

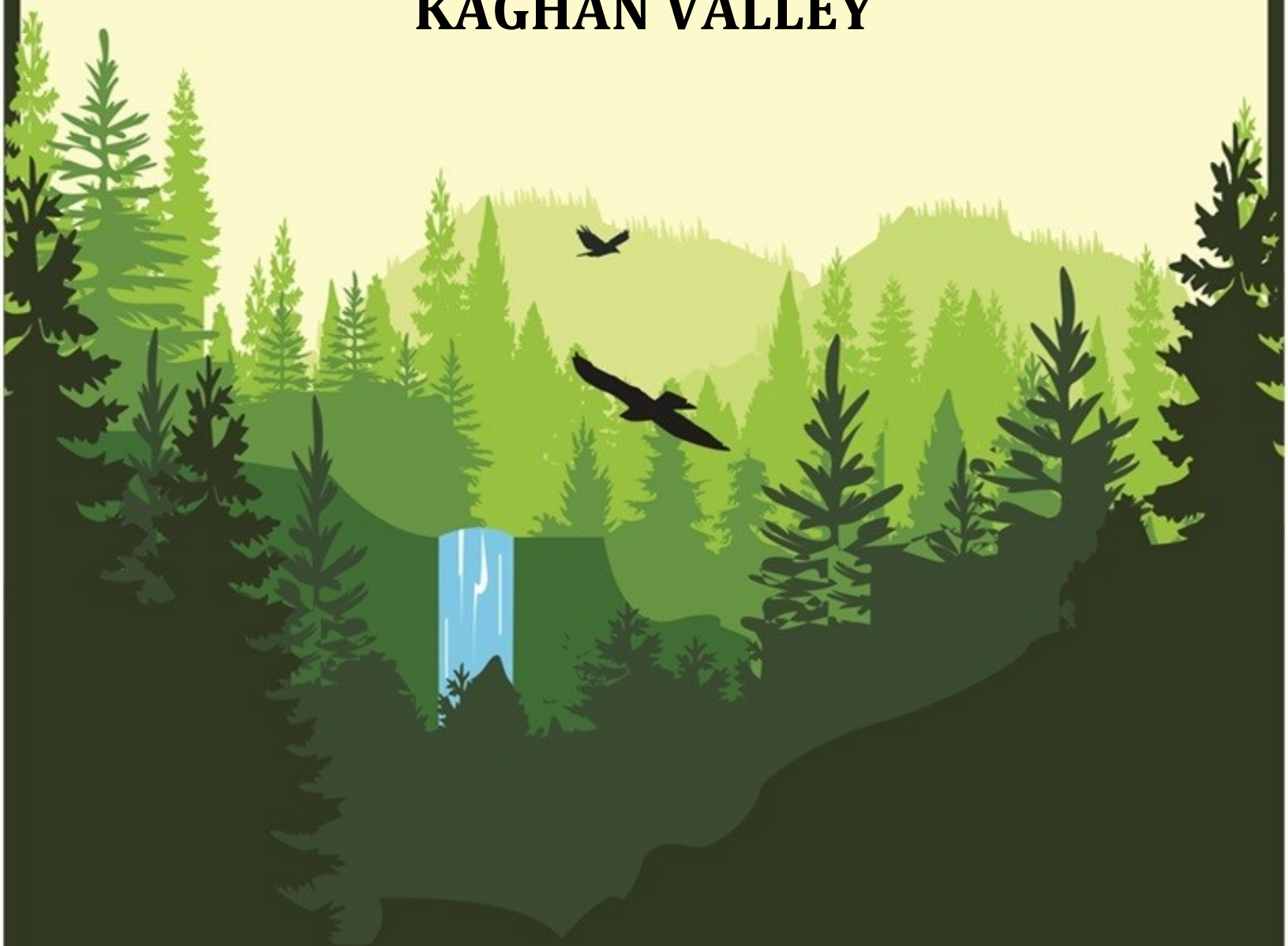


Ministry of Climate Change
Government of Pakistan



FINAL REPORT

**REDD+PES DESIGN DOCUMENT FOR
TEMPERATE FOREST ECOSYSTEM
KAGHAN VALLEY**



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FINAL REPORT

REDD+PES DESIGN DOCUMENT FOR TEMPERATE FOREST ECOSYSTEM

KAGHAN VALLEY

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LIST OF ABBREVIATIONS

AFOLU	Agriculture, Forestry and Other Landuse
AGSB	Aboveground Shrub Biomass
AGTB	Aboveground Tree Biomass
A/R	Afforestation/Reforestation
BAU	Business As Usual
BTAP	Billion Trees Afforestation Project
CBOs	Community Based Organizations
CDM	Clean Development Mechanism
CfRN	Coalition for Rainforest Nations
CNA	Country Needs Assessment
CSOs	Civil Society Organizations
CSR	Corporate Social Responsibility
CERs	Certified Emission Reductions
CIFOR	Center for International Forestry Research
CITES	Convention on International Trade of Endangered Species of Wildlife
CO₂	Carbon Dioxide
CoP	Conference of the Parties
CPEIR	Climate Public Expenditure and Institutional Review
DBH	Diameter at Breast Height
EPA	Environmental Protection Agency
FAO	Food and Agriculture Organization
FRA	Forest Resource Assessment
FD	Forest Department
FEG	Framework for Economic Growth
FCPF	Forest Carbon Partnership Facility
FPIC	Free, Prior and Informed Consent

FY	Financial Year
GCF	Green Climate Fund
GEF	Global Environment Facility
GHG	Green House Gas
GIS	Geographic Information System
GPG	Good Practice Guidance
GPS	Global Positioning System
GoP	Government of Pakistan
GT	General Topographic
Ha	Hectare
ICIMOD	International Centre for Integrated Mountain Development
IUCN	International Union for Conservation of Nature
JFMCs	Joint Forest Management Committees
km	Kilometer
KP	Khyber Pakhtunkhwa
KP-FD	Khyber Pakhtunkhwa Forest Department
KP-WD	Khyber Pakhtunkhwa Wildlife Department
KV	Kaghan Valley
LULUCF	Landuse, Landuse Change and Forestry
M	Marketable
MEAs	Multilateral Environmental Agreements
MOCC	Ministry of Climate Change
MoU	Memorandum of Understanding
mm	Millimeter
MRV	Measurement, Reporting and Verification
MUSD	Million United States Dollar
MW	Mega Watt

NCCP	National Climate Change Policy
NFMS	National Forest Monitoring System
NGO	Non-governmental Organization
NM	Non-Marketable
NPV	Net Present Value
NRM	Natural Resource Management
NTFP	Non Timber Forest Produce
PC	Participants Committee
PDD	Project Design Document
PES	Payment for Ecosystem Services
PFI	Pakistan Forest Institute
PFGRM	Provincial Feedback and Grievance Redress Mechanism
PGJDC	Pakistan Gems and Jewelry Development Company
PKRs	Pakistani Rupees
PLRs	Policy Laws and Regulations
PoAs	Programme of Activities
PRA	Participatory Rural Appraisal
REDD+	Reducing Emissions from Deforestation and Forest Degradation plus the role of conservation of carbon stock, sustainable forest management and enhancement of carbon stock
RPP	Readiness Preparation Proposal
RSPN	Rural Support Programme Network
RS	Remote Sensing
SFM	Sustainable Forest Management
SRSP	Sarhad Rural Support Programme
SUPARCO	Space and Upper Atmosphere Research Commission
t	Tonnes
TAP	Technical Advisory Panel

TEV	Total Economic Value
ToR	Terms of Reference
UNDP	United Nations Development Programme
UNCBD	United Nations Convention on Biological Diversity
UNFCCC	United Nations Framework Convention on Climate Change
USD	United States Dollar
USAID	United States Agency for International Development
VCS	Voluntary Carbon Standard
VCUs	Verified Carbon Units
VDCs	Village Development Committees
WAPDA	Water and Power Development Authority
WHTF	Western Himalayan Temperate Forests
VLUP	Village Land Use Planning
WWF	World Wide Fund

EXECUTIVE SUMMARY

This report is about designing REDD+ Payment for Environmental Services (PES) in the Western Himalayan Temperate Forests (WHTF) of Kaghan Valley in Khyber Pakhtunkhwa (KP) Province of Pakistan. The report is structured to cover the different topics that National REDD+ Office of the Ministry of Climate Change wanted PFI to address in the report. The report, therefore, has fifteen chapters each focused on specific aspect of the PES scheme that has to be dealt with as per ToRs of this consultancy assignment. These chapters and their topics are discussed below.

Chapter-1 is the Introduction chapter and is meant to cover the background information. It sets the scene of the project area and deals with the contextual elements related to Kaghan valley and the forests and other natural resources that are found there. It discusses the physical context, forests and natural resources, socio-economic situation and institutional setup. Within the framework of institutional arrangements, the different sub-topics covered include the relevant organizations, applicable laws and policies and their provisions with regard to the forests, their ecosystem services and threats to the forest ecosystems in the valley.

Chapter-2 is about the “Process Adopted for Designing the REDD+PES Project”. It describes how the different types of data, including the socio-economic, have been collected, how ecosystem services and resource inventories have been carried out in the field. It also describes how consultations have been held with the various stakeholder groups on different aspects of the Project Design Document including various institutional parameters (policies, laws, regulations), how project boundaries have been laid out, how institutional mechanisms about the PES scheme have been designed in light of the discussions held with the provincial forest department and other relevant departments officials, and how benefit sharing mechanisms were discussed in workshops with communities and other key stakeholder groups.

Chapter-3 is the Project Design Document part of the report. It gives summary description of the project document, project sectoral scope and project type, project proponents, other project entities, project start date, project crediting period, GHG emission reduction and carbon sequestration estimation over the project period, detailed project description (including project goal, objectives and project activities), project location, stakeholders engagement as ecosystem services providers, legal status and property rights.

Chapter-4 discusses the 12 ecosystem services, grouped under four major categories that have been identified under this PES scheme. These ecosystem services include annual water production in Kaghan Valley, habitat conservation for future generations, land stabilization and prevention of landslides and other erosion, mainstream ecotourism, hunting tourism, timber harvesting,, fuelwood harvesting and collection,

carbon sequestration, free-grazing fodder for livestock, medicinal plants collection, commercial fish production, and gems and precious stones collection.

Chapter-5 describes the buyers and sellers for the above mentioned ecosystem services. Keeping in view the forests and resource tenure in the locality, the potential sellers of the different ecosystem services include the Provincial Forests and Wildlife Departments, forest owners, and local pastoral communities. Depending on the ecosystem service in question, there are different potential buyers for the various services. For example, for water and watershed related services, the potential buyers are WAPDA and other hydro-power companies; for the prevention of landslides, the interested parties would include the national highway authority, disaster management authorities and hotel industry; for mainstream tourism the potential buyers are the visitors to the valley from different parts of the country; for trophy hunting, the ecosystem service buyers are the international hunters from all over the world; for timber harvesting the potential buyers are the timber traders; for carbon sequestration again the buyers base is quite wide and may include both international as well as domestic buyers from a range of industries including airline companies, cement industries, and hotel chains; the potential buyers for medicinal plants include various pharmaceutical and cosmetic industries; and for gems and precious stones potential can be Pakistani citizens as well as international buyers. Intermediaries however would be needed to link the ecosystem services providers and buyers.

Chapter-6 provides estimates of the prices that can be set for the different ecosystem services based on monetization of the different ecosystem services that was done in chapter-4. The total value of the selected ecosystem services of Kaghan Valley has been estimated at 6.361 Billion USD. This is equal to 24,642 USD per ha.

Keeping in view the above monetization and the paying capacities as well as willingness of potential buyers, initial tentative prices have been suggested for the various ecosystem services in the chapter. It has to be understood that these are initial estimates and the actual prices to be set would result from the outcome of negotiations between the sellers and buyers.

Chapter-7 discusses business as usual and project scenarios and their comparison. It also identifies the methodology to be applied under the project. Keeping in view the drivers of degradation in Kaghan valley, it would have been ideal to use the VCS Methodology VM0006 Methodology for Carbon Accounting for Mosaic and Landscape-scale REDD Projects, v2.2. With this methodology it is possible to quantify the GHG emission reductions and removals generated in mosaic and landscape scale REDD+ projects. Different project activities can be combined with improved forest management, afforestation, reforestation and re-vegetation activities, as well as clean cooking stoves initiatives. As a result, a more holistic landscape approach to REDD+

activities is possible that integrates efforts to protect forests with programs to improve the livelihoods of rural communities.

The IPCC (2003) Good Practice Guidance for Land Use, Land-use Change, and Forestry (GPG-LULUCF) and the IPCC (2006) Guidelines for National Greenhouse Gas Inventories Agriculture, Forestry and Other Land use (AFOLU) were used for emissions estimation. The challenge to the emissions baseline development is that the data required for estimating the emissions baseline from degradation that complies with the IPCC's GPG reporting principles of consistency, comparability, transparency, accuracy and completeness, is not available in Pakistan. Therefore, the BAU for the Kaghan valley PES REDD+ pilot project applies the historical deforestation rate of 0.7% per year to the project site to estimate and project future emissions from not implementing a REDD+ intervention. The primary drivers of degradation emissions and changes in carbon stocks are fuelwood consumption and unsustainable logging. To be conservative, the baseline changes in carbon stocks are applied only to above ground biomass, as the roots of the trees are generally not removed from the project area, and no burning of below ground biomass or soil is evident. The projected baseline changes in forest area, applying the national historical average deforestation rate for Pakistan, if no REDD+ (or similar) intervention is pursued result in a loss of forest area from the current 51,829 ha in 2018, down to 41,981 ha in 2048.

Changes in carbon stocks over a 30 years period, using conservative estimation, are expected to result in a decline from 9,902,785 tons of carbon stored in the Kaghan valley project site in 2018, to 8,119,356 tons of carbon stored in 2048. This leads to a total reduction of 1,783,429 tons of carbon in a 30 years period or emissions equivalent to 6,545,187 tCO₂e. The above estimates can be enhanced by using IPCC GPG to analyze forestland conversion to cropland.

Over a 30 years period, the historical average deforestation in the project site without a REDD+ intervention will create a loss of 490,615 tons of carbon stored on the land, and create emissions of 1,799,084 tons of CO₂e.

Based on the current data, the total emissions from fuelwood gathering amount to 272,719 tCO₂e per year, or 8,181,559 t CO₂e over a 30 year period assuming constant annual collection of fuelwood from non-renewable resources.

In the PES REDD+ Project Scenario, several assumptions are made to develop the emissions scenario for a REDD+ project intervention.

- Deforestation and forest degradation are not affected for the first five years of the project intervention while awareness raising and community support is built. As a result, the deforestation rate of 0.7% per year will be applied to the first five years, and then assumed to be 0% from there onwards.

- The Billion Trees Afforestation Project (BTAP) will lead to enhancement in carbon stocks on an area of 11,816 ha counting plantings from 2018 and applying an even planting schedule over a 5 year period (2018-2023).

The first project intervention to be calculated is the impact on deforestation and forest degradation emissions. The project applies the deforestation rate to the first five years. The total emissions from deforestation in the first five years is 96,138 tC or 352,538 tCO₂e, after which the intervention is assumed to be fully effective and the deforestation rate drops to 0%.

The second project intervention emission scenario takes the assumptions for afforestation/ reforestation and apply emission values developed by PFI to the current forest areas, and future reforestation efforts. Applying the PFI Carbon sequestration rate over the project lifetime to carbon stock enhancement efforts on 11,816 ha, with an initial five year planting schedule, annual carbon stocks increase, and over the 30 years project lifetime, a total of 2,227,316 tons of CO₂e are sequestered

The PES REDD+ Project is therefore estimated to create a positive emissions impact over the 30 years period by taking the difference of projected baseline emissions BAU scenario and the emissions sequestered from the plantation efforts, as well as a long term reduction in forest degradation and deforestation on the project site.

In addition to the above comparison of BAU and Project scenario for GHG reduction, the chapter also discusses the non-carbon benefits of the REDD+ PES project. These non-carbon benefits include: watershed protection, land stabilization and prevention of landslides and other erosion, biodiversity conservation, ecotourism, NTFPs, free grazing fodder for livestock, and medicinal plants utilization value by the communities.

Chapter-8 gives details of the MRV system to be used for monitoring, verification and reporting under this PES scheme. Main elements of the proposed MRV system include project boundary setting, sampling design, plot shape and size for undertaking field measurements, measurement of above ground biomass, measurement of below ground biomass, measurement of shrubs biomass, measurements related to deadwood, soil carbon, carbon sequestration rate and non-carbon ecosystem services.

Chapter-9 is about forest and land tenure issues in the context of Kaghan valley PES scheme. It gives the existing forest distribution in the valley as per the two prevailing forest tenure systems in Kaghan area-Guzara Forests and Reserve Forests. The chapter then describes the conceptual foundation of tenure and property rights as well as the effects of tenure on PES rights, liabilities and benefits sharing. International principles of responsible governance of tenure system are also given to enrich the stakeholders about tenure issues. In the end it gives a suite of 12 strategies for reforming forest tenure so that Gujjars, pastoral communities and other landless people can be given tenure rights so that they can play a positive role in the PES project as

well as benefit from the incentives that become available as a result of this project initiative. The proposed strategies fall under three main categories: strategies for legal recognition and protection of tenure; strategies for proper implementation of tenure by governments and right holders; and strategies to support the enjoyment of rights given under the tenure.

Chapter-10 highlights the different levels (international level, national level, regional level, and local level) at which PES benefits accrued, the different types of benefits that are realized (economic benefits, social benefits and environmental benefits), the sources of benefits, criteria for the identification of beneficiaries, and discusses various elements of the benefits distribution system. These elements of the benefits distribution system include: share of government and communities in the benefits, amount of benefits, payment mode (group vs. individual payment), payment differentiation, PES contract length, payment duration, upfront payment, payment frequency, degree of conditionalities for PES payments, type of conditionalities for PES payments, unit of management or control for PES payments, establishing additionality for PES payments, leakages prevention, ensuring permanence for ecosystem services, benefits targeting, cost targeting, facilitating conditions for supporting pro-poor ecosystem services provision, reducing negative impacts on poor, and reducing negative impacts on women.

Chapter-11 discusses the major categories under which roles of women in the PES scheme are commonly dealt. These roles include women as a vulnerable group, women as PES beneficiaries, women as stakeholders, and women as agents of change. It highlights the challenges and opportunities for women involvement in the PES scheme at the three stages of the PES scheme-the design stage, the implementation stage, and the consolidation stage. There are numerous challenges for women participation in PES scheme at all the three stages of PES project implementation. These challenges inter alia include limited access to information; weak or non-existing forestry sector policy, legal and institutional reforms targeting women; cultural barriers limiting women participation and leadership roles; limited time to participate due to already too much workload, including house chores, water collection, fuelwood collection, etc.; poor implementation of land tenure laws; weak capacity by women to negotiate; conflicts with regard to benefit sharing at household levels; likely frustration by women with PES and hence reverting to no interest or negative environmental practices.

There are also a host of opportunities for women to participate in the PES scheme as well. These among others include the requirements of UNFCCC and other social environmental safeguards to involve all stakeholder, particularly the vulnerable groups; existence of supporters who promote recognition of women as key players in PES projects; the opening of government to involve all stakeholders in PES projects; the on-

going policy, legal and institutional reforms in forestry sector; consulting women at community level; the existence of women organizations in some localities; bringing women organizations on board to fully participate on policy and laws related to PES; exploring venues for bringing about different tenure reforms as part of the PES project; building capacity of CBOs, CSOs and NGOs to address gender in forestry sector and PES projects; identifying context issues and capitalizing on how women can contribute to forestry and PES projects as agents of change; and identifying and recognizing women as stakeholders and beneficiaries in forestry sector and PES projects

Chapter-12 gives a description of the existing and proposed governance and institutional arrangements for REDD+PES schemes implementation at the national and provincial levels. Recognizing the need to further strengthen these governance and institutional arrangement, it is proposed that at the national level it is important to strengthen National REDD+ PES Office of the Ministry of Climate Change to deal with PES schemes processing, coordination and reporting issues in close collaboration with Provincial Forest Departments and other stakeholder groups. The staff proposed for the National REDD+ Office include a Project Coordinator, MRV Specialist, Awareness Raising and Institutional Development Specialist and Safeguards Management Specialist. The existing National REDD+ Steering Committee is proposed to also deal with the strategic aspects of the PES projects. At the provincial level, it is proposed to establish PES infrastructure at various levels-at the provincial level, regional/forest circle level, and forest division/district level. At the provincial level the proposed bodies include Provincial REDD+/PES Board (headed by Additional Chief Secretary), Provincial REDD+/PES Management Committee (headed by Secretary Forests), Provincial REDD+/PES Thematic Working Groups on different thematic aspects of PES, and Provincial REDD+/PES Research Unit. At the Forest Region/Forest Circle level it is proposed to have a Regional REDD+/PES Management Unit at Northern Forest Region (Region-II) level and a Forest Circle Level REDD+/PES Social and Environmental Safeguards and Grievance Redress Mechanism. At the Kaghan Forest Division level, it is proposed to have a Social and Environmental Safeguard and Grievance Redress Mechanism. Further, for effective implementation of future PES projects at the provincial level, it is proposed to establish a Provincial PES Management Unit in KP province. The PES Management Unit will be staffed with a Provincial PES Project Director, MRV Specialist, Awareness Raising and Institutional Development Specialist, and Safeguards Management Specialist.

Chapter-13 discusses the different potential project risks and possible strategies for mitigation of various types of risks. A structured process and approach is proposed for dealing with risks. The process includes risks identification, risks qualification, risks evaluation, and risks mitigation. Also, risks have been broadly categorized into external risks and internal risks. External risks are those which are external to the project and include risks that are of the nature of informational, funding and financial, spatial,

temporal, institutional, political, governance/ bureaucratic, economic and market, security, natural hazards, etc. Internal risks are internal to the project/organization and include technical risks, organizational and managerial risks, fiduciary risks, and risks related to UNFCCC Cancun and Other Social and Environmental Safeguards and stakeholders engagement related risks. There are different options for tackling risks. These options include sharing the risk, enduring the risk, avoiding the risk, and lessening the risk. Depending on the type of risk, a host of risk mitigation strategies have been proposed too.

Chapter-14 is about possible conflicts and conflicts resolution mechanism in the context of Kaghan valley PES scheme. It identifies the potential actors or parties in these PES related conflicts, the sources of conflicts, and the mechanisms for dealing with conflicts. Major actors in the PES scheme who could get involved in the PES scheme include Provincial Forest and Wildlife Departments, local communities (Owners, Users, pastoral/grazing community and general community), hotel industry, WAPDA and other PES services buyers, EPAs as regulators, NTFPS services related providers and buyers, eco-tourism operators, Disaster Management Authorities, and buyers of different PES services such as Carbon Credits Buyers, etc. The chapter has proposed proper risk analysis using a variety of tools. It alludes to the fact that risk management requires a proper understanding of the allocation and distribution of rights, responsibilities, returns and relationships. Rights, responsibilities and returns are relationships that stakeholders have to the resource base. Rights have been defined as access and control over resources, as legally or informally defined. Responsibilities are roles and power in relation to the management of forests and other natural resources in the valley. Returns are the benefits and costs that a PES stakeholder derives from the PES scheme, based on rights and responsibilities. In addition, stakeholders have relationships among each other that are independent of the resource.

It has been highlighted that five different types of core issue may lead to conflicts in the PES scheme. These include problems with information, conflicting interests, difficult relationships, structural issues, and conflicting values. Therefore, it is important to identify what gave rise to the issue and is the source of the conflict. Are the issues stemming from perceived or actual differences or contending views, perceived or actual threats, or a gap - an absence or lack of important information, rules, regulations, etc.

The chapter alludes to the fact that conflict resolution mechanisms fall into a number of generic strategies. These include avoidance (acting to keep a conflict from becoming publicly acknowledged), coercion (trying to impose one's will through the threat or use of force, including violence, protests, exertion of economic dominance and political contacts), negotiation (following a voluntary process in which parties reach agreement through consensus), mediation (using a third party to facilitate the negotiation process),

arbitration (submitting a conflict to a mutually agreeable third party, who renders a decision), and adjudication (resolving the issue through a judicial/legal process).

The conflicts will be settled either through the court mechanism or through an out of court approach. For the out of court feedback and grievance redress mechanism, it is proposed to establish a Provincial Feedback and Grievance Redress Mechanism (PFGRM) Unit in the province. This unit is to have a dedicated staff officer who deals with the conflicts in a structured manner. The proposed process comprises of four steps which include receipt and registration of the grievance, investigation of the grievance, resolution of the grievance and monitoring of grievance resolution process through maintaining a proper database. An easy and accessible system for complaints lodging is has been proposed which includes sending complaints through a variety of means which inter alia include email, website, feedback/complaint box, toll free number, SMS/WhatsApp, letter form, in person appearance, etc. For ease of access to various stakeholders, the provision and registration of complaints is to be permissible in local language, Urdu as well as English language. Time frames have been suggested for the different steps in the conflicts resolution process.

Chapter-15, which is the last chapter, gives a detailed roadmap for the PES scheme implementation.

CHAPTER-1

INTRODUCTION

1.1 Physical Context of Kaghan Valley

Kaghan valley is located in Balakot Sub-Division of District Mansehra. The valley lies between $34^{\circ} 15'$ and $34^{\circ} 57'$ North latitudes and $73^{\circ} 20'$ and $73^{\circ} 57'$ East longitudes. The tract is bounded on the east by Azad Jammu and Kashmir, on the north by Chilas District of Gilgit Baltistan, on the west by Allai and Kohistan and on the south by Abbottabad District and southeast by Mansehra Sub-Division. Balakot and Garhi Habibullah are the main towns in the lower part of the valley. Bhoonja, Jared, Mahandri, Kaghan, Naran and Battakundi are main villages in the upper part of the valley. The valley's length from south-west to north east, as the crow flies, is 60 miles. By road from Babusar pass to Balakot it is 159 kilometers. Average width is about 24 kilometers. Balakot village is the gateway of this beautiful valley. Its total area is 2,227 square kilometers or 222,700 ha. The town of Balakot was destroyed by the Earthquake of 8th October 2005 and most of the houses of the town/ area associated along the fault line were leveled to ground.

The valley is drained by the Kunhar River which originates from Lulusar Lake near Gittidas in the northeastern part of the valley and meets river Jhelum at Domishi below Garhi Habibullah town after a fairly turbulent course of about 180 kilometers.

The tract is rugged and mountainous ranging from 1220 meters to 5,302 meters in elevation. Malka Parbat is the highest peak in the valley which is located to the east of Saiful Maluk Lake. Most of the slopes are steep and inaccessible. There are a number of water streams/nullahs, deep and narrow ravines. Landslides and snow slides are a common feature in the valley and cause a lot of damage to forests.

1.2 Geology, Rock and Soil

The underlying rock in the valley consists of slates, phyllites, schist, quartzite, nummulitic limestone and dolomites. Nummulitic limestone is the most conspicuous rock in the valley. Dynamic metamorphism of a high grade is evident. The soil formed from these rocks is fertile and supports tree and other vegetation growth in the valley.

1.3 Climate

Climate of the tract in general is moist temperate with distinct seasonal variations. Winters are severe with heavy snow fall in the upper parts of the valley. The snow fall mostly occurs from mid -December to end of March. Bulk of the rainfall is received during monsoon with intermittent rains during rest of the year. The drought spell is generally during April to June and then September to mid-December. Average rainfall at Balakot is 1770 mm while that at Naran is 983 mm. Average snow depth ranges from 0.9 meter at Jared to 6 meters at Naran (Khan, 2005).

1.4 Surface Water and Flooding

There are several water streams and nullahs in the valley as well as a number of springs. These are a source of surface water in addition to the Kunhar River itself.

Floods do occur and cause tremendous damage to agricultural crops as well as forests. The poorly constructed terraces on steep slopes coupled with heavy grazing pressure and rainfall, make the area vulnerable to flood damages.

1.5 Forests and other Natural Resources

Kaghan valley is very rich in terms of natural resources which include forests, wildlife, medicinal plants, alpine pastures, rangelands, agriculture, rivers, and glaciers and snow. Forest is the dominant landuse in the area followed by alpine pasture and glaciers and snow. Agriculture is mostly practices on terraced lands. The detail of landuse in Kaghan valley is given in Table 1.1.

Table 1. 1: Land Use/Land Cover Classes

S.No.	Landcover Class	Area in Ha	Percentage
1.	Forest	77,725	30.11
2.	Agriculture	24,494	9.49
3.	Alpine pasture	71,939	27.87
4.	Rangeland	26,675	10.33
5.	Barren Land/wasteland	8,762	3.38
6.	Glacier and Snow	45,436	17.60
7.	Settlement	882	0.34
8.	Wetland	2,238	0.88
	Total	258,151	100.00

Source: Estimates of area obtained from Swati (1985); Khan (2002) and Khan (2005)

Kaghan's forests have been classified as Reserve Forests, Guzara Forests and Undemarcated Forests. Reserve Forests are owned and managed by the Government with no rights of the local communities. Guzara Forests are owned by the communities either individually or jointly and managed by the Forest Department. Undemarcated Forests are owned by private people but these have not been delineated on the ground. Table 1.2 below gives distribution of reported forest area by tenure category, actual forest area and blank areas.

Table 1. 2: Reported Forest Area, Actual Forest Area and Blank Forest Area

Forest Tenure Category	Total Forest area (ha)	Actual forest cover (ha)	Blank area inside forest (ha)
Reserved Forest	19,525	16,900	2625
Guzara Forest	37,137	21,353	15784
Undemarcated forest	21,063	13,576	7,487
Total	77,725	51,829	25,896

Sources: Total Forest Area is based on Swati, 1985; Khan (2002) and Khan, 2005

1.6 Socio-economic Context

Total population of Balakot sub-division as per census of 2017 is 273,089 and the number of households is 45,659. Thus the average household size is 6. Main tribes living in the area include Swatis, Syeds, Gujjars, Awans, Quraish, Durai and Mughal. Swatis and Syeds are the major land and forest owners. Gujjars for the most part live in upper reaches and do not own land or forests. Population of the valley is predominantly rural and the economy is agro-pastoral and more recently oriented towards tourism and hoteling industry. Scenic beauty and pleasant weather in summer months have made the valley a famous tourist resort.

Maize and potatoes are agricultural crops commonly grown in the valley. Livestock rearing by Gujjars is their main stay of livelihood. Forests are used for grazing purposes. Cattle and buffaloes are grazed in the lower elevation ranges, whereas goats and sheep graze in both lower elevation as well as sub-alpine and alpine pasture lands.

1.7 Institutional Context

1.7.1 Organizational and Legal Context

Forestry being a provincial subject under the constitution of Pakistan, forests in Kaghan valley are managed by the Provincial Forest Department. There are three forest regions in KP Province. Kaghan valley is part of Forest Region-II or Northern Forest Region. Within Northern Forest Region, it is under the administrative control of Conservator of Forests, Lower Hazara Forest Circle. There is a separate Forest Division for the valley, called Kaghan Forest Division and is headed by a Divisional Forest Officer. There are four Forest Sub-Divisions in Kaghan Forest Division. These include Garhi Habibullah, Balakot, Jared and Kaghan Forest Sub-Divisions, each headed by a Sub-Divisional Forest Officer.

Federal government's role in the context of forestry and this REDD+ PES project is limited to policy development, coordination, awareness creation and training, and compliance with international agreements, and facilitation in implementation of the PES project.

Forests in Kaghan valley are protected, conserved and managed under the KP Forest Ordinance, 2002. There are three types of forest land tenures in Kaghan valley, Reserve Forests, Guzara Forests and Private Forests.

Reserve Forests

Reserve Forests are state owned property. Chapter-II (section 4 to section 27) of the KP Forest Ordinance (2002) deals with reserve forests. Before declaring a given piece of land as a reserve forest, a process for declaration of reserve forests has to be followed by Forest Settlement Board to be constituted for the purpose and all issues with regard to existing claims of villagers will have to be dealt with. Explicitly prohibited activities include illegal encroachments, forest clearing for agriculture or any other purpose, setting of fire, grazing cattle, stone and other types of quarrying, pollution of soil and water, hunting and fishing, etc. Local populations' rights are limited to collection of fuelwood from fallen trees, and rights of way and water.

Reserve forests have been demarcated during the land settlement.

Guzara Forests

Guzara Forests are privately owned forests but managed by the provincial forest department. Subject to the rights and powers of government in respect of seigniorage fee, forest conservancy, sustainable development and management as defined in the Forest Ordinance (2002) or in the rules made thereunder, and subject also to the claims of the right-holders not being owners of the land, all Guzara forests and wastelands are the property of the owners of the land. These may be owned individually or jointly. The owners of Guzara forests are entitled to use free of charge, for their own domestic use or agricultural requirements any trees of forest produce found therein, but they have no right or power to sell any tree, timber, brushwood or any other forest produce growing on such lands, except with the permission of the Conservator of Forests and under such conditions as the Conservator of Forests may impose. All such sales are subject to payment to government of timber surcharge, forest development charges, seigniorage fees, and management charges which are credited to the Forest Development Fund.

The claims of right holders other than land owners of the village are recognized to the extent defined and recorded at settlement, or in case of doubt or dispute, to the extent which may hereafter be defined by the Collector with the sanction of the Board of Revenue, and exercise of such rights are subject to the provisions of the Forest Ordinance and rules made thereunder.

All Deodar trees in Kaghan Area, whether grown on government or private lands, are deemed to be property of the government; provided that in case of Deodar tree growing on private lands, the right holders shall be paid half the price of timber from the commercial sale of trees, after deducting at sources the extraction cost, timber surcharge, other forest development charges and surcharges, and managerial charges.

Acts prohibited in Guzara forests include the clearing of forest land for agriculture or any other purpose, setting of fire, quarrying of stones and other material, contravention of any general or special management orders passed under the Forest Ordinance or rules made thereunder, sell or convey for sale any tree, timber, or brushwood, or cut without permission any forest produce, pollution of soil or water, and hunting, fishing, etc. and abetting in the commission or furtherance of the above acts.

Guzara forests have been demarcated as part of the land settlement process.

Guzara forests are dealt with under chapter-V (Control over Guzara Forests and Wastelands) of the KP Forest Ordinance, 2002.

Undemarcated Private Forests

These are private forests which were not demarcated as Guzara Forest during the settlement. These also include trees growing on agricultural lands or plantations raised under various development projects. Owners of these Undemarcated Private Forests cannot cut trees in these forests for commercial purposes. Also, Government retains the right to prohibit cutting and lopping of trees and other land and vegetation damaging acts in these forests in view of their role in soil erosion control and for protection against land slides and other hazards, etc.

1.7.2 Policy Context

At the national level, the Ministry of Climate Change (MoCC) has developed the National Forest Policy 2015. The objectives of the policy include the following:

- Promoting ecological, social and cultural functions of forests through sustainable management and use of forest produce including wood and non-wood forest products.
- Implementing a national level mass afforestation programme to expand and maintain optimum forest cover.
- Maximizing forest areas by investing in available communal lands, Guzara forests and urban forestry.
- Facilitating and harmonizing inter-provincial movement, trade and commerce of wood and non-wood forest products through the Federal Forestry Board.
- Inter-linking natural forests, protected areas, wetlands and wildlife habitats to reduce fragmentation.
- Enhancing role and contribution of forests in reducing carbon emissions and enhancing forest carbon pools.
- Facilitating implementation of international conventions and agreements related to Forestry, Wetlands, Biodiversity and Climate Change.

- Promoting standardized and harmonized scientific forest planning, research and education including for community-based management

The KP Government has notified its Forest Policy in 1999 and manages all its forests under this policy. The policy defines forests very broadly and comprise of all lands supporting natural forests, shrubs, plantations, grazing grounds, wildlife and fisheries. Following are objectives of this policy:

- Meeting the domestic needs of the local communities for timber, firewood, grazing and medicinal plants.
- Increasing the incomes of the local people by providing them gainful employment while adding value to the outputs of forests.
- Enhancing the protective functions of watershed for regulating their water regimes, retarding soil erosions and siltation of reservoirs and protecting downstream cultivation and infrastructure from flood damage.
- Managing and rehabilitating range lands so as to harness their full potential through appropriate range management practices such as controlled grazing systems and grass cutting besides other interventions.
- Contributing towards meeting Pakistan's demand for constructional timber, eco-tourism and medicinal plants.
- Conserving, promoting, developing and managing fisheries, wildlife, sericulture and other natural resources for the benefit of individuals, communities and societies.
- Generating income for forest owners of Guzara Forests and shareholders in Protected Forests.
- Conserving biological diversity.
- Promoting non-consumptive uses of forests such as eco-tourism.
- Improving the quality of human environment through promoting urban forestry.
- Fostering attitudinal changes in support of sustainable forest management among individuals, communities and the society at large.
- Assisting the Government of Pakistan in meeting the obligations of relevant international agreements such as the UN-CBD, UNCCD, UNFCCC and Agenda 21.

Guiding principles of the provincial forest policy include the following:

- Integrated resource management whereby the different land use types (forests, watershed areas, range lands, biodiversity areas, etc.) and vegetation and other resource types (trees, shrubs, grasses, wild animals and fisheries) will be managed in an integrated way as part of the over-all ecological system.
- Participation of the local communities and other stakeholder groups in the planning, implementation, monitoring and evaluation of natural resources management activities.

- Decentralization in management approach so that there is de-concentration of administrative and financial powers in the functioning of the government forestry sector institutions, delegation of responsibilities and spinning of certain functions of government to non-government organizations and private sector institutions, and devolution of political authority and responsibility in decision making processes. This therefore implies both vertical and horizontal decentralization.
- Promotion of the private sector in natural resource management activities so as to take advantage of the entrepreneurship and mobilize their financial, social and physical capital.
- Fostering inter-generational and intra-generational equity. Among other things, it includes inter-gender equity, equity between the powers, responsibilities and tasks of Forest Department staff and the local communities, and between different social groups in local communities.
- Increasing public awareness, increasing motivation for positive action and enhancing capacities for undertaking natural resources management activities.
- Developing appropriate incentives for enlisting the cooperation of local communities and for compensating them for foregoing forest uses that are not consistent with sustainable management of forests so to realize the full spectrum of economic, social and environmental objectives of sustainable natural resource management.
- Promoting cross-sectoral linkages so as to ensure integrated sustainable land use. For this purpose, the department will develop both strategic and operational level linkages with other institutions and sectors, such as water, agriculture, livestock, environment, local government and energy, etc.

1.8 Temperate Forests Ecosystem Services

Kaghan valley temperate forests are the water towers of Pakistan because of their location in the catchment area of river Jhelum which provides irrigation water as well as a source of hydropower for the country. In the following table we list the major categories and their component ecosystem services which contribute to human well-being. These are listed below:

Table 1. 3: Ecosystem Services of Temperate Forest Ecosystem

Provisioning Services	Regulating Services	Informational and Cultural Services	Supporting Services
Timber/Wood	Air Quality	Aesthetic Values	Primary Production
Fuelwood	Buffering against Extremes	Effects on Social Interactions	Soil Formation
Fodder	Noise Abatement	Iconic Landscapes/Seascapes	Habitat –breeding, feeding and protection for numerous terrestrial species

Biochemical, Medicinal and Pharmaceutical Products	Carbon Sequestration and Climate Regulation	Inspiration	Biodiversity conservation
Food Products like Honey	Protection from floods and snow avalanches	Knowledge Systems	Nutrient Cycling
Genetic Resources	Storm and Erosion Control	Recreational Opportunities	
Ornamental Resources	Prevention of Land Slides	Sense of Place	
Water	Pollination	Spiritual and Religious Values	
Fishes and Other Forest Products Production	Reducing Pests and Diseases	Therapeutic Services	
	Water Purification	Non-use and Existence Values	

Many of these ecosystem services have the characteristics of ‘public goods’ such that the people who benefit cannot be excluded from receiving the service provided (e.g., climate change mitigation, habitat and watershed protection); and that the level of consumption by one beneficiary does not reduce the level of service received by another (e.g., scenic beauty of the landscape). Due to these characteristics, the potential for private incentives to sustainably manage temperate forests ecosystem services is limited and markets for such services do not exist. In other words, there is a ‘market failure’ and by their inherent nature, these forest ecosystem services are under supplied by the market system.

As a result, temperate forests are generally undervalued in both private and public decision-making relating to their watershed protection, biodiversity conservation, climate change mitigation, etc. The lack of understanding of, and information on, the values of forest ecosystem services has generally led to their omission in public decision making. Without information on the economic value of forest ecosystem services that can be compared directly against the economic value of alternative public investments, the importance of forests as natural capital tends to be ignored.

A number of studies have developed and applied methods to calculate the monetary value of various forest ecosystems. Although these studies provide some insight in the range of values that may be assigned to the ecosystem services provided by temperate forests, they are all context specific and do not provide a more generic insight in the values of these temperate forests.

Table 1.4: Estimates of Forest Ecosystem Services Values

S.No.	Ecosystem Good or Service	Market Nature of Service	Value of Temperate or Boreal Forests US\$/acre	Value of Tropical Forests US\$/acre	Value of All Forest Types US\$/acre
1.	Climate regulation	NM	35.6	90.2	57.1
2.	Disturbance regulation	NM	N.A.	2.0	0.8
3.	Water supply regulation	NM	0.0	2.4	0.8
4.	Water supply	M, NM	N.A.	3.2	1.2
5.	Erosion control and sediment retention	NM	0.0	99.1	38.8
6.	Soil formation	NM	4.0	4.0	4.0
7.	Nutrient cycling	NM	N.A.	373.1	146.1
8.	Waste treatment	NM	35.2	35.2	35.2
9.	Biological control	NM	1.6	N.A.	0.8
10.	Food production	M	20.2	12.9	17.4
11.	Raw materials	M	10.1	127.5	55.8
12.	Genetic resources	M, NM	N.A.	16.6	6.5
13.	Recreation	M, NM	14.6	45.3	26.7
14.	Cultural	NM	0.8	0.8	0.8
	Total		122.2	812.2	392.1

Source: Based on Constanza et al. (1997)

‘N.A.’ means Not Available.

‘NM’ means a good or service that is primarily Non-Market in nature.

‘M’ means a good or service that is primarily Market in nature.

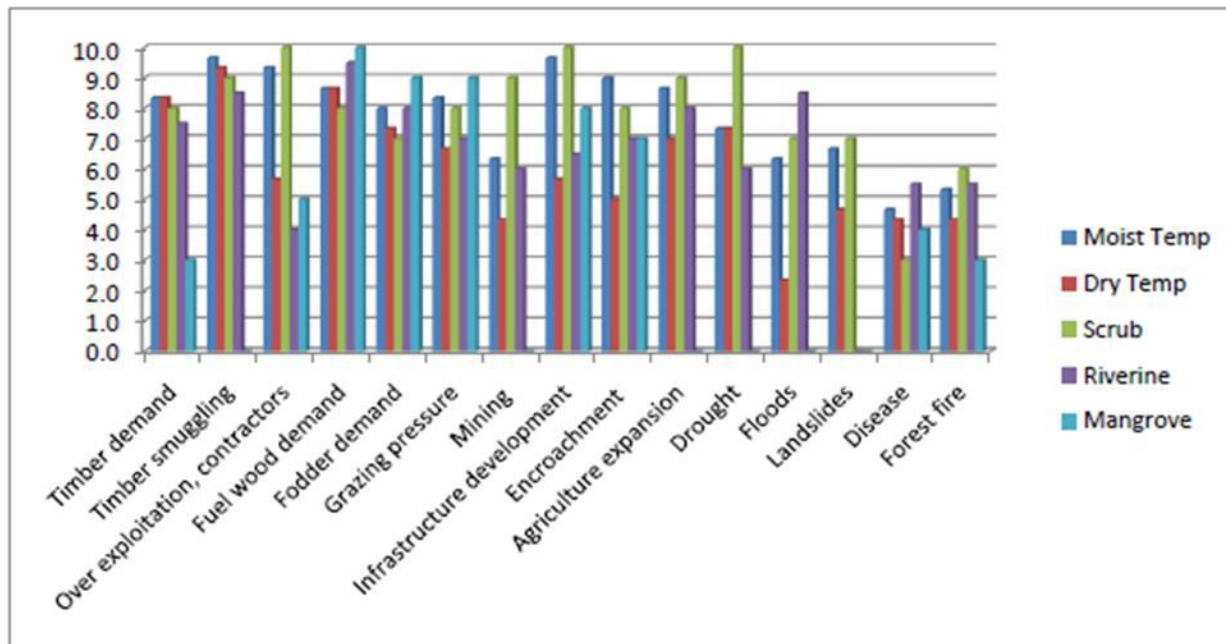
‘M, NM’ means a good or service that has significant Market and Non-Market characteristics.

1.9 Threats to Temperate Forests and Challenges of Forest Management

1.9.1 Threats to various forest ecosystems in Pakistan

As per Pakistan National Biodiversity Strategy and Action Plan (2017) and Interim Report Development of the National Strategy and its Implementation Framework for Pakistan (2018), following are the major threats to the forests of Pakistan.

Figure 1. 1: Major Drivers of Deforestation and Forest Degradation in Different Forest Types of Pakistan



Source: Readiness Preparation Proposal Pakistan (R-PP) 2015.

1.9.2 Threats to Forests in Kaghan Valley

Following are the major threats to temperate forests in Kaghan valley (Khan, 2005):

- Cutting of Forests for fuelwood purposes
- Illicit cutting of timber
- Encroachment on forest land
- Lopping for fodder
- Torchwood extraction
- Grazing, grass cutting and fire
- Debarking of walnut tree roots
- Negative impacts of tourism
- Natural hazards such as snow avalanches and land slides

1.9.3 Major Challenges to Sustainable Forest Management

The following pose major challenges to sustainable forest management (Interim Report: Development of National REDD+ Strategy and its Implementation Framework for Pakistan, 2017)

- Population pressure
- Settlements constructions at scenic sites
- Political influence
- Unclear rights
- Lack of alternatives
- Shortage of alternative energy sources
- Revenue based forest management approaches

CHAPTER-2

2 PROCESS FOR DESIGNING PROJECT DESIGN DOCUMENT

The Ministry of Climate Change, Government of Pakistan is implementing REDD+ Readiness Preparation Proposal (RPP) through financial support of the Forest Carbon Partnership Facility (FCPF) of the World Bank. Under RPP, Pakistan is working on four main components i.e. (i) REDD+ Policy Analysis, (ii) REDD+ Technical Preparation, (iii) Readiness Management Arrangements and (iv) Designing and Testing REDD+ Payments for Environmental Services. These components have been assigned to different national and international organizations/firms. Pakistan Forest Institute (PFI) was awarded a study in January 2018 to “Design REDD+ Payment for Environmental Services (PES)” in two ecosystems. Out of seven potential ecosystems identified for the study, two ecosystems were finally selected for “Designing REDD+PES”. These ecosystems were Mangroves Forests of Sindh and Balochistan provinces and Moist Temperate Forests of Kaghan, Khyber Pakhtunkhwa.

The main objectives of the study “Designing REDD+Payment for Environmental Services” is to design a pilot programme to test payment for ecosystem services that supports results for REDD+ in the two selected forest ecosystems also including institutional arrangements, benefit sharing mechanisms, conflict resolution mechanisms, safeguards, identifying sources of payments, and governance system. This report presents the project design document for REDD+ PES in Moist Temperate Forests of Kaghan.

The approach and methodology adopted for preparing Project Design Document (PDD) for Moist Temperate Forests of Kaghan were based on extensive review and analysis of the prevailing policies, laws and regulations governing environmental services in the country, international experiences about PES, intensive consultation with key stakeholders, socio-economic surveys and field inventories. This was further enriched by the knowledge and work experience of our key consultants, particularly the Team Leader, International Experts, NFMS Expert/Deputy Team Leader, Sociologist and the NRM Expert. Besides, the technical inputs provided by the National REDD+ Office and several renowned professionals working in Government departments and private sectors significantly improved the quality of the work.

The assignment was accomplished in three phases i.e. inception phase; field data collection, trainings, consultations and research phase; and data analysis, and report writing phase. The *Inception Phase* started with signing of the contract followed by the inception workshop held in second week of January 2017. During this phase sites were selected and methodologies were refined for field work.

2.1 Data Collection, Consultation and Research

The main component of designing the REDD+PES scheme in Kaghan comprised *Field Data Collection, Consultations and Research*. This phase was started with a field trip by the project team to Kaghan valley where informal discussions were held with officers of Forest Department, Wildlife Department, NGOs and Community Members. This was followed by a consultative and training workshop in Balakot on April 23-24, 2018. The workshop was attended by a wider group of stakeholders including officers of KP Forest

Department, Wildlife Department, Agriculture Department, Livestock Department, Fisheries Department, Non-Timber Forest Products (NTFPs) Directorate, Sustainable Forest Management Project funded by UNDP and GEF, Non-Governmental Organizations (NGOs), members of Joint Forest Management Committees (JFMCs), Village Development Committees (VDCs), Elected Representatives of Local Government, owners of Guzara forests, Forest users and other local communities. The workshop was aimed at introducing the idea of payment for environmental services in moist temperate forests of Kaghan Valley, awareness raising and building the capacity of the stakeholders. During this workshop, the key elements of the REDD+PES Design were presented upon which the participants provided their inputs. Data collection methodology and further steps involved in the design of the study were also shared and finalized with the stakeholders. It was learned during the workshop that several organizations have already worked on different aspects of forest management, rural livelihood and natural resource management. Therefore, it will be good to take benefits of the findings of these studies and spend less time on primary data collection.

2.2 Collection and Analysis of the available information

The following reports were collected from different offices and reviewed accordingly.

- Working Plan of Reserved Forests of Kaghan (1985)
- Working Plan of Upper Guzara Forests of Kaghan (2005)
- Working Plan of Lower Guzara Forests of Kaghan (2002)
- Carbon Stock Assessment in High Conservation Value Coniferous Forests of Kaghan (2018)
- Fuelwood Per Capita as well as Total Households Consumption in Khyber Pakhtunkhwa (2005)
- Effect of Commercial Timber Harvesting on Local Economy and Forest Ecology in Kaghan (2017)
- Khyber Pakhtunkhwa REDD+ Strategy (2018)
- Benefit Sharing Mechanism for REDD+ in Khyber Pakhtunkhwa (2017)
- Forest Reference Emission Level of Khyber Pakhtunkhwa (2017)
- Landless Mobile Pastoralist: Securing their roles as custodian of Northern Pakistan's Mountains (2012)

2.3 Socio-economic Survey

A semi-structured questionnaire (given at Annex-II) was developed for household survey in Kaghan Valley. This survey was designed to collect primary data from the households regarding the dependence of local communities on forests, identification and quantification of environmental goods and services utilized by these communities, major constraints in the natural resource use and management. About 68 household heads belonging to 12 different villages were interviewed during the survey in Kaghan. The following information was collected through household surveys.

- Household profile
- Energy sources
- Uses of forest resources (timber, fuelwood, fodder, NTFPs)
- Issues in forest management

- Recreation and tourism
- Issues in accessing ecosystem services

2.4 Tourism Assessment Survey

Tourism has been identified as a key ecosystem service in Kaghan having significant potential for the proposed PES scheme. It was, therefore, decided to collect the requisite information and data about tourism industry in Kaghan. Two surveys were conducted for this purpose. One survey was designed for getting information from Hotels, Guest Houses and Restaurants. The following information was collected through this survey:

- Number of Hotels and Guest Houses
- Number of rooms for accommodation
- Number of visitors on annual basis
- Room rent and other charges paid by the tourists
- Problems of Hotel Industry in Kaghan

The second tourism assessment survey was designed for individual tourists visiting Kaghan. A semi-structured questionnaire given at Annex-III was developed for collecting information from the tourists. The survey was conducted during May by interviewing 102 tourists from different backgrounds. The following information was collected during the survey:

- Visitor's Recreational Behavior
- Visitor's Attitude towards Entrance Fees/Environmental Fee
- Suggestions about tourism improvement
- General Information about the Visitors

2.5 Analysis of Policies, Laws and Regulations

One of the main requirements for PES implementation is availability of enabling policy and legal framework. Relevant policies, laws and regulations were collected from different departments and offices. These documents were reviewed to identify relevant provisions and clauses affecting PES implementation in the selected sites, gaps were identified and recommendations were framed to amend these PLRs for REDD+PES implementation in Kaghan.

A workshop was held in Balakot on April 23-24, 2018 wherein the provincial Policies, Laws and Regulations (PLRS) were analyzed in a participatory manner and recommendations were made to amend these frameworks for smooth implementation of PES schemes in Kaghan and other areas of Khyber Pakhtunkhwa.

2.6 Benefit Sharing Mechanism

Kaghan valley has a very complex forest tenure system. Several ethnic groups are present in the area who have divergent interests and have different rights and concessions. There is also sharp variation in *de facto* and *de jure* uses of forests resources. Thus, devising a new benefit sharing mechanism is a sensitive issue that can lead to creation of conflicts in the area. Benefit sharing mechanism already developed by the KP Forest Department was presented and shared with stakeholders.

This was thoroughly discussed in the workshop held in Balakot on April 23-24, 2018 and suitable changes were proposed by the stakeholders to ensure fair and equitable distribution of the benefits from REDD+PES implementation. The existing benefit sharing mechanism from the sale of timber in Guzara Forests of Kaghan was also assessed and the new mechanism was based on the existing revenue distribution arrangements with suitable changes. This mechanism was discussed in the workshop held in Kaghan on 30th April to 1st May 2018 where large numbers of forest owners and forest users were invited to reach a consensus on the proposed benefit sharing mechanism. Lessons were also learned from the benefit distribution system implemented for trophy hunting of Markhor in Chitral District of Khyber Pakhtunkhwa as form of Payment for Environmental Services. The mechanism was presented in the workshops held in Balakot on May 11-12, 2018 and the inputs of the participants were incorporated to have an equitable and fair distribution mechanism for PES. The view point of the local communities and civil society organizations were given special consideration while designing Benefit Sharing Mechanism.

2.7 Institutional Arrangement

For proposing institutional arrangements for REDD+PES at federal, provincial and local level, the existing institutional arrangements were analyzed. Khyber Pakhtunkhwa has already proposed new institutional setup for REDD+ implementation in the province. This new and the existing institutional arrangements were analyzed to identify gaps/weaknesses with respect to REDD+PES and measures were proposed to have an efficient and transparent institutional setup at multi levels for REDD+PES implementation. These proposed institutional arrangements were properly discussed in the consultative workshops and the proposals were duly endorsed by the representatives of the Forest Departments and other stakeholders.

2.8 International Experiences

International experiences on REDD+PES from around the world were reviewed and only the most relevant PES schemes were taken up for designing the current PES Schemes. The institutional arrangements, financing mechanisms, benefit distribution and values of different ecosystem services were of great importance for designing the PES Schemes in Kaghan valley.

2.9 Forest Carbon Inventory

A comprehensive forest carbon inventory has recently been conducted by PFI in Kaghan Valley in 2017 under Sustainable Forest Management (SFM) project. Therefore, it was decided to utilize the results of the inventory instead of going for new inventory. Data was collected from 245 sample plots each having area of 0.1 ha, laid out in the forest areas through a systematic random sampling design. Sample plots were laid out on a geo-referenced map using a grid of 700 x700 m. The coordinates of the centers of the sample plots were noted from the maps and uploaded onto GPS and navigated in the field accordingly. Beside forest compartment maps, General Topographic (GT) sheets were also used to locate the actual position of the sampling units in the field. The plots were permanently marked on the ground by inserting iron rods in the centre of the sample plots for verification and future monitoring. Data was collected on aboveground biomass, dead wood, litter, and soil carbon.

2.10 Boundary setting

REDD+PES pilot area comprises the whole Kaghan Forest Division with a total area of 258,151 ha. Out of this, forest area is 77,725 ha i.e. 30.11%. Forest has been further classified into Reserve Forest, Guzara Forests and Undemarcated Forests with areas of 19,525 ha, 37,137 ha and 21,063 ha, respectively. These categories of forests have been mapped using Spot-5 satellite image of 2012. Forest area maps are given at Annex-I. The Reserved and Guzara Forests have been clearly demarcated on the ground and boundary pillars have been established at the time of settlement. Maps and coordinates of these pillars are available with Forest Department as well Survey of Pakistan in the form of GT sheets and compartments maps.

CHAPTER-3

3 PROJECT DESIGN DOCUMENT

3.1 Summary Description of the Project

The Western Himalayan Temperate Coniferous Forests (WHTCF) Pilot PES Scheme is an initiative designed to promote the role of forests in watershed protection, climate change mitigation and adaptation, conservation and maintenance of biodiversity/ecotourism, conservation of non-timber forest products, and prevention of landslides. The scheme is intended to be implemented under the United Nations scheme of Reducing Emissions from Deforestation and forest Degradation (REDD+). The following table gives statistics of the forest ecosystem at the pilot site:

Table 3. 1: Forest Density Classes found in project area

S.No.	Forest Density Class	Area of Billion Trees Afforestation Project (BTAP) Plantations	Area of Undemarcated Private Forests (ha.)	Area of Privately owned Guzara Forests (ha.)	Area of State owned Reserve Forests (ha.)	Total Area (ha.)
1.	Blank Area of below 10 % crown cover		7,487	15,784	2,625	25,896
2.	10-25 % crown cover		7,060	10,510	6,898	24,468
3.	26-50 % crown cover		5,159	8,703	6,052	19,914
4.	51-100 % crown cover	11,816	1,357	2,140	3,950	19,263
	Total	11,816	21,063	37,137	19,525	89,541

Source: PFI, 2018

Total ecosystem area of private forests and state owned forests including BTAP plantations is 89,541 ha. Area covered with dense forests and plantations is 19,263 ha. Medium density forests are 19,914 ha and low density forests occupy 24,468 ha. Designated forest areas which are either blank or have crown density below 10 % occur over 25,896 ha.

The project aims at rehabilitating the 44,382 ha degraded forests (low to medium density forests) and sustainably managing the well-stocked forests and plantations of 19,263 ha as well as re-stocking the blanks areas of 25,896 ha for realizing the following ecosystem services and benefits to the society:

- Watershed protection so as to improve water yield and quality and reduce sediment load into Mangla dam;

- Biodiversity conservation of the Western Himalayan Temperate Forests and further enhancement of eco-tourism opportunities in the valley;
- Climate change mitigation and adaption for local, national and global benefits through reduction of GHG emissions from deforestation and forest degradation and carbon stocks enhancement through afforestation and re-forestation;
- Protection and conservation of various non-timber forest products in the valley for improving livelihoods and ensuring their sustained supply to users of these resources;
- Landscape stabilization and prevention/control of landslides in the area thereby reducing their damages.

3.1.1 Watershed Protection

A major tributary of River Jhelum originates from watersheds in the Kaghan valley. The most valuable function of forests and rangelands in the valley is therefore the sustained supply of sediment-free water for generation of electricity, and water supply for agriculture in the Jhelum River. Erosion and sedimentation, following the loss of forests, will bring enormous economic, environmental, social and political costs as a result of reduced storage capacity of the Mangla reservoir, loss of fertile soils, enhanced maintenance cost of irrigation infrastructure, reduction in agricultural and industrial production, and higher cost of production of hydro power.

The four major factors of **climate**, **soil**, **topography**, and **landuse** determine rates of rill and inter rill erosion in a given area. All the above factors are playing their role in contributing to and accelerating soil erosion in Kaghan valley. Due to high rainfall in the area, rainfall erosivity tends to be high. Similarly, soil erodibility is also high because of the soil texture and structure as well as topography (slope length, steepness and shape). While climate, soil and topography are naturally determined factors, land use is anthropogenic in nature.

Land use is the single most factor affecting rill and inter rill erosion in Kaghan area. Cover management or cultural practices and support practices determine land use. *Cover management practices* affect both the forces applied to the soil by erosive agents and the susceptibility of the soil to detachment. Land can have forest cover, grass cover, agricultural crops, roads/buildings or be barren. In case of forest vegetation, the most important factors are crown cover density and the integrity of canopy layers so as to shield the soil from erosive forces of falling rain drops. In crop lands, important features include the crops that are grown, yield level, and the type of tillage systems such as clean, reduced or no till.

Support practices include ridging, vegetative strips and barriers (e.g., buffer strips, strip cropping, fabric fence, gravel bags, etc.), runoff interceptors (e.g., terraces, diversions), and small impoundments (e.g., sediment basins, impoundment terraces). Support

practices reduce erosion primarily by reducing the erosivity of surface runoff and by causing deposition.

3.1.2 Biodiversity Conservation of the Western Himalayan Biodiversity and promotion of Eco-tourism

The Western Himalayan Moist Temperate Forests are considered high conservation value forests (HCVF) based on a number of criteria. These include biological values in terms of species richness, endemism, threatened and endangered status of species using IUCN Red List and Pakistan Red List, species of concern to CITES, CMS and those protected under provincial wildlife laws, or any conservation convention or other relevant protocols, degree of disturbance, human value and use, characterization of the habitats for the life requisites of the target species, such as breeding areas, feeding areas, water sources, dispersal and connectivity corridors, etc. However, there are a number of barriers to biodiversity conservation in the region. One key barrier is the limited capacity and knowledge to conserve forest biodiversity especially at a landscape level planning and management. The main activities to conserve forest biodiversity are limited to the establishment of protected areas. Even here, these are focussed on species protection. The lack of species and habitat management for biodiversity conservation and of measures for management at the landscape scale thus represents a missed opportunity for forest biodiversity conservation. Both Forest and Wildlife departments have not exhibited sufficient experience in developing and implementing strategic plans on how to manage forest habitats for biodiversity, or how to manage forest habitats and species for biodiversity considerations when planning and undertaking restoration, reforestation and afforestation or other forest operations such as thinning or forest harvesting. Generally, there are no demonstration models of landscape-scale application of forest biodiversity conservation, and capacity to deliver these is currently insufficient.

The project will endeavour to tackle the above issues pertaining to biodiversity conservation in Kaghan valley.

3.1.3 Climate Change Mitigation and Adaption

A number of factors have been contributing to deforestation and forest degradation in the valley. Major factor contributing to deforestation inter alia include conversion of forest land to non-forest lands for various purposes such as for crop land, for settlements construction, for infrastructure development and for mining. Main causes of forest degradation are the cutting and lopping of trees to meet fuelwood demand, cutting of trees to meet timber demand, illicit cutting of trees for smuggling purposes, open range grazing, and forest fires. According to a survey, conducted with Forest Officers in 2012, following is the relative contribution of each driver to deforestation:

Table 3. 2: Relative percentage importance of different drivers leading to deforestation

S.No.	Driver of Forest Degradation and Deforestation	Importance
1.	Illegal logging for commercial sale	55 %
2.	Fuelwood gathering due to dependence of local communities on forest resources	27 %
3.	Free grazing of livestock in forest areas due to dependence of local communities on forest lands	12 %
4.	Conversion of forest land to settlements due dependence of local people on forest lands	4 %
5.	Conversion of forest land to crop land due to dependence of local communities	1 %
6.	Forest fires	0.6 %
7.	Leasing of land for mining	0.4 %

Under this component, the project will develop practical approaches to reducing emissions from deforestation and forest degradation and enhancing carbon sequestration through protecting, rehabilitating and restoring degraded and former forested areas, as well as raising of new forest plantation so as to enhance forest carbon sequestration potential.

3.1.4 Protection and Conservation of Non-Timber Forest Products

Non-timber forest products (NTFPs) constitute an important resource source of raw material for different pharmaceutical, herbal and culinary industries and as a source of livelihood for the local communities. These include medicinal and aromatic plants, mushrooms, honey, wild fruits, nuts, etc. Many rural people in the valley earn their livelihood or add to their income by collection and sale of these NTFPs.

The diversity, quality, and availability of many species of NTFPs in Kaghan valley are decreasing. This situation has serious consequences for the industries using these products, people dependent on these for their livelihoods or livelihoods supplementation and for the biodiversity of the forest and grassland ecosystems in the valley.

The project therefore proposes to take various measures so as to reverse this negative trend by working and interacting with the collectors, producers, traders, processors, manufacturers as well as with policy makers, implementers, promoters and researchers of NTFPs in the valley so as to ensure their protection and sustainable management.

3.1.5 Landscape stabilization and prevention/control of landslides

Landslides are a growing hazard in the project area. Factors contributing to this include greater prevalence of extreme weather events on account of changing rainfall and

snowmelt patterns, earthquakes and seismic activity, roads construction, deforestation and land use conversion, and adoption of in-appropriate land use practices.

To reduce their frequency and impact, the project will take different measures. Some of the suggested measures for the purpose are the identification and monitoring of landslides hazards, protection of landslide-prone landscapes, and slope protection and reclamation of landslides.

The different project interventions are designed to address the issues of deforestation and forest degradation in the valley so as to secure their ecosystem services with respect to watershed protection, biodiversity and NTFPs conservation, climate change mitigation and adaptation and prevention and control of landslides. Main outcomes of the project that are expected to contribute to the project development goal include:

- Reducing threats to existing forests in the project area, enhancing stocking of degraded forests and increasing area of temperate forests thereby maintaining and enhancing the capacity of these Western Himalayan Temperate Coniferous Forests to provide ecosystem services;
- Models of public and private sector PES and related schemes developed and demonstrated within the project area, and the approach replicated in the wider region of Pakistan;
- Enhanced technical capacity of key stakeholders to develop and implement PES schemes and recommendations made for improved policy, legal and institutional framework at the national and provincial levels so as to institutionalize PES concept in forest resources conservation and management;
- Increased availability of information on, and awareness of, PES concepts, schemes and opportunities increased in the provinces and at the national level.

3.2 Sectoral Scope and Project Type

This is an Agriculture, Forestry and Other Land Use (AFOLU) project and corresponds to VCS Sectoral Scope 14: Agriculture, forestry and Other Land Use. Within the framework of VCS, the project falls in the category mosaic and unplanned deforestation and forest degradation at the landscape level. It therefore can use IPCC 2006 Guidelines and GPG for carbon accounting as well as VM0006 Methodology for Carbon Accounting for Mosaic and Landscape-scale REDD Projects, v2.2. The project will use the following Methodological Tools:

Combined tool to identify the baseline scenario and demonstrate additionality in A/R CDM project activities” (Version 01)

Estimation of non-CO2 GHG emissions resulting from burning of biomass attributable to an A/R CDM project activity” (Version 04.0)

Estimation of carbon stocks and change in carbon stocks in dead wood and litter in A/R CDM project activities” (Version 03.1)

3.3 Project Proponent

Organization Name	Office of Inspector General of Forests Ministry of Climate Change, Government of Pakistan, Islamabad, Pakistan.
Contact Person	
Title	Inspector General of Forests
Address	LG&RD Complex, G-5/2, Islamabad
Telephone No.	051-9245589
Fax No.	051-9245590
Mobile No.	
Email address	igf@ccd.gov.pk

3.4 Other Entities Involved in the Project

Organization Name	Office of the Chief Conservator of Forests Northern Forest Region Government of Khyber Pakhtunkhwa, Abbottabad.
Contact Person	
Title	Chief Conservator of Forests
Address	Abbottabad, Khyber Pakhtunkhwa
Telephone No.	
Fax No.	
Mobile No.	
Email address	

3.5 Project Start Date

January, 2020.

3.6 Project Crediting Period

Project crediting period is 30 years and 0 months. Start date of the crediting period is January 1, 2020 and the end date is December 31, 2049.

Work on project preparation has been started in January 2018. The first activity related to the project was the signing of agreement between the Ministry of Climate Change, Government of Pakistan and Pakistan Forest Institute for the preparation of first draft of Project Design Document.

Pakistan Forest Institute has since then started discussions and consultations with different stakeholders on design elements of the project.

Actual implementation of the project, however, is expected to start from January 1, 2020 after completion of all the codal formalities, including validation of the Project Description Document and its registration with VCS and possibly CCB also.

Supporting documentation for the start date can be found in the folder “Project start date”.

3.7 Project Scale and Estimated GHG Emission Reductions or Removals

Project Scale	
Project	Yes
Large Project	

3.7.1 Estimated GHG Emission Reductions or Removals

The Business as Usual (BAU) for the Kaghan valley PES REDD+ pilot project applies the historical deforestation rate of 0.7% per year to the project site to estimate and project future emissions from not implementing a REDD+ intervention. The primary drivers of degradation emissions and changes in carbon stocks are fuelwood consumption and unsustainable logging. To be conservative, the baseline changes in carbon stocks are applied only to above ground biomass, as the roots of the trees are generally not removed from the project area, and no burning of below ground biomass or soil is evident. The projected baseline changes in forest area, applying the historical average deforestation rate, if no REDD+ (or similar) intervention is pursued, then it will result in a loss of forest area from the current **51,829 ha in 2018, down to 41,981 ha in 2048.**

Changes in carbon stocks over a 30 years REDD+ project period, using conservative estimation, are expected to result in a decline from 9,902,785 tons of carbon stored in the Kaghan valley project site in 2018, to 8,119, 356 tons of carbon stored in 2048. This leads to a total reduction of **1,783,429 tons of carbon in a 30 years period** or emissions **equivalent to 6,545,187 tCO_{2e}**. The above estimates can be enhanced by using IPCC GPG to analyze forestland conversion to cropland.

Over a 30 years period, the historical average deforestation in the project site without a REDD+ intervention will create a loss of **490,615 tons of carbon** stored on the land, and create emissions of **1,799,084 tons of CO_{2e}**.

Based on the current data, the total emissions from fuelwood gathering amount to **272,719 tCO_{2e} per year, or 8,181,559 t CO_{2e} over a 30 year** period assuming constant annual collection of fuelwood from non-renewable resources.

In the PES REDD+ Project Scenario, several assumptions are made to develop the emissions scenario for a REDD+ project intervention.

- Deforestation and forest degradation are not affected for the first five years of the project intervention while awareness raising and community support is built. As a result, the deforestation rate of 0.7% per year will be applied to the first five years, and then assumed to be 0% from there onwards.

- The Billion Trees Afforestation Project (BTAP) will lead to enhancement in carbon stocks on an area of 11,816 ha counting plantings from 2018 and applying an even planting schedule over a 5 year period (2018-2023).

The first project intervention to be calculated is the impact on deforestation and forest degradation emissions. The project applies the deforestation rate to the first five years. The total emissions from deforestation in the first five years is **96,138 tC or 352,538 tCO₂e**, after which the intervention is assumed to be fully effective and the deforestation rate drops to 0%.

The second project intervention emission scenario takes the assumptions for afforestation/ reforestation and apply emission values developed by PFI to the current forest areas, and future reforestation efforts. Applying the PFI Carbon sequestration rate over the project lifetime to carbon stock enhancement efforts on **11,816 ha**, with an initial five year planting schedule, annual carbon stocks increase, and over the 30 years project lifetime, a total of **2,227,316 tons of CO₂e** are sequestered

The PES REDD+ Project is therefore estimated to create a positive emissions impact over the 30 years period by taking the difference of projected baseline emissions BAU scenario and the emissions sequestered from the plantation efforts, as well as a long term reduction in forest degradation and deforestation on the project site.

To calculate the net emissions sequestered from the project intervention, a decision on how to use the deforestation and forest degradation baselines needs to be considered. The degradation baseline shows a much higher source of emissions both annually and cumulatively than the deforestation baseline. According to PFI, the degradation emissions should be included in the deforestation emissions, but the degradation emissions baseline shows emissions are 8 times higher than the deforestation emissions baseline.

Therefore, the two projected emissions scenarios for deforestation and forest degradation are presented separately in the following table to analyze the emission reduction impact of the project.

Accounting Item	tCO ₂ e
Baseline	6,545,187
Emissions reduced from REDD+ Project Intervention	2,579,854
Net Emissions under the Project Scenario (Baseline – REDD+ Project Intervention)	3,965,333

3.8 Description of the Project Activity

3.8.1 Project Goal

To secure climate, community and biodiversity benefits in Western Himalayan Temperate Coniferous Forest ecosystems through the demonstration and promotion of Payments for Environmental Services (PES) and related financing schemes.

3.8.2 Project Objectives

Project goal will be achieved through the following project objectives/outcomes:

Outcome 1:

Reducing threats to existing forests in the project area, improve the stocking of degraded forests and increasing area of forests thereby maintaining and enhancing the capacity of temperate forests to provide climate, community and biodiversity related ecosystem services.

Outcome 2:

Models of public and private sector PES and related schemes developed and demonstrated within the project area, and the approach replicated in the wider regions of Pakistan.

Outcome 3:

Enhanced technical capacity of key stakeholders to develop and implement PES schemes and recommendations made for improved policy, legal and institutional framework at the national and provincial levels so as to institutionalize PES concept in forest resources conservation and management.

Outcome 4:

Increased availability of information on and awareness of PES concepts, thereby enhancing opportunities for PES schemes in the provinces and at the national level.

3.8.3 Project Program of Activities (PoAs)

The Program of Activities (PoAs) proposed under the project will produce outputs which are expected to contribute to the realization of project outcomes if certain frame conditions exist. The assumed theory of change is that if the existing and potential future threats to forests are reduced; new forests are planted; greater use is made of partnerships for forest conservation; policy, legal and institutional frame conditions are made conducive for PES; awareness about PES is raised; and the skills of relevant stakeholders are enhanced; then all these factors will synergistically contribute to maintaining and expanding the forest cover in the valley, which in turn will ensure the

increased and sustained availability of their ecosystems services in support of watershed protection, biodiversity conservation and promotion of ecotourism, climate change mitigation and adaptation, and prevention/control of landslides. When the above mentioned project outcomes are realized, these will lead to better environmental, economic, social and institutional impacts on the ecology, economy and society. Based on this theory of change and intervention strategy, the project inputs and activities are designed to produce the outputs and outcomes required to eventually achieve the ecosystem impact level results-better watershed protection, climate change mitigation, biodiversity conservation, enhanced landscape protection and improved community livelihoods .

The likelihood that these impacts will be achieved depends on a number of assumptions including willingness of the Provincial and National Governments to mainstream PES schemes into policy and decision-making and overall forest resource management plans, collaboration among provinces and interest and motivation of the stakeholders to continue to apply PES schemes. Therefore, important drivers towards project goal and impact include development of policy and legal frameworks at provincial and national levels, documentation, wider dissemination and distribution of best practices of this pilot PES scheme, and mapping and assessment of ecosystems and their services. Based on international experiences, mainstreaming lessons learnt of projects that involve changes in policy and legislation are beyond the immediate control of the project, because policy and legal changes have to be approved by governments and involve debates and reviews that are beyond the control of the project. Therefore, wider geographical replication of the PES concept is proposed so as to deliver the project goal on institutionalizing it as an approach.

Main opportunities for PES scheme in different landscapes in the valley lie in the following areas:

- Rehabilitation of degraded forest lands and re-stocking of blank forest areas
- Improving productivity of crop lands
- Improving productivity of grass lands and range lands
- Integration of sylvo-pastoral systems
- Integration of trees and crops growing on crop lands

Logical framework of the project alongwith Program of Activities (PoAs) is given in Table 3.3.

Table 3. 3: Logical framework of the project

Expected Result	Objectively Verifiable Indicator (OVI)	Baseline	Target		Means of Verification (MoV)	Assumptions
			Mid-Term (when applicable)	Final		
Project Goal: Secure climate, community and biodiversity benefits in WHTF ecosystems through the demonstration and promotion of Payments for Environmental Services (PES) and related financing schemes.	A PES scheme for the WHTF ecosystem in Kaghan valley is developed for securing ecosystem services of these forests.	The 3 existing Forest Management Plans of Kaghan valley have not collected systematic data on various ecosystem services of these Moist Temperate Forest Type. There is currently no PES scheme under implementation in forestry sector in Pakistan.	Work on the development of a Project Description Document for PES scheme in Kaghan valley forests of Pakistan is initiated.	WHTF Forests PES Schemes is designed, adopted and under implementation in Kaghan valley of Pakistan.	Project Description Document for WHTF Forests PES scheme is developed and available. The PES Scheme is approved and under implementation.	Willingness of Governments to mainstream PES schemes into policy and decision-making and resource conservation and management tool. Collaboration between different provincial government agencies and with the federal government on PES related issues. Interest and willingness of stakeholders in continued implementation of PES schemes.
Project Outcomes						
Reduced threats to existing WHTF in the project area, enhanced carbon stocking of degraded forests and increased area of well-stocked forests in the valley thereby maintaining and enhancing the capacity of these WHTF to provide	Existing WHTF in the project area (total ~63,645 ha) are protected and rehabilitated and 25,896 ha blank forest area in the valley is restocked in addition to raising trees on farm land through Agro- and Farm Forestry Program.	Based on land cover statistics prepared from satellite imageries and land surveys of 2017 and 2018, total WHTF ecosystem area in Kaghan valley is 63,645 ha.	The 63,645 ha existing WHTF area is protected and restocking/ restoration plan prepared for the 25,896 ha forest blanks/ degraded/ barren area. WHTF areas to be assessed at the mid-term evaluation time.	The 63,645 ha existing WHTF area is protected and rehabilitated and 25,896 ha forest blanks and degraded/ barren area in the valley is planted with suitable species using appropriate planting techniques and plant to plant spacing.	Land cover statistics and maps prepared from satellite imageries of the WHTF area in Kaghan valley at pilot project site at project start time; mid—term evaluation time; and at post project terminal evaluation time.	High resolution satellite imageries are procured for the project, images are accurately interpreted and land cover maps prepared.

ecosystem services.				WHTF areas to be assessed at the post project evaluation time.		
Models of public and private sector PES and related schemes developed and demonstrated within the project area, and the approach replicated in the wider regions of Pakistan.	MoUs developed and signed for public-private sector WHTF PES schemes. These PES schemes are meant to reward the maintenance, improvement or adoption of WHTF conservation and expansion-friendly measures.	No MoUs for public-private partnerships covering PES schemes currently existing in the said project area.	At least 1 MoU developed.	At least 1 MoU signed.	Copies of Project Design Documents and copies of signed MoU between public-private partners for PES Schemes implementation. Copies of Plan for WHTF in Kaghan valley of KP Province at project start time; midterm evaluation reports of the project; and post- project independent evaluation time.	Societal changes in Kaghan valley have opened a window of opportunity for developing and implementing PES schemes through public-private partnerships for resources protection, conservation and sustained production of environmental services to the society.
Enhanced technical capacity of key stakeholders to develop and implement PES schemes and recommendations made for improved policy, legal and institutional framework at the national and provincial levels so as to institutionalize PES concept in forest resources conservation and management.	Number of key stakeholders in WHTF areas in Kaghan valley are aware of PES and related sustainable financing mechanisms, and are considering adopting them for the conservation and sustainable management of these WHTF in their areas. Concrete proposals for policy, legal and institutional reforms that are supportive of PES program are	Little or no awareness amongst key stakeholders in WHTF areas in Kaghan valley about PES and related sustainable financing mechanisms. Existing policies, legal and institutional	Key stakeholders in the project areas are identified and their level of knowledge and needs related to PES and related sustainable financing schemes are assessed. Specific gaps in existing policies, laws and institutional frameworks at the national and provincial levels are identified.	1 National level workshop and 1 provincial level workshop are held with concerned staff of relevant ministries and departments. Each workshop has at least 15 participants. Specific proposals for policies, legal and institutional reforms that are supportive of PES at the national and provincial levels are developed and are being considered for initiation of needed	Reports of qualitative knowledge, skills and capacity assessment surveys among project participants and key stakeholders in pilot project site to be conducted at project inception and as part of post-project evaluation. Concrete proposals for policies, legal and institutional reforms at the national and	Interest from key players in WHTF areas. Lessons from and basic approaches developed in the pilot project area are useful in other areas of the province and Pakistan. Close cooperation is developed between the federal and provincial agencies and amongst the provincial agencies for bringing about needed policy, legal and institutional reforms

	prepared at the national level as well as the provincial governments levels.	frameworks at the national level and the provincial levels have gaps that need to be fulfilled through appropriate measures.		actions.	provincial levels are available.	that are supportive of and conducive for PES schemes implementation.
Increased availability of information on, and awareness of, PES concepts, schemes and opportunities increased in the province and at the national level.	Project experiences and lessons learned ('how-to' manuals, good practices guidelines, etc.) captured and available to key provincial, national and international conservation and development community through project website.	No documentation of best practices/ lessons in the project areas.	Draft lessons learned and best practices, and newsletter issues on interim results and lessons learnt.	Accurate documentation of processes and activities leading to best practices is systematically being documented at the project sites and the work is supported by the project.	<p>Evidence provided in project survey reports, progress reports and final reports that the pilot PES project has made significant contributions to the concerned ministries, departments and conservation community's knowledge of how to scale-up PES and sustainable financing schemes as well as how to incorporate them in forest management so that they deliver significant conservation and livelihood improvements.</p> <p>Reports of qualitative information and knowledge assessment surveys and interviews among project participants of Ministry of Climate Change, Provincial Forest and Other Departments and other key stakeholders</p>	<p>Interest from key players in other areas of KP province, other provinces and territories of Pakistan.</p> <p>Lessons from, and basic approaches developed in the pilot project are useful for and applicable for adoption other areas or can be applied after suitable adaptation.</p> <p>Interest in and PES and PES like schemes among Policy makers, government departments, local communities and conservation and development organizations remains high.</p>

					in local communities and conservation organizations, to be conducted at project inception and as part of post-project evaluation.	
Project Outputs						
Outputs contributing to Outcome 1: Reducing threats to existing forests in the project area and planting of new forests						
Plans for better protection and conservation of existing WHTF in Kaghan valley developed.	3 No. of Consultations held and WHTF Protection and 3 Sustainable Management Plans developed.	The 3 Forest Management Plans are expired and also have deficiencies.	Consultations started and work on plans preparation initiated.	The 3 Forest Management Plans preparation finalized and M&E systems for effective plans implementation developed.	Forest Management Plans for Kaghan Reserve Forests, Upper Kaghan Guzara Forests and Lower Kaghan Guzara Forests Documents. M&E System Documents for effective Plans Implementation.	Sufficient level of interest in PES/SF of relevant stakeholders exists. Financial resources for plan implementation are available and can be mobilized.
Plans for rehabilitation and restoration of degraded WHTF developed.	Consultations held and WHTF rehabilitation and restoration plans developed.	No systematic and comprehensive plans for WHTF rehabilitation and restoration existing.	Consultations started and work on plans preparation initiated.	Plans preparation finalized and M&E system for plans implementation developed.	WHTF Rehabilitation and Restoration Plan Documents. M&E Documents.	Sufficient level of interest in PES/SF of relevant stakeholders exists. Financial resources for plan implementation are available and can be mobilized.
Plan for planting WHTF over degraded and barren	Consultations held and Afforestation/ Reforestation Plan	A REDD+ PES specific Afforestation/ Reforestation Plan is	Consultations started and work on Afforestation/	Plan preparation finalized and M&E System for plan	Afforestation/ Reforestation Plan Document for WHTF.	Sufficient level of interest in PES/SF of relevant stakeholders

areas developed.	developed.	currently not existing.	Reforestation Plan preparation initiated.	implementation developed.	M&E System Document.	exists. Financial resources for plan implementation are available and can be mobilized.
Plan for Integrated Silvo-pastoral System developed.	Consultations held and Integrated Silvo-pastoral Plan developed.	An Integrated Silvo-pastoral Plan not existing.	Consultations started and work on Silvo-pastoral Plan preparation initiated.	Plan preparation finalized and M&E System for plan implementation developed.	Integrated Silvo-pastoral Plan for Kaghan Valley Document. M&E System Document for Silvo-pastoral System Plan Implementation.	Sufficient level of interest in PES/SF of relevant stakeholders exists. Financial resources for plan implementation are available and can be mobilized.
Plan for Integrated Agro- and Farm Forestry developed.	Consultations held and Integrated Agro- and Farm Forests Plan developed.	Integrated Agro- and Farm Forestry Plan for Kaghan Valley not existing.	Consultations started and work on Agro- and Farm Forestry Plan preparation initiated.	Plan preparation finalized and M&E System for plan implementation drafted.	Integrated Agro- and Farm Forestry Plan Document for Kaghan Valley. M&E Document for Integrated Agro- and Farm Forestry Plan Implementation .	Sufficient level of interest in PES/SF of relevant stakeholders exists. Financial resources for plan implementation are available and can be mobilized.
Plan for Integrated Watershed Management in Kunhar River Catchment Areas developed.	Consultations held and Integrated Watershed Management for Kunhar River Catchment Areas is developed.	An Integrated Watershed Management Plan for Kunhar Rive Catchment Areas is not existing.	Consultations started and work on Integrated Watershed Management Plan for Kunhar River Catchment Areas preparation initiated.	Plan preparation finalized and M&E System for plan implementation drafted.	Integrated Watershed Management Plan for Kunhar Rive Catchment Areas Plan Document. M&E System Document for Watershed Management Plan Implementation.	Sufficient level of interest in PES/SF of relevant stakeholders exists. Financial resources for plan implementation are available and can be mobilized.
Plan for Biodiversity Conservation in Kaghan Valley developed.	Consultations held and Biodiversity Conservation Plan developed.	Biodiversity Conservation Plan for Kaghan Valley is not existing.	Consultations started and work on Biodiversity Conservation Plan preparation initiated.	Plan preparation finalized and M&E System for plan implementation drafted.	Biodiversity Conservation Plan Document. M&E System Document for Biodiversity Plan Implementation.	Sufficient level of interest in PES/SF of relevant stakeholders exists. Financial resources for plan implementation are

						available and can be mobilized.
Plan for Eco-tourism Development in Kaghan Valley developed.	Consultations held and Eco-tourism Development Plan developed.	NTFPs Conservation and Development Plan for Kaghan Valley is not existing.	Consultations started and work on NTFPs Conservation and Development Plan preparation initiated.	Plan preparation finalized and M&E System for plan implementation drafted.	Eco-tourism Development Plan Document. M&E System Document for Eco-tourism Development Plan Implementation.	Sufficient level of interest in PES/SF of relevant stakeholders exists. Financial resources for plan implementation are available and can be mobilized.
Plan for NTFPs Conservation and Development in Kaghan Valley developed.	Consultations held and NTFPs Conservation and Development Plan developed.	Biodiversity Conservation Plan for Kaghan Valley is not existing.	Consultations started and work on Biodiversity Conservation Plan preparation initiated.	Plan preparation finalized and M&E System for plan implementation drafted.	NTFPs Conservation and Development Plan Document. M&E System Document for NTFPs Conservation and Development Plan Implementation.	Sufficient level of interest in PES/SF of relevant stakeholders exists. Financial resources for plan implementation are available and can be mobilized.
Plan for Landscape Stabilization and Landslides Prevention and Control developed.	Consultations held and Landscape Stabilization and Landslides Prevention and Control Plan developed.	Landscape Stabilization and Landslides Prevention and Control Plan for Kaghan Valley is not existing.	Consultations started and work on Landscape Stabilization and Landslides Prevention and Control Plan preparation initiated.	Plan preparation finalized and M&E System for plan implementation drafted.	Landscape Stabilization and Landslides Prevention and Control Plan Document. M&E System Document for Landscape Stabilization and Landslides Prevention and Control Plan Implementation.	Sufficient level of interest in PES/SF of relevant stakeholders exists. Financial resources for plan implementation are available and can be mobilized.
Plan for Improving Productivity of Grass Lands and Rangelands developed.	Consultations held and Grass Lands and Range Lands Productivity Enhancement Plan developed.	Grass Lands and Range Lands Productivity Enhancement Plan for Kaghan Valley is not existing.	Consultations started and work on Grass Lands and Range Lands Productivity Enhancement Plan preparation initiated.	Plan preparation finalized and M&E System for plan implementation drafted.	Grass Lands and Range Lands Productivity Enhancement Plan Document. M&E System Document for Grass Lands and Range Lands	Sufficient level of interest in PES/SF of relevant stakeholders exists. Financial resources for plan implementation are available and can be mobilized.

					Productivity Enhancement Plan Implementation.	
Plan for Improving Productivity of Crop Lands developed.	Consultations held and Crop Lands Productivity Enhancement Plan developed.	Crop Lands Productivity Enhancement Plan for Kaghan Valley is not existing.	Consultations started and work on Crop Lands Productivity Enhancement Plan preparation initiated.	Plan preparation finalized and M&E System for plan implementation drafted.	Crop Lands Productivity Enhancement Plan Document. M&E System Document for Crop Lands Productivity Enhancement Plan Implementation.	Sufficient level of interest in PES/SF of relevant stakeholders exists. Financial resources for plan implementation are available and can be mobilized.
Plan for controlling cutting of WHTF coniferous trees for fuelwood purposes developed.	Consultations held and measures for controlling cutting of WHTF coniferous trees for fuelwood purposes agreed and codified.	In-effective measures for controlling cutting of WHTF coniferous trees for fuelwood purposes existing in the project areas.	Consultations started and work on measures and their codification initiated.	Plan preparation finalized and MoU for plan implementation drafted.	Document detailing agreed measures for controlling cutting of WHTF coniferous trees for fuelwood purposes. MoU Document.	Sufficient level of interest in PES/SF of relevant stakeholders exists. Financial resources for plan implementation are available and can be mobilized.
Plan for controlling of cutting of branches and lopping of WHTF broadleaf trees for animal fodder purposes developed.	Consultations held and measures for controlling cutting of branches and lopping of WHTF broadleaf trees for animal fodder purposes agreed and codified.	In-effective measures for controlling cutting of branches and lopping of WHTF broadleaf trees for animal fodder purposes existing in the project area.	Consultations started and work on plan preparation initiated.	Plan preparation finalized and MoU for plan implementation drafted.	Document detailing agreed measures for controlling cutting of branches and lopping of WHTF broadleaf trees for animal fodder purposes. MoU Document.	Sufficient level of interest in PES/SF of relevant stakeholders exists. Financial resources for plan implementation are available and can be mobilized.
Plan for controlling unauthorized construction for habitation and business purposes developed in collaboration with concerned agencies.	Consultations held and plan for controlling unauthorized construction of habitation and business purposes developed.	In-effective planning existing in project areas for controlling unauthorized construction of habitations and business complexes.	Consultations started and work on plan preparation initiated.	Plan preparation finalized and MoU for plan implementation drafted.	Document for controlling unauthorized construction of habitation and business complexes. MoU Document.	Sufficient level of interest in PES/SF of relevant stakeholders exists. Financial resources for plan implementation are available and can be mobilized.
Outputs						

contributing to Outcome 2: Models of public and private sector PES and related schemes developed and demonstrated						
Model public-private PES Programs developed by the Federal Ministry of Climate Change.	At least two project proposals for public-private PES program developed by the Ministry of Climate Change.	No proposal currently existing.	Work on proposal development initiated.	Work on proposal development completed and proposal ready for adoption.	Public-private PES Program Proposal Documents.	<p>Sufficient level of interest in PES/SF of relevant stakeholders exists.</p> <p>Technical capacity exists or can be procured for proposal development.</p>
Model public-private PES Program developed by the KP Provincial Forest Department.	At least one project proposal for public-private PES program developed by the KP Forest Department.	No proposal currently existing.	Work on proposal development initiated.	Work on proposal development completed and proposal ready for adoption.	Public-private PES Program Proposal Documents.	<p>Sufficient level of interest in PES/SF of relevant stakeholders exists.</p> <p>Technical capacity exists or can be procured for proposal development.</p>
Outputs contributing to Outcome 3: Enhanced technical capacity of key stakeholders to develop and implement PES schemes and recommendations made for improved policy, legal and institutional framework						

Concrete proposals developed for initiating policy, legal and institutional reforms at the federal level that are conducive to and support implementation and large-scale adoption of PES programs in the forestry sector.	Proposals for policy, legal and institutional reforms at the national level that are supportive of PES programs are developed.	Currently concrete proposals for policy, legal and institutional reforms at the national level not existing.	Work on proposals development for policy, legal and institutional reforms at the national level initiated.	Work on proposals development for policy, legal and institutional reforms at the national level completed.	Documents of Concrete Proposals on Policy, Legal and Institutional Reforms. Project Progress Reports.	Sufficient level of interest in PES/SF of relevant stakeholders exists. Technical capacity exists or can be procured for proposal development.
Concrete proposals for initiating policy, legal and institutional reforms at the provincial level that are conducive to and support implementation and large-scale adoption of PES programs in the forestry sector.	Proposals for policy, legal and institutional reforms at provincial levels that are supportive of PES programs are developed.	Currently concrete proposals for policy, legal and institutional reforms at provincial levels not existing.	Work on proposals development for policy, legal and institutional reforms at provincial levels initiated.	Work on proposals development for policy, legal and institutional reforms at provincial levels completed.	Documents of Concrete Proposals on Policy, Legal and Institutional Reforms. Project Progress Reports.	Sufficient level of interest in PES/SF of relevant stakeholders exists. Technical capacity exists or can be procured for proposal development.
Outputs contributing to Outcome 4: Increased availability of information on and awareness of PES concepts						
Awareness creation and training and capacity building program on PES in the forestry sector for the staff of Provincial Forest Department developed.	Increase in awareness scores of PES concepts, schemes and opportunities among pilot site Forest Department staff.	Little or no awareness amongst staff of Provincial Forest Departments about PES concepts, schemes and opportunities.	Targeted awareness raising activities carried out covering reaching key targets.	Increased awareness of PES concepts, schemes and opportunities among pilot site Forest Department staff.	Interviews with key set of stakeholders conducted during final project evaluation.	Sufficient level of interest in PES/SF of relevant stakeholders exists.

Awareness creation and training and capacity building program on PES in the forestry sector for relevant communities developed.	Increase in awareness scores of PES concepts, schemes and opportunities among pilot sites communities.	Little or no awareness amongst communities about PES concepts, schemes and opportunities.	Targeted awareness raising activities carried out covering reaching key targets.	Increased awareness of PES concepts, schemes and opportunities among pilot sites communities.	Interviews with key set of stakeholders conducted during final project evaluation.	Sufficient level of interest in PES/SF of relevant stakeholders exists.
Awareness creation and training and capacity building program on PES in the forestry sector for staff of other relevant departments developed.	Increase in awareness scores of PES concepts, schemes and opportunities among pilot sites staff of other relevant departments.	Little or no awareness amongst staff of other relevant departments about PES concepts, schemes and opportunities.	Targeted awareness raising activities carried out covering reaching key targets.	Increased awareness of PES concepts, schemes and opportunities among pilot sites staff of other relevant departments.	Interviews with key set of stakeholders conducted during final project evaluation.	Sufficient level of interest in PES/SF of relevant stakeholders exists.
Awareness creation and training and capacity building program on PES in the forestry sector for politicians, policy makers and other opinion makers developed.	Increase in awareness scores of PES concepts, schemes and opportunities among politicians, policy makers and other opinion makers.	Little or no awareness amongst politicians, policy makers and other opinion makers about PES concepts, schemes and opportunities.	Targeted awareness raising activities carried out covering reaching key targets.	Increased awareness of PES concepts, schemes and opportunities among politicians, policy makers and other opinion makers.	Interviews with key set of stakeholders conducted during final project evaluation.	Sufficient level of interest in PES/SF of relevant stakeholders exists.
Project Activities						
Interventions Related to Outcome 1						
Implement Social Awareness Raising, Livelihoods Improvement and Improved Forest Governance in the valley.	Social Awareness Raising, Livelihoods and Forest Governance Improvement Plan for Kaghan Valley have been prepared.	A specific and targeted Social Awareness Raising, Livelihoods and Forest Governance Improvement Plan for Kaghan Valley does not exist.	Consultations held for the preparation of the Plan and Plan prepared and made operational.	Implementation of the Plan is further fine tune and strengthened based on lessons learned during implementation.	Plan Document is prepared and available. Documents detailing lessons learned from plan implementation are available and being made use of. Progress Reports.	Sufficient level of interest in PES/SF of relevant stakeholders exists.
Prepare and	A Village Land Use	Village Land Use	Village Land Use	The outcomes of	VLUP Documents.	Sufficient level of

implement Integrated Land Use Plans using the Village Land Use Planning (VLUP) Approach	Plan is prepared and available for implementation.	Plans in the project area do not exist.	Plans are prepared and their implementation is underway.	VLUP implementation are being documented and made use for further strengthening of the VLUP process.	Progress Reports of VLUP implementation.	interest in PES/SF of relevant stakeholders exists
Increase Forest Patrolling and Protection in the valley.	Consultations with the communities and plans for increased forest patrolling and protection.	Currently such engagement and consultations plans with communities for increased forest patrolling and protection are not available.	Consultations held.	Consultations held and plans prepared.	Minutes of the consultations held and plan document. Progress Reports.	Sufficient level of interest in PES/SF of relevant stakeholders exists.
Establish Forest Enclosures to promote and assist natural regeneration and do enrichment planting by the Forest Negahbans or Forest Watchers.	Consultations with the communities for Forest Enclosures establishment and appointment of Forest Negahbans, and the establishment of Forest Enclosures.	Currently no REDD+ PES specific consultations are being held and no plans are available.	Consultations held.	Consultations held and plans prepared.	Minutes of the consultations held and plan document. Progress Reports.	Sufficient level of interest in PES/SF of relevant stakeholders exists.
Implement fire prevention measures at vulnerable sites.	Consultations with communities and fire prevention plans.	Currently no consultations are being held and no plans are available for fire prevention.	Consultations held and fire prevention measures being implemented.	Consultations held and fire prevention plans are being implemented.	Minutes of the consultations held and plan document. Progress Reports.	Sufficient level of interest in PES/SF of relevant stakeholders exists.
Develop alternate energy sources.	Consultations with communities and prepare plans for alternate energy sources.	Currently no consultations are being held and no plans are available for the development of alternate energy sources.	Consultations held.	Consultations held and plans prepared.	Minutes of the consultations held and plan document. Progress Reports.	Sufficient level of interest in PES/SF of relevant stakeholders exists.
Distribute fuel efficient cooking stoves.	Consultations with relevant communities and distribution of fuel efficient cooking stoves.	Currently no consultations are being held and there is no distribution of fuel efficient cooking stoves.	Consultations held.	Consultations held and plans prepared.	Minutes of the consultations held and plan document. Progress Reports.	Sufficient level of interest in PES/SF of relevant stakeholders exists.
Develop woodlots.	Consultations with	Currently no	Consultations held.	Consultations held and	Minutes of the	Sufficient level of

	communities and raising of woodlots. sources through coastal rivers.	consultations are being held and no woodlots in support of REDD+ PES scheme are being raised.		plans prepared.	consultations held and plan document. Progress Reports.	interest in PES/SF of relevant stakeholders exists.
Restock and re-plant 25,896 ha of forest blanks, barren and degraded areas in Kaghan valley with different tree species of WHTF zone at suitable sites using appropriate planting techniques and spacing through interaction with relevant agencies.	Consultations with communities and relevant agencies and planting of 25,896 ha of forest blanks, degraded and barren land.	Currently no consultations are being held and no REDD+ PES specific planting is being done in the valley.	Consultations held and planting being done.	Planted areas are being protected and maintained.	Minutes of the consultations held and progress reports of plantations raised, protected and maintained.	Sufficient level of interest in PES/SF of relevant stakeholders exists. Financial resources are available and can be mobilized for the purpose.
Control cutting of WHTF coniferous trees fuelwood purposes through dialogue with concerned communities and effective implementation of forest law.	Consultations with and plan for controlling cutting of forests for fuelwood purposes.	Currently no consultations are being held and plans for controlling the cutting of trees for fuelwood purposes are not effective.	Consultations held and plans being implemented.	Consultations held, plans are prepared, implemented, monitored and further strengthened based on lessons learned.	Minutes of the consultations held and progress reports of plans implementation.	Sufficient level of interest in PES/SF of relevant stakeholders exists.
Control damages to WHTF broadleaf trees due to cutting of branches for animal fodder through dialogue with local communities and effective implementation of forest law.	Consultations with and plan for controlling damages to broadleaf trees due to cutting of branches for animal fodder purposes.	Currently no consultations are being held and no plans are available for controlling the damages to trees due to cutting of branches for animal fodder purposes.	Consultations held and plans being implemented.	Consultations held, plans are prepared, implemented, monitored and further strengthened based on lessons learned.	Minutes of the consultations held and progress reports of plans implementation.	Sufficient level of interest in PES/SF of relevant stakeholders exists.

Control forest land conversion to non-forest land uses in the valley and stop the construction of un-authorized human habitations and business complexes through dialogue with concerned parties and effective implementation of forest law.	Consultations with and control of conversion of forest land to non-forest land uses and stoppage of construction of un-authorized human habitations and business complexes.	Currently such measures controlling the conversion of forest land to other non-forest uses and the stoppage of construction of un-authorized human habitations and business complexes are not very effective.	Consultations held and plans being implemented.	Consultations held, plans are prepared, implemented, monitored and further strengthened based on lessons learned.	Minutes of the consultations held and progress reports of plans implementation.	Sufficient level of interest in PES/SF of relevant stakeholders exists.
Develop and implement Integrated Watershed Management Program in the catchment areas of Kunhar River.	Consultations with relevant stakeholders and implementation of Integrated Watershed Management Plan.	Existing watershed management activities are patchy and not enough.	Consultations held and plans being implemented.	Consultations held, plans are prepared, implemented, monitored and further strengthened based on lessons learned.	Minutes of the consultations held and progress reports of plans implementation.	Sufficient level of interest in PES/SF of relevant stakeholders exists. Financial resources are available and can be mobilized for the purpose.
Develop and implement Biodiversity Conservation and Management Program in the valley.	Consultations with relevant stakeholders and implementation of Biodiversity Conservation and Management Plan.	Existing biodiversity conservation and management activities are patchy and not enough.	Consultations held and plans being implemented.	Consultations held, plans are prepared, implemented, monitored and further strengthened based on lessons learned.	Minutes of the consultations held and progress reports of plans implementation.	Sufficient level of interest in PES/SF of relevant stakeholders exists. Financial resources are available and can be mobilized for the purpose.
Develop and implement NTFPs Conservation and Development Program in the valley.	Consultations with relevant stakeholders and implementation of NTFPs Conservation and Development Program.	There is no existing NTFPs Conservation and Development Program implemented in the valley.	Consultations held and plans being implemented.	Consultations held, plans are prepared, implemented, monitored and further strengthened based on lessons learned.	Minutes of the consultations held and progress reports of plans implementation.	Sufficient level of interest in PES/SF of relevant stakeholders exists. Financial resources are available and can be mobilized for the

						purpose.
Develop and implement Eco-tourism Development and Promotion Program in the valley.	Consultations with relevant stakeholders and implementation of Eco-tourism Development and Promotion Program	Existing Eco-tourism Development and Promotion activities are patchy and not enough.	Consultations held and plans being implemented.	Consultations held, plans are prepared, implemented, monitored and further strengthened based on lessons learned.	Minutes of the consultations held and progress reports of plans implementation.	Sufficient level of interest in PES/SF of relevant stakeholders exists. Financial resources are available and can be mobilized for the purpose.
Develop and implement Landscape Stabilization and Landslides Prevention and Control Program in the valley.	Consultations with relevant stakeholders and implementation of Landscape Stabilization and Landslides Prevention and Control Program in the valley.	Existing Landscape Stabilization and Landslides Prevention and Control Program activities are patchy and not enough.	Consultations held and plans being implemented.	Consultations held, plans are prepared, implemented, monitored and further strengthened based on lessons learned.	Minutes of the consultations held and progress reports of plans implementation.	Sufficient level of interest in PES/SF of relevant stakeholders exists. Financial resources are available and can be mobilized for the purpose.
Develop and implement Integrated Silvo-pastoral System in the valley	Consultations with relevant stakeholders and implementation of Integrated Silvo-pastoral System.	There is no existing effective integrated silvo-pastoral system in the valley.	Consultations held and plans being implemented.	Consultations held, plans are prepared, implemented, monitored and further strengthened based on lessons learned.	Minutes of the consultations held and progress reports of plans implementation.	Sufficient level of interest in PES/SF of relevant stakeholders exists. Financial resources are available and can be mobilized for the purpose.
Develop and implement Agro- and Farm Forestry Program on Crop Lands in the valley.	Consultations with relevant stakeholders and implementation of Agro- and Farm Forestry Program on Crop Lands.	Existing Agro- and Farm Forestry activities are patchy and not enough.	Consultations held and plans being implemented.	Consultations held, plans are prepared, implemented, monitored and further strengthened based on lessons learned.	Minutes of the consultations held and progress reports of plans implementation.	Sufficient level of interest in PES/SF of relevant stakeholders exists. Financial resources are available and can be mobilized for the purpose.
Develop and implement Crop Land Productivity	Consultations with relevant stakeholders and implementation of	Existing Crop Land Productivity Enhancement	Consultations held and plans being implemented.	Consultations held, plans are prepared, implemented,	Minutes of the consultations held and progress reports of	Sufficient level of interest in PES/SF of relevant stakeholders

Enhancement Program in the valley	Crop Lands Productivity Enhancement Program.	activities are patchy and not enough.		monitored and further strengthened based on lessons learned.	plans implementation.	exists. Financial resources are available and can be mobilized for the purpose.
Develop and implement Grass Land and Range Land Productivity Enhancement Program in the valley.	Consultations with relevant stakeholders and implementation of Grass Lands and Range Lands Productivity Enhancement Program.	Existing Grass Land and Range Land Productivity Enhancement activities are patchy and not enough.	Consultations held and plans being implemented.	Consultations held, plans are prepared, implemented, monitored and further strengthened based on lessons learned.	Minutes of the consultations held and progress reports of plans implementation.	Sufficient level of interest in PES/SF of relevant stakeholders exists. Financial resources are available and can be mobilized for the purpose.
<i>Interventions related to Outcome 2</i>						
Initiation and promotion of public-private PES Model Programs by the Federal Ministry of Climate Change.	Federal Ministry of Climate Change initiates at least two public-private PES Model Programs.	Currently no financial resources are available for implementation of Model PES Plans.	Work started on mobilization of needed financial resources.	Needed financial resources mobilized.	Minutes of the consultations held and financial resources mobilization plan document.	Sufficient level of interest in PES/SF of relevant stakeholders exists. Financial resources are available and can be mobilized for the purpose.
Initiation and promotion of public-private PES Model Programs by the KP Provincial Forest Department.	KP Provincial Forest Department initiates at least one public-private PES Model Program.	Currently no financial resources are available for implementation of Model PES Plan.	Work started on mobilization of needed financial resources.	Needed financial resources mobilized.	Minutes of the consultations held and financial resources mobilization plan document.	Sufficient level of interest in PES/SF of relevant stakeholders exists. Financial resources are available and can be mobilized for the purpose.

Interventions related to Outcome 3						
Liaison and advocacy with concerned Federal Ministries to initiate policy, legal and institutional reforms that are conducive to and support implementation and large-scale adoption of PES programs in the forestry sector.	Liaise and advocate with concerned Federal Ministries to initiate policy, legal and institutional reforms that are conducive to and support implementation and large-scale adoption of PES programs in the forestry sector.	Currently only generic and not concrete work is on-going on the policy, legal and institutional reforms dimension.	Consultations held.	Consultations held and concrete proposals prepared.	Minutes of the consultations held and proposed documents.	<p>Sufficient level of interest in PES/SF of relevant stakeholders exists.</p> <p>Adequate technical capacity and resources are available or can be procured.</p>
Liaison and advocacy with concerned Provincial Ministries and Departments to initiate policy, legal and institutional reforms that are conducive to and support implementation and large-scale adoption of PES programs in the forestry sector.	Liaise and advocate with concerned Provincial Ministries and Departments to initiate policy, legal and institutional reforms that are conducive to and support implementation and large-scale adoption of PES programs in the forestry sector.	Currently only generic and not concrete work is on-going on the policy, legal and institutional reforms dimension.	Consultations held.	Consultations held and concrete proposals prepared.	Minutes of the consultations held and proposed documents.	<p>Sufficient level of interest in PES/SF of relevant stakeholders exists.</p> <p>Adequate technical capacity and resources are available or can be procured.</p>
Interventions related to Outcome 4						
Designing, developing and implementing large-scale awareness creation and training and capacity building program on PES in the forestry sector	Design, develop and implement large-scale awareness creation and training and capacity building program on PES in the forestry sector for the staff of Provincial	Currently no consultations are being held and no awareness creation and training and capacity building plans are available for the staff of	Consultations held.	Consultations held and plans prepared.	Minutes of the consultations held and plans documents.	<p>Sufficient level of interest in PES/SF of relevant stakeholders exists.</p> <p>Sufficient technical capacity and resources exist or can be procured</p>

for the staff of Provincial Forest Departments.	Forest Departments.	Provincial Forest Departments.				to do the job.
Designing, developing and implementing large-scale awareness creation and training and capacity building program on PES in the forestry sector for relevant communities.	Design, develop and implement large-scale awareness creation and training and capacity building program on PES in the forestry sector for the relevant communities.	Currently no consultations are being held and no awareness creation and training and capacity building plans are available for the relevant communities.	Consultations held.	Consultations held and plans prepared.	Minutes of the consultations held and plans documents.	Sufficient level of interest in PES/SF of relevant stakeholders exists. Sufficient technical capacity and resources exist or can be procured to do the job.
Designing, developing and implementing large-scale awareness creation and training and capacity building program on PES in the forestry sector for staff of other relevant departments.	Design, develop and implement large-scale awareness creation and training and capacity building program on PES in the forestry sector for the staff of other relevant departments.	Currently no consultations are being held and no awareness creation and training and capacity building plans are available for the staff of other relevant departments.	Consultations held.	Consultations held and plans prepared.	Minutes of the consultations held and plans documents.	Sufficient level of interest in PES/SF of relevant stakeholders exists. Sufficient technical capacity and resources exist or can be procured to do the job.
Designing, developing and implementing large-scale awareness creation and training and capacity building program on PES in the forestry sector for politicians, policy makers and other opinion makers.	Design, develop and implement large-scale awareness creation and training and capacity building program on PES in the forestry sector for politicians, policy makers and other opinion makers.	Currently no consultations are being held and no awareness creation and training and capacity building plans are available for politicians, policy makers and other opinion makers.	Consultations held.	Consultations held and plans prepared.	Minutes of the consultations held and plans documents.	Sufficient level of interest in PES/SF of relevant stakeholders exists. Sufficient technical capacity and resources exist or can be procured to do the job.

3.9 Project Location

Project area of WHTF PES Project falls in Kaghan Valley of KP Province, representing the entirety of the forest areas in the valley. The project is in the temperate zone and therefore supports Western Himalayan Temperate Forest Ecosystems. The area is characterized by snowy winters, cool summers, and monsoon as well as at times winter and spring season rains.

Map of the project area is given as Annex-I

3.10 Business as Usual Scenario, Project Scenario and Comparison of Business as Usual and Project Scenarios

Please refer to Chapter-7

3.11 Stakeholder Engagement as PES Services Providers, Facilitators and Supporters

Table 3.4 shows the major stakeholders in WHTF in Kaghan valley who are either directly or indirectly relevant in the context of this PES project, and who could potentially be engaged as PES services providers, facilitators or supporters. The table also highlights potential challenges associated with their involvement.

Table 3. 4: Stakeholders as PES Services Providers

Service Provider, Facilitator/ Supporter and Justification	Impact on Service Provision	Challenges
Subsistence Users: Long- term de facto use rights	Their use may be regulated to avoid overharvesting, but they would not have been expected to negatively impact forest. They may be among the most effective at monitoring status.	Identification of individual users is difficult, and changes over time. Not a well-organized grouping and power to enforce is likely limited. Difficult to target PES payments to this group of subsistence users.
Individual Households: Possible to provide household forest protection contracts that clearly define rights and responsibilities	Monitoring responsibilities can be clearly defined and targeted. Likely to be the most cost effective because targeting payments to few individuals.	Enforcement would have to rely on government. Concerns of elite capture in how protection rights are allocated.
Surrounding Hamlets: Lack explicit rights, but proximity means they can influence management, likely overlap with subsistence users.	Best suited to enforce and make rules over resource use, if supported through co-management arrangement.	Not necessarily organized legally as a management unit with explicit rights to forests. Cash payment distribution likely to result in elite capture. Therefore, it is better to compensate through community development initiatives.
Private Companies: Hotels, Fishing Farmers and Mining Companies. Can contribute by curtailing their pollution and landscape disturbing activities.	Decide on treatment of waste from their respective operations and use of the leased land for mining purposes and therefore have management rights and responsibilities. Have some monitoring ability.	Will only participate if PES payments bring in more business and the returns are greater than the costs incurred.
Timber Mafia and Timber Royalty Purchasers: Mostly involved in illegal and legal forest harvesting for commercial sale purposes.	Timber Mafia and Timber Royalty Purchasers is a group loosely comprised of Guzara Forest Owners, contractors, and traders engaging in illegal logging activities. Typically, government officials will collude with them to allow illegal logging and purchase of timber royalty rights to take place. Can influence PES scheme outcomes in a variety of ways.	Will only participate if PES payments are greater than income from sale of timber.
Full Surrounding Communities: Have rights over the area through de facto usages and tacit political support.	Can have impact on forests around the villages.	Too many people, with too little direct impact on the service.
Migrants, Gujjars and Pastoral Communities: Directly adjacent to forest areas and may have some de facto livestock grazing rights.	If Gujjars and pastoral communities have de facto rights over grazing of livestock in forests, they could be paid to forego those rights to ensure sustainable forest management over time. They may be paid to forego their rights to restore degraded forests in the areas where they graze their livestock.	Although they have been exercising de facto use rights in Reserve and Guzara Forests for some time, it may not be socially appropriate or legal to pay them to change their de facto but illegal land and forest use rights. Guzara Forest owners may also not be willing to officially recognized their de facto use rights by making them legal beneficiaries in PES payments.
Provincial Governments: Establish rules around forest protection and administer and finance enforcement.	Legal framework, but daily management is not effective or possible.	Forest Department has legal right to PES payments but the money goes as forest revenue to the State unless specifically authorized to be deposited in the Forest Development Fund, over which Forest Department has control.

3.12 Legal Status and Property Rights

As per KP Forest Ordinance 2002, forests in Kaghan valley have been designated as Reserve Forests or Guzara Forests depending on who owns the forest lands. The ownership of Reserve Forests is vested in the state and the forests are therefore state property. Local communities have no rights in these forests.

Section 26 of the KP Forest Ordinance 2002 prohibits certain acts in Reserve Forests. Following are the major acts prohibited:

- Setting fire or abetting in setting fire;
- Construction of buildings and other structures;
- Grazing of livestock or cutting of grass;
- Pass through or trespassing any closed areas;
- Negligence and causing damage to forests or trees therein during harvesting operations;
- Cutting or causing any type of damage to trees, brushwood in these forests;
- Quarrying any stones or other forest produce;
- Polluting soil or water in the forests;
- Hunting or shooting wildlife;
- Fishing or poisoning any water; and
- Abetting in the commission or furtherance of any of the above acts.

Guzara Forests although privately owned, but their management vests in the Provincial Forest Department under section 37 of the KP Forest Ordinance 2002. Section 44 of the Forest Ordinance prohibits the following acts in Guzara Forests and protected waste lands:

- Clearing of forest land for agriculture or any other purpose;
- Setting of fire or abetting in setting fire;
- Quarrying of stones and other material;
- Contravention of any general or special management orders passed under the Forest Ordinance or rules made thereunder;
- Sell or convey for sale any tree, timber, or brushwood, or cut without permission any forest produce;
- Pollution of soil or water;
- Hunting of wildlife;
- Illegal fishing and poisoning of water; and
- Abetting in the commission or furtherance of the above acts.

Forest produce has been defined in the Forest Ordinance and includes both living and non-living things found in forest ecosystems. There, however, is no mention of forest carbon in the legislation as it is an old legislation and the concept of forest carbon did

not exist at the time. However, it says that government through a notification may declare any other produce as forest produce from time to time.

Given the fact that Gujjars and other pastoral communities have no de jure rights in these Reserve Forests and Guzara Forests but are using the ecosystem under de facto arrangements, tensions can potentially arise when a PES project becomes operational. Tensions will arise because PES project will allocate certain incentives for improved behavior that contributes to resources conservation, as well as it will allocate certain responsibilities and obligations for protecting and enhancing the provision of their ecosystem services, including curtailing or altogether stopping some of their current usages under the de facto tenure system. Clarification of the property rights is therefore of crucial importance in the design of the PES scheme.

There are chances of tensions when deciding on tenure mechanisms, because a tension exists in all the following situations:

- approaches that individualize forest tenure into households that can clearly monitor and enforce rights (to the exclusion of others in the community);
- approaches that are more community-based, but will also reduce the amount of payments that incentivize any given household; and,
- approaches that place all management authority in the hands of government.

It is therefore recommended that in order to provide incentives to local communities, Gujjars and pastoral communities, individuals, or groups of individuals and users to conserve forests, rights in ecosystem services of the services providers in the forests be defined and secured so that they become entitled to ecosystem services benefits, as well as can be held accountable for failing to comply with their assigned obligations and responsibilities. Accordingly, it is proposed that provisions be made in the forest laws with regard to the protection of ecosystem services rights of services providers under the PES scheme.

CHAPTER-4

4 ECOSYSTEM SERVICES IDENTIFIED FOR PES SCHEME

4.1 Overview

Kaghan Valley situated along both sides of the Kunhar River in Khyber Pakhtunkhwa province is an interesting location for a REDD+ PES scheme as there are several important ecosystem services provided by the area. Different ecosystem services were identified in a workshop held on April 23-24, 2018 in Balakot where a large number of professionals and community members were present. A list of ecosystem services was prepared which was presented to the workshop participants for ranking and final selection of ecosystem services in the proposed PES Scheme. The criteria for selection of the ecosystem services were high economic value, importance from environmental rehabilitation, human livelihood, social support, and economic business perspective for Kaghan Valley and Pakistan on a national level. The identified main types of ecosystem services for the Kaghan Valley with the actual economic benefits and their respective valuation techniques and data requirement for monetized valuation are given in Table 4.1.

Table 4. 1: Identification of Ecosystem Services, Valuation Technique and Data Requirements

Identified main ecosystem services	Actual economic benefit analyzed and valued	Valuation technique	Data required
Watershed protection	Annual water production in Kaghan Valley	No water market price exists. Thus, the water price derived with replacement cost or cost avoidance methods.	Assessment of total annual run-off in Kaghan Valley & determining of a price for mountain water from reports.
	Habitat conservation for future generations	Replacement cost for out planting of seedlings and spreading of herb seeds.	Planting and seeding costs per hectare of slopes from DFO Office.
	Land stabilization and prevention of landslides and other erosion	Cost avoidance for reduced need of expansion of new hydropower capacity (landslides) and prevention of erosion on steep slopes by planting/seeding.	Recent hydropower reports on dam sedimentation and cost of construction of new hydropower capacity upstream. For erosion also planting & seeding cost per ha from DFO Office.
Biodiversity conservation and promotion of ecotourism	Mainstream ecotourism	Travel cost method	Recent statistics on annual ecotourists numbers and tourist survey conducted by PFI
	Hunting tourism	Travel cost method	Recent statistics on annual ecotourists numbers and average trophy hunting prices
Carbon sequestration and wood products	Timber harvesting in Kaghan Valley	Log market prices per species	Statistics on type of tree species and cubic meter per species & market prices
	Fuelwood harvesting and collection	Fuelwood market prices per species	Statistics on type of tree species and cubic meter per species & market prices
	Carbon sequestration in Kaghan Valley	Annual growth of plantations and restored forest areas & carbon sequestration	Annual growth of plantations and restored forest areas & international carbon sequestration market price
Promotion of Non-Timber Forest Products (NTFPs)	Free-grazing fodder for livestock	Replacement cost/shadow pricing using total livestock sector annual sales	Statistics of Kaghan livestock populations and various livestock product prices
	Medicinal plants collection	Market price estimates at commercial sales point.	Statistics from official sources & medicinal plants distribution in Pakistan
	Commercial fish production	Fish production at market price	Official statistics of the KFD and newspaper article
	Gems and precious stones collection	Annual estimate for gems/ precious stone sales in Pakistan and derivation of KV share of total annual sales.	Recent newspaper article, maps and reports.

In the following section, each of the ecosystem services has been analyzed, quantified and monetized.

4.2 Watershed protection values

4.2.1 Annual water production in Kaghan Valley

Scally and Gardner (1992) measured and analyzed in 1986-87 the total water run-off around Kunhar river in Kaghan Valley and concluded after up-scaling of his smaller area measurements that the total annual run-off in 1986 and 1987 would be around 3,212,121,212 and 3,757,575,758 cubic meters, respectively. In those years of his measurements the annual precipitation was between 900 mm to 2600 mm depending on measurement location in the valley. According to current local opinion in Kaghan Valley the snow amount in the valley has decreased for the last 6 years (Khan 1995). By checking the precipitation amounts for the Balakot weather station for 2005-2015 one cannot see this decrease (i.e. the precipitation remains within same range throughout the whole period). It is perhaps possible that as temperature increases during the winter months the snow has melted frequently already during the middle of winter, which has reduced the thickness of the snow layer in the valley. We therefore consider that the Scally and Gardner (1992) measurement of total annual water run-off is still valid.

The following issue to consider is how much of the water is reaching its destination in irrigation schemes, hydro power plants, towns and other locations. According to SBP (2017) this water amount is 78% of the total. However, as water is also used locally we will set this amount to 80%. Table 4.2 presents the water value calculations for Kaghan Valley.

Table 4. 2: Economic value of water resources from Kaghan Valley

Water run-off in m ³		Precipitation in mm		Water run-off in 2015 (m ³) (Mean of 1986-87)	Set water price in PKRs	Effective water delivery (80%) in m ³	Total value of water in PKRs
in 1986	in 1987	in 1986-87	in 2015				
3,212,121,212	3,757,575,758	900-2600 (various locations)	Approx. same level as in 1980s	3,484,848,485	200	2,787,878,788	557.58 billion

The following step is to determine an economic value for a cubic meter of water, which does not seem to have such a recognized value in Pakistan so far. At least it seems that the agricultural sector's irrigation scheme that use the lion part of this water do not include water price in its own financial cost-benefit analyses. The irrigation scheme financial analyses contain a price for irrigation, but closer assessment of what it means indicate that it comprises of irrigation canal and tubing annual maintenance costs with no actual water price incorporated. According to SBP (2017) the agricultural sector is factoring in Rs. 100/litre water for ground water due to the need for pumping it up from perhaps deep wells (i.e. pumping cost). This price become too expensive per cubic

metre (i.e. it would become Rs. 100,000/m³) to accept as the shadow price value of the Kaghan valley water. The tap water price paid by households in urban areas cost on average USD 1.99 for untreated water (i.e. Rs. 220/m³). We have therefore concluded that we price the Kaghan Valley water Rs. 200/m³ and thus the total value of the Kaghan Valley water would be approximately Rs. 557.58 billion or USD 5.023 Billion.

4.2.2 Habitat conservation for future generations

Annually the Kaghan Forest Division rehabilitate around 1000 ha of forest lands, of which about 2/3 are conducted as planting operations and 1/3 as direct sowing or enrichment planting (BTAP website 2018). As most of the annual hectares planted for rehabilitation are used for stabilization of highly eroded lands (please see below under Land stabilization and prevention of landslides and other erosion) the remaining hectares for habitat conservation for future generations comprise 259 ha of direct sowing and 127 ha enrichment planting. The direct sowing costs are according to KP-FD (personal communication 2018) Rs. 12,500/ha and enrichment planting costs are around Rs. 20,760/ha, respectively. The habitat conservation can therefore be monetized at an annual value of Rs. 3,237,500 or USD 29,167 for direct sowing and Rs. 2,636,520 or USD 23,752 for enrichment planting. On top of this is an annual free distribution of approx. 800,000 tree seedlings that constitute additional enrichment planting around rural households' homesteads. The value of this is around Rs. 7,250,000 or USD 63,315. Additionally, there are also 156 forest enclosures of various size in the Kaghan Valley where humans and livestock are excluded from trespassing for some years to allow these enclosure areas a chance to rehabilitate by themselves. If annual supervision costs are around Rs. 25,000/enclosure the total value of these enclosures would be around Rs. 3,900,000 or USD 35,135. The overall monetized value for habitat conservation is thereby Rs. 16.8 million or USD 151,369.

4.2.3 Land stabilization and prevention of landslides and other erosion

There is a substantial potential to generate hydropower electricity in northern Pakistan mountain areas and Kunhar river is no exception in this respect. A new Suki Kinari hydropower dam is under construction at an investment cost of USD 1.8 Billion. With riversides completely forested the sedimentation would be minimal in the hydropower dam, but with degradation due to mainly human activities there will be substantial sedimentation occurring. We will now try to calculate an approximate economic value for having forests protecting hydropower dams from sedimentation plugging.

According to Jared and Tingsanchali (2012) the sedimentation in different hydropower dams (Tarbela, Mangla and Chasma along the northern Indus river) has varied between 27-55% over a timespan of approximately 40 years. As the Tarbela hydropower dam has been filled with sediments at an approximately average annual rate we will select this hydropower dam for more close analysis.

The 3,478 MW Tarbela hydropower plant had originally a water storage dam of 14,328,130,000 m³ capacity, which by 2015 had become decreased by 35% due to

sedimentation. This total loss of 5,014,845,500 m³ storage capacity mean an annual loss of 125,371,138 m³. The best way to maintain hydropower dams' storage capacity from sedimentation is to build another hydropower plant and dam upstream that will prolong the older hydropower dam's lifecycle by its own storage capacity of new sediments from upstream. The size of new hydropower dam that can tackle the annual loss of 125,371,138 m³ would be a hydropower plant with a dam capacity of this annual loss times around 30 years or so. The Suki Kinari hydropower dam with its' 870 MW capacity should with the Tarbela as a model have a dam for storing $(870/3478) \times 14,328,130,000 \text{ m}^3 = 3,582,032,500 \text{ m}^3$. Such a dam would be able to operate for 28.6 years (with the old 1970s technology in Tarbela) before it has been filled with sediment. As it is a new hydropower dam it can be flushed better than the old hydropower dams and thus this size may be sufficient. We will anyway conduct the monetary valuation of the annual loss of storage capacity so that the Suki Kinari investment cost is divided by 28.6 to get an annual landslide protection monetized value for completely forested riversides along Kunhar River. The monetized value, thus, becomes USD 62,937,063 or Rs. 986,013,982.

Annually there are also various mitigation activities for stopping land erosion along the Kunhar river sides. Table 4.3 presents the 2017 statistics of the works undertaken in the valley by the Kaghan Forest Division. The costs of rehabilitation of badlands (i.e. unstabilized highly eroding steep slopes that have lost their tree cover) can be used as a proxy monetized value of the forested slopes ability to stop erosion.

Table 4. 3: A proxy monetized valuation of badlands rehabilitation with tree planting and constructions

Type of bad lands rehabilitation	Total amount of activity	Unit cost in USD per hectare or km	Total cost of bad lands rehabilitation in USD
Loose stone check dams	1016 ha	2620/ha	2,661,920
Live spurs	25 km	4000/km	100,000
Diversion channels	29 km	3000/km	87,000
Bad land stabilization	588 ha	900/ha	529,200
Rehabilitation of degraded watersheds in Manor	12 ha	900/ha	10,800
Rehabilitation of degraded watersheds in Khalil Sarash Balakot	14 ha	900/ha	12,600
Total cost of all rehabilitation in PKRs			377,568,720
Total cost of all rehabilitation in USD			3,401,520

The total monetized value for protection against landslides and erosion is then the overall cost avoidance of both the hydropower dam sedimentation reduction and the badlands rehabilitation in Kaghan Valley, which jointly constitute **USD 66,338,583 or PKRs 1,363,582,702**.

4.3 Biodiversity conservation and promotion of ecotourism

Mainstream ecotourism stands for all those tourists that arrive in the Kaghan Valley to admire the nature in one form or another. We will in this group of tourists include also fishing and amateur stone collecting tourists, while hunting tourists are partly left out as its own group of tourists. The latest tourist statistics available is from a financial year 2016 to 2017 during which time totally 758,000 tourists visited Kaghan Valley and of these 354 were hunting tourists (KP-FD 2018 direct communication).

According to an ecotourists survey conducted by PFI in early May 2018 as part of this assignment, the following kind of information was acquired about the tourists:

- The survey was filled in by totally 101 respondents of which 82 were males and 19 were females, that all together represented households with totally 600 members (i.e. 6 persons in average household);
- The respondents represented mainly urban people of which the majority had a university degree and came from a large variety of professions with monthly salary range from nil to over PKRs 100,000;
- The oldest respondent was 64 years and the youngest 19 years with the average respondent 30.8 years old;
- The respondents came from cities all over Pakistan at distances from 125 km to 2,200 km and time duration on the road varying from 3 hours to 48 hours with mean time 11 hours to reach Kaghan Valley;
- The average travel cost for the trip can be split up as follows:
 - Public transport: Rs. 3,532
 - Private vehicle (mainly person car): Rs. 6,062
 - Food: Rs. 7,640
 - Accommodation: Rs. 7,497
 - Other expenditures: Rs. 3,674
 - Total mean expenditure per person was thus Rs. 28,531

The total monetized value for the mainstream ecotourists for 2016-2017 financial year is therefore PKRs 21,616,400,000 or USD 194,742,342.

4.3.1 Trophy and other hunting

There are three kinds of hunting activities on-going in Northern Pakistan as follows:

- Trophy hunting;
- Other licensed hunting;
- Unlicensed hunting conducted by rural communities.

The trophy hunting is highly regulated and follows the directives of the Convention on International Trade of Endangered Species of Wildlife (CITES) and it has been restricted to certain areas in Pakistan and Kaghan Valley is currently not part of these areas. Annually there has been quota of totally four Markhors, eight blue sheep and six

ibexes for one season with hunting rates set at a minimum of USD12,000 for blue sheep, USD 3,000 for Ibex and USD 70,000 for a single Markhor (Pakistan Observer 2013). As there may be several hunters interested in these few licenses there can be auctions for acquiring them. Recently one single license for a Markhor was sold at an auction for USD 100,500 (KP-FD/WD direct communication 2018). In the future this kind of trophy hunting income may also be possible in Kaghan Valley.

For the previous hunting season the KP-FD/Wildlife Department sold ordinary hunting licenses (i.e. for lesser trophy hunting or just meat) for Kaghan Valley area. The hunting licenses may vary in price between USD 482 to 840 and depends on species and area (The Hunting Company Ltd. 2018). We will take the average license price in use for the monetizing of this other licensed hunting and thus the annual total becomes PKRs 25,973,334 or USD 233,994. As these hunting licenses are almost entirely purchased by Pakistani citizens we can calculate their monetized travel expenses as totally PKRs 10,099,974 or USD 90,991 and thus the total hunting monetized value as PKRs 36,073,308 or USD 324,985.

The third group of hunters constitute local rural household members that hunt without any permits and with low awareness about the game animals' population dynamics. These hunters are allowed hunting of forest hens and small mammals on Guzara forest lands. According to Abdul (2014) the hunting interest among local rural household is widespread and in his survey around 90% of the households expressed an interest in hunting. However, many local forest hen and small mammal species have been decimated quite substantially and therefore there are not that many successful hunters among rural households. As the people of Kaghan Valley are quite poor with low amount of animal protein in their diet are forest meat a very welcomed addition to their food intake. According to Abdul (2014) the hunters are mainly males at the age of 20 to 40 years. As there are no information on the scope of the current hunting situation in terms of prey we will leave this type of hunting unmonetized.

Besides the intentional hunting there has also been several killings of white collar black bears by the rural communities as retaliation of human killings or hurting of community members. The reasons for these illegal activities are mainly the result of the uncontrolled spread-out of homesteads in most unsuitable locations in the forest areas of the Kaghan Valley, which cause high competition between humans and bears for certain wild and cultivated vegetarian foods.

4.4 Carbon and other forest wood products

4.4.1 Timber harvesting

Until 2013-2014 timber harvesting in Kaghan Valley was at a different level from what it has been during the last few years. Protection and within certain limits rational utilization of natural resources has become increasingly important to meet the increasing demand for timber, firewood and fodder requirements and environmental conservation. As the forests are presently protected the harvesting amounts are small as forests are important as a means of protecting the hills thereby regulating stream flow, and

reducing the rate of soil erosion, conserving ecosystem and biodiversity among many others. The most recent statistics for 2016-2017 provided by the KP-FD is presented in Table 4.4.

Table 4. 4: Commercial timber harvesting including harvesting conducted under Dry and Wind Fallen Tree Policy.

Harvesting agency	Official harvesting		
	Green marking	Dry & Wind falls	Total
FDC	201,779	110,780	312,559
Forest Coop: Societies	264,141	0	264,141
JFMCs	0	33,932	33,932
Illegal harvesting			
Particulars	Persecution cases	Compensation cases	Total
Illicit cutting in Reserved forests	878	109	987
Illicit cutting in Guzara and private owned areas	5,315	166	5,481
TOTAL illicit timber	6,193	2,76	6,469
TOTAL all timber in cft	472,113	144,988	617,100
TOTAL all timber in m³	13,369	4,106	17,475
Gross revenue PKRs 2017-2018			815,818,372
Gross revenue in USD 2017-2018			7,349,715

Source: KP-FD, 2018 and PFI, 2016

As the present harvesting contains substantial amounts of dry and wind-fallen trees and all is auctioned out in big units there is no proper official timber prices since 2014-2015. As 2012-2013 is the last year for which there is both information on timber quantities and the total sales price we will use this information and with inflation checking bring this average price per cubic meter to 2018 (Khan, 2017; PFI, 2016). An average cubic meter price of PKRs 35,719.82 became thus PKRs 46,685.8/m³ for 2018. This new acquired cubic meter price was then applied to the 2017-2018 sales as indicated in Table 4.4 above.

4.4.2 Annual fuelwood consumption

The KP-FD provided its latest estimation for the total annual fuelwood consumption in the whole of Kaghan Valley which was 163,854 tons. The price for fuelwood in Kaghan Valley range between 350-700 Rs. per maund (i.e. one maund is 40 kg) and the average fuelwood price is about Rs. 500 per maund/40kg. Thereby the monetized value of fuelwood is PKRs 2,048,175 or USD 18,452 (KP FD, 2018).

4.4.3 Forest Carbon Stocks in Kaghan Valley

The total carbon stocks of all Kaghan valley forests are shown in Table 4.5 below. The table indicates that there is more carbon below ground in soil and root biomass (56%) and the remaining 44% is in the above ground biomass. Further, the largest amounts of carbon are in the Guzara forests, followed by Reserved forests and undemarcated privately owned forests. Based on Forest Carbon Inventory conducted by PFI (2018) the total carbon stock of the existing forest lands is 10.762 million tonnes.

Table 4. 5: The total carbon stock of Kaghan Valley forests (PFI 2018)

Forest Category	Forest Area (ha)	Forest covered (ha)*	AGC (t/ha)	BGC (t/ha)	Litter (t/ha)	Soil C (t/ha)	Total C t/ha	Total C (ton)
Reserved Forest	19,525	19,525*	78.58	22.2169	4.02	62.55	167.3669	3,267,839
Guzara Forest	37,137	28,153*	49.65	13.8272	3	62.55	129.0272	3,632,503
Undemarcated privately owned	21,063	15,967*	49.65	13.8272	3	62.55	129.0272	2,060,177
Current forest plantations		11,816	26.0	7.5	2	55.0*	90.5*	1,069,348
Total forest covered of above	63,645	63,645						
Carbon in clearcut forest lands	14,080				2	50.0*	52.0*	732,160
Total	77,725	63,645						10,762,027

*own estimations

In Table 4.6 we have further assessed the carbon sequestration potential of the Kaghan valley forest lands, which was found to be approximately 395,029 tCO₂/year.

Table 4. 6: Carbon Sequestration in existing Kaghan's Forests

Forest Category	Area	Carbon Sequestration Rate (tCO ₂ /ha/year)	Total Carbon sequestration (tCO ₂ /year)
Reserved Forest	19,525	5	97,625
Guzara Forest	28,153*	5	140,765
Undemarcated privately owned	15,967*	5	79,835
Current plantations	11,816	6.5	76,804
Total	77,725		395,029

The currently used market price for carbon dioxide is USD 5/tCO₂ and thereby the total annual monetized carbon value is currently worth PKRs 217,265,950/year or USD 1,975,145/year.

4.5 Value of Non-Timber Forest Products (NTFPs) in Kaghan Valley

The non-timber forest products economic values turned out to be complicated to monetize securely as there are no proper statistics of their use.

4.5.1 Free-grazing fodder for livestock

We will start with the free-grazing fodder, which livestock feed on in forested hillslopes and higher altitude range pasture lands. The KP-FD provided the latest statistics on livestock populations and the total free grazing fodder requirement in Kaghan Valley, which is presented in Table 4.7 and Table 4.8 below.

Table 4. 7: Current livestock populations in Kaghan Valley

Cattle	Buffalo	Sheep	Goats	Poultry	Other	Total
55,817	44,796	94,968	104,901	341,702	16,364	658,548

Source: KP-FD 2018

Table 4. 8: Estimated total amount of fodder in tons needed to free graze feed all livestock in Kaghan Valley.

Cattle	Buffalo	Sheep	Goats	Other	Total in tons
200,941	241,920	684,000	113,280	58,920	1,299,061

Source: KP-FD 2018

As the Valley and its rural population is very poor it would be somewhat misleading if the fodder benefit is monetized by utilization of the market price of commercial fodder. Therefore, we will monetize fodder by looking at what kind of livestock products are annually produced and thereby use the monetized benefit of these instead. Table 4.9 presents the main livestock products of Kaghan Valley and how the calculations were conducted. The KP-FD had in their own calculations used human population census 1998 and therefore we also had to use this census, which means that the total number of rural households used in the calculations were 208,295.

Table 4. 9: The main livestock products of Kaghan Valley and the monetizing of their values.

Product type	Unit	Price of Unit in PKRs	Total in PKRs
Milk per day *	1.108 litre per day/household	85 Rs/litre	7,160,286,395
Ghee (butter) per annum*	17.87 kg/household	Rs 1145/kg	4,261,955,239
Sheep wool per animal*	1.7 kg/animal	28 Rs/kg	32,558,400
Goats hair per animal*	1.3 kg/animal	23 Rs/kg	3,387,072
Buffaloes live*	241,920	64,500/animal/year (in 10 year)	1,560,384,000
Cows live*	200,941	49,600/animal/years (in 5 years)	1,993,334,720
Sheep live*	684,000	12,000/animal (in 5 year)	1,641,600,000
Goats live*	113,280	10,500/animal (in 5 years)	1,189,440,000
TOTAL in PKRs			17,842,945,826
TOTAL in USD			162,208,598

* source is KP-FD (2016); the prices have been compiled from various Internet sources.

4.5.2 Medicinal plant utilization value

The official statistics is not covering medicinal plant extraction well and it is difficult to form a good opinion about the quantities and species traded from Kaghan Valley despite the existing list of medicinal species traded from the Garhi Habibullah area. PFI managed in April and May 2018 to collect information for this assignment from a number of medicinal plant middle men that purchase the plants from rural collecting households together with the prices paid for the collected medicinal plants as presented in Table 4.10 below.

Table 4. 10: Medicinal plants collected and sold from Kaghan Valley in 2017

S. No.	Local Name	Botanical Name	Weight in Maunds (40 Kg/ Maund)	Rate/40 Kg In PKR (Local)	Rate/40 Kg In PKR (Outside)	Total using outside rates in PKRs
1	Mushk-e-bala	<i>Valeriana jatamansi</i>	400	14,000/40kg	16,000-17,000/40kg	165,000
2	Zakhm-e-Hayat	<i>Bergenia ciliate</i> (Haw.) Sternb.	200	2,000/40kg	2,000/40kg	10,000
3	Anjabar	<i>Bistorta amplexicaulis</i>	50	2,500/40kg	4,000/40kg	5,000
4	Banafsha	<i>Viola canescens</i>	50	1,000/40kg	1,200/40kg	1,500
5	Mamekh	<i>Paeonia emodi</i>	50	2,000/40kg	2,000/40kg	2,500
6	Morel/Guchii	<i>Morchella spp.</i>	400-500	16,000/kg	17,000/kg	191,250
7	Sumbal	<i>Berberis lycium</i>	50	1,000/40kg	12,000/40kg	15,000
8	But pewa	<i>Bergenia ligulata</i>	40	2,000/40kg	2,000/40kg	2,000
9	Walnut		2000	6,000-7,000/40 kg	8,000-9,000/40kg	425,000
Total all medicinal plants in PKRs						817,250
Total all medicinal plants in USD						7,363

Source: PFI's own data collection from middle men in Kaghan Valley

The paid duty and revenues taken by the KP-FD are not included in the above figures, but it tells about the kind of income it is locally and for middle men. For monetizing of the real value of this medicinal plant sector we will have to make the calculations in a more complex manner. To begin with we keep in mind that the total amount of forests in use for medicinal plant collection is 77,725 hectares in Kaghan Valley.

Shinwari (2010) assessed the national sales quantities and monetized values of medicinal plants in 2002 and 2009, which seems still to be the latest overall assessment

for medicinal plants in Pakistan. He also compiled the following total monetized values for medicinal plants present in Table 4.11.

Table 4. 11: Annual collection of important medicinal plants used by ten leading Pakistani industrial companies in 2009. The data from 1990 published by NIH, Pakistan.

Plant category	Avg. consumption in 1990 (million kg)	Total value in 1990 (million Rs)	Avg. consumption in 2009 (million kg)	Total value in 2009 (million Rs)
20 most used species > 10,000 kg/year	0.33	5.6	0.5	10.00
80 used species > 1000 kg/year	0.26	8.2	0.5	18.00
100 used species < 1000 kg/year	0.05	1.4	0.1	2.00
Total 200 species	0.64	15.2	0.1	30.00
Estimated production 4-2 million kg	1.27	30.4	>4	>100
Total value in 2009				>130

Source: Shinwari, 2010

The total monetized value in 2009 can thereby be set exceeding PKRs 130 million. If we calculate that there has been a decrease of 30% in the quantity annually collected of these medicinal plants since then, we can simultaneously cover for domestic use of these medicinal plants (i.e. what is consumed in rural households that do not reach the market at all). We will then revalue the 2009 figure into 2018 money and it becomes approximately PKRs 239 million or USD 2.15 million.

The forest areas of Khyber Pakhtunkhwa province constitute 41% of all forest areas in Pakistan and the Kaghan Valley has 4.2% of this. If medicinal plants are collected evenly on all forest lands then the Kaghan Valley share of the annual collection of medicinal plants would thus be worth as monetized PKRs 4,113,428 or USD 37,058.

4.5.3 Commercial fish farming in Kaghan Valley

Fish farming with various trout species has long traditions in Kaghan Valley stretching from 1950s to present. Besides the main state-owned hatchery and fish farm there are now also private fish farms along Kunhar river. This fish production industry is currently considered as the third most economically important one of the area. However, fish farms are just like human settlements causing substantial amounts of phosphorus pollution in the river from all untreated sewage derived from the high concentration of

hungry fishes in their thousands in small confined places. According to KP-FD (personal communication in 2018) do all fish farms in Kaghan Valley produce annually some 180,000 kg of trout, which are sold at 1,000 to 1,500 rupees per kilogram. The monetized value of fish farming in Kunhar river is thus PKRs 225 million or USD 2.03 million.

A substantial amount of trout has also been released to local rivers and lakes in Kaghan Valley. One trout that weighed 7 kg was caught in Lake Saiful Maluk near Naran (Khan, 2016). The wild trout fishing has been handled under mainstream ecotourism above, as this kind of fishing distinguishes itself from other ecotourism mainly by the purchase of a fishing license (included under other expenses for mainstream ecotourists).

4.5.4 Gems and precious stones collection

There is again no reliable information on the amounts of gems and precious stones mined or collected from Kaghan Valley. We will therefore instead try to intrapolate backwards from the commercial market to the source. Since 1994, the annual Pakistan Gems and Mineral Show has been held in Peshawar as a joint venture event among sellers, during four days in October. The show has so far not attracted much potential buyers from abroad. Its few stalls on display cannot fulfill any of the requisite needs of experienced buyers from abroad, especially the USA and Europe with certificates etc. From northern Pakistan are traded, for instance, emeralds, various quartz, epidotes, peridot, xenotime, bastnaesite, diopsides, zircons, aquamarine, tourmaline, topaz, ruby, morganite and apatite among others. The Sapat olivine deposit is northeast of Naran in northern Mansehra. Olivine is also often brought to market in Dasse capital of Kohistan District), north of the Komila bridge, via the Jalkot Valley. The deposit has formed in serpentized shear zones in dunite (GIA - Geological Institute of America in 2018). In the overall Khyber area there are at least collected quartz with astrophyllite/reibeckite fibers inclusions, aquamarine, topaz, xenotime, and bastnaesite (Pakistan Update – 8/15/07).

Pakistan's western and northern areas are home to three mountain ranges, which are Hindukush, Himalaya, and Karakorum that are home to all the minerals found in Pakistan. The province of Khyber Pakhtunkhwa has three large mountain ranges: Hindukush covers the area to north and north-west, Karakoram to the north and north-east, and Himalayas to the east. According to Bureau of Statistics of Khyber Pakhtunkhwa, 2,568 tons of baryte and 85 tons of corundum were produced in 2005-2006 and 1,416 tons of quartz was produced in 2006-2007 in the province. According to one source, Swat has reserves of 70 million carats of emerald, Mardan has reserves of 9 million carats of pink topaz and Kohistan has 10 million carats worth of reserves of peridot.

The government-run Pakistan Gems and Jewelry Development Company (PGJDC) is trying to raise skill levels to allow the country to compete better with the likes of Thailand and India. Gem and jewelry exports have risen enormously in recent years to stand at USD 1.3 billion in 2013, and PGJDC is aimed for a target of USD 1.7 billion by 2017 (PGJDC, 2015, 2015).

We will now take this last economic figure of PGJDC as the company's actual state for the current situation as there is no better figure for this sector. On top of this government operated company there are also private companies, so we will have to presume that PGJDC is the largest player on the market with perhaps some 60% market share in Pakistan. There would thus be private companies with another 40% total market share. This would put the total sales for 2017 at PKRs 2.83 billion. If we further subtract 25% of all gems and precious stones sold as coming from neighboring Afghanistan we are left with PKRs 2.1 billion from Pakistan. Total land area of Pakistan is 796,095 km² and of this area about 25% is mountainous or roughly 200,000 km².

The size of Kaghan Valley is 2582 Km² and thus it constitutes 1.3% of the total mountainous areas in Pakistan. We will now additionally presume that gems and stones are collected quite evenly in Kaghan Valley as in all other mountainous areas in Pakistan. The monetized value of gems and stones would thereby be around PKRs 27.3 million or USD 246,000. This figure is a guess estimate but gives anyway an indication of the present monetized value of gems and stones in Kaghan Valley in a situation when nobody knows the exact figure.

4.6 Conclusion on monetized values from Kaghan PES area

The following tables 4.13 and 4.14 summarize all the monetized values calculated in section 4.2-4.5 above from a quantified and a monetized value viewpoint, respectively.

Table 4. 12: Summary of quantification of the ecosystem services for the Kaghan Valley PES area.

Identified main ecosystem services	Actual economic benefit analyzed and valued	Overall quantification of Sindh PES area ecosystem services
Watershed protection	Annual water production in Kaghan Valley	Calculated based on 2,787,878,788 m ³ of water run-off from Kaghan Valley
	Habitat conservation for future generations	Habitat conservation comprise 259 ha of direct sowing, 127 ha enrichment planting, free distribution of approx. 800,000 seedlings for households and 156 forest enclosures.
	Land stabilization and prevention of landslides and other erosion	Calculated based on annual 125,371,138 m ³ sedimentation of hydropower dam and badland rehabilitation as presented in Table 4.3 above.
Biodiversity conservation and promotion of ecotourism	Mainstream ecotourism	758,000 ecotourists in financial year 2016-2017 to Kaghan Valley
	Hunting tourism	354 hunting tourists in Kaghan Valley
Carbon and other forest wood products	Timber harvesting in Kaghan Valley	Recently 17,475 m ³ of timber sold from Kaghan Valley
	Fuelwood harvesting and collection	Annually used 163,854 tons of fuelwood in Kaghan Valley

	Carbon sequestration in Kaghan Valley.	Approximately 395,029 tCO ₂ /year
Promotion of Non-Timber Forest Products (NTFPs)	Free-grazing fodder for livestock	Calculated based on livestock products received from all livestock free-grazing in Kaghan Valley as presented in Table 4.9 above.
	Medicinal plants collection	Calculated based on monetary value of whole medicinal plant business in Pakistan of which Kaghan Valley constitute 1.72%
	Commercial fish production	In Kaghan Valley the annual production of trout is around 180,000 kg
	Gems and precious stones collection	Calculated based on monetary value of whole gems and precious stones sector in Pakistan of which Kaghan Valley constitutes 1.3% of the total mountainous areas in Pakistan where such resources are found.

Table 4. 13. Summary of all monetized values for the Kaghan Valley PES area.

Identified main ecosystem services	Actual economic benefit analyzed and valued	Monetized value in PKRs	Monetized value in USD
Watershed protection	Annual water production in Kaghan Valley	557.58 billion	5.02 Billion
	Habitat conservation for future generations	16.8 million	151,369
	Land stabilization and prevention of landslides and other erosion	1.36 billion	66.34 million
Biodiversity conservation and promotion of ecotourism	Mainstream ecotourism	21.62 billion	194.74 million
	Hunting tourism	36.01 million	324,985
Carbon and other forest wood products	Timber harvesting in Kaghan Valley	815.82 million	7.35 million
	Fuelwood harvesting and collection	2,048,175	18,452
	Carbon sequestration in Kaghan Valley.	217.25 million	1.975 million
Promotion of Non-Timber Forest Products (NTFPs)	Free-grazing fodder for livestock	15.22 Billion	137.1 Million
	Medicinal plants collection	4.11 million	37,058
	Commercial fish production	225 million	2.03 million
	Gems and precious stones collection	27.3 million	246,000
Total overall monetized value in PKRs or USD		699.71 Billion	6.361 Billion
Total monetized value per whole PES area		2,710,620	24,642

hectare (PKRs or USD/ha)		
Total monetized value per forest area hectare (PKRs or USD/ha)	9,002,380	81,840

By looking at the above figures more closely it becomes clear that the single most valuable ecosystem service that Kaghan valley provides is water production, which comprise 79% of the whole monetized value. Other important ecosystem services provided by the Valley are ecotourism (3.06%), free-grazing fodder of livestock (2.15%) and land stabilization and prevention of landslides (1%), while the rest of the ecosystem services share the remaining 15%. The Valley has huge importance as a natural environment without human damaging interference in the form of rural settlements in the wrong places, too excessive ecotourism, large timber harvesting, too much fish farms or excessive mining operations that destroy the landscape. The extremely high per hectare values indicate that this area should be conserved in one form or another, and a good way is to create a PES scheme out of it. However, it is vulnerable to human overpopulation and therefore there is a high need for the right kind of land and land use policies to be set in place and enforced as soon as possible.

CHAPTER-5

5 BUYERS AND SELLERS OF THE IDENTIFIED ECOSYSTEM SERVICES

5.1 Buyers and sellers identified for Kaghan Valley PES area

Twelve ecosystem services, grouped under four main categories, have been identified and economically valued for the potential PES scheme in Kaghan Valley. For these services we have identified the following two main categories of sellers:

- KP Forests and Wildlife Departments through Kaghan Forest Division;
- Selected rural communities (in the form of Guzara Forest Owners, hillslope settlers, private landowners – somewhat differently for different PES services).

Consultations were held with the above mentioned sellers to arrive at a consensus on the selling of the identified ecosystem services. Forest Department is interested in being involved in the capacity of both PES seller and PES Scheme coordinator. Wildlife Department can also play an important role in ecotourism. The involvement of local communities particularly Guzara owners is must as they have legally recognized ownership of the Guzara forests and any decision made about Guzara forests must reflect their aspirations. A list of Guzara Forests is provided as Annex IV.

The Kaghan Forest Division has the capacity to act as the Coordinator of a PES fund into which all the various PES payments will be collected into as a financing basket from which funding is distributed in defined percentages to the three parties in accordance with a mutual negotiated agreement.

The Forest Department will have to establish a new unit for managing/coordinating the PES scheme arrangements. The funding for the PES arrangements will be provided by the annual PES payments. Nongovernmental organizations like IUCN and WWF should be involve to provide technical assistance in biodiversity assessment, and waste water treatment, and acting as external reviewers to ensure transparency and coordination between sellers and buyers. The IUCN and the WWF would get financial compensation for being facilitators and from participating in the service provision in the field. There should be high transparency between partners.

For the overall PES services we have identified potentially some 15 different local, provincial and national buyers of the PES services as well as one international highly interested buyer (an international flight company). The respective sellers and buyers for the Kaghan Valley PES area are presented in Table 5.1.

Table 5. 1: The potential buyers and sellers of PES services for the Kaghan Valley PES area

Identified main ecosystem services	Actual economic benefit analyzed and valued	Potential Seller of PES	Potential Buyer of PES
Watershed protection	Annual water production in Kaghan Valley	KP-FD and some selected rural communities on mountain slopes	Relevant hydropower plants and downstream water customers. Also National Highway Authority and Provincial Disaster Management Authority are potential buyers. Further for watershed protection WAPDA (Water and Power Development Authority) is a buyer.
	Habitat conservation for future generations		
	Land stabilization and prevention of landslides and other erosion		
Biodiversity conservation and promotion of ecotourism	Mainstream ecotourism	KP-FD (incl. Wildlife Dept.) and some selected rural communities on mountain slopes & tourism authorities	Ecotourists, ecotourism agencies in cities around Pakistan and hotels in Kaghan Valley.
	Hunting tourism		
Carbon and other forest wood products	Timber harvesting in Kaghan Valley	KP-FD, Guzara communities and other forest owners	Wood purchasers in Kaghan Valley and outside the Valley
	Fuelwood harvesting and collection		
	Carbon sequestration in Kaghan Valley.	KP-FD, Guzara communities and other forest owners	No local buyer identified. Outside buyers could be Pakistani and international flight companies, hotels, cement industry, etc.
Promotion of Non-Timber Forest Products (NTFPs)	Free-grazing fodder for livestock	KP-FD, Guzara communities and other forest owners	Livestock owners from Kaghan Valley in in-kind form through stricter rules and awareness.
	Medicinal plants collection	KFD, Guzara communities and other forest owners	Medicinal plant using industries in Pakistan.
	Commercial fish production	Fish farming companies	Fish farming companies must be enforced to install own waste water cleaning treatment plants.
	Gems and precious stones collection	KFD, Guzara communities, other forest owners and other relevant landowners affected	Collectors (and indirectly jewelry industry) of gems and precious stones

The above list of 15 potential buyers of which most of them comprise by themselves numerous business entities (i.e. industrial companies and hotels in Kaghan Valley, province, Pakistan or internationally) should make it rather easy to acquire sufficient financing for the Kaghan Valley PES area. Additionally, the economic value of the Valley itself is very high with many important services for the above listed potential buyers, which should act as a good motivator to ensure their respective own businesses and thereby the sustainability of the Valley.

Table 5.2.outlines how the realization of the identified ecosystem services can be made, which is then further elaborated on in Chapter 7 in regard of carbon trading. Elsewhere in this document is also elaborated on how the PES income benefit sharing is supposed to be divided between PES sellers. The benefit sharing distribution was an outcome of the group works conducted during the Inception Workshop of this assignment in January 2018.

Table 5. 2: The potential PES services provided by the sellers for the Kaghan Valley PES area

Identified main ecosystem services	Actual economic benefit analyzed and valued	Potential Seller of PES	Potential PES derived activities to sell
Watershed protection	Annual water production in Kaghan Valley	KP-FD and some selected rural communities on mountain slopes	Protection of the whole watershed nature to preserve its water accumulation capacity, stabilize hillslopes against landslides and erosion as well as conserve its habitants. This is done with protection, plantations, enclosures, seeding and slope stabilization measures. In some cases rural settlers may need to be moved to other locations and thus need compensation.
	Habitat conservation for future generations		
	Land stabilization and prevention of landslides and other erosion		
Biodiversity conservation and promotion of ecotourism	Mainstream ecotourism	KP-FD (incl. Wildlife Dept.) and some selected rural communities on mountain slopes & tourism authorities	Ecotourism services and sites need financing to enable development of needed infrastructure and new attractions. Waste and sewage management needs to be installed by hotels and KP-FD in the Valley.
	Hunting tourism		
Carbon sequestration and wood products	Timber harvesting in Kaghan Valley	KP-FD, Guzara communities and other forest owners	Current practices are OK, but better pricing system would make things easier to handle and manage. Regeneration of harvested sites is a must.
	Fuelwood harvesting and collection		
	Carbon sequestration in Kaghan Valley.	KP-FD, Guzara communities and other forest owners	Carbon trading MRV must be in place and new rules for forest management considering carbon trading must be in place. Money for auditing will be needed.
Promotion of Non-Timber Forest Products (NTFPs)	Free-grazing fodder for livestock	KP-FD, Guzara communities and other forest owners	Livestock owners must be aware of free-grazing damaging impacts, new stricter rules and awareness in place to minimize

			environmental degradation on steep slopes in particular. Range extension needed.
	Medicinal plants collection	KP-FD, Guzara communities and other forest owners	Current medicinal plant collection is very damaging to medicinal plants. Better collection practices and enrichment seeding and planting needed.
	Commercial fish production	Fish farming companies	Fish farming companies must be enforced to install own waste water cleaning treatment plants
	Gems and precious stones collection	KP-FD, Guzara communities, other forest owners and other relevant landowners affected	Revenues must be to enable minimizing of landscape destruction and enable new organized prospecting.

Regarding division of funding between the respective PES benefits it is not at this point clear exactly how this should be performed. This issue will be determined in various negotiations between buyers and sellers under the guidance of the facilitators. Some PES services can accumulate large amounts of payments, while other equally important PES services may have difficulty to catch sufficient funding, therefore, this should be the task of the sellers funding basket to figure out as result of the negotiation rounds that will have to take place. At least some important buyers should also be involved in these talks and negotiations to have high transparency in this process and reduce the risks of misallocation of money.

We foresee that it is mainly the carbon trading market that is likely to become voluntary, while the various payments for water, landslide protection, forest harvesting and others are likely to require a relevant specific law prepared and enforced to get a general acceptance of PES payments among the PES buyer candidates. There are multiple opportunities to generate a variety of revenues streams that can provide payments for ecosystem services depending upon how mature markets are for a particular ecosystem service, and the regulatory environment at the location of the project intervention. It is always best if both negotiations and agreements would be based on voluntary commitments, but we foresee that most industries and other buyers will not give in to pay annually any PES payments. To be on the safe side with getting all polluters and extractive users on-board paying PES fees it is best to make the payments mandatory by preparing a special law for the PES area and to enforce it properly before the PES scheme is started up.

There are a large number of industries and other polluters to cover in meetings and one must have a plan for how these will be approached. The approaching will best be handled with a ready outline of the PES scheme with monetized values, so that polluting buyers have a chance to see and understand their own role in the PES scheme and

environmental situation. It will be better to have both carrot and stick available when one approaches the potential buyers, so that these cannot just dismiss the PES scheme as a waste of time from their side but something that they will have to consider seriously either voluntarily or by law enforcement.

Forest carbon payments have had marketable value since the agreement of the Marrakesh Accords under the Kyoto Protocol in 2001. The Cancun Agreements agreed under the UNFCCC in 2010 outlined a three-phased approach to REDD+ for developing countries. The three phases essential provide boundary conditions for the appropriate types of financing to seek, and are outlined in Figure 5.1 below.

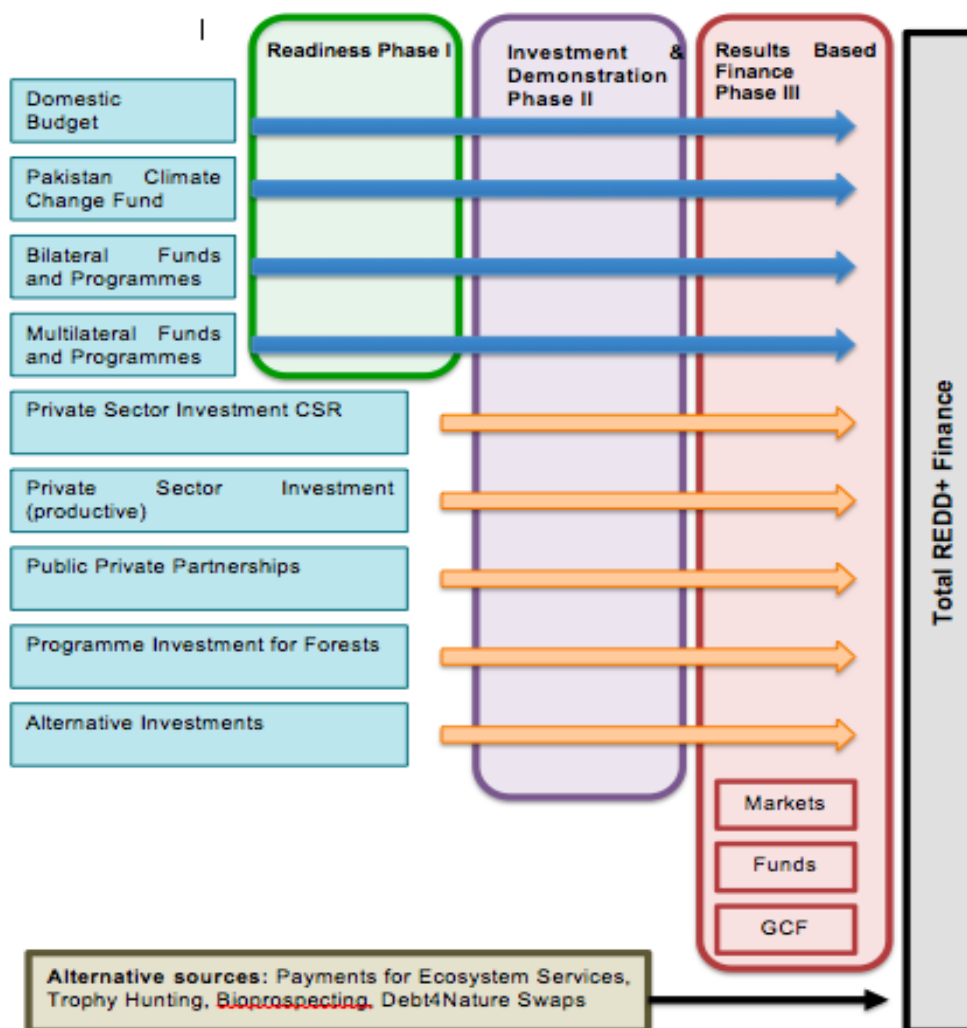


Figure 5.1: Types of Financing Mechanisms for REDD+ and PES

One of the critical challenges Pakistan faces in implementing this REDD+ PES Pilot project is access to sustainable, predictable and adequate finance for its forest and community activities. Multiple reports in recent years have noted the challenge. Of particular relevance, a recent PROFOR publication *Private Financing for Sustainable*

Forest Management and Forest Products in Developing Countries – Trends and Drivers, noted, “Sustainable forest management needs between USD 70 billion and USD 160 billion each year (globally) to be implemented properly. But official development assistance to forestry only covers about 1% of the estimated total financing need” (see Castren et al., 2014).

As part of the Warsaw REDD+ Framework, a work program on results-based finance to progress the full implementation of the REDD+ activities was agreed under COP decision 9/CP.19. The decision, among other things reaffirmed that results-based finance may come from a wide variety of sources, public and private, bilateral and multilateral, including alternative sources, and including the Green Climate Fund.

As part of continuing the work program in relation to the implementation of the Warsaw REDD+ Framework, and the paragraph 54 of the Paris Agreement, the issue of how to finance REDD+ continues, and hence there is a COP work program on REDD+ finance. This section will briefly review the different mechanisms that can be used to support the pilot scheme for REDD+ PES in Pakistan, and conclude with recommendations for the appropriate financing mechanisms.

Pakistan’s domestic Climate Public Expenditure and Institutional Review (CPEIR) undertaken by the UNDP in 2015

The Government of Pakistan (GoP) notified the National Climate Change Policy (NCCP) in 2012, which aims to ensure that climate change is mainstreamed in the economically and socially vulnerable sectors of the economy, and to steer Pakistan towards climate-resilient development.

In 2012, the Ministry of Climate Change (MoCC) expressed an interest in undertaking a Climate Public Expenditure and Institutional Review (CPEIR) to assess the level at which the GoP has so far been able to respond to the challenges of climate change, and to identify opportunities for further strengthening its response. The study includes an assessment at the federal level, as well as in one province, Khyber Pakhtunkhwa (KP).

The review found that climate change response in Pakistan requires major investment; climate change has been recognized in Pakistan as a core component of the economic growth model which is required for growth, poverty reduction and the wellbeing of the population. This is embedded in national economic policies such as the Framework for Economic Growth (FEG), 2011, Vision 2025 and the accompanying Medium-Term Development Plan (2010–2015).

The National Strategy for Sustainable Development (developed 2012) also positions climate change centrally in the sustainable development trajectory, although the strategy is so far unratified. For instance, Pakistan was ranked number three in the 2012 assessment of the Global Climate Risk Index 2014 with over 6 billion USD PPP losses due to climate change. Investment requirements for mitigation to decouple economic growth from the corresponding GHG emissions increase have been

estimated to be in the order of USD 8 billion, annually for a 15 percent GHG reduction, to USD 17 billion for a 40 percent reduction. Naturally this has indirect implications for the REDD+ PES pilot scheme, because there could be actions taken on a public level that get financed, that can support a REDD+ PES pilot scheme.

The Federal Climate Budget

The total federal climate-related expenditure (development + current budget) was estimated to be between 5.8 and 7.6 percent of total federal expenditures in the four studied years. The relative proportion of the climate-relevant budget spent on adaptation and mitigation varied significantly across the studied years; adaptation varied between 25 and 60 percent and mitigation between 30 and 71 percent (combined adaptation and mitigation benefits were a maximum of 11 percent). While the fiscal headroom for climate-related development expenditures is tight, it is nonetheless growing. The CPEIR illustrated that the number of climate-relevant development projects and the proportion of climate-relevant projects within each government institution vary widely across the studied years, suggesting rather erratic resource allocation and policy delivery. The highest percentage of climate-relevant projects tended to be in the MoCC, the Water and Power Division and the Kashmir Affairs and Gilgit-Baltistan Division. The reality of erratic patterns of climate change-related expenditures highlight the need for an overarching climate change financing framework which can help streamline budget allocations and ensure a holistic response to climate change challenges in the country.

Pakistan Climate Change Fund: is managed by a board and will be used to finance suitable adaptation and mitigation projects and measures designed to combat the adverse effects of climate change. The fund could provide potential finance for the REDD+ PES pilot.

Multilateral Funds and Programs

Pakistan initially presented an Expression of Interest to join the Forest Carbon Partnership Facility (FCPF) in 2011¹, and a follow up expression of interest was delivered on January 30th 2013². The FCPF is designed to support REDD+ readiness and piloting demonstration activities, such as those presented in this document.

Pakistan submitted its initial R-PP on July 31st 2013, and then first revision on September 13th 2013, followed by a second revision on November 18th 2013. The document went through a review by the Technical Advisory Panel (TAP) and the Participants Committee (PC). Pakistan presented its intended final version of its R-PP to the PC in July 2014 with incorporation of the previous PC meeting decision comments, however further comments were received in the meeting and in September 2014, the

¹<https://www.forestcarbonpartnership.org/sites/forestcarbonpartnership.org/files/Documents/PDF/Jan2012/Pakistan%20FCPF%20-27-January-2012.pdf>

²<https://www.forestcarbonpartnership.org/sites/forestcarbonpartnership.org/files/Documents/PDF/Feb2013/Expression%20of%20interest%20FCPF%20update%20january%202013.pdf>

final version of Pakistan's R-PP was submitted, and passed its completeness check in October 2014. In May/June 2015, Pakistan signed its grant agreement for Readiness Implementation with the World Bank.

Pakistan joined the Coalition for Rainforest National (CfRN) in 2010, and has maintained involvement in formulating and supporting its joint positions for REDD+ under the United Nations Framework Convention of Climate Change (UNFCCC) negotiations.

In June 2011, Pakistan became a UN-REDD Partner Country to receive targeted support and support to the Country needs Assessment (CAN). Under UN-REDD, Initial targeted support was provided to the preparation of the R-PP, completed in December 2013. Follow up support has assisted Pakistan with the development of a NFMS Action Plan and capacity development activities under the plan, preparedness for REDD+ through increased knowledge and capacity related to the legal and institutional framework at the national and provincial levels (legal preparedness).

In 2012, Pakistan developed its REDD+ Roadmap with the support from UN-REDD. In February 2013, over 70 forestry experts and stakeholders gathered for a national consultative workshop under the 'REDD+ Project: Preparedness Phase for Pakistan' to initiate a 'REDD+ Roadmap' process for improving forest protection and management in Pakistan. The workshop was organized by Pakistan's Ministry of Climate Change, ICIMOD, and WWF-Pakistan, with the support of One UN Joint Program on Environment. The REDD+ Roadmap process launched at this workshop draws on the experience of several countries in Asia and the Pacific, backstopped by technical support from the United Nations Collaborative Program on REDD+ (UN-REDD Program), which also provides additional financial support.

Private Sector Corporate Social Responsibility: As part of this project, the international consultant reached out to a number of multinational corporations that have established corporate social responsibility programs, and requested expressions of interest in providing finance for the REDD+ PES pilot project. Discussions revealed there is certainly interest from an international airline and a hotel group that should be considered as the pilot project furthers its design process. Both CSR programs require social and environmental values to be considered in addition to transacting carbon from forests. The expected price of a bundled REDD+ PES credit is between USD 5-8 tCO₂e (bundled) based on initial consultations, depending on the extent of the social and environmental benefits compared to the baseline.

There are two additional related mechanisms that could be related to CSR that could be considered under the PES REDD+ scheme. These include **productive private sector investments**, for example, in native forest plantations; and a public private partnership. Balochistan has a good example of partnering with Merck pharmaceuticals to plant trees in arid degraded areas under the structure of a public private partnership.

There are mechanisms that are specific for results-based finance, however, this assignment focuses on PES REDD+ applied in the context of a pilot scheme, and therefore, at this stage, results based finance should be considered for future potential financing through mechanisms such as the Green Climate Fund, or the Voluntary Carbon Market.

To conclude, potential PES REDD+ buyers of credits for the pilot projects could consist of a range of different stakeholders summarized earlier. The sellers of the REDD+ PES credits are likely to be the relevant authority from Government of Pakistan that will represent community interests. This is because there is already an institutional set-up, through the REDD+ Steering Committee and REDD+ cells in the provinces that can facilitate REDD+ activities with communities. All PES transactions should best be managed by the same institution to ensure efficiency in communications and resource allocation.

CHAPTER- 6

6 PRICES SET FOR DIFFERENT ECOSYSTEM SERVICES

6.1 Overview of price setting of the PES services

It is only the carbon trading mechanisms that is already in place and this has been already described in detail in Chapter 5. For the other ecosystem services the payment mechanisms have to be created through new law specifically tailor-made and enforced for the PES scheme. Most major international PES schemes have such legal arrangements in place to enable PES funding accumulation.

Except for carbon trading there is no set level for pricing of the PES services. This means that we will here analyze the needs of financing and back-track to propose price setting in accordance to the needs and a reasonable amount for PES payments. All the identified PES services are in their own way important to finance, which means that there is good justification to include them. As the funding is proposed to be placed in a PES fund from where to distribute the payments, there should be some flexibility allowed by the buyers to enable paying out money for a needed cause. Many of the response activities that balance the payments are anyway the same for different PES services as will be discussed below for each category of PES services.

It will be best if the PES payments will be annual in nature and the first-year payment should be up-front to enable the PES scheme to be funded and started up. The carbon trading arrangements have already rather strict rules for payments based on performance and therefore no up-front payments are allowed. For second year and later annual PES payments (or fees) it should be negotiated about their time-schedules. However, from a performance viewpoint it is best that part of the funding would be up-front in-put based and another part performance-based, so that the sellers have got some funding to operate the PES scheme services to be performed each year. Without some up-front funding it is unlikely that the PES scheme will get any success. It is planned that the PES payment would be annual throughout the PES scheme duration at similar size if planned annual activities are fully carried out each year. For each year there should be set targets for the PES sellers to reach. If one year's performance is lagging behind it should be possible to speed up performance later to reach the set targets and thus get paid later to full extent.

6.2 Watershed protection

It is recognized that hydropower companies are already paying compensations to numerous rural communities and individual rural settlers for their being removed from the Suki Kinari hydropower dam area. Besides shortsightedly solving a conflicting situation with the moved settlers it has also created huge new counter-productive problems and the resettled households have settled in most cases exactly in the wrong places, where they should not have their homesteads. Their new homestead locations are now on the steepest slopes over Kunhar river where landslides and erosion are highly eminent and the risk of being severely affected of an earthquake is very high.

Besides the above-mentioned degradation risks there are also new conflicts with wildlife and water harvesting needs and similar issues that have become apparent. The settlers' degrading appearance on the steep slopes reduces water accumulation on the slopes. With wildlife such as white collar black bears, for instance, the settlers compete for food on the slopes in the form of wild plants (medicinal plants and wild vegetarian food and animal game meat) and cultivated plants become a substitute for those wild plants bears otherwise would eat.

New land and land-use policies must be prepared and enforced as soon as possible to minimize current settlers damaging existence on these steep slopes and to hinder new settlers to establish their homesteads on these slopes as well. Additionally, many may need to move from where their new houses have been built to some better locations. We have been told that such locations do not exist in Kaghan Valley, but then something needs to be done so that a) the best possible locations for homesteads are chosen and b) some mountain may need to be bull-dozed away or slope structure changed so that people can live there. This cost money and that is where the PES scheme and PES payments comes in.

In Pakistan water has been provided free-of-charge all over the country – especially to agricultural sector, that does not even calculate in any expenses for water provision. According to SBP (2017) is the Pakistani irrigated agriculture operating at very low efficiency – perhaps the lowest in Asia besides Afghanistan (where many issues are in a chaotic state at moment). One reason for this is probably current misuse of water which is possible as water is free-of-charge. A change is needed in this respect. The agriculture sector must widen its perspective and understand that water is not God's gift in abundant quantities, but a scarce resource produced in mountainous areas in northern Pakistan – such as the Kaghan Valley high altitude glaciers and forested areas. There must therefore be introduced a water price to allow water use to become efficient and well managed.

National Highway Authority and Provincial Disaster Management Authority are also potential buyers of PES services in watershed management.

There is therefore a need to introduce a water price set by Kaghan Forest Division to hydropower companies in first instances for water use. The hydropower companies produce both hydropower and water diversion to irrigation schemes and urban areas and they can in their turn enforce their customers to start paying for water. We propose that the water price should be PKRs 50/m³ water and can later be gradually increased to its right-full level over some years. Such payment would annually bring in totally PKRs 139 billion or USD 1.26 billion to the PES scheme.

6.3 Biodiversity conservation and promotion of ecotourism

As part of this assignment PFI conducted a rather comprehensive ecotourism survey among tourists arriving in Kaghan Valley (mainly conducted in Naran) in early May 2018. As part of the survey the respondents were asked about setting of an entry fee and its size in the respondents view as shown in Table 6.1.

Table 6. 1. Setting of size of an entry fee – responses by ecotourists in Naran, May 2018.

Fee amount increment alternatives (to the right)	1. if there is no source of improvement except imposing fee would you be willing to pay Rs. 50 as entry fee?		2. if entry fee is Rs. 100 would you be willing to pay?		3. if entry fee is raised to Rs. 200 would you be willing to pay?		4. if entry fee is raised to Rs. 300 would you be willing to pay?		5. Do you think placing of an entry fee will improve tourism	
"Yes" or "No" answers by respondents	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No
Percent (%) figure responses	91	10	72	29	48	53	30	71	64	37
Entry fee revenue if enforced (in PKRs)	34.5 million	0	54.6 million	0	72.8 million		68.2 million	0		
Entry fee revenue income if enforced (in USD)	0.31 million	0	0.49 million	0	0.66 million		0.61 million	0		

The survey had 101 respondents, which is too small sample for the annual total of 758,000 tourists that come to Kaghan Valley. It gives anyway an indication on how tourists are thinking about entry fees. In column 5 of Table 6.1, the tourist respondents were asked whether an entry fee would improve the tourism services or become futile and 64% of the respondents expect it to be useful in developing the tourism attraction of the Kaghan Valley.

Regarding the entry fee size in money terms the respondents were given four alternatives to consider. If the respondents think 50, 100, 200 or 300 rupees would be the right size of it. For 91% of respondents it was acceptable to impose a Rs. 50 entry fee while Rs. 100 could still be accepted by 72%. A fee of Rs. 200 could only be acceptable to 48% and Rs. 300 was only acceptable to 30% of the respondents. To solve how large entry fee to place for ecotourism attractions in Kaghan Valley there are three different kinds of solutions to consider.

The first issue to consider is how many tourists are really wanted in Kaghan Valley – when is the carrying capacity reached for sustainable ecotourism in terms of sewage and waste, upkeeping of the attraction from wearing it out by trampling people and noise etc. If the answer is “Yes” – there can still be more tourists than currently (i.e. 758,000/year), then the entry fee should be low. If the answer is “No” – there are

already too many tourists and we need to restrict the amounts of tourists to a certain level, then the entry fee should be higher.

The second issue is to consider tourists willingness to pay. Table 6.1. indicates how much money would be accumulating at different size of the entry fee and we can see that most money is accumulating when there are 48% of current tourist quantities (i.e. 363,840 tourists) and they pay 200 rupees as an entry fee. The size of the entry fee seems to have substantial impact on tourist numbers.

The third issue is how to best compromise between tourist numbers and fee revenues. There could be a lower overall entry fee to the Kaghan valley as such, but then some special attractions in the national park could have their own entry fees on top of the general entry fee. This is probably the best solution to keep up the sustainability (i.e. the carrying capacity) of the tourism attractions and to enable a proper development of attraction sites.

Some potential attractions simply cannot be visited by a million people in one year, so there must be some selection who can go there. This kind of attractions relate to wildlife observation tours, photo safaris, hunting, fishing, and similar activities. Also walking around in nature must be kept within acceptable tourist numbers. These kinds of activities must therefore have their own fees separate from the main entry fee.

There are several kinds of activities, which currently are not well developed in Kaghan Valley that could form good attractions for tourists and simultaneously bring in revenue. A group of tourists does not need to do everything in one year – they can come back and take another activity next year if they cannot afford everything during one trip.

Besides the ecotourists there are also 381 hotels in Kaghan Valley, where the tourists live during their stay in the Valley. These hotels live from the ecotourism and it is in their own interest to see that the tourist attractions are maintained year in and out in long-term. Therefore, they should also invest in favor of sustainability. During the consultative workshop that PFI held for the preparation of this PES Project Document in Balakot 11-12 May, 2018 there were also some hotel owners participating. They pointed out that they already contribute quite much to the Valley economy in the following manner:

- Increasing livelihood opportunities for local rural households (i.e. at hotels and in tourist transportation etc.);
- Decreased direct dependence of natural resources;
- Connecting local rural households socially with tourists;
- Increasing the business people's presence in Kaghan Valley; and
- Increase also KP-FD's other than tree harvesting income opportunities in the Valley.

These above listed positive benefits are true – these benefits are present. However, there is a need that hotels take responsibility for their own pollution of the environment. Therefore, the hotels should be obligated to build proper waste handling and sewage systems for their hotels and contribute to waste management in the national park. All

the above benefits for local rural households and KP-FD as well as the hotels own investment in waste treatment and sewage systems can be incorporated in the PES scheme funding as in-kind contributions.

Additionally, there could be some smaller fee for ecotourist agencies in major Pakistani cities, that arrange ecotourism tours to Kaghan Valley. How much they should pay would be needed to discuss in open discussions between Kaghan valley authorities and the ecotravel agencies.

Regarding hunting there are already hunting licenses in place, which cover the actual hunting activities. The hunters would then also have to include the common entry fee for Kaghan Valley attractions. Besides actually hunting wildlife with guns, there could be a kind of compromise activity, which is photo safaris and watching of mammals and birds. KP-FD should develop these kind of park services for the tourists. Small issue like placing out salt stones for wild mammals to lick salt from is a rather easy thing to implement. Wildlife usually finds such salt stones quite fast and like them a lot as wild animals often lack mineral salt in their diet. If such a salt stone is placed in a suitable valley in the mountains and humans can be taken to some hilltop from where they can quietly be observing or photographing animals, it could be a good attraction. Some watching tower could even be built at such a site if observation is difficult otherwise.

Going one step further, would be to place out some food for wildlife. Meat for predators such as white collar black bears, wolves and leopard and hay or similar plant material for grass feeders such as markhors, ibexes or other herd animals. If an animal is nocturnal the watching of the animals may have to take place at such a site where people can be even during dusk or night hours for some time. From newspaper articles and local people information sources during the workshop in Balakot, it is clear, that large predators do not have it too easy to find food, which means that they would easily accept such a bait site.

6.4 Carbon sequestration and wood products

For timber and fuelwood harvesting we do not propose anything new from current practices besides that better statistics on timber and fuelwood pricing and sales should be officially available. Both timber and fuelwood have got their buyers already, which means that we do not specifically see any real need to bring these two products into the PES scheme arrangements – they can continue as they are currently practiced.

There are no major buyers of carbon locally in Kaghan Valley, which means that the sequestered carbon from forest growth and new plantations should be traded with organizations outside the PES area. The good thing is that there are several potential national and international buyers available. If we start with the national ones, there are at least three different buyer groups. The first would be Pakistani flight companies that are likely to be willing to buy carbon credits for their flights. Another group is formed by major hotel chains in Pakistan that have similar interest in carbon trading. Among the industry is the cement industry a potential buyer due to their high air pollution of carbon

dioxide. The same is also of course true about coal power plants, but these may find another carbon credit seller closer by.

Internationally we do know that some international flight companies are looking for carbon trading opportunities from Pakistan, which is a good opportunity if Pakistani buyers are eventually not willing to purchase the carbon from the PES scheme.

The current carbon dioxide (CO₂) price is around USD 5 per ton on the global market and it is advisable to try to keep the carbon price at this level. The Kaghan PES area is currently sequestering carbon at an annual rate of 324,629 ton for the carbon market. With planting of several thousand more hectares of forests the above-mentioned amounts of annually sold carbon credits that are traded be increased considerably. With the currently used market price for carbon dioxide the total monetized carbon value could be worth millions of dollars or rupees each year. Over twenty or more years the income will become considerable.

6.5 Non-timber forest products

6.5.1 Free-grazing fodder for livestock

Most of the livestock owners in Kaghan valley are poor rural people who would be unable to keep many livestock without the free-grazing opportunity. These people cannot be realistically asked to pay a fee for the free-grazing fodder, but they can contribute in-kind. The in-kind contribution we have in mind for these livestock owners and their herds men relate to extension work with them. They need to understand where they can allow their livestock to graze and where the livestock should not be grazing. There are also incidents when livestock owners have lit some hillslope on fire to get new fresh grass growing there after a while, neglecting the fact that in the process some hectare of forest has perished in the fire. If range management is conducted well there should be less sustainability issues with free-grazing or conflicts with wildlife and thereby there are also some financial savings that derive from sustainable practices. How much is impossible to say without further assessment of the situation.

6.5.2 Medicinal plants collection

The situation with medicinal plants collection is a bit similar to what was written above about livestock free-grazing – hillsides become degraded due to overexploitation. The poor rural household collectors need awareness raising and extension on how collection of medicinal plants does not damage the regeneration of these plants and some enrichment sowing of seeds or planting of some plant species is further needed to get these plants more populous once more. The financing for this should come from the traditional medicine industrial companies that purchase the medicinal plants. These companies are likely making rather huge profits, which should be to an extent distributed back also to the nature end of the production process. As can be seen in sub-chapter 4.5 there is rather a huge discrepancy between the amount of money that collectors and middlemen get as compared to the traditional medicine industry. Negotiations should therefore be started with some of these industrial companies to see

what kind of compensation they would be willing to pay so that the medicinal plant collection becomes more sustainable in the future. Depending on how many such companies there are and their general financial situation one should negotiate sufficient funding for acquiring sustainability in the field. Anything between say USD 10,000 to 30,000 could be sufficient per company.

6.5.3 Commercial fish production

The commercial fish farms and hatcheries are currently not taking too well care of their own pollution in the form of fish feces in huge amounts in similar manner to human urban area feces build up, which both need somewhere to dispose it. The fish farms need therefore build up some capacity for this themselves to take care of this problem as it pollutes the Kunhar river substantially. This waste water cleaning treatment could be added as a kind of in-kind PES funding that the fish farms can incorporate in the overall PES arrangements. The fishing licenses could also be accumulated and used as part financing for this purpose.

6.5.4 Collection of gems and precious stones

Similar to medicinal plants industrial businesses there is some secrecy about how business profits are derived from this activity. The profits are considerable and it would be fair to have the main jewelry companies that purchase gems and precious stones from Kaghan Valley to contribute some financing to set up proper management of the mining and collection operations in the Valley. Depending on size and profitability there contributions from these companies to Kaghan Forest Division as PES funding should be negotiated. Anything between say USD 10,000 to 30,000 could be sufficient per company and year.

6.6 Conclusions

The above proposed price settings are indicative and will be tried out in real and fair negotiations between sellers and buyers to set fair levels of PES payments to protect the PES area nature and stakeholder communities in the first place and the Kaghan Forest Division in its management role. Only the negotiations will tell how much annual and total financing these two PES schemes will accumulate. For the Kaghan PES area the annual PES payments could be either very large if water in the future is a paid commodity instead of a free-of-charge good as it is currently. For the other PES services from Kaghan Valley the PES payments could annually be in the range of from USD 100 million to USD 200 million per year. Optimistically thought even much higher than that, but then more difficult to achieve and manage.

CHAPTER-7

7 BUSINESS AS USUAL AND PROJECT SCENARIOS AND THEIR COMPARISON

7.1 Baseline Emissions and Business as Usual Scenario

The proposed project intervention in Kaghan valley is a REDD+ project intervention that estimates the emissions baseline from historical deforestation and forest degradation, as well as the enhancement of forest carbon stocks through an afforestation/reforestation rehabilitation program.

In the case of Kaghan valley, the Business As Usual (BAU) baseline is developed against that actual emissions will be compared, whereby emission reductions are estimated as the difference between the BAU and the actual emissions. Therefore, the BAU is assumed to depict what the emissions scenario would be in the absence of the REDD+ project intervention.

The IPCC 2003 IPCC Good Practice Guidance for Land Use, Land-use Change, and Forestry (GPG-LULUCF) and the IPCC 2006 Guidelines for National Greenhouse Gas Inventories Agriculture, Forestry and Other Land use (AFOLU) were used for emissions estimation. One of the key considerations that the BAU estimation accounts for in this project is national circumstances. Pakistan has historically had one of the highest rates of deforestation across Asia, and therefore standing forests in the Kaghan valley continue to be at risk.

Pakistan is a country that is classified with low forest cover and high deforestation rate. Therefore using the historical emissions baseline methodology is the most appropriate method at this point in time as it captures the emissions risk of continued absence of a REDD+ mechanism.

In the Kaghan valley, emissions from degradation are higher than emissions from deforestation driven by unsustainable, sometimes illegal logging practices and the immense dependency of local surrounding communities have on forests for fuelwood consumption. As stated previously in this report, the KP-FD (2018 direct communication) provided its latest estimation for the total annual fuelwood consumption in the whole of Kaghan Valley which was 163,854 tons per year of which 114,417 tons per year are from unsustainable sources.

The fuelwood degradation emissions only captures a fraction of the problem, and coupled with the depletion of standing carbon stocks from unsustainable logging, require regular inventories and application of remote sensing and GIS techniques to estimate emissions from degradation with spatial-temporal analysis.

The challenge to the emissions baseline development is that the data required for estimating the emissions baseline from degradation that complies with the IPCC's GPG reporting principles of consistency, comparability, transparency, accuracy and completeness, is not available in Pakistan. Therefore, the BAU for the Kaghan valley PES REDD+ pilot project applies the historical deforestation rate of 0.7% per year to the project site to estimate and project future emissions from not implementing a REDD+ intervention. Kaghan is one of the most protected forest areas of Khyber Pakhtunkhwa.

According to a PFI study deforestation rate was 0.7% between 2007-2012 in the Mansehra district where Kaghan is located. This deviates considerably from FAO FRA estimates, which could be used to determine the national or subnational reference level/s for Pakistan (Table 7.1).

Table 7. 1: Natural Forest Cover Change in Pakistan

Year	Annual forest cover change 1990-2000 (ha)	Annual forest cover change 2000-2005 (ha)	Annual forest cover change 1990-2005 (ha)	Annual forest cover change 2005-2010 (ha)	Rate of forest cover loss 1990-2000 (per year)	Rate of forest cover loss 2000-2005 (per year)	Rate of forest cover loss 1990-2005 (per year)	Rate of forest cover loss 2005-2010 (per year)
Pakistan	-41,100	-42,800	-41,667	-43,000	1.6%	2.0%	1.6%	2.3%

Source: FAO, 2010

This baseline rate applying 0.7% per year annual forest loss in Kaghan is expected to be revised in the future as updated data becomes available. As mentioned earlier, the primary drivers of degradation emissions and changes in carbon stocks are fuelwood consumption and unsustainable logging. To be conservative, the baseline changes in carbon stocks are applied only to above ground biomass, as the roots of the trees are generally not removed from the project area, and no burning of below ground biomass or soil is evident.

Table 7. 2: Projected Baseline Changes in Forest Areas in Kaghan Valley 2018-2048

YEAR	Reserve Forest (ha)	Guzara Forest (ha)	Undemarcated Forest (ha)	Total Forest (ha)
2018	16900	21353	13576	51829
2019	16782	21204	13481	51466
2020	16664	21055	13387	51106
2021	16548	20908	13293	50748
2022	16432	20761	13200	50393
2023	16317	20616	13107	50040
2024	16203	20472	13016	49690
2025	16089	20328	12925	49342
2026	15976	20186	12834	48997
2027	15865	20045	12744	48654
2028	15754	19905	12655	48313
2029	15643	19765	12566	47975
2030	15534	19627	12479	47639
2031	15425	19489	12391	47306

2032	15317	19353	12304	46975
2033	15210	19218	12218	46646
2034	15103	19083	12133	46319
2035	14998	18949	12048	45995
2036	14893	18817	11964	45673
2037	14788	18685	11880	45353
2038	14685	18554	11797	45036
2039	14582	18424	11714	44721
2040	14480	18295	11632	44407
2041	14379	18167	11551	44097
2042	14278	18040	11470	43788
2043	14178	17914	11389	43481
2044	14079	17789	11310	43177
2045	13980	17664	11231	42875
2046	13882	17540	11152	42575
2047	13785	17418	11074	42277
2048	13689	17296	10996	41981

The projected baseline changes in forest area, applying the national historical average deforestation rate for Pakistan, if no REDD+ (or similar) intervention is pursued result in a loss of forest area from the current 51,829 ha in 2018, down to 41,981 ha in 2048. To estimate the potential emissions from the baseline projection, the methodology uses estimates developed by PFI. The total carbon stocks of all Kaghan valley forests are shown in Table 7.3 below.

Table 7.3: The total carbon stocks stored in carbon pools of Kaghan Valley forests

Forest Category	Area (ha)	AGC (t/ha)	BGC (t/ha)	Litter (t/ha)	Soil C (t/ha)	Total C t/ha	Total C (ton)
Reserved Forest	19,525	78.58	22.2169	4.02	62.55	167.3669	3,267,839
Guzara Forest	37,137	49.65	13.8272	3	62.55	129.0272	4,791,683
Undemarcated privately owned	21,063	49.65	13.8272	3	62.55	129.0272	2,717,700
Total	77,725						10,777,222
IPCC default values for Cropland							
Cropland (annual)		n.a	n.a	n.a	n.a	5	

Applying these carbon stock estimates to the relevant carbon pools in the forest, and using conservative estimates to account only for changes in above ground biomass, the following table summarizes the changes in carbon stocks for Kaghan Valley in the BAU scenario.

Table 7. 4: Projected Baseline Changes in Carbon Stocks in Forestland in Kaghan Valley 2018-2048 (estimates in tonnes)

YEAR	Total AG	BG	Litter	Soil	Total
2018	3549469	1238528	253091	4861699	9902786
2019	3467831	1238528	253091	4861699	9821148
2020	3388071	1238528	253091	4861699	9741388
2021	3310145	1238528	253091	4861699	9663462
2022	3234012	1238528	253091	4861699	9587329
2023	3159630	1238528	253091	4861699	9512947
2024	3086958	1238528	253091	4861699	9440275
2025	3015958	1238528	253091	4861699	9369275
2026	2946591	1238528	253091	4861699	9299908
2027	2878819	1238528	253091	4861699	9232137
2028	2812607	1238528	253091	4861699	9165924
2029	2747917	1238528	253091	4861699	9101234
2030	2684715	1238528	253091	4861699	9038032
2031	2622966	1238528	253091	4861699	8976283
2032	2562638	1238528	253091	4861699	8915955
2033	2503697	1238528	253091	4861699	8857014
2034	2446112	1238528	253091	4861699	8799429
2035	2389852	1238528	253091	4861699	8743169
2036	2334885	1238528	253091	4861699	8688202
2037	2281183	1238528	253091	4861699	8634500
2038	2228715	1238528	253091	4861699	8582033
2039	2177455	1238528	253091	4861699	8530772
2040	2127374	1238528	253091	4861699	8480691
2041	2078444	1238528	253091	4861699	8431761
2042	2030640	1238528	253091	4861699	8383957
2043	1983935	1238528	253091	4861699	8337252
2044	1938305	1238528	253091	4861699	8291622
2045	1893724	1238528	253091	4861699	8247041
2046	1850168	1238528	253091	4861699	8203485
2047	1807614	1238528	253091	4861699	8160931
2048	1766039	1238528	253091	4861699	8119356

Changes in carbon stocks over a 30 years period, using conservative estimation, are expected to result in a decline from 9,902,785 tons of carbon stored in the Kaghan valley project site in 2018, to 8,119, 356 tons of carbon stored in 2048. This leads to a total reduction of 1,783,429 tons of carbon in a 30 years period or emissions equivalent to 6,545,187 tCO₂e. The above estimates can be enhanced by using IPCC GPG to analyze forestland conversion to cropland.

7.2 Baseline for Deforestation and Degradation

The baseline for deforestation and degradation will apply the Annual Change in Carbon Stocks in Living Biomass in Land (Forestland) Converted to Crop Land from the IPCC GPG.

As mentioned earlier, the Kaghan valley has a deforestation rate of 0.7% per year. The assumption of the conversion is that the land class change is from forest land to cropland and thereby applying the respective default values to calculate the net change in carbon stocks from deforestation, and associated degradation. The basic steps in estimating carbon stock change in biomass from land conversion to cropland are as follows:

- (i) Estimate the average area of land undergoing a transition from non-cropland to cropland during a year ($A_{\text{conversion}}$), separately for each initial land use (i.e., forest land, grasslands, etc.) and final crop type (i.e., annual or perennial woody).
- (ii) For each type of land use transition to cropland, use Equation 3.3.8 to estimate the resulting change in carbon stocks. Default data in Section 3.3.2.1.1.2 for C_{After} , C_{Before} , and ΔC_{Growth} can be used to estimate the total stock change on a per area basis for each type of land use transition. The estimate for stock change on a per area basis can then be multiplied by the appropriate area estimates from step 1.
- (iii) Estimate the total carbon stock change from all land-use conversions to cropland by summing the individual estimates for each transition.

The default assumption for Tier 1 is that all carbon in biomass is lost to the atmosphere through decay processes either on- or off-site. As such, Tier 1 calculations do not differentiate immediate emissions from burning and other conversion activities.

The equation for Annual Change in Carbon Stocks in Living Biomass in Land (Forestland) Converted to Crop Land is given by:

$$\Delta C_{\text{LCLB}} = A_{\text{Conversion}} * (L_{\text{Conversion}} + \Delta C_{\text{Growth}})$$
$$L_{\text{Conversion}} = C_{\text{After}} - C_{\text{Before}}$$

Where:

ΔC_{LCLB} = Annual change in carbon stocks in living biomass in land converted to cropland, tonnes C yr⁻¹

$A_{\text{Conversion}}$ = annual area of land converted to cropland, ha yr⁻¹

$L_{\text{Conversion}}$ = carbon stock change per area for that type of conversion when land is converted to cropland, tonnes C ha⁻¹

ΔC_{Growth} = changes in carbon stocks from one year of cropland growth, tonnes C ha⁻¹

C_{After} = carbon stocks in biomass immediately after conversion to cropland, tonnes C ha⁻¹

C_{Before} = Carbon stocks in biomass immediately before conversion to cropland, tonnes C ha⁻¹

Based on the IPCC GPG's default biomass carbon stocks present on land converted to cropland in the following year of conversion, assuming it is annual cropland, is 5 tonnes of carbon per hectare. The table presents the baseline for deforestation from forestland to cropland, and therefore is limited by not being able to account for degradation. Over a 30 years period, the historical average deforestation in the project site without a REDD+ intervention will create a loss of 490,615 tonnes of carbon stored on the land, and create emissions of 1,799,084 tonnes of CO₂e.

Table 7. 5: Annual Change in Carbon Stocks in Living Biomass in Forestland Converted to Cropland

YEAR	Forestland	Cropland	Conversion tC/ha	CO ₂ e
2018	9194452.663	259145	-8935307.663	-32765773
2019	9174564.715	257330.985	-8917233.73	-32699496
2020	9154815.983	255529.668	-8899286.314	-32633683
2021	9135205.491	253740.96	-8881464.531	-32568330
2022	9115732.274	251964.774	-8863767.5	-32503435
2023	9096395.369	250201.02	-8846194.349	-32438995
2024	9077193.822	248449.613	-8828744.209	-32375005
2025	9058126.686	246710.466	-8811416.22	-32311463
2026	9039193.02	244983.493	-8794209.528	-32248366
2027	9020391.89	243268.608	-8777123.282	-32185711
2028	9001722.367	241565.728	-8760156.64	-32123494
2029	8983183.532	239874.768	-8743308.764	-32061713
2030	8964774.468	238195.644	-8726578.823	-32000365
2031	8946494.267	236528.275	-8709965.993	-31939445
2032	8928342.028	234872.577	-8693469.451	-31878952
2033	8910316.855	233228.469	-8677088.386	-31818883
2034	8892417.858	231595.87	-8660821.988	-31759234
2035	8874644.154	229974.699	-8644669.455	-31700003
2036	8856994.865	228364.876	-8628629.99	-31641186
2037	8839469.122	226766.322	-8612702.801	-31582781
2038	8822066.059	225178.957	-8596887.102	-31524785
2039	8804784.818	223602.705	-8581182.113	-31467195
2040	8787624.545	222037.486	-8565587.059	-31410008
2041	8770584.394	220483.223	-8550101.171	-31353221
2042	8753663.524	218939.841	-8534723.683	-31296832
2043	8736861.1	217407.262	-8519453.838	-31240837
2044	8720176.293	215885.411	-8504290.882	-31185235
2045	8703608.28	214374.213	-8489234.067	-31130021
2046	8687156.243	212873.594	-8474282.649	-31075194
2047	8670819.37	211383.478	-8459435.892	-31020751
2048	8654596.855	209903.794	-8444693.061	-30966689

7.3 Baseline for Annual Carbon Loss Due to Fuelwood Gathering

Fuelwood causing degradation is an estimated based on a field survey conducted by the KP Forest Department. One point should be noted that 30% of this fuelwood (163,454 tonnes) is supplied through Farm Forestry, which is a renewable source, so the actual quantity of non-renewable biomass from fuelwood collected from the Kaghan forest is 114,417 tonnes. Fuelwood is collected mostly from Guzara forests and undemarcated forests but some amount could be coming from reserved forests as well. However to keep the degradation emissions conservative, this degradation from fuelwood baseline will assume that the fuelwood is predominantly sourced from Guzara and undemarcated forests. The species used for fuelwood are *Pinus roxburghii*, *Pinus wallichiana*, *Abies pindrow*, *Quercus spp.* etc.

From the IPCC LULUCF GPG, we apply the following equation 3.2.8 Annual Carbon Loss Due to Fuelwood Gathering to estimate the baseline for fuelwood collection in Kaghan Valley.

$$L_{\text{FUELWOOD}} = FG * D * BEF_2 * CF$$

Where

L_{FUELWOOD} = annual carbon loss due to fuelwood gathering, tonnes C. yr⁻¹

FG = Annual volume of fuelwood gathering, m³, yr⁻¹

D = Basic wood density, tonnes d.m. m⁻³; Table 3A.1.9

BEF₂ = biomass expansion factor for converting volumes of extracted roundwood to total aboveground biomass (including bark), dimensionless; Table 3A.1.10

CF = carbon fraction of dry matter (default = 0.5), tonnes C (tonne d.m.)⁻¹

First, the annual weight of fuelwood collected, 114,417 tonnes per year, needs to be converted into cubic meters. This is done by dividing the weight in tonnes by the wood density (kg/m³). The wood density for conifers (0.45 Kg/m³) is applied as it is the predominant type of wood collected. The volume of fuelwood collected annually amounts to 254,260 m³ yr⁻¹.

Table 7.6 applies the formula 3.2.8, and the respective default and biomass expansion factors to estimate the annual carbon loss due to fuelwood gathering. The result is multiplied by 3.667 to convert the carbon loss into carbon dioxide equivalent.

Table 7.6: Annual Carbon Loss due to Fuelwood Gathering

YEAR	FG m ⁻³ yr ⁻¹	D d.m.m ⁻³	BEF	CF(t d.m ⁻¹)	L (tC Yr)	tCO ₂ e
2018	254260	0.45	1.3	0.5	74371.1	272719
2019	254260	0.45	1.3	0.5	74371.1	272719
2020	254260	0.45	1.3	0.5	74371.1	272719
2021	254260	0.45	1.3	0.5	74371.1	272719
2022	254260	0.45	1.3	0.5	74371.1	272719
2023	254260	0.45	1.3	0.5	74371.1	272719
2024	254260	0.45	1.3	0.5	74371.1	272719
2025	254260	0.45	1.3	0.5	74371.1	272719
2026	254260	0.45	1.3	0.5	74371.1	272719
2027	254260	0.45	1.3	0.5	74371.1	272719
2028	254260	0.45	1.3	0.5	74371.1	272719
2029	254260	0.45	1.3	0.5	74371.1	272719
2030	254260	0.45	1.3	0.5	74371.1	272719
2031	254260	0.45	1.3	0.5	74371.1	272719
2032	254260	0.45	1.3	0.5	74371.1	272719
2033	254260	0.45	1.3	0.5	74371.1	272719
2034	254260	0.45	1.3	0.5	74371.1	272719
2035	254260	0.45	1.3	0.5	74371.1	272719
2036	254260	0.45	1.3	0.5	74371.1	272719
2037	254260	0.45	1.3	0.5	74371.1	272719
2038	254260	0.45	1.3	0.5	74371.1	272719
2039	254260	0.45	1.3	0.5	74371.1	272719
2040	254260	0.45	1.3	0.5	74371.1	272719
2041	254260	0.45	1.3	0.5	74371.1	272719
2042	254260	0.45	1.3	0.5	74371.1	272719
2043	254260	0.45	1.3	0.5	74371.1	272719
2044	254260	0.45	1.3	0.5	74371.1	272719
2045	254260	0.45	1.3	0.5	74371.1	272719
2046	254260	0.45	1.3	0.5	74371.1	272719
2047	254260	0.45	1.3	0.5	74371.1	272719
2048	254260	0.45	1.3	0.5	74371.1	272719

The figures above are expected to change over the next decade and will need to be reviewed as electricity and renewable energies become readily available, and rural populations migrate to cities. These demographic changes should be considered in future baseline projections as the relevant data and information becomes available. Base on the current data, the total emissions from fuelwood gathering amount to **272,719 tCO₂e per year, or 8,181,559 t CO₂e over a 30 year period** assuming constant annual collection of fuelwood from non-renewable resources.

7.4 REDD+ Project Scenario

7.4.1 Project Scenario and Assumptions

In the PES REDD+ Project Scenario, several assumptions are made to develop the emissions scenario for a REDD+ project intervention.

1. Deforestation and forest degradation are not affected for the first five years of the project intervention while awareness raising and community support is built. As a result, the deforestation rate of 0.7% per year will be applied to the first five years, and then assumed to be 0% from there onwards.
2. The Billion Tree Afforestation Project (BTAP) will lead to enhancement in carbon stocks on an area of 11,816 ha counting plantings from 2018 and applying an even planting schedule over a 5 year period (2018-2023).

The first project intervention to be calculated is the impact on deforestation and forest degradation emissions. The project applies the deforestation rate to the first five years, as explained above. The total emissions from deforestation in the first five years are 96,138 tC or 352,538 tCO₂e, after which the intervention is assumed to be fully effective and the deforestation rate drops to 0%.

REDD	Ha	Ha	Ha	Ha Total	Carbon stock changes	
YEAR	Reserve	Guzara	Undemarc	Total	TOTAL	Change
2018	16900	21353	21063	59316	9566182.21	
2019	16781.7	21203.529	20915.559	58900.788	9543692.16	-22490.055
2020	16664.2281	21055.1043	20769.1501	58488.4825	9521359.53	-22332.624
2021	16547.5785	20907.7186	20623.766	58079.0631	9499183.24	-22176.296
2022	16431.7455	20761.3645	20479.3997	57672.5097	9477162.18	-22021.062
2023	16431.7455	20616.035	20336.0439	57383.8243	9470044.56	-7117.6154
2024	16431.7455	20616.035	20336.0439	57383.8243	9470044.56	0
2025	16431.7455	20616.035	20336.0439	57383.8243	9470044.56	0
2026	16431.7455	20616.035	20336.0439	57383.8243	9470044.56	0
2027	16431.7455	20616.035	20336.0439	57383.8243	9470044.56	0
2028	16431.7455	20616.035	20336.0439	57383.8243	9470044.56	0
2029	16431.7455	20616.035	20336.0439	57383.8243	9470044.56	0
2030	16431.7455	20616.035	20336.0439	57383.8243	9470044.56	0
2031	16431.7455	20616.035	20336.0439	57383.8243	9470044.56	0
2032	16431.7455	20616.035	20336.0439	57383.8243	9470044.56	0
2033	16431.7455	20616.035	20336.0439	57383.8243	9470044.56	0
2034	16431.7455	20616.035	20336.0439	57383.8243	9470044.56	0
2035	16431.7455	20616.035	20336.0439	57383.8243	9470044.56	0
2036	16431.7455	20616.035	20336.0439	57383.8243	9470044.56	0
2037	16431.7455	20616.035	20336.0439	57383.8243	9470044.56	0
2038	16431.7455	20616.035	20336.0439	57383.8243	9470044.56	0
2039	16431.7455	20616.035	20336.0439	57383.8243	9470044.56	0
2040	16431.7455	20616.035	20336.0439	57383.8243	9470044.56	0
2041	16431.7455	20616.035	20336.0439	57383.8243	9470044.56	0
2042	16431.7455	20616.035	20336.0439	57383.8243	9470044.56	0
2043	16431.7455	20616.035	20336.0439	57383.8243	9470044.56	0
2044	16431.7455	20616.035	20336.0439	57383.8243	9470044.56	0
2045	16431.7455	20616.035	20336.0439	57383.8243	9470044.56	0
2046	16431.7455	20616.035	20336.0439	57383.8243	9470044.56	0
2047	16431.7455	20616.035	20336.0439	57383.8243	9470044.56	0
2048	16431.7455	20616.035	20336.0439	57383.8243	9470044.56	0

The second project intervention emission scenario will take the assumptions for afforestation/reforestation and apply emission values developed by PFI to the current forest areas, and future reforestation efforts. The PFI (2018) has for this assignment calculated the total annual carbon sequestration potential of the carbon stock enhancement intervention presented in Table 7.7 below.

Table 7.7: Carbon Sequestration in existing Kaghan's Forests

Forest Tenure Category	Area in ha	C Sequestration Rate (tCO ₂ /ha/year)	Total C sequestration (tCO ₂ /year)
Reserved Forest	16,900	5	84,500
Guzara Forest	21,353	5	106,765
Undemarcated privately owned	13,576	5	67,880
Total	51,829		259,145

In addition to the existing forests there are various kinds of afforestation/reforestation efforts conducted with the Billion Tree Afforestation Project (BTAP) by the KP FD that will additionally expand the carbon sequestration in the valley, which are shown in Table 7.8 below.

According to IPCC (2006), the aboveground biomass growth in plantations in mountain temperate forest is 3 t/ha/year. This growth rate was converted to CO₂ t/ha/year which was calculated as below:

$$3 \times 0.47 \times 3.66 = 5.16$$

Belowground biomass growth rate was taken as 26% of the above ground estimate i.e 1.34 tCO₂/ha/year. Thus, the total biomass growth rate was determined at 6.5 tCO₂/ha/year.

Table 7.8. Potential Carbon Sequestration by Plantations raised under BTAP

Area Planted (ha)	C sequestration rate (tCO ₂ /ha/year)	Total CO ₂ e sequestration (tonnes)
11,816	6.5	76,804

Applying the carbon sequestration rate over the project lifetime to carbon stock enhancement efforts on 11,816 ha, with an initial five year planting schedule, annual carbon stocks increase, and over the 30 years project lifetime, a total of 2,227,316 tonnes of CO₂e are sequestered

Table 7.9: Annual and Cumulative Sequestered Emissions from a REDD+ Project Intervention for Enhancement of Carbon Stocks on 11,816 ha in Kaghan Valley (2018-2048)

YEAR	Subtotal Ha	A/R tCO ₂ e/yr	A/R Cumulative tCO ₂
2018	2363.2	15360.8	15360.8
2019	4726.4	30721.6	46082.4
2020	7089.6	46082.4	92164.8
2021	9452.8	61443.2	153608
2022	11816	76804	230412
2023	11816	76804	307216
2024	11816	76804	384020
2025	11816	76804	460824
2026	11816	76804	537628
2027	11816	76804	614432
2028	11816	76804	691236
2029	11816	76804	768040
2030	11816	76804	844844
2031	11816	76804	921648
2032	11816	76804	998452
2033	11816	76804	1075256
2034	11816	76804	1152060
2035	11816	76804	1228864
2036	11816	76804	1305668
2037	11816	76804	1382472
2038	11816	76804	1459276
2039	11816	76804	1536080
2040	11816	76804	1612884
2041	11816	76804	1689688
2042	11816	76804	1766492
2043	11816	76804	1843296
2044	11816	76804	1920100
2045	11816	76804	1996904
2046	11816	76804	2073708
2047	11816	76804	2150512
2048	11816	76804	2227316

The PES REDD+ Project is therefore estimated to create a positive emissions impact over the 30 years period by taking the difference of projected baseline emissions BAU scenario and the emissions sequestered from the plantation efforts, as well as a long term reduction in forest degradation and deforestation on the project site.

The numbers in the above table are expected to need to be adjusted to take into account plantation cycle and baseline emissions for the first 10 years. New emission

factors may need to be considered to apply annual biomass growth functions to the replanted area rather than an average rate of carbon sequestered.

To calculate the net emissions sequestered from the project intervention, a decision on how to use the deforestation and forest degradation baselines needs to be considered. The degradation baseline shows a much higher source of emissions both annually and cumulatively than the deforestation baseline. According to PFI, the degradation emissions should be included in the deforestation emissions, but the degradation emissions baseline shows emissions are 8 times higher than the deforestation emissions baseline. The anomaly arises from four points:

1. The deforestation emissions accounting method uses emissions data linked with land class to determine the changes in carbon stocks – it applies the IPCC methods that are conservative;
2. The degradation emissions accounting method uses activity data linked with fuelwood collection based on Forest Department estimates. While the method applies the IPCC guidance, the volumes of fuelwood collected on an annual basis are very large, which lead to high annual emissions.
3. The deforestation rates and fuelwood collection data and estimates are old and could need revision;
4. The data used in the calculations is not taken from a regular forest inventory or robust land use change monitoring method.

Therefore, the two baselines for deforestation and forest degradation will be presented separately to analyze the emission reduction impact of the project.

Table 7.10 presents two deforestation baselines and a forest degradation baseline. The IPCC Good Practice Guidance was followed using default emission factors, which yield conservative estimates (Tier 1 accuracy). To improve the accuracy of these estimates, field data (Tier 3) was sourced from PFI (2018), which collected site specific annual deforestation rates, linked with annual fuelwood and logging estimates from the site. Therefore, the IPCC GPG estimates using default values for the deforestation and degradation baselines serve as a reference range to test the validity of the field data. As demonstrated in Table 7.10, the field data for the emission baseline are within the reference range using two different baseline methodologies with default values, and is therefore valid, applying the baseline emission projection for the site between 2018-2048 of 6,545,187 tCO₂e.

Table 7.10: Baseline Emission Estimates without REDD+ Project Intervention (2018-2048)

Baseline Measurement	Methodology	tCO₂e
Deforestation (Default Values)	Annual Change in Carbon Stocks in Living Biomass in Land (Forestland Converted to Crop Land from the IPCC GPG)	1,799,084
Deforestation (Field Data)	Average Annual Historical Deforestation Rate (0.7%) Applied to Forest Carbon Stock Changes using field measurement data from PFI	6,545,187
Degradation	Annual Carbon Loss Due to Fuelwood Gathering from IPCC GPG	8,181,559

The chapter outlined the multiple assumptions that the REDD+ project intervention would meet in order to reduce emissions from deforestation, as well as removals through afforestation/ reforestation. Table 7.11, summarizes the emission estimates from avoiding deforestation and implementing the afforestation/reforestation program scheduled for the site. Both REDD+ interventions have a positive effect on emissions reductions and removals through carbon sequestration so that over the REDD+ project intervention time period, an estimated 2,579,854 tCO₂e is expected to be sequestered or avoided emissions as a result of REDD+.

Table 7.11: Emission Estimates from REDD+ Project Intervention (2018-2048)

REDD+ Project Intervention	Methodology	tCO₂e
Avoided Deforestation	Emission values and annual average historical deforestation rate estimated by PFI (2018), assumption that after 5 years of REDD+ project implementation, deforestation halts to 0%	352,538
Afforestation/Reforestation	Removals values estimated by PFI (2018)	2,227,316
Total Estimated Emission Reductions and removals from REDD+	Sum of emission reductions and removals	2,579,854

Table 7.12 presents the overall summary calculations of the emissions at the project site starting with the Baseline emissions, subtracting the avoided emissions and enhancement of carbon stocks, to yield the net emissions from the Kaghan Valley project with the REDD+ intervention, an estimated 3,965,333 tCO₂e over the 30 year period.

Table 7.12: Net Emissions under the Project Scenario after the REDD+ Project Intervention in Kaghan Valley (2018-2048)

Accounting Item	tCO ₂ e
Baseline	6,545,187
Emissions reduced from REDD+ Project Intervention	2,579,854
Net Emissions under the Project Scenario (Baseline – REDD+ Project Intervention)	3,965,333

Note that the net emissions differs from the carbon values calculated in chapter 4 because the assumptions are slightly different regarding the time, deforestation and degradation emission baselines, and the effect that a REDD+ project intervention has on the overall deforestation rate.

7.4.2 Additionality

Since carbon emissions reductions of this PES project are proposed to be used as an offsets, therefore establishing the fact that these emissions reductions are real and additional to what would have been under the Business As Usual (BAU) is important. In Table 7.12 above we have given comparison of BAU and Project Scenarios. As per this table, there are total emissions of 6,545,187 tons of CO₂e in the BAU and 2,579,854 tons of CO₂e in the Project scenario. The Project scenario emission reductions come from both avoided deforestation (352,538 tons of CO₂e) and afforestation/reforestation (2,227,316 tCO₂e). It is clear that most of the emission reductions come from afforestation/reforestation of 11,816 ha of plantations under BTAP, which will sequester carbon from the atmosphere. The emission reductions coming from avoided deforestation are only 352,538 tons of CO₂e. These emissions reductions from avoided deforestation are based on very conservative deforestation rate of 0.7 percent per year, where as FAO and other studies put this figure to be 3.2 percent year. The use of this very conservative deforestation rate and most of emission reductions accruing from plantations of 11,816 ha which are already verified through Third Party Monitoring Reports imply that emission post implementation of the project are indeed lower than business as usual scenario. Therefore, additionality of the carbon offsets of this REDD+ PES project is established and is beyond doubt.

7.4.3 Leakages Estimation

The estimation of leakages or displacement of emissions has been done using the **AR Tool-15: A/R Methodological tool-Estimation of the increase in GHG emissions attributable to displacement of pre-project agricultural activities in A/R CDM project activity Version 02.0**. Following is the web link for this tool:

<https://cdm.unfccc.int/methodologies/ARmethodologies/tools/ar-am-tool-15-v2.0.pdf>

As per this tool, leakage emission is estimated under the following conditions:

- Leakage emission attributable to the displacement of agricultural activities due to implementation of an A/R CDM project activity is estimated as the decrease in carbon

stocks in the affected carbon pools of the land receiving the displaced activity.

Note 1: Displacement of an agricultural activity by itself does not result in leakage emission. Leakage emission occurs when the displacement leads to an increase in GHG emissions relative to the GHG emissions attributable to the activity as it exists within the project boundary.

Note 2: Increase in GHG emission occurring outside the project boundary attributable to the secondary effects of the A/R CDM project activity (e.g. changes in demand, supply or price of goods) is considered insignificant for the purpose of this tool and hence accounted as zero.

- *Leakage emission attributable to the displacement of grazing activities under the following conditions is considered insignificant and hence accounted as zero:*
 - (a) Animals are displaced to existing grazing land and the total number of animals in the receiving grazing land (displaced and existing) does not exceed the carrying capacity of the grazing land;*
 - (b) Animals are displaced to existing non-grazing grassland and the total number of animals displaced does not exceed the carrying capacity of the receiving grassland;*
 - (c) Animals are displaced to cropland that has been abandoned within the last five years;*
 - (d) Animals are displaced to forested lands, and no clearance of trees, or decrease in crown cover of trees and shrubs, occurs due to the displaced animals;*
 - (e) Animals are displaced to zero-grazing system.*

Given the geographical location of Kaghan valley and the prevailing socio-economic conditions and forest ownership and tenure systems in the area, the displacement of any of drivers of deforestation and forest degradation from Kaghan valley either Neelum valley of Azad Jammu and Kashmir or Siran valley of KP are extremely low indeed and can be safely assume to be negligible. Also, even when the diagnostic test is run to see if the project site meets the condition 10 it gets established that condition 10 is met indeed. The leakage emission attributable to the displacement of grazing activities meets the above conditions. In light of the above, leakage emission is considered insignificant and hence is taken to be zero.

7.4.4 Addressing Non-permanence Issues

Non-permanence related concerns under the project have been addressed in the following two ways. Firstly, sufficiently long project period of 30 years has been set to dispel with the risk of reversal of emissions. Secondly, it is proposed to make use of “risk buffer pools” under the project. Under this latter approach, a proportion—corresponding to the reversal risk—of the credits generated by the project is proposed to be contributed to the risk buffer pool as a kind of insurance mechanism. As a result of both these measures, the non-permanence issues seem to be sufficiently addressed.

7.5 Baseline for Non-Carbon Benefits

7.5.1 Watershed Protection

The Kaghan Valley area has historically received a good level of interest from watershed management projects and programs financed both by donors such as the

World Food Program, and by the Government of Pakistan. The first watershed management programs in the Kaghan Valley started in 1971-72 with support from the World Food Program and was implemented by the Forest department in collaboration with the Water and Power Development Authority (WAPDA). In 1977, the program was further expanded to cover four divisions east of Indus, and in 1984-85 to include Kohistan and Bunair districts to the west of Indus. The latter project was ended in June 1993. The current project is now a second phase of the World Food program and also supported by the German Development Bank, Kreditanstalt für Wiederaufbau (KfW). The Tarbela watershed management program has minimal impact on sediment control; as 29% of the live storage capacity has already been lost; considering an annual loss of 0.86% per annum (WAPDA, 1986; Ahmad, 1993; PWP, 1999).

Mohammad (1968) conducted a critical appraisal of the Kaghan Valley Watershed Management Project. The purpose of this project was to rehabilitate and stabilize an area of about 50 square km of badly eroded hill lands around Kunhar River and to preserve the vegetative cover. The project prohibited cultivation on steep slope lands, provided terracing of eroded and gullied land, accomplished planting of fruit, fodder and forest trees, and compensated owners for displacement if any occurred.

As a result of the soil and water conservation measures taken, the yield of agricultural crops improved. Grasses from treated areas showed promise and the inflow of sediment was reduced because of terracing and the channelization and stabilization of annual and perennial streams. Peach, plum, apricot, almond, and apple trees introduced in the project area have started bearing fruit, thereby increasing the income of farmers.

The above references show that when the watershed areas are well managed, the forests can provide protective benefits, however, once a program stops, the old practices revert and the ecosystem benefits are at risk of diminishing in value, if they are not managed.

7.5.2 Land stabilization and prevention of landslides and other erosion

Soil erosion is taking place at an alarming rate and is mainly due to deforestation in the northern areas of Pakistan. Every year approximately one billion tones of soils are being lost, silting up precious dams and dumped into the Arabian sea. The highest recorded rate of erosion is estimated to be 150-165 tons/hectare/year.

Water erosion is the widespread hazard in the region, caused mainly by excessive exposure of bare soil due to poorly managed logging operations, indiscriminate land clearance, cutting of vegetation for fuel and inadequate management of runoff. Water erosion shortens the life span of major reservoirs, irrigation system and reduces their efficiency

Water erosion is prominent on steep slopes. According to Anjum et al (2010) about 50% of the rainwater is lost as runoff. The Indus River carried the fifth largest load of sediment (4.49 t/h) in the world in 1990. If half of this water could be saved, it would amount 6 MAF of water, which is equal to 2/3 of the usable capacity of Tarbela Dam, enough to irrigate 4 million acres of land.

7.5.3 Biodiversity conservation

A comprehensive assessment of the biodiversity has not been attempted in Kaghan Valley. There has been significant investment in the past that constitutes an important contribution for biodiversity conservation. As a result of donor funded projects in the 1990s, extensive experience with social forestry with biodiversity conservation has been developed in Pakistan, particularly in Khyber Pakhtunkhwa Province. All these activities were local initiatives mainly driven by projects and NGOs and not by federal or regional policies. Since the end of the 1990s, however, security issues and disasters shifted the attention of donors and the Pakistan Government away from the development of innovative forest management. Most of the initiatives stalled when donor support decreased as no effective sustainable funding mechanisms had been established to implement management plans. Nevertheless, the Government of Pakistan continued to undertake a number of projects aimed at strengthening environmental management and biodiversity conservation of forests.

Also noteworthy is the fact that the Provinces on their own are taking several important steps such as investing in the implementation of provincial conservation strategies, district conservation strategies and integrated district development plans (e.g. Khyber Pakhtunkhwa, Balochistan, Gilgit-Baltistan, Sindh and Punjab). This is significant in light of the recent decentralization and greater autonomy given to the Provinces whereby Provincial authorities have the sole mandate for planning, conservation and management of land, forestry and other natural resources in their respective provinces.

The UNDP's recent project document for Sustainable Forest Management to Secure Multiple benefits in Pakistan's high conservation value forests (2016), presented the baseline situation where forest biodiversity conservation will continue to have a very low profile in Pakistan, with most of the budget allocations from government focusing on activities within the protected areas. Even within protected areas, the focus will continue to emphasize species protection activities, rather than conservation measures to mainstream biodiversity into sustainable forest management through effective habitat conservation and restoration. Reforestation programmes will continue to focus solely on increasing tree cover, without addressing biodiversity conservation as would be needed under a landscape-wide SFM strategy. Moreover they do not necessarily use indigenous trees, nor take into account the effect of tree monocultures on biodiversity.

Failure to address livestock husbandry, overgrazing by cattle and goats degrades valuable understory habitats, which are vital for biodiversity.

7.5.4 Ecotourism

IUCN (2003) reported that Northern areas are rich mix of natural and cultural heritage makes the region a particularly important tourist destination. However, tourism development has been hampered by the lack of policy guidelines, insufficient investment, inadequate tourism infrastructure, insufficient human resource development and weak marketing.

Security is of prime concern to every human being especially when he/she is none of an alien country. Although there was not any security problem in the study area but when the respondents were asked in the context of Northern areas, they thought it as main hindrance. Especially some of the fatal incidents that occurred in the northern areas, which was exaggerated and propagated in international and especially western media, had a negative effect on the flow of tourists to the area, see Israr et al (2009).

Tourism is a services-oriented industry, requiring skilled work force, there, the importance of human resource development and capacity building is obvious, lack of trained manpower results in poor quality of services offered to the tourists.

7.5.5 NTFPs

Currently there are no NTFP certified forests in Pakistan. NTFPs are collected by nomadic grazers and poorer resident households. Women and children are the main collectors. Contribution of pine nuts and morels to average household income varies from site to site. Some NTFP management and conservation measures are implemented by local communities, but not for the following:

- a) Leaves of *Taxus wallichiana* (CITES Appendix I) harvested illegally for fodder and as an NTFP

- b) Morel mushroom collection practices adversely impacts pheasant populations, including globally threatened species (e.g. White crested Kalij), through breakage and collection of pheasant eggs.

According to a recent UNDP review of the Mountains 2 Market project in Pakistan (2017), all Valleys have Valley Conservation Plans and Valley Conservation Funds. Some have community-based trophy hunting enterprises, however, there is no community-based certified NTFP production. Some biodiversity conservation measures are being implemented under Village and Valley Conservation Plans.

There is considerable capacity, especially among NGOs, (e.g. RSPN, SRSP, AKRSP) for social mobilization and establishment of different types of village organizations,

including, to a lesser extent, enterprise development. At the national level, there is some capacity for organic certification of agricultural /horticultural products. Little capacity among NGOs or key government agencies / departments for promoting biodiversity conservation through certified production of NTFP by local communities or for delivering extension services in an integrated rather than sectoral manner.

No agency in Pakistan has experience or training to verify whether NTFP production complies with agreed certification standards.

7.5.6 Free-grazing fodder for livestock

Qasim et al (2013) showed that the cattle population in the Kaghan valley has significantly increased compared to the past. Uncontrolled grazing particularly in upper parts of the valley where, cattle population is highest, livestock eat regenerating seedlings and reduce chances of natural regeneration of forest because of several reasons:

1. Open grazing with cattle are free to graze anywhere in winter;
2. Decrease in fodder crops as farmers preferred to cultivate vegetables
3. Decrease in grasses from forests due to less forest cover.

The Kaghan valley suffers from land degradation and erosion predominantly due to deforestation and livestock eat regenerating seedlings through browsing and trampling. The cycle is difficult to break because the livestock grazing reduces the chances of natural forest regeneration.

7.5.7 Medicinal plant utilization value

Many rural inhabitants use a variety of NTFPs for medicinal purposes. A study by Hocking (1958) reported that 84% of Pakistani population is dependent on traditional medicines for their medicinal needs. The local forest dwellers of the area have knowledge about medicinal use of the local flora. In early 90's, 584 plant species were reported from this valley (Khan,1990). Surveys from forest and rural dwellers in the Kaghan valley mention that currently medicinal plants are over harvested and regeneration of most of the medicinal plants is almost negligible.

CHAPTER-8

8 MEASUREMENT, REPORTING AND VERIFICATION

Measurement, Reporting and Verification (MRV) system is one of the key international requirements for accessing result based payments under REDD+ or other carbon trading schemes. Payments for Environmental Services including carbon and non-carbon services are linked to performance or results agreed by the sellers. Therefore there is a need devise a transparent and effective mechanism to measure, monitor and verify the results obtained from a REDD+PES Scheme. Different approaches and methods have been used to establish benchmarks for measurement of different ecosystem services and monitoring changes in these services over time.

8.1 Measurement and Monitoring of Carbon Stocks

For assessment of forest carbon stocks in Kaghan Valley, a comprehensive terrestrial carbon inventory was conducted by PFI under Sustainable Forest Management Project during 2017. The results of the same inventory were used to establish baselines of carbon stocks in the moist temperate forests of Kaghan which is described in detail in the following sections.

8.1.1 Determination of Forest Cover

According to the Working Plans Documents of Kaghan Forest Division, the total forest area of Kaghan Valley is 77,725 ha. These include both stocked and blank area. Thus, it is clear that the actual forest cover is less than the reported forest area. Forest cover was determined through segmentation or Object Based Image Analysis (OBIA) of the spot-5 image of 2012. The definition used for forest mapping included “A *minimum area of land of 0.5 ha with tree crown cover of more than 10% comprising trees with the potential to reach a minimum height of 2 meters*”.

This exercise resulted in the forest cover of Kaghan valley as 51,829 ha meaning that the over all canopy cover is 66.68%. Forest area was further classified into Reserved Forest, Guzara Forest and Undemarcated Forest. Compartments within Reserve and Guzara Forests were also mapped. The boundaries of these compartments were digitized from the original paper maps which were scanned and geo-referenced as per actual ground coordinates. The area detail is given in the following Table 8.1.

Table 8. 1: Area Estimates of Kaghan's Forests

Forest Tenure Category	Total area(ha)	Actual forest cover (ha)	Blank area inside forest (ha)
Reserved Forest	19,525	16,900	2,625
Guzara Forest	37,137	21,353	15,784
Undemarcated forest	21,063	13,576	7,487
Total	77,725	51,829	25,896

8.1.2 Sampling Design

Systematic random sampling technique was used for collecting data in the field. This sampling design is efficient in reducing the possibility of bias, determining a valid sampling error and ensuring uniform coverage of the target area. Sample plots were laid out on a geo-referenced map using a grid of 700 x700 m. The coordinates of the centers of the sample plots were noted from the maps and uploaded onto GPS and navigated in the field accordingly. Beside forest compartment maps, GT sheets were also used to locate the actual position of the sampling units in the field. The plots were permanently marked on the ground by inserting iron rods in the centre of the sample plots for verification and future monitoring.

8.1.3 Field Measurements

As the inventory was aimed at estimating biomass and carbon stock in different carbon pools of the forest ecosystem, nested circular plot approach was applied for collecting the data. Circular plot shape was chosen for the inventory due to its easiness in establishment particularly in sloping terrains and to reduce the problem of edge effect associated with rectangular plots. As illustrated in the Figure, three subplots were established within each plot for specific purposes. The outermost circular plot with radius 17.84m was used for measurement of trees with DBH more than 5 cm. The second circular plot with radius 5.64 m was used for measurement of shrubs and sapling; and the innermost plot with radius of 0.56 m was used for measurement of leaf, litter and grasses as well as soil.

The sample plots were navigated in the field with the help of GPS and map. After identifying the exact location of the plot, the plot center was established by marking on a tree or a stone. After establishing the plot center, the boundary of the plot was marked by encircling the plot with a rope and marking on the trees on the border. Photographs of the sample plots were also taken from different angles.

The following general information were recorded for every sample plot.

- Plot Number :
- Date
- Recorder Name
- Location: Name of Forest Range, Forest Block, Compartment, Sub-compartment
- Landuse Class:
- GPS Co-ordinates: Latitude, Longitude of the plot center and GPS precision
- Altitude
- Aspect
- Slope
- Direction to the plot location
- Crown cover
- Stand composition
- Ecological condition and land use: intact, degraded or deforested;
- Topographic position: top of ridge, middle, valley bottom
- Disturbance evidence:

- Fire damage: not evident, light, moderate or severe
- Timber harvest: not evident, low (<30% basal area), medium (30–70%), or high (>70%).
- Other disease or disturbance: not evident, light, moderate or severe. Also describe the other disease or disturbance.

8.1.4 Measurement of Aboveground Biomass

The wider circular plot of 17.84 m radius (0.1 ha) was used for measuring the attributes of all trees with Diameter at Breast Height (DBH) \geq 5cm. The plots were laid out with the help of Laser Based Vertex Hypsometer (VL5) which automatically corrects slope of the radius. DBH was measured with dia tape at 1.37 m above ground on uphill side. Heights of randomly selected trees in this circular plot were recorded through Vertex Hypsometer. Species name, diameter at base, diameter at breast height (DBH) and tree height were recorded on the inventory form. Diameter was measured with diameter tape and height was recorded with the help of Haglof Vertex. Trees on the border of the sample plot were included if more than 50% of their basal area was within the plot and excluded if less than 50% of their basal area was outside the plot. For measurement of border trees every second tree was included in the measurement. AGBT was calculated through locally developed allometric equations for major tree species. However for minor tree species the equations available in literature (e.g. Chave et al., 2005) were used. The allometric equations used for biomass estimation are given in the Table 8.2.

Table 8.2: Allometric Equations used for biomass estimation

Species	Allometric equation	Basic Wood Density/Specific Gravity	Biomass Expansion Factor
General (Coniferous species)	$M = 0.1645(pD^2H)^{0.8586}$	0.450	1.30
<i>Cedrus deodara</i> (Deodar)	$M = 0.1779(D^2H)^{0.8103}$	0.460	1.37
<i>Pinus wallichiana</i> (Kail)	$M = 0.0631(D^2H)^{0.8798}$	0.430	1.24
<i>Abies pindrow</i> (Fir)	$M = 0.0954(D^2H)^{0.8114}$	0.420	1.30
<i>Picea smithiana</i> (Spruce)	$M = 0.0843(D^2H)^{0.8472}$	0.430	1.19
<i>Quercus ilex</i> (Oak)	$M = 0.8277(D^2H)^{0.6655}$	0.890	1.67
Other Species (not listed above)	$M = 0.112(pD^2H)^{0.916}$		

(Source: Ali, 2015)

Mean carbon stock in the aboveground biomass pool in Reserved Forest, Guzara Forest and Undemarcated Forest were estimated at 78.58 t/ha, 49.65 t/ha and 49.65 t/ha respectively.



Figure 8.1 A view of Forest Carbon Inventory and Destructive Sampling in Kaghan

8.1.5 Above-ground Shrub Biomass (AGSB)

The second circular plot with radius 5.64 m (100 m² area) was used for measuring biomass of shrubs and saplings. All shrubs of the plot were cut and weighed on the spot. Representative samples were collected, put in bags and their fresh weight was recorded. The samples were taken to PFI for further analysis in the Lab. The samples were dried in the oven at 105°C till constant weight using a digital balance. Moisture content was determined by the following formula:

$$MC\% = (\text{Fresh Weight of sample} - \text{Dry Weight of sample}) / \text{Fresh weight of sample} \times 100$$

The oven-dried biomass was converted into carbon stock by multiplying with 0.47 as per IPCC Guidelines.

8.1.6 Belowground Biomass

Belowground biomass refers to the biomass present in the roots of plants in the ecosystem below the soil surface. Belowground biomass was estimated using default values from IPCC Guidelines (2006). In all pools biomass was converted to carbon stock by multiplying with 0.47 as suggested by IPCC (IPCC, 2006). Below ground biomass carbon was estimated at 62.55 t/ha.

8.1.7 Litter

The litter layer is defined as the recently fallen non-woody, dead, organic material on the soil surface. Typically, it consists of dead leaves, flowers, fruits, seeds and bark fragments. Third circular plot with radius 0.56 m (1 m² area) was used for measuring all leaf, litter, herbs and grasses which were destructively sampled. The material was weighed on the spot and a well mixed subsample of 100 g was collected for drying in the oven to determine the ratio of oven-dry to fresh biomass.



Figure 8.2: Litter collection in the field

Carbon stock in leaf/litter and grass was found to be 4 t/ha in reserved forests and 3 t/ha in Guzara Forests and Undemarcated Forests.

8.1.8 Dead Wood

Dead and downed wood is also an component of aboveground biomass in coniferous forests. Standing dead trees were measured in 17.84 m plot in the same way as live tree except that their decomposition classes were noted. The specific decomposition classes for standing dead trees are as follows:

- 1) Status 1 trees are recently dead and maintain many smaller branches and twigs.
- 2) Status 2 trees have lost small branches and twigs, and a portion of large branches.
- 3) Decay status 3 applies to standing 'snags', where most branches have been lost and only the main stem remains. The main stem is often broken.

Fallen dead wood lying on the ground is measured in the 5.64 m radius plot. There are two methods for measurement of downed dead wood. Directly weigh the pieces of dead wood and take samples for drying in the oven. Alternately measure the volume of the dead wood by measuring the diameter at midpoint and length of the piece of the wood. Fallen branches and stems should be divided into sections of 2 meters and the exact length and diameter at the middle of each section should be measured.

It was found during the inventory in the moist temperate forests of Kaghan that dead wood is not a significant pool in the ecosystem as it frequently collected by the local people for firewood.

8.1.9 Soil Carbon

Soil organic carbon is an important pool of carbon in the forest ecosystem. This pool is also affected by landuse change and management activities. For measuring soil carbon, samples were collected from 0-15 cm and 16-30 cm for determining bulk density and soil carbon concentration (Subedi et al., 2010). The samples were oven dried in the laboratory at 105C° till constant weight. Bulk density was determined through measuring the volume of the soil pit and recording dry weight of the soil sample. Subsamples of 50 g were taken for soil carbon determination. Soil samples were analyzed for determining soil organic carbon through loss on ignition method. This method involves the burning of organic matter by heating the sample at 440°C for 8 hours in the Muffle Furnace.

(Schumacher, 2002; Rehman et al., 2011). Soil organic carbon was calculated by the equation given by IPCC (2003) as follows:

$$\text{SOC} = \rho * d * C * 10$$

Where ρ is the bulk density of the soil; d is depth of soil sample; and C is carbon content in the sample.

Table 8.3: Estimates of Carbon Stocks in the Moist Temperate Forests of Kaghan

Forest Tenure Category	Area (ha)	AGC (t/ha)	BGC (t/ha)	Litter (t/ha)	Soil C (t/ha)	Total C t/ha	Total C (ton)
Reserve Forest	16,900	78.58	22.22	4.02	62.55	167.37	2,828,501
Guzara Forest	21,353	49.65	13.83	3	62.55	129.02	2,755,118
Undemarcated privately owned	13,576	49.65	13.83	3	62.55	129.02	1,751,673
Total	51,829						7,335,292

8.1.10 Carbon Sequestration Rate

Mean carbon sequestration rate in moist temperate forest of Kaghan was determined through the growth rate of biomass provided by IPCC, 2006. The growth rate provided by IPCC was also cross checked with the growth rate reported by the Working Plans of Kaghan Forest prepared by Forest Department.

Table 8.4: Carbon Sequestration potential in Kaghan

Forest Tenure Category	Area in ha	C Sequestration Rate (tCO ₂ /ha/year)	Total C sequestration (tCO ₂ /year)
Reserve Forest	16,900	5	84,500
Guzara Forest	21,353	5	106,765
Undemarcated privately owned	13,576	5	67,880
Total	51,829		259,145

Table 8.5: Potential Carbon Sequestration by Plantations raised under BTAP

Area Planted (ha)	C sequestration rate (tCO ₂ /ha/year)	Total C sequestration (tonnes)
11,816	6.5	76,804

Total Carbon Sequestration in Kaghan (from existing forest+plantations raised under Billion Trees Afforestation Project):

$$259,145 + 76,804 = 335,949 \text{ tons CO}_2$$

8.2 Measurement of Non-Carbon Ecosystem Services

Unlike carbon sequestration, the non-carbon ecosystem services have no specific methodologies for measurement and monitoring. However, for measurement and monitoring of non-carbon environmental services, different indicators and proxies will be used to measure the performance of PES. For example in case of biodiversity conservation, key species will be identified as indicators of biodiversity status. For watershed protection and water regulation, sediment loads in the river and streams will be used to judge the performance of PES Scheme. Besides, change in extent of forest area itself is a good indicator for measurement of PES performance. If forest cover is increased with PES Scheme, then it is understood that environmental services are getting improved.

The design of MRV systems for PES and conservation incentive programs, including the use of particular indicators and technologies, has been largely directed by the criteria used to assess compliance and disburse compensation.

MRV system will use a combination of remote-sensing technology (high- and low-resolution satellite images and aerial photography) combined with ground inventories aimed at collecting data on different indicators. The monitoring indicators for non-carbon ecosystem services of Mangroves forests are listed in the Table 8.2.

Table 8.6: Monitoring Indicators for Non-Carbon Ecosystem Services

Type of Ecosystem Service	Indicator	Measurement and Monitoring Methods
Biodiversity conservation	Abundance and diversity of key species of recreational interest	Field Surveys Focus Group Discussion Tourists Surveys
Watershed Protection	Sediment load in river and streams Landslide events	Flume based measurements GIS based assessment of landslides Monitoring plots
Ecotourism	Number of tourists visiting the area Abundance and diversity of key species of recreational interest	Tourism Surveys Official records
NTFPs	Plant Species diversity Density by species Size-class structure by Species Biomass of herbs by Species Growth and yield of selected NTFP species	Resource Inventory Transact walk Monitoring Plots

8.2.1 Monitoring of Biodiversity

Biodiversity is a very broad and comprehensive concept that encompasses both flora and fauna and variations in all life forms from genes to kingdoms. Therefore, there is no single agreed methodology that can be used for measurement and monitoring of biodiversity. Different components of biodiversity can be measured by measuring different variables and proxies. However, any inventory and monitoring scheme at the community level will need to involve local communities multiple government agencies (Forests, Wildlife, Fisheries, Agriculture and Livestock). Forest Department has a key leadership role in this process, and any biodiversity assessment framework developed is to involve and consider agencies with different types of conservation responsibilities.

Biodiversity benchmarks will be established at the following three levels with specific indicators for measurement and monitoring of biodiversity:

Ecosystem level diversity

- Historical trends in land cover
- Area of forest land by forest type
- Extent of forest land by forest type and age class or successional stage
- Extent of areas by forest type in protected area categories as defined by IUCN
- Fragmentation of forest types

Species diversity

- Number of forest-dependent species
- Status of threatened and endangered species

Genetic diversity

- Number of forest-dependent species that occupy a small portion of their former range
- Population trends in wildlife species.

8.2.2 Watershed Protection

Soil erosion, landslides and land degradation are extremely important issues in Pakistan and therefore need to be factored into watershed related PES schemes. Version 2 of Revised Universal Soil Loss Equation (RUSLE-2), an empirically based model will be used for measurement and monitoring of erosion and landslides. The general Revised Universal Soil Loss Equation is as follows:

$$A = R \times K \times LS \times C \times P$$

Where:

A is average annual soil loss (tons per hectare per year;

R is the Rainfall and Runoff erosivity index (in MJ mm/ha/ hr/yr);

K is the soil Erodibility factor (in tons/MJ/mm);

LS is the Slope and Length of Slope Factor;

C is the Cropping Management Factor;

P is the supporting conservation practice factor.

From the above equation, it is clear that climate, soil, topography, and land use are the four major factors which determine rates of soil erosion and landslides. In the RUSLE-2 equation, erosion and landslides are directly related to the forces applied to the soil by erosive agents in relation to the soil's resisting forces regardless of the land use.

RUSLE-2 model can be applied to any type of land where soil erosion is occurring and land stabilization is important for ecosystem conservation. It can be used in the case of deforested or degraded forest lands, range lands, croplands, wetlands, abandoned mining sites, construction sites, reclaimed land, landfills, and any land where mineral soil is exposed to the direct forces of water erosion and surface runoff generated by heavy intensity rainfall events.

8.2.3 Ecotourism

Tourism is an untapped resource in Pakistan. Given the wide variety of touristic spots available in the country, the potential to develop this as a source of livelihood for the local communities and earning of foreign exchange for the country are vast. The key point, however, is to promote pro-poor and pro-environment eco-tourism that does not cause any cultural, social, economic or environmental problems.

The following Proposed eco-tourism related indicators will be used for assessing the performance of ecotourism in PES scheme.

Table 8.7: Indicators for measurement and monitoring of ecotourism

Category of Indicator	Indicator
<i>Socio-Cultural Scope Indicators</i>	
Land Property	No. of tourism facilities of which property is owned by and title held by local people
Access Roads	No. of kilometers of paved roads
Trainings	No. of trainings conducted
	Types of trainings conducted
	No. of people trained
Loss of local identity and values	No. of local festivals held
	No. of complaints by local people about loss of local identity and values
Adhesion of the community to	No. of community people who adhere to tourism as an

the tourism	economic activity
<i>Economic Scope Indicators</i>	
Economic activities	No. of persons or families that carry out tourism
Visitation	No. of visitors monthly/annually
Travel agencies	No. of tour operators working in the industry
	No. of trips sold
	Types of activities offered
Accommodation	No. and square feet of properties currently existing
	No. and square feet of properties being developed annually
Gastronomy	No. of restaurants and kiosks opened
	No. of dishes including tradition food
	Sale levels measured in Pakistani Rupees
Household income	Increased household income measured in Pakistani Rupees
	Percentage of household income from tourism
Basic resources	No. of basic resources and facilities that are available
	Quality of available resources and facilities
Transportation	No. of modes of transport available
	Quality of transport facilities
<i>Environmental Scope Indicators</i>	
Solid waste generation	Kilograms of garbage generated per month in peak season
Energy used	Megawatts of energy used in high season
Water supply	Liters of water used per month in high season
	No. of water bodies getting contaminated
Biodiversity Impacts	No. of plant species getting affected
	No. of animal species getting affected
	Sighting species with conservation problems
Landscape/Seascape Impacts	No. of landscape/seascape impacts
	Type of landscape/seascape impacts

8.2.4 Non-Timber Forest Products (NTFPs)

Non-timber forest products (NTFPs) constitute an important resource source of raw material for different pharmaceutical, herbal and culinary industries and as a source of livelihood for the local communities. These include medicinal and aromatic plants, mushrooms, honey, wild fruits, nuts, etc. Many rural people earn their livelihood or add to their income by collection and sale of these NTFPs.

The diversity, quality, and availability of many species of NTFPs in Pakistan are decreasing. This situation has serious consequences for the industries using these products, people dependent on these for their livelihoods or livelihoods supplementation and for the biodiversity of the forest and grassland ecosystems in the valley.

The PES project therefore proposes to take various measures so as to reverse this negative trend by working and interacting with the collectors, producers, traders, processors, manufacturers as well as with policy makers, implementers, promoters and

researchers of NTFPs in the valley so as to ensure their protection and sustainable management.

The following indicators (condition indicators, pressure indicators, and human response indicators) will be used for measurement and monitoring of NTFPs.

Table 8.8: Conditions Indicators used for measurement of NTFPs

Condition Indicator	Verifiers	Unit of Measurement	Methods
Diversity of plants species	No. of young/mature plants	No. of species	Field surveys, sample plots, transect walks
Density by species	No. of young/mature plants	Number per ha	Resource inventory
Size-class structure by species	No. of young/mature plants	Number per ha	Resource inventory
Biomass of herbs by species	Utilizable biomass	Kg per ha	Monitoring of Sample plots
Growth and yield of selected NTFP species	Tree diameter growth	mm per year	Monitoring of Sample plots
	Shrub height growth	cm per year	Monitoring of Sample plots
	Utilizable biomass growth	Kg/ha/year	Monitoring of Sample plots
	Product yield	Kg/ha/year	Monitoring of Sample plots
NTFP Regeneration by species	Young growth	4 point ordinal scale	Resource inventory
Seed production by species	Occurrence of seed	Qualitative	Focus group discussions, transect walk
		Quantitative	Experimental plot (mean kg/ha; % germination)

Table 8.9: Pressure Indicators Relevant for NTFPs Measurement

Pressure Indicator	Verifiers	Unit of Measurement	Methods
Biomass Removal	Timber	Volume/ha/year	Records
	Fuelwood	Volume/ha/year	Records
	Poles and Posts	Volume/ha/year	Records
	NTFP Species	Weight/ha/yea	NTFP harvester & buyer records
Grazing	Area	Ha.	Records
	Livestock Units	No./ha/year	Records, Transect walks
	Period	Months per year	Focus Group Discussions
Land Conversion	Forest to Crop Land	Ha./year	Records
	Forest to Settlement	Ha./year	Records
	Forest to Roads	Ha./year	Records
	Forest to Other Non-forest land use	Ha./year	Records
NTFP Harvesting Practices	Season	Degree of Appropriateness	Focus Group Discussions
	Tools Used	Degree of Appropriateness	Focus Group Discussions

	Methods/Techniques	Degree of Appropriateness	Focus Group Discussions
Fire	Area	M ² /ha/year	Records, Transect Walks
	Frequency	No./year	Records, Transect Walks
	Type	Crown, ground, surface	Records, Transect Walks
	Cause	Natural, Prescribed, Incidental	Focus Group Discussions
Socio-economic Pressures	Price	Rs./unit	Records, Producers Surveys, Market Surveys, Focus Group Discussions
	Unemployment	Rate	Economic Surveys
	Out-migration	No. young people continuing extractive activities	Interviews, Focus Group Discussions

Table 8.10: Human Response Indicators Relevant for NTFPs Measurement

Human Response Indicator	Verifiers	Unit of Measurement	Methods
Promotion of Natural Regeneration	Timber	Ha/year reseeded, planted or managed for natural regeneration	Records
	NTFP species	Describe various techniques	Interviews, Focus groups
Conflict	Stakeholders	List each group	Interviews Focus groups Ethnographic fieldwork
	Frequency	No. per year	
	Issue	Describe conflict	
	Resolution	Facilitation, negotiation, mediation, arbitration, litigation, coercion	
Perceptions	Of nature	Describe, categorize	Ethnographic fieldwork Participant observation Interviews Focus groups
	Of value of NTFPs to livelihood, quality of life		
	Of land management		
	Of conservation		
	Of I & M efforts		
	Of regulations		
Resource Management Regulations	Forest Department NTFP related regulations	Describe, categorize	Records Interviews or focus groups discussion
Law Enforcement	Frequency	No. of Incidences/year	Law enforcement records.
	Types	Describe Incidences	Law enforcement records Interviews

CHAPTER-9

9 LAND AND FOREST TENURE ISSUES IN PES SCHEME

9.1 Existing Forest Tenure System in Kaghan Valley of Pakistan

Following is the distribution of Guzara and Reserve Forests in the valley as per three Forest Management Plans for Kaghan Forests prepared by KP Forest Department (Revised Working Plan for Lower Kaghan Guzara Forests 2005-2006 to 2014-2015 and Revised Working Plan for Upper Kaghan Guzara Forests 2005-2006 to 2014-2015 by Ali Gauher Khan, and Revised Working Plan for the Kaghan Reserve Forests of Mansehra District 1985-86 to 2004-2005 by Muhammad Iqbal Swati):

Table 9. 1: Reported Forest Area Distribution as per Working Plans of Kaghan Forests

S.No.	Planning Unit	Area in ha	Part of the Valley	Legal Category of Forest
	Guzara Forests			
1.	Garhi Habibullah	2,626	Lower	Guzara Forest
2.	Balakot	1,921	Lower	Guzara Forest
3.	Sharan	3,788	Lower	Guzara Forest
4.	Shogran	4,341	Lower	Guzara Forest
5.	Pottendes	4,229	Upper	Guzara Forest
6.	Manur	6,802	Upper	Guzara Forest
7.	Kaghan	7,334	Upper	Guzara Forest
8.	Naran	3,454	Upper	Guzara Forest
9.	Batta Kundi	3,215	Upper	Guzara Forest
	Sub-Total Guzara Forests	37,710		Guzara Forest
	Reserve Forests			
10.	Lachi Khan (Garhi Habibullah)	476		Reserve Forest
11.	Kanshian (Garhi Habibullah)	529	Lower	Reserve Forest
12.	Mukhair (Balakot)	1035	Lower	Reserve Forest
13.	Manna (Balakot)	512	Lower	Reserve Forest
14.	Malkandi (Balakot)	1923	Lower	Reserve Forest
15.	Chittapar (Balakot)	1022	Lower	Reserve Forest
16.	Manshi (Balakot)	2321	Lower	Reserve Forest
17.	Nagan (Balakot)	1,637	Lower	Reserve Forest
18.	Nuri (Jared)	3,403	Upper	Reserve Forest
19.	Kamalban	2,112	Upper	Reserve Forest
20.	Manur	584	Upper	Reserve Forest
21.	Dewanbela	342	Upper	Reserve Forest
22.	Shorthum	272	Upper	Reserve Forest
23.	Kanari	241	Upper	Reserve Forest
24.	Karkana	1,453	Upper	Reserve Forest
25.	Andherabela	392	Upper	Reserve Forest
26.	Bhimbal	105	Upper	Reserve Forest
27.	Chittakatha	203	Upper	Reserve Forest
28.	Battal	352	Upper	Reserve Forest
29.	Naran	877	Upper	Reserve Forest
	Sub-Total Reserve Forests	19,791		Reserve Forest
	Total Forest Area	57,501		

In addition to the above reported area, there are also Undemarcated Forest lands as well as forest plantations raised under the BTAP. These given below:

Table 9.2: Undemarcated Forest Lands and BTAP Plantations

S.No.	Forest Type	Actual Forest Area in ha.	Blank Area in ha.	Total Area in ha.
1.	Undemarcated Forests	13,576	7,487	21,063
2.	BTAP Plantations	11,816		11,816
	Total	25,392	7,487	32,879

9.2 Tenure and Property Rights Issues in PES Design

Land and resource tenure rights constitute critical issues that need to be taken into account while designing and implementing PES schemes. Clear and unambiguous tenure systems facilitate proper and transparent allocation and sharing of benefits and determining non-compliance and non-permanence liabilities in the context of PES schemes. This is so because tenure systems influence who becomes and needs to be involved in the PES scheme and that land tenure and PES project related rights and liabilities may be linked or divorced with implications for the implementation of project in an efficient, effective and equitable manner.

Tenure for the purposes of this PES scheme can be defined as the right, whether defined in customary or statutory terms, that determines who can hold and use land (including forests and other landscapes), water and resources (forests, fisheries, wildlife, grasses, non-timber forest products, etc.), for how long, and under what conditions. Tenure encompasses both property rights (understood as social relationships that contain enforceable claims to rights in something), and informal relations governing access to, use of and exclusion from resources, and involving potentially multiple authorities and mechanisms. This distinction between formally sanctionable property rights and informal relations around natural resources management is important because, on the one hand, it recognizes that property is only property if socially legitimate institutions sanction it, and politico-legal institutions are only effectively legitimized if their interpretation of social norms is heeded. On the other hand, it underscores the fact other forms of accessing and benefiting from natural resources transcend formal property rights and may rely on other forms of authority and legitimacy (Corbera et. al., 2011).

Property rights embrace differentiated “bundle of rights” (i.e., rights of access, withdrawal, usufruct, control, management and decision making, exclusion, and alienation) that are mutable over time. Access rights concern the right to enter a defined physical property while withdrawal rights allow users to obtain the “products” of a resources (e.g., to collect fodder, collect fuelwood, appropriate water); users with management rights have the right to establish rules and sanction under which the

resources can be managed; users with exclusion rights can determine who has access and withdrawal rights; and, finally, users with alienation rights have the right to transfer their acquired rights to other parties. This differentiation allows identifying five different types of property rights holders depending on the number of claims they can make over a particular resource:

- (1) the authorized entrant holding access rights only, e.g., the right to enter and walk through a forest;
- (2) the authorized user with both access and withdrawal rights, e.g., the rights to cut grasses in or collect mushrooms and other NTFPs in a forest;
- (3) the claimant, with access, withdrawal and management rights, e.g., the right to make decisions about who can have access to, withdraw from or be involved in the management of forest and their resources;
- (4) the proprietor, with all but alienation rights, e.g., the right to prevent others from accessing, withdrawing from and participating in management of forests; and
- (5) the owner, who holds all “bundles of rights”, e.g., the right to exercise all the above rights and also have the alienation right of a forest (the right to rent out, lease out, sell out or otherwise dispose of a forest).

Tenure systems can in turn be grouped in four categories depending on the nature of underlying property rights (Corbera et.al., 2011):

Open access systems are those in which access to natural resources is unregulated and open to everyone (such as atmosphere, north pole, south pole and open oceans), and where it is difficult, costly, or almost impossible to establish rules of exclusion and regulations across resources users.

State and public property implies that the state is only institution with the legitimacy to vest access rights and management quotas over the resource to other users. Usually, the general public has equal rights to the resources and the state has coercive powers of enforcement. The government can establish regulations for sustainable resource use, but such regulations can be extremely costly to monitor in some cases where the resources expands over vast chunks of areas and governments have limited resources. As a result, government enforcement of regulations becomes ineffective. In fact, quite often, public property is often unsuccessful in ensuring exclusion, and informal access to resources prevails. In many other instances, however, public property can de facto be used by individuals, organizations and/or communities who may hold long-term access and withdrawal rights over specific resources like open range grazing in state owned forests-Reserve Forests and Protected Forests.

Private property refers to situation in which individuals and families hold full rights over land and rely on state-based political and legal institutions to recognize and enforce their property claims. Private property holders have the right to exclude others from resources but legitimacy of such rights would determine the costs of exclusion. Furthermore, property, particularly in forests, is often subject to regulations that in practice constrain how owners can manage their resources. This is the case in Guzara Forests in Kaghan valley and in the rest of Pakistan as well.

Common property regimes bring together a group of resource users who share collective ownership over a territory, or over a single environmental resource. These users share rights of access to and management of natural resources and rely on both community and state-based authorities to assert their claims, establish management rules and exclude outsiders, while the state retains alienation rights. The example of such common property regimes are the Village Common Forests. Many traditional and indigenous rural communities manage their resources in common but their “bundle of rights” over such resources can be socially differentiated and regulated by customary practices and community institutions. Members of a common property regime can also hold full or partial private property rights over forests and grazing lands, which in some cases may be transferable to third parties, depending on the legal and customary provisions.

The tenure and property systems described above constitute somewhat rigid categories, and many situations in practice tend to combine different “bundle of rights” across different tenure systems that co-exist in specific contexts. Forest tenure regimes, in particular, are often characterized by multiple claims on access rights, and competing relations about how to manage resources and who to exclude. For example, Reserve Forests in Kaghan valley, which are legally notified as State owned Forests, there are local groups or communities who have been using the forest and forest land, and different forest products in these forest areas as commons, despite the fact that they have no legal right of withdrawal of the resources. But the use of these resources by the groups of people and adjoining communities has been happening historically and the resources are essential to cultural identity and well-being of the concerned communities. They are a source of food and income, an important safety net, and a matter of human rights – for pastoral peoples and local communities including Gujjars, migrants, landless people and the most marginalized and vulnerable.

Similarly, Guzara Forests, although private property of forest owners in the valley, are being used by the Gujjars and pastoralists under de facto tenure regime, notwithstanding the fact that they have no de jure rights of access, use and withdrawal of resources in these forests.

Thus land and forest resource tenure issues are important in the context of PES scheme implementation in WHTF in Kaghan valley of Pakistan. For example, as stated above, although Reserve Forests have been notified as such with ownership rights vested in the provincial government, and local communities have neither land and resource ownership rights nor access rights as per in-vogue forest law. Local communities, however, make de-facto use of these resources for collection of dead and fallen wood, cutting of branches for fodder collection, and open range grazing of livestock in these forests. They also collect various non-timber forest products in these forests. Local pastoral and Gujjar communities who reside near these forests depend on and make use of their various ecosystem services.

Thus natural resources in Kaghan valley (land and forests) are subject to a variety of multiple, flexible bundles of tenure rights, which may be held permanently or temporarily by different rights holders. They may have fixed or fluid boundaries, which may be periodically renegotiated, modified, rescinded and agreed upon by the community. These resources will remain as a viable source of livelihoods only if they are governed responsibly. Secure tenure rights to these resources can provide incentives for the environmentally sustainable use of forests, NTFPs, biodiversity, and other natural resources and for responsible investments in the productivity of the resource systems.

This suggests that the forests tenure systems in Kaghan valley of Pakistan are shaped by history, geography, and the political context and that their configuration responds to the existence of customary claims, the way tenure reforms are implemented, and governments' policies and discourses on forest conservation and use in the area.

9.3 Tenure Effect on PES Rights, Liabilities and Benefits Sharing

Many ecosystem services, including climate regulation and water quality improvement, are public goods available to everyone without charge. Therefore, private landowners are often uncompensated for their contribution to ecosystem service production, and under provision of these services is a likely result. Incentive payments equal to the value of ecosystem services provide a potential solution to the under provision of ecosystem services. This however requires securing rights of the providers to ecosystem services.

Therefore, forest and other resources tenure issues have important effects on ecosystem services rights, PES liabilities and PES benefit sharing. They are therefore critical for PES schemes design for the following reasons:

- The essence of PES scheme is to reward those who maintain or enhance the forests and their ecosystem services, and compensate them for lost opportunities; this includes direct payment schemes, which require not only clear rights to land but also the ability to demonstrate exclusion rights, which includes the right and means to prevent third parties from changing land cover.

- The right holders to ecosystem services and their providers must be held accountable in the event that they fail to fulfill their obligation – the ‘conditional’ part of conditional incentives.
- When tenure is unclear or not formalized, forest people may be excluded from forests and/or from participation in PES scheme benefits; also, if PES increases the value of standing forests, it may lead to a resource rush that places the rights of current residents at risk.
- PES scheme will inevitably prohibit certain uses of forest resources; this must be done with due process and compensation, and without increased hardship, for poor forest peoples (Sunderlin et al., 2017).

Given the fact that tenure clarity and security are important requirement for PES scheme on account of the above reasons, significant attention will have to be given to resolving tenure conflict and clarifying tenure rights in PES schemes design and implementation strategies. In practice, however, research suggests that progress has been slow so far. With regard to equity concerns, the question of resolution also raises the issue as to who will benefit from ‘clarification’ or reform policies.

9.4 International Principles for the responsible governance of tenure

The international community has provided ten human rights-based implementation principles for how state and non-state actors should set up processes for the responsible governance of tenure. These include: human dignity, non-discrimination, equity and justice, gender equality, a holistic and sustainable approach, consultation and participation, the rule of law, transparency, accountability and continuous improvement as explained below:

1. Human dignity: recognizing the inherent dignity and the equal and inalienable human rights of all individuals.
2. Non-discrimination: no one should be subject to discrimination under law and policies as well as in practice.
3. Equity and justice: recognizing that equality between individuals may require acknowledging differences between individuals, and taking positive action, including empowerment, in order to promote equitable tenure rights and access to land and forests, for all, women and men, youth and vulnerable and traditionally marginalized people, within the national context.
4. Gender equality: ensure the equal right of women and men to the enjoyment of all human rights, while acknowledging differences between women and men and taking specific measures aimed at accelerating de facto equality when necessary. States

should ensure that women and girls have equal tenure rights and access to land and forests independent of their civil and marital status.

5. Holistic and sustainable approach: recognizing that natural resources and their uses are interconnected, and adopting an integrated and sustainable approach to their administration.

6. Consultation and participation: engaging with and seeking the support of those who, having legitimate tenure rights, could be affected by decisions, prior to decisions being taken, and responding to their contributions; taking into consideration existing power imbalances between different parties and ensuring active, free, effective, meaningful and informed participation of individuals and groups in associated decision-making processes.

7. Rule of law: adopting a rules-based approach through laws that are widely publicized in applicable languages, applicable to all, equally enforced and independently adjudicated, and that are consistent with their existing obligations under national and international law, and with due regard to voluntary commitments under applicable regional and international instruments.

8. Transparency: clearly defining and widely publicizing policies, laws and procedures in applicable languages, and widely publicizing decisions in applicable languages and in formats accessible to all.

9. Accountability: holding individuals, public agencies and non-state actors responsible for their actions and decisions according to the principles of the rule of law.

10. Continuous improvement: States should improve mechanisms for monitoring and analysis of tenure governance in order to develop evidence-based programs and secure on-going improvements.

9.5 Tenure Reform Strategies

Although the concept of PES is gaining momentum as an approach to resource conservation and the continued production of ecosystem services, there are still unresolved issues that could potentially hamper the process and progress of the concept. Of particular importance are the insecurities associated with land and resource tenure. Clear and secure land tenures have been recognized as one of the key elements for successful PES schemes. Tenure related problems mostly arise from lack of title to land or the resource; restrictions on land and resource use by government or a private party through a decree or land lease concessions; rights revocation; land contestation, conflict, grabbing/invasion or land competition; etc. Tenure insecurity, ambiguity and contestation must therefore be addressed early for PES schemes to

achieve their objectives in an efficient, equitable and effective manner. PES projects proponents therefore have been intervening on land and resource tenure related issues.

Since, secure tenure rights in land are an important element in building investors' confidence in the PES program; therefore, KP government has to play a key role in this regard. Some of the actions that government can take include the following:

- Where applicable, formalization of forest land use rights of Gujjars, silvo-pastoralists and other forest dependent vulnerable communities, either alone or as part of a government program to facilitate or encourage PES.
- Establishing or utilizing innovative mechanisms for granting secure land-use rights in state-owned forest lands (Reserve Forests and Protected Forests) to non-owner forest users, for example via a PES conservation concession or similar instruments.
- Streamlining registration of claimants or forest use rights of non-owner users and facilitating access to these records.
- Providing training and/or resources related to obtaining and registering titles of forest owners or forest use rights and resolving tenure conflicts.

It is recommended that KP and other PES participating provinces and governments take steps on the lines proposed above to ensure secure rights to land, water, forests and associated resources under the PES program in the areas where such programs are to be implemented. It has to be borne in mind though that although simplifying and streamlining land ownership and land tenure rights can facilitate PES and make PES more accessible; yet, it can also facilitate land grabs by vested interest groups or entities, who seek to capture PES revenues. Similarly, recognizing de facto rights can increase accessibility and equity, but can also create challenges in terms of titling, recording, and consultation. Therefore, potential unintended consequences, or policy perversities, should be carefully considered prior to definitive policy action on this count.

Keeping in view the international principles with regard to tenure management, a suite of 12 strategies (based on international experiences) are recommended. These proposed strategies fall under the following three main headings:

- Strategies for legal recognition and protection of tenure
- Strategies for proper implementation of tenure by governments and right holders
- Strategies to support the enjoyment of rights given under the tenure

9.6 Strategies for legal recognition and protection of tenure

- Where appropriate and required, legally recognize legitimate tenure rights to forests and other natural resources and their rights holders by devolving the

authority and responsibility to govern these, conditioned by legal requirements for inclusive, accountable and sustainable governance.

- Strengthen or establish a legal framework focusing on procedural rules to accommodate the complexity, diversity and flexibility of tenure rights to forests, fisheries and other natural commons.
- Agree on rules for the utilization of these resources, map their boundaries and register them based on a negotiated and inclusive local process.
- Establish a transparent policy-making and law-making process that enables communities and civil society to participate.
- Carry out advocacy work to support agreed tenure rights to the resources.

Strategies for implementation of agreed tenure rights governments and rights holders

- Strengthen or progressively develop inclusive and accountable community governance structures.
- Support the empowerment of marginalized and vulnerable groups within communities to make effective use of community institutions.
- Strengthen or develop the implementation capacities of concerned government officials and devolve human and financial resources.

Strategies to support the enjoyment of tenure rights

- Ensure access to justice, recognize and integrate local-level mechanisms, and enable legal advocacy.
- Strengthen the environmentally sustainable and economically viable use of forests and fisheries resources to maintain and create long-lasting benefits for community members.
- Ensure that any partnerships or contracts with investors support local livelihoods and do not infringe on agreed tenure rights to forests and fisheries, or violate related human rights.
- Engage in the facilitation of multi-stakeholder processes for the review of legislation and monitoring of institutions, processes and the rule of law.

CHAPTER-10

10 BENEFITS ALLOCATION, DISTRIBUTION, DISBURSEMENT AND MANAGEMENT MECHANISM

10.1 Sources of PES Benefits

REDD+ PES benefits can accrue at different levels, from a variety of sources and in a number of forms. These benefits accrue at individual, community and local levels as well as at sub-national and national levels. The benefits may accrue from a variety of sources such as sale of carbon credits, through provision of watershed services, biodiversity conservation, eco-tourism, sale of non-timber forest products, and protection of infrastructure and communities from various types of natural and human caused disasters. Further PES benefits may be in economic terms, in social terms or in environmental terms. The following table (adapted from Preskett, 2011) describes these benefits:

Table 10. 1: PES Benefits Levels and Description

Benefit type/level	Description/function
Local level	
Economic	<ul style="list-style-type: none"> • Employment in REDD+ PES schemes • Income from direct incentive payments • Income from sale of products linked to REDD+PES • Increased net income due to local infrastructure improvements • Increased land and forest assets linked to REDD+PES
Social	<ul style="list-style-type: none"> • Local institutions more inclusive of poorer community members and better represent their interests in decision making processes • Reduced conflict and acknowledgement of roles • Improved health
Environmental	<ul style="list-style-type: none"> • Improved local environmental quality
Sub-national/National Level	
Economic	<ul style="list-style-type: none"> • Contribution to REDD+ finance to sub-national/national GDP and profits from sale of REDD+ credits and other PES benefits sources • Multiplier effects of REDD+ PES investments, such as spending of income in local markets or creation of jobs elsewhere in the economy • Physical (e.g. roads; monitoring systems) and institutional (e.g. better resourced forest management institutions) infrastructure improvements • Reduced spending, for example on flood management due to improved forest environmental services
Social	<ul style="list-style-type: none"> • Accountable sub-national/national institutions
Environmental	<ul style="list-style-type: none"> • Improved sub-national/national environmental quality

10.2 Criteria for Identification of Beneficiaries

Desirable features of REDD+PES program are often characterized in terms of the “3E” criteria of effectiveness, efficiency, and equity outcomes. For example, in the REDD+ context, effectiveness is a measure of “the amount of emissions reduced or removals increased by REDD+ actions” and efficiency a measure of “the costs of these emissions reductions or removal increases” (Angelsen 2009:5). The third characteristic equity relates to the distribution of socio-economic factors and goods in a society according to an agreed set of principles or criteria, which often include principles such as fairness, justice and need. Equity has different dimensions such as distributive equity (Distributive equity refers to the allocation of outcomes and their impacts on different stakeholders in terms of costs, risks, and benefits (Corbera et al. 2007, Proctor et al. 2008, Pascual et al. 2010, McDermott et al. 2012), procedural equity (Procedural equity refers to participation in decision making and inclusion and negotiation of competing views (Brown and Corbera 2003). Central to the emphasis on procedural equity is the notion that it strengthens legitimacy.) , and contextual equity (Contextual equity refers to equity of access to resources and markets. For example, contextual factors such as capacity, power, cultural values, social capital, and the level of dependence on forest have important effects on the equity of distribution (Konow 2001).

Luttrell C. et al 2013 have identified a typology of six rationales for the distribution and targeting of benefits that cut across all three objectives of effectiveness, efficiency, and equity. These six rationales represent different justifications for the allocation of benefits, namely that:

- benefits should go to actors with legal rights (“legal rights” rationale);
- benefits should go to those actors achieving emission reductions (“emission reductions” rationale);
- benefits should go to low-emitting forest stewards (“stewardship” rationale);
- those actors incurring costs should be compensated (“cost compensation” rationale);
- benefits should go to effective facilitators of REDD+ implementation (“facilitation” rationale);
- benefits should go to the poorest (“pro-poor” rationale).

Benefit-sharing rationale I: benefits should go to actors with legal rights related to carbon emission reductions (“legal rights” rationale)

One rationale that is prevalent in the benefit-sharing debate in all countries is that benefits should be distributed to those with a legal claim or right, whether statutory or

customary, to any benefits associated with carbon emission reductions. This rationale is related to theories on libertarian justice. This rationale is particularly strong in Tanzania and Brazil, which is perhaps a reflection that land and forest resource rights are more clearly defined in these countries; in most countries, rights to carbon sequestration and storage (carbon rights) have not been clarified. None of the countries studied has national legislation on carbon rights, and as a result most REDD+ projects are operating in a vacuum of uncertainty over the legal right to benefit from payments for carbon emission reductions.

In the absence of that clarity, existing land and forest tenure rules and current policies for rights to forest resources can be assumed to serve as the basis for allocating payments for carbon emission reductions (Cotula and Mayers 2009). However, in those countries, e.g., New Zealand until 2008, and states, e.g., Amazonas and Acre in Brazil, where carbon rights are clarified legally, the rights do not reflect existing land and forest tenure because the carbon rights were vested in the state regardless of land and forest tenure (Peskestt and Harkin 2007, Karsenty et al. 2012a).

Legal rights vary within a “bundle” of property rights, ranging from usufruct rights, or the right to earn income from a resource, to the right to transfer the resource to others (McKean 2000, Segal and Whinston 2013). Ownership of land or trees does not necessarily give the owner a legal right to benefit from carbon sequestration or reductions in carbon emissions. Peskestt and Brodnig (2011) argue (Streck and Sullivan 2007; Takacs 2009) that the term “carbon rights” has two different aspects:

1. The property right to the sequestered carbon itself, which is physically contained in land, trees, and soil, does not necessarily have to coincide with the property right to the physical resources.
2. The right to benefit from selling carbon credits is distinct from the property right to sequestered carbon. Where there is no explicit law on the right to sequestered carbon, legal rights to sell carbon credits can be associated with the right to the underlying asset, activity, or resource. If the legal status is not clear, contracts become important for clarifying rights and responsibilities (Norton Rose 2010).

Therefore, a central consideration is whether the state will claim separate rights to benefit from trading carbon credits even in contexts where land or forest is privately or communally owned. In Pakistan, some REDD+ PES projects will take place on Guzara Forests or undemarcated privately owned forests, which are private property and are either individually or communally owned. Because individuals or communities that own Guzara Forests or undemarcated private forests have the right to the revenue and benefits arising from them. There is no legal requirement for the income from these projects to go to the federal government. However, despite the relative clarity of the

laws in Pakistan, national-level actors have exhibited some resistance to the decentralization and devolution of decision-making power and rights to communities, based on the view that the entire nation should benefit from forest resources and not only those living in forest areas.

If the national or provincial government claims rights to the benefits from carbon emission reductions, a national or provincial benefit-sharing mechanism needs to address not only how to distribute the revenue from any carbon credits but also the creation of incentives at lower scales to encourage those responsible for deforestation and forest degradation to reduce these activities. If rights are assigned to households or communities, further attention may be required to tackle the drivers of carbon emissions, because those given the legal rights may not be responsible for high-emitting behavior.

Basing a benefit-sharing mechanism on a legal rights rationale may have the effect of further disadvantaging the poor. Poor forest users seldom possess legally recognized rights to land and/or forest products, often because of the rights assignment done as part of the land settlements done in the past; they therefore use the forest illegally (Colchester et al. 2006). In some REDD+ projects, the large-scale land uses, e.g., large-scale timber concessions, targeted by the project would be classified as “legal,” whereas many of the smaller-scale activities that would also be reduced as a result of the project either have no legal recognition or would be deemed “illegal”. In these cases, directing benefits only to those entities with legal rights would favor large-scale land users and not compensate the poor for the loss of their livelihood activities. This is an important issue and needs to be addressed if benefit distribution is done following this principle.

Benefit-sharing rationale II: benefits should go to those who reduce emissions (“emission reductions” rationale)

The effectiveness and efficiency objectives of REDD+ focus on the goal of reduced carbon emissions and the notion that benefits should be used as an incentive to bring about a reduction in emissions. In a performance-based payment system, actors are paid for their actual performance in terms of improved forest conditions and reduced degradation in ways that can be empirically verified through higher forest carbon stocks compared with reference emission levels. This system provides a direct link between REDD+ payments and effective forest conservation activities. This rationale is related to the “merit-based” theory of “actual provision” (Pascual et al. 2010), which states that the distribution of a reward should correspond to the actual level of ecosystem service provision.

One implication of this rationale is that REDD+ finance may end up being used to reward large-scale actors, the dominant emitters in many contexts, for reducing carbon

emissions. This can be controversial, partly because of the magnitude of the opportunity costs that these large-scale actors will incur and partly because of the concern that they will be rewarded for their poor environmental performance in the past. In Brazil, for example, a large proportion of government and NGO/research respondents in the social organization survey disagreed with the statement that “REDD benefits should reward large-scale industries/companies for reducing forest emissions”. In particular, many of the respondents from indigenous and traditional groups raised concerns that “criminals” would be rewarded, given that much of the deforestation is carried out by large private landowners that do not comply with the National Forest Code or do not have proper land titles. In Indonesia, on the other hand, this statement received strong support among government and private sector respondents, although only around half of the NGO/research respondents agreed with it.

Benefit-sharing rationale III: benefits should go to forest stewards (“stewardship” rationale)

A rationale that emerges frequently in policy debates, particularly in Brazil (e.g., Nepstad et al. 2007), is that REDD+ benefits should go not only to the actors reducing emissions but also to indigenous groups or other forest users that have a record of responsible forest management. This rationale is partly based on the “merit” principle of equity: that benefit distribution should reward a virtuous pattern of behavior. It also owes something both to the egalitarian view that benefits should be distributed equally among all providers of a service regardless of the level of service provision, and to the needs-based theory, as it advocates for the use of REDD+ benefit-sharing mechanisms to support marginalized forest dwellers.

Under a benefit-sharing mechanism based on this rationale, a community or users that have been protecting the forests for a long time would have a strong claim to benefits from REDD+. In this view, benefits from REDD+ serve to recognize both past and current efforts and to encourage the continued protection of forests. The dilemma for REDD+ is that in many of these low-emission situations, additionality cannot be proven because there are no emissions to reduce in the first place. However, it can be argued that emissions are likely to increase in the future, because a realistic baseline is higher than a historical one, and therefore continued conservation could be considered as additional.

Recognition of good forest stewardship is evident in some of the projects studied in Peru and Brazil, where benefits are being distributed to actors that are not directly involved in deforestation as a means of encouraging collaboration and creating incentives for protecting the area. This can be seen, for example, in the BAM (Brazil Nuts Concession REDD) project in Madre de Dios, Peru, where the owners of Brazil nut concessions are given incentives to protect the forest, even though the main activities

causing deforestation, agricultural clearance and illegal logging, are carried out by different actors altogether. Another example is the Bolsa Floresta Program in Brazil, whose site has undergone relatively little land use change to date, although deforestation is a long-term threat. The benefits that the program offers to families are therefore perceived not as compensation for “additional measures” to alleviate deforestation pressures but rather as a reward for those who have sustained forest permanence over the years. It is interesting to note, however, that outside of Brazil and Peru, the stewardship rationale has little presence in the design of the benefit-sharing systems at the project level.

Benefit-sharing rationale IV: actors incurring costs should be compensated (“cost-compensation” rationale)

One view that emerges frequently in the benefit-sharing debate is that the actors that shoulder implementation, transaction, and opportunity costs should be compensated regardless of the carbon emission reductions for which they are directly responsible. However, it has been found that the distinction between compensation for incurred costs and rent is made explicit in only a few of the situations where this rationale has been proposed as a basis for benefit sharing.

This rationale is related to “merit-based” theories, which suggest that distribution should be proportional to inputs (Dobson 1998). Within the merit-based theories is a tension between the view that reward should be based on performance, i.e., the “actual provision” of emission reductions, and the view that any effort or inputs made toward REDD+ implementation should be rewarded. This tension is reflected in the design of many emerging benefit-sharing arrangements. It arises not only because inputs are easier to define and measure than are emission reductions and their associated opportunity costs, but also because most REDD+ projects are in the early stages of implementation and recognize the need to give actors incentives for getting involved. Although projects are striving to move toward results-based crediting, many proponents argue that it is essential to look at the potential costs arising from REDD+ and whether the actors bearing the costs are the same ones receiving compensation or rent.

Most of the REDD+ projects studied in Tanzania are combining upfront funding as compensation for early inputs with plans to shift to payments based on performance. In projects such as the Tanzania Forest Conservation Group (TFCG) and *Hifadhi ya Misitu ya Asili* (HIMA), communities receive benefits as long as they implement activities that improve carbon stock, such as the development of land use plans, participatory forest management, law enforcement, or the implementation of forest management plans. This option has low transaction costs because these activities can easily be verified.

The rationale does have several drawbacks. For example, it does not necessarily allow

for a direct link between payments and reductions in deforestation and forest degradation. Furthermore, it does not account for variability in the performance of forest managers, and their incentives are weak if paid regardless of forest outcomes (TFWG 2010). An effort-based payment system also ignores the differences in opportunity costs among communities; for example, communities that succeed in halting charcoal production or shifting cultivation will incur higher opportunity costs than those that fail (TFWG 2010). In addition, because there tend to be more valuable economic opportunities in areas where forests have higher carbon content (TFWG 2010), communities in such highland areas will incur greater opportunity costs than communities in low-carbon forests, for example, miombo in southern Tanzania and coral-rag in Zanzibar (United Republic of Tanzania 2009). This is a rare example in the cases that have been studied, in that attention has been given to contextual equity in the debate around benefit sharing. If such cost differences are not factored in, effort-based systems could arguably be inequitable.

Designing mechanisms for compensation of opportunity costs is at an early stage in most of the projects. A review of projects' own assessments of their opportunity costs reveals considerable disparity between (i) the stakeholder groups that are predicted to incur the most significant opportunity costs depending on whether "significant cost" is defined in terms of the greatest financial loss, (ii) the loss of livelihood for the greatest number of people, and (iii) the most significant change in area of land or forest use. In some examples of REDD+ projects, the highest levels of potential financial loss correspond to activities with the highest forest area change and carbon emission reductions. This highlights potential trade-offs between an opportunity costs approach based on profit foregone and consideration of other equity concerns associated with the number of people whose basic livelihoods may be affected.

Benefit-sharing rationale V: benefits should go to effective facilitators of implementation ("facilitation" rationale)

Also related to the "merit-based" principle of "compensation" is the rationale, running through much of the REDD+ benefit-sharing debate, that a proportion of REDD+ benefits should be shared with the actors that are not necessarily forest-based but that are essential for the implementation of REDD+. These actors may include private sector proponents, NGO project proponents, or federal or provincial or local government. This rationale is more explicitly about the level of "rent" that will accrue to actors rather than compensation, although making a distinction between the two presupposes that each actor is clear about the exact costs of implementation.

The proportion of the benefits that should accrue to facilitators of implementation is subject to debate in many countries. The debate largely concerns who should benefit from REDD+ and the legal and constitutional considerations concerning the state's right to retain revenue from privately and nationally owned goods. The challenge is to ensure

that those facilitating the implementation of REDD+ receive sufficient incentives to achieve effective implementation, while at the same time guarding against them getting windfall profits. Private sector project developers in Indonesia are lobbying to influence national policy on setting benefit-sharing rules, arguing that project developers require adequate compensation to cover the implementation and transaction costs they are incurring as a result of REDD+ readiness activities. In the Tanzanian projects in particular, the level of administration fees that should accrue to the facilitating organization is a key issue in negotiations with communities. A complicating factor is that, in most of the cases, project proponents are NGOs operating at a small scale and the level of “rent” that could, or should, accrue to them has not been clarified in national policy.

This question also arises in relation to the rights of governments to retain some revenue to cover their own implementation and transaction costs. As with revenue collected from forest products, federal, provincial and local governments might retain revenue for admissible costs, such as setting up systems for monitoring, reporting, and verification and for enforcement (Irawan and Tacconi 2009). The UN-REDD Programme (2010) recommends that the amount retained by government should be based on performance and directly related to the costs incurred, although it is recognized that the principles of “cost recovery” and “performance-based” can conflict with each other in the actual design of the rules.

A related question in the vertical benefit-sharing debate is how to distribute REDD+ rent or taxes between levels of government, including the degree to which local governments should keep locally derived revenues. The principle of subsidiarity suggests that greater efficiency is achieved by locating powers and tasks at the lowest possible administrative level (Føllesdal 1998). In the case of REDD+, however, some activities may be best handled at the federal level, e.g., to contain leakage (Irawan and Tacconi 2009).

Benefit-sharing rationale VI: benefits should go to the poor (“pro-poor” rationale)

The view that REDD+ benefits should flow to the poorest constitutes another influential rationale in the debate on REDD+ benefit sharing. This rationale is based on the concern that an exclusive focus on carbon emissions and compensation of costs could result in unfair distribution of REDD+ funds, e.g., by rewarding wealthy actors for reducing their illegal behavior, and thus serve to increase inequality and undermine the moral and political legitimacy of REDD+ (Kaimowitz 2008, Karsenty and Ongolo 2012). The Cancun Agreements consolidated the “pro-poor” rationale as a safeguard by establishing that REDD+ should be implemented in the context of sustainable development and poverty reduction to enhance other social and environmental benefits (UNFCCC 2010). This rationale is related to “needs-based” equity theories. Needs-

based theories have a moral basis, drawing on the principles that benefits should be distributed according to need, with those with the greatest need receiving a greater reward, and that the needs of marginalized groups, such as women, indigenous people, and vulnerable communities, should be catered for. This rationale stems from a concern that benefits will not flow to poor people and that REDD+ systems could create new risks for the poor (Peskett, 2011).

The statement “REDD should mainly reward local people for emission reduction activities” elicited very strong agreement from respondents to the social organization survey across all groups in both Brazil and Indonesia, even among those groups that had previously said that large-scale emitters should be rewarded for reductions. Although this opinion is likely to be rooted in support for pro-poor outcomes, it may also reflect to some extent a pragmatic concern for effectiveness, given that without involvement of local people in their implementation, REDD projects are unlikely to be effective. A significant pragmatic element to the debate lies in the idea that if REDD+ is not equitable it will not be perceived as fair (Börner and Wunder 2008), which can undermine its effectiveness, legitimacy (Peskett 2011, Lindhjem et al. 2010, Costenbader 2010), and sustainability, thus leading to increased conflict and a higher risk of non-permanence (IIED 2009).

Pro-poor rationales are a clear concern at the project level. Many of the projects have invested in upfront, in-kind benefits in the form of livelihood alternatives, capacity building, and tenure strengthening. However, cash payments tend not to be targeted according to the pro-poor rationale but rather tend to be shared according to the cost compensation or emission reductions rationales.

10.3 Benefits Distribution Mechanism

A Mechanism for Disbursement and Management of Benefits has been proposed for the Kagah Valley REDD+ PES Project. Main Design Features of the Benefits Distribution System are given below:

Table 10. 2: PES Benefits Distribution Mechanism

PES Design Element	Proposed Measures
PES Benefits Receipts Mechanism	All monetary PES benefits would be deposited in a Fund (called REDD+ PES Fund) to be established for the purpose as a separate head within the Forest Development Fund (FDF) already created and managed by the KP Forest Department. All monies received and realized under the REDD+ program will be deposited into this fund. This includes any seed money by government, donor grants and donations, loans and performance based payments from sale of different forest ecosystem services. Since, it is being established as a head within the FDF; therefore it will be operated and managed in accordance with FDF Management Rules of KP Forest

	Department.
PES Benefits Distribution Mechanism	All community cash payments from PES benefits received on account of Guzara Forests and Undemarcated Private Forests will be made by the concerned Divisional Forest Officer on the pattern of payment of timber sale proceeds of these forests. Community infrastructure schemes related expenditures and monies to be spent on forest rehabilitation to be incurred from REDD+/PES Fund will be done as per in-vogue procedures of KP Forest Department.
Beneficiaries share: government and local communities	<p>Following is the existing benefits distribution system in KP:</p> <p><u>Reserve Forests:</u> Being state property, all sale proceeds go to the state as local communities do not have any legal rights in Reserve Forests.</p> <p><u>Guzara Forests:</u> Guzara Forests are private property. Therefore, local forest owners receive 80 % of the sale proceeds. Government charges 20 % as managerial charges.</p> <p><u>Undemarcated Forests:</u> Private owner get 100 % of the sale proceeds.</p> <p>Under the PES scheme, the following formula is proposed for benefits distribution out of the net PES income from the sale proceeds. This distribution is based on discussions held with the Forest Department and local communities in workshops arranged for the purpose.</p> <p><u>Reserve Forests:</u> 20 % of the net PES income be distributed to the eligible local communities; another 30 % be spent on the rehabilitation, expansion and sustainable management of these forests. An additional 30 % income may be spent on infrastructure development activities for the benefit of the forest dependent communities. The remaining 20 % PES income may be deposited as state revenue.</p> <p><u>Guzara Forests:</u> 65 % share from net income is proposed for the forest owners; 5 % share to government as managerial and facilitator charges; and 20 % share on the rehabilitation, expansion and sustainable management of Guzara Forests; and 10 % share on infrastructure spent on infrastructure development activities for the benefit of forest dependent communities.</p> <p>Undemarcated Private Forests: 90 % share to forest owners from net income; and 10 % share on rehabilitation, expansion and sustainable management of these forests.</p>
Payment Amount	Payment amount will depend on the sale price as well as the quantity of PES service being provided. For PES income to serve as an incentive, the payment amount should cover at least opportunity costs, transactions, validation and registration costs, as well as some part of implementation costs, if not total of implementation costs.
Payment Mode	Payments in both cash and kind forms are proposed. The community benefits for infrastructure development are proposed in kind form. Government share, forest owners share and other beneficiaries share are proposed to be paid in cash.

Group vs. Individual Payment	Both group and individual payments are a possibility to the local beneficiaries of these forests. Group payments will mostly be in kind form for various natural resources and infrastructure development initiatives.
Payment Differentiation	Payments need to be differentiated based on cost of provision and ecosystem services provision. Payment differential is desirable when opportunity costs or potential for ecosystem benefits per hectare/activity varies significantly across sites, and estimates on differentiation criterion are available.
PES Contract Length	Although long contract periods are desirable; however, given the fact that there may be some beneficiaries who would rather prefer short term (upto 8 years) to smedium term (upto 15 years) contract lengths. It has to be borne in mind though that in case of REDD+ projects, the contract length has to be at least 20 years long so as to avoid the pitfalls on non-permanence.
Payment Duration	Payment duration will vary with the ecosystem service being contracted out. For example, Carbon contracts, biodiversity conservation contracts and watershed services provisions contracts will have to be long term given the nature of the ecosystem service and the need for continuity. As against this, some contracts like the ones related to eco-tourism, NTFPs, etc. could be comparatively short term (upto 8 years).
Upfront Payment	Although local communities do and would demand some upfront payments; however, such option be excercised after due consideration of local context.
Payment Frequency	Payment frequency generally is related with verification frequency in performance based contracts. Frequent and activity-based payments are desirable from the perspective of local communities.
Degree of Conditionalities for PES Payments	There will have to be conditionalities associated with PES payments as PES income is generally performance based. However, low and flexibility in conditionalities for PES Payments are important from the perspective of local communities.
Type of Conditionalities for PES Payments	Local communities have a preference for activities or inputs based payments as opposed to outcomes and performance based payments.
Unit of Management or Control for PES Payments	Most of the payments will be linked to group/collective performance by the communities as the outcomes generally depend on collective action by the whole community. Some local communities may perceive the payment based on group performance as less fair and not reflective of their individual performance.
Establishing Additionality for PES Payments	Many current PES schemes do not compute baselines, but rather just pay on the basis of an activity being implemented or forests being protected and conserved. The additionality issue is given most attention in carbon sequestration projects.
Leakages Prevention	Leakages may happen on account of activities shifting by those local communities who shift their demand to other places. To prevent such leakages, communities will be made accountable for any such damages in the surrounding/reference region.
Ensuring Permanence for Ecosystem Services	Permanence in Ecosystem Services provision can be at risk due to a number of reasons, including both anthropogenic and natural such as increasing opportunity costs and natural factors such floods and storms, insects pests, etc. Though increasing opportunity costs would not be problematic if contracts were perfectly enforceable, in practice the temptation for Ecosystem Services providers to breach a PES contract becomes high when

	<p>opportunity costs rise significantly.</p> <p>PES contracts therefore need to be designed in a way that ensure permanence as well as differentiate between intentional non-compliances and those non-compliances which are beyond reasonable human control.</p>
Benefits Targeting	In general, targeting can be implemented at different levels. Area based targeting criteria, for example identifying ecologically important regions and making premium payments for such areas, are relatively inexpensive to implement.
Cost Targeting	Although cost targeting is an important efficiency principle when different local communities have different provision and opportunity costs; however, cost targeting can be an issue in this PES scheme as establishing these cost differences will be difficult in practice.
Facilitating Conditions for Supporting Pro-Poor Ecosystem Services Provision	Transaction costs are the main barriers to participation of poor communities in PES. Further hurdles may include lack of access to information and credit and lack of trust in government programs. When these issues are relevant, PES design will have to be adapted to reduce barriers to participation for poor ES providers, for example by keeping transaction costs low (e.g., allowing group applications, lowering requirements on proof of formal title, etc), supporting poor people through capacity building, technical assistance, access to inputs and credit, and building trust through transparency and credible intermediary organizations.
Reducing Negative Impacts on Poor	Some of the PES interventions are likely to impact selected poor communities and selected members of some communities who are users of these forests, such as Gujjars and other pastoral communities. Given these negative impacts, special precautionary measures or compensation package may be needed to address these negative impacts on poor.
Reducing Negative Impacts on Women	Any increase in women work load as a result of the PES program needs to be avoided or duly compensated for their additional time and effort in PES activities. This is an important equity consideration and needs to be abided by.

CHAPTER-11

11 PROMOTING THE ROLE OF WOMEN IN PES SCHEME

11.1 Roles of Women in Forests and PES Project

Women are categorized and portrayed in different roles in forests and PES projects. These fall into the following four broad categories:

- Women as Vulnerable Group
- Women as Beneficiaries
- Women as Stakeholders
- Women as Agents of Change

Women as Vulnerable Group

Characterization of women as a vulnerable group has its roots in the recognition how inequalities of access to and control and power over forests and their ecosystem products and services make women more vulnerable. For example, women may not get the same share in landed property and income from forest resources.

Women as Beneficiaries

By specifically targeting women as beneficiaries, forestry and PES projects activities have the potential to contribute to gender equality and women's empowerment, as well as other sustainable development goals.

As forestry and PES activities can be quite encompassing, women along with their families and wider communities can benefit from diverse opportunities such as through increased economic opportunities; improved capacities, environment, health and safety; and stronger social outcomes and over-all better environmental results.

Women as Stakeholders

As producers, consumers and users of forests and their various ecosystem products and services, women lives and livelihoods are affected by decisions in forestry sector at all levels. They, however, are not part of the decisions that are taken in the forestry. When women are excluded from forestry governance, decision making processes are more likely to result in forestry projects and policies that ignore the unique needs, aspirations, knowledge and contributions of women.

Women as Agents of Change

Women can transform and change the forestry sector in their roles as forestry sector entrepreneurs, innovators and decision makers. Integrating women into all levels of forestry sector and its value chain can unlock greater productivity, returns on

investment, biomass energy use efficiency, etc. However, women's knowledge and capacities often go unrecognized because of social, political and economic structures hindering their access to and contributions in developing forestry sector resources.

11.2 Women Consultations and Engagement in the Pilot PES Projects

To recognize and enhance their role in the Pilot PES projects, a workshop has been held with women in Balakot for Kaghan Valley Forests Pilot Project in May, 2018. In this workshop opportunities and challenges for women participation in the PES projects were discussed.

11.3 Challenges for Women Participation in PES Projects

Based on discussions held in the workshops, the following challenges have been identified for women participation in PES projects at various phases of PES projects.

Planning Phase Challenges

- Limited information dissemination to women
- Weak or non-existing forestry sector policy, legal and institutional reforms targeting women
- Cultural barriers limiting women participation and leadership roles
- Limited time to participate due to already too much workload, including house chores, water collection, fuelwood collection, etc.
- Lack of or inadequate alternative sources of energy and income generating activities
- Lack of comprehensive consultations with women at all levels
- Limited resources allocation for women related forestry sector activities
- Few pilot demonstrations targeting women due fewer resources allocation in the sector
- Limited support to women's initiatives since forestry is low among government priorities
- Limited opportunities for women to serve in the forestry sector and PES projects
- Women in NGOs who are interacting with rural women have limited knowledge of PES initiatives
- Poor linkages between local, district, provincial and national levels due to which women issues which are mostly discussed at the local level do not get integrated into higher level decision making processes
- No deliberate effort by other stakeholder groups to involve women in consultations and ensure their participation in forestry sector and PES projects
- Only limited and at times inaccurate information may reach women about PES projects
- Poor targeting and hence elite capture of benefits to the detriment of women

Implementation Phase Challenges

Following are the major issues in implementation phase of PES project:

- Women may not be employed in key PES projects positions
- Women Organizations (WOs) may not have information about all phases and aspects of PES implementation
- PES funds and benefits may not target women and women organizations
- Limited decision making at household level by women may limit their benefits
- Women may have limited time to participate in PES activities
- Men in some situations may not allow women to participate in PES activities
- Women lack knowledge and skills to use monitoring and evaluation tools that may be used in PES projects implementation
- Poor implementation of land tenure laws
- Majority of the women do not own land in their names and hence may not be entitled to carbon and other PES benefits which are tied to land ownership
- Women are not informed about over-all forest policies and laws and more specifically about PES related policies and laws.

Consolidation Phase Challenges

Major challenges anticipated in the consolidation phase of PES project are as follows:

- Weak capacity by women to negotiate
- Conflicts with regard to benefit sharing at household levels
- Likely frustration by women with PES and hence reverting to negative environmental practices
- If this frustration continues, women may de-campaign about PES among the younger population
- Limited land ownership by women affecting equitable sharing of PES benefits
- Threat to women's priority for food and energy security at the household level
- Limited understanding of the technical, social and economic aspects of PES hindering women's meaningful participation
- Traditional perception and viewpoint in selected areas that "property cannot own property", i.e., women do not own property

11.4 Opportunities for Women Participation in PES Projects

Following have been identified as potential opportunities for women participation in PES projects at various stages.

Planning Phase Opportunities

Following are opportunities for women in planning phase of PES Projects:

- Women networks and platforms created for knowledge sharing, advocacy and lobbying on use of forest resources and PES
- Breaking of myths about women uses of the forest
- Capacity building leading to women's involvement in decision making and participation in forestry and PES projects
- Career opportunities for women in forestry, surveying information and communication technology, etc.
- The requirements of UNFCCC and other social environmental safeguards to involve all stakeholder, particularly the vulnerable groups
- Existence of supporters who promote recognition of women as key players in PES projects
- The opening of government to involve all stakeholders in PES projects-on-going policy, legal and institutional reforms in forestry sector
- Consulting women at community level
- The existence of women organizations in some localities
- Brining women organizations on board to fully participate on policy and laws related to PES
- Exploring venues for bringing about different tenure reforms as part of the PES project
- Building capacity of CBOs, CSOs and NGOs to address gender in forestry sector and PES projects
- Identifying context issues on how women can contribute to forestry and PES projects as agents of change
- Identify and recognizing women as stakeholders and beneficiaries in forestry sector and PES projects

Opportunities for Women in Implementation Phase

Implementation phase opportunities include the following:

- Improve women's livelihood and poverty reduction: women will and can obtain benefits such as income from the sale of NTFPs, etc.
- Empowerment of women, as women come together to share knowledge through networks, they also build their self-confidence, which enhances their participation in programs, including PES
- Increase participation in forest management as women become aware of their rights in community based forest management practices
- Training and capacity building of women so that they are equipped with good management skills as they come to learn more about forest management and the need to conserve forests for next generations
- Existence of women organization and civil society organizations that are gender-sensitive

- Existence of partners who are supportive of women involvement
- Proposed forestry sector reforms as part of the PES project
- Environmental and social safeguards
- Social and environmental impact assessment studies which highlight the vulnerabilities of women to climate and environmental issues
- Increasing entrepreneurial skills of women
- Greater involvement in decision making

Consolidation Phase Opportunities

Following are some of the opportunities in the consolidation phase”

- Training and knowledge sharing on forest management for communities and particularly women
- Access to formal and informal education for women
- Capacity building for educated women in technical, social, business and management skills and aspects of PES projects
- Skills development in vocational skills development for higher employment and income earning opportunities
- Elimination of stereotype role for men and women in forestry sector
- Increased dialogues with women on forest planning, management and uses
- Increased access to and use of various forest ecosystem goods and services and their benefits
- Involvement of women in MRV
- Creation of Women MRV Committees
- Legal protection of rights of women through contracts and other instruments
- Increased incomes for women from PES activities
- Use of alternative and other forms of energy to save women time from fuelwood collection
- Provision of water facilities as part of PES project to save their time from water fetching
- Forest conservation and women development fund as part of PES revenues
- Improved nutrition and health opportunities
- Improved and diversified income opportunities
- Improved opportunities for getting access to credit and start of businesses
- Increased opportunities for women to demand transparency, accountability and good governance with regard to women involvement in forestry sector and PES projects
- Increased access to information and hence enhanced chances to contribution in the forestry sector

CHAPTER-12

12 GOVERNANCE AND INSTITUTIONAL ARRANGEMENTS FOR REDD+

PES and REDD+ program management in Pakistan as well as at the Provincial level is a multi-objective, multi-functional, multi-actor and multi-scale phenomenon. It is multi-objective because the person at the helm of affairs has to ensure that the multiple program objectives (carbon sequestration, biodiversity conservation, community development) are achieved in an effective, efficient and equitable manner. There also has to be an effective participation of all the relevant groups. Moreover, different principles and elements of good governance such as access to information, transparency, accountability and results-based orientation will have to be paid attention too.

REDD+ program is multi-functional because it involves numerous functions such as program design and planning, program implementation and coordination, program monitoring and oversight, program evaluation, networking and public relations management, motivation and communication etc. It is multi-actor as it involves different roles and functions like putting in place and strengthening policy, legal and governance frameworks; carrying on planning and decisions making processes and functions; and implementing, compliance and enforcement. Finally the program is multi-scale as it can be implemented as a project, at the provincial level as well as at the national level

Having so many dimensions means it requires very meticulous design and planning. Therefore, the governance and institutional arrangements for REDD+ must ensure that all these dimensions of REDD+ are implemented with due diligence and care too.

The proposed innovation is to make use of institutional arrangements that can perform and deliver on the following:

Technical and Program Functions related to PES/REDD+:

- Program Planning Function
- Program Technical Aspects Management Function
- Program Service Delivery Function
- Program Monitoring and Evaluation Function
- Use and Management of Other Needed Knowledge and Skills

Administrative and Support Functions related to PES/REDD+:

- Administrative procedures and management systems

- Financial management (budgeting, accounting, fund raising, and sustainability)
- Human resource management (staff recruitment, placement and support)
- Management of other resources (information, equipment, infrastructure, etc.)

Resources Needed for PES/REDD+:

- Human Resources
- Financial Resources
- Technical and Other Resources

Structure and Culture:

- Vision and purpose
- Governance Approach
- External Relations Management

12.1 Project Governance

There will have to be established independent Project Governance Units at the federal as well as provincial levels as proposed below.

PES Pilot Project Coordination Unit at the Federal Level

At the federal level there is National REDD+ Office (NRO) already established under the FCPF R-PP Grant Funding. This Office will be continued and further strengthened to carry out the different functions associated with the processing, coordination, and reporting of project activities in close coordination with the Provincial Project Implementation Unit in the KP Provincial Forest Department.

The federal NRO will have the following professional staff in addition to the usual support staff.

- National REDD+Coordinator
- MRV Specialist
- Awareness Raising and Institutional Development Specialist
- Safeguards Management Specialist
- Administration and Finance Officer

Provincial PES Project Implementation Units in KP Province

A PES Project Implementation Unit will be established in KP. The Provincial Implementation Unit will have the following professional staff and supporting staff:

- Provincial REDD+Project Director
- MRV Specialist
- Awareness Raising and Institutional Development Specialist
- Safeguards Management Specialist
- Administration and Finance Officer

12.2 PES Institutional Arrangements

In addition to the above REDD+ Projects Governance Units, there will have to be Institutional Arrangements for the institutionalization and promotion of PES at the policy and sector level.

Federal Level Institutional Arrangements

At the federal level, there is a National REDD+ Steering Committee, which will also look after and steer the PES projects.

Provincial Level Institutional Arrangements

Provincial level institutional arrangements are currently being established in the provinces for REDD+. Provincial REDD+ Focal Points have already been notified and Provincial REDD+ Management Committee has been established in KP Province, where this pilot PES site is located. In the following we propose to further strengthen the existing institutional set-ups at provincial, regional/circle and district/forest division levels as given below:

Provincial Level Set-Ups

- Provincial REDD+Board
- Provincial REDD+Management Committee
- Provincial REDD+Thematic Working Groups
- Provincial REDD+Research Unit

Regional and Forest Circle Level Set-ups

- Regional REDD+Management Unit.
- Forest Circle Level REDD+Social and Environmental Safeguards and Grievance Redress Mechanism.

Forest Division Level Set-Ups

- Forest Division Level REDD+ Social and Environmental Safeguards and Grievance Redress Mechanism

I. Provincial REDD+ Board

Provincial REDD+ Board will be the REDD+ Apex Body at the province level.

Composition of the Provincial REDD+ Board

The Provincial REDD+ Board will have members from government departments, international organizations, community groups, civil society organizations, industry, women and relevant academic institutions. It will be chaired by the Additional Chief Secretary of the province. Its members will include:

- Secretary Forestry, Environment and Wildlife Department.
- Secretary, Finance Department.
- Secretary, Planning and Development Department.
- Secretary, Agriculture and Livestock Department.
- Secretary, Tourism Department.
- Senior Member Board of Revenue.
- Secretary Mines and Minerals Department.
- Secretary Energy and Power Department.
- Secretary, Law Department.
- Representative of IUCN Pakistan
- Representative of WWF Pakistan
- Representative of Civil Society
- Representative of Industry
- Representative of Academic Institutions
- Representative of Women

Secretary Forestry, Environment and Wildlife Department shall act as Secretary of the Provincial REDD+ Board.

Roles and Functions of the Provincial REDD+/PES Board

The REDD+ Board will carry out steering and liaison function involving the approval of REDD+ policies, plans, laws and programs. Detailed functions of the Provincial REDD+ Board with respect to the above role include:

- Act as a Think Tank and Strategic Resource for Sustainable Forest Management and REDD+ related matters by giving vision and framework;
- Review, develop and advocate for policies, laws and institutions for Sustainable Forest Management and REDD+;
- Review and approve the State of Forestry and REDD+ Report of the Province;
- Brief and Inform the Chief Minister and Minister-Incharge about the State of Forestry and REDD+ Report of the Province;
- Appraise the performance of the Department with regard to Sustainable Forest Management and REDD+;
- Coordinate with Federal Government on REDD+ related matters;
- Coordinate with United Nations Framework Convention on Climate Change (UNFCCC) and Other International Forums on REDD+matters;
- Identify and resolve basic issues hampering the implementation of REDD+in the province;
- Identify and study the impact of various incentive measures for promoting Sustainable Forest Management and REDD+in the province;
- Increase transparency and accountability in the working of the REDD+program; and
- Any other relevant function as may contribute to effective REDD+implementation in the province.

II. Provincial REDD+ Management Committee

Composition of the Provincial REDD+ Management Committee

The Provincial REDD+Management Committee shall be headed by the Secretary Forests Department. Its members shall include the following:

- Chief Conservators of Forests in the province
- Chief Conservator Wildlife
- Director General, EPA
- Director General, Pakistan Forest Institute

- Director General, Agriculture Research Department
- Conservator of Forests, Planning and Monitoring Circle
- Provincial REDD+Focal Person
- One Representative of Forest Owners/Forest Concessionists
- One Representative of Forest Users Groups
- Head of Environmental Sciences Department, University of Peshawar
- Representative of Chamber of Commerce and Industries
- The Provincial REDD+Focal Person shall be the Secretary of this Committee.

Functions of the Provincial REDD+ Management Committee

The Provincial REDD+Management Committee shall have different, yet mutually reinforcing functions, which include:

- Supportive Function: involving preparation of REDD+policies, plans, laws and institutional mechanisms, searching funding opportunities
- Implementation Function: carrying out the previously determined mandate.
- Supervisory Function: involving progress review and monitoring the implementation of REDD+programs.

III. Provincial REDD+/PES Thematic Working Groups

The Provincial REDD+Board and the Provincial REDD+Management Committee will need regular support on certain technical, managerial and social aspects of REDD+implementation in the province. Accordingly, the following Thematic Working Groups will be established to support the working of the Provincial REDD+Board and the Provincial Management Committee:

- Technical Working Group on Forest Reference Emissions/Forest Reference Levels.
- Technical Working Group on Provincial Forest Inventory and Measurement, Reporting and Verification (MRV)
- Technical Working Group on REDD+ Social and Environmental Safeguards and Grievance Redress Mechanism
- Technical Working Group on REDD+Finance and Marketing

VI. Provincial Level REDD+/PES Research Unit

This REDD+related Research Unit will be established in the Pakistan Forest Institute, Peshawar. It is to carry on research on various REDD+related issues. This Research Unit will also coordinate with other relevant Research Institutes in the province.

Forest Circle Level REDD+Social and Environmental Safeguards and Grievance Redress Mechanism

This Forest Circle Level forum will be coordinated by the respective Conservator of Forests and will ensure adherence to the Social and Environmental Safeguards. It will have representation of the relevant stakeholder groups at the Forest Circle level.

Forest Divisions/District Level REDD+ Committees

Forest Division/District Level REDD+Committees shall be established at each District Level where REDD+Program is implemented. The Committee shall be chaired by the Divisional Forest Officer of the Forest Division of the concerned district headquarter. Its members shall include:

- DFO Wildlife
- District Officer of Agriculture Extension Department
- District Officer of Livestock and Dairy Development
- District Officer of Fisheries Department
- Assistant Commissioner Revenue Department
- A representative of Forest Owners/Forest Concessionists
- A representative of Forest Users Groups
- A representative of Civil Society Organization
- A representative of Women;
- A representative of Media.
- Any other co-opted member.

The District Advisory Committees shall perform the following functions:

- Work as Think Tank and Resource Pool for the Provincial REDD+Management Committee;
- Serve as platform for discussions on and resolution of REDD+related issues at the district level;
- Provide information and data on REDD+implementation at the district level to the Provincial REDD+Management Committee.

CHAPTER-13

13 PROJECT RISKS AND RISKS MITIGATION STRATEGIES

Despite PES schemes strategic importance and Pakistan's commitment for its success, the implementation of PES schemes across the country may face certain risks. These risks can be external (e.g., finance) or internal (organizational weaknesses). Both types of risks need to be constantly monitored and relevant mitigation measures taken for their proper management. According to Roberts (2007), effective risk management consists of the following steps:

- Risks Identification
- Risks Qualification
- Risks Evaluation
- Risks Mitigation

13.1 Risks Identification

In the identification stage, all potential risks and issues specific and inherent to the project are identified. Both the external and internal risks can be categorized in a number of ways. In the following table, we show the external or internal risks and the potential challenges these risks pose.

Table 13. 1: Risks and the challenges posed by the risk

Risk Category	Challenges Posed by the Risk
External Risks	
Informational	<ul style="list-style-type: none"> ▪ Lack of awareness among beneficiaries and services providers.
Funding and Financial	<ul style="list-style-type: none"> ▪ Non-availability of funds for project implementation. ▪ Perceived risks. ▪ High start-up costs. ▪ High transaction costs.
Spatial	<ul style="list-style-type: none"> ▪ Spatial variability.
Temporal	<ul style="list-style-type: none"> ▪ Non-permanence. ▪ Long time lags. ▪ Different time horizons of buyers and services providers. ▪ Different time horizons of different ecosystem services.
Institutional	<ul style="list-style-type: none"> ▪ Multi-institutions involvement. ▪ Collective action problems. ▪ Weak community organizations and partners. ▪ Coordination and linkages problems.
Political, Governance and Bureaucratic	<ul style="list-style-type: none"> ▪ Political instability. ▪ Changes in and reversal of government policies and priorities. ▪ Changes in bureaucracy and government failures to adopt and implement supportive policies, legislation and governance arrangements.
Economic and Market	<ul style="list-style-type: none"> ▪ Low prices for carbon and other ecosystem services. ▪ Low economic returns and insufficient revenues from ecosystem services to pay for opportunity costs, transactions costs and implementation costs

	visa-a-vis high risks. <ul style="list-style-type: none"> ▪ Inflation and rising costs for project activities implementation. ▪ Extreme fluctuations in country currency exchange rates.
Security	<ul style="list-style-type: none"> ▪ Insurgency.
External	<ul style="list-style-type: none"> ▪ Wars.
Natural	<ul style="list-style-type: none"> ▪ Earthquakes. ▪ Floods. ▪ Droughts. ▪ Forest Fires ▪ Diseases and Insects Pests Outbreaks ▪ Extreme weather events.
Internal Risks	
Technical	<ul style="list-style-type: none"> ▪ Scientific uncertainty. ▪ Establishing baselines. ▪ Diffuseness. ▪ Appropriate program size. ▪ Avoiding leakages. ▪ Accuracy in ecosystems services valuation. ▪ Non-excludability and free-riding ▪ Shortages of skills and experience. ▪ Complicated measurement, monitoring, reporting and verification methods.
Organizational and Managerial	<ul style="list-style-type: none"> ▪ Lack of capacities at organization level for project and program management. ▪ Organizational inertia.
Fiduciary	<ul style="list-style-type: none"> ▪ Weak financial management and over-sight capacities.
UNFCCC Cancun and Other Social and Environmental Safeguards	<ul style="list-style-type: none"> ▪ Lack of or inadequate capacities for proper understanding of the safeguards. ▪ Inadequate capacities to address safeguards in policies, laws and planning mechanisms. ▪ Inadequate capacities to respect safeguards in the field. ▪ Lack of or inadequate capacities to report on the safeguards system.
Stakeholders Engagement	<ul style="list-style-type: none"> ▪ Inadequate engagement of key stakeholders.

13.2 Risks Qualification

The qualifications of the identified risks need to be rated and ranked and according to their likelihood and their impact on the project. Roberts (2007) proposes to create a risk matrix with scores from 0 to 11 for impact, and scores 0 to 10 for likelihood. For both, the value of zero stands for the least impact or least likelihood, and 11 or 10 respectively stand for the highest impact or likelihood. At the end each identified risk has two scores: one for likelihood and one for impact.

13.3 Risks Evaluation

In the evaluation stage, both scores are multiplied in order to assess the relative value of the risk or issue. These can also be categorized as low, medium and high. Low risk category has scores of 0 to 3 on the likelihood and impact scales). Medium risk

category has scores of 4 to 6 on the likelihood and impact scales. High risk category has scores of 7 to 10 on likelihood scale and scores of 7 to 11 on impact scale.

Those elements that carry the highest risk factors need to be paid special attention and prioritized for mitigation.

Using the evaluation criteria, the different risks are categorized as follows:

Table 13.2: PES Risks Categorization, Challenges, Likelihood and Impact Scores

Risk Category	Challenges Posed by the Risk	Likelihood Score	Impact Score	Over-all Score
External Risks				
Informational	<ul style="list-style-type: none"> ▪ Lack of awareness among beneficiaries and services providers. 	▪ Medium	▪ Medium	▪ Medium
Funding and Financial	<ul style="list-style-type: none"> ▪ Non-availability of funds for project implementation. ▪ Perceived risks. ▪ High start-up costs. ▪ High transaction costs. 	▪ Low	▪ High	▪ Medium
Spatial	<ul style="list-style-type: none"> ▪ Spatial variability. 	▪ Low	▪ Medium	▪ Low
Temporal	<ul style="list-style-type: none"> ▪ Non-permanence. ▪ Long time lags. ▪ Different time horizons of buyers and services providers. ▪ Different time horizons of different ecosystem services. 	▪ Medium	▪ Medium	▪ Medium
Institutional	<ul style="list-style-type: none"> ▪ Multi-institutions involvement. ▪ Collective action problems. ▪ Weak community organizations and partners. ▪ Coordination and linkages problems. 	▪ Medium	▪ Medium	▪ Medium
Political, Governance and Bureaucratic	<ul style="list-style-type: none"> ▪ Political instability. ▪ Changes in and reversal of government policies and priorities. ▪ Changes in bureaucracy and government failures to adopt and implement supportive policies, legislation and 	▪ Low	▪ High	▪ Medium

	governance arrangements.			
Economic and Market	<ul style="list-style-type: none"> ▪ Low prices for carbon and other ecosystem services. ▪ Low economic returns and insufficient revenues from ecosystem services to pay for opportunity costs, transactions costs and implementation costs visa-a-vis high risks. ▪ Inflation and rising costs for project activities implementation. ▪ Extreme fluctuations in country currency exchange rates. 	▪ Medium	▪ Medium	▪ Medium
Security	▪ Insurgency.	▪ Low	▪ High	▪ Medium
External	▪ Wars.	▪ Low	▪ High	▪ Medium
Natural	<ul style="list-style-type: none"> ▪ Earthquakes. ▪ Floods. ▪ Droughts. ▪ Forest Fires ▪ Diseases and Insects Pests Outbreaks ▪ Extreme weather events. 	▪ Low	▪ High	▪ Medium
Internal Risks				
Technical	<ul style="list-style-type: none"> ▪ Scientific uncertainty. ▪ Establishing baselines. ▪ Diffuseness. ▪ Appropriate program size. ▪ Avoiding leakages. ▪ Accuracy in ecosystems services valuation. ▪ Non-excludability and free-riding ▪ Shortages of skills and experience. ▪ Complicated measurement, monitoring, reporting and verification methods. 	▪ Medium	▪ Medium	▪ Medium
Organizational and Managerial	<ul style="list-style-type: none"> ▪ Lack of capacities at organization level for project and program management. ▪ Organizational inertia. 	▪ Low	▪ Low	▪ Low
Fiduciary	▪ Weak financial management and over-	▪ Low	▪ Low	▪ Low

	sight capacities.			
UNFCCC Cancun and Other Social and Environmental Safeguards	<ul style="list-style-type: none"> ▪ Lack of or inadequate capacities for proper understanding of the safeguards. ▪ Inadequate capacities to address safeguards in policies, laws and planning mechanisms. ▪ Inadequate capacities to respect safeguards in the field. ▪ Lack of or inadequate capacities to report on the safeguards system. 	▪ Low	▪ Low	▪ Low
Stakeholders Engagement	<ul style="list-style-type: none"> ▪ Inadequate engagement of key stakeholders. 	▪ Low	▪ Medium	▪ Medium

13.4 Risks Mitigation

In the mitigation stage, prominent risks need to be mitigated. Depending on the type of risk, a different combination of mitigation options can be used. Roberts (2007) has identified some options, which include:

- Sharing the risk
- Enduring the risk
- Avoiding the risk
- Lessening the risk

A risk can be reduced by sharing it with, for example, an insurance company, a project partner, or a public or financial institution.

The enduring option is only selected in those cases where the project can live with the risk. Only those risks are chosen for enduring in which the risks of harming the project are not too high so as to kill the project.

Certain risks can be avoided by being proactive and preparing alternative solutions, so that when the risks arise, an alternative is ready for implementation.

The last option, lessening the risk, focuses on reducing either the likelihood of the risk arising or the impact it will have if it arises.

13.4.1 Risks Mitigation Strategies

Following are the proposed risks mitigation strategies for the different types of risks:

Table 13.3: Risks Mitigation Strategies

Risk Category	Challenges Posed by the Risk	Over-all Risk Score	Risk Mitigation Strategy
External Risks			
Informational	<ul style="list-style-type: none"> ▪ Lack of awareness among beneficiaries and services providers. 	<ul style="list-style-type: none"> ▪ Medium 	<ul style="list-style-type: none"> ▪ Establish close cooperation with key partners and ensure pro-active engagement. ▪ Create awareness through making effective use of different information dissemination mechanisms, including print, electronic, social and theater media. ▪ Carry out advocacy work. ▪ Promote champions of PES amongst high political figures, policy makers, and other opinion makers.
Funding and Financial	<ul style="list-style-type: none"> ▪ Non-availability of funds for project implementation. ▪ Perceived risks. ▪ High start-up costs. ▪ High transaction costs. 	<ul style="list-style-type: none"> ▪ Medium 	<ul style="list-style-type: none"> ▪ Diversify the PES funding sources and mechanisms. ▪ Explore options for the establishment of domestic financing mechanism such as from public sources, public-private partnerships, etc. aiming at funding a greater share of projects with in-country capacity. ▪ Explore other PES opportunities such as pollution control, water purification, bio-prospecting, etc. in addition to carbon finance initiatives only. ▪ Negotiate to reduce start-up costs and mobilize resources from different sources. ▪ Negotiate to reduce transactions costs through different measures. ▪ Reduce risks through adoption of a suite of risk mitigation strategies. ▪ Negotiate better contractual deals for service providers so as to increase the returns from PES services provisions.
Spatial	<ul style="list-style-type: none"> ▪ Spatial variability. 	<ul style="list-style-type: none"> ▪ Low 	<ul style="list-style-type: none"> ▪ Adopt landscape approach to the extent possible.
Temporal	<ul style="list-style-type: none"> ▪ Non-permanence. ▪ Long time lags. ▪ Different time horizons of buyers and services providers. ▪ Different time horizons of different ecosystem services. 	<ul style="list-style-type: none"> ▪ Medium 	<ul style="list-style-type: none"> ▪ Initiate and implement projects with long time spans to address non-permanence issues. ▪ Try to bring alignment in the time horizons of buyers and services providers through adoption of innovative financing and payments mechanisms which cater to the needs of both parties. ▪ Design PES schemes keeping in view the different time horizons of various ecosystem services.
Institutional	<ul style="list-style-type: none"> ▪ Multi-institutions involvement. ▪ Collective action problems. 	<ul style="list-style-type: none"> ▪ Medium 	<ul style="list-style-type: none"> ▪ Making effective use of multi-sector and multi-stakeholders/institutions forums like the Forestry Round Table and Joint Forest Management Committees to make PES

	<ul style="list-style-type: none"> ▪ Weak community organizations and partners. ▪ Coordination and linkages problems. 		<p>schemes a priority and as a standing agenda.</p> <ul style="list-style-type: none"> ▪ Establish similar replica at other levels to ensure coordination at various level. ▪ Advocacy work so that appropriate resources are sanctioned for working of these fora. ▪ Capacitate PES institutions across all tiers of government, local communities' and other stakeholder groups.
Political, Governance and Bureaucratic	<ul style="list-style-type: none"> ▪ Political instability. ▪ Changes in and reversal of government policies and priorities. ▪ Changes in bureaucracy and government failures to adopt and implement supportive policies, legislation and governance arrangements. 	<ul style="list-style-type: none"> ▪ Medium 	<ul style="list-style-type: none"> ▪ Develop and implement an effective communication and information strategy for creating ownership for the project. ▪ Establish networks. ▪ Establish economic viability, and social and environmental desirability of the PES initiative. ▪ Establish close cooperation with key partners and ensure pro-active engagement. ▪ Create awareness through making effective use of different information dissemination mechanisms, including print, electronic, social and theater media. ▪ Carry out advocacy work. ▪ Promote champions of PES amongst high political figures, policy makers, and other opinion makers. ▪ Engage these key partners from start of the program.
Economic and Market	<ul style="list-style-type: none"> ▪ Low prices for carbon and other ecosystem services. ▪ Low economic returns and insufficient revenues from ecosystem services to pay for opportunity costs, transactions costs and implementation costs visa-a-vis high risks. ▪ Inflation and rising costs for project activities implementation. ▪ Extreme fluctuations in country currency exchange rates. 	<ul style="list-style-type: none"> ▪ Medium 	<ul style="list-style-type: none"> ▪ Slight price changes can be compensated through appropriate provisions and protections in the PES contracts. ▪ Work closely with PES services buyers to agree on equitable and fair compensation mechanisms. ▪ Work closely with government agencies and communities to mobilize resources for PES scheme from different sources available with the government and local communities.
Security	<ul style="list-style-type: none"> ▪ Insurgency. 	<ul style="list-style-type: none"> ▪ Medium 	<ul style="list-style-type: none"> ▪ Be prepared to endure the risk.
External	<ul style="list-style-type: none"> ▪ Wars. 	<ul style="list-style-type: none"> ▪ Medium 	<ul style="list-style-type: none"> ▪ Be prepared to endure the risk.

Natural	<ul style="list-style-type: none"> ▪ Tsunamis. ▪ Earthquakes. ▪ Floods. ▪ Droughts. ▪ Forest Fires ▪ Diseases and Insects ▪ Pests Outbreaks ▪ Extreme weather events. 	<ul style="list-style-type: none"> ▪ Medium 	<ul style="list-style-type: none"> ▪ Establish and strengthen early warning systems. ▪ Train and capacitate stakeholders in disaster risk reduction strategies. ▪ Strengthen preparedness for various types of disasters. ▪ Strengthen disasters coping strategies at various levels. ▪ Take proactive actions.
Internal Risks			
Technical	<ul style="list-style-type: none"> ▪ Scientific uncertainty. ▪ Establishing baselines. ▪ Diffuseness. ▪ Appropriate program size. ▪ Avoiding leakages. ▪ Accuracy in ecosystems services valuation. ▪ Non-excludability and free-riding ▪ Shortages of skills and experience. ▪ Complicated measurement, monitoring, reporting and verification methods. 	<ul style="list-style-type: none"> ▪ Medium 	<ul style="list-style-type: none"> ▪ Support research work on ecosystem services and PES related issues. ▪ Train staff and relevant members of communities in technical aspects of PES schemes. ▪ Strengthen Systems and Institutions on MRV as per the national and provincial MRV System. ▪ Assign sufficient resources (technical and financial at all levels). ▪ Adopt fully landscape approach ▪ Create a platform of jurisdictions within the landscape (e.g., large forest areas across several adjoining districts). ▪ Establish an enabling environment and good forest governance in all forest types and areas with sufficient resource support. ▪ Develop synergy with other projects and programs (Billion Trees Afforestation Project, Green Pakistan Program, Poverty Reduction Programs, Environmental Protection Programs, The Restoration Initiative, Sustainable Forest Management Program, etc.)
Organizational and Managerial	<ul style="list-style-type: none"> ▪ Lack of capacities at organization level for project and program management. ▪ Organizational inertia. 	<ul style="list-style-type: none"> ▪ Low 	<ul style="list-style-type: none"> ▪ Create critical mass of qualified staff and PES promoters and facilitators in the organizations at national, provincial, district and local levels. ▪ Strengthen upfront the GIS and RS capability at federal and provincial levels for landscape planning and monitoring. ▪ Create partnerships with national and international centers of excellence on various aspects of PES schemes, including technical, policy, legal, marketing and research aspects, to name a few .
Fiduciary	<ul style="list-style-type: none"> ▪ Weak financial management and oversight capacities. 	<ul style="list-style-type: none"> ▪ Low 	<ul style="list-style-type: none"> ▪ Strengthen program management and financial oversight capabilities at federal, provincial, district and local levels. ▪ Ministry of Climate Change, Government of Pakistan and KP Provincial Forest

			Department are accredited as Green Climate Fund (GCF) entities.
UNFCCC Cancun and Other Social and Environmental Safeguards	<ul style="list-style-type: none"> ▪ Lack of or inadequate capacities for proper understanding of the safeguards. ▪ Inadequate capacities to address safeguards in policies, laws and planning mechanisms. ▪ Inadequate capacities to respect safeguards in the field. ▪ Lack of or inadequate capacities to report on the safeguards system. 	<ul style="list-style-type: none"> ▪ Low 	<ul style="list-style-type: none"> ▪ Implement UNFCCC and other social and environmental safeguards instruments through establishing and strengthening institutional set ups for the purpose. ▪ Prepare and implement the social and environmental management plan as per recommendations of the Climate, Law and Policy consultancy firm which has worked on these issues.
Stakeholders Engagement	<ul style="list-style-type: none"> ▪ Inadequate engagement of key stakeholders. 	<ul style="list-style-type: none"> ▪ Medium 	<ul style="list-style-type: none"> ▪ Set clear, objective and transparent targeting strategy for the different stakeholders' engagement. ▪ Ensure stakeholders' engagement in work planning and monitoring of PES scheme. ▪ Create broader partnership with private sector and civil society both at landscape, provincial and federal levels.

CHAPTER-14

14 CONFLICTS AND CONFLICTS RESOLUTION MECHANISMS

14.1 Stakeholders

There a large number of government sector institutions and agencies, local communities and their organizations, research institutions, and private sector bodies who are involved in Kaghan Valley of Pakistan. They are therefore stakeholders and have stakes in the management of WHTFs in one way or another-some directly and others only indirectly. The following is a list of these stakeholders:

14.1.1 Federal Agencies

- Federal Ministry of Climate Change
- Water and Power Development Authority (WAPDA)
- National Highway Authority (NHA)
- Federal Environmental Protection Agency (Pak-EPA)
- National Disasters Management Authority (NDMA)

14.1.2 Provincial Agencies

- KP Forests, Environment and Wildlife Department
- KP Environmental Protection Agency (KP-EPA)
- KP Agriculture Department
- KP Livestock Department
- KP Tourism Development Corporation
- KP Provincial Disasters Management Authority (PDMA)
- Mines and Minerals Development Department

14.1.3 Local Communities

- Forest Communities in Kaghan Valley
- Gujjars and Other Grazing Communities
- General Communities

14.1.4 Conservation Organizations and NGOs

- IUCN-Pakistan
- WWF-Pakistan
- Local NGO's

14.1.5 Research Institutions

- Academic and Research Institutions (Universities working on mountainous areas)

14.1.6 Private Sector

- Private Sector (e.g. Tourism Operators, NTFP Companies, Agro business and General trading sectors)
- Ecosystem Services Buyers

14.1.7 Media

- Press and Electronic Media

14.2 Conflicts Related to Kaghan PES Scheme

There can be a variety of sources or reasons for conflicts between different groups of actors and among actors within a group in this PES project. An improved understanding of the conflicts is important for conflicts management and resolution.

14.3 Potential Actors in the PES Scheme Conflict

Major actors in the Mangrove PES Project Conflicts include the following:

- PES Services Providers
 - Forest Department
 - Tourism Authorities
 - Local Communities- Forests Owning Community and Grazing Community
- PES Services Buyers
 - Water and Power Development Authority
 - Beneficiaries of NTFPs
 - Biodiversity Conservation Organizations and Beneficiaries
 - Eco-tourists
 - Disaster Management Authorities
 - National Highways Authority
 - Carbon Credits Buyers
- PES Services Intermediaries and Other Supporting Organizations
 - PES Scheme Developers
 - PES Scheme Validators
 - PES Scheme Verifiers
 - Wildlife Department
 - Environment Department
 - Other Regulatory Bodies
- Watch Dogs and Civil Society Organizations
 - NGOs
 - Civil Society Organizations
 - Media

14.4 Conflicts Analysis

Resolution of the different sources of conflicts among the different actors in the PES scheme would require proper understanding of the conflict. This would need conflict analysis, which will have to be integrated into the conflict management process, and a proper understanding of the allocation and distribution of rights, responsibilities, returns and relationships. Rights, responsibilities and returns are relationships that stakeholders have to the resource base:

- Rights are access and control over resources, as legally or informally defined.
- Responsibilities are roles and power in relation to the management of resources.
- Returns are the benefits and costs that a stakeholder derives from a resource, based on rights and responsibilities.

In addition, stakeholders have relationships among each other that are independent of the resource.

Five types of core issue may lead to conflicts:

- Problems with information
- Conflicting interests
- Difficult relationships
- Structural issues
- Conflicting values

Therefore, it is important to identify what gave rise to the issue:

- A perceived or actual difference or contending views
- A perceived or actual threat
- A gap - an absence or lack of important information, rules, regulations, etc.

Table 14. 1: Matrix of Stakeholder who can potentially have conflicts in WHTF PES Project

	Forest Deptt:	Forest Owning and Using Community	Other Government Deptts:	Water and Power Development Authority and Other Federal Authorities as PES Services Buyers	EPAs as Regulatory Authorities	Pharmaceutical and Other Industries	Eco-tourism Operators	Hotelling Industry	National Highway Authority and Other PES Services Buyers	Disasters Management Authorities	Carbon Buyers
Forest Deptt:		X		X		X	X	X	X		X
Community: Forest Owners, Grazing and General Community	X		X	X							X
Other Government Deptts:		X									
WAPDA and Other Authorities as PES Services Buyers	X	X									
EPAs as Regulators		X	X				X	X			
Pharmaceutical and Other NTFPs Industries	X	X	X								
Eco-tourism Operators	X	X	X								
Hotelling Industry	X	X	X		X						
National Highway Authority and Other Authorities as PES Services Buyers	X	X	X								
Disasters Management Authorities	X	X	X								
Carbon Buyers	X	X									

14.5 Potential Sources of Conflict in the PES Scheme

Following are the potential sources of conflict among the above actors in the WHTF PES scheme:

- Conflicts over resources and rights
- Conflicts over returns and benefits sharing
- Conflicts over responsibilities and performance
- Conflicts over relations

14.6 Conflicts Resolution Mechanism

The introduction of the PES scheme in Kaghan valley can potentially have significant impacts on the dynamics of conflicts related to forests and other natural resources and associated rights, returns and benefits sharing, responsibilities and performance, and over relations. Major strategies that are used in different situations include the following:

- **Avoidance:** acting to keep a conflict from becoming publicly acknowledged.
- **Coercion:** trying to impose one's will through the threat or use of force, including violence, protests, exertion of economic dominance and political contacts.
- **Negotiation:** following a voluntary process in which parties reach agreement through consensus.
- **Mediation:** using a third party to facilitate the negotiation process.
- **Arbitration:** submitting a conflict to a mutually agreeable third party, who renders a decision.
- **Adjudication:** relying on a judge or administrator to make a binding decision.

We propose to resolve PES related conflicts in one of the following four ways: negotiation, mediation and arbitration or adjudication. The use of negotiation, mediation and mediation strategies would require a Feedback and Grievance Redress Mechanism (FGRM).

14.7 Feedback and Grievance Redress Mechanism

This is an out of court conflict resolution mechanism, for which a unit will be established in KP province. The proposed system is the one recommended by the consultants engaged for the purposed by the National REDD+ Office of the Ministry of Climate Change, Government of Pakistan. In line with this national FGRM, this provincial FGRM should also be implemented as a four-step process as given below:



Figure 14.1: Feedback and Grievance Redress Mechanism

Such a mechanism needs to be available from the start of the PES scheme so that problems are addressed at their initial stages before they turn into bigger issues. A 60-day resolution process is contemplated from the time the complaint is first registered. For this a dedicated person or complaints officer is to be made responsible.

Step-1: Receipt and Registration of Grievance

The designated person in the field and relevant organizations (DFO, Conservator of Forests, Chief Conservator of Forests, Forestry Round Table, Joint Forest Management Committee) can and will be able to receive complaints and take the initial steps to respond to them.

The PES scheme FGMR is designed to reach out to all stakeholders in the PES scheme. Complaints and grievances may be presented through multiple low cost channels that inter alia include email, website, feedback/complaint box, toll free number, SMS/WhatsApp, letter form, in person appearance, etc. For ease of access to various stakeholders, the provision and registration of complaints is to be permissible in local language, Urdu as well as English language.

The total time envisaged for registration of the grievance is seven working days.

Step 2: Investigation of Grievance

Once the grievance has been registered, the concerned person in the PES scheme is to compile the relevant information to help determine if it is possible and in what way the issue can be resolved. The concerned person will contact the complainant, other relevant parties, and organizations to obtain first-hand information in order to better understand the problem. The concerned staff officer gathers the opinions of the

complainant and other principal parties involved by completing the matrix below. This includes potential resolutions and / or solutions to the complaint.

Table 14.2: Complaints Processing Form

Actors	Complaint/ Issue	Position and interest	Legal basis	Witnesses and evidence	Proposed resolution	Recommended solution
Who are the relevant parties?	What is the complaint (s) or issue (s)?	What does the claimant request and why? What is the position of the other party?	What is the legal right or obligation that has been violated or not recognized?	What evidence is available to substantiate the complaint? Are there witnesses and if so, who are they and what is the information they provide?	What is the resolution requested by the claimant?	What is the resolution approach recommended?

The research process would take 20 working days.

Step 3: Resolution

Once all the necessary information has been collected, the concerned officer recommends and implements a resolution approach at the appropriate level (mediation at village, district or province).

In the mediation the claimant and another party (affected) mutually discuss the resolution proposed and shape it in a process acceptable to both parties.

The concerned officer formulates a written response about the decision process and resolution. The way in which the response is formulated is as important as the content of the response, ensuring cultural sensitivity. A response generally consists of: i) the complaint and the issues that are being considered in the response, ii) the opinion of each party on the issues, iii) the justification for the decision, iv) the decision and the approach of the resolution.

The delivery of the response will be made by the complaints officer in a face-to-face meeting with the claimant. The complaints officer explains the resolution proposed. If the complainant is not satisfied with the resolution, he / she can appeal or proceed to use the available and applicable grievance mechanisms. If the complainant is satisfied with the resolution, he/she will receive additional instructions from the complaints officer how to implement the resolution.

The outcome of the procedure is an agreement between the parties. The parties will sign this agreement and will be obliged to comply with its stipulations.

If an acceptable solution is not found, complaints officer issues a report of the results of the session. The report is transmitted to the claimant and to all other parties.

Minutes and decision logged by complaints officer and stored in Provincial FGRM Unit office database.

The process of evaluation and decision making takes maximum of 20 working days.

Step 4: Monitoring

The provincial PES Office in KP province will be responsible for monitoring the implementation of the resolution of complaints. The provincial FGRM monitoring system can be a simple database from which the information can be analyzed to recognize the patterns of complaints, identify the causes of the complaint and evaluate how effectively the complaints are handled by the FGRM Unit.

It is recommended that a database is created to keep track of statistical information on complaints.

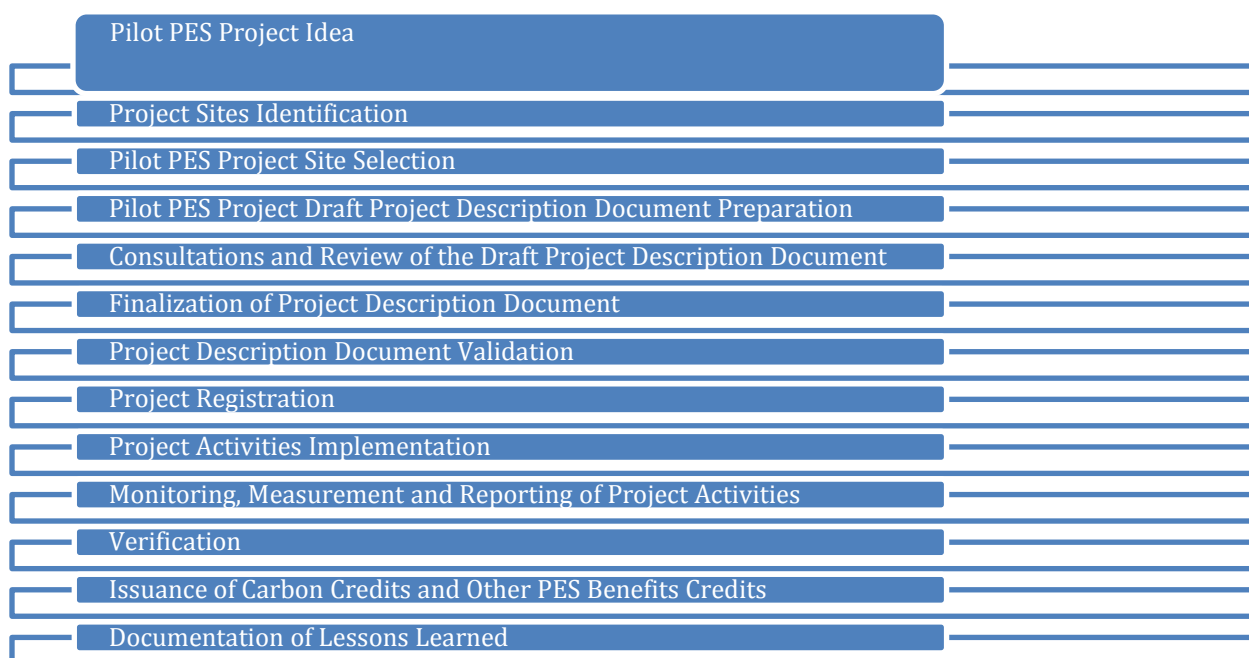
The monitoring process will take as long as the duration of the agreement and resolution of the complaint (usually between 3-12 months).

It has to be noted that the above proposed mechanism is not intended to replace the judiciary or other forms of legal recourse as may be specified in the PES contracts. Therefore, the procedure described above would apply in case the affected parties decide to use the FGRM in preference to other available mechanisms.

CHAPTER-15

15 ROADMAP FOR PES PROJECT IMPLEMENTATION

In the following we provide a generic flow chart for the conception, design, development, validation, registration, implementation, monitoring, verification and documentation of lessons learned of a PES project.



The conception and design phases of the PES project are being done under the current REDD+ Readiness Phase grant of FCPF to the government of Pakistan. In the work plan given below we describe the following steps and actions that need to be taken for Pilot PES Project Implementation:

- Consultations on and Review of the First Draft of Project Description Document
- Finalization of Project Description Document
- Validation of Project Description Document
- Registration of Pilot PES Project
- Implementation of Pilot PES Project
- Monitoring, Measurement and Report of Project Implementation
- Verification
- Issuance of Carbon Credits and Other PES Benefits
- Documentation of Lessons Learned from Pilot Project Implementation

The above steps are further detailed in the following action plan.

Roadmap Objectives	Action Steps	Timeline	Objectively Verifiable Indicators of Success	Primary Responsibility	Supporting Responsibility
Conducting Consultation on and doing review of the Draft Project Description Document	<p>Share the Project Description Document with KP Government/KP Forest Department.</p> <p>The Ministry of Climate Change and the KP Provincial Forest Departments in collaboration with conservation organizations like IUCN and WWF hold consultative meetings with different stakeholders in the PES scheme and get their feedback on the proposed WHT Forests Pilot PES scheme.</p>	December, 2018.	<p>Project Description shared with KP Government/ KP Forest Department.</p> <p>Consultative Meetings program for holding of joint consultative meetings of Ministry of Climate Change, KP Provincial Forest Department and various Conservation Organizations with the different stakeholders in the PES scheme is prepared, implemented and minutes of the consultations held are available.</p>	Ministry of Climate Change, Government of Pakistan.	<p>KP Provincial Forest Department.</p> <p>Conservation Organizations like IUCN and WWF.</p>
Finalize the Project Description Document after the consultative and review process	Revise and finalize the Project Description Document.	March, 2019.	Copy of revised and final Project Description Document is prepared and available.	Ministry of Climate Change, Government of Pakistan.	KP Provincial Forest Department.
Getting Letter of Endorsement for the Project from the Competent Authority in the Government of Pakistan	<p>Liaise and interact with relevant agencies in the Government of Pakistan to get letter of endorsement for the project from the competent authority.</p> <p>The Project Proponents/Ministry of Climate Change, Government of Pakistan, lists the Project Description on the VCS Project Pipeline so that it appears in a section of the VCS Project Database for forthcoming projects.</p> <p>The Project Proponents/Ministry of Climate Change, Government of Pakistan opens an account with one of the two VCS Registry Operators (APX or Markit), both of which are linked with the VCS Project Database.</p>	September, 2019.	<p>Letter of endorsement for the project from the competent authority in the Government Pakistan is obtained and is available.</p> <p>The Project is listed in VCS Project Pipeline list and its Project Description is available in the VCS Project Database for forthcoming projects.</p> <p>Account is opened with one of the two VCS Registry Operators and Account Number is available.</p>	Ministry of Climate Change, Government of Pakistan.	KP Provincial Forest Department.
Conduct Third Party Validation of the Project Description Document	Engage independent Third Party Validator for validation of the Project Description Document.	October, 2019.	Project Description Validation letter is procured and available.	Ministry of Climate Change, Government of Pakistan.	KP Provincial Forest Department.
Complete Project	Register Project with the Verified Carbon	December, 2019.	Project Registration letter is	Ministry of Climate Change,	KP Provincial Forest

Registration with Verified Carbon Standard (VCS) and Climate Community and Biodiversity (CCB) Standard	Standard and Climate, Community and Biodiversity Boards.		procured and available.	Government of Pakistan.	Department.
Project Implementation as per Project Description Document	Start Project Implementation as per approved and registered Project Description Document.	January, 2020.	Project Implementation is officially started.	KP Provincial Forest Department.	Ministry of Climate Change, Government of Pakistan.
Putting in place Threshold Conditions for PES					
Advocacy for making constitutional amendment that recognizes and makes provisions for ecosystem services of forests.	Draft constitutional amendment after due consultation with all federating units.	December, 2020.	Draft of constitutional amendment by the Ministry of Climate Change after due consultation with all federating units for further processing is prepared and available.	Ministry of Climate Change, Government of Pakistan.	Provincial Governments.
Review and revision of forestry legislation at the national level and make appropriate provisions for PES.	Draft a new national level framework legislation for implementation of the national framework forest policy that has provisions for PES in the forestry sector.	December, 2020.	Draft of proposed legislation is prepared and available.	Ministry of Climate Change, Government of Pakistan.	Provincial Governments.
Review and revision of provincial forestry legislation and incorporate therein the required provisions for PES, rights to ecosystem services and other discernable regulatory regimes for PES.	Draft provincial forestry legislation that has provisions for PES, rights to ecosystem services and other discernable regulatory regimes for PES.	December, 2020.	Draft of proposed legislation is prepared and available.	Provincial Forest Departments.	Ministry of Climate Change and Other Provincial Forest Departments.
Addressing UNFCCC Cancun Safeguards and World Bank Social and Environmental Policies Safeguards.	Take concrete steps to address the recommendations made by Climate, Law and Policy and Hagler Bailey Consultancy with regard to UNFCCC Cancun and World Bank Environmental and Social Safeguards.	As per time line provided by the Consultancy Firms.	Drafts of proposals for accommodating the Cancun and Other Social and Environmental Safeguards are prepared and available.	Ministry of Climate Change, Government of Pakistan.	Provincial Governments.
Taking steps to address land tenure issues.	Take concrete steps to put in place the proposed strategies for legal recognition and protection of tenure of relevant PES services providers. Take concrete steps to put in place the proposed strategies for tenure rights implementation by governments and right	December, 2020.	Drafts of strategic actions are prepared and available.	Provincial Forest Departments.	Provincial Law Departments

	holders. Take concrete steps to put in place the proposed strategies for supporting the enjoyment of tenure rights.				
Addressing key good forest governance factors: pillars and principles of good forest governance.	Take steps towards good forest governance for achieving positive and sustained resources conservation, development and environmental protection outcomes.	December, 2020.	Draft of forest governance reform is prepared and available.	Provincial Forest Departments.	Federal Ministry of Climate Change, Government of Pakistan.
Addressing drivers of deforestation and forest degradation and over-exploitation of other natural resources like wildlife, biodiversity, fishes.	Take steps to address the drivers of deforestation and forest degradation related to managing the demand and consumption of various forest and other natural resources products and services, e.g., fuelwood, timber, fodder, grazing of livestock, extraction of various non-timber forest products, etc. Take steps to address the drivers of deforestation and forest degradation that result in converting forest land into other land uses such as agriculture, settlements, infrastructure, mining, etc. Take steps to reduce the pressures resulting on forests, wildlife, fisheries and other PES resources resulting from natural or human made hazards, such as climate change, droughts, floods, extreme weather events, fires, landslide, wave action of passing ships, insects pests and diseases of these resources.	December, 2020.	Action plan for implementation of agreed interventions is prepared and available.	Provincial Forest Departments.	Federal Ministry of Climate Change, Government of Pakistan.
Instituting appropriate institutional mechanisms for PES at national and provincial levels.	Ministry of Climate Change at the national level takes steps to design and develop an appropriate institutional apparatus for PES in the Ministry. Provincial Forest Departments take steps to design and develop appropriate institutional mechanisms for PES in the province.	December, 2019.	Draft of Proposal for PES Institutional Architecture at the national is prepared and available. Draft of Proposals for PES Institutional Architectures at provincial levels are prepared and available.	Ministry of Climate Change, Government of Pakistan.	Provincial Forest Departments
Identification and targeting of potential buyers for the identified PES services (Watershed protection;	Identify and target potential buyers of various ecosystem services of mangrove forests. Negotiate with the potential members in communities who would be partners in the	March, 2019.	Potential buyers for various ecosystem services identified and negotiations held with the buyers. Records of meetings and	KP Provincial Forest Department.	Ministry of Climate Change, Government of Pakistan.

biodiversity conservation and ecotourism; climate change mitigation and adaptation; conservation and development of NTFPs; and landscape stabilization and prevention and control of landslides).	<p>proposed PES pilot scheme.</p> <p>Identify and target potential intermediaries to bring together buyers and sellers of ecosystem services and provide other needed services for PES pilot project materialization.</p> <p>Develop criteria for price setting of different PES services and initiate negotiations between buyers and sellers of PES services.</p> <p>Develop and negotiate sale and purchase agreements between buyers and sellers of different PES services.</p>		negotiations held are prepared and available.		
Addressing Policy Gaps					
Reviewing and revising national and forest, wildlife, fisheries and environment policies to make them conducive for and supportive of PES.	<p>Review and revise national forest, wildlife, fisheries and environment policies to make these conducive for and supportive of PES program in the forestry sector.</p> <p>Develop an action plan for implementing PES related provisions of various national policies.</p>	December, 2019.	<p>Review completed and draft of revised policies prepared and available.</p> <p>Action plan for implementation modalities of the revised policies prepared and available.</p>	Ministry of Climate Change, Government of Pakistan.	Relevant Provincial Government Departments- Forests, Wildlife, Fisheries and Environment.
Reviewing provincial forest, wildlife, fisheries and environmental policies to make them conducive for and supportive of PES program.	<p>Review and revise provincial forest, wildlife, fisheries and environment policies to make these conducive for and supportive of PES program in the forestry sector.</p> <p>Develop an action plan for implementing PES related provisions of various provincial policies.</p>	December, 2019.	<p>Review completed and draft of revised policies prepared and available.</p> <p>Action plan for implementation modalities of the revised policies prepared and available.</p>	Relevant Provincial Government Departments- Forests, Wildlife, Fisheries and Environment.	Ministry of Climate Change, Government of Pakistan.
Addressing Institutional Gaps and undertaking institutional development and organizational strengthening activities at the national level.	<p>Undertake institutional capacity assessment exercise at the national Ministry of Climate Change level and identify capacity gaps.</p> <p>Develop capacity building plan for the identified institutional capacity gaps.</p> <p>Prepare a project document for institutional development and organizational strengthening.</p>	December, 2019.	<p>Institutional capacity assessment done and report prepared and available.</p> <p>Capacity building plan prepared and available.</p> <p>Project document for institutional development and organizational strengthening prepared and available.</p>	Ministry of Climate Change, Government of Pakistan.	Relevant Provincial Government Departments- Forests, Wildlife, Fisheries and Environment.
Addressing Institutional Gaps and undertaking	Undertake institutional capacity assessment exercise at the Forest, Wildlife, Fisheries and Environment Departments	December, 2019.	Institutional capacity assessment done and report prepared and available.	Relevant Provincial Government Departments- Forests, Wildlife, Fisheries	Ministry of Climate Change, Government of Pakistan.

institutional development and organizational strengthening activities at provincial levels.	<p>level and identify capacity gaps.</p> <p>Develop capacity building plan for the identified institutional capacity gaps.</p> <p>Prepare a project document for institutional development and organizational strengthening.</p>		<p>Capacity building plan prepared and available.</p> <p>Project document for institutional development and organizational strengthening prepared and available.</p>	and Environment.	
Identifying, involving and strengthening the role of intermediaries.	<p>Identify intermediaries for the PES program who could perform different supporting functions for PES program design and implementation.</p> <p>Negotiate with the intermediaries and involve them.</p> <p>Strengthen the role of intermediaries in the PES program.</p>	December, 2019.	<p>A panel of intermediaries is available.</p> <p>Minutes of discussions and negotiations held with intermediaries.</p> <p>A list of steps and measures taken to strengthen the role of intermediaries.</p>	Provincial Forest Departments.	Federal Ministry of Climate Change, Government of Pakistan.
Engaging stakeholders and ensuring their effective participation in PES program.	<p>Identify and liaise with all the relevant stakeholders at the national and provincial levels.</p> <p>Develop a plan for stakeholders' engagement.</p> <p>Implement the stakeholders' engagement plan.</p>	December, 2019.	<p>Stakeholders' engagement plan prepared and available.</p> <p>Project proposal prepared for effective implementation of the stakeholders engagement plan.</p> <p>Resources procured for implementation of the plan and plan implementation underway and progress reports of implementation prepared and available.</p>	Relevant Provincial Government Departments- Forests, Wildlife, Fisheries and Environment.	Ministry of Climate Change, Government of Pakistan.
Developing incentives allocations and benefits distribution and disbursement mechanisms.	<p>Develop incentives allocations and benefits distribution and disbursement mechanisms.</p> <p>Discuss with and get endorsement of local communities and other PES participants for the proposed incentives allocation and benefits distribution and disbursement mechanisms.</p> <p>Implement the developed and agreed plan.</p>	December, 2019 to end of project in December 2049.	<p>Incentives allocation and benefits distribution and disbursement plan prepared and available.</p> <p>Discussions with local communities and other PES participants held and minutes of the meetings held prepared and available.</p> <p>Implementation of the plan is underway and progress reports of implementation prepared and available.</p>	Relevant Provincial Government Departments- Forests, Wildlife, Fisheries and Environment.	Ministry of Climate Change, Government of Pakistan.
Ensuring funding for	Prepare proposals for securing funding for	December, 2019.	Proposals for securing	Relevant Provincial	Ministry of Climate Change,

PES project from different sources.	PES project from different sources. Advocate for procuring the needed funds.		funding for PES projects prepared and being processed. Advocacy material for PES financing prepared and being widely circulated to relevant parties.	Government Departments- Forests, Wildlife, Fisheries and Environment.	Government of Pakistan.
Making Project Proposals for GCF Funding	Prepare and process project proposals for GCF funding of PES programs.	July, 2019.	GCP Project concepts prepared and under process.	Relevant Provincial Government Departments- Forests, Wildlife, Fisheries and Environment.	Ministry of Climate Change, Government of Pakistan.
Implementing Awareness Creation Program					
Implementing awareness programs among local communities to increase their appreciation of the long-term value of WHTF and their ecosystem services and the benefits that can be generated through implementing PES schemes, and their understanding of the impact of their activities to the WHTF ecosystems and their ecosystem services.	Prepare and implement the awareness raising programs.	July, 2019 and all along during project implementation.	Awareness raising programs prepared and under implementation.	Relevant Provincial Government Departments- Forests, Wildlife, Fisheries and Environment.	Ministry of Climate Change, Government of Pakistan.
Conducting a campaign (workshops, exhibitions, etc.) at local, provincial and national levels to promote the attraction and value of WHTF ecosystem (biodiversity, watershed protection value, natural disaster protection, economic value, recreation etc.)	Prepare and implement the different campaign programs.	July, 2019 and all along during project implementation.	Campaign programs prepared and under implementation.	Relevant Provincial Government Departments- Forests, Wildlife, Fisheries and Environment.	Ministry of Climate Change, Government of Pakistan.
Establishing a Stakeholders Forum	Prepare for and establish the Stakeholders Forum.	July, 2019 and all along during	Stakeholders Forum established and functioning.	Relevant Provincial Government Departments-	Ministry of Climate Change, Government of Pakistan.

for discussing the WHTF management issues Between Forest and other government departments, local community, private sector, NGOs, media, and PES services buyers.		project implementation.		Forests, Wildlife, Fisheries and Environment.	
Conducting radio / TV talk-shows and writing press articles to promote the project.	Prepare and implement the project PR and promotion programs.	July, 2019 and all along during project implementation.	Project PR and promotion programs prepared and under implementation.	Relevant Provincial Government Departments- Forests, Wildlife, Fisheries and Environment.	Ministry of Climate Change, Government of Pakistan.
Implementing Training and Capacity Building Program	The following tasks are accomplished:	January 2020 to end of project period in December 2049.	Training programs prepared and under implementation.	Relevant Provincial Government Departments- Forests, Wildlife, Fisheries and Environment.	Ministry of Climate Change, Government of Pakistan.
Training local community in the skills necessary to involve in the project activities.	Prepare and implement the training programs.	January, 2020 and all along during project implementation.	Training programs prepared and under implementation.	Relevant Provincial Government Departments- Forests, Wildlife, Fisheries and Environment.	Ministry of Climate Change, Government of Pakistan.
Training other departments (fisheries, wildlife, environment etc.) in the skills necessary to involve in the project activities.	Prepare and implement the training programs.	January, 2020 and all along during project implementation.	Training programs prepared and under implementation.	Relevant Provincial Government Departments- Forests, Wildlife, Fisheries and Environment.	Ministry of Climate Change, Government of Pakistan.
Training NGOs and Other Stakeholders like Media in the skills necessary to do advocacy work in support of the PES project.	Prepare and implement the training programs.	January, 2020 and all along during project implementation.	Training programs prepared and under implementation.	Relevant Provincial Government Departments- Forests, Wildlife, Fisheries and Environment.	Ministry of Climate Change, Government of Pakistan.
Training Provincial Forest Departments para-professional staff in the skills necessary to implement various project activities.	Prepare and implement the training programs.	January, 2020 and all along during project implementation.	Training programs prepared and under implementation.	Relevant Provincial Government Departments- Forests, Wildlife, Fisheries and Environment.	Ministry of Climate Change, Government of Pakistan.
Training other project partners relevant staff (Port Qasim Authority, Industries, Karachi City Government,	Prepare and implement the training programs.	January, 2020 and all along during project implementation.	Training programs prepared and under implementation.	Relevant Provincial Government Departments- Forests, Wildlife, Fisheries and Environment.	Ministry of Climate Change, Government of Pakistan.

Hospitals, Industrials Estates, etc.) in the skills necessary to involve in the project activities.					
Training religious leaders and other opinion makers in the skills necessary to involve in the project activities	Prepare and implement the training programs.	January, 2020 and all along during project implementation.	Training programs prepared and under implementation.	Relevant Provincial Government Departments-Forests, Wildlife, Fisheries and Environment.	Ministry of Climate Change, Government of Pakistan.
Improving the capacity of project staff and government partners on technical and project management, climate change mitigation, biodiversity conservation, eco-tourism, pollution control, shoreline stabilization, etc.	Prepare and implement the training programs.	January, 2020 and all along during project implementation.	Training programs prepared and under implementation.	Relevant Provincial Government Departments-Forests, Wildlife, Fisheries and Environment.	Ministry of Climate Change, Government of Pakistan.
Implementing PDD Activities related to outcome 1: Reduced threats to existing WHTF and their ecosystem services in the project area and increased area of WHTFs thereby maintaining and enhancing the capacity of WHTFs to provide ecosystem services.	The following tasks are accomplished:	January 2020 to end of project period in December 2049.	Plans for protection of existing natural forests and enhancement of forest area through planting of barren and degraded areas are prepared and under implementation.	KP Provincial Government Departments-Forests, Wildlife, Agriculture, Livestock, Tourism, etc.	Ministry of Climate Change, Government of Pakistan.
	Social Awareness Raising, Livelihoods and Forest Governance Improvement Plan for Kaghan Valley have been prepared.	January 2020 to end of project period in December 2049.	Plans for proposed activities are prepared and under implementation.	KP Provincial Government Departments-Forests, and Other Partners.	Ministry of Climate Change, Government of Pakistan.
	A Village Land Use Plan is prepared and available for implementation.	January 2020 to end of project period in December 2049.	Plans for proposed activities are prepared and under implementation.	KP Provincial Government Departments-Forests, and Other Partners.	Ministry of Climate Change, Government of Pakistan.
	Consultations with the communities and plans for increased forest patrolling and	January 2020 to end of project	Plans for proposed activities are prepared and under	KP Provincial Government Departments-Forests, and	Ministry of Climate Change, Government of Pakistan.

	protection.	period in December 2049.	implementation.	Other Partners.	
	Consultations with the communities for Forest Enclosures establishment and appointment of Forest Negahbans, and the establishment of Forest Enclosures.	January 2020 to end of project period in December 2049.	Plans for proposed activities are prepared and under implementation.	KP Provincial Government Departments-Forests, and Other Partners.	Ministry of Climate Change, Government of Pakistan.
	Consultations with communities and fire prevention plans.	January 2020 to end of project period in December 2049.	Plans for proposed activities are prepared and under implementation.	KP Provincial Government Departments-Forests, and Other Partners.	Ministry of Climate Change, Government of Pakistan.
	Consultations with communities and prepare plans for alternate energy sources.	January 2020 to end of project period in December 2049.	Plans for proposed activities are prepared and under implementation.	KP Provincial Government Departments-Forests, and Other Partners.	Ministry of Climate Change, Government of Pakistan.
	Consultations with relevant communities and distribution of fuel efficient cooking stoves.	January 2020 to end of project period in December 2049.	Plans for proposed activities are prepared and under implementation.	KP Provincial Government Departments-Forests, and Other Partners.	Ministry of Climate Change, Government of Pakistan.
	Consultations with communities and raising of woodlots. sources through coastal rivers.	January 2020 to end of project period in December 2049.	Plans for proposed activities are prepared and under implementation.	KP Provincial Government Departments-Forests, and Other Partners.	Ministry of Climate Change, Government of Pakistan.
	Consultations with communities and relevant agencies and planting of 22,500 ha of barren land.	January 2020 to end of project period in December 2049.	Plans for proposed activities are prepared and under implementation.	KP Provincial Government Departments-Forests, and Other Partners.	Ministry of Climate Change, Government of Pakistan.
	Consultations with and plan for controlling cutting of forests for fuelwood purposes.	January 2020 to end of project period in December 2049.	Plans for proposed activities are prepared and under implementation.	KP Provincial Government Departments-Forests, and Other Partners.	Ministry of Climate Change, Government of Pakistan.
	Consultations with and plan for controlling damages to braodleaf trees due to cutting of branches for animal fodder purposes.	January 2020 to end of project period in December 2049.	Plans for proposed activities are prepared and under implementation.	KP Provincial Government Departments-Forests, and Other Partners.	Ministry of Climate Change, Government of Pakistan.
	Consultations with and control of conversion of forest land to non-forest land uses and stoppage of construction of un-authorized human habitations and business complexes.	January 2020 to end of project period in December 2049.	Plans for proposed activities are prepared and under implementation.	KP Provincial Government Departments-Forests, and Other Partners.	Ministry of Climate Change, Government of Pakistan.
	Consultations with relevant stakeholders and implementation of Integrated Watershed Management Plan.	January 2020 to end of project period in December 2049.	Plans for proposed activities are prepared and under implementation.	KP Provincial Government Departments-Forests, and Other Partners.	Ministry of Climate Change, Government of Pakistan.
	Consultations with relevant stakeholders and implementation of Biodiversity Conservation and Management Plan.	January 2020 to end of project period in December 2049.	Plans for proposed activities are prepared and under implementation.	KP Provincial Government Departments-Forests, and Other Partners.	Ministry of Climate Change, Government of Pakistan.
	Consultations with relevant stakeholders and implementation of NTFPs Conservation	January 2020 to end of project	Plans for proposed activities are prepared and under	KP Provincial Government Departments-Forests, and	Ministry of Climate Change, Government of Pakistan.

	and Development Program.	period in December 2049.	implementation.	Other Partners.	
	Consultations with relevant stakeholders and implementation of Eco-tourism Development and Promotion Program	January 2020 to end of project period in December 2049.	Plans for proposed activities are prepared and under implementation.	KP Provincial Government Departments-Forests, and Other Partners.	Ministry of Climate Change, Government of Pakistan.
	Consultations with relevant stakeholders and implementation of Landscape Stabilization and Landslides Prevention and Control Program in the valley.	January 2020 to end of project period in December 2049.	Plans for proposed activities are prepared and under implementation.	KP Provincial Government Departments-Forests, and Other Partners.	Ministry of Climate Change, Government of Pakistan.
	Consultations with relevant stakeholders and implementation of Integrated Silvo-pastoral System.	January 2020 to end of project period in December 2049.	Plans for proposed activities are prepared and under implementation.	KP Provincial Government Departments-Forests, and Other Partners.	Ministry of Climate Change, Government of Pakistan.
	Consultations with relevant stakeholders and implementation of Agro- and Farm Forestry Program on Crop Lands.	January 2020 to end of project period in December 2049.	Plans for proposed activities are prepared and under implementation.	KP Provincial Government Departments-Forests, and Other Partners.	Ministry of Climate Change, Government of Pakistan.
	Consultations with relevant stakeholders and implementation of Crop Lands Productivity Enhancement Program.	January 2020 to end of project period in December 2049.	Plans for proposed activities are prepared and under implementation.	KP Provincial Government Departments-Forests, and Other Partners.	Ministry of Climate Change, Government of Pakistan.
	Consultations with relevant stakeholders and implementation of Grass Lands and Range Lands Productivity Enhancement Program.	January 2020 to end of project period in December 2049.	Plans for proposed activities are prepared and under implementation.	KP Provincial Government Departments-Forests, and Other Partners.	Ministry of Climate Change, Government of Pakistan.
Implementing PDD Activities related to outcome 2: Models of public and private sector PES and related schemes developed and demonstrated within the project area, and the approach replicated in other regions of Pakistan.	The following tasks are accomplished:	January 2020 to end of project period in December 2049.	MoUs developed and signed for public-private sector WHTF PES schemes. These PES schemes are meant to reward the maintenance, improvement or adoption of WHTFs conservation and expansion-friendly measures. Copies of Project Design Documents and copies of signed MoUs between public-private partners for PES Schemes implementation are available and under implementation.	Relevant Provincial Government Departments-Forests, Wildlife, Fisheries and Environment.	Ministry of Climate Change, Government of Pakistan.
	At least two project proposals for public-private PES program developed by the Ministry of Climate Change and are under implementation.				

	At least one project proposal for public-private PES program developed by KP Forest Department and is under implementation.				
Implementing PDD Activities related to outcome 3: Enhanced technical capacity of key stakeholders to develop and implement PES schemes and recommendations made for improved policy, legal and institutional framework at the national and provincial levels so as to institutionalize PES concept in forest resources conservation and management.	The following tasks are accomplished:	January 2020 to end of project period in December 2049.	At least 70 % of key stakeholders in Kaghan valley with WHTFs are aware of PES and related sustainable financing mechanisms, and are considering adopting them for the conservation and sustainable management of mangroves forests in their areas. Concrete proposals for policy, legal and institutional reforms that are supportive of PES program are prepared at the national level as well as the provincial governments levels.	Relevant Provincial Government Departments- Forests, Wildlife, Fisheries and Environment.	Ministry of Climate Change, Government of Pakistan.
	Proposals for policy, legal and institutional reforms at the national level that are supportive of PES programs are developed.				
	Proposals for policy, legal and institutional reforms at provincial levels that are supportive of PES programs are developed.				
Implementing PDD Activities related to outcome 4: Increased availability of information on, and awareness of, PES concepts, schemes and opportunities increased in the provinces and at the national level.	The following tasks are accomplished:	January 2020 to end of project period in 2049.	Project experiences and lessons learned ('how-to' manuals, good practices guidelines, etc.) captured and available to key provincial, national and international conservation and development community through project website.	Relevant Provincial Government Departments- Forests, Wildlife, Fisheries and Environment.	Ministry of Climate Change, Government of Pakistan.
	Design, develop and implement large-scale awareness creation and training and capacity building program on PES in the forestry sector for the staff of Provincial Forest Departments.				

	Design, develop and implement large-scale awareness creation and training and capacity building program on PES in the forestry sector for the relevant communities.				
	Design, develop and implement large-scale awareness creation and training and capacity building program on PES in the forestry sector for the staff of other relevant departments.				
	Design, develop and implement large-scale awareness creation and training and capacity building program on PES in the forestry sector for politicians, policy makers and other opinion makers.				
Adopting and Implementing a UNFCCC Cancun and Other Social and Environmental Safeguards System	<p>Adopt the UNFCCC and Other Social and Environmental Safeguards System developed by Climate, Law and Policy Consultants under the Readiness Phase Project.</p> <p>Implement the UNFCCC and Other Social and Environmental Safeguards System developed by Climate, Law and Policy Consultants under the Readiness Phase Project.</p> <p>Report to the UNFCCC Secretariat on Safeguards as per requirements of UNFCCC on the safeguards reporting.</p>	<p>The Safeguards Information System (SIS) is developed as per time frame proposed by the Climate, Law and Policy consultants.</p> <p>The safeguards system is implemented all along during the project period.</p>	<p>A system for proper Understanding of the Safeguards developed by the consultants is available and being implemented.</p> <p>A system for proper Addressing of the Safeguards developed by the consultants is available and being implemented.</p> <p>A system for proper Respecting of the Safeguards developed by the consultants is available and being implemented.</p> <p>A system for proper Reporting of Safeguards (Safeguards Information System) developed by the consultants is available and being implemented.</p>	Ministry of Climate Change, Government of Pakistan.	Provincial Forest Departments.
Monitoring, Measurement and Reporting of Project Activities	<p>Prepare and implement a comprehensive monitoring system for various ecosystem services so as to cover the following:</p> <p>A monitoring system of forest cover using remote sensing;</p> <p>A system for monitoring carbon on the ground through activity data emission factors data, and greenhouse gases</p>	All along during project implementation.	<p>A comprehensive monitoring system for various ecosystem services is prepared and functioning as evident from different project progress reports.</p> <p>Training and capacity building is prepared and implemented as evident</p>	Provincial Forest Departments.	Ministry of Climate Change, Government of Pakistan.

	<p>emissions and removals using latest IPCC Guidance;</p> <p>A system for monitoring watershed management program;</p> <p>A system for monitoring of biodiversity conservation program;</p> <p>A system for monitoring of eco-tourism development program;</p> <p>A system for monitoring of NTFPs conservation and development activities going in the project area;</p> <p>A system for monitoring of landscape protection and landslides prevention and control program;</p> <p>A system for monitoring of silvo-pastoral program;</p> <p>A system for monitoring of Agro-and Farm Forestry Program;</p> <p>A system for monitoring of Crop Land Productivity Enhancement Program; and</p> <p>A system for monitoring of Grass Land and Range Land Productivity Enhancement Program.</p> <p>Integrate the provincial monitoring system with national forest inventory and national greenhouse gases inventory.</p> <p>Train staff with regard to UNFCCC and IPCC Guidelines.</p> <p>Train staff with regard to GIS and remote sensing as well as managing the information produced.</p> <p>Train staff for field measurements for forest carbon stock and other ecosystem services and to manage the information produced.</p> <p>Establish MRV units with necessary</p>		<p>from different project progress reports.</p> <p>Training and capacity building modules on various topics are prepared and available.</p> <p>Training program implementation progress reports are prepared and available.</p> <p>MRV reports are prepared and available.</p>		
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	<p>equipment, software, financial resources and qualified staff.</p> <p>Design, develop and implement a system for reporting on various ecosystem services.</p>				
Verification of Project Activities Through Third Party Verifiers	Submit the monitoring reports for Third Party Verification as per agreed frequency.	All along during project implementation.	Third Party Verification Reports are prepared and available.	Provincial Forest Department.	Ministry of Climate Change, Government of Pakistan.
Arranging for Issuance of Carbon Credits and Other PES Incentives	<p>Prepare claims for carbon credits and other PES benefits in light of verification reports of Third Party Verifiers, duly accounting for any amounts that have to go to buffers.</p> <p>Receive, record and manage the credits.</p>	All along during project implementation.	<p>Claims for carbon credits and other PES benefits in light of verification reports of Third Party Verifiers are prepared.</p> <p>Record of credits received is prepared and available.</p>	Provincial Forest Department.	Ministry of Climate Change, Government of Pakistan.
Distribution and Disbursement of Project Benefits to concerned Beneficiaries	<p>Design and develop a benefits allocation, distribution and disbursement system.</p> <p>Establish institutional mechanisms for operation of the benefits distribution and disbursement system.</p> <p>Keep records and accounts of the incentives and benefits distributed.</p> <p>Undertake audit of the accounts of benefits distributed.</p>	All along during project implementation.	<p>A benefits allocation, distribution and disbursement system is designed, developed and available.</p> <p>Institutional mechanisms for the benefits distribution and disbursement are in established and functioning.</p> <p>Records and accounts of the incentives and benefits distributed are prepared and available.</p> <p>Audits of the accounts are done and audit reports are available.</p>	Provincial Forest Department.	Ministry of Climate Change, Government of Pakistan.
Receiving Feedback and Addressing Grievances of Stakeholders	<p>Develop and establish feedback receiving, conflicts resolving and grievance redress mechanisms at different levels for different stakeholder groups.</p> <p>Receive feedback from different stakeholder groups.</p> <p>Manage any conflicts regarding the PES scheme.</p>	All along during project implementation.	<p>Feedback, conflicts resolution and grievance redress mechanism are established and functioning at different levels.</p> <p>Documentation of feedback received, conflicts and grievances that have arisen, redressed and managed is</p>	Provincial Forest Department.	Ministry of Climate Change, Government of Pakistan.

	Document the feedback received, conflicts that have arisen and the functioning of the grievance redress mechanisms.		prepared and available.		
Documentation of Lessons Learned under the Project	Collect information on best practices and lessons learned. Document the best practices and lessons learned.	All along during project implementation.	Information on best practices on PES schemes implementation in the context of Pakistan is collected and available. The information on best practices and lessons learned is documented and copies of documents available.	Ministry of Climate Change, Government of Pakistan.	Provincial Forest Department.
Dissemination of Lessons Learned	Disseminate the lessons learned to concerned agencies and stakeholders.	All along during project implementation and beyond.	The information on best practices and lessons learned is disseminated to all concerned agencies and stakeholders and record of dissemination of the documents is available.	Ministry of Climate Change, Government of Pakistan.	Provincial Forest Department.
Preparation of Project Proposals for replication of pilot PES Projects in other Forest Ecosystems and Geographic Regions of Pakistan.	Prepare project proposals for PES Project Schemes in the following forest ecosystems: Moist Temperate Forests in Neelum Valley, Azad Kashmir. Murree Guzara Forests, Rawalpindi. Ziarat Juniper Forests, Balochistan. Temperate Forests in Astore, Gilgit-Baltistan. Dry Temperate Forests in Chitral, Khyber Pakhtunkhwa. Chilghoza Pine Forests in FR D.I.Khan and South Waziristan Agency. Chilghoza Pine Forests in Sherani District, Balochistan. Coniferous Forests in Naltar, Gilgit-Baltistan.	June, 2020.	PES Project Proposals for different forest ecosystems in Pakistan are prepared and available.	Ministry of Climate Change, Government of Pakistan.	Concerned Provincial and Territorial Forest Departments.

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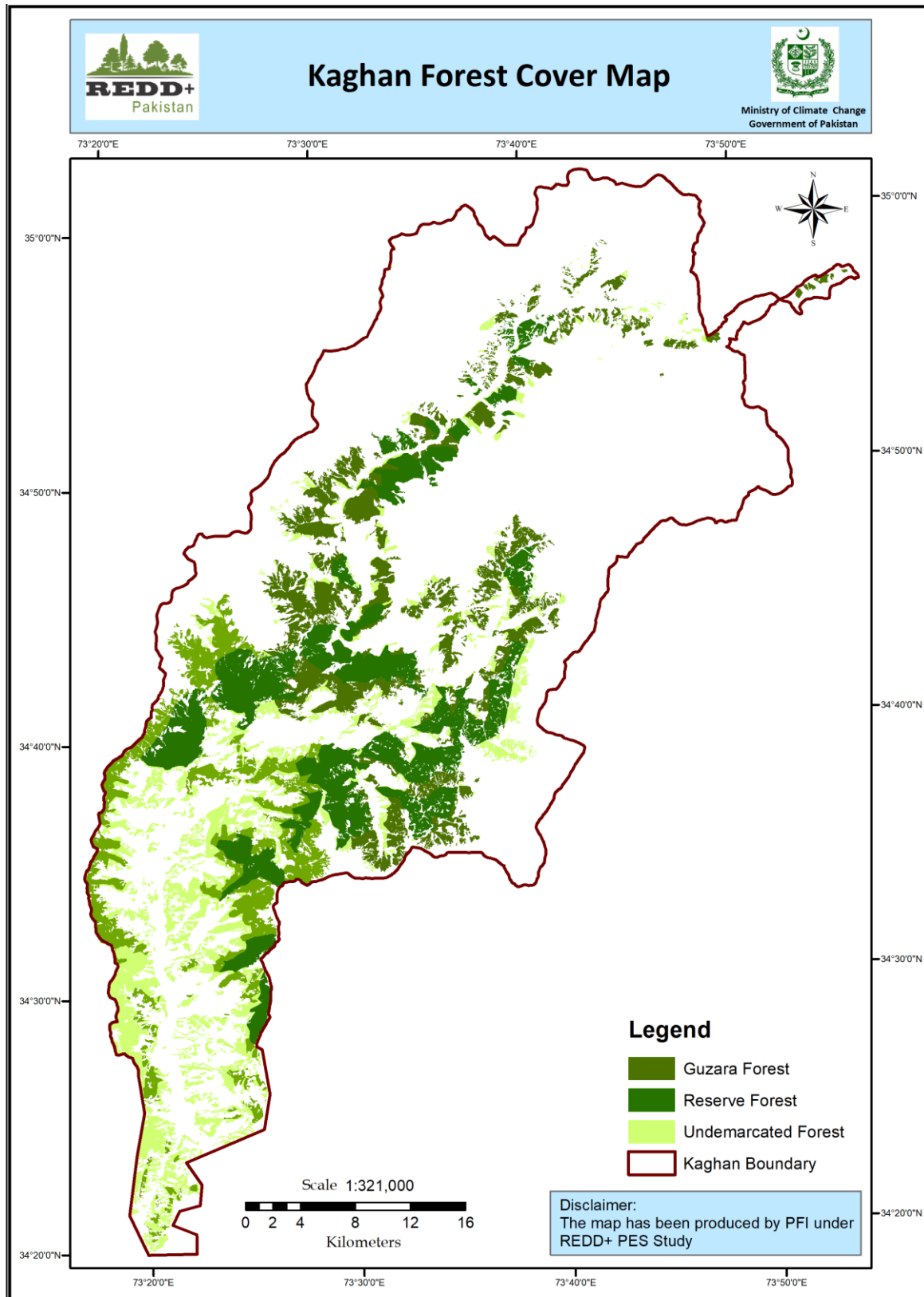
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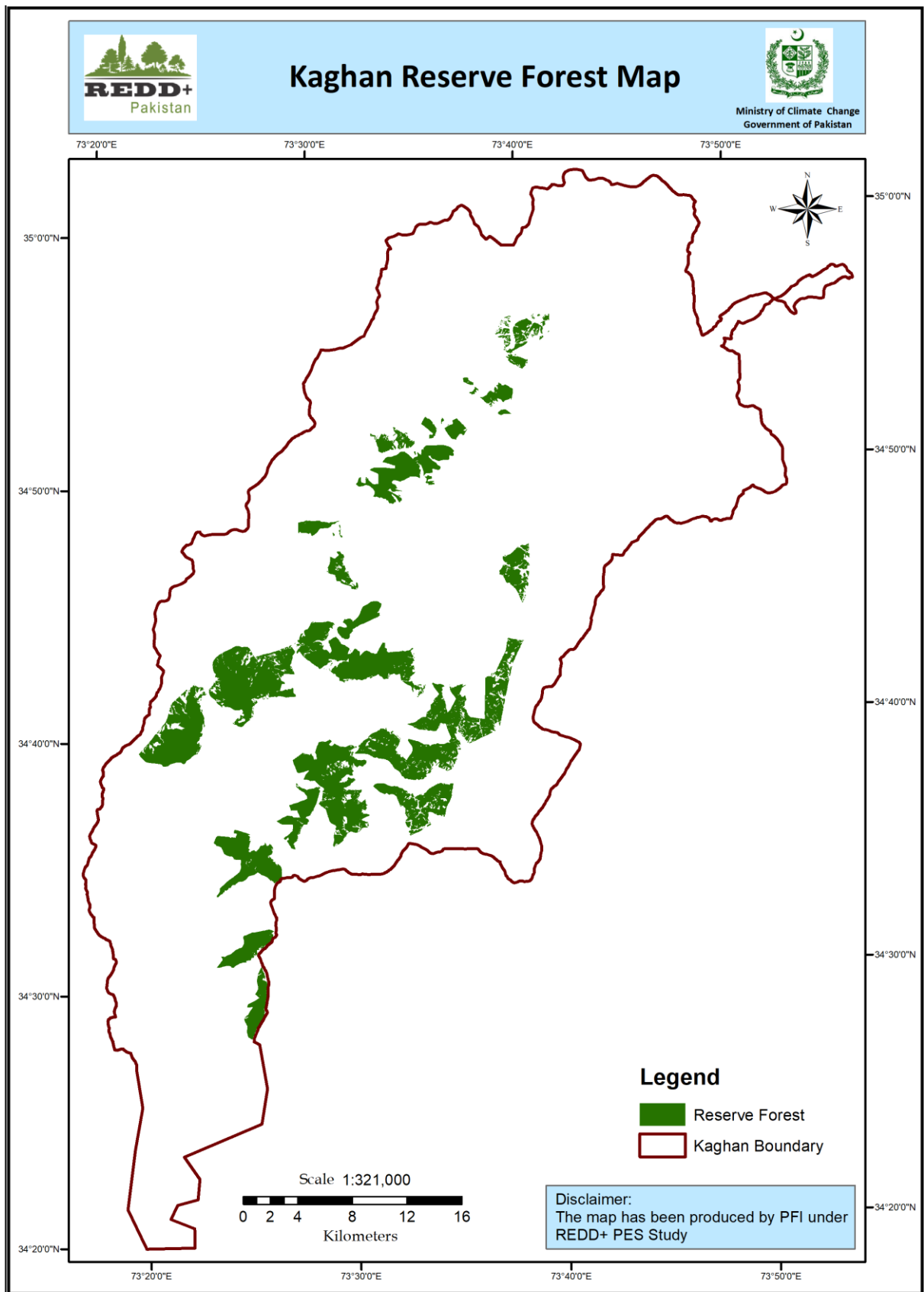
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Annex-1

Maps of Kaghan Valley REDD+ PES Areas



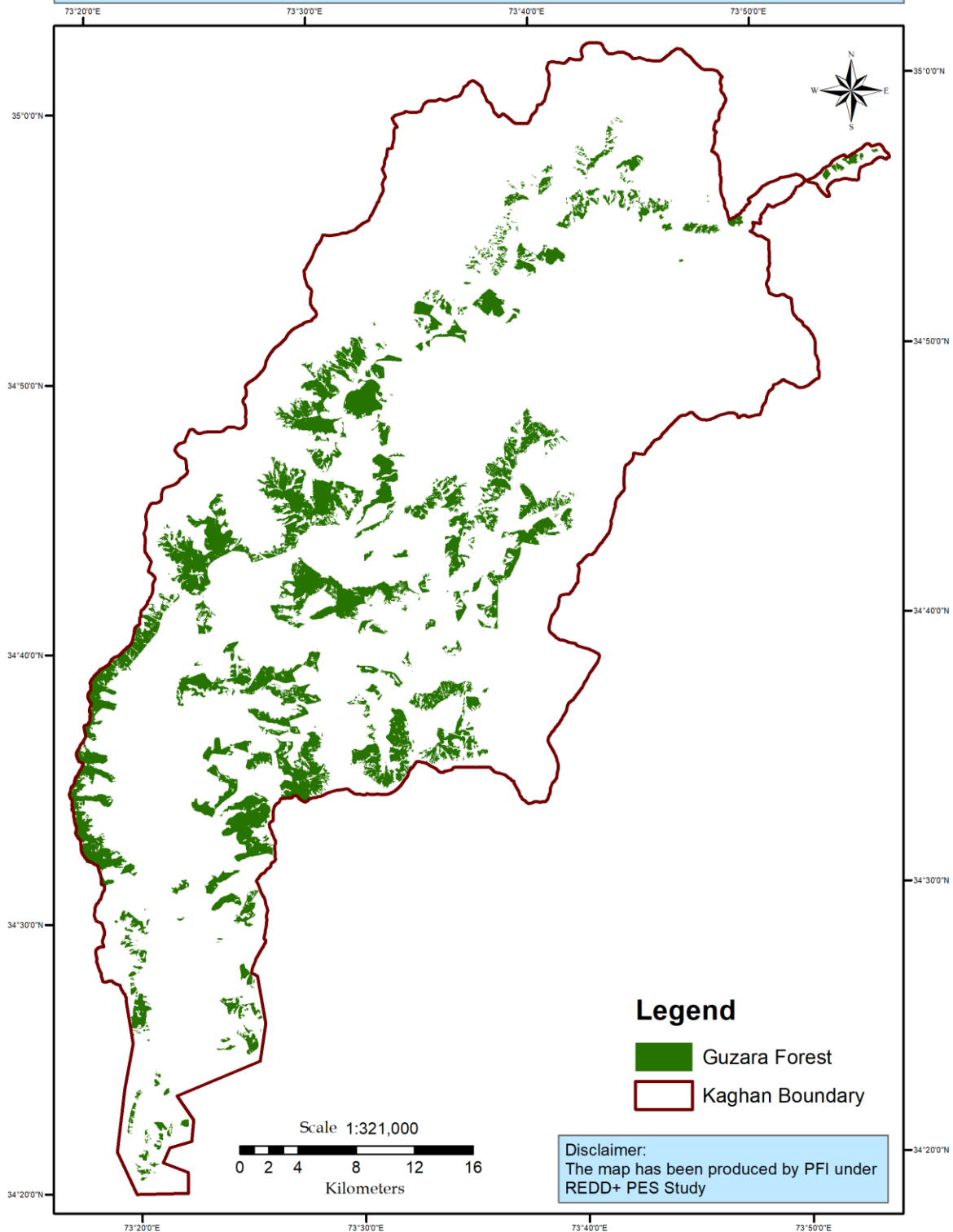




Kaghan Guzara Forest Map



Ministry of Climate Change
Government of Pakistan



Annex-II

QUESTIONNAIRE FOR SOCIO ECONOMIC SURVEY IN KAGHAN

House Holed Headed by: _____

Village:	Union Council:
Tehsil:	District:
Number of persons in the HH	Male: _____ , Female: _____
Number of person educated in HH	
Highest level of education in HH	

Main income source (rank the relevant ones)

Income Source	Ranke	% Share in total income	No. of HH members Engaged in this activity
Forest Based			
Farming			
Livestock			
Fishing			
Transport/driver			
Merchant/Business			
Pension			
Service			
Labour			
Other (Specify)			

Landholding and land Use of the HH:

S. No	Land Use	Area in Acres	Non owned land uses by HH			
			Guzara Forest	Waste land	Rangeland	Rented Agriculture land
1	Agriculture					
2	Guzara Forest					
3	Range Land					
4	Waste Land					

What are the sources of Energy at HH Level?

Type of energy	Quantity/month	Unit cost	Source
Firewood			Reserve Forest
			Guzara Forest
			Farm land
			Market
Sui gas			
LPG			
Agriculture residuals			
Other			

Uses of Forests by HH:

Use	Quantity	Price	Issues?
Timber			
Firewood			
Fodder			
Others			

Forests:

- Overtime trends of Forests _____
- Increasing _____, Decreasing _____, No Change _____
- If Change how significant

- Is it over all change or any particular Spp.

- What are the reasons for the Change

- Are getting adequate and timely returns from forests: Yes _____, No _____
- Any other issue related to forestry that you are currently facing: -

- Proposed Solutions for tackling the issues and problems of access to goods and services:

Agriculture information of HH:

Crop	Area	Production per acre	Source of Irrigation	Inputs Quantity				
				Seed	Fertilizers	Pesticides	Labor	other

Economics of Agriculture production per HH:

Crop	Area (Ploughing cost)	Production per acre/Price	Source of Irrigation	Inputs Cost				Revenue
				Seed Rs./Kg	Fertilizers Rs.	Pesticides Rs.	Labor Rs.	

1. Issues and Problems in Access to and availing agricultural products and services:

2. Proposed Solutions for tackling the issues and problems of access to goods and services:

Wildlife and Biodiversity:

Type	Trend			Reasons	Major Issues	Solutions
	Increasing	Decreasing	No change			
Birds						
Mammals						
Reptiles						
Frogs / other amphibians						
Others						

Livestock in the Village per HH:

Livestock	No. of Animals now	No. of Animals 10 years ago	Source of Feed					
			Grazing in Reserve Forest	Grazing in Guzara Forest	Stall Feeding	Price		
						Price/cost of Reserve Forest	Price/cost of Guzara Forest	Stall feeding

- Issues and Problems in Access to and availing livestock products and services:

- Proposed Solutions for tackling the issues and problems of access to goods and services:

Information about Disaster from HH

Types	Frequency	Severity	No. of people affected	Estimated damages	Existing mechanism for dealing with disasters	Measures you like to propose for dealing with disaster

Recreational information

Types	Recreational spots	Estimated no. of visitors	Existing facilities for tourists	Role of the community	How to enhance recreational opportunities in the area	How to maximize your benefits from recreational opportunities

3-W Matrix of HH _____

Sr.#	Name of Organization	Activities Done or ongoing	Impacts	Your impressions about these activities
1				
2				
3				
4				
5				
6				
7				

Seasonal Calendar at HH Level

Activities	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Agricultural												
Land preparation												
Sowing/planting												
Weeding												
Irrigation												
Harvest												
Grass cutting/collection												
Cleaning/maintaining irrigation channel												
Vegetable cultivation / kitchen gardening												

Livestock												
Deworming												
Vaccination												
Transfer to range lands												
Fuel wood collection												
Seasonal migration of people (transhumance)												
Festivals												
Floods												
Rainy season												
Forestry												
Nursery Raising												
Plantation												
Harvesting of Timber												
Collection of Fuel wood												
Grazing of Animals in Forest												
NTFPs Collection												
Soil conservation works												
Other forestry works												
Tourism												
Tourist guide												
Other Tourism related												

Annex-III

QUESTIONNAIRE FOR ASSESSMENT OF TOURISM IN KAGHAN

Interview Schedule S.No _____

Date: ____/____/2018

Name of Visitor: _____

A: Visitor's Recreational Behavior

A. 1. How many times did you visit forest areas or nature-based recreation in Pakistan within the last 5 year for recreation purpose? No. of times: _____.

A. 2: How much did you spend on eco-tourism during the last year? _____

A. 3: How many times did you visit Kaghan Valley within the last 5 years for recreation purposes? No. of times: _____.

A. 4. Where do you stay in Kaghan during your visit? a)Hotel b) Rest House c)friend home d) camping e) other _____ Rent per night _____

A. 5. If you were not on this trip today, what would you most likely be doing?

Working at job ____ Watching TV ____ Housework/Shopping ____ Other (pl. Specify) _____

A. 6. How did you come to this area? By Tour Bus, ____ By mini bus, ____ By taxi, ____

By private car, ____ By motorcycle, ____ By public bus, ____ By bicycle. ____

Other (please specify) _____

A. 7. How much did you spend on your trip:

Transportation _____ Rs. (in case of public transport)

Fuel _____ Rs. (if private/own vehicle)

Food _____ Rs.

Accommodation _____ Rs.

Other _____ Rs.

Total _____ Rs.

A. 8. Please estimate the time and distance it takes you to get to this area from your home? _____ hours _____ km.

A. 9. How would you describe the quality of recreational facilities at Kaghan?

____ Very poor ____ Poor ____ Fair ____ Good ____ Excellent ____ Don't know.

A: 10. Are you satisfied with the existing facilities of Kaghan? ____ Yes ____ No.

A. 11. would you like to improve recreational services provided in Kaghan? ____ Yes ____

No

A. 12. If No , why?

_____ Satisfied with the existing recreational benefits/services of Kaghan.

_____ Don't have any money; cannot afford

_____ Govt.'s responsibility

_____ Not my responsibility

_____ Others (Specify)

A. 13. If yes what types of improvements would you like to see at Kaghan?

(i) Recreational Site:

_____ Sight-seeing _____ Bird-watching _____ Relaxation _____ Walking tracks _____ chair lift _____

Road improvement _____ sanitation facilities _____ other. _____

(i) Information about KAGHAN VALLEY:

_____ Maps _____ Information Sign _____ Precaution Sign _____ Tourist Information Centre

(ii) Traffic:

Road Conditions _____ Traffic Safety _____ Traffic Sign _____ Parking _____

(iii) Miscellaneous:

_____ Waste disposal, _____ Lavatory, _____ Food and Beverage Services.

_____ Accommodation _____ Others.

B: Visitor's Attitude towards Entrance Fees/Environmental Fee

B. 14. What is the entry fee to KAGHAN VALLEY _____ (Rs.)

B. 15. If KAGHAN VALLEY needs more income to provide better services for visitors, such as more recreational sites, improved cleanliness, greater traffic safety, public safety and forest fire protection, how should these recreational services be financed?

_____ Raise the entry fees _____ Raise govt. budget _____ Donation to Park fund _____ Other.

B. 16. Suppose there were no other sources of improvement except imposing/raising entry fees, would you be willing to pay Rs.50 entry fee? _____ Yes _____ No.

B. 17. (a) If the entry fee were Rs. 100, would you be willing to pay it to visit the area?
Yes _____

No _____

(b) Suppose that the government designing the project for improving environmental services of the area confronted budget problems, and that instead of Rs. 100 the entry fee was Rs. 200. In this case would you be willing to pay the entry fee or not? Yes _____ No. _____

(c) Suppose that instead of Rs. 200 the entry fee was Rs. 300. In this case would you be willing to pay the entry fee or not? Yes _____ No _____

Do you think imposition of entry fee will improve tourism? Yes _____ No _____

C: General Information about the Visitor

C: 18. Gender of the respondent: Male _____ Female _____

C: 2. Age _____ (years)

C: 3. Marital Status (please circle one): 1 single 2 married 3 widowed/divorced

C: 4. Household Size: _____ (No. of Family Members).

C: 5. Highest Level of Education: 1. none 2. primary 3. Secondary 4. Inter 5. university

C: 6. Location: Name of District _____ 1. Urban Dweller 2. Living in Rural Areas.

C: 7. Income of the household/family (Rs./month): (Tick one of the following)

1. 25,000 Rs.

4. 25,000-50,000 Rs.

5. 50,000-75,000 Rs.

6. 75,000-1, 00,000 Rs.

7. More than 1, 00,000 Rs.

C: 8. What is your profession? _____

C: 9. What is your monthly salary (Rs) _____.

ANNEX IV

LIST OF GUZARA FORESTS ALONGWITH NAME OF MAJOR GUZARA OWNERS IN KAGHAN

Name of Forest Sub-Division/Range	Name of Guzara	Owner Name
Garhi Habibullah Forest Range	Jabbi Guzara Comptt: No. 1 and 2 (192 Acres)	Muhammad Sajjad
		Abid Hussain
		Waqar Ahmad
		Liaqat Ali
		Haji Ali Asghar
		Nadeem Ahmad Khan
		Jamil Ahmad Khan
		Jehangir Khan
		Ejaz Afzal Khan
	Gulmaira Guzara Comptt: No. 1 to 6 (1100 Acres)	Jehangir Khan
		Yaqoob Khan
		Nadeem Ahmad Khan
		Jamil Ahmad Khan
		Naeem Khan
	Batora GFC - 1 (154 Acres)	Ejaz Afzal Khan
		Nadeem Ahmad Khan
		Naveed Ahmad Khan
		Khalid Khan
		Jehangir Khan
	Jabri Kaliesh GFC-1 & 2 (333 Acres)	Arif Khan
		Nasir Khan
		Jehangir Khan
		Resham
		Abdur Rehman
	Bajmori GFC - 1 to 3 (486 Acres)	Sardar Khursheed
		Sardar Abdur Rehman
		Syed Suleman Shah
		Sardar Haleem
	Kumi Khangeeri GFC - 1 to 5 (767 Acres)	Mir Zaman
		Master Bashir Ahmad
		Israiel
	Kanshian GFC - 1 to 4 (1100 Acres)	Abdul Khaliqe
		Qazi Gul Faras
		Qazi Shah Nawaz
		Babar Khan
		Kareem Shah
	Batsangra GFC - 1 to 3 (589 Acres)	Sardar abdur Rasheed
		Sardar Mahwali
		Chaudary Khani Zaman
		Muhammad Irfan
	Tarrana Guzara C - 1 (58 Acres)	Sakhee Shah
		Akhtar Hussain
		Aashiq Hussain
		Siddque
		Abid Hussain
		Aziz Ahmad

Name of Forest Sub-Division/Range	Name of Guzara	Owner Name
Garhi Habibullah Forest Range	Basoot GFC – 1 (92 Acres)	Siddque
		Muhammad Hussain
		Niaz Hussain
		Aashiq Hussain
		Akhtar hussain
		Aashiq Khan
	Shohal Najif GFC - 1 to 9(1490 Acres)	Aatif khan
		Zaheer Khan
		Ehsan Khan
		Muhammad Faridoon (Late)
		Mahroof Khan
		Israr Khan
		Arif Khan
		Ajab Khan
	Bissian GFC -1 to 4 (517 Acres)	Sardar Abdur Rehman
		Gulfam
		Chanzaib Khan
		Altif Khan
		Zahid Khan
		Mansoor Khan
	Jagri Guzara GFC - 1 to 5 (793 Acres)	Bakht Nawaz khan
		Mufti Iddress Khan
		Waqar Khan
		Rizwan Bakht Khan
		Khaid Khan
		Masud-ul-Haq
		Asim Khan
		Haroon Khan
	Garhi Habibullah GFC 1 (45 Acres)	Jehangir khan
		Rashid Khan
		Yaqoob Khan
		Naeem Khan
		Jamil Ahmad khan
	Terrerri GFC - 1 (77 Acres)	Raja Gul Faraz
		Raja Aurangzeb
		Haji Khursheed Khan
		Raja Niamat
		Raja Imtiaz
		Shabir Khan (Late)
	Katha Dobandi GFC - 1 (45 Acres)	Raja Mahabat
		Raja Maqbool
		Raja Gulzar
		Raja usman
		Sardar Ibrahim
		Raja Haibat Khan

Name of Forest Sub-Division/Range	Name of Guzara	Owner Name
Garhi Habibullah Forest Range	Bagal char GFC - 1 (58 Acres)	Sardar Muhammad Afzal
		Abdur Rasheed
		Aurangzeb
		Ali Zaman
		Sharif-ud-Din
	Dogga GFC - 1 to 5 (569 Acres)	Abdur Rasheed
		Sardar Ayub
		Sardar Miskeen
		Bashir Khan
		hussan Din
	Khairabad GFC - 1 to 2 (269 Acres)	Pir Syed Chan Pir Shah
		Mian Ghous
		Gul Nasheen
		Nazir Hussain Shah
	Seri GFC – 1 (128 Acres)	Muhammad Sadiq
		Altif Hussain Shah
		Zaheer Shah
	Porr Guzara GFC - 1 (58 Acres)	Jehangir Kahn
		Jamil Ahmad Khan
		Habibullah Kahn
		Rashid Khan
	Sial Guzara GFC -1 (26 Acres)	Muhammad Al-Mehdi Khan
		Rizi Khan
	Karnol GFC - 1 (102 Acres)	Dr.Munir
		Liaqat Khan
		Sajid Khan
		Abdur Rehman
		Malik Khanan
	Dalola GFC -1 to 4 (265 Acres)	Said Alam
		Zaaman Shah
		Rasheed Shah
		Mir Alam
Total Garhi Habibullah	9313 Acres	

Name of Forest Sub-Division/Range	Name of Guzara	Owner Name
Jared Forest Sub Division	Noori GFC-1 and 2 (139 Acres)	Mansoor Khan
		Haq Nawaz Khan
		Muhammad Haneef Khan
		Nazir Khan
		Zafeer Khan
		Sajjad Khan
		Adil Khan
		Ejaz Khan
		Altaf
		Bashir Khan
	Manoor GFC 1-36 (9118 Acres)	Shah Jehan Khan
		Muhammad Riaz Khan
		Qaim Khan
		Muhammad Ashraf
		Awal Khan
		Rehmat Khan
		Fida Muhammad Khan
		Siraj Khan
		Sadiq Khan
		Taj Afzal Khan
		Taj Muhammad
		Muhammad Rafique
		Sartaj
		Muhammad Sarwar Khan
		Ghuam Qadir
		Totta Jan
		Muhammad Mahroof
		Farooq Mughal
		Shoukat
		Shah Nazir
		Muhammad Farooq
		Muzamal Khan
		Bashir Khan
		Muhammad Farooq-II
		Khaaqaan Khan
	Shukraha GFC - 1 to 3 (165 Acres)	Munir HussainShah
		Sikandar Shah
		Dildar Hussain Shah
		Fareed Shah
	Choshal GFC - 1 to 5 (638 Acres)	Muhammad Hussain shah
		Shoukat Ali Shah
		Altaf Hussain Shah
		Abdul Latif Khan
		Dure-Aman Khan
		Syed Iqbal Shah

Name of Forest Sub-Division/Range	Name of Guzara	Owner Name
Jared Forest Sub Division	Suan GFC - 1 to 8 (1372 Acres)	Sabir Hussain Shah
		Sadaqat Hussain Shah
		Muhammad Arif Shah
		Syed Khalid Shah
		Naeem Anwar Shah
		Syed Ajmal Shah
		Syed Fida Hussain Shah
		Syed Mushtaq Shah
		Syed Sajjad Hussain Shah
		Syed Salah-ud-Din Shah
	Phagna GFC - 1 to 6 (2149 Acres)	Syed Munir Hussain Shah
		Syed Azhar Shah
		Syed Liaqat Shah
		Syed Noor Hussain Shah
		Syed Shamas-ud-Din Shah
		Syed Mumtaz Shah
		Ahmad Nawaz Shah
		Syed iqbal Shah
		Syed Anwar Shah
		Haq Nawaz Khan
	Jared GFC - 1 to 8 (1301 Acres)	Niaz Muhammad Khan
		Azir-ur-Rehman
		Haji Gulab Khan
		Sabir Hussain
		Haji Sadiq Khan
		Haji Mubarik-ur-Rehman
		Hafeez-ur-Rehman
		Muhammad Tamaz Khan
		Abdul Wakeel Khan
		Abdul Qayyum Khan
		Iftkhar Javed
		Sher Afzal Khan
		Khursheed Alam Khan
		Muhammad Anwar Khan
		Muhammad Riaz Khan
	Kamalban GFC - 1 & 2 (208 Acres)	Syed Muzammal Shah
		Syed Salah-ud-Din Shah
		Syed Aziz Shah
		Abdul Haq Shah
		Abdur Qadir Shah
		Noor Muhammad Shah
		Syed Bashir Shah
		Qamar Ali Shah
		Syed Tariq Shah
		Syed Muhammad Alam Shah

Name of Forest Sub-Division/Range	Name of Guzara	Owner Name
Jared Forest Sub Division	Kalas Jamal Mari GFC 1 to 5 (1367 Acres)	Imtiaz Khan
		Abdul Qadoos
		Niaz Khan
		Haq Nawaz Khan
		Rashid Khan
		Azhar Khan
		Atta Muhammad
		Master Manzoor
	Phagal GFC - 1 and 2 (2031 Acres)	Syed Muzammal Shah
		Syed Salah-ud-Din Shah
		Muhammad Tahir Khan
		Abdul Haq Shah
		Muhammad Asif Khan
		Syed Imjid Shah
		Syed Bashir Shah
		Syed Akhter Shah
		Syed Tariq Shah
		Syed Muhammad Alam Shah
		Gulab Shah
Total Jared Forest Sub-Division	18488 Acres	

Name of Forest Sub-Division/Range	Name of Guzara	Owner Name
Balakot Forest Sub Division	Bhoonja GFC - 1 to 29 (7782 Acres)	Abdul Qadoos Khan (Late)
		Abdul Wadood Khan (Late)
		Umer Khan
		Abdul Jabbar Khan
		Aashiq Khan
		Wajid Khan
		Jehangir Khan
		Ahmad Nawaz Khan
		Muhammad Faridoon Khan
		Muhammad Azeem Khan
		Muhammad Haneef Khan
		Muhammad Arif Khan
		Muhammad Pervaiz Khan
		Muhammad Asif Khan
		Raza Muhammad Khan
		Muhammad Sarwar Khan
		Muhammad Sadiq Khan
		Abdul Khaliq Khan
		Sultan Muhammad Khan
		Riaz Ahmad Shah
		Anwar Sultan Khan
		Iftikhar Ahmad Khan
		Niaz Muhammad Khan
		Fizah Muhammad Khan
		Abdul Wakeel Khan
		Ghulam Sarwar
		Syed Qasim Shah
Balakot Forest Sub Division	Kewai GFC - 1 to 8 (1522 Acres)	Muhammad Azam Khan
		Israr Ahmad Khan
		Haq Nawaz Khan
		Mir Afzal Khan
		Syed Qasim Shah
		Syed Abbass Shah
		Syed Jawad Shah
		Syed Tariq Hussain Shah
		Pir Muhammad Shah
		Syed Riaz Hussain Shah
		Syed Zain-ul-Abideen Shah
		Syed Abdul Qayyum Shah
		Syed Mukhtiar Shah
		Mushtaq Khan
		Amjad Ali Shah
		Ashfaq Shah
		Abdullah
		Muhammad Asif
		Syed Zakir Hussain Shah
		Syed Masoom Shah
		Shoukat Ali Shah

Name of Forest Sub-Division/Range	Name of Guzara	Owner Name
Balakot Forest Sub Division	Bela Sacha GFC - 1 to 5 (896 Acres)	Syed Munir Hussain Shah
		Syed Akhter Shah
		Syed Zulfiqar Shah
		Syed Abid Hussain Shah
		Syed Altaf Hussain Shah
		Syed Mukhtiar Hussain Shah
		Syed Mir Afzal Shah
		Syed Shoukat Shah
		Ghulam Mustafa Shah
		Noor Ahmad Shah
		Syed Yousaf Shah
		Syed Daud Shah
		Abdul Wakil Shah
		Abdul Latif Shah
		Syed Buzurg Shah
		Abdul Qadir Shah
		Syed Rizwan Shah
		Syed Shah Zaman Shah
		Ghulam Rabbani Shah
		Syed Mehmood Shah
		Syed Munawar Shah
		Syed Hamid Shah
		Syed Khalid Shah
		Syed Anwar Shah
Balakot Forest Sub Division	Hungrai GFC - 1 to 4 (1024 Acres)	Syed Farid Ahmad Shah
		Ghulam Noorani
		Said Alam
		Muhammad Irfan
		Muhammad Sharif
		Mir Alam
		Ali Asghar
		Muhammad Humayun Khan
		Muhammad Arif Khan
		Abdur Rauf
		Muhammad Asaf
		Muhammad Haroon
		Muhammad Sadiq
		Hakim Din
		Muhammad Yaqoob
		Muhammad Sabir
		Roshan
		Bashir
		Bostan

Name of Forest Sub-Division/Range	Name of Guzara	Owner Name
Balakot Forest Sub Division	Ghanool GFC - 1 to 12 (3867 Acres)	Sardar Muhammad Haroon
		Sardar Iftikhar Ahmad
		Sardar Hamid
		Sardar Zaffar
		Sardar Bashir
		Salah-ud-Din
		Noor-ur-Rehman
		Sardar Pervaiz
		Muqaddar Hussain
		Ghulam Rabbani
		Muhammad Rafique
		Khanizaman
		Shamim Baig Mirza
		Mirza Zubair Ahmad
		Mirza Aqeel Ahmad
		Haji Mubarik-ur-Rehman
		Sardar Ghulam Jillani
		Muhammad Waheed Khan
		Shujahat hussain
		Muhammad Rizwan
		Abdul Majid
		Sardar Amjid Malik
		Ashfaq Khan
		Badi-ud-Zaman
		Haji Muhammad Farooq
		Muhammad Nawaz
		Muhammad Younis
		Farooq
		Muhammad Afal
		Qasim Shah
		Muhammad Iqbal
	Paras GFC - 1 to 4 (740 Acres)	Syed Abdul Wahab Shah
		Syed Sajjad Hussain Shah
		Syed Mumtaz Shah
		Syed Abdul Qayyum Shah
		Syed Faroz Shah
		Ghulam Rahim Shah
		Syed Amin Shah
		Syed Salah-ud-Din Shah
		Syed Faisal Shah
		Syed Farid Shah
		Syed Iqbal Shah

Name of Forest Sub-Division/Range	Name of Guzara	Owner Name
Balakot Forest Sub Division	Sangar GFC - 1 to 3 (404 Acres)	Muhammad Akram Khan
		Muhammad Ashfaq Khan
		Ghulam Qadir
		Syed Sadiq Shah
		Syed Fidayat Shah
		Muhammad Waris Khan
		Sanaullah Khan
	Bhangian GFC - 1 to 4 (1146 Acres)	Jaffar Hussain Khan
		Tehmasip Khan
		Sardar Akram
		Muhammad Sadiq Khan
		Muhammad Munir Khan
		Babar Khan
		tehmasip Khan
	Jigga GFC - 1 and 2 (455 Acres)	Abdul Basit Khan
		Shad Muhammad Khan
		Ishtiaq Khan
		Ashfaq Khan
		Muhammad Haroon
		Babar Khan
	Mittikot GFC - 1 to 9 (1314 Acres)	Muhammad Nawaz
		Raza Muhammad Khan
		Muhammad Saleem Khan
		Liaqat Ali Khan
		Naseeb Alam Khan
		Qaisar Hayat Khan
		Muhammad Haroon Khan
		Muhammad Saeen
		Muqqadam
		Khanizaman
	Bagir GFC - 1 to 15 (7155 Acres)	Munir Khan
		Muhammad Farid Khan
		Ibrahim
		Aziz
		Muhammad Miskeen
		Muhammad Khalid
		Raza Muhammad Khan
		Ejaz Khan
		Syed Qasim Shah
		Muhammad Saleem Khan
		Naseeb Alam Khan
		Mehboob
		Ghulam Noorani
		Abdul Ghani
		Ghulam Jillani
		Muhammad Saeen Khan

Name of Forest Sub-Division/Range	Name of Guzara	Owner Name
Balakot Forest Sub Division	Satbani GFC - 1 to 4 (1081 Acres)	Said Rasool
		Muhammad Yousaf
		Muhammad Yaqoob
		Sualkheen
		Abdur Rehman
		Abdul Qayyum
		Zulfiqar Ali
		Muhammad Ismaiel
		Muhammad Younis
		Muhammad Haroon
		Muhammad Yousaf
		Mian Muhammad Yousaf
		Sardar Mehmood
		Saeen
		Muhammad Khalid
		Bostan
		Haji Shah Jehan
		Mehmood
		Ghulam Noorani
		Haji Feroz Khan
		Muhammad Zaman
	Ban-Baggar GFC - 1 to 3 (1174 Acres) Khait Sarash GFC - 1 (467 Acres) Ghanail GFC - 1 (537 Acres)	Sardar Kaloo
		Sardar Anayat-ur-Rehman
		Ghulam Noorani
		Muhammad Yousaf
		Abdul Ghani
		Khan Wali
		Ghulam Hussain
		Anwar Zeb
		Muhammad Ismaiel
		Wali-ur-Rehman
		Muhammad Farooq
		Shabir Ahmad
		Niaz Ahmad Khan
		Muhammad Asif
		Shad Muhammad Khan
		Sultan Muhammad Khan
		Muhammad Azam Khan
		Nazakat Ali Khan
		Muhammad Tariq Khan
		Muhammad Haroon Khan
		Gohar Rehman Khan
		Abdur Rasheed Khan
		Umer Zeb Khan
		Muhammad Mahroof Khan
		Khurshid Asghar
		Naseer Asghar

Name of Forest Sub-Division/Range	Name of Guzara	Owner Name
Kaghan Forest Sub Division	Kaghan GFC 1 to 8 (3049 Acres)	1.Syed Muhammad Shah
	Rajwal GFC - 1 to 3 (3295 Acres)	
	Doda GFC - 1 to 5 (996 Acres)	2.Syed Salah-ud-Din Shah
	Pottendes GFC - 1 to 33 (4477 Acres)	3.Syed Aziz Shah
	Julgran GFC - 1 (52 Acres)	4. Abdul Haq Shah
	Doda Kalas GFC – 1 (264 Acres)	5.Abdul Qadir Shah
	Porr GFC- 1 (302 Acres)	6.Noor Muhammad Shah
	Kinari GFC - 1 to 6 (1768 Acres)	7.Syed Bashir Shah
	Bhimbal GFC - 1 to 4 (949 Acres)	8.Qamar Ali Shah
	Chitta Katha GFC – 1 (38 Acres)	9.Syed Tariq Shah
	Pludran GFC - 1 (124 Acres)	10.Syed Muhammad Alam Shah
	Doongi Seri GFC - 1 and 2 (764 Acres)	11.Syed Humayun Shah
	Perthee GFC - 1,2 (524 Acres)	12.Shamas-ul-Haq Shah
	Derseri GFC - 1 to 3 (739 Acres)	13.Gulab Shah
	Battal GFC - 1 to 8 (1151 Acres)	14.Syed Dilawar Shah
	Naran GFC - 1 to 8 (2277 Acres)	15.Abdul Jabbar Shah
	Dhumduma GFC - 1 to 3 (1741 Acres)	16.Shah Abdul latif Shah
	Soach GFC - 1 to 7 (4509 Acres)	17.Amjad Hussain Shah
	Batta Kundi GFC - 1 to 8 (6455 Acres)	18.Abdul Mahroof Shha
	Borawai GFC – 1 (1325 Acres)	19.Syed Riaz Hussain Shah
		20.Syed Waseem Shah
	larri GFC -1 (1453 Acres)	21.Syed Masood Shah 22.Abdul Qadir Shah 23.Mian Ghualm Qasim 24.Mian Zia-ur-Rehman 25.Mian Manzoor Ahmad

