 2: Effective, targeted, and adaptive implementation of SLM Land Use Planning & Decision Support System.

Outcome 3: On-the-ground implementation of climate-resilient SLM activities is up-scaled across landscapes.

Activities under these three outcomes will build on the experiences and up-scale the results of the SLMP Pilot Phase. They will focus on two levels of intervention:

- a) At the national and (particularly) the provincial levels the project will ensure a strong and sustainable enabling framework for implementing SLM approaches to land degradation across the country. This will involve establishing permanent Desertification Cells, nationally and in all four provinces to coordinate the inter-sectoral delivery of SLM approaches. In addition, the project will develop cross-sectoral policy and planning tools for SLM, as well as integrating SLM approaches into sectoral policies at provincial level. Furthermore, the project will build capacity for SLM approaches and support the development of an SLM land use planning and decision support system.
- b) A high proportion of the project budget and effort will be given to up-scaling successful SLM approaches that were piloted during Phase I. These will be extended across 800,000 hectares of degraded landscapes in all four provinces, including 400,000 hectares of rain-fed farm lands, 300,000 ha of rangelands, and some 100,000 ha of dry forests.

Outcome 1: Strong enabling environment at national and provincial levels supports up-scaling of SLM practices.

This Outcome will focus on three key elements to provide a strong enabling environment for up-scaling of SLM interventions. Firstly, it will support the development of integrated land use plans for each of the four provinces, as well as integrating SLM guidelines into sectoral provincial policies. Secondly, the project will build on the national and provincial Project Coordination Units established during the pilot phase of the SLMP to establish permanent national and provincial Desertification Control Cells. Thirdly, the project will establish a knowledge management and outreach programme both to support implementation in the target areas, but also to share knowledge throughout the country and beyond.

Output 1.1: Enabling policies and institutional mechanisms for SLM are in place at federal and provincial levels and being implemented

At present there are no policy guidelines available in the provinces to regulate the use of land in order to maintain its productive potential and ecological functions and services. Prime agriculture land is being converted into non-agriculture uses such housing, development of industrial complexes with no safe disposal of affluent wastes. This together with many land related issues which jeopardize country’s food and economic security calls for an early assessment and harmonization of

existing land uses so that further degradation of this resource is prevented. There is a need to institutionalize and systematically operationalize land use planning process that are socially inclusive and driven by local community members and legally accepted by line agencies. Moreover, a legal basis for land use planning at provincial level has to be established, making land management decision-making more informed, and binding. This would help in making the land use plans legally enforceable and using the land resources as per their land capability classification. Integrated land use policies are therefore urgently needed in all four provinces to help in:

- i. Realization of sustainable development goals of the province to guide the use and development of land according to its suitability.
- ii. In order to cater growing needs of industrial and housing development sectors which are consuming some of the most productive and prime agricultural and forest lands
- iii. Guide sectoral policies such as agriculture, forest, rangeland, environment, human settlements, tourism, etc. dealing with land and water.
- iv. Promote the holistic approach to development by integrating land use planning into development planning in the provinces.

The project will therefore provide technical and financial support to prepare these land use policies based on SLM principles. The policies will provide a framework to ensure the sustainable utilization of land resources that would help in reversing the trend of converting prime agricultural land to non-agricultural uses, promoting land conservation practices, secure rights over land, providing sustainable growth, reducing land degradation, poverty alleviation, and improving wellbeing of the people in line with the government's overall development objectives. In order to support this work a study will be commissioned to develop the methodologies to assess carbon sequestration under different SLM interventions, and to develop a carbon sequestration strategy.

In addition to this cross-sectoral approach, SLM must be made part of all related sectors and its significance highlighted under various policy guidelines of the concerned sectors. A systematic approach to integrate the concept of SLM into provincial sectoral policies, legal and regulatory frameworks, and planning and budgetary processes, shall be the major outcome of this sub-component.

The integrated management of land and water resources requires appropriate cross-sectoral institutional arrangements. During Phase-I of the project detailed studies were conducted at national level to assess synergies between different sectoral policies and plans with land management on sustainable basis. An important element that came out of these studies was to mainstream SLM within various provincial departments (e.g. Planning, Agriculture, Forests, Livestock, Irrigation etc.), the private sector, local communities and local government. In order to achieve this, it is essential to establish a provincial unit in each provincial Planning & Development Department to facilitate mainstreaming SLM. Accordingly the project will setup Desertification Control/SLM units in the Planning & Development Departments, building from the existing Project Coordination Units established in Phase 1. These units will facilitate in developing guidelines for integrating SLM into provincial and sectoral development planning and budgeting processes (e.g. for agriculture, forestry, livestock), implementation of a common monitoring and evaluation system for SLM and development of guidelines for allocation of land to different land uses - balancing environmental, social and economic needs.

Output 1.2: Skills for up-scaling SLM enhanced through institutionalisation of multi-tiered capacity building programme

Throughout Pakistan, there is a lack of professional staff with the skills and experience both to effectively develop and deliver SLM approaches in their daily work, and also to pass that experience

onto the communities on the ground. The development of synergies between different sectors to achieve the objectives of SLM will only be possible if trained professionals are made available in all concerned disciplines. The problem is compounded by the lack of any formalised training programmes or opportunities in SLM. Capacity building to ensure sustained human resource development for effective SLM has therefore been identified as a critical and urgent priority for the project. Work under this Output will have three strands:

Capacity Building of professional Stakeholders: The project will support the development of a strategic, long-term approach to individual capacity building in SLM for professional staff of national, provincial and district level line departments and agencies, as well as NGOs and community leaders. Following an assessment of the key gaps and requirements in knowledge, this will involve the design of a formal certifiable SLM training program (with competence standards / accreditations) as part of the in-service career progression of the professionals. The training programme will establish formal cooperation agreements for delivery with specialised universities, institutes, NGOs and the Management & Professional Development Department (MPDD). A series of training modules will be developed and delivered in at least 15 courses during the period of the project. These will be supported by manuals, presentations, advance study materials and written hand-outs for field learning, as well as tests to determine competency standards. The capacity building program will generate training materials that reflect the Pakistani context while reflecting best international principles and practices. Trainees will be capable of supporting village level resource users for sustainable land management, including: sustainable agricultural practices (e.g., tillage, crop mix/rotations, nutrient management, soil and water conservation techniques); sustainable harvesting methods for non-timber forest products; sustainable rangeland management.

Capacity Building at Grass Root level: The project will facilitate in arranging district and village level SLM short-training courses on various aspects of land use planning, agriculture, forestry and rangeland management, efficient use of water resources, animal health care improvement. The target groups will be village activists, NGOs, community organizations, etc. that can then replicate the learning among farmer groups. The trainings will be conducted by the concerned research institutes in the project districts. The modules for the training programmes will be finalized jointly by the project in consultation with the research institutes and delivered through field/demonstration days etc..

Masters level course on SLM. The project will seek to establish agreements with one or more Universities to establish a Masters level course on SLM, to provide an opportunity for graduates and professionals to gain higher level skills and qualifications in this subject. The project will support studies to design and develop the course contents and guiding books on SLM.

Output 1.3: Up-scaling is enhanced through a knowledge management and outreach programme for SLM

In addition to the formal training proposed under the previous Output, an important element towards ensuring sustainability of SLM interventions will be to develop a strong knowledge base and knowledge sharing mechanism among professionals and practitioners, and to ensure maximum outreach of the knowledge that has been gained. During the inception phase, the project will therefore develop a knowledge management and outreach plan, which is expected to include the following approaches.

SLM network: This network for professionals and practitioners will be managed by the national and provincial PCUs/Desertification Control Cells, making maximum use of technology and modern social media to share information. The network will be animated and supported by a range of activities, including regular e-newsletters, and the following:

SLM Information System (SLMIS): A web-based portal will be established at national level, with pages for each province to ensure maximum coordination and sharing of information about the overall SLM programme. This will make available all policies, plans, guidelines, technical documentation, as well as information on capacity building and events etc.. SLMIS will be managed by the national and provincial PCUs/Desertification Control Cells.

Documentation of indigenous knowledge: Some target regions have rich indigenous knowledge regarding land management, environment, degradation processes and proven strategies to answer various challenges. The local farming community through their long on-farm experiences knows very well the causative factors of land degradation and how to address them but a number of factors limit their ability to react to these challenges. These may be lack of resources, lack of access to knowledge and technical services. The project will therefore document local available knowledge related to land management and use this in devising or fine-tuning its strategies for addressing land degradation. The same material will be used in other areas to increase knowledge and build further the capacities in new areas.

Field/Demonstration Days: These will be organised in the different provinces to demonstrate and share learning experiences in the application of the different SLM techniques being implemented. The findings will be summarised in learning notes, to be posted on the SLM website

Workshops/Seminars: An important mechanism for disseminating information related to SLM is through workshops and seminars. The project will design and organize workshops/seminars on important tools and topics related to land degradation and desertification. The events will be organized at district and provincial level to share the best practices, encourage private investors in SLM, share research findings of local research institutes and other scenarios related to LD&D. The project will also support key champions to participate in regional SLM workshops and communities of practice, where appropriate.

Awareness raising: In order to raise awareness on desertification issues and SLM, user-friendly SLM materials in the form of leaflets, brochures, and fact sheets will be published and disseminated to a wider audience. The prime target of these materials will be local farming community, with a focus on issues related to land management and degradation. These materials will therefore be prepared in local languages. The project will also work with local media (TV, radio and newspapers) to disseminate information about the project and the benefits of SLM approaches.

Outcome 2: Effective, targeted, and adaptive implementation of SLM Land Use Planning & Decision Support System

Under this outcome of the project, participatory GIS-based village and district level land use plans will be developed. An SLM Decision Support System based on bottom-up approach will be established at province level. This would help identify SLM constraints and potential solutions to farmers, NGOs and line agencies and thus contribute in informed decision making. The objective is to ensure sustainable management of land and natural resources in the arid and semi-arid regions of Pakistan so that ecosystem functionality and critical ecosystem services are enhanced. It will also promote the application of SLM methods and technologies through integrated approaches of land cover mapping and land use planning that have already been tested during the pilot phase.

Output 2.1: GIS-based participatory district and village land use plans developed and being implemented

During the pilot phase, guidelines for preparation of land use plans were drafted and land use plans for 62 villages in 9 districts were prepared. The first step in the up-scaling project will be to finalise and approve guidelines for the preparation of district and village land use plans, so that a standard

approach can be used across the country. Technical assistance will be provided to build capacity so that a total of 200 villages and 4 districts located in four provinces will be able to generate comprehensive, integrated, and legally enforceable land use plans including baseline and performance indicators for on-the-ground activities. This effort will involve building upon the Pilot Phase assessments, gathering indigenous knowledge and using analytical tools (e.g., Participatory Rural Appraisals and GIS data sets, satellite imageries of 15 meter resolution for 9 districts and 2.5 meter resolution for 63 villages procured) to bring practical, landscape level SLM planning to Pakistan.

The project will provide technical assistance to local communities to develop and implement local level land use plans based on internationally recognized SLM principles and will focus upon improving local and traditional practices related to the use and conservation of land, water, and biodiversity resources. These will be prepared at two levels:

- (i) **Village Land Use Plans:** The project will support local CBOs/NGOs to conduct participatory resource assessments/surveys through techniques like Participatory Rural Appraisal and Planning (PRAP). These assessments will be used as the basis for participatory preparation of site-specific land use plans on the basis of best practice SLM principles, owned by the village community and endorsed by the DCO and heads of local line departments. The project will provide backstopping/assistance in GIS-based mapping and guidelines for land use planning.
- (ii) **District Land Use Plans:** These village-level plans will be scaled-up to district level land use plans to be implemented by the local authorities, and further incorporated in provincial level. The Districts have a significant importance as an administrative and financial entity within a province. Each District has a responsibility to maximize output from the existing land resources that inevitably results in higher revenue earning for the province. The project will support the district Governments in decision-making process and the preparation of land use plans with regard to efficient utilization of available land resources.

Output 2.2: Climate-resilient SLM Decision Support System developed and implemented using GIS and Remote Sensing (RS)

The project will put in place an effective and comprehensive decision-support system for planning, monitoring and adapting climate-resilient SLM at the provincial and district levels - critical to mobilizing the investment needed for implementation. The project will mainstream climate change related issues within all SLM interventions. The goal will be to give decision makers the information required to make sound land use management decisions that reflect climate change challenges. It will do so by supporting the development of a land and ecosystem degradation assessment, monitoring and decision-support system that down-scales climate change projections - making them relevant to provincial and district level planning and management. DSS concept note, proposal and software will be developed (and installed) in two provinces, and appropriate training provided.

To strengthen the decision-making process for sustainable management of land resources, networking for SLM Decision Support System will be reinforced for systematic data collection and its management in one province. The objective is to reinforce the collaboration of various departments like Planning, Agriculture, Irrigation, Forestry & Livestock etc, local government institutions, private sector and NGOs through a systematic networking. The land resource database will be managed at a central level in the province and will be periodically updated. This database will be made available to the land resource managers and planners through a customized web-based application. The system will facilitate planning, monitoring and adapting approaches and climate resilient practices. Implementation of Decision Support System is also helpful in: (i) development and enforcement of guidelines for integrating SLM into sectoral development planning and budgeting processes, e.g. agriculture, forestry, livestock at district and provincial levels; (ii)

monitoring of ecosystem degradation, especially in the light of climate change risks and impacts; (iii) developing knowledge management system on SLM adaptation to climate change for example increasing soil carbon, diversification of crops, selection of drought tolerant species, improving vegetation cover etc.; and (iv) documentation of indigenous knowledge and practices. Additionally, preparation of national land degradation and desertification atlas will be undertaken.

Outcome 3. On-the-ground implementation of climate-resilient SLM activities is up-scaled across landscapes

A large number of successful trials of different field level SLM interventions to address land degradation and desertification were conducted during the pilot phase and will be up-scaled during the current phase (see further details for each province in Annex 6). These include: on-farm interventions in land and water management; measures to rehabilitate degraded rangelands; measures to improve dryland forest and control shifting sand dunes. All of these interventions have the overall aim of restoring ecosystem services including carbon sequestration, and will help to support improved and new livelihood opportunities. Local community participation in the planning, implementation and monitoring of all activities will be crucial, with the support of a strong enabling environment from government. A number of options for developing local community financing mechanisms that were tested in the pilot phase will also be up-scaled.

Output 3.1: Local communities mobilized for up-scaling SLM activities

The local communities in the target districts will be organized to make collective efforts towards overcoming the issues of land degradation and desertification. The project will follow a community-based approach. All project activities from planning to execution and aftercare will be managed with the active support of the local communities. A setup for social organization of the community will be established at village level for which the project will establish or revive CBOs/NGOs in the project areas. The aspect of gender mainstreaming in promoting SLM will be given high priority, with the aim of minimum 20% female participation in implementation of the pilot interventions. Decisions between the project and community will be through CBO resolutions, documented in CBOs meeting minutes. A Terms of Partnership will be finalized and signed with each CBO. The continued existence of the CBOs after completion of the project will ensure sustainability of the SLM activities in the future.

Output 3.2: Appropriate soil and water conservation measures and on-farm management practices are up-scaled

A combination of water scarcity combined with floods in the monsoon season, climate changes, poor planning, and the adoption by local communities of unsustainable land and water management practices such as overgrazing has resulted in loss of vegetation and much increased soil erosion. Whilst addressing the issue of overgrazing (see Output 3.3), the soil erosion needs to be checked by establishing simple structures to regulate the water runoff which will ultimately be collected in water ponds. Such structures could include loose stone walls, spurs and retaining walls on hill torrents, water diversion channels, bunds and conveyance systems, gated structures to control water levels, plantations to stabilise earthen bunds, and shelterbelts to reduce wind erosion. The water ponds will also check the speed of water going downstream. The establishment of watering points in the form of water ponds at different locations within and around a village will also be an essential tool to regulate grazing within any village, and to separate livestock ponds from those used by humans for drinking. Water ponds will also be constructed for the storage of rain water which will be used for domestic consumption; in addition, wells (with solar pumping system) and low-cost roof-water storage tanks will be installed.

In areas where land use plans have been agreed, and soil and water conditions are considered appropriate, the project will support improvements to irrigation systems including: the lining of irrigation canals to reduce evaporation losses, the installation of solar pumps and sprinkler or hose-fed irrigation systems for cash crops; and the installation of water tanks and drip (or mini-bubbler) irrigation for orchards etc..

For each of the above interventions, the local community will support such activities in the form of labour and financial contributions for the construction of water ponds and water control structures, while the project will provide construction materials and technical support. A careful monitoring and evaluation system will be maintained for all interventions.

Output 3.3: Degraded rangelands are rehabilitated through improved management

Livestock keeping is an increasingly important livelihood option for local people, who are keeping more and more livestock to cater for their family needs of food and nutrition. This factor is compounded by the weakening of the dryland farming system due to changing climatic patterns and uncertainty of rainfall. More and more dryland farms are being abandoned, and people are switching over to livestock (sheep, goats, cows, camels, and buffalos). Vast tracts of rangelands are used as grazing lands, as well as the fallow farmlands after harvesting. The free grazing and increasing number of livestock are causing enormous pressure on natural vegetation, and as a result of overgrazing and poor rangeland management, a high proportion of the total land area in the target districts is severely degraded, and in some cases devoid of vegetative cover which is causing severe soil and water erosion. Establishment of permanent vegetation and sustainable management of existing rangeland resources in these areas is urgently required.

A key focus will be to improve the management and grazing capacity of rangelands that are communal property and that are used for unrestricted grazing and thus facing degradation. For these areas, comprehensive participatory grazing plans for regularization of grazing, rehabilitation of degraded sites and introduction of new fodder species will be prepared in consultation with local communities, farmers' organizations, government line agencies and the SLMP implementing partners. These plans will incorporate measures such as: rotational grazing depending upon the range condition; soil working and reseeded with palatable grasses; and livestock improvement (vaccination, de-worming, fodder-chopping machines).

Although overgrazing is perhaps the key issue, a number of non-livestock-related activities will also be implemented to help restore dryland vegetation including: (i) support will be given to rainwater harvesting techniques for establishing vegetative cover, such as semi-circular micro-catchments and contour bunds; (ii) farmers will be encouraged to establish community nurseries for native plants that can encourage regeneration of natural vegetation; (iii) enclosures will be established to allow collections of seeds for re-seeding; (iv) dryland afforestation will be encouraged to rehabilitate the fodder banks in rangelands, and also to provide sources of fuel-wood and timber for local community; (v) shelter-belts will be established to reduce wind erosion; (vi) establishment of desert oases; (vii) cultivation of medicinal plants for household use and commercial selling through on-farm cultivation for earning extra income by farmers, and thereby reducing harvesting pressure in the natural rangelands.

Measures will be put in place to ensure that community investments in rangeland management are compensated through grazing fees that contribute to the community funds described below.

Output 3.4: Improved dryland forest and sand-dune management restores ecosystem services, and provides new livelihood opportunities

As described under the baseline section, natural forests in arid regions are under high pressure of exploitation by local people to cater for their household energy and construction needs, and have become seriously degraded due to overgrazing, logging, and fuel wood collecting. In addition to the

efforts towards afforestation of dry rangelands discussed above, the project will support measures to improve and expand the existing dryland forests, including: (i) the establishment of farmer and community nurseries to grow the seedlings required for re-stocking and to help to promote social forestry as plants will be available to the farmers at their door-steps; (ii) community re-afforestation activities; and (iii) support for the establishment of energy plantations / woodlots within the existing farmland situation order to reduce pressure on natural forests.

Further measures will be taken to promote sand dune stabilization so that the productive potential of these lands can be restored. Activities will include (i) protection of the area from human and livestock encroachment; (ii) creation of micro-wind breaks on the dune slopes, using locally available shrubs in parallel strips; (iii) direct seeding or transplantation of indigenous and exotic species; (iv) plantation of grass slips or direct sowing of grass seeds on leeward side of micro-wind breaks; (v) management of re-vegetated sites. These measures were successfully trialed during the pilot phase. It is expected that by restoring the desert ecosystem improvement will take place in overall farming system in the area which will improve livelihood of local community. In some case, on older dunes, it may be possible to restart some agricultural activities on the restored dunes. However, where the land is not productive enough to grow agricultural crops, woodlots will be established using locally improvised irrigation system.

In KP province, shifting sand dunes are a common feature of desert areas, due to strong wind storms in the summer months. The sand dunes are low in organic matter and nutrients, and retain very little water that could be used for crop production. The shifting of sand dunes makes them unsuitable for crop cultivation and also causes damage to standing crops on adjoining farmlands, and infrastructure like roads and rail tracks. Stabilization of sand dunes and their transformation to soil is a slow and difficult process. Cultivation of Kana (*Saccharum spontaneum*) on sand dunes has been found very effective in breaking the velocity of winds and deposition of suspended particles. Kana is a tall grass with stalks and leaves used for a number of purposes by local people. It can be easily cultivated with low labour cost, and it withstands severe and prolonged droughts and provides a number of crops annually. The SLMP will therefore promote Kana cultivation in the sandy deserts Where required the activity can be supplemented with plantation of other species like *Tamarix* to further strengthen the sand dune stabilization.

Due to extensive cultivation of Kana and hence easy availability of raw material, the Kana cottage industry has flourished over the years in District Lakki Marwat of KP province. The products associated with this industry include chiks⁴, ropes, local furniture etc. However, intensive manual labour is involved, increasing the workload of women and children who are mostly engaged in this industry. Therefore the project will support mechanisation for Kana fibre extraction, for fibre processing, and for added value products. Machines were first introduced in the pilot phase and were very successful in reducing the production time, work load of women and also added quality to the products fetching higher prices..

Output 3.5: Community-financed viable local SLM funds, resource specific business plans, public-private partnerships and targeted matching grants designed and supporting up-scaling

Through development of the comprehensive SLM policies for the four provincial governments, the project will ensure ear-marking of financial and human resources that will be dedicated to implementing SLM interventions covering an area of 800,000 hectares. The policies will also detail economic and regulatory incentives for local governments and resource users to pursue and

⁴ Traditional bamboo sticks curtain to cover façade of a building or windows/doors.

implement landscape-level SLM interventions, including financial triggers linked to the adoption of SLM policies and practices and payments for ecosystem services.

Because of the vast scale of land degradation and desertification in the provinces, and the limited financial and human capital available, the project will support the establishment of revolving “Sustainable Land Management Funds” to support SLM activities specified in the land use plans. These will be financed by government and local communities’ contributions, as well as resources mobilized from private sector partnerships and PES. Guidelines prepared for the establishment of such funds during Phase-I will further be strengthened and capacity of the communities built to efficiently run such funds. SLMP will provide matching grants for these funds provided the village community agree to deposit equal amount in bank account. Funds will be operated by a Management Committee and will have separate account in local banks. The account will be managed by at least 3 signatories (2 from the committee and 1 from the SLMP Implementing Partner). Members of the village community will be eligible to obtain loans from the fund to solve their land management issues or promote sustainable land management practices on their own fields. The management committee will recover the loan amount plus some service charges. The project will provide training in account management, record keeping and developing guidelines for operation of the fund. Funds will only be established where the community is considered to be fully receptive and capable to run these funds after the completion of the programme.

SLM funds will operate in all provinces under a specific model based on requirements of the local communities. The different approaches are described in more detail below:

Punjab: The financial and human capital available in the province is limited to tackle the issue without consolidating upon the existing resources. The project will create a Revolving Fund titled “Sustainable Land Management Fund” to carry out SLM activities specified in the land use plan. The fund will be jointly managed by the Implementing Partner and community organisation with at least 25% community share in cash, whereas, remaining 75% funds will be provided by the project. The community organisation will finance viable proposals from the members from the SLM fund. A total of 10 funds amounting to Rs. 300,000/- each will be established to finance SLM plans.

Sindh: The creation of independent Land Management Funds at local level will provide an opportunity to the community to revolve the land development needs through a regular cost/benefit sharing mechanism. The main outcome shall be the development of financial system to support the land improvement measures. About 12 SLMFs will be established during the programme in areas where the community is fully receptive and capable to run these funds after the completion of the programme. Guidelines prepared for the establishment of such funds during Phase-I will further be strengthened and capacity of the communities built to efficiently run such funds.

Khyber Pakhtunkhwa: The SLMP successfully introduced community-based Rud Kohi Management Fund in Dera Ismail Khan and will introduce similar mechanisms in Lakki Marwat and Karak focusing on land management issues. SLMP will provide matching grants for these funds provided the village community agree to deposit equal amount in bank account.

The Community-based Land Management Fund (CLF) will be operated by CLF Management Committee and will have separate account in local banks. The account will be managed by at least 3 signatories (2 from the committee and 1 from the SLMP Implementing Partner). Members of the village community will be eligible to get loans from the fund to solve their land management issues or promote sustainable land management practices on their own fields. The CLF committee will recover loan amount and certain amount of service charges. SLMP will provide training in account management, record keeping and developing guidelines for operation of the fund. Overall 20 funds will be established with a minimum matching grant of Rs. 0.900 Million. Community based funds have proven to be useful tools for sustainability of project interventions in many cases. These funds

are owned and managed by community themselves with financial resources coming from community and other local or non-local sources. The success of these funds however depends upon the internal system and procedures adopted for operation and maintenance of the fund, and the capacities of office bearers.

Rodh Kohi/Land Management Funds: The farming communities depending upon rodh kohi system are faced with problems each year. As they have to invest in repair of their system at farm and large level to cope with the monsoon flooding season. According to estimates, farmers in each village borrow money up to Rs. 120,000 from various sources (informal) for this purpose. The loan amount is returned after harvesting of their crops from rodh kohi water. The successful establishment of a rodh kohi fund during SLMP Phase-I will be extended and 3 new funds for villages in Sheikh Haider Zam area and 3 in UC Paliana area in Dera Ismail Khan will be established under the up-scaling programme. This activity will benefit at least 2000 households in terms of better support for their land management and rehabilitation through better water and soil management for better crop production.

Baluchistan: The creation of 6 independent funds at local level will provide an opportunity to the community to revolve the land development needs through a regular cost/benefit sharing mechanism. The main outcome shall be the development of financial system to support the land improvement measures.

Business plans: The project will help local resource users (at village level) to design and implement realistic business-plans that help guide the incremental adoption of proven SLM practices and lessen the economic risks associated with poorly informed decision-making. As such, the project will guide communities in management of existing land resources in such a manner that regular income is gained without depleting the capital resource.

Public Private Partnerships and PES: The project will work with private entrepreneurs and businesses to devise unique partnerships with local communities to overcome the problem of land degradation and desertification, with condition that such projects shall benefit the local communities. A study will also be undertaken to explore and make recommendations for generating payments for ecosystem services, such as from grazing rights. All proposals/agreements for this activity shall be scrutinized by the Public-Private Partnership cell of the provincial P&D Department as a resource to the Secretary P&D/Provincial Project Director, SLMP.

2.6 KEY INDICATORS, RISK AND MITIGATION STRATEGY FOR RISKS

The project indicators are contained in Part III (Strategic Results Framework) and include a number of ‘SMART’⁵ impact (or ‘objective’) and outcome (or ‘performance’) indicators and targets.

The organisation of the log-frame is based on the general assumption that: if (1) there is a strong enabling environment at national and provincial levels that supports up-scaling of SLM practices; and (2) there is effective, targeted, and adaptive implementation of SLM Land Use Planning & Decision Support System; and (3) on-the-ground implementation of climate-resilient SLM activities is up-scaled across landscapes; then these landscapes will be much less vulnerable to land degradation and climate change impacts, with significant benefits to local communities and broader ecosystem services.

In turn, the choice of indicators was based on two key criteria: (i) their pertinence to the above assumption; and (ii) the feasibility of obtaining / producing and updating the data necessary to

⁵ Specific, Measurable, Achievable, Relevant and Time-bound.

monitor and evaluate the project through those indicators. The methods used to establish the baseline and to track progress towards the end of project targets for each of the key indicators are summarised in the Table below:

Table 8: Definition and measurement methods for the Objective & Outcome indicators

Indicator	Explanatory note
OBJECTIVE: To promote sustainable management of land and natural resources in the arid and semi-arid regions of Pakistan in order to restore degraded ecosystems and their essential services, reduce poverty, and increase resilience to climate change	
Area of farmland in target districts with reduced land degradation resulting from introduced SLM practices	<ul style="list-style-type: none"> ▪ This will be derived from GIS/RS mapping of each landholding in the target districts that has implemented the project's SLM prescriptions. The area (ha) will be measured on an annual basis and reported in the PIRs
Area of degraded forests and rangelands and shifting sand-dunes in target districts benefiting from introduced SLM techniques	<ul style="list-style-type: none"> ▪ This will be derived from GIS/RS mapping of those degraded forests and rangelands, as well as shifting sand-dunes in the target districts that are under management through implementation of the project's SLM prescriptions. The area (ha) under management will be measured on an annual basis and reported in the PIRs
Households participating in SLM interventions have increased their average income earned from dryland farming and NRM activities as compared to baseline.	<ul style="list-style-type: none"> ▪ Each household collaborating in the project's SLM interventions will be asked to sign an agreement, securing the obligations of both Parties. This will include an obligation to provide information on household income. This indicator will be reported at project mid-term and project end.
Total amount of CO2 equivalent greenhouse gas sequestered in the target districts due to effective application of SLM practices	<ul style="list-style-type: none"> ▪ This indicator will be the subject of an expert consultancy in Year 1, to assist the project to more clearly define the methodology for assessing carbon sequestration as a result of each of the project's interventions. This indicator will be reported at project mid-term and project end.
Outcome 1: Strong enabling environment at national and provincial levels supports up-scaling of SLM practices	
Number of provincial land use policies with SLM and NAP mainstreamed, being implemented	The number of provincial land use policies with SLM and NAP mainstreamed will be measured on an annual basis and reported in the PIRs as either approved or being implemented.
Number of key sectoral policies, especially agriculture & forests, addressing desertification issues and SLM principles	The number of key sectoral policies integrating SLM guidelines will be measured on an annual basis and reported in the PIRs as either approved or being implemented.
Functioning National & Provincial Desertification Control Cells	The process of converting the Project Coordination Units to formal Desertification Control Cells will be reported in the annual PIRs.
Number of staff of line agencies/NGOs with increased capacities in SLM and desertification control measures	A simple SLM capacity scorecard will be designed to assess capacities: (i) at the start of the project, (ii) at mid-term and (iii) at the end of project – through surveys of awareness and actual implementation of SLM practices.
Number of households with increased knowledge and capacity on SLM	A simple SLM capacity scorecard will be designed to assess capacities: (i) at the start of the project, (ii) at mid-term and (iii) at the end of project – through surveys of awareness and actual implementation of SLM practices.
Outcome 2: Effective, targeted, and adaptive implementation of SLM Land Use Planning & Decision Support System	

Indicator	Explanatory note
Number of integrated participatory district level SLM land use plans being implemented (developed with the participation of key sectoral representatives and NGOs/CBOs)	The number of integrated participatory district level SLM land use plans will be measured on an annual basis and reported in the PIRs as either approved or being implemented.
Number of integrated participatory village level SLM plans	The number of integrated participatory village level SLM land use plans will be measured on an annual basis and reported in the PIRs as either approved or being implemented.
SLM Information System and Decision Support System operational and being used	This indicator will be measured by a) the number of hits per month on the SLM information system website, plus the formal approval of the DSS system and evidence that it is being used in decision-making. Progress will be reported annually in the PIRs.
Outcome 3: On-the-ground implementation of climate-resilient SLM activities is up-scaled across landscapes	
Number of villages and households in target districts participating in SLM activities	The number of villages and households participating in SLM activities will be measured by the number of SLM implementation agreements signed by households in the participating districts. This will be reported annually in the PIRs.
Number of farmers in target districts implementing soil and water conservation measures and on-farm management practices	The number of farmers implementing soil and water conservation measures and on-farm management practices will be measured by the number of SLM implementation agreements for these measures signed by farmers in the participating districts. This will be reported annually in the PIRs.
% of livestock owners in target districts participating in agreements to restore degraded rangelands	The % of livestock owners participating in agreements to restore degraded rangelands will be measured by the number of grazing agreements signed by graziers in the participating districts, as a % of all the graziers in the district. This will be reported annually in the PIRs.
% of households participating in agreements to restore degraded dryland forests	The % of households participating in agreements to restore degraded dryland forests will be measured by the number of participation agreements signed by households in the participating districts, as a % of all the households in the district. This will be reported annually in the PIRs.
# of households participating in new livelihood initiatives based on sustainable use of natural resources (eg NTFPs) and % increase in income.	The % of households participating in new livelihood initiatives based on sustainable use of natural resources (eg NTFPs) will be measured by the number of participation agreements signed by households in the participating districts, as a % of all the households in the district. This will be reported annually in the PIRs.

The project will also use a number of process-oriented indicators to strengthen the ‘M&E framework’. These indicators will be incorporated into the annual work planning from Year 1, and are expected to feed into the project’s overall M&E framework. The table below provides a preliminary list of these process-oriented indicators.

Table 9: Preliminary list of process-oriented indicator-targets for end of project

Output	Process-oriented indicator-targets for end of project
Outcome 1: Strong enabling environment at national and provincial levels supports up-scaling of SLM practices	
Output 1.1: Enabling policies and institutional mechanisms for SLM are in place at federal and provincial levels and being	<ul style="list-style-type: none"> ▪ Guidelines and regulations available to improve systemic capacity for effective SLM ▪ Number of meetings held by PCUs / Desertification Control Cells

Output	Process-oriented indicator-targets for end of project
implemented	<ul style="list-style-type: none"> ▪ Study conducted to develop carbon sequestration
Output 1.2: Skills for up-scaling SLM enhanced through institutionalisation of multi-tiered capacity building programme	<ul style="list-style-type: none"> ▪ Strategic SLM training programme established and institutionalised with certified competency standards ▪ 15 training workshops conducted and 120 SLM trainees certified ▪ Grassroots-level training provided to 2500 persons ▪ Masters level course initiated and field-based training manuals on SLM developed & implemented
Output 1.3: Up-scaling is enhanced through a knowledge management and outreach programme for SLM	<ul style="list-style-type: none"> ▪ Knowledge management and outreach strategy/plan developed and being implemented ▪ National SLM network established ▪ 35 posters, 25 leaflets, 20 brochures/booklets and 1 documentary prepared in national and local languages ▪ National land degradation and desertification atlas developed ▪ 10 best practice reports prepared ▪ 8 studies for documentation of indigenous knowledge
Outcome 2: Effective, targeted, and adaptive implementation of SLM Land Use Planning & Decision Support System	
Output 2.1: GIS-based participatory district and village land use plans developed and being implemented	<ul style="list-style-type: none"> ▪ Base line status of desertification and land degradation in 15 districts prepared ▪ Guidelines for preparation of district and village land use plans prepared
Output 2.2: Climate-resilient SLM Decision Support System developed and implemented using GIS and Remote Sensing (RS)	<ul style="list-style-type: none"> ▪ Web-based SLM information system on-line ▪ Training in DSS provided, with support manuals
Outcome 3: On-the-ground implementation of climate-resilient SLM activities is up-scaled across landscapes	
Output 3.1: Local communities mobilized for up-scaling SLM activities	<ul style="list-style-type: none"> ▪ Local communities in project areas organized through 50 new CBOs ▪ Socio-economic impact study conducted
Output 3.2: Appropriate soil and water conservation measures and on-farm management practices are up- scaled	<ul style="list-style-type: none"> ▪ 400 ponds established for rainwater harvesting for humans and / or livestock ▪ 4000 Roof rainwater storage tanks established for drinking, livestock & plantation ▪ 1500 on-farm sustainable water management structures installed (water conveyance systems, gated/inlet structures, spillways etc..) ▪ 50 sprinkler irrigation systems installed and drip irrigation introduced on 500ha ▪ 400km of shelterbelts established
Output 3.3: Degraded rangelands are rehabilitated through improved management	<ul style="list-style-type: none"> ▪ Controlled grazing on 50,000ha ▪ Re-seeding on 3000ha ▪ Dryland afforestation on 1850ha ▪ 50 rangeland management plans operational
Output 3.4: Improved dryland forest and sand-dune management restores ecosystem services, and	<ul style="list-style-type: none"> ▪ 200 farmer nurseries established ▪ 180 Kana / NTFP processing machines installed

Output	Process-oriented indicator-targets for end of project
provides new livelihood opportunities	<ul style="list-style-type: none"> Sand dunes stabilised on 400ha
Output 3.5: Community-financed viable local SLM funds, resource specific business plans, public-private partnerships and targeted matching grants designed and supporting up-scaling	<ul style="list-style-type: none"> 49 community based SLM Funds established Sustainable business plans of 8 SLM related enterprises developed 7 PPP projects implemented

The following potential risks and mitigation measures have been identified. These risks and the mitigation measures will be continuously monitored and updated throughout the project, and will be logged in ATLAS and reported in the PIRs, and appropriate strategies will be developed for their mitigation. The risk table has been updated as below:

Table 10: Risks and proposed mitigation measures

Risk	Level	Risk Mitigation Measures
Overall security situation in some of the target areas may delay execution of project activities	Medium	This is a potential risk mainly in the Khyber Pakhtunkhwa and Balochistan provinces. UNDP however, has considerable experience of operating under such conditions in Pakistan. The UNDP Security Officer has confirmed that the security situation is not expected to deteriorate further and that field implementation of projects in Khyber Pakhtunkhwa and Balochistan can proceed as per plan. In addition the project's reliance on local institutions to implement field level activities and the fact that field level implementation will be coordinated by the provincial authorities ensures that much of project implementation can happen under moderate security threats. In the worst case scenario, the project would temporarily suspend activities in affected areas.
Competing priorities at national and provincial levels may reduce political and financial support for SLM.	Low to Medium	There is a solid baseline; a key design focus of this project is that it seeks to reorient these investments to engender a paradigm shift to SLM. All current indications is that this baseline is secure—focused as it is on meeting basic development needs. To complement the achievements made by the pilot phase in generating awareness and ensuring greater political support and ownership for the SLM programme, the project will design and implement a common monitoring and evaluation system that will focus on generating evidence illustrating the economic and ecological success of landscape level SLM. This is critical to deepen the investment case for SLM and concretise SLM funding over the long-term.
The possibly slow pace of achieving the conditions needed at the provincial and district levels in terms of a conducive environment for up-scaling SLM practices	Low	The project's Outcome 2 is dedicated to addressing this. It will vigorously work with provincial stakeholders for institutionalizing a comprehensive decision support and monitoring system that will guide and catalyze implementation of sustainable land and natural resource management practices and approaches. It will facilitate inter-provincial communication through focal persons and also support the generation of comprehensive, integrated, and legally enforceable land use plans. The multi-tiered training programme will aim to maximize human resources for SLM.
Climatic factors may effect up-scaling SLM based activities in project	Medium	The project is designed specifically to address, monitor, and integrate climate concerns, especially adaptation to climate change impacts. The project strategy emphasizes development of know-how for dealing with

areas and cause some emergencies which may change Government priorities		climate change risks through the design and implementation of decision-support system that considers climate change and by integrating climate change concerns and adaptation issues into the formulation and implementation of SLM interventions.
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2.7 EXPECTED GLOBAL, NATIONAL AND LOCAL BENEFITS

The proposed project has global, national and local benefits. These benefits are closely linked. The global benefits will be: (1) improved ecosystem stability and productivity, by adopting sustainable land management practices, and the restoration and subsequent protection of degraded dryland ecosystems for enhancing their structural and functional stability, while improving the livelihood of local communities; (2) improved carbon sequestration, which would be achieved through the adoption of sustainable agriculture and rangeland/pasture management practices and the restoration of degraded vegetation in areas currently used for livestock production, as well as through promoting dry-afforestation; (3) conservation of plant and animal species of global significance; and (4) meeting Pakistan's obligations under UNCCD as well as CBD and UNFCCC through cross-sectoral interventions and integrated management of land resources.

The global benefits will be delivered primarily through the adoption of SLM practices that will reduce land degradation and ensure ecosystem services over a landscape of more than 800,000 ha through multi-sectoral SLM interventions, as follows:

Table 11. Selected global benefits of the project

Current Practice	Alternative to be put in place by the project	Selected benefits
Unsustainable crop and land management practices: <ul style="list-style-type: none"> - Intensive cultivation leading to reduced fertility - Severe soil erosion - Limited water management and poor maintenance of irrigation infrastructure - Inappropriate subsidies or limited investments for wise use fertilizers and other improvements in inputs 	Improved soil and water management practices that includes: <ul style="list-style-type: none"> - integrated soil fertility management - increasing vegetation cover and planting windbreaks - promotion of water efficient technologies (e.g. drip irrigation) - integrated farming - planting drought tolerant species in highly drought prone areas 	i) Sustainable management of land and natural resources on around 800,000 ha of land consisting of agriculture land, rangeland / pastures and forest land that result in reduced soil erosion, halt / reverse land degradation process and continued provision of ecosystem services ii) Improved productivity as measured by increase in Primary Productivity, , reduced erosion rates and/or enhanced RUE (Rain Use Efficiency) iii) Enhanced carbon sequestration in soil and vegetation across landscape in project sites
Degradation of dryland forests through: <ul style="list-style-type: none"> - illicit felling of trees for fuel wood; - over-grazing in forest lands - over-exploitation of NTFPs 	Sustainably managed dry forests: <ul style="list-style-type: none"> - sustainable fuel wood collection - reduced grazing in forests - enrichment planting of preferred species - sustainable use of NTFPs, value addition 	iv) Improved socio-economic returns from improved land productivity and natural resource enterprises (e.g. NTFPs) v) biodiversity intactness in dry forests

<p>Over-grazing and degradation of rangelands</p> <ul style="list-style-type: none"> - no attention paid to carrying capacity of rangelands - open access regimes with no efforts in pasture / rangeland management - soil erosion of barren degraded lands 	<p>Improved rangeland management:</p> <ul style="list-style-type: none"> - changing from open-access to regulated grazing regimes - promotion of rotation grazing to provide rest periods - re-seeding of palatable species and weed management 	
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National and local benefits of the projects will include:

The National Benefits generated from the project will include: (1) implementation of National Action Programme (NAP) to combat desertification and mainstreaming SLM principles into national policies and plans (indicator: Number of provincial land use policies with SLM and NAP mainstreamed, being implemented); (2) improved economic productivity through sustainable management practices, including efficient use of water resources, introduction of soil conservation measures, introduction of integrated management of land resources, and introduction of land use planning (indicators: Households participating in SLM interventions have increased their average income as compared to baseline, Number of households with increased knowledge and capacity on SLM, Number of integrated participatory district level SLM land use plans being implemented (developed with the participation of key sectoral representatives and NGOs/CBOs)); (3) sustainable livelihood opportunities for rural communities and reduced poverty through benefits derived from ecosystem “goods and services” associated with improvement in land management (indicators: Number of villages and households participating in SLM activities, Number of farms implementing soil and water conservation measures and on-farm management practices, % of livestock owners participating in agreements to restore degraded rangelands, % of households participating in agreements to restore degraded dryland forests, number of households participating in new livelihood initiatives based on sustainable use of natural resources (eg NTFPs)); (4) improved policy and planning framework to support sustainable land management concepts and practices (indicator: Number of key sectoral policies integrating SLM guidelines being implemented, SLM Information System and Decision Support System operational and being used, Functioning National & Provincial Desertification Control Cells); (5) enhanced institutional strengths and human-resource capacity to promote sustainable use of natural resources (indicators: Increased capacities for SLM as measured by LD Capacity Development % Score, Number of integrated participatory village level SLM plans); and (6) improved management skills at the local level through participatory learning and actions and involvement of local communities in decision-making processes for making on-the-ground investments for building social infrastructure and promoting SLM practices (indicators: Number of villages and households participating in SLM activities, Number of farms implementing soil and water conservation measures and on-farm management practices, % of livestock owners participating in agreements to restore degraded rangelands, % of households participating in agreements to restore degraded dryland forests, number of households participating in new livelihood initiatives based on sustainable use of natural resources (eg NTFPs)).

At the local level, the participatory nature of the project will ensure the involvement of local communities in decision-making processes, as principal beneficiaries of the project. Investments in building social infrastructure will contribute to collective actions by the communities and their improvement - benefits that go beyond the project life.

i) Financial Benefits: The main financial benefits will be the improved net income streams of the households participating in the SLM measures as described below. Under the programme, co-

financing from other donors will also be arranged as indicated under capital cost outlay of the project. Mobilization of these resources will help in addressing land degradation and desertification problems in the country.

ii) Economic Analysis: Given the cross-sectoral and integrated nature of the project, it is very difficult to have an economic analysis in monetary terms and their corresponding indicators. However, on-the-ground implementation of the project will result in increase of household income from the SLM interventions. Specifically, the project will help in:

- reducing poverty among the project communities;
- improving land productivity;
- improving local environment;
- controlling soil erosion and conserving precious water resources; and
- building capacity of the federal and provincial governments, as well as of line agencies.

iii) Social Benefits/ Target Beneficiaries: The expected socio-economic benefits include: (i) better management of crop lands and other natural resources, thereby improving the sustainability of livelihoods of people dependent on these resources; (ii) rehabilitation and sustainable management of degraded rangelands and integrated management of water resources that will help communities to cope with water scarcity and provide adequate water for human and livestock consumption and the recharge of groundwater resources; (iii) conservation and sustainable use of indigenous plants and NTFP, thus enhancing sustainable income generating opportunities; and (iv) reduced vulnerability and enhanced resilience to climate change. The socio-economic benefits will span across all sections of society including women and marginalized groups. Women are active, selective and creative natural resource users and managers in the project area. The project will develop and implement a gender inclusion strategy that promotes the role of women in both the planning and implementation of SLM interventions.

The project will strengthen capacity of the local communities and address their needs in relation to sustainable land management. It will also strengthen the capacity of project and line agencies staff to respond to the challenges of combating desertification. The participatory nature of the project will result in testing appropriate technologies for their field application and subsequently adoption by the local communities. This will ultimately contribute to rehabilitation of degraded ecosystems and improvement in local livelihoods.

Employment generation (direct and indirect) opportunities will be generated for the contractual staff to be recruited for the Project activities at the National Coordination Unit and Provincial Coordination Units. These will include both technical and non-technical positions. In addition, the project would indirectly generate both on-farm and off-farm employment opportunities for the local communities.

Federal and Provincial Governments - The project will create an enabling environment and institutional capacity at national and provincial levels to support sustainable land management through mainstreaming SLM principles into national policies, strategies, and action plans pertaining to agriculture, forest, and water sectors, in order to encourage sustainable use of land resources.

Importantly, the project will also help to establish the basic infrastructure for the creation of federal and provincial desertification units as envisaged under the NAP. The National Coordination Unit at the CCD will evolve into a Federal Desertification Control Cell, while Provincial Coordination Units will be designated as Provincial Desertification Control Cells. After closure of the project, the funding for these units will be mainstreamed into federal and provincial budgets.

Provincial Line Agencies - Other target groups will be the Agricultural and Forestry staff of the provincial and district governments. The project will provide training to the local staff in technical areas related to SLM practices, especially in participatory approaches to land use planning and implementation of local level land use plans.

Research Institutions - The relevant research institutions will be involved in targeted research designed for testing innovative techniques for SLM and transferring them to local farmers. Their staff will receive training and these institutions will be strengthened through provision of financial and technical support.

Community Leaders - Community leaders will be direct beneficiaries from the technical skills development and training program of the Project. The training will enable these community leaders to assist villagers in development and implementation of local land use plans.

Local NGOs - Local NGOs will have an improved understanding of community-based and participatory approaches for introduction and implementation of SLM practices at the local level. The formation of local community-based organizations will enable farmers and women to receive direct benefits from the project. The establishment of National Desertification Control Fund (NDCF) will provide an opportunity to the local NGOs to receive small grants for addressing land degradation and desertification issues.

iv) Environmental Impact: The overall goal of the project is to combat land degradation and desertification in Pakistan in order to protect and restore degraded ecosystems and essential ecosystem services. The successful implementation of the project will have a positive impact on the local environment. The major environmental benefits would be:

- improved ecosystem stability and productivity;
- enhanced carbon sequestration capacity;
- conservation of biological diversity;
- controlled soil erosion from wind and water; and
- improved local climate.

2.8 COST EFFECTIVENESS

The Terminal Evaluation of the Sustainable Land Management Project – Phase I revealed that the project has paved the way towards pursuing a long-term programmatic and results-based approach to combat desertification and land degradation over wider landscapes. The institutional model adopted by the pilot project has been quite effective to ensure ownership, involvement of local communities and coordination among all the line agencies, implementing partners and stakeholders during project implementation. The arrangement of placing all the four Provincial Coordinating Units (PCUs) of the SLMP under the Planning and Development Departments of the respective provinces has contributed to the devolution process since mid-2011 enabling the provinces to get actively engaged in project planning and implementation. Moreover, this arrangement has been financially efficient and has promoted better interaction and coordination among line departments towards development planning and monitoring of the project activities. It has also helped to mainstream SLM within the budgetary framework of the provincial governments at higher level. The functioning of the PCUs under the overall command and control of the Secretary P & D Departments who act as Provincial Project Director will facilitate the conversion of these PCUs into permanent Desertification Cells/Units as envisaged under the up-scaling programme. This will ensure the sustainability of the programme after the completion of the up-scaling programme.

The project strategy and approach is cost-effective because it builds on the existing administrative set-up and infrastructure of the government agencies both at the federal and provincial levels. The innovative strategy of sub-contracting SLM interventions in target districts to the line agencies and capable NGOs under a proper set of TORs will be continued during the up-scaling programme to reduce overhead administrative costs and focus more on on-the-ground interventions. Moreover, the lessons learned and best practices documented during Phase I will be adopted during the up-scaling project to save resources and time.

2.9 SUSTAINABILITY

The project has been designed to be sustainable. Environmental and social sustainability are main objectives of the project, and were assessed through application of UNDP's "Environmental and Social Screening Summary". The completed Checklist is attached as Annex 3.

In order to ensure long-term sustainability, the up-scaling SLM programme envisages creating a Desertification Cell at the Federal level, and one cell each in the four provincial Planning & Development Departments. A provision has been made to establish these cells towards the end of the 1st year of the project implementation so that the units are fully embedded in the system and are able to run effectively after the close of the programme. It is envisaged that in addition to the donor funding for the land degradation, provincial governments after completion of the GEF/UNDP funded SLM programme will allocate financial resources under their ADPs to combat desertification and land degradation. After completion of the 5 year programme, the expected operating and maintenance cost of each provincial unit will be around Rs.8.0 million annually. This will include salaries of staff and operational costs of the Desertification Cells, which would be met by the respective provincial governments.

The project has considered four key aspects of sustainability, which are described below:

Institutional sustainability: The project builds primarily upon existing institutional structures and mandates of the government agencies and follows expressed policies of the government. It will create permanent Desertification Control Cells at federal and provincial levels as envisaged in the NAP. The capacity building of government staff and others is expected to be institutionalized and continued after the project. Securing the institutional sustainability of the project's impacts will be promoted by developing the technical capacities at relevant levels, in all the participating institutions. Capacity building is a major thrust of the project, so both short-term and long-term plans to strengthen technical expertise and capability for all involved, have been recommended.

Financial sustainability: The project will support community level actions to demonstrate and disseminate appropriate mechanisms for financing on-the-ground SLM activities. For this, the project builds on the successes and experiences of the pilot phase. Every step will be taken to avoid building any dependencies on external inputs amongst the local stakeholders. The financial sustainability of the project's impacts will be further assured by the project's focus on a business-based approach to SLM. The ideal situation is to develop the business aspect of the project into activities so that in the long-term, these same activities will become self-supporting and independent of external funding.

Social sustainability: The capacity building activities, networking and continuous field-level presence by the management agencies (state, private and civil society) will help achieve social sustainability of the project. The build-up of trust through dialogues and stakeholder consultations, and stakeholder mobilization through capacity building by the project will assist in achieving this long-term objective. The strong focus on building local knowledge, capacities and incentives and ensuring gender equity are expected to lead to social sustainability.

The primary social impacts of the project will relate to the potential impacts the project may have on vulnerable community stakeholders like women, the poor and other traditionally marginalized groups. Women and men have differ in terms of access to and ownership of land and may opt for different land uses to suit their needs. The dominant form of land ownership in the rural communities is by men while women typically undertake majority of land management tasks. Women and men may also have different needs and concerns related to sustainable land management. The negative social impacts are expected to occur either in the way the project selects the beneficiaries (risk of women and poor being excluded as public meetings are mostly dominated by men and the local powerful actors) or in the selection and design of project interventions (risk of being either inappropriate or not affordable). To address these risks, the pilot project team has held separate and focused discussions with women and poor in the target villages to elicit their views and concerns. This is reflected in the project's underlying principle to embrace cultural diversity and gender equity. It recognizes that sustainable land management requires equal participation of men, women, poor and other disadvantaged groups. Another important social impact arise from the way the project may alter access to natural resources especially in implementing local land use / SLM plans. There is a possibility that such plans can restrict access to forest areas and resources – this while impacting the whole community will disproportionately impact the poor and women as they depend most on natural resources. In addition, some communities may voluntarily move out of specific agro-pastoral areas as they implement improved and sustainable farming practices in vulnerable and degraded areas. The project design recognizes these risks although they are minimal. Finally although the project has been designed to reduce vulnerabilities of local communities to climate change through improved land productivity and reduced degradation, a related social impact is that local communities voluntarily opt to focus a lot more on agricultural activities at the expense of a more diversified and resilient livelihood base. This will in fact increase local communities and in particular the poor's vulnerability to the impacts of climate change. The project has as such also included interventions focused on diversifying livelihoods and improving incomes.

Environmental Sustainability: The primary purpose of this project is to achieve environmental sustainability in Pakistan through the implementation of SLM activities. Therefore, the majority of the environment impacts are positive. Among others these include reduce soil erosion, improve water discharge and retention functions, improved soil conservation and fertility, increased agricultural productivity, and reduced pressures on forests and degradation of land halted. While striving to achieve environmental sustainability at the target site, the project will also ensure that there are no off-site displacement of threats (such as protecting forests at target sites displaces harvesting in non-target sites). The project design has as such given careful consideration to this aspect of land use planning and will ensure an inclusive cross-sectoral approach to land use planning which will make use of expert knowledge and best practices available in the various sectors so that sensitive areas will be identified and protected.

2.10 REPLICABILITY

The project has been designed to ensure that its actions can be widely replicated within Pakistan. The cost-effectiveness, as well as institutional, social and environmental sustainability factors mentioned above is expected to contribute to the replication of the project's approaches. In addition, the project will ensure that activities, impacts and lessons learnt are recorded and disseminated widely within the country (and internationally through GEF and UNDP knowledge management mechanisms) to generate a bottom-up demand for similar activities throughout the country. The involvement of NGOs and the private sector in the project activities are also expected to lead to further replication of the project's actions in Pakistan. One of the strongest mechanisms for wider replication of the project's activities nationally will be through the incorporation of SLM consideration in the

development of participatory community development plans. This approach is expected to be nationally implemented, and thus the approach will be replicated through the national government mechanism.

Part III Strategic Results Framework

Objective/ Outcome	Indicator	Baseline	End of Project target	Source of Information	Risks and assumptions
GOAL: To combat land degradation and desertification in Pakistan					
Objective: To promote sustainable management of land and natural resources in the arid and semi-arid regions of Pakistan in order to restore degraded ecosystems and their essential services, reduce poverty, and increase resilience to climate change	Area of farmland in target districts with reduced land degradation resulting from introduced SLM practices	100,000 ha	400,000 ha by end of project	PIRs and Project Final Report	<ul style="list-style-type: none"> - Current security situation in project districts allows implementing and monitoring on-the-ground activities - Current political and economic stability continues to hold in the country - Prevailing climate change impact (i.e. drought cycle) in south and south-western part of the country ends - Political situation in the neighbouring countries remains stable and there is no further influx of refugee - Co-financing is secured from Government allocations and other donors - Government willingness to accept and implement policy reforms and mainstreaming SLM into sectoral policies
	Area of degraded forests and rangelands and shifting sand-dunes in target districts benefiting from introduced SLM techniques	Forests: 43,500 ha Sand-dunes: 11,700 ha Rangelands: 175,000 ha	Forests: 100,000 ha by end of project Sand-dunes: 12,300 ha by end of project Rangelands: 287,700 ha by end of project	PIRs and Project Final Report	
	Project communities are participating in SLM interventions and have increased their average household income earned from dryland farming and NRM activities as compared to baseline.	5% of households participating YR1 3,000 US\$ average income	15% of households benefiting by YR5 Income increased by 20% by YR5	Household survey reports	
	Total amount of CO2 equivalent greenhouse gas sequestered in the target districts due to effective application of SLM practices	7 million tons CO2 equivalent	Sequestration of additional 20 million tons CO2 equivalent	Carbon sequestration reports	
Outcome 1: Strong enabling environment at national and provincial levels supports up-scaling of SLM practices	Output 1.1: Enabling policies and institutional mechanisms for SLM are in place at federal and provincial levels and being implemented			Land use policy documents	<ul style="list-style-type: none"> - Political situation in provinces remains conducive for policy reforms. - Federal ministries, PRSP secretariat, provincial line agencies and district governments are collaborating and receptive for introducing SLM practices.
	Output 1.2: Skills for up-scaling SLM enhanced through institutionalisation of multi-tiered capacity building programme				
	Number of provincial land use policies with SLM and NAP mainstreamed, being implemented	0	4 provincial land use policies owned by Provincial P&D Departments.		
	Number of key sectoral policies, especially agriculture and forests address desertification issues and SLM principles	0	LD issues and SLM principles integrated into sectoral provincial policies on agriculture and forests in	Sectoral policy documents	

Objective/ Outcome	Indicator	Baseline	End of Project target	Source of Information	Risks and assumptions
			all 4 provinces		
	Functioning National & Provincial Desertification Control Cells	National & provincial coordination units established during SLMP Phase I	1 National and 4 Provincial Coordination Units converted into respective Desertification Control Cells by the end of YR1	Progress reports Project Final Report	
Outcome2: Effective, targeted, and adaptive implementation of SLM Land Use Planning & Decision Support System	Output 2.1: GIS-based participatory district and village land use plans developed and being implemented Output 2.2: Climate-resilient SLM Decision Support System developed and implemented using GIS and Remote Sensing (RS)				
	Number of integrated participatory district level SLM land use plans being implemented (developed with the participation of key sectoral representatives and NGOs/CBOs)	0	At least 4 districts are implementing land use plans integrating SLM	District land use plans and meeting records	<ul style="list-style-type: none"> – Provincial Governments are willing to develop and implement land use plans. – Willingness to share Information and use of GIS outputs by the line agencies
	SLM Information System and Decision Support System operational and being used	0	Systems operational and being used in 2 provinces	Project reports, manuals etc	
Outcome 3: On-the-ground implementation of climate-resilient SLM activities is up-scaled across landscapes	Output 3.1: Local communities mobilized for up-scaling SLM activities Output 3.2: Appropriate soil and water conservation measures and on-farm management practices are up-scaled Output 3.3: Degraded rangelands are rehabilitated through improved management Output 3.4: Improved dryland forest and sand-dune management restores ecosystem services, and provides new livelihood opportunities Output 3.5: Community-financed viable local SLM funds, resource specific business plans, public-private partnerships and targeted matching grants designed and supporting up-scaling				
	Number of villages and households in target districts participating in SLM activities	63 villages 2,300 households	400 villages 12,500 households	Project reports	<ul style="list-style-type: none"> – Political situation remains conducive for enabling implementation of SLM – Provincial and district governments and line agencies are collaborating and receptive for introducing SLM initiatives – Private sector is ready to invest in SLM related interventions
	Number of farms in target districts implementing soil and water conservation measures and on-farm management practices	12,600 farmers	28,400 farmers	Project reports	
	% of livestock owners in target districts participating in agreements to restore degraded rangelands	2%	10%	Signed agreements	

Objective/ Outcome	Indicator	Baseline	End of Project target	Source of Information	Risks and assumptions
	% of households participating in agreements to restore degraded dryland forests	1%	5%	Signed agreements	
	Number of community-financed viable local SLM funds, resource specific business plans, public-private partnerships and targeted matching grants designed and supporting up-scaling	5 Funds 1 Business plans 1 PPPs 3 Grants	49 Funds 8 Business plans 7 PPPs 50 Grants	Community financing reports and project reports	

Part IV: Total Budget and work plan

Short Title:	SLM - Programme, Pakistan
Award ID:	00075848
Project ID:	00087529
Business Unit:	PAK10
Project Title:	Sustainable Land Management Programme to Combat Desertification in Pakistan
PIMS #	4593
Implementing Partner	Climate Change Division, Government of Pakistan

GEF Outcome/ Atlas Activity	Implementing Agent	Fund ID	Don or Name	Atlas Budgetary Acct Code	Atlas Budget Description	Year1	Year2	Year3	Year4	Year5	Total USD	Budget Note
Outcome 1: Strong enabling environment at national and provincial levels supports up-scaling of SLM practices	CCD	62000	GEF	71200	International Consultants	0	13,500	13,500	0	13,500	40,500	1
		62000	GEF	71300	Local Consultants	68,254	73,775	76,002	84,843	71,526	374,400	2
		62000	GEF	72100	Contractual services-Company	17,700	71,033	131,727	119,393	60,147	400,000	3
		62000	GEF	74200	Printing & publication	1,500	4,000	6,000	6,000	3,000	20,500	4
		62000	GEF	75700	Training/Workshop, conference	11,400	13,500	26,419	13,800	14,100	79,219	5
		62000	GEF	75700	Training/Workshop, conference	4,500	4,500	4,500	4,500	0	18,000	6
					Sub-Total	103,354	180,308	258,148	228,536	162,273	932,619	

Outcome 2: Effective, targeted, and adaptive implementation of SLM Land Use Planning & Decision Support System	CCD	62000	GEF	71300	Local Consultants	39,744	41,731	45,904	50,495	42,926	220,800	7
		62000	GEF	71600	Travel	800	800	800	800	800	4,000	8
		62000	GEF	72100	Contractual services-Company	7,800	17,400	32,100	84,800	46,100	188,200	9
		62000	GEF	72400	Communications and audio equipment	0	15,000	15,000	10,000	10,000	50,000	10
		62000	GEF	72800	IT equipment	8,700	10,950	7,800	1,950	0	29,400	11
					Sub-Total	57,044	85,881	101,604	148,045	99,826	492,400	
Outcome 3: On-the-ground implementation of climate resilient SLM activities is up-scaled across landscapes	CCD	62000	GEF	72100	Contractual services-Company	97,524	484,346	695,034	595,848	303,686	2,176,438	12
					Sub-Total	97,524	484,346	695,034	595,848	303,686	2,176,438	
Project Management Cost	CCD	62000	GEF	71300	Local Consultants	15,000	26,300	27,615	28,996	30,489	128,400	13
		62000	GEF	71600	Travel	10,000	7,000	10,000	7,000	6,000	40,000	14
		62000	GEF	72500	Office supplies	1,500	1,500	1,500	1,500	1,500	7,500	15
		62000	GEF	74100	Professional services	2,000	2,000	2,000	2,000	2,000	10,000	16
		62000	GEF	74500	Cost-recovery chrgs-Bills	1,517	-	253	-	253	2,023	17
		62000	GEF	74500	Miscellaneous expenses	250	250	250	250	620	1,620	
					Sub-Total	30,267	37,050	41,618	39,746	40,862	189,543.00	

					Total Programme	288,189	787,586	1,096,404	1,012,174	606,647	3,791,000
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Budget Notes	
1	Domestic expertise in SLM are limited and services of international consultant are needed for designing capacity building related initiatives like development of curriculum etc. and other deliverables under enabling environment.
2	Services of long term local Consultant (Senior Programme Specialist, SLM, Programme Specialist PR&CB, 4 Provincial Programme Specialists, SLM) would be required (US\$4100X48 m/w months =196,800; US\$2300X240m/w months = 552,000, 50% from GEF)-374,400
3	Other consultants/companies for different short term assignments would be required (US\$400X 1000 m/w days = 400,000 for developing/mainstreaming with SLM provincial policies, bridging gaps in provincial legal and regulatory frame works and preparing guidelines for mainstreaming SLM, carbon sequestration & PES Strategy, preparation of field based training manuals, communication expert and national network would be established).
4	Printing / publishing of key documents; printing of training materials and outreach materials
5	Multi-tiered training programmes/modules covering all aspects of SLM stakeholders including line agencies, communities, NGOs, women groups would be prepared & implemented. Training workshops would be conducted. Master's level Course on SLM developed and implemented. Knowledge-based extension programme developed and disseminated
6	In-country, regional and international exchange visits would be conducted for stakeholders capacity building.
7	Services of long term local Consultant (Programme Specialist LUP&I and Programme Specialists, GIS) would be required (US\$2300X96 m/w months = 220,800)
8	Travel costs for field assistants, technical advisors and for local community members for any technical consultations that maybe organized centrally
9	Other consultants/companies for different short term assignments would be required (US\$300X 110 m/w days = 33,000 for web portal development and concept note for DSS, consultants would also be required for establishing network to operationalize SLM Decision Support System demonstration in 2 provinces (US\$800X144m/w months = 115,200) Satellite images of US\$40,000 would be required for baseline data-mapping of 4 districts and 200 villages.
10	National LD & Desertification Atlas would be developed with the collaboration of SUPARCO, PFI, Soil Survey and Survey of Pakistan. The required satellite imageries and other relevant data would be purchased.
11	Hardware for GIS & DSS would involve procurement of PCs and furniture for DSS, GIS work station, plotter cartridges and accessories. Software will be identified or developed for DSS. The available software for GIS would be upgraded.

12	Government line agencies would be contracted for technical services and NGOs would be selected through a competitive process for different on-the-ground interventions in 15 districts in the four provinces.
13	Local consultants would involve National Programme Coordinator, Finance and Admin Officer (US\$1500X60 = 90,000, US\$3200X12 = 38,400) included support staff i.e Finance Associate, Admin Associate, Receptionist, drivers and office juniors.
14	Travel for PMU staff for preparatory and monitoring visits
15	Office supplies-stationaries, paper, toner etc
16	Audit experts @2,000 USD/year for 5 years
17	Direct Project Service costs (DPS): Estimated costs of DPS requested by the implementing partners to UNDP for executing services as indicated in TBWP for recruitment of consultants. In accordance with GEF Council requirements, the costs of these services will be part of the executing entity's Project Management Cost allocation identified in the project budget. DPS costs would be charged at the end of each year based on the UNDP Universal Pricelist (UPL) or the actual corresponding service cost. The amounts here are estimations based on the services indicated, however as part of annual project operational planning the DPS to be requested during the calendar year would be defined and the amount included in the yearly project management budgets and would be charged based on actual services provided at the end of that year. The Letter of Agreement (LOA) is being process and expect to be completed before project document signature process.

Summary of Funds						
Source	Year 1	Year 2	Year 3	Year 4	Year 5	Total
GEF	288,189	787,586	1,096,404	1,012,174	606,647	3,791,000
UNDP	111,000	320,000	440,000	400,000	229,000	1,500,000
Government (Grants), Federal & Provincial	1,110,000	3,199,500	4,399,500	4,000,500	2,290,500	15,000,000
Global Mechanism	60,000	70,000	0	0	0	130,000
Total	1,569,189	4,377,086	5,935,904	5,412,674	3,126,147	20,421,000

2 of the agreement between the Government of the Islamic Republic of Pakistan and UNDP concerning assistance under the Special Fund Sector of the UNDP.

The project is to be nationally executed (NEX), in line with the Standard Basic Assistance Agreement between the UNDP and the Government of Pakistan, and with the Country Programme Action Plan (CPAP). The proposed Project will be executed in accordance of the rules and procedures laid down under the Project Cycle Operations Manual for Pakistan (PCOM-IV). The UNDP Country Office (UNDP-CO) will be responsible for: (i) providing financial and audit services to the project; (ii) overseeing financial expenditures against project budgets approved by PSC; (iii) appointment of independent financial auditors and evaluators; and (iv) ensuring that all activities including staff and equipment procurement and financial services are carried out in strict compliance with UNDP/GEF procedures. International procurement will be mainly handled by the UNDP upon request of the CCD. A UNDP staff member will be assigned the responsibility for the day-to-day management and control over project finances.

Project (Programme) Steering Committee

The Programme Steering Committee (PSC) established for the SLMP Phase-I will continue to function for the up-scaling programme to provide guidance and oversee implementation of the project as well as coordination with the concerned ministries, provincial line departments, and relevant research institutions. The PSC will meet at least twice a year or as needed to review the project implementation. The Secretary, CCD, will be the Chair of the PSC. The PSC will have high level, cross-sectoral representation including of civil society organizations, line ministries, provincial Planning and Development Departments, national research institutions, and relevant NGOs. The Committee may, however, choose to co-opt additional members to enhance its efficacy. The main purpose of PSC meetings will be to review project progress, approve project work plans, and approve major project deliverables. The NCU will serve as the secretariat of the PSC and the NPD will take responsibility for calling and chairing its meetings, documentation of minutes and ensuring that decisions of the PSC are implemented in letter and spirit. The ToR of the PSC are given at Annex X.

At the provincial level, the Project would be implemented by the Planning and Development Departments through Provincial Coordination Units (PCUs) established during the pilot phase of the Programme. In Punjab, Balochistan & Khyber Pakhtunkhwa, Secretary Planning & Development Departments will continue to be designated as Provincial Project Directors of the Up-scaling SLM Programme who will be assisted by the Provincial Project Coordinators and implementing partners as in the SLMP Pilot Phase. In Sindh, the Special Secretary (Tech) to P&D Department has been designated as the Provincial Project Director (PPD), who will guide Provincial Project Coordinator in execution of the project through Implementing Partners and CBOs. This arrangement has worked successfully while execution of pilot phase and provided effective coordination of the project with all the line departments and stakeholders during implementation of programme interventions.

National Coordination Unit (NCU)

The NCU established during the SLMP Pilot Phase – I will continue to be the nucleus of the project and will be responsible overseeing project management, planning and coordination with the Provincial Coordination Units (PCUs), timely delivery of project inputs and achievement of project outputs (see project Organogram). The NCU will act as a National Desertification Control Cell as has been envisaged under the NAP. CCD will designate a part time National Project Director (NPD) not below the rank of a Joint Secretary (BPS 20) who will oversee the operations of NCU. The NPD will be responsible for providing government oversight and guidance to the project implementation. The NPD will not be paid from the project funds, but will represent a Government in-kind

contribution to the Project. The NCU will be housed in close proximity to the office of the Climate Change Division in order to have easy access to the NPD, Inspector General of Forests and other functionaries of the Ministry on day-to-day basis. The NCU will be headed by a National Project Coordinator (NPC), who will manage day to day operations of the NCU. The NPC will report to the NPD, while NPC will be supported by a team of professional and technical staff assisted by the administrative finance officer, assistants, secretaries and other support staff. The detail of positions at NCU and TORs for the staff positions at the NCU are given in Annex 4.

Provincial Coordination Units (PCUs)

The PCUs will be established in the provincial Planning and Development Department (P&D) of each of the four provinces. The PCUs will act as the Provincial Desertification Units as envisaged under the NAP. The operations of the PCUs will be overseen by the Secretary, P&D, of the respective province, who will act as the Provincial Project Director (PPD). The PCUs will be headed by a Provincial Project Coordinator (PPC), who will report directly to the Secretary, P&D/PPD with additional reporting to the NPC. The PPCs will work closely with the Chief of Sections of the relevant sectors (like agriculture, environment, irrigation and poverty). The major role of PCUs will be to coordinate implementation of the provincial level components of the projects to be executed through sub-contracts. The other supporting staff at each PCU will be an Administration & Finance Assistant, Secretary, driver and an office junior. The ToRs for the PPD and PPC are at Annex 4.

Provincial Coordination Committees (PCCs)

The experience of establishing Provincial Coordination Committees (PCCs) in the provincial Planning and Development Departments of the respective province during SLMP Phase-I have been very successful and will continue to function during the up-scaling programme. The Provincial Coordination Committees will over-see the implementation of provincial components of the programme as well as to ensure coordination with line departments, provincial research institutions, and relevant NGOs. The PCCs will meet annually or as needed to review the progress on implementation of the pilot projects. The PCCs will have cross-sectoral representation, including provincial secretaries of agriculture, forest, livestock and irrigation departments; concerned Chief Sections of P&D Departments, NPD, NPC and heads of relevant research institutions. The Additional Chief Secretary (ACS), Development/Chairman P&D Board will be the Chair of the PCC. The Chair may, however, choose to co-opt additional members of the PCC, if needed. The PCUs will act as the secretariat of the PCC and Provincial Project Director (PPD) will act as member/secretary of the PCC.

District Implementation Committees (DICs)

These committees would play a similar role to the PCCs, but at District level.

Desertification Control Cells at National & Provincial level

To ensure long-term sustainability of the programme after completion of this Up-scaling programme, establishment of permanent Desertification Control Cells (DCCs) in provincial P&D Departments and at the National level has been envisaged under the Up-scaling phase of the project. These independent units with regular necessary technical and administrative supportive staff will ensure the enabling environment for mainstreaming SLM policies in development plans and would also guarantee the sustainability of the project after termination through the national and provincial level

budgetary planning process. For this purpose, at the provincial level, a post of Chief Desertification Control Cell in BS19 with supporting staff will be created in P&D Department under this project in 4th year. He/she will take-over the functions of Provincial Project Coordinator SLMP in the 4th year of the project. The ToRs of the Chief DCC are given in Annex 4.

Mode of Financial Operations and Audit Arrangements

The project will be funded by the GEF and co-financed (cost-shared) by the UNDP, Provincial Governments and Government of Pakistan. The NCU will report on and justify expenditures on a quarterly basis to the UNDP. All the cost-sharing funds will be utilized as per rules and procedures given in the Project Cycle Operational Manual (PCOM)-IV approved by the Economic Affairs Division (EAD), Government of Pakistan. UNDP's Finance Section will make payments following a joint review of the quarterly financial and progress reports.

UNDP-Country Office will arrange for financial audit of the Project on an annual basis to ascertain that standard procedures are applied for disbursements and required monitoring systems are in place for internal control and record-keeping. Copies of the annual audit reports will be made available to the NPD and NCU. All local and international procurements will be carried out in accordance with the procedures detailed in the PCOM-IV. The NCU will establish and maintain a property ledger for equipment purchased under the Project.

Part VI: Monitoring framework and evaluation

Project M&E procedures will be designed and conducted by the project team and the UNDP-CO (with support from the UNDP/GEF Regional Coordination Unit (RCU) in Bangkok), in accordance with established GoP and UNDP-GEF procedures. The project's Strategic Results Framework in Part III contains objective and outcome level impact indicators for evaluating project implementation, along with their corresponding means of verification. The LD tracking tool (see Annex 1) and specially designed Capacity Scorecards will also be used as instruments to monitor progress. These provide the basis on which the project's M&E system will be built.

The M&E plan includes: inception report, project implementation reviews, quarterly and annual review reports, a mid-term review and final evaluation. The following sections outline the principal components of the Monitoring and Evaluation Plan and indicative cost estimates related to M&E activities. The project's Monitoring and Evaluation Plan will be presented and finalized in the Project's Inception Report following a collective fine-tuning of indicators, means of verification, and the full definition of project staff M&E responsibilities.

Inception Phase

A Project Inception Workshop (IW) will be conducted within the first 2 months of project start, with the full project team, relevant government counterparts, co-financing partners, the UNDP-CO and representation from the UNDP RCU. A fundamental objective of this Inception Workshop will be to assist the project team to understand and take ownership of the project's goal and objective, as well as finalize preparation of the project's first annual work plan on the basis of the log-frame matrix. This will include reviewing the log-frame (indicators, means of verification, assumptions), imparting additional detail as needed, and on the basis of this exercise, finalizing the Annual Work Plan (AWP) with precise and measurable performance indicators, and in a manner consistent with the expected outcomes for the project. In addition, the Inception Workshop will initiate a Sustainability and Exit Plan for the project, which will be reviewed at regular intervals during project implementation.

Additionally, the objective of the Inception workshop will be to: (i) introduce project staff with the UNDP-GEF team which will support the project during its implementation, namely the CO and responsible RCU staff; (ii) detail the roles, support services and complementary responsibilities of UNDP-CO and RCU staff *vis à vis* the project team; (iii) provide a detailed overview of UNDP-GEF reporting and monitoring and evaluation (M&E) requirements, with particular emphasis on the Annual Project Implementation Reviews (PIRs) and related documentation, the Annual Review Report (ARR), as well as mid-term and final evaluations; (iv) finalise the project's stakeholder inclusion and gender strategies/plans. Equally, the workshop will provide an opportunity to inform the project team on UNDP project related budgetary planning, budget reviews, and mandatory budget re-phasing. The workshop will also provide an opportunity for all parties to understand their roles, functions, and responsibilities within the project's decision-making structures, including reporting and communication lines, and conflict resolution mechanisms. The Terms of Reference for project staff and decision-making structures will be discussed in order to clarify for all, each party's responsibilities during the project's implementation phase.

Monitoring responsibilities and events

A detailed schedule of project review meetings will be developed by the project management, in consultation with project implementation partners and stakeholder representatives and incorporated in the Project Inception Report. Such a schedule will include: (i) tentative time frames for Project Steering Committee Meetings and (ii) project-related Monitoring and Evaluation activities. Day-to-day monitoring of implementation progress will be the responsibility of the NPC based on the project's Annual Work Plan and its indicators. The NPC will inform the UNDP-CO of any delays or difficulties faced during implementation so that the appropriate support or corrective measures can be adopted in a timely and remedial fashion. The NPC will fine-tune the progress and performance/impact indicators of the project in consultation with the full project team at the Inception Workshop with support from UNDP-CO and assisted by the UNDP-GEF RCU. Specific targets for the first year implementation progress indicators together with their means of verification will be developed at this Workshop. These will be used to assess whether implementation is proceeding at the intended pace and in the right direction and will form part of the Annual Work Plan. Targets and indicators for subsequent years would be defined annually as part of the internal evaluation and planning processes undertaken by the project team.

Measurement of impact indicators related to global benefits will occur according to the schedules defined in the Inception Workshop. Besides the status of the impact indicators against the planned targets will be assessed independently at the occasion of the Mid-term and Final Evaluations. The measurement of certain indicators will be undertaken through subcontracts or retainers with relevant institutions. Periodic monitoring of implementation progress will be undertaken by the UNDP-CO through quarterly meetings with the Implementing Partner, or more frequently as deemed necessary. This will allow parties to take stock and to troubleshoot any problems pertaining to the project in a timely fashion to ensure smooth implementation of project activities.

Quarterly

- Progress made shall be monitored in the UNDP Enhanced Results Based Management Platform.
- Based on the initial risk analysis submitted, the risk log shall be regularly updated in ATLAS. Risks become critical when the impact and probability are high. Note that for UNDP GEF projects, all financial risks associated with financial instruments such as revolving funds, microfinance schemes, or capitalization of ESCOs are automatically classified as critical on the basis of their innovative nature (high impact and uncertainty due to no previous experience justifies classification as critical).

- Based on the information recorded in Atlas, a Project Progress Reports (PPR) can be generated in the Executive Snapshot.
- Other ATLAS logs can be used to monitor issues, lessons learned etc... The use of these functions is a key indicator in the UNDP Executive Balanced Scorecard.

Annually:

Annual Project Review/Project Implementation Reports (APR/PIR): This key report is prepared to monitor progress made since project start and in particular for the previous reporting period (30 June to 1 July). The APR/PIR combines both UNDP and GEF reporting requirements.

The APR/PIR includes, but is not limited to, reporting on the following:

- Progress made toward project objective and project outcomes - each with indicators, baseline data and end-of-project targets (cumulative)
- Project outputs delivered per project outcome (annual).
- Lesson learned/good practice.
- AWP and other expenditure reports
- Risk and adaptive management
- ATLAS QPR
- Portfolio level indicators (i.e. GEF focal area tracking tools) are used by most focal areas on an annual basis as well.

The NPC will present the PIR/ARR to the Project Steering Committee, highlighting policy issues and recommendations for the decision of the PSC participants.

Monitoring Visits: Provincial Programme Coordinators will visit on-the-ground SLM interventions in each district at least twice every quarter and submit report. NPC and thematic experts of the NCU also periodically visit on-the-ground SLM interventions and submit report.

Project (Programme) Steering Committee (PSC) Meetings: To be held twice a year to review the progress against approved work plan, and recommend corrective measures. The terminal PSC meeting is held in the last month of project operations. Through a Terminal Report, it considers the implementation of the project as a whole, paying particular attention to whether the project has achieved its stated objectives and contributed to the broader SLM objective. It decides whether any actions are still necessary, particularly in relation to sustainability of project results, and acts as a vehicle through which lessons learnt can be captured to feed into other projects under implementation or formulation.

Provincial Coordination Committee (PCC) Meetings: The PCC has already been established in each province. Its meetings are held twice a year to review and approve the interventions to be implemented in the province.

Mid-term of project cycle:

The Mid-term Evaluation will be conducted at the start of year 3 of implementation. The Mid-Term Evaluation will determine progress being made toward the achievement of outcomes and will identify course correction if needed. It will focus on the effectiveness, efficiency and timeliness of project implementation; will highlight issues requiring decisions and actions; and will present initial lessons learned about project design, implementation and management. Findings of this review will be incorporated as recommendations for enhanced implementation during the final half of the project's term. The Terms of Reference for this Mid-term evaluation will be prepared by the UNDP CO based on guidance from the Regional Coordinating Unit and UNDP-GEF. The management response and the evaluation will be uploaded to UNDP corporate systems, in particular the [UNDP Evaluation Office Evaluation Resource Center \(ERC\)](#).

The relevant GEF Focal Area Tracking Tools will also be completed during the mid-term evaluation cycle.

End of project:

An independent Final Evaluation will take place three months prior to the final Project Board meeting and will be undertaken in accordance with UNDP and GEF guidance. The final evaluation will focus on the delivery of the project's results as initially planned (and as corrected after the mid-term evaluation, if any such correction took place). The final evaluation will look at impact and sustainability of results, including the contribution to capacity development and the achievement of global environmental benefits/goals. The Terms of Reference for this evaluation will be prepared by the UNDP CO based on guidance from the Regional Coordinating Unit and UNDP-GEF.

The Terminal Evaluation should also provide recommendations for follow-up activities and requires a management response which should be uploaded to PIMS and to the [UNDP Evaluation Office Evaluation Resource Center \(ERC\)](#).

The relevant GEF Focal Area Tracking Tools will also be completed during the final evaluation.

During the last three months, the project team will prepare the Project Terminal Report. This comprehensive report will summarize the results achieved (objectives, outcomes, outputs), lessons learned, problems met and areas where results may not have been achieved. It will also lay out recommendations for any further steps that may need to be taken to ensure sustainability and replicability of the project's results.

Risk and Issues Logs: The purpose of the Risk Log is to provide a repository of information about the risks, their analysis, countermeasures and status. The risk log covers risks related to environment; finance (both external and internal); organizational setup; political status; programme & operation; regulatory and security. The Issue Log is a document to track issues as they arise. It serves as a source of information when writing Quarterly, Annual or terminal reports.

Quarterly Planning & Review Meetings: Planning & Review meetings are held on quarterly basis, at the NCU-SLMP, to discuss and review the progress for the previous quarter, and finalize the work-plan for the next quarter. These meetings are attended by SLMP NCU staff, representatives from UNDP, GEF Cell, EAD, and Planning Commission, in addition to the Provincial Programme Coordinators of SLMP.

Best Practices/Case Studies: All the PPCs are required to assess the efficacy and effectiveness of all physical interventions under the programme and prepare best practice case studies, on prescribed format. It covers in depth analysis of socio-economic, environmental and SLM related benefits accruing to the direct and indirect beneficiaries.

Updating of criteria and indicators for SLM at national level: Criteria and indicators for SLM at national level were drafted during the pilot phase of SLMP. These are to be updated during second year of programme implementation.

Independent Review Missions: Periodically, donors may send independent review missions to assess the performance of SLMP towards its goal and objectives, and recommend course correction measures, if required. The review focuses on Programme performance based on quantitative and qualitative indicators. The review considered issues related to management and substantive/technical implementation, including programme delivery, implementation, and finances.

Publications: SLM related communication and dissemination material is published and widely circulated among all stakeholders, according to the branding guidelines described below.

Impact Assessment: Nature of SLM interventions is such that it takes several years to show its impact in terms of improvement of land conditions and reduction in poverty of local communities. Studies to assess impacts are to be conducted.

M& E work plan and budget

The following sections outline the principal components of the M&E Plan. Indicative cost estimates related to M&E activities are shown in Table below.

Table 12. Indicative Monitoring and Evaluation Work Plan and Corresponding Budget

Type of M&E activity	Responsible Parties	Budget US\$ excluding project team staff time	Timeframe
Inception Workshop (IW)	NPD UNDP Country Office (CO) UNDP-GEF Regional Service Centre (RSC)	3,000 USD	Within first two months of the appointment of NPD
Inception Report	NPD and NCU UNDP CO	None	Immediately following IW
Measurement of Means of Verification for Project Purpose Indicators	PC under close supervision of PD will oversee the hiring of specific institutions and delegate tasks and responsibilities to relevant Project Administrative Team members	2,000 annually; total 10,000	Start, mid and end of project
Measurement of Means of Verification for Project Progress and Performance (measured on an annual basis)	Project Steering Committee (PSC) with overseeing by UNDP-CO and NPD; Measurement of progress conducted by NCU	To be determined as part of the Annual Work Plan's preparation.	Annually prior to Annual Project Report and Project Implementation Review and upon completion of the implementation of the annual work plans
Annual Project Report (APR) and Project Implementation Review (PIR)	NPC UNDP-CO UNDP-GEF	None	Annually
Tripartite Review (TR) and Terminal Tripartite Review (TTR) Reports	GEF Operational Focal Point UNDP-CO NPC	None	Every year, upon receipt of APR
Annual status reports /seminar /workshop	PC and NSC staff	2,000	To be determined by Project Team and UNDP

Technical reports/knowledge and advocacy material	NCU, PCUs UNDP External consultants as needed	5,000	To be determined by Project Team and UNDP
Mid-term Evaluation	UNDP-CO, UNDP-GEF RCU NPC and Project staff External Consultants (evaluation team)	30,000	At the mid-point of project implementation.
Final External Evaluation	UNDP-CO, UNDP-GEF RCU NPC and Project staff External Consultants (evaluation team)	35,000	At the end of project implementation
Lessons learnt and shared at international level	Project Team and UNDP		Yearly
Financial Audits	MoF and UNDP	2,000 annually; total 10,000	Yearly
Visits to field sites (UNDP staff travel costs to be charged to IA fees)	UNDP-CO UNDP-GEF RCU (as appropriate) PSC Members	5,000	Yearly
TOTAL INDICATIVE COST Excluding project team staff time and UNDP staff and travel expenses		100,000 USD	For 5 years

Audit Clause

The Government will provide the Resident Representative with certified periodic financial statements, and with an annual audit of the financial statements relating to the status of UNDP (including GEF) funds according to the established procedures set out in the Programming and Finance manuals. The Audit will be conducted according to UNDP financial regulations, rules and audit policies by the legally recognized auditor of the Government, or by a commercial auditor engaged by the UNDP.

Learning and knowledge sharing

Capturing and sharing knowledge and lessons learned will constitute an important component of the project and an essential way to ensure sustainability and replicability of project achievements. Learning and knowledge sharing cuts across all three outcomes and relevant outputs are included under each respectively. Results from the project will be disseminated within and beyond the project intervention zone through a number of existing information sharing networks and fora. In addition, the project will participate, as relevant and appropriate, in UNDP/GEF sponsored networks, organized for senior personnel working on projects that share common characteristics. UNDP/GEF RCU has established an electronic platform for sharing lessons between the project coordinators. The project will identify and participate, as relevant and appropriate, in scientific, policy-based and/or any other networks, which may be of benefit to project implementation through lessons learned. The project will identify, analyse, and share lessons learned that might be beneficial in the design and implementation of similar future projects. Identifying and analysing lessons learned is an ongoing process, and the need to communicate such lessons as one of the project's central contributions is a requirement to be delivered not less frequently than once every 12 months. UNDP/GEF shall provide a format and assist the project team in categorizing, documenting and reporting on lessons learned.

Communications and visibility requirements:

Full compliance is required with UNDP's Branding Guidelines. These can be accessed at <http://intra.undp.org/coa/branding.shtml>, and specific guidelines on UNDP logo use can be accessed at: <http://intra.undp.org/branding/useOfLogo.html>. Amongst other things, these guidelines describe

when and how the UNDP logo needs to be used, as well as how the logos of donors to UNDP projects needs to be used. For the avoidance of any doubt, when logo use is required, the UNDP logo needs to be used alongside the GEF logo. The GEF logo can be accessed at: http://www.thegef.org/gef/GEF_logo. The UNDP logo can be accessed at <http://intra.undp.org/coa/branding.shtml>.

Full compliance is also required with the GEF's Communication and Visibility Guidelines (the "GEF Guidelines"). The GEF Guidelines can be accessed at: http://www.thegef.org/gef/sites/thegef.org/files/documents/C.40.08_Branding_the_GEF%20final_0.pdf. Amongst other things, the GEF Guidelines describe when and how the GEF logo needs to be used in project publications, vehicles, supplies and other project equipment. The GEF Guidelines also describe other GEF promotional requirements regarding press releases, press conferences, press visits, visits by Government officials, productions and other promotional items.

Where other agencies and project partners have provided support through co-financing, their branding policies and requirements should be similarly applied.

Part VII: Legal Context

The legal context for UNDP-assisted programmes and projects in Pakistan is established by two major agreements: 1) the Convention on the Privileges and Immunities of the United Nations, given affect by Act XX of 1948 of the Pakistan Constituent Assembly (Legislative) and assented to on June 16, 1948; and 2) the agreement between the Government of the Islamic Republic of Pakistan and the United Nations Development Programme concerning assistance under the Special Fund Sector of the United Nations Development Programme, signed by the parties on February 25, 1960.

This Project Document shall be the instrument (therein referred to as a Plan of Operation) envisaged in Article 1, Paragraph 2 of the agreement between the Government of the Islamic Republic of Pakistan and the United Nations Development Programme concerning assistance under the Special Fund Sector of the United Nations Development Programme.

UNDP-assisted programmes and projects for Pakistan are planned and executed in accordance with the global UNDP Financial Rules and Regulations and the Project Cycle Operations Manual (PCOM) for Pakistan.

The following types of revisions may be made to this project document in writing with the signature of the UNDP Resident Representative only, provided he or she has verified the agreement thereto by the UNDP-GEF Regional Coordination Unit and is assured that the other signatories of the Project Document have no objections to the proposed changes: a) revisions in, or addition of, any of the annexes of the Project Document; b) revisions which do not involve significant changes in the immediate objectives, outputs or activities of a project, but are caused by the rearrangement of inputs already agreed to or by cost increases due to inflation; and, c) mandatory annual revisions which re-phase the delivery of agreed project inputs or increased expert or other costs due to inflation or take into account agency expenditure flexibility.

Consistent with the Article III of the Standard Basic Assistance Agreement, the responsibility for the safety and security of the implementing partner and its personnel and property, and of UNDP's property in the implementing partner's custody, rests with the implementing partner.

The implementing partner shall:

- put in place an appropriate security plan and maintain the security plan, taking into account the security situation in the country where the project is being carried;

- assume all risks and liabilities related to the implementing partner’s security, and the full implementation of the security plan.

UNDP reserves the right to verify whether such a plan is in place, and to suggest modifications to the plan when necessary. Failure to maintain and implement an appropriate security plan as required hereunder shall be deemed a breach of this agreement.

The implementing partner agrees to undertake all reasonable efforts to ensure that none of the UNDP funds received pursuant to the Project Document are used to provide support to individuals or entities associated with terrorism and that the recipients of any amounts provided by UNDP hereunder do not appear on the list maintained by the Security Council Committee established pursuant to resolution 1267 (1999). The list can be accessed via <http://www.un.org/Docs/sc/committees/1267/1267ListEng.htm>. This provision must be included in all sub-contracts or sub-agreements entered into under this Project Document.

Part VII: Co-financing and Support Letters

i) UNDP Co-financing letter

United Nations Development Programme

August 26, 2013



Dear Ms. Dinu,

This is with reference to the United Nations Development Programme - Global Environment Facility (UNDP-GEF) project entitled **"Sustainable Land Management Programme to Combat Desertification in Pakistan."**

The up-scaling of the Sustainable Land Management (SLM) Programme is being accorded high-priority by the federal and provincial governments of Pakistan to address land degradation and desertification challenges faced by the country. The national ownership and commitment to this programme is evident from the provision of substantial co-financing by the host government to support the implementation of this very important project which has been designed based on the pilot testing and lessons learned during the implementation of the pilot phase. The Programme is also aligned with Pakistan's One UN Programme II and Common Country Programme Document (CCPD) 2013-2017 as well as UNDP's commitment to assist Pakistan in meeting the obligations under the Multilateral Environmental Agreements, particularly the United Nations Convention to Combat Desertification (UNCCD).

Within this context, I am pleased to confirm UNDP-Pakistan's contribution of US\$1.5 million as co-financing for the project.

I take this opportunity to acknowledge the assistance provided by the regional and global advisors of UNDP-GEF for the approval of this very important Programme and look forward to their close collaboration during the implementation of the Programme.

Sincerely,

A handwritten signature in black ink, appearing to read 'Marc-André Franche'.

for Marc-André Franche
Country Director

Ms. Adriana Dinu
OIC/Deputy Executive Coordinator
UNDP-GEF
Energy and Environment Group, BDP
United Nations Development Programme
304 East 45th Street, 9th Floor
New York, NY 10017
USA.

4th Floor, Senna Business Complex, Khyaban-e-Suhrawardy, Sector G 5/1, Islamabad
P. O. Box 1051, Islamabad, Pakistan. Tel: (92-51) 8355600 Fax: (92-51) 2600254 35. www.undp.org.pk

ii) Global Mechanism (GM) Co-financing letter

United Nations Development Programme

August 28, 2013



*Empowered lives.
Resilient nations.*

Dear Ms. Dinu,

This is with reference to the up-scaling phase of the project titled "**Sustainable Land Management Programme to Combat Desertification in Pakistan**" to be funded by the Government of Pakistan, UNDP-GEF and other partners.

The UNDP is also assisting the Government of Pakistan in its meeting obligations under various Multilateral Environmental Agreements, particularly the United Nations Convention to Combat Desertification (UNCCD). The SLM Programme of the Climate Change Division, Government of Pakistan has mobilized US\$130,000 from Global Mechanism of the UNCCD to prepare an Integrated Financial Strategy for implementation of Pakistan's aligned National Action Programme to Combat Desertification and Sustainable Land Management. These funds would be channeled through the UNDP and for this purpose an Agreement has been signed between the UNDP-Pakistan and Global Mechanism. Implementation of this grant will contribute to policy related activities of the SLM Programme.

I am pleased to confirm that UNDP has already received these funds which are shown as co-financing for the above mentioned Programme.

With best regards,

Sincerely,

A handwritten signature in blue ink, appearing to read 'Gul Najam Jamy', is written over a horizontal line. The signature is stylized and somewhat cursive.

Gul Najam Jamy
Assistant Country Director

Ms. Adriana Dinu
OIC/Deputy Executive Coordinator
UNDP-GEF
Energy and Environment Group, BDP
United Nations Development Programme
New York, NY 10017, USA

iii) Government of Pakistan Co-financing letter

Tel: 92-51-9245531
Fax: 92-51-9245532

No. F. No. 5(1-4)/SLMP-II/3092
Government of Pakistan
Cabinet Secretariat
Climate Change Division



Islamabad, August 28, 2013

JOINT SECRETARY (DEV.)

Subject:- **SUSTAINABLE LAND MANAGEMENT PROGRAMME TO COMBAT
DESERTIFICATION IN PAKISTAN**

This is with reference to the up-scaling phase of the SLM project titled "Sustainable Land Management Programme to Combat Desertification in Pakistan" to be funded by the UNDP-GEF and other partners.

The Government of Pakistan places high priority to combating land degradation and desertification in the country. The pilot phase of the SLM Programme has been successfully implemented and the Government is now keen to up-scale its operations to a much wider landscape. Given this high-priority, the Planning Commission of Pakistan is anticipating the next phase of the project, whereas the provincial governments are ready to co-finance the Programme and have already made allocations under their development budgets for 2013-14. Details of co-financing from the provincial governments are as under:

Name of co-financier	(US\$ million)		
	Grant	Parallel	Total Co-financing
Punjab	2.0	1.5	3.5
Khyber-Pakhtunkhwa	2.0	1.5	3.5
Sindh	2.0	1.5	3.5
Balochistan	2.0	1.5	3.5
Total:	8.0	6.0	14.0

The grant/co-financing is expected to be increased by US\$1.0 million at the time of approval of the final PC-I document by the federal Government. The total contribution of the Government of Pakistan is thus likely to be US\$15.0 million for the implementation of this Programme.

The Climate Change Division will facilitate implementation of this Programme and we look forward to having its early commencement.

With best regards.

Yours sincerely,

(MUHAMMAD KHALID SIDDIQ)

Mr. Marc-Andre Franche
Country Director, UNDP
4th Floor, Serena Business Complex
G-5/2, Islamabad

Part VIII: Project Annexes

Annex 1. Land degradation Tracking Tool

Annex 2. Stakeholder Engagement Plan

Annex 3. Environmental and social screening summary

Annex 4. TOR for key project staff

Annex 5. Table of consultants and technical assistants

Annex 6. Profile of activities in project target areas, per province

ANNEX 1. LAND DEGRADATION TRACKING TOOL

See separate MS Excel file

ANNEX 2. STAKEHOLDER ENGAGEMENT PLAN

Outputs	Government Agencies	International Agencies/NGOs	Private Sector	Local Communities
Outcome 1: Strong enabling environment at national and provincial levels supports up-scaling of SLM practices				
1.1: Enabling policies and institutional mechanisms for SLM are in place at federal and provincial levels and being implemented	Climate Change Division (CCD), Cabinet Secretariat; Planning Commission; Economic Affairs Division (EAD), Finance Division (FD) Ministry of National Food Security & Research (MoNFS&R); Ministry of Science and Technology, Ministry of Water & Power (MoWP); PARC, Provincial P&D Depts.; provincial Water & Irrigation, Agriculture, Livestock and Forest Depts.; PCRWR, District Governments, Zarai Taraqiati Bank Ltd. (ZTBL)	UNDP, IFAD, UNCCD-Secretariat, Global Mechanism (GM), World Bank, European Union (EU), Asian Development Bank (ADB), FAO, ICIMOD, WWF-P, IUCN, SCOPE, Rural Support Programmes (RSPs), LEAD Pakistan, Sustainable Development Policy Institute (SDPI)	Small and Medium Enterprise Development Authority (SMEDA), First Micro Finance Bank, First Women Bank, Khushali Bank, Urban Sector Planning & Management Services Unit (Private) Limited	Farmers Organizations, CCBs, CBOs (male & female)
1.2: Skills for up-scaling SLM enhanced through institutionalization of multi-tiered capacity building programme	CCD, Planning Commission, Higher Education Commission (HEC), EAD, Universities, MoNFS&R, MoWP, PCRWR, PARC, Provincial P&D Depts., provincial line agencies & District Governments, NARC, Arid Zone Research Institute (AZRI), Pakistan Forest Institute (PFI), Barani Agriculture Research Institute (BARI), Soil and Water Conservation Research Institute (SAWCRI), Cholistan Institute of Desert Studies, and Punjab Forestry Research Institute (PFRI).	UNDP, UNCCD-Secretariat, Global Mechanism (GM), World Bank, ADB, FAO, WWF-P, IUCN, Islamic Development Bank, ICIMOD, RSPS, Lead-Pakistan, SCOPE, Baanhn Beli, Center for Peace & Development (CPD), and Veer Development Organization (VDO)	Oil & Gas Companies, Zemindara Seed Cooperation, Fuji Fertilizer Company and Engro Pakistan Ltd.	CBOs, Village Organizations, CCBs, farmers' associations.
1.3: Up-scaling is enhanced through a knowledge management and outreach programme for SLM	CCD, Planning Commission, MoNFS&R, MoWP, Provincial P&D Depts., Power & Irrigation, Agriculture & Forestry Departments, & District Governments, NARC, AZRI, AZRC, PFI, PFRI, BARI, SAWCRI, Cholistan Institute of Desert Studies, and academic institutions, Pakistan Television Cooperation (PTV), and radio Pakistan	UNDP, World Bank, EU, ADB, & FAO, WWF-P, IUCN, SCOPE, RSPs, SDPI, Lead-Pakistan.	Electronic and print media companies, SMEDA, Fuji Fertilizer Company, Engro Pakistan, seed companies, and pesticide companies.	CBOs, VOs, and CCBs

Outcome 2: Effective, targeted, and adaptive implementation of SLM Land Use Planning & Decision Support System				
2.1: GIS based participatory district and village land use plans developed and being implemented	CCD, Planning Commission, MoNFS&R, MoWP, Provincial P&D Depts., Revenue Departments, Power & Irrigation, Agriculture & Forestry Departments, District Governments, PFRI, SUPARCO, PFI, Soil Survey of Pakistan	UNDP, World Bank, EU, ADB, & FAO, RSPs, PPAF, UNDP Small Grants Programme, SCOPE, Agency for Barani Areas Development (ABAD), LEAD-Pakistan	Oil & Gas Companies, First Micro Finance Bank, First Women Bank, Khushali Bank, Chambers of Commerce & Industries; SMEDA	CBOs, VOs, and CCBs
2.2: Climate Resilient SLM Decision Support System developed & implemented using GIS and Remote Sensing	CCD, Planning Commission, MoNFS&R, MoWP, Provincial P&D Depts., Power & Irrigation, Agriculture, Urban Planning Company, Punjab, Revenue Departments Forestry Departments, District Governments, PFI, PCRWR, SUPARCO, NESPAK, Soil Survey of Pakistan, Survey of Pakistan, and Geological Survey of Pakistan, Pakistan Met. Department, Universities	UNDP, World Bank, EU, ADB, & FAO, WWF-P, IUCN, SCOPE, RSPs, PPAF, Inter-cooperation-Pakistan, Baanhn Beli, Center for Peace & Development (CPD), and Veer Development Organization (VDO)	Oil & Gas Companies, Seed companies, Engro Pakistan, and Fuji Fertilizer Company	CBOs, VOs, and CCBs
Outcome 3: On-the-ground implementation of climate resilient SLM activities is up-scaled across landscapes				
3.1: Local communities mobilized for Up-scaling SLM activities	CCD, Provincial Power & Irrigation, Agriculture & Forestry Departments, Provincial line agencies & District Governments	PPAF, UNDP Small Grants Programme, USAID, SDC, AusAid, SCOPE, ABAD, RSPs, Baanhn Beli, CPD, and VDO, Inter-Corporation-Pakistan, Sungi Development Organization, SPO, TVO, Save the Children, Care International, Plan International.	Oil & Gas Companies, First Micro Finance Bank, First Women Bank, Khushali Bank, Chambers of Commerce & Industries	CBOs, VOs, and CCBs
3.2: Appropriate soil & water conservation measures & on-farm management practices are up-scaled	CCD, Planning Commission, MoNFS&R, MoWP, Provincial P&D Depts., Power & Irrigation, Agriculture & Forestry Departments, Provincial On Farm Water Management Departments, PCRWR, SAWCRI, PAEC & District Governments	UNDP, World Bank, EU, ADB, International Atomic Energy Commission & FAO, RSPs, PPAF, UNDP Small Grants Programme, SCOPE, ABAD, Small Dams Organization, CPD, Baanhn Beli, VDO, Community Motivation & Development Organization	Oil & Gas Companies, SMEDA, First Micro Finance Bank, First Women Bank, Khushali Bank, local Chamber of Commerce & Industries	CBOs, VOs, and CCBs

		(CMDO)		
3.3: Degraded rangelands are rehabilitated through improved management	CCD, Planning Commission, MoNFS&R, NARC, AZRI, AZRC, Provincial P&D Depts., Power & Irrigation, Agriculture, livestock, & Forestry Departments, Provincial line agencies, & District Governments	UNDP, ICIMOD, World Bank, EU, ADB, & FAO, RSPs, PPAF, UNDP Small Grants Programme, SCOPE, ABAD, Baahn Beli, VDO, CMDO.	Oil & Gas Companies, SMEDA, First Micro Finance Bank, First Women Development Bank, Khushali Bank, Chambers of Commerce & Industries	CBOs, VOs, and CCBs
3.4: Improved dryland forest and sand-dune management restores ecosystem services, and provides new livelihood opportunities	CCD, Planning Commission, MoNFS&R, Provincial P&D Depts., Agriculture, livestock & Forestry Departments, PFRI, BARI, AZRI, AZRC & District Governments	UNDP, FAO, RSPs, PPAF, UNDP Small Grants Programme, SCOPE, LEAD-Pakistan, ABAD, Baahn Beli, VDO, Care International, Save the Children	Oil & Gas Companies, Khushali Bank, Chambers of Commerce & Industries	CBOs, VOs, and CCBs
3.5: Community-financed viable local SLM funds, resource specific business plans, public-private partnerships and targeted matching grants designed and supporting up-scaling SLM activities	CCD, Planning Commission, MoNFS&R, Provincial P&D Depts., Revenue, Agriculture & Forestry Departments, National and provincial Research Institutions, PFI, & District Governments	UNDP, World Bank, EU, ADB, & FAO, RSPs, PPAF, UNDP Small Grants Programme, SCOPE, ABAD, Baahn Beli, VDO, CPD	Oil & Gas Companies, SMEDA, First Micro Finance Bank, First Women Bank, Khushali Bank, ENGRO Pakistan, Fuji Fertilizer, Qurshi and Humdard Pvt. Ltd., Chambers of Commerce & Industries	CBOs, VOs, and CCBs

ANNEX 3. ENVIRONMENTAL AND SOCIAL SCREENING SUMMARY

ENVIRONMENTAL AND SOCIAL SCREENING SUMMARY

Name of Proposed Project: **Sustainable Land Management Programme to Combat Desertification in Pakistan (PIMS 4593)**

A. Environmental and Social Screening Outcome

Category 1. No further action is needed

Category 2. Further review and management is needed. There are possible environmental and social benefits, impacts, and/or risks associated with the project (or specific project component), but these are predominantly indirect or very long-term and so extremely difficult or impossible to directly identify and assess.

Category 3. Further review and management is needed, and it is possible to identify these with a reasonable degree of certainty. If Category 3, select one or more of the following sub-categories:

Category 3a: Impacts and risks are limited in scale and can be identified with a reasonable degree of certainty and can often be handled through application of standard best practice, but require some minimal or targeted further review and assessment to identify and evaluate whether there is a need for a full environmental and social assessment (in which case the project would move to Category 3b). See Section 3 of the Review and Management Guidance.

Category 3b: Impacts and risks may well be significant, and so full environmental and social assessment is required. In these cases, a scoping exercise will need to be conducted to identify the level and approach of assessment that is most appropriate. See Section 3 of Review and Management Guidance.

B. Environmental and Social Issues (for projects requiring further environmental and social review and management)

Summary of the project: The project will promote the application of climate resilient SLM methods and technologies through integrated approaches. To enable this, the project will put in place a legal basis for land use planning aimed at balancing competing environmental, social and economic objectives—to improve the sustainability of land management. The project will strive to realign the baseline project investments to scale up SLM interventions in 4 provinces in the country while also emplacing incentives for the uptake of improved practices by local communities. It will also support establishment of a comprehensive decision-support system for planning, monitoring and adapting climate-resilient SLM at the provincial and district levels complemented by improved capacities of relevant stakeholders and the documentation of lessons, linking SLM actions to climate change adaptation.

In achieving the above, the project will result in policy and planning level outcomes, including development of land use plans for Provinces, institutionalisation of SLM activities, and promulgation of guidelines and standards to support implementation of SLM practices at scale and transforming land uses across the country. The following are the key environmental and social impacts:

Environmental impacts: Although the risk is minimal, there is a possibility that the land use plans that will be developed under the project if not informed by an adequate understanding of the ecological and socio-economic understanding of the areas may prove detrimental to natural resources including possible conversion and degradation of important areas such as forests and natural ecosystems. If not addressed, such changes will also impact the water storage and discharge patterns leading to serious problems of pollution and impacts on aquatic biodiversity. The project design has as such given careful consideration to this aspect of land use planning and has ensured an inclusive cross-sectoral approach to land use planning which will make use of expert knowledge and best practices available in the various sectors so that sensitive areas will be identified and protected. Other likely environmental impacts (positive and negative) are mostly associated with the choice of SLM practices / interventions. For example, the project will seek to transform the current

inappropriate and wide-spread intensive use of fertilizers to wise use of fertilizers. Although the project is reducing fertilizer usage, inherent risk associated with chemical fertilizer will persist and will need to be monitored and reduced. Where possible and appropriate the project will encourage significant reduction in use of fertilizer by encouraging the adoption of integrated soil fertility management including substitution of organic manure and compost for fertilizers. Majority of the environment impacts are positive. Among others these include reduce soil erosion, improve water discharge and retention functions, improved soil conservation and fertility, increased agricultural productivity, and reduced pressures on forests and degradation of land halted. These positive impacts have been internalized by the project and will be monitored and ensured during project implementation.

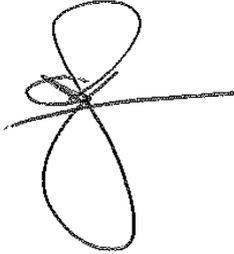
Social impacts: The primary social impacts of the project will relate to the potential impacts the project may have on vulnerable community stakeholders like women, the poor and other traditionally marginalized groups. Women and men have differ in terms of access to and ownership of land and may opt for different land uses to suit their needs. The dominant form of land ownership in the rural communities is by men while women typically undertake majority of land management tasks. Women and men may also have different needs and concerns related to sustainable land management. The negative social impacts are expected to occur either in the way the project selects the beneficiaries (risk of women and poor being excluded as public meetings are mostly dominated by men and the local powerful actors) or in the selection and design of project interventions (risk of being either inappropriate or not affordable). To address these risks, the PPG team has held separate and focused discussions with women and poor in the target villages to elicit their views and concerns. This is reflected in the project's underlying principle to embrace cultural diversity and gender equity. It recognizes that sustainable land management requires equal participation of men, women, poor and other disadvantaged groups. Another important social impact arise from the way the project may alter access to natural resources especially in implementing local land use / SLM plans. There is a possibility that such plans can restrict access to forest areas and resources – this while impacting the whole community will disproportionately impact the poor and women as they depend most on natural resources. In addition, some communities may voluntarily move out of specific agro-pastoral areas as they implement improved and sustainable farming practices in vulnerable and degraded areas. The project design recognizes these risks although they are minimal. Finally although the project has been designed to reduce vulnerabilities of local communities to climate change through improved land productivity and reduced degradation, a related social impact is that local communities voluntarily opt to focus a lot more on agricultural activities at the expense of a more diversified and resilient livelihood base. This will in fact increase local communities and in particular the poor's vulnerability to the impacts of climate change. The project has as such also included interventions focused on diversifying livelihoods and improving incomes.

C. Next Steps (for projects requiring further environmental and social review and management):

The project will ensure application of best practices and international experiences related to the formulation and implementation of the land use plans. It will ensure that these are espoused based on a highly participatory manner involving all relevant actors at the Province, District and Village levels – government sector agencies, civil society, local communities including women, men, poor and other disadvantaged groups. The project through the cross-sectoral coordination mechanism will ensure that implementation of the land use plans are agreed by all and vetted by relevant experts. The above identified environmental and social risks have been incorporated in the risk description with corresponding mitigation strategies in the relevant section of the Project Document. Some of these measures in summary include elaborating in detail the draft stakeholder engagement plan during the inception phase to ensure that stakeholder engagement, consultation and in particular participation by affected local communities including women, men and poor members will be ensured; implementing the project gender strategy with particular focus on implementation of on-site SLM activities to address gender needs and gender equality aspects identified above (and during the PPG). Further the project will carry out studies to comprehensively understand land tenure and ownership patterns in the various villages and use these in the design and implementation of field level SLM interventions. The project recognizes the key role of local communities for the successful scale up of promising SLM technologies. In this regard, it will design and implement a focused community outreach and awareness raising throughout the project period including setting up a platform for sharing experiences and learning from each other – e.g. through the approach of farmer field schools and demonstrations. The project team will continuously monitor

the impact of the project on the environment and the local communities during implementation as enabled by the project's emphasis on adaptive management.

D. Sign Off



Project Manager: Gul Najam Jamy

Signed Date: 2013-08-25

ENVIRONMENTAL AND SOCIAL SCREENING CHECKLIST

Name of Proposed Project: Sustainable Land Management Programme to Combat Desertification in Pakistan (PIMS 4593)

QUESTION 1

Has a combined environmental and social assessment/review that covers the proposed project already been completed by implementing partners or donor(s)?

Answer to Question 1:No

QUESTION 2

Do ALL outputs and activities described ONLY fall in the Project Document fall within the following categories?

1. Procurement (in which case UNDP’s Procurement Ethics and Environmental Procurement Guide need to be complied with)
2. Report preparation
3. Training
4. Event/workshop/meeting/conference (refer to Green Meeting Guide)
5. Communication and dissemination of results

Answer to Question 2:No

QUESTION 3

Does the proposed project include activities and outputs that support upstream planning processes that potentially pose environmental and social impacts or are vulnerable to environmental and social change (refer to Table 3.1 for examples)? (Note that upstream planning processes can occur at global, regional, national, local and sectoral levels)

Evaluation Result of Checklist Table 3.1:Yes

TABLE 3.1 EXAMPLES OF UPSTREAM PLANNING PROCESSES WITH POTENTIAL DOWNSTREAM ENVIRONMENTAL AND SOCIAL IMPACTS	
1. Support for the elaboration or revision of global- level strategies, policies, plans, and programmes. For example, capacity development and support related to international negotiations and agreements. Other examples might include a global water governance project or a global MDG project.	No
2. Support for the elaboration or revision of regional-level strategies, policies and plans, and programmes. For example, capacity development and support related to transboundary programmes and planning (river basin management, migration, international waters, energy development and access, climate change adaptation etc.).	No
3. Support for the elaboration or revision of national-level strategies, policies, plans and programmes. For example, capacity development and support related to national development policies, plans, strategies and budgets, MDG-based plans and strategies (e.g. PRS/PRSPs, NAMAs), sector plans.	No

4. Support for the elaboration or revision of sub-national/local-level strategies, policies, plans and programmes. For example, capacity development and support for district and local level development plans and regulatory frameworks, urban plans, land use development plans, sector plans, provincial development plans, provision of services, investment funds, technical guidelines and methods, stakeholder engagement.	Yes
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QUESTION 4

Does the proposed project include the implementation of downstream activities that potentially pose environmental and social impacts or are vulnerable to environmental and social change?

Evaluation Result of Checklist Table 4.1:Yes

TABLE 4.1 ADDITIONAL SCREENING QUESTIONS TO DETERMINE THE NEED AND POSSIBLE EXTENT OF FURTHER ENVIRONMENTAL AND SOCIAL REVIEW AND MANAGEMENT	
1. Biodiversity and Natural Resources	
1.1 Would the proposed project result in the conversion or degradation of modified habitat, natural habitat or critical habitat?	No
1.2 Are any development activities proposed within a legally protected area (e.g. natural reserve, national park) for the protection or conservation of biodiversity?	No
1.3 Would the proposed project pose a risk of introducing invasive alien species?	No
1.4 Would the proposed project pose a risk of introducing invasive alien species?	No
1.5 Does the project involve the production and harvesting of fish populations or other aquatic species without an accepted system of independent certification to ensure sustainability (e.g. the Marine Stewardship Council certification system, or certifications, standards, or processes established or accepted by the relevant National Environmental Authority)?	No
1.6 Does the project involve significant extraction, diversion or containment of surface or ground water? For example, construction of dams, reservoirs, river basin developments, groundwater extraction.	No
1.7 Does the project pose a risk of degrading soils?	No
2. Pollution	

2.1 Would the proposed project result in the release of pollutants to the environment due to routine or non-routine circumstances with the potential for adverse local, regional, and transboundary impacts?	No
2.2 Would the proposed project result in the generation of waste that cannot be recovered, reused, or disposed of in an environmentally and socially sound manner?	No
2.3 Will the proposed project involve the manufacture, trade, release, and/or use of chemicals and hazardous materials subject to international action bans or phase-outs? For example, DDT, PCBs and other chemicals listed in international conventions such as the Stockholm Convention on Persistent Organic Pollutants, or the Montreal Protocol.	No
2.4 Is there a potential for the release, in the environment, of hazardous materials resulting from their production, transportation, handling, storage and use for project activities?	No
2.5 Will the proposed project involve the application of pesticides that have a known negative effect on the environment or human health?	Yes
3. Climate Change	
3.1 Will the proposed project result in significant greenhouse gas emissions? The Environment and Social Screening Procedure Guidance provides additional guidance for answering this question.	No
3.2 Is the proposed project likely to directly or indirectly increase environmental and social vulnerability to climate change now or in the future (also known as maladaptive practices)? You can refer to the Environment and Social Screening Procedure Guidance to help you answer this question. For example, a project that would involve indirectly removing mangroves from coastal zones or encouraging land use plans that would suggest building houses on floodplains could increase the surrounding population's vulnerability to climate change, specifically flooding.	No
4. Social Equity and Equality	
4.1 Would the proposed project have environmental and social impacts that could negatively affect indigenous people or other vulnerable groups?	No
4.2 Is the project likely to significantly impact gender equality and women's empowerment?	No
4.3 Is the proposed project likely to directly or indirectly increase social inequalities now or in the future?	No
4.4 Will the proposed project have variable impacts on women and men, different ethnic	Yes

groups, social classes?	
4.5 Have there been challenges in engaging women and other certain key groups of stakeholders in the project design process?	Yes
4.6 Will the project have specific human rights implications for vulnerable groups?	No
5. Demographics	
5.1 Is the project likely to result in a substantial influx of people into the affected community(ies)?	No
5.2 Would the proposed project result in substantial voluntary or involuntary resettlement of populations? For example, projects with environmental and social benefits (e.g. protected areas, climate change adaptation) that impact human settlements, and certain disadvantaged groups within these settlements in particular.	No
5.3 Would the proposed project lead to significant population density increase which could affect the environmental and social sustainability of the project? For example, a project aiming at financing tourism infrastructure in a specific area (e.g. coastal zone, mountain) could lead to significant population density increase which could have serious environmental and social impacts (e.g. destruction of the area's ecology, noise pollution, waste management problems, greater work burden on women).	No
6. Culture	
6.1 Is the project likely to significantly affect the cultural traditions of affected communities, including gender-based roles?	No
6.2 Will the proposed project result in physical interventions (during construction or implementation) that would affect areas that have known physical or cultural significance to indigenous groups and other communities with settled recognized cultural claims?	No
6.3 Would the proposed project produce a physical “splintering” of a community? For example, through the construction of a road, powerline, or dam that divides a community.	No
7. Health and Safety	
7.1 Would the proposed project be susceptible to or lead to increased vulnerability to earthquakes, subsidence, landslides, erosion, flooding or extreme climatic conditions? For example, development projects located within a floodplain or landslide prone area.	No
7.2 Will the project result in increased health risks as a result of a change in living and working conditions? In particular, will it have the potential to lead to an increase in HIV/AIDS infection?	No

7.3 Will the proposed project require additional health services including testing?	No
8. Socio-Economics	
8.1 Is the proposed project likely to have impacts that could affect women's and men's ability to use, develop and protect natural resources and other natural capital assets? For example, activities that could lead to natural resources degradation or depletion in communities who depend on these resources for their development, livelihoods, and well-being?	Yes
8.2 Is the proposed project likely to significantly affect land tenure arrangements and/or traditional cultural ownership patterns?	Yes
8.3 Is the proposed project likely to negatively affect the income levels or employment opportunities of vulnerable groups?	No
9. Cumulative and/or Secondary Impacts	
9.1 Is the proposed project location subject to currently approved land use plans (e.g. roads, settlements) which could affect the environmental and social sustainability of the project? For example, future plans for urban growth, industrial development, transportation infrastructure, etc.	Yes
9.2 Would the proposed project result in secondary or consequential development which could lead to environmental and social effects, or would it have potential to generate cumulative impacts with other known existing or planned activities in the area? For example, a new road through forested land will generate direct environmental and social impacts through the cutting of forest and earthworks associated with construction and potential relocation of inhabitants. These are direct impacts. In addition, however, the new road would likely also bring new commercial and domestic development (houses, shops, businesses). In turn, these will generate indirect impacts. (Sometimes these are termed "secondary" or "consequential" impacts). Or if there are similar developments planned in the same forested area then cumulative impacts need to be considered.	No

ANNEX 4. TOR FOR KEY PROJECT STAFF

PROJECT (PROGRAMME) STEERING COMMITTEE (PSC)

Combating land degradation and desertification requires cross-sectoral and integrated approaches. It involves many agencies and institutions ranging from federal ministries, to national research institutions, to a wide range of provincial departments to district governments and to community level organizations. However, coordination among these agencies/institutions has always been an issue. Policy and planning decisions are often made at sectoral level which results in poor planning and weak monitoring, particularly in cross-sectoral interventions like Sustainable Land Management (SLM). There is no institutional arrangements for coordination and sharing of lessons on what works, what doesn't, and why? The GoP is very much concerned of this situation and would like to improve cross-sectoral coordination to address the land degradation issues.

Since integrated management of land resources can best be achieved through multi-sectoral interventions to accomplish the goal of SLM, this requires participation of key stakeholders in the decision making process and providing guidance for implementation of a cross-sectoral Programme like SLMP. Therefore, it would be essential to have a cross-sectoral Programme Steering Committee to oversee the Programme operations and ensure coordination among the concerned ministries, provincial governments, line agencies and relevant research institutions.

Functions of the PSC

The Programme aims to combat land degradation and desertification in Pakistan in order to protect and restore degraded ecosystems and essential ecosystem services that are key to reducing poverty. The PSC will contribute toward achieving this goal by:

- Providing long term vision for promoting sustainable land management in the country;
- Providing policy guidance and overseeing implementation of the Programme ;
- Improving quality of decision making and sectoral efficiency in implementation of the Programme;
- Monitoring and evaluating progress made in achieving the Programme objectives;
- Facilitating policy and legislative reforms in support of SLM;
- Facilitating inter-sectoral and inter-agency coordination at the national and provincial levels;
- Coordinating sectoral efforts in mainstreaming National Action Programme and SLM principles into sectoral policies and plans;
- Approving sub-contract awards for implementation of the Up-scaling Programme ;
- Sensitizing policy makers of the federal, provincial, and district governments about the need of integrated management of land resources in order to combat land degradation and desertification;
- Providing support in mobilizing co-financing for the Up-scaling Programme; and
- Approving annual rolling work plans and budget.

NATIONAL COORDINATION UNIT

TERMS OF REFERENCE FOR THE KEY PROGRAMME STAFF

1. NATIONAL PROGRAMME DIRECTOR (NPD)

The NPD will be responsible to direct, guide and oversee the implementation of the Up-scaling Programme, realization of its goal and objectives and make policy decisions regarding direction of the Programme. The Cabinet Secretariat - Climate Change Division (CCD) will designate an officer not below the rank of a Joint Secretary (BPS 20) or above preferably having some experience of overseeing programme management. NPD will be the main focal point for SLMP in the CCD, Government of Pakistan responsible for ensuring effective coordination with the Federal Ministries, Provincial Planning and Development Departments, other implementation partners and stakeholders. He and National Programme Coordinator will have financial authority as per PCOM & UNDP guidelines and procedures.

NPD will specifically be responsible to:

- Act as the focal point to ensure successful implementation of the SLM Programme;
- Ensure availability of all Government and donor inputs committed to the Programme;
- Over-see effective operation of the National Programme Coordination Unit/National Desertification Cell to be established under the programme;
- Recruit key staff for the SLMP including National Programme Coordinator (NPC) ensuring transparency and merit in consultation with the UNDP and as per PCOM procedures;
- Supervise the work of NPC and ensure that he/she is fully empowered to implement the Programme with full independence observing all government procedures;
- Provide guidance and help to the NPC, as necessary, to over-come constraints, mitigate risks and resolve implementation problems;
- Authorize/approve Programme expenditures as per procedures laid down in the PCOM;
- Represent the Programme at meetings with key partners/stakeholders including line ministries, provincial governments, national institutions, NGOs and donors;
- Approve on behalf of the Government quarterly workplans and reports, including quarterly progress reports, expenditure plans and financial report(s) of the Programme;
- Provide assistance in the coordination of Up-scaling Programme activities that involve other agencies of Government both federal and provincial;
- Assist in out-sourcing implementation of Up-scaling Programme /feasibility studies through sub-contracts to line agencies, research institutions, and NGOs; and
- Serve as Member/Secretary to the Programme Steering Committee.

2. NATIONAL PROGRAMME COORDINATOR (NPC)

The National Programme Coordinator will be responsible for the overall management and coordination of the Up-scaling Programme operations. He/she will look after day to day management of National Coordination Unit & its staff including general and financial administration, work planning, progress reporting, monitoring and quality control of Programme inputs. The NPC will work closely with the Climate Change Division (CCD) and the UNCCD Focal Point, and provide technical backstopping in implementation of the UNCCD and mainstreaming SLM & NAP

into sectoral policies and plans. Under the supervision and guidance of the National Programme Director (NPD), the NPC will lead the Programme team and ensure the implementation of Programme activities in a manner to achieve all deliverables, outcomes and outputs to maximize benefits and the desired impacts of the programme.

The NPC will be responsible for the following technical, administrative and managerial tasks:

- Lead and manage the National Coordination Unit, applying administrative and financial procedures as required under the PCOM and by the UNDP;
- Assist the NPD with execution of the Up-scaling Programme and delivery of the Programme outputs according to the PC-I and the PCOM procedures;
- Selection, recruitment and supervision of Programme technical and administrative support staff;
- Preparation and negotiation of sub-contract agreements with all the implementing agencies of feasibility studies to be carried out under Up-scaling Programme;
- Initiate mobilization of all Programme inputs in accordance with PCOM procedures;
- Preparation and revision Programme workplans, budgets and financial plans in consultation with the NPD;
- Organize and manage Programme activities in accordance to the workplan in order to produce Programme outputs;
- Hiring of Programme consultants/technical inputs in consultation of the NPD and UNDP-CO;
- Coordinate the Programme activities with line ministries, sectoral agencies, provincial governments, research institutions, NGOs and local communities to ensure cross-sectoral integration of the Programme activities;
- Provide backstopping to the NPD in organizing PSC meetings;
- Coordinate and supervise the technical inputs from the national/international experts to secure timely production of outputs planned in the Programme document;
- Timely preparation and submission of the Quarterly and Annual Progress Reports to the UNDP-CO under the guidance of the NPD; and
- Identification and resolution of Programme implementation problems with the assistance of the NPD, if necessary;
- Provide technical guidance to the Provincial Programme Directors for the implementation of various SLM activities under provincial components of the Programme.

Selection Criteria

- Post-graduate degree (preferably Ph.D.) in natural sciences or a field closely related to sustainable land management;
- At least 15 years of professional experience in planning, development and implementation of integrated natural resources management projects;
- Extensive knowledge of land degradation and desertification issues in Pakistan;
- Previous experience in GEF Programme proposal preparation and familiarity with GEF operating areas and strategic priorities would be an added advantage;
- Extensive knowledge of UNCCD and other Rio Conventions to ensure synergy;

- Familiarity with NAP process and national reporting on implementation of UNCCD;
- Proven track record of working with the multi-stakeholders, including federal and provincial government, NGOs and research institutions;
- Proven ability to work under pressure and time constraints;
- Ability to lead multi-disciplinary teams of technical experts.
- Experience and knowledge of the functioning, procedures, and systems of GoP and UNDP projects, especially with PCOM procedures and requirements would be appreciated;
- Management skills and experience;
- Problem solving skills and result oriented approach;
- Leadership qualities and sensitivity to gender issues; and
- Computer literate with excellent facilitation, interpersonal and communication skills.

3. GIS Specialist

The GIS Specialist will be responsible for establishing a Sustainable Land Management (SLM) Information System, including database on the extent of land degradation and desertification, mapping of socio-economic data, establishing baselines and GIS -based land use planning at the proposed areas. He/she will work under the direction and direct supervision of the National Programme Coordinator and in close collaboration with PPCs.

He/she will be responsible for the following specific tasks and responsibilities:

- Establish GIS based SLM Information System for the Up-scaling Programme with spatial and numeric database (RDBMS);
- Develop baseline database on desertification, land degradation and drought;
- Prepare landuse, landcover and thematic maps;
- Undertake analysis of environmental and socio-economic data generated through resource need assessment and socio-economic surveys at proposed sites;
- Establish baseline and develop site specific land use maps of the proposed sites;
- Establish networking and maintain links with other organizations working on GIS based data management including PFI, WWF-Pakistan, SUPARCO, Government Agencies, Research Institutions and Universities as well as private sector organizations;
- Provide technical input in preparation of Programme documents, including Programme brief, technical reports, and quarterly & progress reports;
- Assist the sectoral experts/consultants in producing quality outputs;
- Procure, set-up, and maintain GIS equipment including software and hardware required for the land use planning and SLM Information system;
- Assist NPC/Team Leader in executing technical tasks including comments on technical reports and documents;
- Oversee development and maintenance of Programme website and discussion forums;
- Supervise technical staff assigned to the GIS Unit under the Up-scaling Programme;

- Any other specific task as may be assigned by the National Programme Director or National Programme Coordinator;

Selection Criteria

- Post-graduate degree in GIS or natural sciences, forestry, geography, engineering or agriculture with specialization in GIS and Remote Sensing.
- Minimum of 5 years of professional experience in handling GIS and RS assignments
- Strong GIS & RS skills with complete command on two or more GIS packages like Arc GIS, 3D-Analyst, Spatial Analyst, SQL Server, and ERDAS Imagine Professional.
- A good understanding about the Information Management System .
- Hands-on experience in data input, storage, management, analysis, transformation, and producing output and presentations.
- Should have ability in taking initiatives, analytical thinking, and problem solving
- Excellent communication skills both in verbal and written English

4. POLICY REFORMS AND CAPACITY BUILDING SPECIALIST

The Policy Reforms and Capacity Building Specialist (PR-CB) will work under the direct supervision and guidance of the NPC and will closely collaborate with PPCs and other thematic Specialists. The primary responsibilities of the incumbent will be to mainstream SLM principles and guidelines into sectoral policies and plans. Actively plan, implement and coordinate activities related to the capacity building component of the Up-scaling Programme. He/she will ensure that proposed programme objectives, specifically of his/her component, are accomplished within prescribed timeframe and funding parameters. His/her other major task would also be to collaborate with line ministries and provincial governments for mainstreaming NAP into their planning process

The specific tasks of the Policy Reforms and Capacity Building Specialist will include:

- Assist the NPC in achieving the overall objectives of the Programme ;
- Take a lead role in developing appropriate legal and policy reforms to harmonize sectoral policies for adoption of sustainable land management practices and identifying capacity development needs of the Programme partners and formulate a capacity building program tailored toward SLM of land resources and the overall mandate of the Up-scaling Programme ;
- Ensure, that NAP is mainstreamed into sectoral policies and development plans
- Organize training workshops and seminars on sustainable land use planning, rehabilitation of degraded ecosystems and integrated management of land resources;
- Develop National Criteria & Indicators (C & I) for SLM in collaboration with line ministries, research institutions, provincial governments, and NGOs;
- To work in close liaison with NPC to design/develop agreed Implementation strategy for phase-II designed among all stakeholders;
- Develop a training plan for the Programme partners and community representatives to build their capacity in promoting SLM and integrated ecosystem management;
- Lead the process of developing a strategy for creation of National Desertification Control Fund;

- Coordinate and collaborate with partner organizations and other relevant agencies for enhancing technical capacity of the line agencies, district government staff, research institutions, NGOs, farmer groups and women's organizations in tackling land degradation and desertification;
- Provide guidance and supervise the work of communication officer in designing and implementing the Up-scaling Programme communication strategy;
- Design and implement a program for promoting public-private partnerships for addressing desertification issues;
- Take a lead role in developing and implementing outreach and awareness raising strategy for the Programme;
- Provide quarterly updates on progress on implementation of enabling environment component of the Programme;
- Take care of special concerns such as gender equity and human rights while designing and implementing on-the-job-training programs;
- Assist and collaborate with PPCs and other thematic Coordinators in team efforts for achieving the Programme objectives;
- Provide quarterly updates on implementation and progress made on the policy reforms and capacity building component of the Programme based on the annual workplans;
- Assist and collaborate with PPCs and other thematic Coordinators in team efforts for achieving the Programme objectives;
- Any other specific task as may be assigned by the NPD or NPC.

Selection Criteria

- Post-Graduate degree in agriculture/forestry social sciences or natural resource management with at least 10 years of experience of working in multi stakeholders environment, particularly in the public sector;
- Experience in developing policies and familiarity with UNCCD process and developing NAPs would be an advantage;
- Proven ability to develop and implement outreach and public awareness programmes and familiarity with sectoral policies;
- Demonstrated interpersonal communication and leadership skills;
- Problem solving skills and result orientated;
- Sensitivity to gender and other social issues;
- Excellent writing skills and ability to fluently speak English and Urdu. Knowledge of other regional languages will be an added advantage;
- Good computer skills for data analysis, preparation of presentation and report writing.

7. LANDUSE PLANNING AND IMPLEMENTATION SPECIALIST

The incumbent will work under the direct supervision and guidance of the NPC. The primary responsibilities of the Land Use Planning and Implementation Specialist will be to mainstream SLM

principles and guidelines in land use planning process; play the lead role in developing participatory land use plans for the Up-scaling Programme sites and the model districts in collaboration with the PPCs and GIS Coordinator and monitor on-the-ground field activities.

The specific tasks of the Coordinator, Land Use Planning and Monitoring would include:

- Take a lead role in identifying and implementing an overall planning and monitoring system for the Programme in connection with: Programme outcomes, outputs, activities, benchmarks and indicators;
- Review, adopt, test and modify existing/available monitoring tools, techniques and methods to suit the specific needs of the SLM Up-scaling Programme ;
- Take lead role in establishing data collection procedures;
- Assist the SLMP in developing SLM Criteria and Indicators;
- Provide guidance and support to SLMP in collection of baseline information for implementation of up-scaling programme and conduct participatory resource appraisal and planning for the targeted areas.
- Coordinate with PPCs in development of participatory land use plans at village and district levels and provide technical backstopping;
- Assist SLMP in data collection, monitoring procedures, and assessment of results and activities;
- Assist SLMP for developing database on SLM and collection of data on the extent of land degradation and desertification in the country;
- Finalize the selection of field demonstrations and Programmes for full-scale Programme interventions based on site selection criteria;
- Prepare and implement a programme for enhancing the monitoring capacities of the Programme team;
- Organize and conduct relevant workshops for Programme team, partners and CBOs;
- Compile Quarterly and Annual Progress Reports and work plans based on the inputs from SLMP team;
- Facilitate annual and periodic review and assessment exercises.
- Work in close liaison with independent evaluation teams;
- Supervise the work of Provincial Planning and Monitoring Officers;
- Keep abreast of new methods and techniques with regard to M&E of SLM/INRM initiatives;
- Assist SLMP in mainstreaming NAP, and
- Any other specific task as may be assigned by the NPD or NPC.

Selection Criteria

- Masters degree in social science or agriculture/forestry or in NRM with at least 10 years professional experience in land use planning and NRM;
- Experience in the developing participatory landuse planning would be an advantage;

- Good organizational management and technical skills with track record of implementation and monitoring of community-based projects.
- Experience of working with donor assisted projects/Programmes;
- Good team player and leadership qualities;
- Excellent inter-personal communication skills, especially negotiation and bargaining in NRM;
- Good computer skills for data analysis, preparation of presentation and report writing; and
- Excellent writing skills and ability to fluently speak English and Urdu. Familiarity with regional languages will be an added advantage.

PROVINCIAL COORDINATION UNIT(S)

TERMS OF REFERENCES FOR THE KEY PROGRAMME STAFF

7. LANDUSE PLANNING AND IMPLEMENTATION SPECIALIST

The incumbent will work under the direct supervision and guidance of the NPC. The primary responsibilities of the Land Use Planning and Implementation Specialist will be to mainstream SLM principles and guidelines in land use planning process; play the lead role in developing participatory land use plans for the Up-scaling Programme sites and the model districts in collaboration with the PPCs and GIS Coordinator and monitor on-the-ground field activities.

The specific tasks of the Coordinator, Land Use Planning and Monitoring would include:

- Take a lead role in identifying and implementing an overall planning and monitoring system for the Programme in connection with: Programme outcomes, outputs, activities, benchmarks and indicators;
- Review, adopt, test and modify existing/available monitoring tools, techniques and methods to suit the specific needs of the SLM Up-scaling Programme ;
- Take lead role in establishing data collection procedures;
- Assist the SLMP in developing SLM Criteria and Indicators;
- Provide guidance and support to SLMP in collection of baseline information for implementation of up-scaling programme and conduct participatory resource appraisal and planning for the targeted areas.
- Coordinate with PPCs in development of participatory land use plans at village and district levels and provide technical backstopping;
- Assist SLMP in data collection, monitoring procedures, and assessment of results and activities;
- Assist SLMP for developing database on SLM and collection of data on the extent of land degradation and desertification in the country;
- Finalize the selection of field demonstrations and Programmes for full-scale Programme interventions based on site selection criteria;
- Prepare and implement a programme for enhancing the monitoring capacities of the Programme team;

- Organize and conduct relevant workshops for Programme team, partners and CBOs;
- Compile Quarterly and Annual Progress Reports and work plans based on the inputs from SLMP team;
- Facilitate annual and periodic review and assessment exercises.
- Work in close liaison with independent evaluation teams;
- Supervise the work of Provincial Planning and Monitoring Officers;
- Keep abreast of new methods and techniques with regard to M&E of SLM/INRM initiatives;
- Assist SLMP in mainstreaming NAP, and
- Any other specific task as may be assigned by the NPD or NPC.

Selection Criteria

- Masters degree in social science or agriculture/forestry or in NRM with at least 10 years professional experience in land use planning and NRM;
- Experience in the developing participatory landuse planning would be an advantage;
- Good organizational management and technical skills with track record of implementation and monitoring of community-based projects.
- Experience of working with donor assisted projects/Programmes;
- Good team player and leadership qualities;
- Excellent inter-personal communication skills, especially negotiation and bargaining in NRM;
- Good computer skills for data analysis, preparation of presentation and report writing; and
- Excellent writing skills and ability to fluently speak English and Urdu. Familiarity with regional languages will be an added advantage.

TERMS OF REFERENCE

1. NATIONAL DESERTIFICATION CONTROL CELL, CLIMATE CHANGE DIVISION, GOVERNMENT OF PAKISTAN

National Desertification Control Cell (NDCC) will be located in the Federal Climate Change Division, Government of Pakistan. The purpose of establishing the NDCC is to ensure the sustainability of the SLM interventions after the completion of the GEF/UNDP assisted SLM Programme and to meet our commitment under the National Action Programme (NAP) & United Nations Convention to Combat Desertification (UNCCD).

2. CHIEF, NATIONAL DESERTIFICATION CONTROL CELL, CLIMATE CHANGE DIVISION, GOVERNMENT OF PAKISTAN

National Desertification Control Cell (NDCC) will be headed by the Chief. He will be a BPS 19 Officer and assisted by a Deputy Chief (BPS 18) and a Monitoring and Evaluation Officer (BPS 17) with other office support staff. While the position of Chief will be filled during 4th year of the Up-scaling programme, the Monitoring and Evaluation Officer will be inducted at the start of the programme and assist the National Programme Coordinator in the monitoring of the SLM field activities. The NDCC Section will be on the payroll of the SLMP and located in the Climate Change Division, Government of Pakistan. Chief, NDCC will be responsible for close coordination with the National and Provincial Programme Coordinators for proper implementation of Sustainable Land Management Programme. He/she will work under the supervision and guidance of the NPD-SLMP with additional reporting line to the National Programme Coordinator, SLMP (NPC). Ultimately, his Section will assume the charge of a permanent National Desertification Control Cell (NDCC). The Chief NDCC like other Chief's of their Sections will have the overall responsibility for providing the technical support to current NCU-SLMP and subsequently National Desertification Control Cell to ensure complete ownership of the Government towards SLMP.

The Chief NDCC will be responsible for the following technical and liaison tasks:

- Act as a focal person on behalf of Climate Change Division of Federal Government, provide institutional backstopping support to National Coordination Unit (NCU) of SLM Programme and also coordinate other national level projects in the field of SLM;
- Ensure resource mobilization and implementation of National Action Programme (NAP) to combat desertification and drought;
- Assist and update the NPD-SLMP in all aspects of the Up-scaling Programme including policy matters for successful execution of this Programme and creation of Desertification Control Cell at the national level;
- Keep close liaison with NPC and PPCs-SLMP in all Programme activities including supervision of field activities, taking interest in technical aspects of the Up-scaling Programme, interaction with communities and representatives of line departments in the targeted area to effectively run the Desertification Control Cell after completion of this Programme;
- Keep PCUs informed on the ownership level of Federal government for the SLMP and to suggest measures for proper implementation of the programme and sustainability after its completion;

- Ensure the close liaison between SLMP, Climate Change Division, Government of Pakistan; Provincial P&D Departments and other line departments of the Federal Government, Federal Research Institutes, National and international NGOs, etc. dealing with natural resources;
- Assist the Federal Government in implementing SLM related policy reforms, mainstreaming NAP and land use planning in development plans;
- Take measures for creation of Desertification Control Cell in place of NCU-SLMP in P&D Department after completion of the SLM Programme;

3. DEPUTY CHIEF, NATIONAL DESERTIFICATION CONTROL CELL, CLIMATE CHANGE DIVISION, GOVERNMENT OF PAKISTAN

Deputy Chief will work under NPC, SLM Programme till induction of Chief, NDCC. After induction of Chief, NDCC, he/she will work under him/her and assist him/her in performing official duties. He/she will be a BPS 18 Officer and assisted by a Monitoring and Evaluation Officer (BPS 17) with other office support staff. The position of Deputy Chief will be filled during 3rd year of the Up-scaling programme. Deputy Chief will assist Chief NDCC in keeping close coordination with the National and Provincial Programme Coordinators for proper implementation of Sustainable Land Management Programme. He/she will work under the supervision and guidance of the Chief NDCC. One of the main responsibilities of Deputy Chief will be the documentation and dissemination of lesson learnt and best practices of SLM in Pakistan and abroad to the federal line agencies.

4. MONITORING AND EVALUATION OFFICER, CLIMATE CHANGE DIVISION, GOVERNMENT OF PAKISTAN

Monitoring and Evaluation Officer (BPS 17) will work under NPC, SLM Programme till induction of Chief, NDCC and will monitor and report SLM Programme activities through Provincial Programme Coordinators of SLM Programme. After induction of Chief, NDCC, he/she will work under him/her and will assist Chief and Deputy Chief in day to day activities. He/She will be inducted at the start of the programme and will also work under the supervision and guidance of the NPD-SLMP. Monitoring and Evaluation Officer will assist the National Project Coordinator in the monitoring of the SLM field activities along with designing and institutionalizing participatory M&E System for the up-scaling Programme. He/she will work in close coordination with the “Coordinator Land use Planning and Monitoring” at the NCU-SLMP. The Monitoring and Evaluation Officer will be responsible for the following technical and liaison tasks:

- Keep track of the programme activities as per NCU/NDCC-SLMP instructions;
- Implement Monitoring and Evaluation strategy/system based on Logical Framework Analysis of the project, covering baseline, outcomes, outputs, activities, benchmarks and targets, including key indicators;
- Provide guidance and support to provincial project coordinator in implementation and/or modification of data collection, monitoring and review procedures, and assessment of results and activities;
- Prepare and implement training programme for enhancing the M&E capacities of the national programme team and its partners;

- Compile quarterly and annual progress reports based on the inputs from NPC, PPCs and thematic experts/coordinators;
- Facilitate annual and periodic implementation review and assessment exercises;
- Develop quarterly and annual project workplans and travel with input from NPC, PPCs and thematic coordinators;
- Develop cash plan and activity plans for the PSDP component of the programme;
- Assist the NCU/NDCC-SLMP in designing web-based M&E reporting system accessible to the programme team and partners;
- Keep abreast of new methods and techniques with regard to M&E of sustainable management of land resources based on GEF M&E guidelines;
- Develop targets and performance indicators to be included in the monitoring system for Programme activities, annual reviews and special studies;
- Develop briefs/special reports as and when required;
- Assist and update the NPC-SLMP in all aspects of the programme including policy matters for successful execution of this programme and creation of National Desertification Control Cell;
- Keep close liaison with NPC-SLMP in all programme activities including supervision of field activities, taking interest in technical aspects of the programme, interaction with communities and representatives of line departments in the project area to effectively run the National Desertification Control Cell after completion of this programme;
- Ensure the close liaison between NCU, PCUs-SLMP, Climate Change Division, Government of Pakistan, Provincial P&D Departments and other line agencies of the Federal Government, Federal Research Institutes, national and international NGOs, etc. dealing with natural resources;
- Assist in taking measures for creation of National Desertification Control Cell in place of NCU-SLMP in Climate Change Division, Government of Pakistan after completion of the SLM Programme;
- Document and disseminate lesson learnt and best practices to the federal line agencies.

TERMS OF REFERENCE

1. PROVINCIAL DESERTIFICATION CONTROL CELL, PROVINCIAL PLANNING & DEVELOPMENT DEPARTMENT

Provincial Desertification Control Cell (PDCC), one in each province, will be located in the provincial P&D Departments. The purpose of establishing the PDCC is to ensure the sustainability of the SLM interventions after the completion of the GEF/UNDP assisted SLMP and to meet our commitment under the National Action Programme (NAP) & United Nations Convention to Combat Desertification (UNCCD).

2. CHIEF, DESERTIFICATION CONTROL, PROVINCIAL PLANNING & DEVELOPMENT DEPARTMENT

Each Provincial Desertification Control Cell (PDCC) will be headed by the Chief, Sustainable Land Management (SLM). He/she will be a BPS 19 Officer and assisted by Planning & Monitoring Officer (BPS 17) with other office support staff. While the position of Chief, SLM will be filled during 4th year of the Up-scaling programme, however, Planning & Monitoring Officer will be inducted at the start of the programme and assist the Provincial Programme Coordinator in the monitoring of the SLM field activities. The DCC Section will be on the payroll of the SLMP and located in the P&D Department. Chief, DCC will be responsible for close coordination with the Provincial Programme Coordinator for proper implementation of Sustainable Land Management Programme in the province. He/she will work under the supervision and guidance of the PPD-SLMP/Secretary, P&D Department with additional reporting line to the National Programme Coordinator, SLMP (NPC). Ultimately, this Section will assume the charge of a permanent Desertification Control Cell (DCC) in the province. The Chief DCC like other Chiefs of their Sections will have the overall responsibility for providing the technical support to current PCU and subsequently Desertification Control Unit to ensure complete ownership of the Government towards SLMP.

The Chief DCC will be responsible for the following technical and liaison tasks:

- Act as a focal person on behalf of P&D Department of Provincial Government, provide institutional backstopping support to Programme Coordination Unit (PCU) during implementation of the SLMP;
- Assist and update the PPD-SLMP in all aspects of the Up-scaling Programme including policy matters for successful execution of this Programme and creation of Desertification Cell in the province;
- Keep close liaison with PPC-SLMP in all Programme activities including supervision of field activities, taking interest in technical aspects of the Up-scaling Programme, interaction with communities and representatives of line departments in the targeted area to effectively run the Desertification Cell after completion of this Programme;

- Keep close liaison with the NCU-SLMP and keep informed on the ownership level of Provincial government for the SLMP and to suggest measures for proper implementation of the programme and sustainability after its completion;
- Ensure the close liaison between SLMP, P&D and other line departments of the Provincial Government, District Governments, Research Institutes, NGOs, etc. dealing with natural resources;
- Assist the Provincial Government in implementing SLM related policy reforms, mainstreaming NAP and land use planning in development plans;
- Take measures for creation of Desertification Cell in place of PCU-SLMP in P&D Department after completion of the SLM Program, and;
- Documentation and dissemination of lesson learnt and best practices to the provincial line agencies and P&D Department

3. PLANNING & MONITORING OFFICER, PROVINCIAL PLANNING & DEVELOPMENT DEPARTMENT

Planning & Monitoring Officer will be inducted at the start of the programme and he/she will work under the supervision and guidance of the PPD-SLMP/ Secretary, P&D Department with additional reporting line to the Provincial Programme Coordinator, SLMP (PPC). He will assist the Provincial Programme Coordinator in the monitoring of the SLM field activities along with designing and institutionalizing participatory M&E System for the up-scaling Programme. He/she will work in close coordination with the “Coordinator Landuse Planning and Monitoring” at the NCU-SLMP.

The Planning & Monitoring Officer will be responsible for the following technical and liaison tasks:

- Keep track of the programme activities as per NCU-SLMP instructions;
- Implement Monitoring and Evaluation strategy/system based on Logical Framework Analysis of the Programme , covering baseline, outcomes, outputs, activities, benchmarks and targets, including key indicators;
- Provide guidance and support to provincial Programme coordinator in implementation and/or modification of data collection, monitoring and review procedures, and assessment of results and activities;
- Prepare and implement training programme for enhancing the M&E capacities of the provincial programme team and its partners;
- Compile quarterly and annual progress reports based on the inputs from PPCs and thematic experts/coordinators;
- Facilitate annual and periodic implementation review and assessment exercises;
- Develop quarterly and annual Programme work plans and travel with input from PPCs and thematic coordinators;
- Develop cash plan and activity plans for the ADB component of the programme;
- Assist the NCU-SLMP in designing web based M&E reporting system accessible to the Programme team and partners;

- Keep abreast of new methods and techniques with regard to M&E of sustainable management of land resources based on GEF M&E guidelines;
- Develop targets and performance indicators to be included in the monitoring system for Programme activities, annual reviews and special studies, and
- Develop briefs/special reports as and when required;
- Assist and update the PPC-SLMP in all aspects of the Programme including policy matters for successful execution of this Programme and creation of Desertification Cell in the province;
- Keep close liaison with PPC-SLMP in all Programme activities including supervision of field activities, taking interest in technical aspects of the Programme, interaction with communities and representatives of line departments in the Programme area to effectively run the Desertification Cell after completion of this Programme;
- Ensure the close liaison between PCU-SLMP, P&D and other line departments of the Provincial Government, District Governments, Research Institutes, NGOs, etc. dealing with natural resources;
- Assist in taking measures for creation of Desertification Cell in place of PCU-SLMP in P&D Department after completion of the SLM Programme;

Document and disseminate lesson learnt and best practices to the provincial line agencies and P&D Department

ANNEX 5. TABLE OF CONSULTANTS AND TECHNICAL ASSISTANTS

Position Title	Rate	Estimated time	Tasks to be performed
International Consultant for Curriculum Development for Master level programme in SLM	US\$3,000 per m/w week	4.5 weeks	<ul style="list-style-type: none"> • Designing of curriculum for Master level programme in SLM; • Finalization of standards for curriculum; • Finalization of curriculum for Master level programme in SLM after incorporating inputs of stakeholders; • Provide guidelines for piloting of the Master level programme.
International Consultant for SLM Programme Mid-term evaluation/review	US\$3,000 per m/w week	4.5 weeks	<ul style="list-style-type: none"> • Conducting mid -term evaluation/review of SLM Programme progress and implementation; • Evaluation of results and outputs of SLM Programme activities; • Identifying gaps and formulate a set of specific recommendations for any re-orientation of the programme, identify the necessary actions required to be undertaken, who should undertake those and what the deadline should be, in order to remove or minimize the problems identified relating to the implementation of the Programme.
Senior Programme Specialist, SLM	US\$4100 per month	48 months	<ul style="list-style-type: none"> • Guide the SLM staff in achieving overall objectives of the SLM Programme; • Lead and manage the National Coordination Unit, applying administrative and financial procedures as required by the UNDP; • Assist the NPD with execution of the Up-scaling Programme and delivery of the Programme outputs according to the PC-I and the NIM procedures; • Selection, recruitment and supervision of Programme technical and administrative support staff; • Preparation and negotiation of sub-contract agreements with all the implementing agencies of feasibility studies to be carried out under Up-scaling Programme; • Initiate mobilization of all Programme inputs in accordance with NIM procedures; • Preparation and revision Programme workplans, budgets and financial plans in consultation with the NPD; • Organize and manage Programme activities in accordance to the workplan in order to produce Programme outputs; • Hiring of Programme consultants/technical inputs in consultation of the NPD and UNDP-CO; • Coordinate the Programme activities with line ministries, sectoral agencies, provincial governments, research institutions, NGOs and local communities to ensure cross-sectoral integration of the Programme

			<p>activities;</p> <ul style="list-style-type: none"> • Provide backstopping to the NPD in organizing PSC meetings; • Coordinate and supervise the technical inputs from the national/international experts to secure timely production of outputs planned in the Programme document; • Timely preparation and submission of the Quarterly and Annual Progress Reports to the UNDP-CO under the guidance of the NPD; and • Identification and resolution of Programme implementation problems with the assistance of the NDP, if necessary; • Provide technical guidance to the Provincial Programme Directors for the implementation of various SLM activities under provincial components of the Programme.
Programme Specialist, PR&CB	US\$2300 per month	48 months	<ul style="list-style-type: none"> • Assist the NPC in achieving outputs of outcome 1: PR & CB of SLM Programme; • Take a lead role in developing appropriate legal and policy reforms to harmonize sectoral policies for adoption of sustainable land management practices and identifying capacity development needs of the Programme partners and formulate a capacity building program tailored toward SLM of land resources and the overall mandate of the Up-scaling Programme ; • Ensure, that NAP is mainstreamed into sectoral policies and development plans • Organize training workshops and seminars on sustainable land use planning, rehabilitation of degraded ecosystems and integrated management of land resources; • Develop National Criteria & Indicators (C & I) for SLM in collaboration with line ministries, research institutions, provincial governments, and NGOs; • To work in close liaison with NPC to design/develop agreed Implementation strategy for phase-II designed among all stakeholders; • Develop a training plan for the Programme partners and community representatives to build their capacity in promoting SLM and integrated ecosystem management; • Lead the process of developing a strategy for creation of National Desertification Control Fund; • Coordinate and collaborate with partner organizations and other relevant agencies for enhancing technical capacity of the line agencies, district government staff, research institutions, NGOs, farmer groups and women's organizations in tackling land degradation and desertification; • Provide guidance and supervise the work of

			<p>communication officer in designing and implementing the Up-scaling Programme communication strategy;</p> <ul style="list-style-type: none"> • Design and implement a program for promoting public-private partnerships for addressing desertification issues; • Take a lead role in developing and implementing outreach and awareness raising strategy for the Programme; • Provide quarterly updates on progress on implementation of enabling environment component of the Programme; • Take care of special concerns such as gender equity and human rights while designing and implementing on-the-job-training programs; • Assist and collaborate with PPCs and other thematic Coordinators in team efforts for achieving the Programme objectives; • Provide quarterly updates on implementation and progress made on the policy reforms and capacity building component of the Programme based on the annual workplans; • Assist and collaborate with PPCs and other thematic Coordinators in team efforts for achieving the Programme objectives; • Any other specific task as may be assigned by the NPD or NPC.
Provincial Programme Specialist, SLM (4, one for each province)	US\$2300 per month	192 months	<ul style="list-style-type: none"> • Guide the SLM provincial staff in achieving overall objectives of the SLM Programme in the respective province; • Manage the Provincial Coordination Unit, applying administrative and financial procedures as required under the NIM and UNDP procedures; • Act as focal person on behalf of UNDP during implementation of the Up-scaling Programme activities in the province and provide institutional backstopping to the PPD; • Assist the PPD in coordination of Programme activities with provincial line departments as well as concerned District; • Work closely with the concerned Chief of Sections for cross-sectoral integration of the SLM practices; • Keep close contact with the District Governments in the targeted districts for ensuring smooth functioning of Up-scaling Programme ; • Take lead in establishment of PCUs, including procurement of services/equipment as per NIM; • Effectively coordinate implementation of the Up-scaling Programme , including monitoring of implementation of quarterly workplans by the sub-contractor/implementing agency;

			<ul style="list-style-type: none"> • Assist the thematic coordinators in designing and implementing activities related to policy reforms, mainstreaming NAP, land use planning; capacity building , M&E and GIS & RS activities; • Documentation and dissemination of lesson learnt and best practices to the provincial line agencies and local communities; • Keep close liaison with the NPC and keep him informed on the Programme operations or any other issue concerning the Provincial Up-scaling Programme ; • Work in close collaboration with the consultant(s) hired by the NCU-SLMP for the preparation of Provincial Action Plan (PAP), Provincial Integrated Financing Strategy (IFS) leading to the preparation of National Action Programme (NAP)/National IFS aligned with UNCCD 10-Year Strategic Plan ; • Timely preparation of quarterly and annual progress reports, expenditure plans and advance budget requests to the NCU; • With the assistance of the PPD, identification and resolution of problems faced during implementation of Provincial Up-scaling Programme; and • To perform any other duties as required by the PPD and NPC
<p>Consultants/companies for preparing provincial land use Policies (4, one for each province)</p>	<p>US\$400 per m/w day</p>	<p>200 m/w days</p>	<ul style="list-style-type: none"> • Literature Review • Preparation of background paper for provincial land use policy. It may cover the following topics: (i) <i>Land related issues and institutions</i>; (ii) <i>Past policies, regulatory framework and key programs affecting land use</i>; (iii) <i>Preamble for the proposed policy measures</i> • Preparation of draft provincial land use policy for Punjab. The draft policy may consider the following: (i) Coordination framework for all stakeholder institutions; (ii) issues related to access, use and management of land resources; (iii) disposal of industrial waste to agriculture; (iv) conversion of agricultural land to non-agricultural uses; (v) management of marginal lands; (vi) identifying the root causes of land degradation in all agro-ecological zones; (vii) equitable access to land; targeting land tenure issues; (viii) land based information systems and exchange of information; (ix) land-use needs and priorities; (x) formation and implementation of land use plans at provincial and local levels; (xi) decision making in cases of conflicting objectives in land use; (xii) Compliance to National Environmental Standards (NES) in land management practices; (xiii) Standards for land development including sustainable land management and transparent land administration; (xiv) Identifying existing laws governing the land use management and propose adjustments to the new policy; (xii) updating

			<p>the land-use policy and related legislative or institutional matters. Recommendations for the institutionalization of the policy and regulatory framework may also be highlighted.</p> <ul style="list-style-type: none"> • Meetings and workshop facilitation & finalization of reports
Consultants/companies for mainstreaming SLM in provincial sectoral Policies (4, one for each province)	US\$400 per m/w day	200 m/w days	<ul style="list-style-type: none"> ➤ Review the provincial sectoral policies, strategies and plans related to Agriculture, Forest, Rangeland, Water, land and Revenue; ➤ Study regional experiences in mainstreaming UNCCD and SLM into agriculture policies/plans; ➤ Identify gaps in the policies with respect to SLM; ➤ Identify changes in the policy documents to remove the gaps with respect to SLM after incorporating inputs of stakeholders; ➤ Prepare recommendations for integrating SLM and UNCCD into provincial sectoral policies and developmental plans; ➤ Seek validation of recommendations from Stakeholders; ➤ Meetings and workshop facilitation & finalization of reports.
Consultants/companies for bridging gaps in provincial legal and regulatory frameworks related to SLM (4, one for each province)	US\$400 per m/w day	200 m/w days	<ul style="list-style-type: none"> ➤ Review the provincial provincial legal and regulatory frameworks related to SLM; ➤ Identify gaps in the provincial legal and regulatory frameworks with respect to SLM; ➤ Identify changes in the provincial legal and regulatory frameworks documents to remove the gaps with respect to SLM after incorporating inputs of stakeholders; ➤ Seek validation of recommendations from Stakeholders; ➤ Meetings and workshop facilitation & finalization of reports.
Consultants/companies for preparing guidelines for mainstreaming SLM in policies and regulatory frameworks	US\$400 per m/w day	30 m/w days	<ul style="list-style-type: none"> ➤ Drafting guidelines for mainstreaming SLM in policies and regulatory frameworks; ➤ Finalizing the guidelines in collaboration with the stakeholders; ➤ Seek validation of recommendations from Stakeholders; ➤ Meetings and workshop facilitation & finalization of reports
Consultants/companies for preparing guidelines for carbon sequestration through SLM	US\$400 per m/w day	30 m/w days	<ul style="list-style-type: none"> ➤ Identification of initiatives in Pakistan and nearby countries related to carbon sequestration through SLM; ➤ Drafting guidelines and recommendations for carbon sequestration through SLM; ➤ Finalizing the guidelines in collaboration with the stakeholders; ➤ Seek validation of recommendations from Stakeholders; ➤ Meetings and workshop facilitation & finalization of

			reports
Consultants/companies for PES strategy	US\$400 per m/w day	30 m/w days	<ul style="list-style-type: none"> ➤ Drafting Payment for Eco-system Services (PES) strategy; ➤ Finalizing the guidelines in collaboration with the stakeholders; ➤ Seek validation of recommendations from Stakeholders; ➤ Meetings and workshop facilitation & finalization of reports
Consultants/companies for preparing business plans (8, two for each province)	US\$400 per m/w day	240 m/w days	<ul style="list-style-type: none"> - Studying the marketing, required inputs, labour, expertise, professional assistance required for the product and its value addition options; - Identification of external influences that affect the product in terms of the current market environment, method for marketing the products, labour requirements and availability and capital demands; - Any existing legal and informal business relationships and arrangements related to that product; - Identification of possible business partners; their experience and expertise, and the skills and resources they bring to the business; - Drafting of business plans to guide communities in the development and operation of their proposed ventures/products; seek to capture the vision, financial projections, expected needs and projected results of the venture. Business plans also assist in identifying and articulating the risks involved and developing strategies to manage these risks; - A detailed management plan, calendar of events and production assumptions; - Identified risks and related management strategies for issues such as disease, production loss, environmental, management, political and legal etc; - Description of infrastructure, plant, equipment and other assets. Include the level of development required including cost, maintenance, replacement cycle and expertise required; - Identification of human & Market development strategies required; - Identification of a description of the natural resource base and a plan for management of natural resources, including utilisation and monitoring of water, pasture, stocking rates (if appropriate) and ecological sustainability of the proposed approach; and - Financial analysis of the plan; progress monitoring mechanism and writing of plan after incorporating inputs of stakeholders.
Consultants/companies for preparing field based training manuals	US\$400 per m/w day	40 m/w days	<ul style="list-style-type: none"> - Drafting of training modules and manuals; - Identification of skills for a better training event; - Finalization of training modules and manuals.
Communication expert	US\$400 per m/w day	30 m/w days	<ul style="list-style-type: none"> ❖ Drafting a communication strategy; ❖ Assist SLM Programme in celebrating World Day to Combat Desertification; ❖ Assisting in printing different publications; ❖ Assisting SLM Programme in other outreach and communication related initiatives.
Programme Specialist, LUP & I	US\$2300 per	48 months	<ul style="list-style-type: none"> • Take a lead role in identifying and implementing an overall planning and monitoring system for the

	month		<p>Programme in connection with: Programme outcomes, outputs, activities, benchmarks and indicators;</p> <ul style="list-style-type: none"> • Review, adopt, test and modify existing/available monitoring tools, techniques and methods to suit the specific needs of the SLM Up-scaling Programme ; • Take lead role in establishing data collection procedures; • Assist the SLMP in developing SLM Criteria and Indicators; • Provide guidance and support to SLMP in collection of baseline information for implementation of up-scaling programme and conduct participatory resource appraisal and planning for the targeted areas. • Coordinate with PPCs in development of participatory land use plans at village and district levels and provide technical backstopping; • Assist SLMP in data collection, monitoring procedures, and assessment of results and activities; • Assist SLMP for developing database on SLM and collection of data on the extent of land degradation and desertification in the country; • Finalize the selection of field demonstrations and Programmes for full-scale Programme interventions based on site selection criteria; • Prepare and implement a programme for enhancing the monitoring capacities of the Programme team; • Organize and conduct relevant workshops for Programme team, partners and CBOs; • Compile Quarterly and Annual Progress Reports and work plans based on the inputs from SLMP team; • Facilitate annual and periodic review and assessment exercises. • Work in close liaison with independent evaluation teams; • Supervise the work of Provincial Planning and Monitoring Officers; • Keep abreast of new methods and techniques with regard to M&E of SLM/INRM initiatives; • Assist SLMP in mainstreaming NAP, and • Any other specific task as may be assigned by the NPD or NPC.
Programme Specialist, GIS	US\$2300 per month	48 months	<ul style="list-style-type: none"> • Establish GIS based SLM Information System for the Up-scaling Programme with spatial and numeric database (RDBMS); • Develop baseline database on desertification, land degradation and drought; • Prepare land use, land cover and thematic maps;

			<ul style="list-style-type: none"> • Undertake analysis of environmental and socio-economic data generated through resource need assessment and socio-economic surveys at proposed sites; • Establish baseline and develop site specific land use maps of the proposed sites; • Establish networking and maintain links with other organizations working on GIS based data management including PFI, WWF-Pakistan, SUPARCO, Government Agencies, Research Institutions and Universities as well as private sector organizations; • Provide technical input in preparation of Programme documents, including Programme brief, technical reports, and quarterly & progress reports; • Assist the sectoral experts/consultants in producing quality outputs; • Procure, set-up, and maintain GIS equipment including software and hardware required for the land use planning and SLM Information system; • Assist NPC/Team Leader in executing technical tasks including comments on technical reports and documents; • Oversee development and maintenance of Programme website and discussion forums; • Supervise technical staff assigned to the GIS Unit under the Up-scaling Programme; • Any other specific task as may be assigned by the National Programme Director or National Programme Coordinator;
Consultants/companies for Web portal development	US\$300 per m/w day	50 m/w days	<ul style="list-style-type: none"> • Identifying gaps in the web portal of SLM Programme; • Improving the web portal; • Taking inputs of stakeholders and finalization of the improved version.
Consultants/companies for writing concept note for DSS	US\$300 per m/w day	60 m/w days	<ul style="list-style-type: none"> • Studying the operation and performance of existing DS Systems in Pakistan and in neighboring countries; • Drafting of a concept note and a project proposal/PC-1 for establishment of DSS; • Finalization of concept note and a project proposal/PC-1 after incorporating inputs from stakeholders; • Identification of donors for resource mobilization for the purpose.
Consultants for establishing network to operationalize SLM Decision Support System	US\$800 per month	144 m/w months	<ul style="list-style-type: none"> • Collection of relevant data for DSS from NGOs, line agencies and local community as required; • Provision of data to PCUs; • Feeding the data in the DSS; • Preparing progress reports.
NPC	US\$3200	12	<ul style="list-style-type: none"> • Lead and manage the National Coordination Unit, applying administrative and financial procedures as

	per month	months	<p>required under the NIM and by the UNDP;</p> <ul style="list-style-type: none"> • Assist the NPD with execution of the Up-scaling Programme and delivery of the Programme outputs according to the PC-I and the NIM procedures; • Selection, recruitment and supervision of Programme technical and administrative support staff; • Preparation and negotiation of sub-contract agreements with all the implementing agencies of feasibility studies to be carried out under Up-scaling Programme; • Initiate mobilization of all Programme inputs in accordance with NIM procedures; • Preparation and revision Programme workplans, budgets and financial plans in consultation with the NPD; • Organize and manage Programme activities in accordance to the workplan in order to produce Programme outputs; • Hiring of Programme consultants/technical inputs in consultation of the NPD and UNDP-CO; • Coordinate the Programme activities with line ministries, sectoral agencies, provincial governments, research institutions, NGOs and local communities to ensure cross-sectoral integration of the Programme activities; • Provide backstopping to the NPD in organizing PSC meetings; • Coordinate and supervise the technical inputs from the national/international experts to secure timely production of outputs planned in the Programme document; • Timely preparation and submission of the Quarterly and Annual Progress Reports to the UNDP-CO under the guidance of the NPD; and • Identification and resolution of Programme implementation problems with the assistance of the NDP, if necessary; • Provide technical guidance to the Provincial Programme Directors for the implementation of various SLM activities under provincial components of the Programme.
Finance & Admin Officer	US\$1500 per month	60 months	<ul style="list-style-type: none"> ❖ Managing day to day operations related to Finance and Administration for SLM Programme at the national level; ❖ Training and provision of guidelines to the PCUs; ❖ Development of plans and reports as required from time to time; ❖ Management of Finance and Administration related training events and meetings; ❖ Any other relevant task as directed by the management of SLM Programme.

ANNEX 6. PROFILE OF ACTIVITIES IN PROJECT TARGET AREAS, PER PROVINCE

This Annex provides an overview of the conclusions of consultation sessions and workshops with local communities and other local stakeholders that were undertaken in each province to determine the priority on-the-ground SLM activities for inclusion in the SLMP-II project. These are largely derived from the successful experiences generated during the pilot phase. This information will be used as the basis for the project's annual work plans in each province.

A. ON-THE-GROUND SLM ACTIVITIES FOR UP-SCALING IN PUNJAB PROVINCE

On-the-ground SLM activities envisaged under SLM Up-scaling Programme in Punjab province are as follows:

I. Integrated Soil & Water Management

The District Chakwal predominantly has common lands (Shamlats). The continued neglect on the part of local communities has resulted in loss of vegetation and improper agriculture that has consequently increased soil erosion. The uncontrolled grazing on such lands has further aggravated the process of soil erosion in the area. The soil erosion will be checked by constructing low cost loose stone masonry structures to regulate the water runoff which will ultimately be collected in water ponds. The water ponds will also check the speed of water going downstream. The establishment of watering points in the form of water ponds at different locations within around a village will be essential tool to regulate grazing within any village; the water ponds will be constructed for the storage of rain water which will be used for the domestic consumption of the local communities and livestock. The local community will support the activity by contributing 20% of the total cost in the form of labour and finances for the construction of water ponds and loose stone masonry structures.

- (i) Construction of Water Ponds: A total of 175 water ponds for livestock, soil and water conservation and for raising agriculture crop/fruit orchards will be constructed at pilot sites in Tehsil Chakwal and Talagang. The ponds shall have a retaining wall and spillway with loose rubble masonry having a dimension of 90'(48+12/2)' 15'. The local community will identify the site for water pond with the support of technical team of the project. The Forest Department will execute the activity in field with the support of Directorate of Soil, Rawalpindi and Soil & Water Conservation Research Institute (SAWCRI).
- (ii) Water Conveyance system for Agriculture/Fruit Orchards: The water ponds to be constructed during the project period will be connected with a series of pipes and connectors to improve the efficiency of water supply for preferably establishing fruit orchard or agriculture crop for one season in a year. The decision to raise agriculture crop or fruit orchard will be taken on the basis of quantum of water available for the intervention. The local community will support the activity by contributing 20% of the total cost in the form of labour and finances. The requisite water conveyance systems will be established on water ponds to be constructed under the project in Tehsil Chakwal and Talagang. A total of 80 number water conveyance systems will be established to raise agriculture crop/orchard on uncultivated land. The On-Farm Water Management wing of the district Government in Chakwal will execute the activity with the support of Extension wing and BARI, Chakwal.

II. Support to Dryland Vegetation Improvement

Almost 50% of the total land area of District Chakwal is devoid of vegetative cover which is causing severe soil and water erosion. Establishment of permanent vegetation and management of existing

resource in the area is essentially required. Accordingly, following activities will be implemented to support improvement in dryland vegetation.

- (i) Dry Afforestation on Farmlands: Vegetative cover improvement through rain water harvesting techniques was quite useful in stabilizing fragile slopes during the initial phase of the project. The fuelwood, fodder and wood obtained from the unproductive land was an additional source of income for the farmers. The activity will be replicated in this phase with the addition that besides the tree species, fruit trees will also be planted. The main tree species to be planted will be *Acacia modesta* (Phulai), *Acacia nilotica* (Kikar), *A. albida*, *Melia azadirachta* (Bakain), *Albizia lebback* (Siris), *Zizyphus numilarea* (Ber), etc. The locally adopted fruit plants like olive, loquat, etc will also be planted. The rain water harvesting techniques to be demonstrated for establishing vegetative cover will include; semi-circular micro-catchments and contour bunds. The project will support the earthwork for Afforestation purposes, however, protection and maintenance of plants will be the responsibility of the community. A minimum limit of 10 acres of contiguous unit of land shall be fixed to partially support this activity. A total area of 1400 acres (567 ha) will be planted. A total of 420,000 plants will be planted supplemented with sowing of seed. The local community will support the activity by contributing 20% of the total cost in the form of labour and finances. The Forest Department will execute the activity in field with the support of BARI, Chakwal.
- (ii) Fruit Nurseries: A major demand of farmers in the Potohar tract was to provide fruit plants at decentralized locations. The main beneficiaries will be farmers with smaller land holdings. Accordingly, to support the farmers with small land holdings assorted fruit plants will be raised in farmer nurseries. A nursery farmer will be selected by the community organisation. The farmer will raise and maintained the plants with the support of staff of Forest Department. The farmer will provide land and make water available for the nursery. The project will provide raising cost of the plants up to a maximum of 80% of the total cost whereas remaining 20% cost will be borne by the community organisation. The nursery farmer will distribute 80% of the planting stock among the small farmers at the raising cost. The amount recovered by the nursery farmer will be deposited into the community organisation account to raise new plants in community nurseries on need basis in future. The remaining 20% of the planting stock will be utilized by the nursery farmer in lieu of services provided towards provision of land, water and maintenance of plants. Technical team of the project will provide on the job guidance to the nursery farmer in raising 20 nurseries to produce 400,000 plants (20,000 plants per nursery) in Tehsil Chakwal and Talagang. The fruit nurseries will be raised under the supervision of Barani Agriculture Research Institute, Chakwal with the support of RSP/NGO.

III. Restoring Desert Ecosystem

The project Tehsils of Noorpur, Mankera and Chaubara are located in Thal desert. The average annual rainfall of the area is less than 10 inches, and only supports xerophytic type of natural vegetation. In early fifties, canal irrigation system was introduced in a portion of the Thal desert, however, most part of the desert has arid to semi-arid conditions. Initially the areas brought under the command of Canal Irrigation system were administratively divided into Chaks and within the Chaks lots were allotted primarily to army officers of different provinces. Since majority of the area was leased out by the owners to tenants hence desired input in land development was not ensured due to lack of interest of the tenants. Over the past three to four decades the local settlers and inhabitants of Thal desert managed to purchase the land from the original allottees. The concept of establishing shelter-belts and woodlots for sand dune stabilization and to attain supplementary income from trees and agriculture produce gained momentum over the past three decades in the irrigated portion of the Thal desert. However, scope still exists for such activity in the non-irrigated portion of the desert. In non-irrigated tract, efficient use of

sub-soil water for afforestation and agricultural purposes is critical. The use of modern techniques for such purposes is gaining momentum in the area. The main agriculture crops grown in the area are pea, pulses and fodder crops.

Most sand dune stabilization programmes are directed towards the old dunes, so that the productive potential of these lands can be restored. The activities include (a) protection of the area from human and livestock encroachment; (b) creation of micro-wind breaks on the dune slopes, using locally available shrubs in parallel strips; (c) direct seeding or transplantation of indigenous and exotic species; (d) plantation of grass slips or direct sowing of grass seeds on leeward side of micro-wind breaks; (e) management of re-vegetated sites. During pilot phase of the project sand dunes were stabilized through afforestation supported with efficient use of sub-soil water. The effort shall be continued during the up-scaling phase to efficiently use available water for agriculture and afforestation activities. It is expected that by restoring desert ecosystem improvement will take place in overall farming system in the area which will improve livelihood of local community. The main activities to be performed under this component are as under:

- (i) Agro-forestry through Shelterbelts: Establishment of shelterbelts along the boundaries of crop fields help to reduce injuries to the tender seedlings from sand blasting and hot desiccating winds. Wind velocity on the leeward side of shelterbelt is reduced and soil loss by about 76%. Shelterbelts also reduce the loss of moisture from fields in the leeward side of shelters. The higher soil moisture and more yield of agriculture crop are obtained on the leeward side of shelters, as compared to that in the areas without shelters in the area.

Effort will be made to grow at least three rows of trees across-the-wind on 30' wide belt with rows of trees 10' apart, grown in pits and interspersed with 60 m wide belt will be established. The interspersed area of 60 m shall have agriculture crop. Establishment of micro-shelterbelts in arable lands, by planting tall and fast growing plant species like *Tamarix aphylla*, *Acacia tortilis*, *A. albida*, *Prosopis juliflora*, *Zizyphus numularia* and *Albizia lebbek* on the windward side, and shorter plants like vegetable crops in the leeward side of tall plants will help in increasing the yield of agriculture crops. In spite of such good results the shelterbelts in arable lands are not very popular with farmers, because in many cases the trees put hindrance to agricultural operations and inter-field movement. It is now suggested to plant trees on field bunds across the direction of wind.

Solar-operated peter engines and pumps will be used for raising shelterbelts on private farms through community organizations. A small water storage tank will also be established to store water for delivering it to the cropped area on gravity flow. The farmer will have to develop the land for agriculture and for establishing trees along the border of agriculture field. The equipment will be provided to the private farmers aspirant to establish shelterbelts and raise agriculture crop/orchid on a minimum of 10 acres. The digging of water bore shall be the responsibility of the farmer. The planting equipment will be handed over to the community after completion of one year. Accordingly, agroforestry practice through shelterbelts will be established on about 1850 acres (749 ha) in Nurpur, Mankera and Chaubara Tehsils. The local community will support the activity by contributing 20% of the total cost in the form of labour and finances. The component will be executed by the On-Farm Water Management and Agriculture Extension wings of the district government.

- (ii) Woodlots: The woodlots will be established on the leeward side of the dune, in case the land is not productive to grow agriculture crop. The woodlots will be established using locally improvised irrigation system commonly known as 'Tiba Planting Technique'. The sub-soil water is sweet and about 30ft to 50ft deep. The water will be bored out with the help of water pump in the 'pati' (low lying area between two dunes) and peter engine will be used to irrigate the planted area on the sand dunes and the 'pati' by using hydrants and hand held pipes. Effort will be made to use solar operated peter engines and pumps. One water bore and peter engine will cover planted area of 10 acres. A small water storage tank will also be established to store

water for delivering it to the cropped area on gravity flow. A planted area required watering and after care for about three years depending upon the site condition and type of tree species. Since planting will be a one-time activity hence the equipment used in 'tiba planting' can be re-used to establish plantations over new areas after three years. The planting method was successfully implemented on farmlands during the pilot phase. Woodlots will be established on sand dunes over an area of 2050 acres (830 ha) with a minimum of 450 trees/shrubs per acre. The woodlots will be established in Nurpur, Mankera and Chaubara Tehsils. The local community will support the activity by contributing 20% of the total cost in the form of labour and finances.

- (iii) Community Nurseries: A major observation made during the pilot phase was that farmers with smaller land holdings did not have opportunity for becoming tree/fruit planters. Accordingly, community nurseries shall be established at project sites in next phase of the project. A total of one million assorted plants of different types including Frash, Ber, Acacia albida, Siris, etc. will be raised in 40 nurseries (25,000 plants per nursery) in Tehsil Noorpur, Mankera and Chaubara. Fruit plants may also be raised in the nursery to attain better returns from the nursery. A nursery farmer will be selected by the community organisation. The project will provide raising cost of the plants up to a maximum of 80% of the total cost whereas remaining 20% cost will be borne by the community organisation. The nursery farmer will distribute 80% of the planting stock among the small farmers at the raising cost. The amount recovered by the nursery farmer will be deposited into the community organisation account to raise new plants in community nurseries on need basis in future. The remaining 20% of the planting stock will be utilized by the nursery farmer in lieu of services provided towards provision of land, water and maintenance of plants. The Forest Department will supervise the activity in the field.

IV. Restoring Rangeland-Livestock Productivity

There are different grazing systems to manage and ensure sustained use of rangelands without reducing their carrying capacity. The preferred grazing system in the Potohar and Thal area is rotational grazing. For this a comprehensive grazing plan will be prepared for whole rangeland. The area will be divided into pastures and each pasture will be opened for grazing on rotational basis depending upon the range condition. Grazing management plan will be prepared in consultation with local communities. Under this component following activities will be carried out in Punjab.

- (i) Range Management Plans: The project will support the preparation of Participatory Grazing/Rangeland Management Plans of ten rangelands to ensure that the community involvement sustains in their management. Furthermore, the rotational grazing of animals shall be introduced in the rangelands in a scientific manner after providing an assessment of the existing rangeland resource. The requisite management plans will be prepared for ten rangelands in the six project Tehsils.
- (ii) Rangeland Development: The grazing capacity of the rangelands has decreased due to overgrazing. The continued trampling effect of livestock has hardened the soil that has decreased the natural germination of the palatable grasses. The quantity of unpalatable species has increased in the composition of range vegetation. Therefore, rangeland areas are required to be regularly rehabilitated through soil working and reseeding with palatable grasses. Range rehabilitation, including soil working and range reseeding will be done on a total of 2500 acres (1012 ha) of farmlands in all tehsils of the project. The main natural grass species to be reseeded will include Dhaman, Gorgha, etc. Besides that leguminous plants will also be broadcasted. The project will partially support the earth work for reseeding, however, collection of seed, broadcasting and control over utilization will be responsibility of the community. The community will charge fee from the graziers on the basis of number and kind of livestock that

shall graze on the rehabilitated rangelands. The amount recovered from the graziers will be deposited into the community organisation account. The local community will support the activity by contributing 20% of the total cost in the form of labour and finances. The activity will be executed by the Forest Department with the support of community organisation.

- (iii) Livestock Improvement: In an integrated farming system, livestock has significant role in improvement of livelihood of the community and has indirect relationship with improvement of degraded lands, particularly rangelands. The improvement of livestock is dependent upon its health and provision of quality feed. This will allow increased production with lower growth in animal numbers, and a corresponding slowdown in the growth of environmental damage from grazing. By retaining lower number of quality animals the stress on rangelands will be reduced which will prevent land degradation. Although livestock improvement does not have a direct impact on land degradation, however, as part of the overall farming system a limited scope of animal health care improvement has been included as a project activity. A total of 180 activists, i.e. three per project village, shall be trained in vaccination and de-worming of livestock and other animal health care measures. The trained activists will be provided with livestock kits and medicines for vaccination and de-worming. The activists shall provide support services to the community on improving livestock in all Tehsils of the project. The community will charge fee from the livestock owners for vaccination and de-worming of livestock on the basis of number and kind of livestock that shall utilize the services of the trained activists. Out of the total amount recovered by the community organisation 50% will be deposited into the community organisation account whereas the remaining amount will be remunerated to the trained activist.

B. ON-THE-GROUND SLM ACTIVITIES FOR UP-SCALING IN SINDH PROVINCE

On-the-ground SLM activities envisaged under SLM Up-scaling Programme in Sindh province are as follows:

1. Rehabilitation of Degraded Rangelands

The economy of eastern sandy desert region and western mountainous range (Kohistan) spread over about 2/3rd of total land area is pastoral followed by arid agriculture. The eastern sandy soil region is locally called Thar Desert, although word desert is misnomer for this area, as a large number of trees and shrubs are found and tall palatable grasses grow in rainy season over stabilized sand dunes and their inter zonal plains resembles the rolling topography of a prairie. During rainy season, the carrying capacity of Thar area increases manifold but is drastically reduced during lean periods and drought, when these rangelands are degraded by overgrazing.

The Thar and Kohistan area entirely depend upon erratic rainfall which is mainly received in the months of July and August. Droughts are frequent; and prolonged droughts do occur once in a decade. During these periods, graziers along with their livestock temporarily migrate to adjoining canal irrigated areas for livelihood and survival of their livestock. In these migration, large number of underfed and weak animals die due to hunger and long distances.

Entire Thar area is used for grazing, except longitudinal inter-dunal strips and plain area (in Tharparkar & Umerkote) cultivated in rainy season. As per an estimate, 70% area is under sand dunes and about 30% area is plain area, where barani crops are cultivated. Most of the plain area is private land and remaining whole desert area is state land. Each village/town has some designated grazing land around them notified as *Gauchar* (Grazing land for cows), where cultivation is prohibited. According to 2006 livestock census, 4,336,949 domestic animals are found in Tharparkar district (Appendix-II). The census indicates that cows, goat and sheep dominate the list among which cows and sheep prefer grazing and goat and camel prefer browsing. Due to overgrazing and over cutting of woody vegetation for cooking and heating, some of the palatable grasses and browsing plant have disappeared/become endangered in

the area. Under this project, 40,000 ha grazing land (Public land) will be broadcast with the seeds of palatable seasonal and perennial grasses such as *Cenchrus ciliaris* (Dhaman), *Elionorus hirsutus* (Seen), *Panicum turgidum* (Buth), *P. antidotale* and indigenous browse shrubs and trees such as *Prosopis cineraria* (Kandi), *Acacia senegal* (Kunbhat), *A. jacquemonti* (Baori), *Zizyphus mauritiana* (Jangli Ber), *Z. jujube* (Ber), *Salvadora oleoides* (Khabar/Peelu), *Calligonum polygonoides* (Phog), etc. In addition an important medicinal shrub *Commiphora wightee* (Gugar) which is disappearing rapidly due to excess extraction of gugar gum by chemical application will also be propagated through seed broadcast and planting of cuttings around farmlands as a live hedge. As a safeguard, each area will be broadcast with grass and woody plant seeds for 2 consecutive years to overcome uncertainty of annual rains/droughts. By doing so, a seed source particularly of palatable seasonal and perennial grasses will be developed in these areas. Besides, communities will be encouraged to eradicate non-palatable plant species prior to their seeding to reduce competition for desired plants.

- (i) Enclosures for Production of Grass Seed for Reseeding: For broadcasting 40,000 hectares of rangeland, about 100,000 kg grass seed of palatable grasses is required which is difficult to collect in natural conditions. Therefore, the seeds of palatable grass species will be produced in enclosures and will be collected and stored for next year's broadcast. Under this project enclosures over 10 acres will be developed in project area particularly where these grasses are presently growing and in areas receiving more rainfall. In addition, protected areas such as research area of PCRWR between Chelhar and Mithi will also be utilized for production and collection of grass and woody species seed.
- (ii) Rehabilitation/Reseeding of Degenerated Rangelands: Under the Up-scaling programme an area of 40,000 ha degraded rangeland will be rehabilitated through reseeded of the most adapted and palatable rangeland species to enhance range production and benefit livestock of the dryland communities during drought. Enough quantity of seed will be reproduced in protected seed enclosures and collected in seed producing seasons. This seed will be stored in each village for sowing on receiving the first shower of the season or just before it. The CBO of each village will be in charge and responsible for such seed bank in the village. The seed will be properly stored to maintain its viability and protect from pest damage.
- (iii) Shelterbelts/Wind breaks (3 rows): 4 km Shelterbelts/Wind breaks (3 rows) will be established.
- (iv) Fodder Chopping Machines: Green grass/fodder is only available to Thar livestock for 2-3 months in rainy season depending upon quantity and timing of rainfall. In droughts and dry season, the livestock has to depend upon dry fodder and stall feeding of Bajra dry stalks, guar and wheat straw and some concentrates like oilcake, guar, etc. by affording people. However, all farmers do store bajra stalks after harvest of crop for feeding their animals and for sale. Previously, people used to chop these stocks with hand, but nowadays, affording people get it chopped through machines which are costly. Under this project, 100 chopping machines with small engine will be provided one each to CBO for this purpose.

II. Integrated Water Resource Management

The life in Thar entirely depends upon erratic rainfall which is received mainly in monsoon season. The ground water is generally saline and deep and therefore, collection and storage of rainwater for drinking for some period in all rainfed areas in water ponds/tarais is required near habitations. In sandy areas, the water storage in these ponds depends upon clay contents of the soil, size of pond and its catchment area. In some of these tarais, water is available for almost a year in good rainy years. The pond water is very unhygienic for human consumption as livestock also drinks water from same open pond, but being poor and no other alternate of sweet water, local people drink it unless it becomes highly polluted, smells badly and become very injurious to human health.

- (i) Rainwater harvesting (Water Ponds/ Tarai Livestock): Under this project 100 water ponds & Tarais will be constructed to provide drinking water for human & livestock consumption.
- (ii) Rainwater harvesting (Pacca Water Ponds/ Tarai Human): 100 Tarais will be constructed to provide drinking water for human consumption. For human beings, the size of tarai will be 100'*100'*6' (deep).
- (iii) Low cost Roof-Water Storage Tanks for drinking, livestock & tree planting: Generally, rainwater pond/tarai water lasts for 2-4 months, more clean sweet water for drinking can be made available right in each house hold for some more time by encouraging local people to construct low cost improvised small tanks in their compounds for collection and storing roof water in rainy season. Under this programme 4,000 water storage tanks will be constructed, one in each house. The construction material and skilled labour will be provided by the project and unskilled labour cost required for digging and construction will be borne by the house holders.
- (iv) Construction of dug wells: 20 Dug wells will be constructed for the purpose of drinking water.
- (v) Solar Water Pumping System: Since the main source of drinking water for human and livestock is wells and the water is drawn mainly by draft animals or manually, generally one person in a family is devoted just for water collection. Due to increase in the cost of draft animals and their feed, drinking water costs a lot for a poor family. In addition, repeatedly putting rope in the well with water bucket, takes lot of dung and other impurities in drinking water that makes well water unsafe for drinking. One time investment of a solar pump for pumping water from well and storing in a tank for human beings and leaving water in a trough for livestock will not only save money and hard labour of several people in a village, but will provide safe drinking water. These pumps once installed don't require any running/maintenance cost for years to come. Under this programme, 17 solar pumps will be installed over presently used village wells, where water depth is less than 40 m.
- (vi) Construction of Laths/Earthen Bunds: In plain areas of Parkar and Watt sub regions of Thar, where lands are plain and soil is loamy, rainwater runs off to Rann of Kachh. In this area, there is a practice of construction of laths to delay rainwater for improving the moisture regime of soil and cultivate/ harvest 1-2 sorghum crops for grains and fodder from residual moisture. Under this programme, this activity will be promoted by assisting farmers. Under this programme 3,200 laths (each about 1000 cft) will be constructed.

III. Promotion of Arid Agriculture

- (i) Installation of sprinkler Irrigation units to conserve water in sandy soils: The rainfall data of Tharparkar district for last 20 years indicates that the average annual rainfall of Taluka Nagarparkar is more than 400 mm. Huge amount of rain water collected in cup shape granite Karoonjhar hill which is spread over about 20,000 acres, runs-off to Rann of Kuchh through ephemeral rivers. The soil column around this hill is less than 90' and sub soil water is sweet and very shallow. In rainy season, the water level in some wells approaches ground surface. Presently, lift irrigated agriculture is practiced in Rabi season over about 300 acres and it can be extended over more than 3000 acres. But the rising cost of diesel fuel and 4-5 times more water requirement of sandy soils as compared to normal soils and uncertainty of produce prices is discouraging such cultivations. Due to construction of delay action dams by Irrigation and Power Department and NGO's, the sub-soil water regime has improved but will be of no much use if water lifting cost is not reduced/subsidized. The installation of solar pumps and sprinkler

irrigation will make lift irrigated agriculture economically feasible. If implemented, it will meet the food needs of area and will bring prosperity in the region. Under this programme 35 sprinkler irrigation units will be installed in those villages where sub-soil water is shallow and sweet particularly where Land Use Plans have been prepared during 1st phase of SLMP.

- (ii) Nursery Raising: Enormous woody species of trees and shrubs grows in natural condition in Thar area. Among these tree species, most protected *Prosopis spicigera* and *Salvadora oleodes* generally grows in plain areas where barani crops are cultivated. However, *Acacia Senegal* grows on sandy dune slopes with other woody and non-woody species on public land. Kandi tree locally called *Khejri* is life of Thar area. It is one of the best browse trees and its foliage and beans are cherished by cows, goats and camels equally. Ripe and dry beans are also eaten by local people. Kandi is the only tree that permits crops to flourish under its shade particularly in stress period when healthy crop is only found beneath it due to its thin crown and partial shade. Therefore, this most valuable tree is well protected and promoted in barani farms. There is a large scope of raising nurseries that provides plants of most preferred tree species which together with fruit trees could be used to develop “Oasis” in Thar Desert. During the programme, 568,100 plants of assorted tree species adapted to desert conditions will be raised and provided to farmers for planting.
- (iii) Development of “Oasis”- Forest & Fruit Plants: In desert areas, the development of “Oasis” is emerging as a major trend to establish green spots with favorable micro-climatic condition. Live hedges, low delta crops, medicinal plants, forest and fruit trees are planted around a source of water which could be a spring or a stream. Under this activity it is envisaged to develop seven oases each about 5-acres size. The sites for the development of oasis will be identified in consultation with the local communities ensuring that an appropriate water source is available for the development of such green spots within the desert areas. These oases will help in the re-emergence of local flora and fauna species and improving biodiversity.
- (iv) Seed Multiplication of low delta crops (Millet, Wheat etc): In order to provide quality seeds of low delta millet, wheat, pulses to the farmers, seed multiplication will be established over 20 acres.
- (v) Provision of Seed Grader: For proper grading of seeds, 20 seed graders will be provided to the farmers.

ON-THE-GROUND SLM ACTIVITIES FOR UP-SCALING IN KHYBER PAKHTUNKHWA PROVINCE

On-the-ground SLM activities envisaged under SLM Up-scaling Programme in Kyber Pukhtunkhwa are as follows:

I. Strengthening of Rud-Kohi Water Management System

Water management under the Rud-Kohi system is a centuries old system managed by farming communities in many parts of Pakistan. Dera Ismail Khan is one of the districts where this system prevails over largest area. There are more than 30,000 families attached to some 0.25 million hectare agriculture land that is totally dependent upon this system. *Rodh* means stream or channel and *Kohi* means “of mountains”. The torrents initiating from mountain watersheds extended up to Baluchistan carry down water and sediments to piedmont plains extending from foothills of Koh-e-Suleman range

down to the river bank of Indus. During monsoon and post-winter rainfall season, these torrents are source of flooding in piedmont plains and the flood water is somehow managed by local farmers to inundate their farmlands. The water stored on farmland surface is allowed to evaporate and percolate down the soil so as to conserve maximum moisture for cultivation of crops (wheat mainly).

The indigenous system although worked well for the benefit of farming communities since long, has some inherent problems resulting in loss of water resources and erosion of soil. The system is weak and has little capacity to accommodate high flood events. The water control and conveyance system fails in monsoon floods and the farmers spend lots of resources to repair it post-floods. Added by the changes in climatic patterns resulting in uncertainty of frequency and intensity of rainfall and drought periods, the system needs to be strengthened through promotion of sustainable technologies in participation with farmers and their groups. Following are some of the proven methodologies from SLMP-I to be up-scaled:

- (i) Gated structures on Gandis: The indigenous system for conveyance and further distribution of flood water is very important component in the whole system. The water coming down through Sheikh Haider Zam is carried down further by Rodhs (Sawan and Toya) and channels. The rule of thumb is to irrigate farm lands coming first along the rodh and then allow water down the stream. This is done through Gandis and bunds. As per existing system, the bund or gandi has to be broken to allow water down to other fields. Thus a system of breaking and repairing develops which is very laborious and consumes farmers' precious income each year.

To address the problem, SLMP-I tested gated structures to facilitate water control in floods and to avoid breaking the bunds or *gandis* each season. The structures also ensure prevention of water loss and damage to land and soil in flood season. The project will provide support and facilitation to local farmers CBOs to construct 24 gated structures in Sheikh Haider Zam that will benefit at least 8,000 hectare of farm land by providing water for irrigation and cultivation of cereal crops.

- (ii) In-let structures on farm level: From rodhs and water channels, the water is distributed / directed towards farmlands owned by individual households, where each household has to construct embankments around their fields to impound and hold water for longer period. The basic principle here is to prevent over-flooding that may wash away the embankments and cause damage to other fields downstream. The farmer puts lot of efforts, energy and resources to avoid this by controlling the water in-flow through cutting down available vegetation and using it to stop flows.

The cement and brick made inlet structures constructed at farm inlet points enable farmers to conveniently open and close the water in-flow to their fields and thus prevent the loss of water, damage to farmlands and save their time and energy. These structures have performed very well and 500 inlet structures will be constructed during up-scaling programme. This will provide protection and economic distribution of water on 3,000 hectares of land in Sheikh Haider Zam and adjoining area in District Dera Ismail Khan.

- (iii) Kamara System: The existing system of earthen bunds currently serve the purpose to divert and hold water for a particular village till at least 70% of the farmlands of that village are irrigated by flood water. The earthen bund is usually washed away by heavy floods causing damage to land, crops and property downstream and also loss of water resources. Each village has its own bund which they repair each year before monsoon to hold water during the flood season. The average expenditure per bund per year was calculated as Rs 80,000-120,000. The farmers contribute their hard-earned income to raise funds for repair.

With the support from SLMP, the stronger bunds were constructed capable to withstand floods for longer period, ensuring more farm fields to be irrigated. Keeping in view the demand of

local farmers, the activity will be replicated on 40 new sites to benefit farmers. It will benefit 25,000 hectares of land in Sheikh Haider Zam and adjoining area in District Dera Ismail Khan.

- (iv) Plantation along rodhs: Heavy monsoon rains result in flash floods that cause damage of the local water distribution system through over flooding, and stream bank erosion. The erosion of stream banks also lead to loss of valuable water resources that would have been available for irrigation otherwise. To tackle this problem, the SLMP will mobilize and support local farmers to hold plantation campaigns in each season for planting trees along the streams, channels and rodhs. Trees provide better protection against erosion once plants are established on ground. A number of locally available and easily propagated tree species can be used for this purpose e.g. Tamarix, Acacia, Prosopis etc.

This activity will be implemented along all important rodhs and water channels, covering a length of 48 km (on both sides of the channel, in 4 rows). Plants of above mentioned species will be planted in 4 rows with a distance of 5 feet plant to plant and 5 feet line to line. The activity will be carried out in Sheikh Haider Zam and adjoining area in District Dera Ismail Khan.

- (v) Construction of water ponds for drinking & Plantation: Because of arid climatic conditions, the area faces acute shortage of water for cultivation, livestock and human use. Water stored in earthen ponds near to each village is the only source of water that is used by humans and livestock at the same time. The water quality in these ponds is usually very low and contaminated. Water comes into these ponds in monsoon and post-winter rains, that is stored for use all along the year.

The SLMP in consultation with local people worked on designing and constructing improved earthen ponds. These ponds were designed to restrict the access path-ways so that only humans could use the water in a proper way. The same activity will be replicated in 10 new villages benefiting at least 3000 households in drylands. The older ponds could then be used only for livestock purposes. Some of the selected water ponds can also be equipped with water filtration system to improve the water quality for human uses. This activity will be implemented in Sheikh Haider Zam area and union Council Paliana (Tehsil Paharpur) in District Dera Ismail Khan.

II. Support to Dryland Farming System

Rainfed farming is an important land use in southern drylands of Khyber-Pakhtunkhwa. The rainfall pattern is very uncertain and has positioned the farming community at risk. However this is the prime source of food for majority of people. The rainfall in this region is below 500 mm, and thus is classified as arid or semi-arid. The common crops cultivated include wheat, gram and canola. Vegetables are not cultivated on large scale but few households with access to water usually grow common vegetables e.g. chillies, okra, pumpkin, onion, etc. On other hand, fruits that can withstand shortage of water can thrive well in that climate e.g. Guava, Dates, Ber, Pomegranate, mango (in some parts like Paniala) and grapes.

However the farming is usually considered a land use with very little returns. This is because farmlands are lacking in fertility and are faced with severe wind and water erosion. In most of the cases, hill torrents originating from surrounding barren hills traverse the plans forming deep gullies. Flood water entering the farmlands also cause severe on-farm soil erosion and stream bank erosion. These gullies keep widening with each rainy season. On the other hand, strong wind storms in summer months are drivers of shifting sand dunes, making it very hard to cultivate land under these circumstances.

All these factors have reduced the livelihood options for local farmers. They cannot rely only on farming, but have to look for other supplementary sources of livelihood like livestock keeping, cottage industries and employment outside the area. Poor farmers have very little capacity to invest in their land, and thus are vulnerable to the factors of climate change and desertification. The SLMP identified and

tested a number of on-farm interventions during its Phase I. These will be replicated during Phase II and are described below:

- (i) Farmland water spill-ways: One of the prominent characteristic of dry land farming system is *Sailaba* which means impounding run-off water on to farmlands for longer period to conserve maximum moisture for crop cultivation. For this purpose, raised embankments are made around each farm. The flood water is allowed from one farm to another once the former one is filled. However in heavy flood water, the water pressure is increased eroding the embankments and producing gullies on farmlands.

To overcome this problem, spill ways with cement and stone or bricks can be constructed in embankments for flow of water from one field to another once it reaches certain level in upper farm. This allows free water flow among fields and prevents breakage and erosion of soil. This system is applicable in Palian (Dera Ismail Khan), Dara Tang and Dadiwala (Lakki Marwat) and some parts of District Karak. During Phase II of SLMP, a total of 298 spill ways will be constructed of varying size depending upon farm size and height of embankments. These spill-ways will improve soil and water conservation on farmlands and will have positive impact over an area of 500 hectares.

- (ii) Spurs & retaining walls: The hill torrents in drylands are dead through most part of the year but become alive in monsoon when heavy water flows down causing severe erosion along the stream banks and engulfing fertile farm lands. This problem is usually faced by farmers in Paniala (DI Khan), Dara Tang and Dadiwala (Lakki Marwat) and some parts of district Karak. Spurs and retaining walls on suitable sites can be a cheap and effective solution to this problem, given that designing and positioning of these structures are carefully planned as per site requirements and flow of water. Keeping view the available material, these structures can be made of loose stones, loose stones with wire, concrete, cement and bricks, cement and stones, sand bags combined with vegetative material, vegetation or a combination of many of these. The SLMP will introduce innovative methods including vegetative or bio-engineering on some sites to reduce the cost. As a whole, 100 sites will be treated and it is expected that these structures will provide protection to at least 400 hectares of farm lands.

- (iii) Sand dune stabilization (Kana and Tamarix cultivation): Shifting sand dunes is a common feature of desert areas. Strong wind-storms in the summer months is the major force behind this problem. The sand dunes are low in organic matter and nutrients, and retain very little water that could be used for crop production. The shifting of sand dunes makes these unsuitable for crop cultivation. This also causes damage to standing crops on adjoining farmlands, and infrastructure like roads, rail paths and human population.

Stabilization of sand dunes and their transformation to soil is a slow and difficult process. Cultivation of Kana (*Saccharum spontaneum*) on sand dunes has been found very effective in breaking the velocity of winds and deposition of suspended particles. Kana plants are planted in rows or in clock form with a distance of 5 feet from plant to plant and row to row. Kana is a tall grass with stalks and leaves used for a number of purposes by local people. The stalks are usually used for making chiks, local furniture and roofing material while Kana leaves are important source of fibre for rope making and banh making by local communities, providing additional income. In addition, Kana can be easily cultivated with very less and one time labour cost, it withstands severe and prolonged droughts and provides a number of outputs on annual basis.

The SLMP will promote Kana cultivation in sandy deserts of Paliana (Dera Ismail Khan), and Dara Tang and Dadiwala (Lakki Marwat). The activity will be implemented over an area of 200

hectares in all three districts. Where required the activity can be supplemented with plantation of other species like *Tamarix* to further strengthen the sand dune stabilization.

- (iv) Lining of water courses: In some limited parts of the Sheikh Haider Zam area in Dera Ismail Khan, availability of perennial water is a blessing for local farmers. They use this water for crop cultivation and thus it becomes a valuable resource in this dry region. The perennial water (locally called *Kala Ppani*) originates from springs up the hills and it is diverted towards farmlands through open earthen channels. However much of this scarce resource is lost due to leakage through channel banks, percolation down and on sides and through evaporation due to high temperature.

To prevent water losses through bottom and banks, lining of channels with cement or concrete structures is proposed. Pre-cast structures can be used conveniently for this purpose. Although this is an expensive activity, but limited extent of the activity and high impact on production system are forceful arguments for its implementation during Phase II. The activity will be implemented in Kala pani area of Sheikh Haider Zam. Overall a total of 30 km length of water channel will be treated that will positively affect the availability of water for about 2,000 hectares of cultivated land.

- (v) Construction of earthen rainwater harvesting ponds: 40 ponds will be developed
- (vi) Shelter belts/wind-breaks: Shelter-belts are single or multiple rows of trees planted across the wind direction in linear position on farmlands. The basic purpose of putting these tree strips is to break the velocity of strong winds that could damage standing crops or erode the sandy soils. The strips are repeated after a calculated distance based on height of mature trees in the strips/belts. It is assumed that trees when mature can provide protection against winds up to a distance equal to 15 times their height.

Shelter belts are effective tools against wind erosion in arid regions where strong wind storms are important feature in summer. These are more sustainable if multiple local / indigenous tree species with different heights are used. This can also be based on farmers own choices or experiences. The proposed project will facilitate farmers to establish shelter-belts up to 200 avenue km. The shelterbelt will comprise at least 3 rows of trees 15 feet apart with plant to plant distance of 10 feet. The species composition may be different for different sites but preference will be given to local species like *Acacia nilotica*, *Acacia modesta*, *Tamarix aphylla*, *Zizyphus mauritiana* and *Prosopis cineraria*. The shelter belts will have positive effects over an area of estimated 2,000 hectares. The activity will be implemented with progressive farmers who show responsibility and who are really interested in these kind of interventions. The demonstration effect will mobilize other farmers for replication or adoption of the activity. The activity will be implemented in all three districts.

- (vii) Introduction of new dryland crop varieties (varietal trials): Wheat, gram, maize and canola are major crops cultivated in most of the drylands in target areas. The limited availability of water for cropping has limited the choice of crops for farmers. In Rud Kohi area of Dera Ismail Khan farmers apply deep ploughing in pursuit of soil moisture. In this situation, wheat varieties with longer coleoptile are more successful. In other areas of Lakki Marwat and Karak, wheat and gram varieties that are more drought tolerant should be planted. However, despite of new research taking place in many research centres for drylands, farmers are using traditional crop varieties. The reason behind this is lack of awareness, lesser access to research centres, inability to bear extra cost involved in purchase of new seed, and hesitation in bearing the failure risk involved.

The SLMP in Phase II will introduce new varieties of wheat, gram and canola on selected sites. Some varieties suitable for Daman area in Dera Ismail Khan and other drylands may be Karak-I variety of gram, and Hasham, Raj, Sehar and Zam varieties of wheat. In addition to these new cash crops like oilseeds and Goara can also be introduced. The SLMP will support demonstration of these varieties through crop trial, and seed replication within the communities. Each crop trial demonstration plot will be of 0.5 hectares size, and a total of 214 trials will be made in all the three regions.

- (viii) Farmer nurseries: Forest nurseries owned and managed by departments are usually less accessible for farmers coming from far flung rural areas. Although free or subsidized seedlings are provided during plantation campaigns to farmers but these are limited to specific periods only, and the marginalized poor farmers get a lesser share. A very successful answer to this situation is to train farmers and facilitate them in nursery raising. The nurseries owned and managed by farmers themselves have many advantages. Whereas these provide seedlings to farmers on low cost and easily accessible points, these are also a source of income for farmers. In addition, farmers having basic skills of farming are in better position to acquire nursery raising additional skills.

The SLMP will support farmers in nursery-raising through provision of necessary training and inputs like seeds and polythene tubes. There will be 2 types of nurseries i.e. field nurseries and household nurseries. The field nurseries located on or near to farmlands will be managed by male farmers and household nurseries near or within households will be managed by women and children. The nurseries will provide planting stock to plantation activities under the project, to individual farmers on need basis and also to the department if required. A total of 150 nurseries will be raised, each with at least 20,000 plants. The nurseries may include both forest and fruit species. However priority will be given to the farmers demand and local species in case of species selection for nurseries. The activity will be implemented in all three districts.

- (ix) Energy Plantations: Natural forests in arid regions are under high pressure of exploitation by local people to cater their household energy and construction needs. These are now limited to very few scattered patches over top of Lowaghar, Surghar and Sheenghar. Once covered with green vegetation, these hilly tracks are now barren, added by continuous free grazing of animals that prevent natural regeneration from taking its course. The natural forest comprised of species like *Acacia modesta*, *Olea ferruginea*, *Tecomma undulate*, and a number of shrubs like *Gymnospora royaliana*, and grasses. These forests since centuries have been source of fuel wood, construction timber, poles, and fodder for livestock.

In order to reduce pressure on natural forests, the concept of raising energy plantations on easily accessible sites within the existing farming system was introduced during Phase I and was found successful. Farmers were given option to select trees of their own choice to be planted on their lands. During Phase II, the same activity will be replicated on larger area. This activity will cover an area of 500 hectares using common local preferred species like *Acacia nilotica*, *Dalbergia sissoo*, *Prosopis cineraria*, *Tamarix aphylla*, etc. The plants will be planted with a spacing of 10X15 feet in straight rows. The activity will take place in three districts.

- (x) Sprinkler Irrigation System for crop production: Due to shortage of water, farming is increasingly becoming a less profitable practice in arid lands. The uncertainty in rainfall and increasing population pressure has enforced people to switch to other livelihood sources or migrate from the area. Keeping in view the success in other provinces in similar situations, efficient irrigation system in form of sprinkler or spray gun will be introduced for cultivation of cash crops like melon in Dera Ismail Khan. This activity is specially designed for areas where Rud Kohi water is available that could be stored in underground tanks or ponds and used for

sprinkler or spray-gun irrigation. This activity will be introduced on 15 sites (each with 1 hectare plot size) in Dera Ismail Khan only.

- (xi) Fruit Orchards with drip Irrigation: Fruit orchards can be an important source of food and additional income for poor farmers if the problem of water shortage is solved. Although fruit trees like Guava, Grapes, Pomegranates and Ber are grown by a number of farmers in scattered form around their households or farms but water shortage is preventing the activity to be adopted at formal level.

The system of storing water in water tanks/ponds and watering plants through plastic pipes has been implemented by a number of projects and departments. The system provides to ensure availability of minimum water for plant growth for a longer period of time, even under situation of water scarcity. Thus this system can be implemented in dry regions where water is available to some extent. The SLMP will introduce this irrigation system for growing fruit orchards in Dera Ismail Khan, Lakki Marwat and Karak (230 sites each with 0.5 hectare plot size). In addition to this innovative system, the project will promote dryland fruit orchards of drought resistant fruit species (e.g. guava, Ber, dates, pomegranate). For this purpose, orchards will be established on 120 acres through conventional method.

III.Rehabilitation of Degraded Rangelands

Livestock keeping is the second largest sector of livelihood for local people. Local people are increasingly relying on keeping more and more livestock to cater for their family needs of food and nutrition. This factor is much more highlighted because of weakening of the dryland farming system due to changing climatic patterns and uncertainty of rainfall. More and more dryland farms are being abandoned with time and people are switching over to livestock. Common animals in the target region include sheep, goats, cows, camels, and buffalos. Goats, sheep and cow are the most common animals and these are let open for free grazing the whole day. There are vast tracts of other-wise unused lands that are used as grazing lands. The fallow farmlands after harvesting are also used for this purpose. However the free grazing and increasing number of livestock are causing enormous pressure on natural vegetation (i.e. grasses, shrubs and some of the tree species like *Acacia nilotica*, *Prosopis cineraria* and *Zizyphus mauritiana*). Given the dry climate of the area, the regenerating capacity of vegetation is reduced. This gives rise to the process of depletion of natural soil cover and desertification.

The SLMP will apply a number of solutions to these problems which include preparation of rangeland management plans/grazing plans, dryland afforestation, reseeding of palatable grasses and application of controlled grazing system. The details of these activities are presented below:

- (i) Preparation of Participatory Range management plans: The local communities will take lead in preparation of grazing plans for their lands commonly used for grazing. Specific targets of these plans would be the wastelands that are communal property and that are used unrestricted for grazing and thus facing degradation. The grazing management plans or rangeland management plans will provide an annual plan for regularization of grazing, rehabilitation of degraded sites and introduction of new fodder species. These plans will be prepared by a mutual consultative process of the farmers' organizations, government line agencies and the SLMP implementing partners. The activity will be implemented in all three regions. As a whole 15 plans will be prepared, covering a total area of 1500 hectares.
- (ii) Dryland afforestation (silvopastures): In order to rehabilitate the fodder banks in rangelands, and also to provide sources of fuelwood and timber for local community, the silvopastures development with dryland afforestation was introduced on selected sites in Dera Ismail Khan and Lakki Marwat during Phase I. Water harvesting techniques were also used in order to overcome the water shortage. The activity was successful with active growth of trees and profound growth of natural grass that catered for fodder needs of the local livestock.

The system of dryland afforestation consisted of hillside ditches. The ditches of size 1 foot wide, 1 foot deep are dug along the contour across the slope direction to capture run-off water from above. In each ditch, pits are made with loose soil piled on one side to impound water. Within this system plants are planted at a distance of 15 feet, the ditch to ditch distance being 22 feet. Between each 2 plants, seeds of local fodder shrubs and grasses are sown. To reduce the earth work involved, improvised implements can be used with tractor that also reduces the cost of the activity.

The SLMP will further promote this system over an area of 600 hectares in all the three regions with participation of farmers.

- (iii) Reseeding of palatable grasses: Due to over-grazing and depletion of natural vegetation, the palatable natural species of the area have been reduced to few patches only. The remaining species are non-palatable and low in nutrition. In order to cater for needs of livestock, seeds of palatable grasses and shrubs will be collected and broadcasted in degraded sites. This will also increase the soil cover in area and contribute in halting the process of land degradation. Local farmers will be involved in seed collection and broadcasting. This activity will be carried out over an area of 3000 hectares in all the three regions during Phase II.
- (iv) Controlled grazing system: The controlled grazing system was introduced on few sites during Phase I in Dera Ismail Khan and Lakki Marwat. The activity met variable success depending upon a number of socio-economic issues. Among all, the consensus among all members of the community is very important to initiate the activity and sustain it. The activity must however ensure that there are adequate grazing lands available in all seasons for livestock population of the area.

Controlled grazing system implies a number of methods and strategies that ensure that certain parts of the range lands are put on rest from grazing activity to enable them recover their natural vigour and if possible the improvement activities to get established well on ground. For this purpose the area is demarcated into a number of units where to rotate grazing activity on annual basis. In other cases, only certain areas are closed for grazing and others are grazed for certain period. The area closed to grazing are usually treated with reseeded or other improvement activities.

During Phase II the SLMP will promote this system in all the three regions over an area of 6000 hectares. However it is very important that all stakeholders are taken on board and specific needs of all are accounted for. The activity will be carefully planned with CBOs and line departments.

IV.Promotion of Non-Timber Forest products

Because of severe climatic conditions, drought and sandy nature of the area, Kana (*Saccharum spontaneum*) is extensively cultivated by local farmers in sand dunes. As the sand dunes are lacking in soil nutrients and retain very little moisture, cultivation of other crops is not possible, whereas Kana thrives well in all these circumstances. It serves as wind breaks against wind storms, help in stabilization of sand dunes, and provide Kana fibre that is used in local Kana cottage industry for production of ropes. The long stalks of Kana are used in a variety of products like Chiks, roofing material and local furniture items.

Due to extensive cultivation of Kana and hence easy availability of raw material, the Kana Cottage industry has flourished over the years in District Lakki Marwat. The products associated with this industry include Chiks, Ropes, local furniture etc. However as this sector is very informal and non-mechanized, there is intensive manual labour involved. This has increased the work load of women and children who are mostly engaged in this industry. In the longer run, this activity will promote Kana cultivation in the area that plays significant role in sand dune stabilization. The SLMP will promote certain level of mechanization as under:

- (i) Kana fibre extraction: This is an improvised mechanical unit run with electricity motor to crush Kana leaves into fine and raw fibre. The fibre is then either used locally in making of ropes or sold to external markets in Punjab and thus is a source of additional income for poor farmers of drylands. The mechanical unit was first introduced in SLMP Phase I where it was found very successful in reducing the production time, work load of women and also added quality to the products fetching higher prices. SLMP will work out possible strategies to install 30 more units in the villages of Lakki Marwat during Phase II.
- (ii) Fibre processing & products: The fibre extracted from Kana leaves is then processed for making ropes. The ropes are used in making local furniture and other products. The rope making is again a time consuming and laborious job that significantly increase the work load of farmers, mainly women of them. SLMP successfully introduced rope making mechanical units in Lakki Marwat. These units were run with electricity and significantly reduced the production time, and added quality to the final product i.e. rope. The Phase II will see introduction and installation of 30 more units in other villages of Lakki Marwat to strengthen the cottage industry and provide additional income source.
- (iii) Kana shoots production mechanized: Chick making is an important cottage industry in areas where Kana is growing either naturally or in plantations. In the proposed project areas, Kana production is found in Lakki Marwat and some parts of Karak and DI Khan. The making of chiks from Kana stalks is a laborious job where women and children particularly invest their time and physical well-being. The mechanization of this industry will spare time, increase income and have positive effects of health of women and children. For this purpose, the mechanical units will be introduced in 30 villages.
- (iv) Promotion of medicinal plants: Medicinal plants in many areas have been harvested by local communities for household use and commercial selling. However the sustainability of the resource base has always remained a question in such cases. The dryland ecosystem provide habitation for a number of important medicinal plants e.g. *Aspaghhol*, *Withania* etc. The project will explore the possibility of promoting the cultivation of important medicinal plants in target areas through on-farm cultivation for earning extra income by farmers. Medicinal plants cultivation will be realized on 15 plots (each 1 hectare size) in district Lakki Marwat and analyse the results for further replication if necessary.

D. ON-THE-GROUND SLM ACTIVITIES FOR UP-SCALING IN BALOCHISTAN PROVINCE

On-the-ground SLM activities envisaged under SLM Up-scaling Programme in Balochistan province are as follows:

I. Efficient Irrigation System

- (i) Installation of Drip or Mini Bubbler Irrigation System for low delta fruit trees (apricot, pomegranate, pistachio, olive etc): There are several low delta crops like grapes, pomegranates, olive, pistachio & apricots cultivated by the farmer's communities in all the uplands of the province of Balochistan. These crops are of a great economic importance & the farmers are getting maximum prices from such fruits. But there is a serious shortage of water to irrigate these fruits plants. To promote low delta crops in the province, it is most essential to adopt the drip or Mini Bubbler Irrigation system. The up-scaling programme will demonstrate this system over 50 acres.

- (ii) Drip Irrigation System for grapes: An area of 90 acres will be covered under this system to grow low delta grapes in the target districts.
- (iii) Low cost Hose-Fed Irrigation System: The rural economy of the province is mostly dependent on agriculture & livestock sectors. Agriculture sector is facing a serious threat in the form of very low availability of water for cultivation of crops. As Balochistan is the largest province of Pakistan having waste cultivable land with five micro-climatic conditions, within the available water, area under cultivation is very limited and inadequate. Keeping in mind the importance of water a very innovative, efficient, locally designed & economical irrigation system called Hose-Fed irrigation system will be adopted over 300 acres.
- (iv) Geo Membrane Water Reservoir Geo Membrane base: Water is the limiting factor in Balochistan & within the uplands of the province there is wastage of water due to lack of unlined water channels & water tanks. To overcome water losses during conveyance, the use of geo membrane could be the best solution for the lining of water channels & Water tanks. This geo membrane is basically poly ethylene & can save water for more cultivation of the area within the province. This technology is more economical & easy to install for more efficient utilization of water to grow more area under cultivation of the low delta crops. Under this activity 15 reservoirs will be lined with geo membrane.

II. Integrated Soil & Water Conservation Measures

Water is a scarce resource in Balochistan which area-wise is the largest province in Pakistan. At present tube-well irrigation system is being practiced in almost all districts where underground water is available. In target districts where water is scarce, adoption of innovative irrigation conservation techniques are of great importance. These conservation techniques would be pertaining to soil erosion control measures, development of water conservation structures for more percolation of water, development of water ponds as well as lining of the water channels / courses. The details of the conservation measures are discussed as under:-

- (i) Water and soil conservation structures for soil erosion control: 30 contour trenches, dykes, spurs and check dams will be constructed to harvest rain water and control soil erosion.
- (ii) Promote rainfed agriculture through rainwater harvesting structures and soil moisture conservation: The simplest form of water harvesting system for crop production in the foothills is through Bandats or dykes to delay rainwater for improving the moisture regime of soil and cultivate 1-2 crops for grains and fodder from residual moisture. Under this activity rain-fed agriculture using various water-harvesting structures will be demonstrated on 100 ha.
- (iii) Construction of Stock water ponds: 110 stock water ponds will be constructed for rainwater harvesting mainly for livestock consumption.
- (iv) Construction of water diversion dykes to harness flood water: 15 water diversion dykes will be constructed to harness flood water for promoting rain-fed agriculture.
- (v) Water inlet/outlet structures to conserve soil moisture/erosion control: 100 field inlet/outlet structures will be constructed to regulate flow of water in the fields and divert it from one field to the other. These would be helpful to conserve soil moisture and in erosion control.
- (vi) Watercourse lining/Pipe: In order to reduce water losses, under this activity 23 km of water courses will be lined.

III. Promotion of low delta crops/fruit trees

- (i) Introducing low delta and high yielding fruit-tree grapes: The low delta & high yielding grapes will be introduced over 178 acres.
- (ii) Introducing low delta and high yielding fruit trees - apricot, pomegranate etc: The low delta and high yielding varieties of fruit tree like apricot and pomegranate will be introduced over 188 acres.
- (iii) Introducing low delta and high yielding fruit-trees-Pistachio, Olive etc: The low delta and high yielding varieties of fruit trees like pistachio and olive will be introduced over 24acres.
- (iv) Introducing low delta and high yielding crops and its seed multiplication: This activity will be carried out over 125 acres.
- (v) Establishing Low delta fruit Nursery: It is envisaged to establish 23 low delta fruit plants nurseries on farmers land to provide fruit plants of grapes, apricot, pomegranates, pistachio, fig, ber and olive etc. easily to farmers of the area at low prices. Each nursery unit will have 10,000 saplings of different low delta and high yielding varieties. The choice of plants will depend on local climatic conditions and market demand. The appropriate sites for nurseries will be done in consultation with the local communities. A proper record of the plants distributed, sold and planted will be maintained in each nursery.

IV. Sustainable Forestry & Range Management

- (i) Establishment of enclosures for production of grass seed: Enclosures over 5 acres for production and multiplication of grass seeds will be established to support range re-seeding and rehabilitation programme.
- (ii) Rehabilitation of degraded rangeland/pasture development: Rehabilitation of degraded rangeland and pasture development will be supported over 200 acres.
- (iii) Development of Grazing Management Plan: Rangelands covering an area of 27.4 million ha represent 79% area of the province. It is envisaged to prepare 8 grazing management plans in consultation with the local communities to ensure sustainable management of the rangelands.
- (iv) Establishing Forest Nurseries: Forest trees play a critical role in the development of sustainable land use systems, but availability to tree saplings is limited. To promote low cost tree seedling production and its diversity in an efficient way and provide opportunities for building natural, human and social capital, there is a need of establishing forest nurseries. It will be helpful in biodiversity and eco-system resilience. 20 forest nurseries will be established each unit containing about 100,000 saplings of indigenous species which are adapted to the local conditions. The purpose of the forest nurseries is to train the local farmers in raising these plants so that in future this develops into an income generating business opportunity for the farmers. These forest nurseries will help to promote social forestry in the province as plants will be available to the farmers at their door-steps.
- (v) Dry- afforestation in spurs, contour trenches and eye brows: Dry-afforestation with local species will be promoted over 150 acres through construction of spurs, contour trenches and eye brows.
- (vi) Shelterbelts/windbreaks (3 rows): Shelterbelts/windbreaks are vegetated strips established in rows in cropping areas against the wind direction to control wind erosion as well as protect the crops from the detrimental effects of cold and hot winds. The demonstration effect will mobilize

other farmers for replication or adoption of the activity. The activity will be implemented over 8 km for demonstration purpose so that local farmers adopt this activity after seeing its benefits.

- (vii) Development of Desert Oases: In desert areas, the development of “Oasis” is emerging as a major trend to establish green spots with favourable micro-climatic condition. Live hedges, low delta crops, medicinal plants, forest and fruit trees are planted around a source of water which could be a spring or a stream. Under this activity it is envisaged to develop seven oases each about 5-acres size. The sites for the development of oases will be identified in consultation with the local communities ensuring that an appropriate water source is available for the development of such green spots within the desert areas. These oases will help in the re-emergence of local flora and fauna species and improving biodiversity.
- (viii) Establishment of enclosures for production of grass seed and promote local Agro-cottage industry/livelihoods: Under this activity promotion of local agro-cottage enterprises such as honeybee keeping, poultry, value addition of mazri products will be promoted to enhance local livelihoods of the poor dryland communities.