MID-TERM REPORT

DESIGNING REDD+ PAYMENTS FOR ENVIRONMENTAL SERVICES (FOR TWO ECOSYSTEMS OF PAKISTAN)

PAKISTAN FOREST INSTITUTE, PESHAWAR

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LIST OF ACRONYMS

BP	British Petroleum
BTAP	Billion Trees Afforestation Project
AJK	Azad Jammu and Kashmir
BBOP	Business & Biodiversity Offsets Program
CBD	Convention on Biological Diversity
CCX	Climate Change Exchange
CDM	Clean Development Mechanism
CEDAW	Convention on Elimination of All Forms of Discrimination Against Women
CERs	Certified Emission Reductions
CIFOR	Center for International Forestry Research
CITES	Convention on International Trade in Endangered Species
CMS	Convention on Migratory Species
CO_2	Carbon Dioxide
CoP	Conference of the Parties
DCF	Direct Cash Flow
DFO	Divisional Forest Officer
DRIP	Declaration on Rights of Indigenous People
EPA	Environmental Protection Agency
FD	Forest Department
FGD	Focus Group Discussion
FCPF	Forest Carbon Partnership Facility
FPIC	Free, Prior and Informed Consent
FSMP	Forestry Sector Master Plan
GDP	Gross Domestic Product
GHG	Green House Gas
GIS	Geographic Information System
Ha	Hectare

ICCPR	International Convention on Civil and Political Rights
ICESCR	International Covenant on Economic, Social and Cultural Rights
ICERD	International Convention on the Elimination of All Forms of Racial Discrimination
ICRAF	International Center for Research in Agroforestry
ILO	International Labour Organization
IT	Information Technology
IUCN	International Union for Conservation of Nature
JFMCs	Joint Forest Management Committees
KP	Khyber Pakhtunkhwa
MD	Managing Director
MIS	Management Information System
MEAs	Multilateral Environmental Agreements
MRV	Measurement, Reporting and Verification
NFC	National Finance Commission
NFMS	National Forest Monitoring System
NGO	Non-governmental Organization
NPV	Net Present Value
NTFP	Non Timber Forest Produce
PES	Payment for Ecosystem Services
PFI	Pakistan Forest Institute
RFO	Range Forest Officer
REDD+	Reducing Emission from Deforestation and Forest Degradation, plus the role of enhancement of carbon stock, conservation of carbon stock and sustainable forest management
SDFO	Sub-divisional Forest Officer
SOPs	Standing Operating Procedures
TEV	Total Economic Value
ToR	Terms of Reference
UNFCCC	United Nations Framework Convention on Climate Change
UNDRIP	United Nations Declaration on the Rights of Indigenous Peoples

EXECUTIVE SUMMARY

This Mid-term Report is meant to cover the following topics as per agreement executed between Ministry of Climate Change and Pakistan Forest Institute:

- Report on Measures for Dealing with Policy and Legal Issues
- Develop Mechanism for Disbursement and Management of Benefits
- Identification of Buyers and Sellers of PES
- Training Needs Assessment and Training Plan Development for Capacity Building
- Development of Awareness and Capacity Building Material (5 Manuals)

Accordingly work was done on all the above aspects as per contractual arrangements. In the following we provide a summary of the work done on the above aspects.

Report on measures identified for dealing with policy and legal issues

A number of gaps were identified as part of review of the national and provincial forest, environment and climate change policies during preparation and submission of the Interim Report under this consultancy assignment. Most of these gaps stem from the fact that these are sectoral policies and deal with the sector as a whole. These policies therefore do not have specific provisions with respect to REDD+ PES. Majority of the gaps identified pertained to the following:

- Institutional Development in support of REDD+PES.
- Improving Forest Governance and Land and Forest Tenure system.
- Addressing the drivers and underlying causes of deforestation and forest degradation.
- Technical aspects of REDD+ PES Project development.
- Stakeholders engagement in REDD+PES.
- Incentives Allocation and Benefits Distribution System.
- Conflicts Resolution and Management.
- Social and Environmental and REDD+ Cancun Safeguards.
- REDD+ Finance.
- Legal Issues.
- Marketing and Contractual aspects of REDD+PES.
- Awareness raising and Capacity Building of Stakeholders in REDD+PES Projects.

- Research on REDD+ and Climate Change issues.
- Influencing and Advocacy related to REDD+ and Climate Change.
- International Requirements regarding different Multilateral Environmental Agreements.
- Human and Women Rights in the context of REDD+PES.

Recommendations have been made for tackling all the above policy area gaps and also how to make REDD+ PES implementation more effective in practice. Options have been proposed for incorporating the policy measures, either through revision of the policies or through incorporating the proposed recommendations in the National and Provincial REDD+ Strategies which are currently being prepared. This latter option seems more pragmatic and realistic in addressing policy related gaps.

Develop Mechanism for Disbursement and Management of Benefits

Adequate and sustained benefits generation and their fair and efficient distribution play a critical role in incentivizing sustainable land use practices and dis-incentivizing the non-sustainable ones in PES schemes. Since benefits of PES schemes accrue at various levels-local, sub-national, national and global levels, and can come in a variety of forms-economic, social and environmental; therefore, a properly designed and implemented benefits and benefits distribution system will have implications for economic efficiency, social desirability and environmental effectiveness of the pilot PES program. Hence, benefits and benefits distribution system are important in determining the long-term viability of PES schemes.

Accordingly, one of the ToR under this study is to make recommendations for the design and implementation of PES benefits distribution system for the PES schemes at the two pilot sites. The starting point for meeting this ToR requirement is the identification of the different types and sources of benefits, the levels at which these benefits will accrue, the development of criteria for the identification of beneficiaries, and then the identification of beneficiaries based on the developed criteria. Accordingly, the different types and sources of benefits have been identified and the levels at which these benefits will accrue. Rationale and criteria for beneficiaries identification has been developed, which inter alia include: 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); and benefits should go to the poorest ("pro-poor" rationale).

In the next step, a benefits distribution system has therefore been designed. To make the pilot PES schemes sustainable, the proposed financing and benefits sharing mechanism has considered all potential funding sources and made efforts to ensure effectiveness, efficiency, equity, transparency and accountability. Main design features of this benefits distribution system address the following major aspects of the benefits distribution system: sources of PES funds, shares of different stakeholder groups in the benefits under different forest land tenure systems, payments amounts,

payments mode, group vs. individual payments, the need for payments differentiation, PES contract length, payments duration, payments frequency, the need for and desirability of upfront payments, types of conditionality associated with PES payments, degrees of conditionality for PES payments, units of management of control for PES payments, enhancing the role of benefits in prevention of leakages, use of benefits instruments for ensuring continued supply of ecosystems services and addressing the issue of non-permanence, establishing additionality for PES payments, benefits and cost targeting, making use of benefits to facilitate pro-poor ecosystem services provision, and use of benefits in a way to reduce any unintentional negative impacts on the poor and women.

Identify the Buyers and Sellers of Ecosystem Services

Ecosystem services identified for PES scheme in mangrove forests include: coastal zone and habitation protection, protection of fishes and shrimps spawning sites, biodiversity conservation and promotion of eco-tourism, climate change mitigation, and shoreline stabilization and prevention of sea intrusion into terrestrial ecosystems. Ecosystems services identified and short-listed for PES scheme development in moist temperate forests in Kaghan valley include: watershed protection, climate change mitigation, biodiversity conservation and promotion of eco-tourism, sustainable harvesting and value chain development of non-timber forest products, and landslides prevention and soil erosion control.

Components of these different ecosystem services have also been identified, potential ecosystem services providers and ecosystem services buyers for the different ecosystem services at the two pilot sites have been identified too, in addition to the quantification and valuation of methods for the various ecosystem services, which have been proposed and described.

Main elements of the PES Agreement between buyers and sellers have been discussed and proposed too. These elements inter alia include: specification of contract parties, rights and obligations of parties to the contract including benefits and cost distribution, monitoring and verification of compliance under the contract, dealing with non-compliance issues and consequences of default, disputes and disputes management procedures, risks and risks distribution between the parties, applicability of force majeure, and various other miscellaneous provisions.

Also special features and considerations of the PES contracts which can pose challenges have also been highlighted and discussed.

Training Needs Assessment and Training Plan for Capacity Building

Training Needs of the local communities, para-professional staff and professional staff of Forest Department and various other departments were assessed in the different workshops held in Karachi (for Sindh Province), in Quetta (for Balochistan Province) and in Balakot, Mansehra (for KP Province). Based on these consultative workshops, training needs of communities and para-professional staff of Forest and other departments have been assessed. These relate to the following major topics.

- PES and REDD+ Related Conceptual Clarities
- PES and REDD+ Related Technical Aspects
- PES and REDD+ Related Community Involvement in Baseline Establishment
- PES and REDD+ Related Community Involvement in Monitoring, Measurement and Reporting
- PES and REDD+ Related UNFCCC and Other Donors Social and Environmental Safeguards
- PES and REDD+ Risks and Benefits and Benefits Distribution System
- PES and REDD+ Related Marketing and Contractual Agreements

The above mentioned trainings will be of basic and introductory nature. These will be designed by PFI and their training material will also be developed by PFI. PFI will also train master trainers from community people and para-professional staff of different departments. Trainings will be imparted in Provincial Forest Schools and Academies which have been established for the training of such para-professional staff and local communities.

Major training needs of professional staff of Forest Department and other department fall in the following categories:

- PES and REDD+ Related Conceptual Clarities-Intermediate and Advanced Level
- PES and REDD+ Related Technical Aspects-Intermediate and Advanced Level
- PES and REDD+ Related Baseline Establishment as per standard methodologies
- PES and REDD+ Related Community Involvement in Monitoring, Measurement and Reporting as per standard methodologies
- PES and REDD+ Related UNFCCC and Other Donors Social and Environmental Safeguards addressing, respecting and reporting on
- PES and REDD+ Incentives Allocation and Benefits Distribution System development and implementation
- PES and REDD+ Related Marketing and Contractual Agreements development, execution and monitoring
- International Requirements for Implementation of PES Programs
- PES and REDD+ Related Policies Aspects
- PES and REDD+ Related Legal Aspects
- PES and REDD+ Related Institutional Aspects

- International Research and Experiences about PES Programs Design and Implementation

The level of training material for the professional staff will be of conceptual and advanced nature. These training plans will be developed and implemented by PFI at its own premises or the HRD Directorates of different Provincial Departments. PFI will also train master trainers amongst the professional staff of Forest and other departments for large-scale replication and institutionalization of the training program.

Develop Awareness Raising/ Capacity Building Material (5 Manuals)

Five manuals/Guides have been developed on the following topics:

- What is REDD+? A Community Guide.
- REDD+ Risks and Benefits.
- Climate Change and the Role of Forests.
- REDD+ PES Monitoring Manual-A Community Guide.
- A Manual to Measure Forest Carbon Stocks.

CHAPTER-1

REPORT ON MEASURES IDENTIFIED FOR DEALING WITH POLICY AND LEGAL ISSUES

1.1 Introduction

A number of policy, legal and institutional issues were identified as part of the policy, legal and institutional analysis done during the preparation of the Interim Report using the Analytic Framework as well as lessons learnt for the design and effective implementation of REDD+ PES schemes. The next step is to propose measures for dealing with the identified issues. In this Mid-Term Report we are proposing a set of measures to address the constraints identified and to facilitate the process of REDD+ PES implementation in Pakistan. Some of the proposed measures lie within the forestry sector and can be tackled at the Ministry of Climate Change level for federal issues. Provincial level forestry sector issues can be addressed by the Provincial Forestry, Environment and Wildlife Departments and other Provincial Government Departments. There are, however, a number of issues that fall outside the scope of jurisdiction of the Ministry of Climate Change or the provincial Forestry Departments. Included here are Water Sector Policy (Annex-2) related and other sectors issues which lie outside the forestry sector. These issues will have to be addressed by the concerned agencies and forums which have the mandate to tackle the issues. Further it is noted that some of the proposed measures will require substantial political and policy makers' commitment. Hence, efforts will have to be made to mobilize the needed support for such like measures and reforms. For example, constitutional amendments in support of addressing watershed issues through changes in the National Finance Commission (NFC) so as to make specific allocation in the NFC award for the rehabilitation and development of catchment areas of major rivers in Pakistan and addressing the skewed distribution of landed property ownership will require reforms which are difficult political issues in the context of Pakistan. Similarly addressing the squatting and encroachments on forest lands are other issues that would need substantial political and policy makers' commitment. Also, the findings and proposed measures that lie outside mandate and influence of forestry sector, forestry professionals will have to do a lot of awareness raising and sensitization of the policy makers as they cannot undertake these reforms at their own level.

The constraints mentioned below are linked to the different conditions mentioned in the analytic framework of the study and are described below:

Level I Threshold Conditions: *The first level Threshold Conditions for PES ensure that the fundamental or threshold conditions are in place for buyers to feel that there is sufficient stability in place to consider entering in these business arrangements. These are, therefore, critical to and without which PES implementation will be constrained. Therefore, removing or easing these constraining factors will contribute to smooth implementation of PES in the country. Level I issues are described below:*

- Although there are constitutional provisions pertaining to private property ownership, there are no specific constitutional provisions that mandate payments to upstream

custodians of watershed resources by the downstream beneficiaries of hydel power and water resources.

- Foreign-controlled companies that are working in Pakistan can own land in Pakistan. Foreign individuals must obtain permission from the Home Department before acquiring land in Pakistan (Martindale- Hubbell 2008).
- Skewed distribution of land property ownership in Pakistan.
- Widespread squatting and encroachments on forest lands.
- Protracted and prolonged property and land disputes resolution mechanisms under the civil laws of Pakistan.
- Costly process of land disputes resolution.
- Complicated and cumbersome encroachments evacuation problem.
- Inter-gender differences in property and land ownership, mostly due to customary practices. Linking statutory law with local customary law could be an option for ensuring that women have rights to property as established in statutory law.

Level II Essential Aspects to be developed in Parallel with PES: *The second level of preparedness, while important for well-functioning PES, may be developed adaptively as needs and options become clearer via PES experience on the ground. Problems associated with Level II include the following:*

- Lack of awareness and capacity for property disputes resolution.
- Non-computerization of land records.
- Land scarcity, competition for land for alternative land uses and non-availability of land use planning process.
- Lack of capacity for resolving various institutional elements pertaining to property and land ownership. These among others include: tenure security, land policy, legal framework, and dispute resolution, organization & mandates, capacity and human resources, land administration process, data organization, coordination & data sharing, and financing & data costs.
- Lack of capacity for resolving various technical elements of property. These include: strategic plans users' needs, technology adoption, training and development, land information system design, workflows, quality standards, and services & products.
- Poverty is highly correlated with landlessness and is seen as contributing to political and social instability. Enactment of a comprehensive legal framework for establishing more equitable access to property and more transparent land administration could, many analysts believe, contribute to both political and economic development objectives.

- Repeated government attempts to address inequality of access to land and tenure insecurity have largely failed to transform the system.
- Tenants and sharecroppers have little incentive to invest in sustainable production practices.
- Insecure land tenure at times have led to increasing degradation of land.
- Given Pakistan's history, however, the preparation and administration of conducive and equitable land ownership and access framework would require substantial and sustained leadership on the part of both federal and provincial governments.
- The establishment of a land registration system that incorporates the current tax-revenue-based system of records with standardized documents and registries could increase tenure security and reduce land-based conflicts.

Level III Conditions for Streamlining PES: Streamlining PES conditions include non-urgent aspects that may be important to streamline or scale up PES, depending on the particular circumstances. These are mostly related to maintaining and expanding PES infrastructure and ensuring financial resources for PES. Constraints to Level III include the following:

- PES projects investors in Pakistan, like anywhere else, may be exposed to a number of risks. These can be broadly classified into technical risks, commercial risks, market risks and, and political risks. Given the long duration of many PES investments, the likelihood of a so-called 'risk event' occurring over the life of an investment is higher than for other shorter-term investments. Accordingly, the return requirements of PES investors are high as well.
- Technical risks of PES investments are related to leakages and non-permanence issues. Leakages refer to the displacement of the problem. The displacement could be due to geographical shifting of the problem from one place to another, or due to product shifting or alteration in the source of the problem. Non-permanence problems arise when the solution to the ecosystem degradation problem is not considered long-term and permanent. For example, for forest carbon, a reversal of carbon storage can happen from human activity (e.g., logging) or unforeseen natural events (e.g., forest fires, pest outbreaks).
- Commercial risks are also present. These happen when the commercial operations of eco-system services of a PES investment itself will fail – or fail to create adequate value.
- Market risks are a possibility when the surrounding business or financial market environment will cause a PES business to fail or reduce the value to the investor of the returns generated by a PES business.
- Political risks of a PES investment in Pakistan are associated with actions of sovereign or sub-sovereign entity that will cause a PES business to fail or reduce the ability of the investor to extract capital from a PES investment.

- Within these four risks types, there are a number of specific risks that an investor will either accept or attempt to mitigate.
- The current NFC Award does not have any specific allocation for the development of watersheds and PES related financial transfers. Making such provisions would help in institutionalizing PES in the energy and water sectors.

1.2 Policy Gaps

There are a set of policies at the federal and provincial levels that are relevant in the context of PES in Pakistan. These are listed and described below.

1.2.1 National Level Policies

Following are the main national level policies related to forests, environment and climate change which have been reviewed.

- Draft National Forest Policy 2015
- National Environment Policy 2005
- National Climate Change Policy 2012
- Implementation Plan and Framework for Pakistan National Climate Change Policy 2013-2030.
- National Water Policy, 2018 (Annex-2)

1.2.2 Provincial Level Policies

The Forest, Environment and Climate Change Policies of KP were studied.

- KP Forest Policy 1999
- KP Environment Policy 2008
- KP Climate Change Policy 2017

Sindh Agroforestry Lease Policy 2004 was also reviewed. Balochistan has no provincial policy for forestry, environment and climate change.

While analyzing policies, gaps and provisions with respects to the following aspects have been specifically analyzed:

- Institutional Development in support of REDD+PES.
- Improving Forest Governance and Land and Forest Tenure system.
- Addressing the drivers and underlying causes of deforestation and forest degradation.

- Technical aspects of REDD+ PES Project development.
- Stakeholders engagement in REDD+PES.
- Incentives Allocation and Benefits Distribution System.
- Conflicts Resolution and Management.
- Social and Environmental and REDD+ Cancun Safeguards.
- REDD+ Finance.
- Legal Issues.
- Marketing and Contractual aspects of REDD+PES.
- Awareness raising and Capacity Building of Stakeholders in REDD+PES Projects.
- Research on REDD+ and Climate Change issues.
- Influencing and Advocacy related to REDD+ and Climate Change.
- International Requirements regarding different Multilateral Environmental Agreements.
- Human and Women Rights in the context of REDD+PES.

It was found out that most of the sector policies are deficient on the above aspects as these policies have been prepared from the perspective of the sector as a whole. They are not and cannot be PES specific and therefore lack specific provisions regarding the above issues.

1.3 Legal Gaps

In the following we summarize the gaps and issues with respect to legislation directly or indirectly related to PES program design and implementation in Pakistan.

1.3.1 Forestry and Wildlife Laws

There are gaps in forestry and wildlife laws regarding provisions with respect to ecosystem services, rights relating to ecosystem services, valuation of ecosystem services; and promotion of PES in Pakistan through provision of positive incentives and elimination of perverse incentives.

These legal gaps will have to be fulfilled through suitable revision of the laws. Meeting these gaps are critical as laws provide the threshold conditions for implementation of PES in a country.

1.3.2 Fisheries Laws

Fisheries laws for the most are outdated and cannot serve the purposes of PES.

1.3.3 Environmental Laws

Environmental laws have too vast mandates given to the Environmental Protection Agencies which do not have the capacities to deliver on their mandates. As a result, most of the environmental laws that affect PES program implementation remain un-enforced.

1.3.4 Climate Change Laws

Climate Change related legislation is new and in accordance with modern day requirements regarding climate change adaptation and mitigation needs of the country. Though cursory references have been made to REDD+, the concept of PES and REDD+ have not been fully incorporated in the legislation. At present appropriate institutional mechanisms do not exist for implementation of the climate change laws.

1.3.5 Tourism Laws

There are no tourism specific laws in Pakistan.

1.3.6 Disasters Management Laws

Disasters Management specific laws do not exist.

1.3.7 Property Rights related Laws

There is lack of a comprehensive legal framework governing land rights, absence of standardized documentation and registries of land rights, ineffective formal dispute-resolution systems, and the strength of multiple customary laws create insecurity of land tenure for owners and potential purchasers (Jacoby and Mansuri 2005).

At times there are issues pertaining to property rights protection, property and land ownership concentration, legal framework, organizational/administrative framework, and property and land administration processes for the land record preparation and maintenance from the stakeholders' point of view. These are discussed below:

i. There have been problems in addressing the skewed distribution of property and land ownership in Pakistan.
ii. There are procedural problems in addressing squatting and encroachments on landed property. Vacation of encroachments is a cumbersome and lengthy process.

1.4 Proposed Measures for dealing with Policy Gaps

The following measures are proposed for dealing with Policy Gaps at the national and provincial level policies.

Policy Recommendation No.1: Make needed provisions in National and Provincial Forest Policies for strengthening and ensuring effective implementation of PES programs

Both National Forest Policy 2017 and KP Provincial Forest Policy 1999 are innovative documents. To fully ingrain the concept of PES and its essential ingredients into Forest Policies, it is

recommended to have the following provisions in the Forest Policies at the national and provincial levels:

- Policy Imperatives for managing forests for their high conservation and ecosystem services values: These imperatives inter alia may contain managing the high conservation value natural forests exclusively for their ecosystem regulating functions (climate change mitigation, biodiversity conservation, watershed protection, ecotourism, etc.) as opposed to timber production; improving the livelihoods of the forest dependent communities by making them partners in the benefits accruing from the ecosystem functions and promoting participatory forest management; taking steps for ensuring security, protection and sustainable management of forests through providing alternative sources of livelihoods and employment opportunities; implementation of poverty reduction programs in the forested regions, etc.

- Integrated Resources Planning and Management under a Landscape and Ecosystem Based Approach: Provisions for integrated forest resources planning and management under a landscape and ecosystems' based approach with appropriate balance between the production, social and environmental roles of forests.

- Stakeholders Engagement for enlisting their support for PES Programs: Provisions for effective engagement of stakeholders at all stages of the PES and REDD+ process, from design, development, and implementation all the way up to monitoring and evaluation following a cyclic and adaptive approach.

- Social Inclusion and Addressing Equity Issues so as to meet UNFCCC REDD+ Safeguards: Strengthening of social inclusion and addressing equity issues such as inter-gender equity, inter-generation equity and intra-generational equity in support of UNFCCC REDD+ Safeguards.

- Land and Resource related Tenure and clearly defining Property Rights: The individual or community whose land use decisions affect the provision of ecosystem services must have clearly defined and enforceable property rights over the land. Therefore, provision are needed in the policies for creating an appropriate framework for building a strong land and resource related tenure foundations for PES and REDD+.

- PES Goals and Objectives: Clearly defined PES goals and objectives need to be provided in the policies. These help to guide the design of the program and enhance transparency.

- PES and REDD+ Institutional and Governance Arrangement: Provisions for developing and sustaining an appropriate PES and REDD+ Institutional and Governance arrangement.

- UNFCCC REDD+ Cancun and Other Social and Environmental Safeguards: Provisions for addressing, respecting and reporting on all UNFCCC Cancun Safeguards and other Social and Environmental Safeguards of World Bank and other donor organizations.

- Developing National/Sub-national Forest Monitoring and MRV System for PES Schemes: Provisions for building and institutionalizing a National/Sub-national Forest Monitoring System and Measurement, Reporting and Verification of PES and REDD+ Activities.

- Baseline and Reference Level Establishment: Provisions for Establishing Credible Baseline and/or Forest Reference Emission Level/Forest Reference Level.
- Valuation of Ecosystem Services: Provisions for proper valuation of forest ecosystems so that their total economic values are estimated.
- Financial Resources Mobilization for Forest Conservation and PES Programs: Provisions for ensuring adequate finances for the PES and REDD+ program.
- Incentives Provision for Forest Conservation and PES Programs: Provisions for Incentives for PES and REDD+ schemes.
- Removing Perverse Incentives: For a PES program to produce effective results, perverse incentives and conflicting market distortions, such as environmentally harmful subsidies, should be removed.
- Fair and Equitable Distribution of Incentives: Provisions for fair and equitable distribution of the incentives and/or benefits.
- Strengthening of Legal Aspects of PES and REDD+: Provisions for strengthening legal aspects of the PES and REDD+ program.
- Engagement of Private Sector and Intermediaries: Provisions for the engagement of private sector, knowledge providers and other stakeholders and intermediaries.
- Controlling Drivers of Deforestation and Forest Degradation: Provisions for controlling the direct and indirect drivers of deforestation and forest degradation.
- Cross-Sectoral Linkages Development: Provisions for effective cross-sectoral linkages and coordination mechanisms with other key sectors in the economy like energy, agriculture, livestock, social welfare, poverty reduction, etc.
- Strengthening Forest Governance: Provisions for strengthening forest governance.
- Addressing Non-Permanence Risks: Provisions for addressing the risks of non-permanence.
- Addressing Leakages and Displacement Risks: Provisions for addressing the risks of leakages shifting and displacements control.
- Other Risk Mitigation Strategies: Provisions for adoption and use of other needed PES risks mitigation strategies.
- No Harm Principle: Provisions for ensuring no-harm principles.
- Women Involvement: Provisions for the involvement of women in the whole PES and REDD+ process.
- Value Addition and Value Chain Promotion: Provisions for ensuring value addition and value chain promotion for maximizing gains from the ecosystem functions.

- Awareness raising and Capacity Building: Provisions for awareness raising and capacity building of all stakeholder groups including Free, Prior and Informed Consent for REDD+ projects.
- Development of Action Plan: Provisions for development of an action plan in support of forest policies implementation.
- Resources Provision for Policy Implementation: Provisions for effective implementation of policies and the availability of needed resources for implementation.
- Monitoring and Evaluation of Policy Outcomes and Impacts: Provisions for appropriate monitoring and evaluation of outcomes and impacts of policies implementation.

Policy Recommendation No. 2: Recommendations for Enhancing Effectiveness of PES Programs

The following actions are considered important for enhancing PES effectiveness. It is, therefore, recommended to take the following actions:

- Clearly defining Ecosystem Services for development under the PES scheme:
- Identifying buyers and ensuring sufficient and long-term sources of financing.
- Identifying sellers and target ecosystem service benefits: Accounting for spatial variation in ecosystem service benefits via economic valuation, benefit scoring, and mapping tools allows payments to be prioritized to areas that provide the highest benefits. If the PES budget is limited, this can substantially increase the cost-effectiveness of the program.
- Establishing baselines and target payments to ecosystem services that are at risk of loss, or to enhance their provision: A PES program should only make payments for ecosystem services that are additional to the business-as-usual baseline.
- Differentiating payments based on the opportunity costs of ecosystem service provision: PES programs that reflect the cost of an alternative action that must be avoided (e.g. deforestation) so as to enhance ecosystem service provision, are able to achieve larger ecosystem service benefits per unit cost.
- Consider bundling or layering multiple ecosystem services: Joint provision of multiple services can provide opportunities to increase the benefits of the program, while reducing transaction costs.
- Addressing leakages: Leakage occurs when measures to enhance ecosystem services provision in one location leads to increased pressures for conversion in another. If leakage risk is expected to be high, the scope of the monitoring and accounting framework may need to be expanded so as to detect, and consequently address, leakage.
- Ensuring permanence: Events such as forest fires may undermine the ability of a landholder to provide an ecosystem service as stipulated in a PES agreement. If the risks are high, this will impede the effective functioning of a PES market.
- Delivering performance-based payments and ensure adequate enforcement: Payments should be ex-post, conditional on performance. When this is not feasible, effort-based payments (such as changes in management practices) are a second best alternative,

provided that changes in ecosystem management practices will bring about the desired change in service provision.

Policy Recommendation No. 3: Implementation of proposed policy changes and innovations

Policy innovations in support of Pakistan REDD+ Program and Provincial REDD+ Programs can be implemented in a number of ways. Here we present three possible options:

- Providing for and incorporating the REDD+ Policy Innovations which are endorsed and agreed to by the National REDD+ Office and Ministry of Climate Change, in the National REDD+ Strategy and Provincial REDD+ Strategies. This option seems to be the easiest, least disruptive and the most pragmatic option implementation-wise given the fact that work is on-going on the preparation of Pakistan National REDD+ Strategy and KP Province has also prepared first draft of its Provincial REDD+ Strategy. Sindh and Balochistan Provinces will either adopt the National REDD+ Strategy or follow KP province and start work on preparing its own strategy which is integrated with the National REDD+ Strategy.
- The proposed REDD+ Policy Innovations are incorporated into the existing Forest Policies by revising them and then following the process used in approving a revised policy document. This involves some time and effort in revising the existing documents and then following them through the approval process. It is intermediate in difficulty wise.
- A new REDD+ Policy Document is prepared and adopted. Time and effort wise this is the most laborious option and will require political and policy makers support.

Any one of the above proposed options can be adopted for implementing the proposed policy innovations. The best approach to address their gaps vis-à-vis PES is to incorporate those concerns in REDD+ Strategies at the national and provincial levels. Changing the sector policies will be a lengthy and protracted process.

At present appropriate institutional arrangements for PES and REDD+ do not exist either at the national level or provincial levels. Putting in place appropriate institutional arrangements is critical for successful implementation of PES in the country. This gap will have be met on a priority basis as it is one of the essential conditions for PES implementation.

1.5 Proposed Measures for dealing with Legal Gaps

The following measures are proposed for addressing the legal gaps.

Legal Recommendation No. 1: Forest Laws Strengthening and Effective Implementation in support of REDD+ and PES

Violation of forest laws and forest crimes such as illegal logging, illegal occupation of forest land, incidental forest fires, illegal minerals/stones/sand/forest soil quarrying in forest areas, extraction and/or illegal transport of forest produce, wildlife poaching, damages to planted areas, etc. are common place Pakistan. All these need to be curbed for building investors' confidence for PES programs.

However, a differentiation has to be made between illegal activities driven by poverty and subsistence needs (fuelwood and fodder collection needs, for example) and those resulting from outright greed and involve organized criminal activity. This differential would be helpful in formulating effective and equitable responses to address the complex problems of deforestation and forest degradation in Pakistan.

Generally, need-based forest crimes will have to be tackled through poverty reduction initiatives and the provision of alternative livelihoods, energy and material needs sources. Such targeted approaches for forest dependent populations involved in forest crimes will be particular necessity, especially in situations where broad development programs would only produce gradual results. These approaches are also to deal with issues connected to land tenure arrangements, access rights, laws and regulations that are biased against the poor in the sense that these do not make the necessary distinctions as highlighted above, and transparency and stakeholder participation in decisions directly affecting their livelihoods.

Combating large-scale criminal activities, on the other hand, require both targeted action in directly improving forest law enforcement so that criminals are apprehended and punished. It would also include more fundamental changes to improve the broader governance environment in the forest sector and in the society at large to help strengthen law enforcement efforts.

Given this differentiation, multi-faceted approaches are needed to address forest crimes. These, for example, include:

- Addressing key drivers of deforestation and forest degradation both within and outside the forest sector as identified in the Pakistan National REDD+ Strategies and the KP Provincial REDD+ Strategy.
- Combining actions with both short- and long-term orientation and implications in a realistic stepwise plan.
- Differentiating between failures of law and failures of implementation and addressing both failures of law and failures of implementation. According to Rosenbaum (2002), failures of law include: clashes of norms, when "the rights to the resources as set out in law are not the same as the rights that people or communities believe that they are entitled to have"; undetectable violations, when the law is written in such a way that makes it difficult to enforce; weak penalties, resulting in insufficient punishment to deter criminal behavior; and conflicting legislation. Failures of implementation, on the other hand, include: poor dispute resolution, which can lead to solutions outside the law; unfair application of the law (for example, bias, patronage, corruption, and so on); failure on the part of forest agencies to follow the law; lack of capacity to enforce the law; lack of capacity to administer the law; lack of coordination among government agencies; lack of enforcement of laws outside the forest sector (for example, in mining, agriculture, housing, etc.); and lack of government oversight.

- Strengthening supply-side measures to increase the forest resource base and demand-side measures to reduce and properly manage the demand for timber and other forest products, thereby bringing about a balance.
- Integrating other needed measures such as asset forfeiture laws into the fight against forest crimes in the case of organized forest crime.

It is recommended that forest laws in Pakistan be amended in light of those legal changes proposed in Legal Recommendation No. 2 below. It is further recommended that their implementation be strengthened and improved keeping in view the above failures of law and failures of law implementation.

Legal Recommendation No. 2: Make provisions in forestry legislation with regard to rights to ecosystem services.

While ensuring legal preparedness for REDD+, relevant sections and provisions with regard to different ecosystem services will have to be provided in the forestry legislation in the country in sub-national forestry laws. Currently, the rights associated with carbon and other PES benefits that will accrue from PES program implementation are ill-defined in Pakistani laws. Hence, it is important that carbon and other ecosystem services benefits related rights are provided in the national and provincial forestry legislation. Separate chapters are needed, one each to cater to the Ecosystem Services role of forests and the other one for effective prevention, detection, suppression, investigation and prosecution strengthening of forest offences.

Accordingly, the following terms as defined below may be included in the forestry legislation:

"Ecological character" means combination of the ecosystem components, processes, and services that characterize the forest ecosystem at a given point in time.

"Economic instrument" means one of the tools for environmental protection that makes use of fiscal incentives (subsidies) and deterrents (taxes, levies, charges, etc.) as well as market measures such as carbon credits and tradable emissions permits, rather than regulating specific outcomes.

"Ecosystem" means a dynamic complex of plant, animal, microorganism communities and their non-living environment, interacting as a functional unit. Ecosystems are irrespective of political boundaries.

"Ecosystem approach" means a strategy for the integrated management of land, water, and living resources that promotes conservation and sustainable use in an equitable way.

"Ecosystem services" means processes and functions provided by natural ecosystems that sustain life and are critical to human welfare. These are benefits people obtain from ecosystems and include provisioning services such as food, water, fiber, timber, biochemicals, fodder, fuel wood, etc.; regulating services such as climate regulation, biodiversity conservation, regulation of floods, drought, land degradation, diseases and pests regulation; supporting services such as soil formation, nutrient cycling, habitat provision; and cultural services such as recreational, educational, scientific, spiritual, religious and other non-material benefits.

"Ecotourism" means travel undertaken to witness sites, areas, or regions of unique natural or ecologic quality, or the provision of services to facilitate such travel.

"Endangered ecosystem" means an ecosystem of exceptional biodiversity value or habitat of an endangered or endemic species which has undergone severe degradation.

"Forest carbon" means carbon that is stored in forest biomass, forest soil and other forest carbon pools, and the carbon that will be sequestered in them over time.

"Forest carbon flux" means the exchange of forest carbon between different forest carbon pools and the atmosphere.

"Forest carbon pools" means those parts of the forest ecosystem where forest carbon is stored and includes above ground biomass (both live and dead); below ground biomass (both live and dead); small twigs, leaves, herbs, grasses and litter; organic forest soil carbon; and carbon stored in harvested wood products.

"Forest carbon rights" in relation to forest land means the exclusive legal right to obtain the benefit (whether present or future) associated with the stored forest carbon and any carbon sequestered in the future, by any existing or future tree or forest on the land. It is thus the right of a person, group or an entity to the legal, commercial, economic or other benefits (whether present or future) from exploiting the forest carbon.

"Forest carbon sink" means the natural features (forest, trees and soil) that hold and absorb carbon from the atmosphere.

"Forest carbon stock" means the total carbon stock existing in different forest carbon pools at a given time.

"Forest produce" includes:

(a) The following wherever found: timber, bark, charcoal, gum, natural varnish, resin, rosin, lac wax, wood oil and derivatives thereof;

(b) The following when found in or brought from a forest:

(i) Trees, leaves, flowers, fruits, seeds, roots and all other parts or produce of trees including fuel wood;

(ii) Plants not being trees including grasses, creepers, reeds, mosses, mushrooms, medicinal and aromatic plants and brushwood, and all plants and produce of such plants and other non-wood produce;

(iii) Biodiversity and biodiversity services found within forest area;

(iv) Forest carbon and forest soil carbon and carbon sequestration by forest;

(v) Wildlife and all other parts or produce of wildlife, including skins, horns, bones, silk, cocoon, honey, wax;

(vi) Peat, surface soil, water, snow, salajeet, sand, stones, rocks and minerals including mineral oil, limestone, laterite, marble and all products of mines and quarries;

(vii) Standing or harvested crops and grains thereof such as wheat, barley, maize, rice, pulses, and any other crop and produce thereof;

(viii) Any other produce or ecosystem services, which may be notified as forest produce by Government from time to time.

"Forest Reference Emission Level/Forest Reference Level" means the amount of gross/net carbon dioxide equivalent expressed in tons per year that is a bench mark for assessing each country's performance in implementing REDD+ activities under the UNFCCC.

"Indigenous knowledge system" means the system of norms, culture, rites, rituals and other biodiversity, forest and wildlife conservation and management related practices of communities which have been proved to enable communities interact with and utilize these resources in a sustainable manner.

"Indigenous peoples" means people whose social, cultural and economic conditions distinguish them from other sections of the national community and whose status is regulated wholly or partially by their own customs or traditions or by special laws or regulations.

The ecosystem services chapter inter alia should have sections to address the following issues:

Valuation of Forest Ecosystem Services.---(1) Department shall take steps to estimate the total economic value of forest ecosystems using internationally acceptable valuation techniques for valuing such system services.

(2) Government may make rules for the purpose.

Building Payments for Ecosystems Services Projects.--- (1) Department, in consultation with Government, build Payments for Ecosystems Services Projects to mitigate climate change, conserve biodiversity, watershed protection, or any other ecosystem service to strengthen forest tenure and benefit sharing arrangements and for socio-economic development of local communities.

(2) Government may make rules for the purpose.

Protection of Forest Carbon Rights.--- Government shall take steps to protect and enforce forest carbon rights of local communities.

Forest Rights and Resources.---(1) Forest rights are related to and linked with forest resources. Government shall therefore ensure the protection, conservation, development and sustainable management of forest resources.

(2) Government may make rules for the purpose.

Benefit Sharing of Forest Ecosystem Services.--- (1) Government shall ensure equitable sharing of forest ecosystem services including forest carbon rights to the forest owning communities and relevant stakeholder groups.

(2) Government may make rules for the purpose.

Cancun and other Social and Environmental Safeguards.--- (1) Government shall ensure that the Cancun and other applicable social and environmental safeguards are addressed, respected and properly reported on to the concerned forum.

(2) Government shall develop a proper Safeguards Information System (SIS) for the purpose.

(3) Government may make rules for the purposes of this section

It is therefore proposed that the existing laws be revised so as to have appropriate definitions related to ecosystem services of forests in the definitions section and an exclusive chapter on strengthening and codifying the role of forests in the provision of its various ecosystem services. In addition, it is not just provision of these rights in the laws, awareness about the existence of rights, the strength of rights enforcement systems and local governance systems are crucial for providing the security that carbon and other PES benefits are realized at the local level and they are distributed to the appropriate stakeholders.

Legal Recommendation No. 3: Make provisions in forestry law for pre-emptive application of multi-lateral environmental agreements (MEAs)

Legal reforms are needed so as to ensure that PES programs are efficient, effective, and equitable besides being ingrained in good governance and international environmental conventions and human rights laws including transparency and accountability. These provisions are needed to ensure that human and resources rights of people are not adversely affected. Cancun REDD+ safeguards ensure no harm to people, no harm to environment, and no harm to governance. By doing so they protect among others the following human rights: right to self-determination; right to culture; rights to land, territories and natural resources; right to participation; access and right to information; free, prior and informed consent; access to justice and effective remedy; right to non-discrimination and equality; protection of rights of indigenous peoples; protection of women rights; protection of rights of children; freedom of assembly; freedom of expression; right to fair trial; right to life; right to food; right to water; freedom from torture/violence; freedom from servitude; right to religion; right to health; and protection from displacement/involuntary resettlement.

There are a number of international multilateral environmental agreements and other instruments that are relevant to REDD+ and PES. These, for example include:

- United Nations Framework Convention on Climate Change
- United Nations Convention on Biological Diversity
- United Nations Convention on Combating Desertification

- Convention on Migratory Species.
- Convention on International Trade in Endangered Species (CITES)
- Ramsar Convention on Wetlands
- Vienna Convention on the Protection of the Ozone Layer
- Basel Convention on the Control of Transboundary Movement of Hazardous Waste
- Stockholm Convention on Persistent Organic Pollutants
- Convention on the Law of the Seas
- Paris Agreement
- Nagoya Protocol Access to Genetic Resources under the Biodiversity Convention
- Cartagena Protocol on Biosafety to the Biodiversity Convention
- Montreal Protocol on Ozone Depleting Substances
- United Nations Declaration on the Rights of Indigenous Peoples (UNDRIP)
- International Labor Organization's Convention No. 169 (ILO 169)
- Universal Declaration of Human Rights
- International Covenant on Civil and Political Rights (ICCPR)
- International Covenant on Economic, Social and Cultural Rights (ICESCR)
- International Convention on the Elimination of All Forms of Racial Discrimination (ICERD)
- Convention on Elimination of All Forms of Discrimination Against Women (CEDAW)
- Convention on the Rights of the Child
- UNESCO's Convention on Protection and Promotion of Diversity of Cultural Expressions (CPPCDE)
- World Heritage Convention
- Convention on Biological Diversity Decision on REDD+ Safeguards
- UNFCCC Decision on REDD+ Safeguards

It is proposed that provisions be made in forestry laws for pre-emptive application of the above mentioned multilateral environmental agreements as well as various human rights laws, if the need for such action arises as suggested below:

"**Pre-emptive application of MEAs**.--- Government may, by notification in the official gazette, declare any area, which supports and qualifies for the implementation of different Multilateral Environmental Agreements in the forestry sector including REDD+ and any other PES in the forestry sector, to which Government of Pakistan is signatory, as a REDD+ Project or Other MEA Area with appropriate nomenclature and regulate its management as may be prescribed."

1.6 Proposed Measures for dealing with Institutional and Other Miscellaneous Matters

The different recommendations made as part of the gaps identified based on institutional review process are grouped into the following major categories:

1. Recommendations related to the fulfillment of Level-1 Threshold Conditions for PES
2. Recommendations related to the fulfillment of Level-2 Essential Aspects of PES
3. Recommendations related to Level-3 Streamlining of PES Conditions
4. Recommendations related to Ecosystems Valuation and Natural Capital Accounting
5. Recommendations related to Resources Planning and Management
6. Recommendations related to Institutional Strengthening and Development
7. Recommendations related to Strategies Coordination
8. Recommendations related to Linkages Development and Networking
9. Recommendations related to PES related Research
10. Recommendations related to Awareness raising and Capacity Building about PES and REDD+

1.6.1 Recommendations related to the fulfillment of Level-1 Threshold Conditions for PES

Recommendation No. 1: <u>Institutionalization of PES in the Constitution and/or Laws</u>

Given its usefulness and despite the fact that the different government policies ask for the use of economic instruments like PES as a policy tool, there are no specific provisions either in the Constitution of Pakistan and Other relevant laws for institutionalizing PES. Therefore, the concept has not yet taken roots due to these constitutional and institutional inertia.

It is therefore proposed that PES be promoted, used and institutionalized as an important provision in the Constitution of Pakistan, supporting forestry legislation and forest policies and PES/REDD+ Strategies instrument for forest resources conservation and development and livelihoods improvement in the country through appropriate provisions in the Constitution of Pakistan and/or

Other Supporting Laws and Policies. Also, separate allocations be made in the NFC Award for PES related payments and transfer of funds.

Accordingly, it is recommended that at the time of discussions on 8th NFC Award, the following multiple criteria be discussed for adoption in support of environment protection and watersheds development:

Existing Provision	Proposed Provision
The multiple indicators under the 7th NFC Award Award Multiple Indicators Weights 1. Population 82.0% 2. 2 Poverty/Backwardness 10.3% 3. 3 Revenue Collection/Generation 5.0% 4. 4 Inverse Population Density 2.7% (Urban-Rural) 5. Out of 56 % provincial share of total divisible pool, financial resources will be distributed among the provinces in following ratio. Punjab 51.74% Sindh 24.55% Khyber-Pakhtunkhwa 14.62% Balochistan 9.09%	Proposed multiple indicators under the 8th NFC Award Award Multiple Indicators Weights 1. Population 81.0% 2. Poverty/Backwardness 10.3% 3. Revenue Collection/Generation 5.0% 4. Inverse Population Density 2.7% (Urban-Rural) 5. Environmental Protection and Watershed Development 1.0 % 6. Out of 56 % provincial share of total divisible pool, financial resources will be distributed among the provinces in following ratio. Punjab 51.74% Sindh 24.55% Khyber-Pakhtunkhwa 14.62% Balochistan 9.09%

Recommendation No. 2: Understanding of UNFCCC Cancun and FCPF safeguards

A proper understanding of the Cancun safeguards under the UNFCCC and FCPF safeguards by different stakeholders groups is required so that these are adequately provided for in various policies, laws and institutional mechanisms and are respected in on-ground operations.

It is therefore recommended that a number of awareness raising and capacity building sessions at the federal as well as provincial and district levels be held on the subject so that proper understanding of the safeguards system is developed.

Recommendation No. 3: Addressing Cancun and Other Social and Environmental Safeguards

The consultancy firms (Climate, Law and Policy and Haigler Bailey Pakistan) engaged by the National REDD Office have made a number of recommendations regarding addressing the UNFCCC Cancun and FCPF safeguards.

It is recommended that these proposals be incorporated into various national and provincial policies, laws and institutional mechanisms for effective implementation of PES and REDD+ programs.

Recommendation No. 4: Respecting Cancun and Other Social and Environmental Safeguards

The different Cancun and FCPF safeguards will also have to be implemented on ground. This would require development of Standard Operating Procedures (SOPs) and Protocols for their implementation.

It is therefore recommended that SOPs and Protocols be developed for implementation of the Cancun and FCFP safeguards.

Recommendations No. 5: Reporting on Cancun and FCPF Safeguards

A Safeguards Information System (SIS) is required for proper reporting on the Cancun and FCPF Safeguards.

It is recommended that the SIS developed and proposed by the Consultants engaged for the purpose be adopted and made use of.

Recommendation No. 6: Instituting appropriate Institutional Mechanisms for PES

Non-existing or non-functioning and weak institutional arrangements will slow down and hinder the implementation of PES programs in the country.

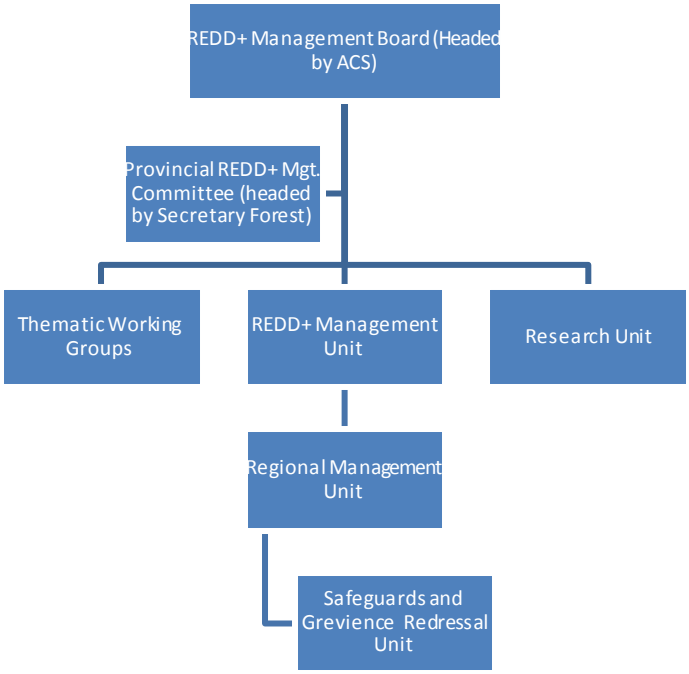
It is therefore recommended that proper and functioning organizations be established at the federal as well as provincial levels for implementing PES programs. At the moment provinces can start with the existing structures but in course of time they will have to establish dedicated setups for REDD+PES. These setups have already been proposed by the provinces themselves in their provincial REDD+ Strategies or working papers. In this regard, the following specific proposals are made:

At the Federal Level

It is proposed that the existing National REDD+ Office in the Ministry of Climate Change be regularized and strengthened to have adequate resources for REDD+ and PES.

At KP Province Level

KP Province has proposed a comprehensive institutional set up for REDD+ implementation in the province which is discussed in detail in Section 1.7 of this report. It is proposed that the same setup will be used for PES implementation in the province.

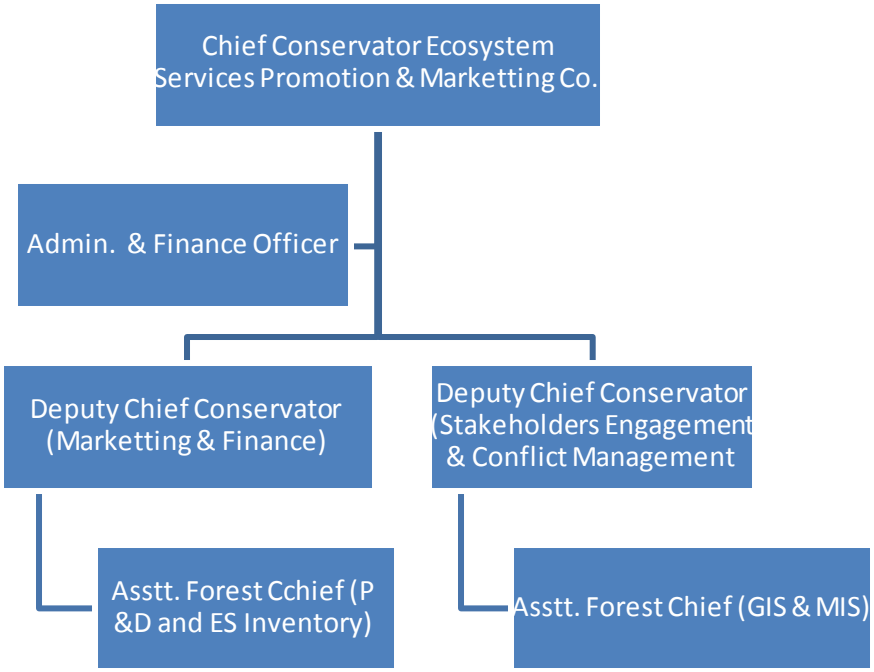


Organogram of proposed Institutional Setup for REDD+PES in KP

At Sindh Province Level

During discussions in Karachi on 13 March, 2018, there was a proposal for establishing a Sindh Ecosystem Services Promotion and Marketing Company/Corporation within Sindh Forest Department. This Corporation is to be headed by a Forest Officer at the level of Chief Conservator of Forests (BS-20 Officer). He will have two Deputy Chief Conservators of Forests (BS-19), one each for Marketing and Finance and the other for Stakeholders Engagements & Conflict Management. In addition, there will be an Assistant Forest Chief (BS-18), Planning and Development and Ecosystem Services Inventory, and an Assistant Chief (BS-18) for GIS and MIS. The Corporation will have an Administration and Finance Officer and other Support staff.

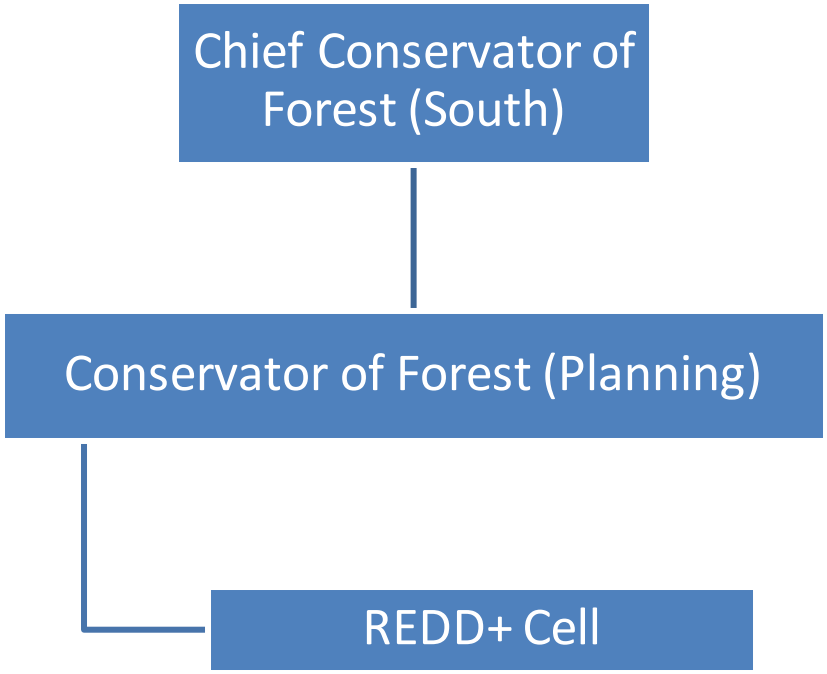
To start with, these proposed Offices can be established through development budgets. Later on, these will be transferred to normal budget once these have proved their worth.



Organogram of proposed Institutional Setup for REDD+PES in Sindh

At Balochistan Province Level

It was proposed in the Workshop on "Designing Payment for Ecosystem Services" held in Quetta on 17-18 April, 2018 that a Provincial PES/REDD+ Office be established in Balochistan Forest Department in the Forest Planning Circle to carry on the tasks of PES/REDD+ activities.



Organogram for REDD+PES Setup in Balochistan

Recommendation No. 7: Promoting Identifiable Supply and Demand for PES

For most PES schemes to happen, government intervention is required to ensure identifiable supply and demand for PES. Possible potential roles for government in this regard could come in many forms. Selected support options could include:

- Launching targeted awareness-raising campaigns about ecosystem service values and threats to those values.
- Promoting and organizing supply and demand via different mechanisms including ecosystem services baseline development, centralized listing, exchange, or otherwise.
- Rigorous implementation of the provisions of environmental legislation pertaining to mandatory environmental assessments of policies, programs and development projects which impact ecosystems and their services.
- Implementing requirements to maintain or offset ecosystem service loss in connection with development projects (e.g., "no net loss" of biodiversity or other ecosystem services).
- Providing subsidies for conservation activities, which may be funded by general taxes or by resource usage fees or targeted tariffs.
- Launching of comprehensive offsets, trading, or mitigation banking programs as part of contributions towards Paris Agreement and other international obligations.

It is recommended that government promotes identifiable supply and demand for PES through the above identified or other such interventions to make use of this approach.

Recommendation No. 8: Governance Factors for PES

The three main pillars of forest governance include (Mekonnen and Bekele 2015 and Larson 2011): conducive policy, legal, institutional and regulatory frameworks; appropriate planning and decision making processes; and effective implementation, enforcement and compliance. Since PES programs are designed, planned, implemented and evaluated under prevailing forest governance and contractual arrangements. Therefore, good forest governance and contractual laws implementation and easy access to justice system are critical.

It is accordingly proposed that appropriate capacity building of the ecosystem services providers and other stakeholders' groups party to the PES contracts or otherwise influencing the outcomes under PES contracts is done so as to ensure improved forest governance which will increase the trust of buyers of ecosystem services.

Recommendation No. 9: Tenure Rights in Land

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

- Where applicable, facilitating forest land titling or formalization of forest land use rights of 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 titles of forest owners or forest use rights of non-owner users and facilitating access to these records.
- Providing training and/or resources related to obtaining and registering title or forest use rights and resolving tenure conflicts.

It is recommended that PES participating provinces and governments take steps on the lines proposed above to ensure secure rights to land under the PES program. 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.

Recommendation No. 10 : Rights in Ecosystem Services

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.

It is therefore recommended that in order to provide incentives to land owners, managers and users to conserve, rights in ecosystem services of the services providers be defined and secured. Accordingly, it is proposed that provisions be made in the forest laws with regard to the protection of ecosystem services rights of local communities.

Recommendation No. 11: Discernable Regulatory Regimes for PES

Discernable regulatory regimes for PES are needed to build investors' confidence in PES programs. At present this is lacking as there are no specific provisions with regard to PES and ecosystem services rights of communities.

To remove these shortcomings it is recommended that discernable regulatory regimes be provided in Pakistan Forest Act and Provincial Forestry legislation. It is therefore proposed that the existing laws be revised so as to have appropriate definitions related to ecosystem services of forests in the definitions section and an exclusive chapter on strengthening and codifying the role of forests in the provision of its various ecosystem services.

Detailed recommendations for forestry legislation have been made in the relevant section, which may be implemented.

1.6.2. Recommendations related to the fulfillment of Level-2 Essential Aspects of PES

Recommendation No. 12: Ecosystem Services Baseline

The establishment of a credible ecosystem services baseline will crucially influence the environmental and economic effectiveness of the PES regime.

It is therefore recommended that credible baselines for the different ecosystem services be established to monitor progress and achievements vis-à-vis the set baseline.

Recommendation No. 13: Building National/Sub-national Forest Monitoring System

To meet the requirements of UNFCCC on this count, countries and jurisdictions have to build national or sub-national forest monitoring system.

It is therefore recommended that a NFMS/Provincial Forest Monitoring System is built taking guidance from the consultants engaged for this job. This Forest Monitoring System will collect data on a bouquet of forest ecosystem functions and not just limited to carbon. While building/

strengthening its Forest Monitoring System (FMS), Pakistan is to follow the guidance and modalities for the NFMS and MRV, which include:

- Build upon existing systems, as appropriate;
- Enable the assessment of different types of forest in the country or sub-national region, including natural forests;
- Be flexible and allow for improvement; and
- Reflect, as appropriate, the phased approach.
- Use a combination of remote sensing and ground-based forest monitoring and carbon inventory approaches.
- The PFMS is to be nested/integrated with the NFMS at appropriate time, if circumstances so warranted it.
- While strengthening the FMS, due consideration will be given to both the institutional development aspects as well as the technical capacities enhancement aspects.
- Revise the Forest Working Plans Code so as to incorporate the assessment of various ecosystem services as part of the Forest Management Plan data collection.
- Collect data which is geo-spatially referenced and thus spatially explicit.
- Regularly procure and make use of high resolution imageries.
- Update and upgrade its GIS software and hardware.
- Upgrade the skills of its staff as well as local communities in PES accounting.

Recommendation No. 14: Establishing a Measurement Reporting and Verification System (MRV)

It is recommended to establish a MRV Section for PES at the federal and provincial levels. At the provincial level, such sections are to be established in the Forest Planning and Monitoring Forest Circle. The MRV Section will be responsible for organizing all related functions from Provincial level to district/local levels and managing the relevant professionals.

The MRV section will manage and maintain the MRV system and also promote data dissemination about the project(s). It will be operationalized through developing and instituting in place the following key elements of the system:

- Database/IT/Metadata Unit
- Remote Sensing/GIS Unit

- Forestry Inventory Unit
- Reporting Unit.

All these four units of the MRV section will work in a coordinated manner.

The GIS Labs currently working in different provincial Forest Departments will have to be strengthened.

Recommendation No. 15: Registries

PES registries ensure that important information on various aspects of PES is captured, processed and stored in a consolidated, transparent, and easy-to-interpret manner. Centralized information storage and access would help to manage implementation of offsets, results based funding, private investment, and potentially PES markets if a market-based mechanism is used.

It is recommended that Pakistan consider the establishment of PES Registry to cater to the above needs, or link itself with another credible registry. A comprehensive PES Registry would have the following components:

Component	What Is Tracked	Unit
NATIONAL PES REGISTRY	**National progress** in achieving progress against the set PES baseline **Sub-National progress** against some assigned proportion of the baseline	CO_2e million tons or some other relevant PES Quantity and serial number of REDD+/PES Credits issued
PROJECT REGISTRY	Status and crediting of individual forest carbon or PES projects Nested accounting can 1) separate credits produced from projects from those attributed to national policies and programs; and 2) allow "true- up" for leakage and failure to perform at project or jurisdictional levels.	Project Data Credits issued by serial number Credits held in reserve for insurance buffers and true-up
TRANSACTION REGISTRY	The issuance, transfer, sales, and retirement of REDD+ credits or other PES credits	Serialized REDD+ or PES Credits by owner and/or agent
FINANCE REGISTRY	Payments for performance from Donors, Markets; Program expenditures	Dollar equivalent
SOCIAL AND ENVIRONMENTAL SAFEGUARD REGISTRY	Achievement of social and environmental safeguards principles and policies: Social safeguards; Benefit distribution; co-benefits	Social and Environmental Principles, Criteria and Indicators

Recommendation No. 16: Stakeholders Participation

Stakeholders, in the context of PES, are individuals, groups, bodies or entities with a stake, interest or right in the forest land that will be affected negatively or positively by PES activities, or who can

influence the outcome resulting from PES program implementation. These include: PES Supply side stakeholders (e.g., Forest Department, Wildlife Department, Fisheries Department, Tourism Department, forest owners and concessionists, forest users, local forest dependent communities including women, and other forest using communities); PES Demand side stakeholders primarily comprising of PES buyers; intermediaries; various knowledge providers; civil society organizations, private sector, media, academia, research organizations, international funding organizations, etc.

It is therefore recommended that full, effective and equitable PES stakeholders' engagement be ensured so as to promote relevance, ownership, accountability, relationships and innovations. Moreover, stakeholders' engagement has to be ensured in all phases of PES.

As part of the stakeholders' engagement, the following issues, among others, need to be covered:

- Access to and distribution of information
- Legitimate representation of community bodies or platforms
- Access to opportunities and capacity to participate
- Systems for decision-making
- Access to justice and grievance mechanisms
- Lands, territories and resources related issues
- Self-determination
- Compensation for opportunity costs, i.e., foregone opportunities
- Benefit-sharing
- Participation
- Free, Prior and Informed Consent (FPIC)

Different tools will be used for stakeholders' engagement. These include: stakeholders' mapping and analysis, gender analysis, capacity needs assessment, information communication strategy and stakeholders' engagement plans.

Principles in the stakeholders' engagement process as enshrined in the FCFP guidelines need to be followed.

Recommendation No. 17: <u>Technical Support</u>

There are a number of technical aspects of PES, for which technical support is required. It is therefore recommended that the requisite technical support be provided as part of the capacity building program recommendation.

1.6.3 Recommendations related to Level-3 Streamlining of PES Conditions

Recommendation No. 18: Maintaining a well-functioning PES infrastructure

It is not just enough to provide for institutional mechanisms for the design, planning, implementation, monitoring and evaluation of PES programs, but to maintain and strengthen these over time. Accordingly, it is recommended that the PES infrastructure be adaptively developed over time based on lessons learnt from program implementation. PES infrastructure inter alia includes PES related policies, strategies, legislative framework, over-all institutional framework and PES implementation mechanism, benefits distribution system, conflicts resolution, etc.

Recommendation No. 19: Facilitating investments into PES

PES programs are investment/incentive mechanisms to compensate ecosystems services providers for the efforts they undertake and the opportunity costs they bear in providing those services. The needed compensation monies can only be mobilized if the prospective buyers are willing to invest and governments are there to facilitate the investments into the program.

It is therefore recommended that necessary steps be taken by government agencies and all other partners to facilitate investments into PES so as to achieve the following to the maximum:

- Impacts on reducing threats to the ecosystem services
- Impacts on conducive Policies
- Political Impacts
- Impacts on Capacities
- Impacts on Stakeholders Perceptions and Participation
- Economic Impacts
- Social Impacts
- Ecological Impacts

Investments for REDD+ PES can come from a variety of sources. These, for example, include:

- Multilateral and Bilateral Donor Sources
    - Green Climate Fund
    - World Bank Forest Carbon Partnership Facility
    - World Bank Forest Investment Program
    - UN-REDD Program
    - BioCarbon Fund
    - German Government REDD+ Early Movers Program
    - Norwegian Government Program

- US Government Program-USAID

- National and Provincial Governments Funds
  - National Government Funds
  - Provincial Government Funds
- Private Sector Funds
  - International Private Sector Funds as part of Corporate Social Responsibility
  - International Private Sector Funds as Productive Investments
  - Domestic Private Sector Funds as part of Corporate Social Responsibility
  - Domestic Private Sector Funds as Productive Investments
- Carbon Market Funds
  - Voluntary Carbon Markets
  - Compliance Carbon Markets
- Alternative Investments
  - Trophy Hunting Schemes
  - Bioprospecting Schemes
  - Debt for Nature Swaps

Recommendation No. 20: <u>Facilitating Incentives</u>

Incentives are meant for enticing PES ecosystem services providers to adopt behaviors which are aligned with the PES program objectives. The incentives to be given to the services providers need to be performance based besides being transparent, effective, efficient and equitable.

It is recommended that government facilitates the services providers and services buyers in incentives provisions to the former by the later. While implementing the incentives program, attention has to be paid to the following issues:

- Who qualifies to receive incentives?
- On what basis would decisions on allocation of incentives be made?
- How will the data for decisions (either input-based or output-based) be collected, analyzed, and shared?

- Who will make the decisions, based on the collected and analyzed data?
- How will the type of incentive (monetary; various types of nonmonetary) be decided?
- How will the incentives be delivered?
- How will the system be monitored?

Also, the incentive to be designed and implemented should have the following desirable properties: effectiveness, efficiency, minimize costs (while consistent with a rights-based approach, equity (the benefits/incentives are shared in a manner that is fair and equitable, particularly to vulnerable groups including indigenous people, women, youth, the poor, etc.), ensure compliance with Cancun and FCPF Safeguards, empower transparent and effective forest governance structures, engender respect for the knowledge and rights of forest dependent peoples and members of local communities, optimality in terms of time, optimality in amount, optimality in form, optimality in terms of payment mechanism, optimality in terms of basis of compensation/recipient of the benefits.

Regular monitoring of the benefit distribution system so as to keep it on track is recommended. It is further recommended that different models for benefit distribution be considered and assessed for their pros and cons. For example, for distribution of PES benefits between government and local communities, in the case of Protected Forests, the model of Trophy Hunting Program in-vogue in KP could be considered, wherein 80 % of the benefits are allocated to the communities and only 20 % share is retained by the government.

Some compensation to the animal graziers who forego their grazing of animals in Forests could also be considered. The amount of compensation will have to be enough to cover their opportunity costs.

This recommendation be implemented through making appropriate provisions in the Forest Policies, REDD+/PES Strategies and regulatory framework for PES.

Recommendation No. 21: Supportive Taxes/Tariffs

It is recommended to levy an appropriate amount of taxes as part of environmental fiscal reforms program initiative in the country.

Recommendation No. 22: PES/REDD+ Risks Mitigation

Given that PES investments in Pakistan are subject to a number of risks; therefore, appropriate risk mitigation strategies will have to be adopted. The following risk mitigation strategies are proposed for the major risk areas in the country based on the Karachi PES Workshop January 2018 and expert opinion:

Risk Category	Assumed Risk	Proposed Risk Mitigation Measures
1. Political and governance: Legislation approval and enforcement	Moderate as government commitment is high	Awareness raising, advocacy, promotion of championships of high political figures.
2. Macroeconomic: Inflation induced living cost may increase all costs including opportunity costs	Moderate	Slight costs increment can be compensated by the exchange rate gain. Work closely with governments and communities to mobilize their support and contribution.
3. Sector strategies and policies : Coordination among sectors	Moderate	Coordination among sectors through Inter-ministerial PES Committee and make PES as a standing agenda. Similar replica at provincial levels need to be established to ensure coordination. Resource is allocated for this. Capacitate PES institutions across all tiers of government.
4. Technical design of program: Experiences on Participatory Forest Management and Afforestation & Reforestation; however there could be a challenge with the new MRV system requirement. Possible leakage within a jurisdiction. within the landscape (e.g, a large forest areas across several districts)	Moderate	Strengthen Systems and Institutions on MRV as per the national and provincial MRV Systems. 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). Enabling environment and good forest governance in all provinces with sufficient resource support. Synergy with other projects and programs (SLMP, SFM, etc.)
5. Institutional capacity for implementation and sustainability	Moderate	Create critical mass of PES facilitators. Strengthen upfront the GIS and RS capability at federal and provincial

		levels for landscape planning and monitoring. Create partnership with national and international centers of excellence on various issues.
6. Fiduciary	Low	Strengthen program management and financial oversight capabilities at federal and provincial level. committed) Establish specific heads for the purpose in the Forest Development Funds Accounts established for the purpose.
7. Cancun and other Environment and social safeguards of FCPF	Moderate	Implement national and provincial level safeguards instruments through strengthening institutional set up as proposed by the consultants engaged for the purpose. Prepare and implement the social and environmental management plan.
8. Stakeholders	Moderate	Set clear, objective and transparent targeting strategy. Stakeholder engagement in work planning and monitoring. Create broader partnership with private sector and civil society at various landscape levels.
9. Land availability: Competing needs for land and long gestation period in forest and related investment.	Medium	Engage communities in transitional income generating activities including labor employment and participation in various other income generating activities. Alternative livelihoods promotion. Adopt participatory land use planning and management at grassroots level.
10. Natural disaster (Drought impact)	Medium	Metrology Department and Climate service informed planning and implementation.

		Tree planting with moisture conservation techniques in drought affected areas. Strengthen preparedness for forest fire prevention and continuous participatory monitoring.
11. Uncertainties in availability of external climate fund from international commitment Moderate.	Moderate	Diversification of PES funding mechanisms. Exploring 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 water, bio-prospecting, etc. in addition to carbon finance initiatives.
12. PES revenues are not sufficient to cover opportunity costs, transactions costs and implementation costs.	Moderate	Promote other types of investments to cover opportunity costs, transactions costs and address direct drivers of deforestation & forest degradation and other implementation costs.

1.6.4 Recommendations related to Ecosystems Valuation and Natural Capital Accounting

Recommendation No. 23: Ecosystems valuation and natural capital accounting

Forests of Pakistan are complex and renewable ecosystems capable of providing a wide range of provisioning, regulatory, supporting and social and cultural benefits. They supply various products and goods like timber, fuelwood, fodder and a variety of other products which contribute directly to the well-being of people. Their goods and services are vital for the economy, ecology and society of Pakistan.

The values associated with conventional forest products, such as timber and fuelwood, pass directly through markets and are therefore easily estimated. On the other hand, many regulatory, supporting and social and cultural functions of forests and their benefits, which are very high, do not pass through markets and therefore do not get accounted for. The current forest valuation system and contributions of forestry sector to GDP in Pakistan are grossly under estimated. These use only the prices of timber, fuelwood and some other non-wood forest products when estimating the contributions of forestry sector to GDP.

Although, it is very difficult to estimate and state the monetary value of all goods and services provided by forest resources. However, a number of serious attempts to put value on the non-

market goods and services of environmental resources such as forests have been recognized in the developed and developing countries in the world using the concept of total economic value (TEV). The TEV considers and includes the direct, indirect, option, and existence values of forests.

It is therefore recommended that the government of Pakistan takes the following steps for forest ecosystems valuation and natural capital accounting:

- Make forest ecosystems valuation a cardinal principle and element of Forest Policies at the national and provincial levels.
- Keeping in view international experiences, develop and make use of standardized approaches and protocols for forest ecosystem services valuation.
- Necessary provisions are made in forestry laws with regard to forest ecosystem services valuation.
- Environmental laws of the country use ecosystem services values as proxies for damages and replacement costs in the EIA process.
- Appropriate strengthening of forestry sector institutions at the federal and provincial levels is done to mainstream and integrate this function into sector working.

1.6.5 Recommendations related to Resources Planning and Management

Recommendation No. 24: Resources Planning and Management

Given the fact that forests perform a number of roles and functions, therefore appropriate planning with regard to these roles and functions is needed. A balance has to be kept between the production, social and environmental roles of forests. Also, the engagement of different stakeholder groups in the planning is critical for ownership creation and effective implementation of forest management plans.

Accordingly, the following recommendations are made:

- Prepare forest management plans on an urgent basis which are without a management plan.
- The management plans should keep an appropriate balance between the production, social and environmental functions of forests.
- Relevant stakeholders be involved in the forest planning process.
- Implementation plans are needed to ensure forest management plans implementation.
- Criteria and indicators be developed and made use for monitoring and evaluating management plans implementation.

- Management plans should be treated as living and adaptive documents with provisions for adjustments on need basis and based on lessons learnt during implementation.
- Adequate resources (financial, human and other) be made available for plans implementation.

1.6.6 Recommendations related to Policies Strengthening and Effective Implementation

These recommendations have already been detailed under policies related section and therefore are not dealt with here.

1.6.7 Recommendations related to Other Natural Resources and Environmental Laws Strengthening and Effective Implementation

Recommendation No. 25: Natural Resources and Environmental Laws Strengthening and Effective Implementation

It is recommended that other natural resources related laws and environmental laws in Pakistan be amended and their implementation strengthened and improved keeping in view the fact that most of these laws do not address climate change and other emerging environmental issues and there are failures of law implementation.

1.6.8 Recommendations related to Institutional Strengthening and Development

Recommendation No. 26: Institutional Strengthening and Development

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, etc.) 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.

PES and REDD+ programs are multi-functional because these involve 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 programs are multi-scale as these can be implemented as a project, at the provincial level as well as at the national level

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

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

As recommended earlier, it is proposed that the existing National REDD+ Office in the Ministry of Climate Change be strengthened to have all the above resources which are needed for its functioning. On similar lines, a Provincial PES/REDD+ Offices/cells be established in KP, Sindh and Balochistan provinces where the two pilots will be implemented. To start with, these Offices can be

established through development budgets. Later on, these will be transferred to normal budget once these have proved their worth.

1.6.9 Recommendations related to Strategies Coordination

Recommendation No. 27: Strategies Coordination

Deforestation and forest degradation frequently result from underlying reasons and factors which cannot be framed as simply forestry problems. Lack of energy alternatives, widespread poverty and lack of livelihood opportunities, lack of land use planning, and high population density, low animal and agricultural productivity and infrastructure expansion all play a significant role in current levels of deforestation and forest degradation in Pakistan. Thus it is not possible to discuss improved forest and land use without addressing social, environmental and economic aspects, such as rural poverty, land tenure, environmental services, and financial and market issues. As a result, National and Provincial REDD+ Strategies and programs would require a cross-sectoral response and the consideration of all relevant factors inside and outside forestry sector. Viewed and understood from such a perspective, representation and interaction of actors across sector boundaries and diverse knowledge and values are to be necessary features for Pakistan National and Provincial REDD+ institutional arrangements to respond to the wider scope of the problems to be solved for controlling forest degradation and deforestation and implementing other aspects of REDD+ and PES.

Therefore, besides the National REDD+ Steering Committee, a set of functional Thematic Working Groups will also have to be established. The different Thematic Working Groups will take care of various technical, coordination, networking, and other related issues. In addition, a PES Round Table will also be required.

The following recommendations are therefore made with regard to Strategies Coordination:

- Establish a Thematic Working Groups at the national and provincial levels to work on different issues and support the respective National and Provincial Steering Committees.
- Establish PES Round Tables at the national and provincial levels.
- Ensure coordination between National REDD+ Strategy and Provincial REDD+ Strategies.

1.6.10 Recommendations related to Linkages Development and Networking

Recommendation No. 28: Linkages Development and Networking

1.6.11 Recommendations related to PES related Research

Recommendation No. 29: PES related Research

PES and its implementation are multi-dimensional and therefore require research inputs from a variety of disciplines in the physical, social, biological and managerial sciences. The best way to

carry out research on these different aspects is to outsource to the relevant research organizations. It is therefore recommended that action research be carried out by the National REDD+ Office and the Provincial REDD+/PES Offices through outsourcing the research agenda to the relevant research organizations.

1.6.12 Recommendations related to Awareness Raising and Capacity Building about PES and REDD+

Recommendation No. 30: Awareness raising about PES

Awareness about various aspects of PES and REDD+ is needed. It is therefore recommended that a PES/REDD+ Information and Communication Strategy (ICS) be developed in support of the National and Provincial PES/REDD+ Strategies.

Target audiences in the ICS will among others include: Politicians and Political Parties; Policies and Decision Makers; Provincial, District and Local level officers of Forests, Wildlife, Livestock, Agriculture, Rural Development, Mining, Communication and Works, Irrigation and other concerned government departments; forest owners; forest users; local communities; media; religious leaders and other opinion makers; NGOs and civil society organizations; women; legal community and judiciary, international community and donors, etc.

Key messages to be delivered to these audiences will be as per their information needs and will cover different aspects of PES and REDD+ including all the Level-1 (Threshold Conditions), Level-2 (Essential Aspects to be developed in parallel with PES) and Level-3 (Streamlining and Supporting Conditions) Requirements for PES.

Different media need to be and may be used to convey the needed messages. These include: print and electronic media including radio, TV, fact sheets and policy papers, research studies, brochures, pamphlets, stickers, conferences, workshops, trainings and capacity building sessions, exposure and field visits, web portal, lectures in schools and other academic institutions, social media, etc.

Recommendation No. 31: Capacity Building for PES

Capacity development is crucial for efficient, effective and equitable implementation of PES programs. Accordingly, it is recommended that a PES/REDD+ Training and Capacity Building Plan be developed and implemented so as to support the implementation of National and Provincial PES/REDD+ Strategies.

Target audience for training and capacity-building would include stakeholder groups directly concerned such as the Forests and Wildlife Departments staff members, forest owners, forest users, women and local communities and their organizations; other important stakeholder groups like policy makers; stakeholder groups from other relevant departments like Environment, Planning and Development, Finance, etc.; and NGOs, media, advocacy groups, etc.

These awareness-cum-capacity-building measures will help to address the concerns of these stakeholders groups and support a number of priorities of especially the non-owner forest users, women and local communities with regard to PES and REDD+. These include:

- Understand climate change and its impacts, PES and REDD+ concepts, and the potential benefits and risks of PES/REDD+ initiatives; various ecosystem services of forests and their economic values, etc.
- Participate fully and effectively in development of PES/REDD+ programs/strategies at multiple levels (village, sub-national, national, international).
- Know about the social and environmental safeguards that need to be observed while implementing the PES/REDD+ program.
- Decide whether or not to participate in PES/REDD+ activities, in keeping with rights to free, prior, and informed consent.
- Participate in implementation and management of activities that will generate ecosystem benefits.
- Benefit from PES/REDD+, especially through increased capacity to negotiate an equitable share of benefits from PES/REDD+.
- Monitor results of PES/REDD+ activities, as part of monitoring, reporting, and verification (MRV) of PES/REDD+ climate, social, and biodiversity impacts.

In the following table we propose broad areas and concerned target group of the capacity building program:

PES/REDD+ Theme	**Stakeholder Groups**			
	Policies and Decision Makers	Forest Department Staff	Forest Owners, Forest Users and Other Forest Dependent Communities Members	Civil Society Organizations, NGOs, Media, etc.
PES Policy Aspects	▪			
PES Technical Aspects		▪		
General Aspects of PES and REDD+ and the UNFCCC	▪	▪	▪	▪
PES and REDD+ Strategies and Action Plans	▪	▪	▪	▪
Monitoring, Reporting and Verification Systems for PES		▪	▪	
PES Baselines		▪	▪	
Policies and Measures for PES and REDD+ Implementation	▪	▪	▪	▪

PES and REDD+ Safeguards System	▪	▪	▪	▪
Stakeholders Engagement in PES and REDD+		▪	▪	▪
PES and REDD+ Funding and Finance	▪	▪	▪	
PES and REDD+ Benefits Distribution System and Approaches for Incentives Allocation	▪	▪	▪	▪
Institutional Mechanisms and Good Governance for PES and REDD+	▪	▪	▪	▪
Legal Aspects of PES and REDD+	▪	▪	▪	▪

1.6.13 Recommendations Related to Property Ownership and Security

Recommendation No. 32: Clarity about Property Ownership

Awareness raising and capacity building about the relevant provisions of Constitution of Pakistan (Articles 23, 24, 172 and 173), land registration and land administration can play an important role in strengthening the property rights systems and supporting PES programs in Pakistan.

It is therefore proposed that as part of the capacity building program in support of PES and REDD+, due consideration is given to awareness raising and capacity building so that PES implementation is facilitated in the country.

Recommendation No. 33: Property Security

Property security can be assured by a multitude of factors, not only by the revenue record.

It is therefore proposed that in addition to the official documents, greater use be made of the advocacy groups and public interest litigation mechanism, greater access to information and transparency so as to strengthen property security in support of PES program.

Recommendation No.34: Development of a PES Supportive Land Allocation and Land Use Policy

PES supportive Land Allocation and Land Use Policies do not exist at any level: national, provincial, divisional, district or lower levels. Development of a PES supportive Land Allocation and Land Use Policy is crucial for allocating land between different competing uses and to stop conversion of forest land to non-forest uses such as settlements, agriculture, etc. Development of such policies would also contribute to economic development, social justice and equity, and political stability.

It is therefore recommended that PES supportive Land Allocation and Land Use Policies be developed at the Federal Level and by each province so as to streamline land allocation decisions and to stop the conversion of forest land for other non-forest land uses.

Recommendation No. 35: Use of New Technologies to secure property rights and in the land administration system

Use of new technologies in Geo-ICT fields will secure property rights and help in the land administration system.

It is recommended that greater use be made of the new technologies and tools in land demarcation, land registration, etc. so as to strengthen the land administration system in Pakistan.

Recommendation No. 36: Strengthening of Land Property related Legal framework for expeditious implementation of PES programs

Legal framework of the Board of Revenue (BOR) is fragmented and outdated and therefore is not in consonance with the modern day realities and therefore may lead to inordinate in implementing PES program in an expeditious manner. Land related matters are governed under several pieces of legislation and two parallel systems of adjudication under revenue courts and civil courts (Qazi, 2005). Although an independent judiciary exists in the country but still the land related disputes (such as boundary, land revenue, partition) are adjudicated by revenue courts while other matters relating to land title and ownership are adjudicated upon by civil courts in the present system. The land adjudication is undertaken under different laws. These regulations are set out in the *Land Record Manual*, specifying the functions of different categories of the land revenue officials. Moreover, some of the issues and entities mentioned in these laws have become outdated.

It is therefore recommended to suggest to the government and do advocacy work through concerned NGOs and entities for suitable amendments in the legal framework as per societal changes and user demands to make the land property related processes more effective and efficient.

Recommendation No. 37: Strengthening Property and Land dispute resolution mechanisms

Main types of land disputes include: the conflicts between various persons with a joint ownership of the same piece of land (because of inheritance), conflicts between smallholders on determining the boundaries of the fields, efforts to encroach upon one another's or communal or government land (often with the connivance of revenue officials), and rarely conflicts between land owners and tenants on the division of earnings from land or when the landowners want to evict the tenants. In all these conflicts a reference always needs to be made to the land records (Qazi, 2005). The land dispute resolution mechanism in Pakistan is very complicated and it takes very long time to resolve these land disputes. These mechanisms are of high cost and time consuming that needs to be improved for better performance of the Land Administration System and PES implementation.

It is recommended that advocacy work be done for strengthening and land disputes resolution mechanism through concerned NGOs and other bodies.

Recommendation No. 38: Streamlining of Land Administration Processes to make them PES supportive

The land administration process in Pakistan is characterized by complex system of maintenance of land records, cumbersome business process, hard-to-decipher language of land records, and general apathy towards the rights of the citizens, all of which make it adverse to and not supportive of PES. All these have added to the mystification of land records. This creates fear in the minds of people about the potential manipulation of these land records (Qazi, 2005). The land administration processes in the present land administration system are too old and time consuming e.g. a chain of six steps is followed in mutation process and requires 4–10 weeks for processing a single mutation. These processes need to be improved to provide quick services to users for fulfilling the demands of a society and land market and thus PES supportive.

It is therefore recommended that relevant NGOs be supported to carry out this advocacy work for streamlining the land administration process in Pakistan.

Recommendation No. 39: Maintenance of Updated Property and Land Records to make them PES supportive

Property and land records are maintained in outdated fashion. Also, access to and understanding of these records is complicated. These are feared to complicate the implementation of PES programs.

It is recommended that advocacy work be supported for maintenance of updated property and land records so that these become PES supportive.

Recommendation No. 40: Strengthening of Data Organizations & Sharing for expeditious availability of land related data

The Board of Revenue is the only organization in the country at provincial level with a mandate to manage land related data for tax collection and disputes resolution. There is no any other organization in the country to deal with such land related activities. The land records are created and maintained at local level (village level). It is recommended that computerization of forest land records be done and proper sharing of the records with the owners be made possible. This computerization and easy access to land related data will help in expeditious implementation of PES programs and distribution of PES benefits.

Recommendation No. 41: National REDD+ Strategy

The National REDD+ Strategy needs to be finalized keeping in view ground realities of the country and coming up with strategy options that are pragmatic as well as effective and supportive of PES.

Recommendation No. 42: Provincial REDD+ Strategy for Sindh and Balochistan Provinces

Sindh and Balochistan Provinces need to explicitly show their intentions as to whether they want to adopt the National REDD+ Strategy or will go for preparing their own Provincial REDD+ Strategies. If they opt for going for the second option, these Provinces need to start work on the preparation of the strategy on immediate basis.

1.7 Proposed Governance and Institutional Arrangements for PES and 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

The following resources, in quantified terms, are needed for PES scheme:

PES Opportunity Costs: Opportunity cost analysis is an economic approach to monetize profits from various land uses, based on the calculation of the Net Present Value (NPV), which is the result of a Discounted Cash Flow (DCF) analysis of the costs and benefits for a certain land use over a defined period of time. Comparing the NPVs ($/ha or Rs./ha) of various land uses indicates the most profitable land use (e.g., from forest, agriculture, pasture). The difference between the higher NPV and the lower NPV is the opportunity cost, indicating the foregone monetized value the land use has to incur when opting for the land use with the lower NPV. These opportunity costs have been estimated for the different ecosystem services at the two pilot sites and will be provided as part of the First Draft Report.

PES Transactions Costs: Following are the major categories of transactions costs and their estimated amounts (USAID-PES Brief 3.4 and Fripp 2015):

Project Design Documentation and Certification = US$ 80,000 approximately.

Costs related to payment distribution and benefit sharing mechanisms = US$ 1,000

MRV related to GHG assessment = Variable and to be estimated.

Costs related to negotiation and contracting of PES payments = Variable and to be estimated.

Contract management enforcement, negotiation, closure, compliance = US $ 5,000

Financial management related to PES = Variable and to be estimated.

Insurance costs = Will depend on the value of the contract and risks involved.

Safeguards reporting, verification and compliance = US$ 4,000

Grievance procedures and outcomes = US$ 6,000

Consultations and participation processes = US$ 60,000

Marketing PES Services = US $ 20,000

Registry operation and management of transactions = To be estimated.

PES Implementation Costs:

PES infrastructure development = US$ 50,000

Extension support services = To be estimated.

Sustainable Forest Management practices = To be estimated.

Forest Law Enforcement = To be estimated.

Afforestation, Re-forestation, Sowing and other forests rehabilitation costs = US$ 1.5 million (Assuming afforestation work is done over an area of 30,000 ha and per ha afforestation and maintenance cost is US$ 500)

Other PES related activities = Variable and to be estimated.

Community Social Programs and Investments = US$ 200,000

Awareness raising and Training and Capacity Building of Communities= US$ 100,000

Staff Salary costs of implementation = Variable and to be estimated

PES related Institutional Costs (Based on Expert Opinion and Consultation with Stakeholders)

Institutional and Land Tenure Reforms Study = US$ 15,000

Policies Development = US$ 10,000

Legislative Reforms Study = US$ 20,000

Training and Capacity Building of Departmental staff related to sustainable land use, GHG MRV, etc. = US$ 50,000

Structure and Culture:

- Vision and purpose
- Governance Approach
- External Relations Management

The Following Institutional and Governance Mechanism is Proposed for REDD+PES

Federal Level

National REDD+ Office already established in the Ministry of Climate Change be strengthened through provision of the resources mentioned in the above section and its scope should be expanded to cover other ecosystem services as well. The set-up should be regularized and brought under normal budget. National REDD+ Office should perform the roles of coordination, facilitation with provinces and accessing national and international donors for REDD+PES Schemes.

Provincial Level

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 Committees have been established in the provinces. Provincial Grievance and Implementation Unit (PGIU) will also be established in provinces. In addition to these arrangements, Khyber Pakhtunkhwa has proposed a comprehensive governance mechanism for REDD+. It is suggested that its scope should be broadened to include other ecosystem services and payment mechanisms for all of them. The proposed institutional setup is given below:

Provincial Level Set-Ups

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

Regional and Forest Circle Level Set-ups

- Regional REDD+/PES Management Units, one each at Forest Region Level in the province.
- Forest Circle Level REDD+/PES 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, Fisheries Department
- Senior Member Board of Revenue
- Secretary Mines and Minerals Department
- Secretary Local Government and Rural Development 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+/PES 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+/ PES related matters by giving vision and framework;
- Review, develop and advocate for policies, laws and institutions for Sustainable Forest Management and REDD+/PES;
- Review and approve the State of Forestry and REDD+ /PES Report of the Province;
- Brief and Inform the Chief Minister and Minister-Incharge about the State of Forestry and REDD+/PES Report of the Province;
- Appraise the performance of the Department with regard to Sustainable Forest Management and REDD+/PES;
- Coordinate with Federal Government on REDD+ /PES related matters;
- Coordinate with United Nations Framework Convention on Climate Change (UNFCCC) and Other International Forums on REDD+/PES matters;

- Identify and resolve basic issues hampering the implementation of REDD+/PES in the province;
- Identify and study the impact of various incentive measures for promoting Sustainable Forest Management and REDD+/PES in the province;
- Increase transparency and accountability in the working of the REDD+/PES program; and
- Any other relevant function as may contribute to effective REDD+/PES implementation in the province.

II. Provincial REDD+/PES Management Committee

Composition of the Provincial REDD+/PES Management Committee

The Provincial REDD+/PES Management and Coordination Committee shall be headed by the Secretary Forests, Environment and Wildlife Department. Its members shall include the following:

Chief Conservators of Forests in the province

Chief Conservator Wildlife/Conservator Wildlife

Director General, EPA

Director General, Tourism Department

Director General, Industries Department

Conservator of Forests, Planning/Working Plans

Provincial REDD+/PES Focal Person

One Representative of Forest Owners/Forest Concessionists

One Representative of Forest Users Groups

Head of Environment/Forestry Department from a public sector university

Representative of Chamber of Commerce and Industries

The Provincial REDD+/PES Focal Person shall be the Secretary of this Committee.

Functions of the Provincial REDD+/PES Management Committee

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

- Supportive Function: involving preparation of REDD+/PES policies, plans, laws and institutional mechanisms, searching funding oppurtunities

- Implementation Function: carrying out the previously determined mandate.
- Supervisory Function: involving progress review and monitoring the implementation of REDD+/PES programs.

III. Provincial REDD+/PES Thematic Working Groups

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

VI. Provincial Level REDD+/PES Research Unit

This REDD+/PES related Research Unit will be established in the relevant forestry research organization of the province. It is to carry on research on various REDD+/PES related issues. This Research Unit will also coordinate with other relevant Research Institutes in the province.

Forest Circle Level REDD+/PES 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+/PES Committees

Forest Division/District Level REDD+/PES Committees shall be established at each District Level where REDD+/PES 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 o
- 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+/PE Management Committee;
- Serve as platform for discussions on and resolution of REDD+/PES related issues at the district level;
- Provide information and data on REDD+/PES implementation at the district level to the Provincial REDD+/PES Management Committee.

CHAPTER-2

DEVELOP MECHANISM FOR DISBURSEMENT AND MANAGEMENT OF BENEFITS

2.1. Introduction

Benefit sharing in REDD+ PES involves the intentional transfer of monetary and nonmonetary incentives and assistance to enable parties in the PES agreement to implement activities that would contribute to the realization of ecosystem services which generate revenues under the PES program. PES benefits range from policy measures (including allocation and clarity over rights) to financial payments and technical assistance (such as technology provision or skills training and capacity building in improved livelihoods, land and resource use and management practices). Arrangements for allocating and sharing these benefits can involve mechanisms for revenue sharing or mechanisms for transferring monetary and nonmonetary assistance among the parties involved.

Implementing benefit sharing requires identifying the beneficiaries and necessary benefits. Clear obligations or responsibilities that need to be met to attain the benefits are also important. There also is the need to develop systems for recording and monitoring the benefits and associated obligations as well as distributing the benefits to the beneficiaries, and grievance redress mechanisms in the event of disputes over benefits allocation and disbursement.

2.2 Importance of Benefit Sharing in REDD+ PES

The principle of REDD+ PES is to pay ecosystem services providers (PES sellers) for undertaking activities that support the continued provision of ecosystem services to their beneficiaries (PES buyers). This they do, for example, by reducing their emissions from deforestation and degradation and enhancing their carbon stocks, biodiversity conservation, watershed protection and rehabilitation, protecting and sustainably managing landscapes and various natural resource products found in the PES area. Payments, or rewards based on the valuation of PES service performed, contribute to the following:

- Reward individuals, communities, organizations, government agencies, and business for actions that change land use, resource use and resource management practices that ensure the continued provision of ecosystem services to the PES buyers and the society at large.
- Cover the opportunity cost of PES activities and thus make it economically rational for these stakeholders to participate in the PES program.
- Equitable benefit sharing mechanisms can build legitimacy for PES programs at local, regional, national and international levels by ensuring that both the people directly affected by PES actions and the wider public are treated fairly and equitably.
- Contribute to acquiring knowledge, skills and attitudes that support the conservation and development of ecosystem functions and services.

- Engender social changes, behavioral re-orientation and development and adoption of conducive policy and legal frameworks.
- Foster development of appropriate institutional arrangements and needed technologies.
- Motivate local, regional, national and international coordination to achieve PES objectives.

2.3 Levels, Sources and Forms of Benefits in PES Program

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:

Benefit type/level	Description/function
Local level	
Economic	• 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	• 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	• Improved local environmental quality
Sub-national/National Level	
Economic	• 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	• Accountable sub-national/national institutions
Environmental	• Improved sub-national/national environmental quality

2.4 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).

The "3-E" criteria are important for our two project sites for the following reasons:

Effectiveness will ensure a number of desirable things such as depth and additionality, flexibility and robustness, breadth and scope, prevention or reduction of leakage, permanence and liability, and increase the extent the REDD+ PAMs are targeting the key drivers of deforestation and forest degradation. It also improves governance and addresses corruption issues.

The Efficiency criteria will reduce start-up costs (including capacity building), operational and running costs of MRV system, opportunity costs (compensation for lost income), and rent (rent is benefits minus costs), and the implementation costs of forest owners and Forest Departments. Except for compensation and rent costs, all the other are what are called transactions costs.

Equity is important from the perspective who gets the benefits and who bears the costs at different scales (local, provincial and national) and groups of stakeholders based on income, assets, ethnicity, gender and a host of other socio-economic variables. It is not just the benefit sharing that is important, but distribution of REDD+ costs is also important. Equity ensures that there is fairness in benefits and costs distribution as well as meeting other social considerations.

Moreover, REDD+ in addition to climate benefits also provide other co-benefits such as forests and biodiversity conservation, poverty reduction and community development, supporting livelihoods and stimulating over-all economic development. It may also spark political change towards improved governance, less corruption and better adherence to human rights.

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 (Peskett and Harkin 2007, Karsenty et al. 2012).

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. Peskett 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).

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.

In conclusion, it is important that while design a benefit sharing mechanism based on the above criteria and rationales, due attention is paid to and a balance is kept between the "3-Es" and the realization of co-benefits under the REDD+ PES projects.

2.5 Benefits Allocation Mechanism Amongst Beneficiaries under different Forest Land Tenure Systems of Pakistan

Benefits allocation amongst the eligible beneficiaries will depend on the prevailing forest land tenure system, and the type of benefit in question. There two main ownership types of forest lands: state owned forests and privately owned forests. State owned forests fall into categories: Reserve Forests and Protected Forests. Privately owned forests could be individually owned or jointly

owned. The different legal categories of forests, their ownership and benefits allocations provisions are described below:

2.5.1 Reserved Forests

The establishment, notification and ownership and usage rights of Reserved Forests have been determined under sections 4 to 25 of Chapter-II of the Pakistan Forest Act, 1927 and KP Forest Ordinance 2002. Offences pertaining to Reserve Forests and the removal of encroachments on these forests are dealt with under section 26 of these two legislation. Legal source for tenure rights in Reserve Forests is provided by Land settlements of 1872, 1901 and 1905, Forest Act 1927 and KP Forest Ordinance 2002 (chapter II Section 4-27). Total area of these forests in KP Province is about 100,000 hectares. These forests are owned and managed by KP Government. Management of these forests is carried out under the prescriptions of a Forest Management Plan/Forest Working Plan. The revenue generated from the commercial sale of these forests goes to Government of KP with a nominal Seigniorage fee to owners of adjacent Guzara (Swati, Iqbal 1985: Revised Working Plan for Kaghan Reserve Forests and Khan, Gauher Ali. 2005: Working Plan for Upper Kaghan Guzara Forests and Forestry Statistics of KP Province, 2017).

These forests are generally free from rights and concessions and all acts are prohibited unless permitted specifically by government through notification. However, the local communities can collect water and fallen wood for domestic use. Local communities are also admitted with right of way, controlled grazing of livestock as per rights admitted in revenue record. Land use in Reserve Forests cannot be changed but only with the approval of Government (under section 27 of the Pakistan Forest Act 1927 and KP Forest Ordinance 2002). All prohibitions mentioned in Section 26 of the Pakistan Forest Act 1927 and KP Forest Ordinance 2002 are prohibited in Reserve Forests.

In Hazara Division of KP Province and Murree Hills of Rawalpindi Division of Punjab Province, control of some Reserved Forests was transferred from forest department to cantonment and municipal authorities. Such forests are called Cantonment and Municipal forests respectively.

The right to sell products of Reserve Forests vests in Government. All money realized from the sale of forest produce after deduction of nominal seignioirage fee is deposited by Forest Department in government treasury.

2.5.2 Protected Forests

Protected Forests are also owned and managed by the state, but differ from Reserve Forests in two distinct ways. First, they have not passed through the process of admittance or extinction of rights or concessions of the local people, and secondly, in contrast to Reserve Forests, all acts are permitted in Protected Forests unless prohibited by a notification of the government.

Protected Forests in KP Province have been created through the merger of princely states in 1969 and Government notification under section 29 to 31 of the Pakistan Forest Act 1927. Coastal areas Mangrove Forests in Sindh Province and Somiani Area Mangrove Forests of Balochistan Province have also been notified as Protected Forests. In the case of KP Province, these forests refer to and

mean all forests existing as such on the commencement of Forests Ordinance 2002 and any other forests that may be declared as Protected Forests under section 29 of the ordinance.

Protected Forests are dealt with and managed under Chapter IV (Section 29-34) of the Pakistan Forest Act 1927 and KP Forest Ordinance 2002. In case of KP Province, management of these forests is undertaken in light of prescriptions of an approved Forest Management Plan for these forests and KP Protected Forests Management Rules 2005. The coastal mangrove forests of Sindh Province and Balochistan Province do not have approved management plans for their management.

No commercial harvesting of timber or other forest produce is done in the Mangrove Forests of both Sindh and Balochistan provinces. Commercial harvesting of timber and extraction of forest produce from Protected Forests is regulated in accordance with the approved Forest Management Plan in case of KP Province. For actualizing the forest working plan prescriptions, Joint Forest Management Committees (JFMCs) are constituted under the Joint Forest Management (Community Participation) Rules 2004.

There is no share of local communities in the forest produce of Protected Forests of Sindh and Balochistan Provinces. In case of KP, local concessionists of Protected Forests have been given shares of up to 60-80 of the total sale proceeds from Protected Forests. Revenue generated from commercial sale of Protected Forests is shared between Government and concessionists as per above shares. Eighty percent (80%) share in the net sale proceeds of the timber and other forest produce is given to Protected Forests of Upper Dir District (Painda Khel and Sultan Khel areas) and in Buner District as well as the Right Bank of River Indus in Kohistan District. Sixty percent (60%) of the net sale proceeds of timber and other forest produce in given in the Protected Forests in the rest of Malakand Civil Division. The government share is realized by Forest Department and is credited to the revenue account of the Government.

The concessionists share from the sale proceeds of Protected Forests is transferred to the concerned District Revenue Officer by the Divisional Forest Officer through a cheque. The District Revenue Officer distributes the amount among the concessionists on acquittance rolls with a verified copy submitted to the Conservator of Forests concerned. Payments through proxy or holders of power of attorney are not permissible.

The concessionists are provided several other rights for domestic use from Protected Forests that include timber for domestic use and other purposes (building construction, agricultural implements etc.) with the approval of government. The concessionists also can exercise their rights to firewood, grasses, fodder, NTFP, grazing of livestock, right of way, water etc. as specified in revenue record.

In case of Protected Forests of Malakand and Swat Kohistan, tree/timber are granted to the right holders and other local inhabitants entitled to this privilege. Timber so granted is to be used for the specific purpose for which it is granted and is not be moved outside the specific local area for which it is granted.

For free grant of timber from protected forests an application duly verified for entitlement of applicant by the concerned Tehsildar and chairman JFMC/Jirga is forwarded to concerned Range

Forest Officer/Sub Divisional Forest Officer (RFO/SDFO). The RFO/SDFO verifies the needs, check the state of construction/reconstruction ensuring foundation is built up to plinth level, record the timber requirements and furnish a certificate of silvicultural availability of trees on the application after visiting the forest. The application, after entering in a register for free grant is forwarded (along with register of free grant to concerned DFO who accords sanction for such grant. Trees are marked by RFO/SDFO within two months of sanction and harvested within six months of sanction, failing to which the grant is cancelled, timber is confiscated and fine is imposed on permit holder. The outturn from marked tree is transported on a Rahdari (timber transport permit) issued by the RFO after banding timber with a hammer mark. The RFO is to verify the timber use for the purpose for which timber was granted. Timber on such quota system is admissible once in ten years to a family. There is also provision for grant of timber under Central Quota as given in the Forest Management Plan of the concerned forests. For grant of timber under the central quota the same procedure is adopted as in local quota except that the Conservator of Forests issues such permits.

Grant of trees from protected forests of Hazara and Southerrn Districts of KP for meeting bonafide domestic requirements of the residents of villages within boundaries of which protected forests are situated is made by Conservator of Forests or DFO concerned on payment at concessional rate.

For the domestic requirements of local inhabitants who either do not have the forests or required timber/trees therein or for construction of commercial buildings by the local inhabitants concessional grants is permitted. For this purpose concessional rates are fixed by the government for that area. The Conservator of Forests concerned can grant up to maximum of 500 trees annually.

In protected forests, the land use cannot be changed but only with the government approval as provided in section 34-A of Pakistan Forest Act 1927 and section 32 of KP Forest Ordinance 2002. All acts mentioned in section 33 of Pakistan Forest Act 1927 and section 33 of KP Forest Ordinance 2002 are prohibited in Protected Forests.

2.5.3 Private Owned Forests

Private owned forest is a broad category encompassing all forests held in private ownership. These are divided into five groups, namely Guzara Forests, Communal Forests, Chos Act Areas, Section 38 Areas and Farm Forest Areas. A brief description of each category is given below.

2.5.3.1 Guzara Forests

Guzara is a colloquial word which means subsistence. At the time of first settlement in 1872, certain forests were declared as Reserve Forests and their ownership vested in government. However, sizable patches of wooded lands close to habitation were set aside to meet the bonafide domestic needs of the local communities in the present day districts of Haripur, Abbotabad, Mansehra, Kohistan and Batagram. Such forests were designated as Guzara forests. Their ownership is vested in local people either as individual property or joint (communal) property called “village shamilat”.

Land Settlement of 1901 in Hazara Area, the then Hazara Forest Act 1936 and currently the KP Forest Ordinance 2002 in its Chapter V sections 35-37 and 39-46 are the source of tenure rights and provide legal cover to these forests. Khyber Pakhtunkhwa Guzara Forest Rules 2004 are also a source of guidance for management of these forests. These forests are privately owned (individually or communally) but managed by Government under the prescription of an approved Working Plan.

The Khyber Pakhtunkhwa Guzara Forest Rules 2004 elaborates that the management and administration of Guzara forests is carried out under the general supervision and control of the Conservator of Forests concerned in accordance with the approved management plan. In all Guzara forests dry wood whether standing or fallen or brush wood may be utilized without restriction for domestic or agricultural purpose by the land owners and resident right-holders within the limits of the village in which it is found and by non-residential right-holders in the limits of the village where they reside and also by the person whether resident or non-resident who are not right holders so long as the right holders raise no objection to their doing so and the Conservator does not think it necessary to interfere in the interest of forest conservancy. Furthermore, sale of dry wood and brushwood from any Guzara forests shall be prohibited except under and in accordance with the provision of the approved forest management plans.

For commercial harvesting from these forests JFMCs are constituted under Joint Forest Management (Community Participation Rules) 2004 for preparation of JFMPs and its implementation. Harvesting, transportation and sale of timber and revenue distribution after deduction of all taxes and government share (20% managerial costs deposited in Forest Development Fund FDF for development of forests from which the FDF is received) is carried out by JFMCs. The owners of Guzara forests get 80% share from the net sale proceed of forest produce from these forests. The JFMCs are responsible for restocking of harvested forests and other developmental activities in the forests by using FDF. Legal Procedure for payments to Guzara owners is the same as is explained under protected forests.

Owners of Guzara forests and other residents whose rights are admitted in revenue record have right of timber for domestic use with approval of government. In addition other rights include fuel wood collection, fodder and grasses collection, NTFPs collection, grazing and rights of way etc. from Guzara forests. Owners of Guzara forests can change the land use with prior approval form government and can sell their forests with all associated rights.

Timber permits for resident and nonresident right holders are provided by following procedure as explained under protected forests. Moreover, all acts mentioned under section 44 of KP Forest Ordinance 2002 are prohibited in Guzara Forests.

2.5.3.2 Communal Forests

Communal forest is a sub-category of Guzara forest. There is no distinction between the two except that the Guzara forests may be owned individually or jointly by a small family or a large village community whereas communal forest is essentially owned by the entire village. Communal forests are mostly found in Rawalpindi Civil Division of Punjab Province.

2.5.3.3 Section 38 Areas

Private owners can offer their lands to forest department for afforestation and management for an agreed period ranging from 10 to 20 years under section 38 of Pakistan Forest Act, 1927 and KP Forest Ordinance 2001. These are called Section 38 Areas. The land is returned to owner(s) after establishment of plantation.

2.5.3.4 Farm Forest Areas

Farm forests are linear or compact planting of trees on private farm lands. These trees are owned individually or jointly by a family. These forests are found throughout the barani and irrigated farming areas of Pakistan.

2.5.3.5 Wasteland and Other Forests

Wasteland means all uncultivated or cultivable land in the area comprising the districts of Haripur, Abbottabad, Mansehra, Kohistan and Batagram and in such other areas in the province as may be declared by Government as wasteland under KP Forest Ordinance 2002 or the rules made there under, but shall not include reserved forests, protected forests, graveyards, sacred places, land recorded and settlement as part of the village site, land shown as khali (barren) or banjarjadeed recently degraded in annual records, land in urban areas and land under roads, railway tracks or water bodies.

2.6 Main Design Features of PES Benefit Distribution System

Following are the main design features of PES Benefits Distribution System:

2.6.1 Beneficiaries Share

Beneficiaries share in the existing benefit sharing arrangements and the ones proposed under the PES scheme for various legal forest categories are given below:

<u>Reserve Forests</u>

Under existing benefits distribution system, Reserve Forests being government property, 100 % of the benefits accruing from the sale of forest produce go to government (KP Forest Department, Personal Communication 2018). It is proposed that under the PES scheme, 20 % of the government share net of seignior age fee be spent on infrastructure development in the surrounding and villages forest dependent communities of these Reserve Forests. Another 30 % be spent on forest restoration and development activities in the concerned Reserve Forests.

<u>Protected Forests</u>

In case of KP Protected Forests in the earstwhile princely states of Malakand Region, the forests are burdened with concessionary rights to the local concessionists. Depending on the locality of the Malakand Region, government share is 20-40 % and local community share ranges between 60-80 %. Eighty percent share has been given to the communities of Sultan Khel and Painda Khel in Dir District, to the people of Buner District, and to people of Kohistan District on the Right Side of River

Indus. Government share in these areas is 20 %. In other areas, community share is 60 % and government share is 40 %. (Source: Forest Management Plan Documents of different Forests in KP).

In Sindh and Balochistan provinces, Protected Forests are free of community rights.

It is proposed that under the PES scheme, at least 20 % of the government share from PES income of Protected Forests be spent on the rehabilitation of these Protected Forests. Any additional 10 % unallocated income, may be spent on infrastructure development activities for the benefit of the forest dependent communities.

Guzara Forests

Guzara Forests are privately owned property, hence no government share in these forests. Government, however, charges 20 % managerial charges. (Source: Khan, Gauher Ali. 2002 and 2005 Forest Management Plan Documents for Upper and Lower Kaghan Areas).

It is proposed, that under PES scheme, 10 % of government managerial charges and 10 % from the owners share be spent on community infrastructure development activities for the benefit of non-owning forest using communities surrounding these Guzara Forests, who are making sacrifices for the success of the PES scheme in these Guzara Forests. List of the major owners of Guzara forests are given at Annex-I.

Other Private Forests

These being private property, there is no government share. Government charges 20 % managerial charges from private forest owners. (Source: Personal Communication with KP Forest Department, 2018).

It is proposed, that under PES scheme, 10 % of government managerial charges and 10 % from the owners share be spent on community infrastructure development activities for the benefit of non-owning forest using communities surrounding these Private Forests, who are making sacrifices for the success of the PES scheme in these Private Forests.

2.6.2 Payment Amount

There has to be a minimum PES amount below which the Ecosystem Service provider would not be able to provide the service and a maximum amount above which it will not be feasible for the Ecosystem Service buyer to buy the service. The minimum PES amount would just cover the Ecosystem Service provider's provision costs. Provision costs include the loss in profits from switching activities ('opportunity costs') as well as transaction costs involved in switching activities and enrolling in PES (Engel et al., 2008). By contrast, the maximum PES would encompass the full value to the Ecosystem Service beneficiaries of the increase in Ecosystem Service arising from the switch to the environmentally friendly activity. It is thus misleading to interpret the payment amount as 'the value' of Ecosystem Service. Rather the payment level determines the distribution of net gains between Ecosystem Service providers and Ecosystem Service beneficiaries.

Making payments close to the social value requires that the full societal value of the increase in Ecosystem Service can be estimated and translated into actual funding. In practice this is only rarely the case due to the methodological difficulties related to non-market valuation techniques, the cost of valuation studies, and the fact that free riding among Ecosystem Service beneficiaries tends to imply scarce budgets for PES (Engel and Schäfer, 2013). In some cases, such as for carbon sequestration, the carbon market price can be used as an approximation, albeit an imperfect one.

In practice, payments are often set close to an estimate of opportunity costs (Wunder et al., 2008). This has the advantage that it does not require or involve an economic valuation of Ecosystem Service benefits and that payments are kept low to achieve more with given budgets. There is evidence in behavioral economics that setting payments too low (below the minimum) can be counterproductive (Gneezy and Rustichini, 2000; Kerr et al., 2012). It appears thus important to estimate provision costs to include not only opportunity costs, but also transaction costs (Wünscher and Engel, 2012; Wünscher et al., 2008). Moreover, current opportunity costs can be misleading when capital constraints keep landholders from conducting more profitable activities. When PES are made, the capital constraint of landholders may be relaxed and the more profitable activity can become the relevant alternative, thus raising opportunity costs (Kaimowitz and Angelsen, 2008; Reutemann and Engel, 2016).

In case of government owned Reserve Forests, PES payment amount should cover at least transaction, validation and registration costs as well as implementation costs. PES payments in Protected Forests must cover at least opportunity costs, transactions, validation and registration costs, as well as implementation costs. In case of Guzara Forests and other privately owned forests, PES payments need to cover at least opportunity costs, transactions, validation, registration costs, and management costs charged by Government.

Benefits Distribution System at the Two Pilot Sites

The two pilot sites are located in two different ecosystems, each with its own unique physical context; socio-economic, political and institutional peculiarities; policy and legal dimensions; as well as different forest lands ownership and tenurial arrangements. The type, nature and quantum of their ecosystem services are different as will be their services providers and PES services buyers. Development of incentive mechanisms to promote sustainable resources mechanism in the coastal areas of Sindh and Balochistan province will therefore vary from the ones in the moist temperate forests of Kaghan valley in KP province. In the following, we therefore, differentiate and describe the design features of the PES benefits distribution system at the two pilot sites.

Differences in Sources of PES benefits due to difference in ecosystem services

Mangrove forests are located in the coastal areas of Sindh and Balochistan provinces near the sea in the tropical zone with elevations close to the sea level, while the moist temperate forests of Kaghan are high hill mountainous region forests occurring at high altitudes. Given these difference in physiography of the two regions, the forest types and their ecosystem services differ considerably.

The ecosystem services of coastal mangrove forests which have the highest potential for development into PES scheme include protection of infrastructure and habitation around coastal

areas; protection of spawning sites of fishes, shrimps and other marine life; use of blue carbon or wetlands for climate change mitigation; biodiversity conservation and eco-tourism revolving around marine and coastal biodiversity, wetlands biodiversity and seascape related eco-tourism; shoreline stabilization and prevention of sea intrusion into terrestrial areas; and water purification and pollution remediation coming from industrial estates, ports and fish harbors, urban city and hospital waste, agricultural waste coming through coastal rivers, and dumping of solid waste around the coast besides municipal pollution.

Against this, major ecosystem services of moist temperate forests which can be developed into PES schemes include watershed protection; production of non-timber forest products like various medicinal and aromatic plants; climate change mitigation through terrestrial forest ecosystems; terrestrial biodiversity conservation and promotion of eco-tourism around landscapes, adventures, trekking and climate variables; and prevention of landslides and soil erosion control.

Difference in PES Service Providers

PES services providers of mangrove forests would include Forest Departments working on wetlands areas, Marine Fisheries Departments, Coastal Authorities, Coastal Communities and coastal areas tourism actors. PES services providers of moist temperate forests include Provincial Forest Department focusing on the management of High Hill Forests, Inland Fisheries Department, Livestock Department, nature tourism actors, pastoralist communities, and communities having their livelihoods from subsistence agriculture.

The nature of relationships between the different PES services providers at the two sites is unique and markedly different from each other.

Differences in PES Services Buyers

The PES services buyers of mangrove forests will be mostly industries, city government and hospital and municipal authorities, fishing industry, buyers of blue carbon credits, coastal areas tourist operators, irrigation and drainage authorities, and agricultural land owners who want to protect their lands and property from sea intrusion.

The PES services buyers of high hill forests will include water and power authorities, pharmaceutical companies and buyers of genetic resources, terrestrial carbon credits buyers, nature and adventure tourism operators, and highways authorities and hoteling industry who would like their highways an hotel infrastructure protected from landslide damages, etc.

Difference in PES Services Intermediaries

The PES services intermediaries of coastal areas would include research institutions doing research on marine biology, marine biodiversity and coastal pollution issues, validators and verifiers specializing in wetlands and blue carbon related projects and methodologies, and other private sector bodies and institutions specializing in coastal areas issues.

Main intermediaries for moist temperate areas would be research institutions working on water and watershed issues, terrestrial biodiversity issues, pastoral systems, mountain agriculture, intermediaries working on the supply chain of NTFPs, etc.

Forest Land Tenure Type and Management

Mangrove forests found in the coastal areas of both Sindh and Balochistan provinces are state owned Protected Forests where local communities have no de jure rights in the forests but have been exercising certain usage of the various coastal resources including mangrove forests under de facto usage mechanisms. The management of mangrove forests vests in the respective provincial forest departments under the Pakistan Forest Act, 1927 in its application to Sindh and Balochistan provinces.

Three different categories of forest land tenures are found in moist temperate forest ecosystem in Kaghan valley of KP province. These include state owned Reserve Forests, Guzara Forests, and Private Forests. Reserve Forests being state property are free of local communities' rights except the rights of way and passage through the forests and collection of water from these forests areas. Therefore, local communities no legal rights to various forest products in Reserve Forests.

Guzara Forests are private property, either owned individually or under joint ownership arrangements.

The management of Reserve Forests and Guzara Forests vests in the KP Forest Department under the KP Forest Ordinance, 2002.

Private Forests are managed by the locals. KP government, however, has prepared a Woodlots Policy that is applicable to these private forests in what are called "mazrua" forest lands.

Basis for making local communities beneficiaries in the PES scheme benefits

Mangrove forests are state owned Protected Forests where local communities have no de jure rights in the forests but have been exercising certain usage of the various coastal resources including mangrove forest under de facto usage mechanisms. Therefore, local communities cannot have benefits in Protected Forests based on statutory law's 'legal rights rationale"-benefits going to actors with legal rights as they have no basis to be beneficiaries given the legal status of these forests.

Hence, local communities will have to be made beneficiaries under the PES scheme through some innovative benefit sharing mechanisms other than the statutory law basis. These other bases could include: benefits should go to them as they contribute to achieving emission reductions ("emission reductions" rationale); benefits should go to them being low-emitting forest stewards ("stewardship" rationale); benefit should to them for being actors incurring costs who need to be compensated ("cost compensation" rationale); benefits should go to them being effective facilitators of REDD+ implementation ("facilitation" rationale); and benefits should go to them they being the poorest ("pro-poor" rationale).

The moist temperate Reserve Forests of KP are similar to the Protected Forests of Sindh and Balochistan regarding their ownership belonging to the state, with communities having practically no rights in these forests. Accordingly, communities will have to be made beneficiaries based on the same principles as enumerated above for mangrove forests of Sindh and Balochistan provinces.

Guzara Forests and Private Forests are different being private property belonging to local communities either individual or under family or joint ownership arrangements. Local communities of such forests therefore have a claim to PES benefits of such forests under the 'legal rights rationale'. Based on this they are entitled to the full net benefits of ecosystem services of these forests, and governments can only charge from them managerial charges and other transactions costs.

Beneficiaries share in the benefits share

Local communities beneficiaries shares in Protected Forests and Reserve Forests is therefore expected to be negotiated between the parties keeping in view the above mentioned ownership and tenurial arrangements.

Opposed to this, the ownership of PES benefits in Guzara Forests and Private Forests in principle belongs to the local communities who own these forests, and they will have to negotiate with the government based on government's role as steward, facilitator, etc. of the PES program.

Payments Mode

Payments mode to the communities in the case of Protected Forests and Reserve Forests will be mainly in kind form through implementation of various forest conservation projects, and infrastructure and area development programs in the PES area.

Payments to owners of Guzara Forests and Private Forests will have to made in cash form on the pattern of existing benefits distribution system from the sale of timber from such forests.

Other PES Benefits Distribution System Design Features

Other PES benefits distribution system design features will also have to be negotiated between Forest Departments, local communities and other stakeholders keeping in the 4Rs-rights, responsibilities, returns and relationships. These other design features may include the need for payments differentiation, PES contract length, payments duration, payments frequency, the need for and desirability of upfront payments, types of conditionalities associated with PES payments, degrees of conditionalities for PES payments, units of management of control for PES payments, enhancing the role of benefits in prevention of leakages, use of benefits instruments for ensuring continued supply of ecosystems services and addressing the issue of non-permanence, establishing additionality for PES payments, benefits and cost targeting, making use of benefits to facilitate pro-poor ecosystem services provision, and use of benefits in a way to reduce any unintentional negative impacts on the poor and women.

The general principle in the 4Rs is that the stakeholder with the most rights should be entitled to the most returns. Also, stakeholders who bear the most responsibilities for PES implementation

and bear costs during PES program implementation need to be compensated. For example, in Protected Forests in Sindh and Balochistan, the Fishing Communities who give sacrifices in terms of foregoing their fishing opportunities need to be compensated. Similarly, in Kaghan valley, Gujjars and Guzara Forest owners will be shouldering responsibilities and will have substantial opportunity costs. They need to be compensated because of their opportunity costs.

2.6.3 Payment Mode

Most PES are made in cash, but some studies have demonstrated cases where Ecosystem Services providers stated a preference for in-kind payments (Kaczan et al., 2013; Zabel and Engel, 2010) or have described PES programs implementing in-kind payments (Asquith et al., 2008; Wunder and Albán, 2008). In-kind payments can be a suitable approach if there are local constraints to absorb cash in a manner that enhances welfare over the long term (Asquith et al., 2008) or if payments are made to groups and there is concern about elite capture. For example, in Bolivia PES recipients opted for beehives as in-kind payment because these were perceived as creating a lasting benefit, while cash would more likely have been spent right away (Asquith et al., 2008). A challenge with in-kind payments is that they may not be sufficiently divisible and suited to be continuously repeated, requiring a switch to different in-kind payments over time, and transaction costs for ES buyers and intermediaries may be high (Asquith et al., 2008). If imposed externally, in-kind payments can also be perceived as paternalistic, while cash payments can be used flexibly by the recipients (Wunder, 2005). On the other hand, some authors have pointed to a risk that the introduction of cash payments reduces ('crowd out') pro-social behavior (Farley and Costanza, 2010; Vatn, 2010). Research in social psychology suggests that this risk might be smaller for in-kind payments (Heyman and Ariely, 2004; as cited in Cranford, 2014).

In poor areas with market imperfections timing of payments can also be an issue. Specifically, it can be useful to disburse payments at times of the year that tend to be economically tight, e.g., prior to the main crop harvest (Zabel and Engel, 2010).

Payment Mode in Reserve Forests: For PES in Reserve Forests, payments are to be in cash.

Payment Mode in Protected Forests: Payments in both cash and kind payments will be desirable. Part of the community concessional amounts could come in kind form whereas government share and part of local concessionists amount need to be paid in cash.

Payment Mode in Guzara Forests: Payments in both cash and kind payments will be desirable. Part of the community ownership amounts could come in kind form. This is particularly to be the case in case of jointly owned Guzara Forests. Government management charges as well as part of local share will have to be paid in cash.

Payment Mode in Other Private Forests: Payments in both cash and kind payments will be desirable. Part of the private community ownership share amounts could come in kind form. The kind payment mode is desirable when the land is communally owned. The rest will be in cash form.

The mode of payments for different forest types will have to be different for the reason that their tenures are different. Protected Forests in Sindh and Balochistan Provinces are state owned and communities have no statutory rights in these forests. Payments to these communities are to be

justified on basis other than statutory rights. Similar is the case with Reserve Forests in Kaghan valley regarding payments to local communities. As opposed to this the communities of Guzara Forests and Other Private Forests are the owners of these forests and therefore their rights have statutory basis. Since, the forest owners of Guzara and Other Private Forests get their income from timber and other forest produce in cash form; therefore, their benefits share in PES scheme is also proposed to be primarily in cash form. Similarly, payments to Governments will have to be cash form. Payments to local communities of Protected Forests are proposed in kind form so that the community as a whole benefits. In addition, some cash payments are proposed to compensate individual members in these communities for their role in relation to the PES project.

2.6.4 Group vs. Individual Payments

Case of Reserve Forests: This is not applicable, as Reserve Forests are owned exclusively by government.

Case of Protected Forests: Both group and individual payments are a possibility to the concessionists of Protected Forests. Group payments will be in kind form for various natural resources and infrastructure development initiatives.

Case of Guzara Forests: Both group and individual payments are a possibility for owners of Guzara Forests. Group payments will be in kind form for various natural resources and infrastructure development initiatives.

Case of Other Private Forests: Both group and individual payments are a possibility for owners of these private forests. Group payments will be in kind form for various natural resources and infrastructure development initiatives.

2.6.5 Payment Differentiation

It is common practice in PES Projects to make *fixed payments*, e.g., per hectare of land on which a pre-specified PES activity is conducted. Fixed payments, however, imply high rents for ecosystem services providers with low participation costs while those with high participation costs are unlikely to participate in the program (Wunder et al. 2008). *Differentiating payments*, either on the basis of provision costs (paying higher amounts to high cost providers) or on the basis of environmental benefits (paying higher amounts where sites provide higher services) can be adopted as opposed to fixed payments (Hanley and White, 2013). Payment differentiation can increase the probability of PES scheme being environmentally effective (Ezzine-de-Blas et al., 2015).

Payment differentiation is important and effective when there is considerable variation in provision costs or in environmental benefits. It also requires data on the variable on which payments are to be differentiated. Particularly, participation costs can be difficult to estimate due to asymmetric information. These also have the possibility of creating conflicts particularly in case of Guzara Forests and other privately owned forests. In addition, these can lead to in-efficiencies if not properly implemented.

2.6.6 PES Contract Length

In PES there is a contract between ecosystem services buyers and ecosystem services sellers. In practice, the length of PES contract varies considerably. The contract length will vary according to the PES service in question and the risk bearing capacity of the parties involved. The PES literature is lacking a systematic analysis on optimal contract length (Hanley and White, 2013). Participation studies (reviewed in Cranford, 2014) have shown that Ecosystem Services providers tend to prefer shorter contracts as they leave more flexibility to change land use once contracts end. From a landholder's perspective this makes sense due to uncertainty about future market conditions, which may affect their opportunity costs. Also, when first enrolling in a new activity, Ecosystem Services providers may wish to try out the new practice for a short time before committing to pursue it for a longer term. Longer contracts — assuming they are enforceable —would then require a risk premium to assure participation (Hanley and White, 2013).

Implementing agencies also face uncertainty about the future values of the Ecosystem Service. If it is unclear whether the societal value will exceed provision costs in the longer run or future funding is insecure, the agency may prefer shorter contracts to maintain flexibility to cease payments eventually (Hanley and White, 2013). Moreover, when there are initially high uncertainties regarding optimal scheme design, shorter contracts support an approach of adaptive management and learning-by-doing.

On the other hand, from the perspective of the implementing agency, longer contracts could help assure conditionality and permanence. The longer the period contracted for, the larger the potential sanction on Ecosystem Services providers in case of non-compliance because more payments can be withheld in the future. Also, if contracts can be enforced, a longer contract can assure a longer-term provision of the service for the Ecosystem Service beneficiary.

Contract Length in Reserve Forests: Longer contract lengths are possible in Reserve Forests, as the involved agency is government. This is particularly desirable in situations when there is low uncertainty about opportunity costs and/or social values of ecosystem services, and strong contract enforcement capacity exists.

Contract Length in Protected Forests: Although long contract periods are desirable; however, given the fact that there may be some concessionists who would rather prefer medium to short term contract lengths. Contracts with length of up to 5 years are considered short term. Contracts with length of up to 15 years are considered medium term. Contracts with length of greater than 15 years are considered long term. 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. Thus medium to long term contract lengths are a possibility, depending on to what extent the Protected Forests are burdened with local concessionists rights.

Contract Length in Guzara Forests: Short to medium term contract lengths will be desired by the owners' of Guzara Forests. Contracts for REDD+ projects, however, will have to be at least 20 years long so as to avoid the pitfalls on non-permanence.

Contract Length in Other Private Forests: Although long contract periods are desirable; however, given the fact that there may be some forest owners who would rather prefer medium to short term

contract lengths. The contract length for REDD+ projects though will have to be at least 20 years long to address the non-permanence issue.

2.6.7 Payment Duration

A PES program may intend to make payments indefinitely or only temporarily. Some activities promoted under PES, for example switching to agroforestry or silvopastoral practices, imply high short-run costs, but start to become profitable for the landholder after some years of implementation. In this case, temporary payments can be sufficient to induce the landholder to adopt the environmentally friendly practice (Pagiola et al., 2004, 2014). Yet, many activities or land use changes promoted under PES, for example avoided deforestation, imply opportunity costs for the Ecosystem Services providers indefinitely. In this case, payments have to be secured for the long run to avoid the reversal of gains in Ecosystem Services provision (Wunder et al., 2008) or that intrinsic motivations are crowded out once payments stop (Gneezy et al., 2011).

Securing long-term funding can be challenging. Three approaches have been discussed in the literature. A first approach is to directly involve private sector actors that benefit from the Ecosystem Services. For example, a hydropower company paying for water services is likely to keep offering payments as long as its benefits exceed the costs. Yet, the potential for private sector funding in PES is limited by the public goods nature of many Ecosystem Services. A second approach is to link payments to earmarked revenues from user fees or taxes. For example, Costa Rica uses a water charge and a fuel tax to provide the bulk of funding for its national PES program (Pagiola, 2008). A third approach is to invest the available funding in a trust fund and make payments only from the interest earned. Though this implies lower annual funding availability, and interest rates and thereby available funds may somewhat vary over time, the approach secures long-term availability of funds.

Note that payment duration is different from contract length. Payments can be made indefinitely, but still be offered in the form of subsequent shorter-run contracts. When money realized from PES projects is invested in Trust Funds and Other Interest Bearing Funds, money flows from such sources may be available even after the contract has expired. In such like cases, the payment duration can potentially exceed the contract length.

2.6.8 Payment Frequency

Payment frequency is also an important aspect of PES benefits distribution system. Ecosystem Services Providers would want more frequent payments as well as some upfront payments and would like these to be related to and activity-based. Services buyers, on the other hand, would want less frequent and performance based payments according to the delivery of ecosystem services.

Given these two different perspectives on payment frequency, a balance has to be kept to meet the needs of both parties to the PES agreement.

2.6.9 Upfront Payment

PES programs may involve an unconditional ex-ante payment or upfront payment (Pagiola et al., 2004; Wunder et al., 2008). Ex-ante payments can be in-kind (for example, technical assistance,

seedlings) or cash. They can be appropriate if the desired activity requires significant ex-ante investments on part of the Ecosystem Services providers and providers lack access to credit to pre-finance such investments, or when fairness considerations ask for the rewarding of past conservation efforts (Pagiola et al., 2004). However, the larger the share of ex-ante payment in overall payments, the lower the conditionality of the program.

In principle, upfront payment could still be conditional in the sense that contracts could stipulate that the payment has to be repaid in case of non-compliance. In practice, however, such provisions are often unenforceable due to weak legal systems, high transaction costs of enforcement, and poverty considerations." (Wunder et al., 2008).

Reserve Forests: Upfront payments generally would not be needed in Reserve Forests.

Protected Forests: Upfront payments may be demanded by some concessionists groups of Protected Forests, particularly the lower income groups.

Guzara Forests: Ex-ante payments will be demanded by the owners of Guzara Forests.

Other Private Forests: Such payments will be the demand of the owners of these private forests.

2.6.10 Degree of Conditionality for PES Payments

Conditionality refers to the idea that payments are made if and only if the Ecosystem Services are provided or an activity is implemented that is clearly linked to provision of Ecosystem Services. Conditionality is widely seen as a key feature of PES, distinguishing it from more conventional integrated conservation and development programs (Ferraro and Simpson, 2002; Kinzig et al., 2011). Implementing conditionality requires monitoring compliance and sanctioning non-compliance (Engel et al., 2008). Sanctions in PES commonly take the form of withholding future payments and sometimes also withdrawing current payments (Wunder et al., 2008). In principle, sanctioning could also take the form of forcing PES recipients to pay back past benefits. This seems to be rarely done due to limited political feasibility. In the Ecuadorian PROFAFOR scheme private landowners had to provide upfront guarantees for contract compliance (Wunder and Albán, 2008).

In general, there are then two main ways to ensure compliance in PES: a higher monitoring intensity and a higher payment (Hart and Latacz-Lohmann, 2005). Theoretically, a third way is additional fines for non-compliance, but these seem to be rarely used in PES (Wunder et al., 2008). The choice of monitoring intensity also depends on the expected propensity of Ecosystem Services providers to cheat (Hart and Latacz-Lohmann, 2005). Moreover, results from behavioral economics and social psychology suggest that, if Ecosystem Services providers are control averse, a medium monitoring intensity may be preferable to a high one (Lindenberg and Foss, 2011). There is some evidence that a medium level of conditionality is also preferred by Ecosystem Services providers (Kaczan et al., 2013), which could be due to fairness preferences. In practice, many PES programs lack effective monitoring and sanctioning (Hart and Latacz-Lohmann, 2005), and this was found to negatively affect environmental effectiveness (Ezzine-de-Blas et al., 2015).

Another dimension of monitoring that is often confused with conditionality is the need to monitor progress in reaching program objectives, i.e., the level of Ecosystem Services targeted (Naeem et al., 2015). Regardless of whether payments are made for activities

or results, it is important to monitor whether the PES scheme's objectives are being achieved. This is equally true for any other policy intervention.

2.6.11 Activity-Based Payment vs. Results-Based Payment

Payments can be made conditional on *activities* (e.g., land use practice) or on *results* (e.g., carbon sequestration, sediment load content in water). Results-based PES are appealing because they imply that payments are made directly for the desired outcome. Moreover, results-based PES can be advantageous when it is less costly to monitor outcomes than activities (Hanley and White, 2013). Recent development in the availability of remote sensing data is likely to reduce the cost of monitoring Ecosystem Services outcomes over time (Hanley and White, 2013). Another advantage of results-based PES is that they can induce farmer innovation by specifying desired outcomes without prescribing specific measures to achieve such outcomes (Hanley and White, 2013). In practice, Ecosystem Services results often depend not only on landholders' activities, but also on external factors (e.g., weather, natural forest fires) (Friess et al., 2015; Naeem et al., 2015). A major disadvantage of results-based PES then is that they push the risk of non-delivery onto service providers who are often risk averse. This implies that a risk premium needs to be paid in results-based PES to assure providers' participation (Hanley and White, 2013). When the external risk is strongly correlated locally, an interesting option can be to make payments conditional on relative performance (Zabel and Roe, 2009). For example, watershed payments can be made on the basis of a sediment content in water flowing from the watershed area relative to average values of sediment content in the water in the area (Zabel and Roe, 2009). Some authors have proposed mixed schemes where part of the payment is based on activities and the other based on results (Derissen and Quaas, 2013; White and Sattler, 2012). While this is theoretically plausible, a mixed scheme could involve high monitoring and transaction costs. To date, the majority of PES schemes are activity-based (Wunder, 2008).

Some PES programs translate data on activities into an Ecosystem Services score, using predefined conversion rates. Examples include the U.S. Conservation Reserve Program (Claassen et al., 2008) and a PES program promoting silvopastoral practices in Colombia, Costa Rica, and Nicaragua (Pagiola et al., 2004). Such schemes are activity-based, but make the link to Ecosystem Services more explicit than broad brush per hectare payments.

Activity-based PES are also sometimes called input-based, while results-based PES are also referred to as performance-, outcome- or output-based.

Performance based payments are desirable at the two pilot sites as these will increase effectiveness, efficiency, equity as well as the realization of co-benefits. Therefore, this is considered a preferred method of payment.

2.6.12 Unit of Management or Control for PES Payments

Most PES are made conditional upon the activities or Ecosystem Services results of individual Ecosystem Services providers. Yet, there are at least three situations where it is appropriate to use the aggregate performance of groups of Ecosystem Services providers as the unit of control. First, land may be under the joint property of local communities, as may be the case in Guzara Forests and other Private Forests or even in some Protected Forests or grazing lands. Second, environmental quality may be observable only on an aggregate level. For example, in Sweden payments for wildlife conservation are based on numbers of wildlife offspring in the area surrounding a village (Zabel et al., 2014). Third, when spatial patterns of activities matter for

effective Ecosystem Services provision basing at least part of the payment on group activity patterns can be an option. Furthermore, making payments conditional upon group performance could activate peer monitoring and enforcement within the group (Cranford, 2014; Hanley and White, 2013) and reduce the potential for relocation of harmful activities to nearby sites. In a meta-analysis of payments for water services, Brouwer et al. (2011) found that schemes were more effective if the contract was made with the entire community rather than individual ES providers. They hypothesize that a possible explanation may be that the community plays an important role in compliance and enforcement.

When payment is based on group performance, the group faces a commons dilemma: every group member benefits from the payment, but incurs a private cost in contributing to performance, implying incentives to free ride (Vatn, 2010; Zabel et al., 2014). This implies that the successful implementation of payments conditional upon group performance likely depends on the group's ability for collective action (Zabel et al., 2014), which in turn depends on a range of factors such as group size, heterogeneity, exit options, etc. (Agrawal, 2001; Ostrom, 1990). Moreover, payment distribution among group members matters, particularly when group members differ in their provision costs (Zabel et al., 2014). Note that making payments conditional upon group performance does not necessarily imply that the payment is also paid out to the group as a whole.

Whether payments are based on individual or group performance also has behavioral implications. Narloch et al. (2012) found that where self-regarding behavior is the norm, payments based on group performance are more likely to crowd out intrinsic motivations for environmentally friendly behavior while payments based on individual performance appear to crowd in intrinsic motivations. Midler et al. (2015) found that Ecosystem Services providers perceived the payment based on group performance as less fair, although this may be different in other contexts (Narloch et al., 2013).

2.6.13 Establishing Additionality for PES Payments

Additionality refers to the difference between the environmental outcome with PES and a hypothetical baseline of what would have been the outcome in the absence of PES (Wunder, 2005). Many authors argue that payments should be made only for activities that would not have been implemented in the absence of PES (Wunder, 2005). Lack of additionality ('Paying for nothing', 'Paying for hot air') may well be the most serious design problem of current PES (Naeem et al., 2015; Pattanayak et al., 2010). Assuring additionality requires estimating realistic baselines on what would have happened in the absence of PES. The baseline should consider not only the level of ES when payments start, but also expected changes in external factors during the period when PES are being made and which may affect ES providers' activities (Naeem et al., 2015). Many current PES schemes do not compute baselines, but rather just pay on the basis of an activity being implemented (Wunder et al., 2008).

The additionality issue is given most attention in carbon sequestration projects, but the approaches used there are also far from perfect (Angelsen and Wertz-Kanounnikoff, 2008). Crediting baselines used can essentially be seen as rough proxies for analytical baselines. A commonly used approach is historic baselines (Angelsen and Wertz-Kanounnikoff, 2008). Yet, these fail to consider socio-economic dynamics in resource use. Moreover, baselines need to provide incentives for action for Ecosystem Services providers with low levels of Ecosystem Services provision without undermining action by those with an effective track record of high Ecosystem Services provision (Angelsen and Wertz-Kanounnikoff, 2008). Historic baselines may reduce intrinsic motivation for pro-environmental action by those who were acting pro-environmentally before the introduction of

PES (Alpizar et al., 2013). This is because basing payments purely on additionality may be perceived as "rewarding the bad guys" (Dobbs and Pretty, 2004, as cited in FAO, 2007). In the context of the debate on REDD+, where ES providers are countries, most proposals use historical baselines, but incorporate 'national circumstances' and 'rewarding early action'. Pagiola et al. (2004) describe a similar approach at the level of individual farmers: In a PES program promoting silvopastoral practices continuous payments were made conditional upon activities that were not previously applied by the farmer, but an ex-ante payment was made to reward early action.

More sophisticated approaches for estimating analytical baselines to assess additionality use socio-economic models, e.g., deforestation (Kaimowitz and Angelsen, 1998), to predict the probability that Ecosystem Services would be lost or not provided in the absence of PES (Alix-Garcia et al., 2008; Wünscher et al., 2008). Proxies can also be used to roughly estimate analytical baselines; for example, Sanderson et al. (2002, as cited in Wünscher and Engel 2012) use population density, land transformation, accessibility, and electrical power as proxies for the probability of habitat destruction.

2.6.14 Leakages Prevention

Leakage refers to the risk that PES causes a displacement of the environmentally harmful activity elsewhere. In the case of avoided deforestation, leakage is more likely under the following conditions (Angelsen and Wertz-Kanounnikoff, 2008). For example, historical rates of deforestation underestimate actual deforestation for countries at early stages in forest transition and overestimate actual deforestation for countries at later stages (Angelsen and Wertz-Kanounnikoff, 2008). The dilemma is that if baselines are too generous and take national circumstances into account there is a risk of undermining overall emissions reductions and credibility.
On the other hand, if baselines are set too tightly, there is a risk of low participation and rejection by developing countries (Angelsen and Wertz-Kanounnikoff, 2008): cultivation of cash crops for the world market; capital and labor mobility; easily accessible, unprotected, cheap neighboring forest lands of similar quality; high returns and inelastic demand for forest products; provision of only a small share of the world market by the country at stake; and fixed input coefficients in the production technology. More generally, one could say that PES is more likely to exhibit leakage if (i) PES restricts production of products with high returns and inelastic demand (e.g., cash crops for the world market); (ii) PES leads to reduced demand for capital and labor, and these are mobile; and/or (iii) PES reduces production of a resource vital to local livelihoods and nearby land is available as alternative production site. Leakage tends to be less of an issue when payments are made for activity creation (e.g., agroforestry, alternative agricultural practices) than when they are made for activity reduction (e.g., avoided deforestation, land retirement) (Wunder, 2008).

Three main approaches for addressing leakage have been proposed. First, payments made for ES provision can be discounted based on the estimated extent of leakage (Murray, 2009). For example, a project creating 100 Ecosystem Services score units but estimated to create 20% leakage would receive a payment for only 80 units. A second approach commonly discussed in the REDD+ debate is to reduce leakage by increasing the scale of accounting and crediting emission reductions (e.g., to the national rather than project scale) (Wunder, 2008). In a national or subnational PES context, and if leakage is likely to occur on nearby sites, this could be an argument for making PES conditional upon the aggregate performance of a group or community of Ecosystem Services providers. A third approach is to implement projects producing equivalent output while reducing environmental damage. For example, in Kenya, payments to reduce charcoaling were complemented by the promotion of ecocharcoaling, relying on scrapwood (Veronesi et al., 2015).

Leakage in this case is defined as emissions moved to a new location divided by emissions avoided at project site (Murray, 2009). Reutemann et al. (In press) describe a case where the combination of payments for avoided deforestation with rotational grazing in Brazil is intended to increase cattle production per hectare while reducing deforestation.

2.6.15 Ensuring Permanence of Ecosystem Services

Permanence refers to the issue of how to assure that environmental service provision paid for is not reversed later. Non-permanence can be seen as leakage in time. Permanence is linked to the issue of payment duration. If the activity promoted by PES implies opportunity costs indefinitely, payments will have to be continued indefinitely, and continuous funding has to be secured to assure permanence. Permanence is also linked to contract length. If contracts could be made for very long time periods and perfectly enforced, permanence could be assured. Yet, this is often not possible in practice. Ecosystem Services providers are likely to resist long-term contracts in light of uncertainty about market prices, and contract monitoring and enforcement become difficult if the incentives to breach a contract strengthen.

Even if payments are maintained at constant rates indefinitely, permanence in Ecosystem Services provision can be at risk due to (i) increasing opportunity costs (e.g., due to growing world demand for food and biofuels), or (ii) natural factors (e.g., natural forest fires). Though increasing opportunity costs would not be problematic if contracts were perfectly enforceable, in practice the temptation for ES providers to breach a PES contract becomes high when opportunity costs rise significantly.

Several approaches to address the risk of non-permanence have been discussed in the literature (Dutschke and Angelsen, 2008). First, a common practice in forest carbon projects is to assign liability to carbon buyers and require that reversed emission reductions need to be compensated for elsewhere. This is often combined with a second approach of project credit buffers: a portion of total carbon credits earned are not issued but temporarily banked as a buffer in the event that some of the original emission reductions are reversed (Dutschke and Angelsen, 2008). While this approach may be suited to dealing with external stressors, it seems unlikely to effectively address increasing opportunity costs over time. As opportunity costs increase, the risk of non-compliance increases, which would require a larger buffer. However, a larger buffer implies lower payments, which in turn increases the probability of non-compliance.

An approach to address the issue of increasing opportunity costs has been proposed by Benítez et al. (2006) and Dutschke and Angelsen (2008). The idea is to link the payment level to an agricultural price index which is thought to covary with the opportunity costs of landowners. Three recent studies have tested the performance of such indexed payments (Engel et al., 2015; Veronesi et al., 2015; Reutemann et al., 2016), with mixed results on their cost-effectiveness relative to other approaches (fixed payments or payments based on carbon market prices). Theoretical considerations in Engel et al. (2015) and the empirical evidence suggest that the results depend crucially on the quality of the index available. Because agricultural price indices are imperfect measures of opportunity costs, indexing payments introduces an additional source of uncertainty for the ES provider (Kaczan et al., 2013). Only if the index is strongly correlated to opportunity costs is indexing likely to be more cost-effective than other approaches. Another caveat is that if opportunity costs increase beyond the value of the Ecosystem Services to society or beyond the cost of alternative activities for providing the services, paying for the activity is no longer socially optimal. For example, if increasing food and bioenergy prices increase the opportunity costs of

avoided deforestation strongly in some areas, avoided deforestation in these areas may no longer be a cost-effective approach for carbon emission reductions (Karsenty et al., 2014).

2.6.16 Site Selection (Targeting)

Frequently the number of potential eligible Ecosystem Services sites and providers for receiving PES exceeds the available budget. The question then arises how to select among different sites. A number of studies have demonstrated that selecting (targeting) sites on the basis of benefit and cost considerations can significantly increase the amount of Ecosystem Services obtained with a given budget (Babcock et al., 1997; Ando et al., 1998; Polasky et al., 2001; Barton et al., 2003; Ferraro and Simpson, 2002; Johst et al., 2002, all as cited in Alix-Garcia et al., 2008; Armsworth et al., 2012; Drechsler, 2011; Ezzinede-Blas et al., 2015; Wunder, 2008; Wünscher and Engel, 2012). Many of these studies demonstrate that large gains in cost effectiveness can be obtained through a combined cost–benefit targeting approach, often also combined with payment differentiation. Some also show that the gain in cost-effectiveness from cost–benefit targeting outweigh the implementation costs (Armsworth et al., 2012; Wünscher et al., 2008). For example, Armsworth et al. (2012) demonstrate that for UK agri-environmental payments targeting combined with payment differentiation can yield a 49–100% increase in biodiversity benefits, the value of which would outweigh an increase in implementation costs of up to 70% of the budget. Yet, these studies focus on countries with relatively high administrative capacity and good data availability. Data and institutional requirements for targeting can be high. Decision support tools are a promising way to facilitate the implementation of cost–benefit targeting (Johst et al., 2015).

In general, targeting can be implemented at different levels. Area based targeting criteria, for example identifying ecologically important regions, are relatively inexpensive (FAO, 2007). Targeting becomes more data-intensive and expensive when conducted at the individual landholder level. Targeting thus involves a trade-off between the complexity of the targeting strategy and its cost (FAO, 2007).

Integrated cost–benefit targeting involves the consideration of both costs and benefits in site selection. This can be done, for example, by ranking sites by their benefit–cost ratio and including those with the highest ratio until the budget is depleted Wünscher and Engel (2012). In addition, timing of conservation activities may also be considered in a spatio-temporal targeting approach where the benefits and costs of conservation measures are sensitive to timing (e.g., agri-environmental measures for biodiversity protection, such as mowing times) (Johst et al., 2002; Wätzold et al., 2015).

Targeting Expected Ecosystem Services Benefits

When sites differ in their potential for ES provision, it can be useful to select sites on the basis of expected ES benefits. A common practice is to focus PES on ecological priority areas. But ES benefits can also vary significantly within such an area. In this case, it can be worthwhile to compute a site-specific ES score, which may be based on the activities to be implemented at the site in combination with site characteristics such as steepness of slope or proximity to a water source (Wünscher and Engel, 2012). Because ES supply is inherently linked to location, the use of geographical criteria (for example, slope) can represent a low cost approach to benefit targeting (FAO, 2007).

Sites can also differ significantly in the degree to which ES benefits are threatened or not provided in the absence of payments (Alix-Garcia et al., 2008). Thus, it can be useful to base site selection on

expected ES benefits, based on both ecology and threat (which is closely linked to additionality). For example, Wünscher et al. (2008) compute expected ES benefits from forest conservation as the product of a site's ES score with the expected probability of deforestation. The latter are computed on the basis of deforestation models, but may also be based on more rough estimations of areas under threat. Alix-Garcia et al. (2008) also found that using predicted deforestation as a targeting criterion enhanced cost-effectiveness of PES significantly. Targeting benefits in site selection is only relevant if there is considerable variation in ES benefits and/or threat. For example, Wünscher et al. (2008) found for Costa Rica that considering the threat did not increase cost effectiveness significantly because deforestation rates were generally very low.

If multiple ES are targeted or multiple indicators are chosen to describe ES or the threat, there is a need to combine these to consider tradeoffs (Drechsler, 2011). Approaches proposed in the literature include (Wünscher and Engel, 2012): a weighted sum of standardized indices (Claassen et al., 2008; Pagiola et al., 2004), normalizing indicators to make indicators directly comparable (Wünscher et al., 2008), a simpler stepwise approach ranking attributes and objectives according to importance (Myers et al., 2000), or a more complex non-parametric distance function approach (Ferraro, 2004).

2.6.17 Cost Targeting

When landholders differ in their opportunity costs, and thus in their provision costs, it can be useful to select sites on the basis of such costs. Cost targeting implies favoring low cost sites over high cost sites in order to obtain ES at a lower cost to society, or in order to achieve more ES provision with given budgets. Cost targeting is often combined with payment differentiation, setting payments equal to or just above provision costs, but this need not be the case. For example, auctions can be used to elicit information on provision costs, but still pay a uniform price to selected landholders (Ferraro, 2008). In the study by Wünscher et al. (2008) on a region in Costa Rica, the largest part of the increase in cost-effectiveness from improved targeting came from payment differentiation and cost targeting. In general, gains in cost-effectiveness are larger the greater the heterogeneity in ES provision costs of landholders.

A difficulty in cost targeting (and also in payment differentiation) lies in the fact that information on ES provision costs tends to be asymmetric. Landholders generally have better knowledge about these costs than implementing agencies. Moreover, landholders have an incentive to overstate their costs. The main approaches for estimating micro-level opportunity costs in practice include (Wünscher and Engel, 2012): computing farm budgets (Wünscher et al., 2008), inference from land values (Chomitz et al., 2005), estimating values on the basis of economic and environmental data (Wilson et al., 2006), and applying auctions to identify the minimum willingness to accept by landowners (WTA) for the inclusion of a site in a PES program (Ferraro, 2008). In addition to opportunity costs the WTA includes transaction costs and accounts for landowners' preferences (such as risk, time, and social and environmental preferences), and is therefore a more relevant measure. In Australia, landholders hand in sealed bids on their WTA for changes in land use management (Wunder et al., 2008). Funding is provided in the order in which the bidders provide the greatest service at the lowest cost until the funds are used up (FAO, 2007). A similar approach is applied by the U.S. Conservation Reserve Program (Claassen et al., 2008).
For an auction to be effective, competition between ES providers is required, implying the need for a sufficiently large number of potential ES providers (Ferraro, 2008; Schilizzi and Latacz-Lohmann, 2013). Auctions can be expensive and difficult to implement, especially when countries have limited institutional capacity and landholders have low levels of information and formal education (FAO, 2007). Yet, some evidence exists of the effective implementation of auctions in a developing country

context (Leimona 2007 as cited in FAO, 2007; Jack, 2013; Khalumba et al., 2014). Also, since auctions in the context of PES tend to be repeated over time, learning effects reduce the incentives for ES providers to reveal their true willingness to accept over time (Latacz-Lohmann and Van der Hamsvoort, 1997).

2.6.18 Spatial Considerations for PES Payments

Environmental benefits sometimes depend on the pattern of sites where a specific land use or agri-environmental measure is implemented. This is particularly the case for biodiversity-related ES (Hanley and White, 2013). Two main approaches have been proposed in the literature to deal with this issue. First, targeting can include spatial patterns as an additional site selection criterion. A rudimentary way to do so is to include a variable like proximity to protected areas or other sites in targeting (Barton et al., 2003; Wünscher et al., 2008). A more sophisticated way to include spatial interactions in targeting is combinatorial auctions (Reeson et al., 2011). These are multiple round auctions where information is spread on the location of other bids, and preference in site selection is given to spatially connected bids. The other main approach to spatial coordination is the agglomeration bonus (Parkhurst and Shogren, 2007; Parkhurst et al., 2002). Under this approach, landholders receive a bonus for spatially coordinated activities. While the agglomeration bonus may be easier to implement than a combinatorial auction, the former implies a coordination game for ES providers. Some experimental evidence suggests that coordination can be achieved, but success depends on transaction costs (Banerjee et al., 2015). Game theory suggests that coordination and thus the agglomeration bonus is likely to work better where the number of potential ES providers is small or they are organized in well-functioning smaller groups. By contrast, a combinatorial auction — like any auction — is likely to work better for larger numbers of potential ES providers.

2.6.19 Facilitating Conditions for Pro-Poor Ecosystem Services Providers

Several studies have shown that transaction costs are the main barriers to participation of poor landholders in PES (Adhikari and Agrawal, 2013; Pagiola et al., 2005, 2010). 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 can 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), supporting poor landholders through capacity building, technical assistance, access to inputs and credit, and building trust through transparency and credible intermediary organizations (Adhikari and Agrawal, 2013; Pagiola et al., 2005, 2010).

2.6.20 Reducing Negative Impacts on Other Poor

PES may also impact landless workers and customary resource users (Pagiola et al., 2005). Employment impacts depend on the difference in labor demand between current land use practices and those promoted under PES. Such impacts can be problematic when payments are made for activity reduction; for example, maintaining forest cover may require less labor than conversion to agriculture (Pagiola et al., 2005).

Employment effects are likely to be less problematic when payments are made for activity creation; for example, silvopastoral practices may increase farm labor use (Pagiola et al., 2004). PES can also impact the access to and availability of forest products for poor customary users.

Again, negative impacts can be a major issue when payments are made for forest conservation (Phelps et al., 2010). By contrast, agroforestry practices can result in increased availability of fuelwood, fodder and fruits (Pagiola et al., 2004). PES design can sometimes counteract negative effects through work programs for conservation on public lands, employing landless workers as guards, and by complementary programs providing alternative income opportunities for customary users (Pagiola et al., 2005). For example, Asquith et al. (2008) describe a case where in-kind PES in the form of beehives also created alternative work and income opportunities for landless households.

2.6.21 Reducing Negative Impacts on Women

Gender based division of work varies among owners and user group and their various age gradations. The women from owner group are involved in household responsibilities only. They take care of house chores and help family economy by rearing animals at household level. The animals are stall-fed for which grasses/fodder is collected by children or servants. The products are used at household level. The excess is sold in market and the amount is used by owner female in personal needs or handed over to household head for running family expanses.

The women from user group have to perform a series of household and agricultural activities. The young girls are involved in grasses and sticks collection and bring meals to elders at workplace. Adult females fetch water and are involved in agricultural activities to support family. They are also responsible for house chores and rearing animals on small scale. The older females fetch firewood from forest area and cut/collect grass/fodder. These activities, except rearing animals are not paid. The amount accrued from sale of animals and its products is handed over to household head for meeting family needs or personally used by these females.

Some of the young girls are involved in working in owners houses for free as the owners provide the non-owner family with the house to live or land to crop. These children, in return, are provided food of self and family and clothes on certain ceremonial occasions like Eid.

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.

2.7 Exercise of De facto forest rights and use patterns

De facto forest rights and use are related to what actually is happening on the ground (what is the true-life situation of rights and uses, basis for entitlement and procedure for exercising them). The analysis of de facto ownership and use rights helps in visualizing the existing forest (and associated) tenure systems. It also unveils the influence of land settlement/law and the customary practices in establishing forest rights and use patterns in different areas. This analysis is based on the primary data collected from major stake holders.

Conventionally benefits from forests can broadly be classified into two categories i.e. non-monitory benefits and monitory benefits (Carbon benefits is a new entry). The non-monitory benefits include the sub categories of timber, firewood, grasses/fodder and other non-timber forest products.

Amount accrued from direct sale of forest products or leasing out the forest land for agriculture, grazing or some other purposes comes under the category of monitory benefits. Rights and use patterns for both monitory and non-monitory benefits from forests are governed by a mix of prevailing forest/revenue laws and customary practices.

Clarity of resource boundary is the key to establish and exercise strong, dispute free and sustainable resource rights. On the basis of land settlement and subsequent demarcation, forests of KP can be categorized into three broad categories i.e. forests that has passed land settlement and demarcated with proper boundary, forests that has passed land settlement but not demarcated and forests that have neither been passed through settlement process nor demarcated.

Reserve, protected and most Guzara forests of Hazara region come under first category as these forests were demarcated after land settlement. Demarcation record of these forests is maintained by FD. Ownership rights in these forests are clearly recorded in the revenue record. The owners (both individual and communal owners) know the boundary and extent of their forests and regulate their rights and responsibilities in consultation with Forest department and non-owners. However, due to increase in land value for agricultural, livestock rearing and residencies there has been increasing trends of illegal felling and encroachments in these forests. The boundary pillars of these demarcated forests are illegally removed or shifted inside forests by the local people to grab more land. To reestablish the boundaries and demarcated Resumed lands of Agror Tanawal Forest Division a PC-I has been approved and demarcation work is in progress. However, emerging disputes on boundary setting and little skills in determining and actual boundary line is hindering the demarcation progress.

State of forest boundary is poor in forests that are brought under settlement but not demarcated (most protected forests of Swat region). Encroachment in these forests is easy to happen and hard to eject. However, forest use rights and monitory benefits accrued from these forests are distributed under established rights recorded in revenue record. Demarcation of these forests has been more a political issue where politicians resist demarcation of forests. Demarcation of these forests has been attempted but with little success as the people removed the boundary pillars overnight in their personal interests.

Forests of Dir, Chitral and Kohistans are neither brought under settlement nor demarcated, hence leading to vague ownership/use rights and multiple forest ownership/royalty disputes, litigations and armed conflicts among contesting groups. Instances of severe disputes are found between various tribes of Pushtuns, Kohistanis, Chitralis and Gujjars in Chitral, Dir, Kalam and Dir Kohistan. The ownership disputes upshot into royalty disputes on sale of harvested timber. The amount realized from sale of timber extracted from these forests could not be distributed due to ownership disputes. Such cases are under trial in National Accountability Bureau (NAB) and Ihtisab court. These disputes are major hindrance to sustainable development of forests and caused forest loss.

The owners living in and controlling their forests are in the most commanding position to control, manage and use their forests. Big land lords with strong hold on forests lease out their estate/forests to users (Gujjars) on different terms and conditions including collecting firewood for owners, bigar (free labor) ijara (fix rent) and tawan (fix amount of grasses, nominal amount of cash

and materials in kind like Ghee, wool etc.). Conversely, forests inhabited and used by non-owner groups (Gujjars) with weak/no writ from real owners, are becoming more disputed as the user groups are gaining power and violating the terms under which they used the forests. They also claim forest ownership. These qabzeen (occupants) use forests without paying rent or tawan to the owners. Although these users don't legally own the resource still they don't allow owners to access or use their legal resource. In some cases the weakened owner is compelled to sell the resource to users on nominal prices or knock the door of court for litigation. In still some other instances the compromises are made where the owner shifts ownership rights of some area to users and in return the users vacate some of the area and return its occupancy to owners.

The forest owners, therefore, try to maintain strong control over their forests by not involving user group in forest protection as they also will claim forest rights for their services. Generally, the users worthy of benefitting owners in their agricultural work or providing services to them free of cost (grasses, firewood, repair of homes, marriage, funerals, dairy products etc.) are allowed to use these forests, otherwise the users have to pay owners for forest use.

Ownership, control and use are the three determining factor in identification of groups involved in forest protection. Wherever owners are in full control of forests they themselves patrol the forests or engage their workers to protect it. In some places the users have overpowered the owners and protect the resource for their own use. In some instances the locals (both owners and non-owners) have constituted protection committees that cruise the forests and inform the relevant group/FD for any illegal cutting for taking legal action. In this scenario the role of user group in forest protection entitle them for their forest use right and in some rare cases some minor monitory reward.

Disputes on forest ownership are also underway between the concessionests of the protected forests (in Swat) and FD. The case was debated at assembly floor and a parliamentary committee was constituted to hear the parties and put their recommendations to the assembly. The committee heard the FD and concessionests and recommended the ownership of the land to concessionests. The case was recommended by the assembly also and put forward before the cabinet for final decision of approval, review or rejection of these recommendations.

The micro analysis of forest uses show that timber, fire wood, grasses/fodder/grazing, NTFP, water and aesthetic/recreation/biodiversity conservation spot comprise the major forest uses.

2.8 Timber for domestic needs

Timber is the major requirement of local communities to meet their need for house construction/repair. Reserve forests and resume lands, under the law and settlement, have no such provision to cover the timber needs of local communities. Most of timber requirement of the communities dependent on reserve forests is met through theft from Reserve Forests, timber permits from Guzara forests or purchase from timber market.

Most of timber requirements of locals in Hazara region are met from Guzara forests. The locals and nonresident owners are provided local and nonresident timber permits for house

construction/repair as per working plan prescriptions. The non-owners meet their timber needs by purchasing from market or under local arrangement.

The right to free grants of trees is available to people who acquired their rights in the Guzara forest through succession, and – in some cases – to those who purchased their Guzara rights along with a landholding in the village. The number of trees granted is determined by the village record of rights. Resident right holders are given first priority, but each family can receive only one grant every three years. Non-resident right holders are allowed a grant once every ten years, but only if there are excess trees after residents have received their grants.

Protected forests cover the timber needs of concessionists under the legal provision of local and central quota permits for timber in Forests of Malakand and Swat Kohistan. Tree/timber is granted to the right holders and other local inhabitants entitled to this privilege. Procedure adopted for free grant of timber in Swat protected forests is the same as mentioned in the section protected forests. In addition the residents of Swat can avail another facility of timber on control rate from the timber Depot at Mingora. All the confiscated timber (timber apprehended from smugglers and other illegal harvested timber) by the Forest department is brought to forest Depot at Mingora where the residents of Swat are provided with the timber on controlled prices. The left over timber is auctioned and all the revenue from such sale and auction goes to government with no share of owners.

In protected forests of Hazara and Southern districts grant of trees for meeting bonafide domestic requirements of the residents of villages within boundaries of which protected forests are situated is made by Conservator of Forests or DFO concerned on payment at concessional rate. The owners may also meet their timber needs through illegal cutting of trees from their share of forests or purchase it from market or by applying for concessional grants.

Generally Two trees are issued on each timber permit from protected forests to concessionists/right holders with average timber out turn of 120 cubic feet (cft.). The owners generally don't cut the timber themselves; rather they engage the members from user group for cutting, converting and transporting timber from the marked tree. The labor is paid per cft basis and on average an amount of PRs. 11000 is paid to labor for cutting, converting and transporting a tree. Constructional timber for non-owner group costs them at an average of PRs. 30000/tree as they purchase timber from other sources. Due to expiry of most working plans (due to which issuance of timber permits is suspended), dwindling forest resources, cumbersome procedure for issuance of permits and high costs of timber harvesting the people residing away from forests prefer to use trees on their agricultural land for constructional purpose or firewood needs. Imported timber is also substituting local timber for its availability and economy in price.

The non-owners follow customary practices for meeting their needs for timber. They approach the owner(s) for letting him/them cut tree(s) from the jurisdiction of owner's forests. The owners generally allow the user to cut tree for his use (but not for sale) with a burden of crime on user if apprehended by Forest department. In some exceptional cases, where the users are actively involved in forest protection or have some very good relations with owners, the owners issue permits on own name and gift the timber to the user for their constructional needs. In most of such

cases the permits are given by owners to their tenants who construct house on lands of owner. Such houses remain in ownership of owner group at the time of vacation of tenants. Theft of timber by user group is also common where the owner may overlook the mischief or inform the crime to FD that is responsible for apprehension and punishment of forest crimes. The user groups can also apply for concessional grant of timber.

2.9 Commercial timber harvesting

Commercial harvesting and sale of timber from Reserve Forests is carried out departmentally under working plan prescriptions. Local labor is engaged in harvesting and transport of timber. The amount accrued from sale of timber goes to government treasury and a nominal seignorage fee paid to concessionists as per rights recorded in revenue record to admit the locals in forest protection, conservation and development activities in Reserve Forests. This right can't be sold.

Commercial harvesting of timber and extraction of forest produce from the Protected and Guzara Forests is regulated in accordance with the approved Working Plan. For actualizing the working plan prescriptions Joint Forest Management Committees (JFMC) are constituted under Community Participation rules 2004. The JFMC is the most recent of all participatory approach adopted by FD for forest management. Ideally a JFMC comprises of 15 members including 7 owners, 3 non owners, 2 FD staff, 2 NGO representatives and 2 local body elected representatives. The DFO register the JFC for 3 years which is extendable for one year. For financial purposes a joint account is opened by DFO and president JFMC. A management plan is prepared for JFMC for development and harvesting of forests. The plan is implemented by JFMC under supervision of FD. The lease agreement is carried out between JFMC and FD. Operations are carried out by JFMC under the supervision of FD. The timber is sold in timber market and the cheque of sales proceed minus operational costs is handed over to DFO. The DFO after deduction of government share (20% and 40% according to appropriate share) FDF and duties/taxes submit the remaining amount to DC for its disbursement in royalty holders. The amount is distributed directly by revenue department (DOR) on acquitance roll with a copy to DFO office or through JFMC. The JFMCs are responsible for restocking of harvested forests and other developmental activities in the forests by using Forest Development Fund (FDF).

In addition to above mentioned legal procedure several customary procedures for distributing forest revenue are in practice in group owned protected forests. "Loogay" a system of monitory distribution in Bahrain area involves equal distribution of financial benefits from sale proceeds to each concessionist house hold. "Dautar" another conventional system in Swat where a person is having agricultural land in vicinity to forest area is entitled to right of share in sale proceed proportionately according to his share in agricultural land. No share of royalty is entitled to non-owners groups.

In protected and Guzara forests of all Kohistans the ownership of forests is of whole tribe. The amount is equally distributed in each khel and subsequently each male head receives equal share an infant boy has the same share as grownup man and the women are exempted. In other regions (both protected and Guzara forests) too, the women rights is received by her male family member (husband/son) and not by the female herself. The process however is under change. Disputes on

forests and royalty issues are settled on Shariat (Islamic Law), Jirga (court of elders), JFMCs, FD or in courts.

In Hazara Kohistan the JFMC system is replaced with Forest Harvesting Cooperative Society Limited (FHCSL) vide notification No SOFT (FAD) X-1/77/B/40131-37 dated 15.12.1981. The forests of Kohistan are worked/treated under 8 point agreement between elders and of Kohistan and the then Governor. These forests are given special mechanism for providing benefits to the local communities unlike any other districts of KP. The FHCSL is constituted by general body and registered with cooperative department under the cooperative act as per notification cited above. The representative body is responsible for looking after all the affairs of harvesting i.e. right from marking of tree to sale of timber in timber market at Dargai and Havelian. The society is headed by Managing Director (MD) who is responsible for clean harvesting and further extraction/transportation up to sale depots. He is supported by a General Secretary, a treasurer and 11-15 members.

FD sign agreement with MD who is the responsible for execution of all operations. The trees are marked in forests that are harvested, converted and transported to transit/roadside depot by MD. In the transit depot the timber is checked by a committee comprising of Representatives from society, FD staff, NAB representative and Army representative etc. on the recommendation of committee transport passes are issued to MD for transport of timber to sale depot. In Kohistan 20% government share as management charges is received by government in kind, i.e. timber received at sale depot as apportioned into 80:20 i.e. owners and government share, respectively. In addition production duty @ PRs 50, 40 and 20 is received/cft for Deodar, Kail and Fir/spruce, respectively and FDF @ 10,8 and 6 is received/levied for Deodar, Kail and Fir/spruce, respectively.

Government share of 20% timber is sold/auctioned in sale depot at Havelian and Dargai where amount realized in lieu of sale is deposited under head of FDF. The FDF generated is accumulating and not used by MD for development/regeneration of forests. Major chunk of the fund is lent to activities of Billion Trees Afforestation Project (BTAP).

One of the major problems of royalty distribution among owner groups is that some owners have sold their forests to contractors many years before actual harvesting and received advance payments. The majority of poor owners, under the influence of few well off owners, sell their forests to contractors on nominal prices by signing deeds with them. The alliance of contractors and influential owners are the real beneficiaries of such deeds. The majority of owners are kept in dark of actual sale proceed and meagerly paid. The influential contractors manipulate the harvesting and cut forests over and above the prescribed harvest and receive the money for same. The major chunk of forest sales value goes to contractors and influential owners. The JFMCs constituted for forest operations are having low capacity to harvest forests and dependent on contractors. Corruption is common in these JFMCs. The government has now made the presence of owner mandatory for receiving the financial return of the sale. In fact the contractor gets the amount as he/they have already purchased the royalty of said forest from owners.

The private forests are managed under Mazrua policy where owners mange harvest and sale forest under the supervision of FD and the revenue, except taxes and 20% management charges, goes to

owners. The owners can sell their private forests or its land or both. From private (outside designated) forests the government gets its 20% share as managerial charges from sale value after deduction of taxes. In addition, PRs. 500/truck is charged on broad leave firewood from plantations on agricultural land.

2.10 Fire wood Collection

Fire wood, beyond doubt, is the most demanding need of the local communities and has tremendous pressure on the forest resource. The working plan allows collection of dry fallen firewood to locals for free however, due to meager forest resources the firewood needs from forests remain unmet.

The owners chop dry trees for meeting their firewood needs on first come first serve basis. In case of disagreement the firewood collected from one tree might be shared by many owners. Trees are also lopped for firewood and transported on donkeys and mules. However, the well-off use clean energy sources like gas for their domestic use or purchase firewood from market instead of collecting it from forests. Bigar is also one of the mechanism in which the user is allowed forest use if he collect firewood for owner or perform his agriculture related job free of cost. Oak, Kao, Phulai and snatha forests are managed and utilized by owners for firewood household use and sale after paying government taxes.

The users collect firewood that is dried or fallen or they lop the trees for the same purpose. Firewood collection and sale is the source of livelihood for some. Donkeys and mules are reared for transport of firewood from forests by users and its sale in the market. The firewood is also transported on transport passes issued by FD after payment of fixed fee to distant areas for sale. The trans-humans collect firewood while they graze animals and pay a lump sum charges (qalang) to owners for use of forest resources and pastures.

Plantations carried out by FD (especially the water shed plantations) are the major source of firewood for local communities. The owners that allowed these plantations on their agricultural and waste lands are not only self-sufficient in fuel wood needs but also earn money through its sale. The non-owners are benefitted from employment in nursery, plantation and protection work. Those involved in protection of these plantations are also rewarded by owners in monitory terms at the sale of these plantations. These plantations not only reduced the fuel wood pressure on natural forests but also reduced workload of women, the major collector of fuel wood, as instead of traveling long distances to natural forests they can collect fuel wood from nearby plantations.

Areas scarce with firewood (Upper Chitral and southern districts) are provided with this basic life necessity through permit system (PRs 500/truck). However, due to poverty and high transport charges this arrangement is getting economically infeasible. The people therefore use timber and firewood grown on agricultural lands to meet their needs. In some extreme far regions near Yarkhun the locals use peat land as fire source.

Economic analysis show higher fire wood needs and expenditure incurred on it in hilly areas due to severity of cold weather. Average house hold fuel wood consumption in Malakand region was estimated to be 12 Kg/household/day (PRs 250/day) during summer and 18kg/household/day

(PRs 360/day) in winter. In Chitral a house hold on average consumed 20kg/day firewood in summer and 30 kg/day in winter. The current price of fire wood in chitral is PRs 600/50kg. In Hazara region daily firewood use ranges from 25-35kg during summer to 50-70kg during winter.

A study on firewood sale from Watershed plantations in Bunir Watershed Division during the year 2004-05 and 2007-08 showed rise in fire wood consumption from 21085 maunds per day (20 kg/household/day) to 37878 maunds during the study period. The total annual consumption of firewood increased from 7.5 million maunds to 13.6 million maunds per year with a total annual cost of consumption increased from 986.7 million rupees in 2004 to 3136.2 million rupees in 2008. Total firewood consumption in tobacco kilns increased from 0.35 million maunds in 2004 to 0.58 million maunds in 2008, so was the cost of consumption for kilns that increased from 46.4 million rupees (2004) to 134.5 million rupees in 2008. Total fire wood amounting to PRs. 39.6 million was exported during 2004 and it increased to PRs. 62.4 millions in 2008. All the said revenue (PRs. 1072.7 million in 2004 and 3337.9 million in 2008) was generated from watershed plantations (Office record of Bunir Watershed Division).

2.11 Grazing and grass cutting

Grazing and grass cutting is another major forest use especially for the poor segment of society whose livelihood depends on livestock rearing. Livestock graze in range lands, forests and pastures. The range lands are located beneath the forest area near agricultural fields and used for grass cutting and grazing animals. Above timber line there are pastures that are seasonally used by locals/trans humans for grazing animals on payment.

The owners graze their animals in range lands and forest for free. They also cut grass to stall feed animals. The owners protect almost all of their grass in the rainy season, selling it only to whoever needs and can pay for it. The range lands are seasonally sold to non-owners on fix price. Patches of standing grass can be purchased. The leasee makes his own arrangements for harvesting the grasses. Besides paying the amount to leaser, the leasee, under the agreement, is supposed to provide a fix amount grasses and firewood to leaser at his residence. Traditionally the grasses are harvested on reciprocal provision of free labor to neighbors (Hashar). However, under changed circumstances paid labor are also engaged in grass cutting from range lands. The grasses so harvested are stored for winter use.

Under agricultural and range land tenancy arrangement grasses in areas that are protected during the rainy season is cut by permanent tenants, and 25 percent of the hay or its value is given or paid to the owners as annual land rent. Village wastelands, on the other hand, are seldom closed from grazing; animal grazing is usually open all year round. A few large-scale land owners control their Guzara lands very strictly and do not let villagers graze animals or cut grass, even after the hay has been harvested. This is particularly common where there are young tree plantations.

Grazing and grass cutting in forest area is common. The users pay fix price (Qalang) to owners for grazing an area during a specific time. They also pay in kind (dairy/animal products) to owners in lieu of using forest for grazing. The non-owner users are also obliged to provide free of cost labor (Bigar) to owners (two days a month) in lieu of getting benefits from forests. After introduction of

BTAP the forest enclosures and plantations are closed for grazing and only limited grass cutting is allowed. The animals are mostly stall fed. The Bigar system is also near to end except helping owners on some special occasions like funerals, marriages and house construction etc.

Forest area and pasture are conventionally used for grazing purposes on seasonal basis (during summer). Movement of animals to pastures is a stepwise process. The local villagers during their travel to pastures have several recesses in temporary stations located in forest areas. On their way the animals are let free to graze in forest areas. At last the herd reaches the pastures above timber line where animals freely graze in the area owned/leased by the herders. Due to free grazing system most pastures are over grazed and depleted.

The pastures are annually rented out by the respective owner groups. Lease arrangements in the pastures vary from situation to situation. Some owners directly lease out their pastures on a fix price depending on fertility of the pasture and size of its area. In some pastures, besides paying fixed lease amount, the users under agreement are also supposed to provide a fix amount of grasses, fuel wood and Ghee, and in some cases a couple of goats/sheep to the owners of the pasture. In still other occasions the users pay a fix amount per animal head to the owners. The amount fixed for the purpose vary from locality to locality (PRs 10/sheep/goat and PRs 100/cow/buffalo in pastures of Lalku and PRs 500/animal/season at Chour pasture). The grazers are also obliged, circumstantially, to provide the above mentioned extra facilities as fixed under ToRs of rent.

The lease of first order divides his rented pasture into smaller units and sublet them to other herders under similar rent conditions while leaving one unit for his self-use. They also collect NTFP for themselves which they sell to local contractor. In this way the leasee manages to graze animals for free and earn some extra money and commodities after meeting the lease agreement of owner.

Chour pastures, one of the biggest and most productive pasture of KP, comprises of an area of 25,000,000 Kanal (1 acre = 8 kanal). The pastures are the property of Nawab of Alai. The pasture is divided into 36 units that are managed by Muqadam (supervisor). A fix price of PRs 500/animal is received at entry point of pasture and on average PRs. 2 million income is accrued from the pasture annually beside thousands of Kg of Ghee and other dairy products.

In some areas (Lalku) pasture ownership rotate among tribes. In this way each pasture is used by different tribes annually and handed over to other tribe the next year thus all pastures are shifted to all tribes sequentially. The amount accrued from pasture lease is proportionally distributed among owners.

The oak forests are major source of fodder for cattle in lean season, therefore, the locals mange them carefully. The leaves are shed with a stick or cut with a sickle, collected and fed to animals. Customarily these oak forests are closed during growing season (termed as nagha) and opened during lean season for fodder collection. Each community has its own patch for fodder collection for which they protect that patch as well.

An analysis for annual cost for rearing one animal unit (a cow and a calf) was carried out in different regions. In Swat and Dir an average amount of PRs. 45000/animal unit/year was required

for stall feeding an animal unit via grasses purchased. However, two jreb (one acre) agriculture land (with a lease amount of 25000-30000/year) is required to rear an animal unit in these areas. The cost is somewhat high in Chitral and Oghi where rearing an animal unit by stall feeding requires PRs 60000/year. To stall feed a cow (or five goats) require 1 acre agricultural land with a rent of PRs. 25000 to 35000 per year in these areas.

2.12 Non Timber Forest Products (NTFP)

NTFP are based on forests and forests are dependent on NTFP. NTFP are forest conservation tool. These preserve ecosystem and biodiversity of forests and provide alternate livelihood support to poor segment of society. These include seeds (chilgoza, nuts) medicinal plants of diverse types, mushrooms, ferns and honey etc. Collection of NTFP is not common by owners. The users collect them on small scale for local use and sale. The NTFPs are not in abundance and are collected and sold on first come first serve basis.

There is a high potential for NTFP production, harvest and sale from KP forests. Chilgoza is one such NTFP with high economic return. Chilgoza forests are properly managed by owners like orchards where only ripen cones are harvested and sold to earn handsome amount of money. Due to economic returns and clear ownership Chilgoza forest is managed sustainable.

Management of other NTFP is not on scientific grounds. Most valuable species are becoming rare due to over exploitation for instance "Mattar Jarrai" a high value medicinal plant was over exploited by locals to the extent that it is now endangered in KP forests. In addition there is little knowledge of phenology, physical and chemical characteristics, management practices, collection, preservation, value addition, and sale of NTFP. For this purpose the NTFP directorate is underway for approval of a PC-I to carry out detailed survey for identification, distribution and abundance of different NTFP in KP and train local communities in identification, collection, preservation, value addition and marketing of NTFPs. The NTFP directorate has also broadcasted NTFP seeds in enclosure areas of Chitral on experimental basis with some fruitful results.

As per rule, the NTFP is supposed to be collected and transported on a permit/transport pass issued by DFO showing the origin/source of NTFP. However, no such record on NTFP quantum and export is maintained by FD.

The economic chain analysis of NTFP shows that there is a chain of intermediaries involved in sale of NTFP. Local communities and leasee of alpine pastures collect NTFP which they sell it to local shopkeepers. From local shopkeepers the product is collected by local contractors for its subsequent supply to local NTFP market (Mingora and Madyan). From local market the product is exporter in raw form to its major markets at Lahore and from where the products are sorted, graded value added and exported to foreign. According to some of keen NTFP collectors some good production years may help poor families to earn income higher than any other livelihood source. An estimated average amount of PRs 25000-30000/year is earnt by the families involved in NTFP collection.

Water for irrigation is collected from forests and distributed on allocated time basis and managed by irrigation department. In addition these forests have great aesthetic values that attract tourists

and are indirect source of income for locals. The forests are inhabited by several endangered wild life birds and animals which make it a biodiversity hotspot and need conservation initiatives.

2.13 Bottlenecks in Existing Benefit Sharing System

Based on above analysis there are several policy/legal, institutional, technical and cultural constraints in REDD+PES implementation in the selected ecosystems. Some major constraints are highlighted as under.

- Carbon is a not covered as a forest produce under the prevailing laws and policies therefore operationalization of carbon stock measurement as, "how to determine who own how much carbon?" will pose legal hindrances in implementation of REDD+ in Guzara forests of Kaghan where owners have legally recognized ownership rights over these forests but tenants use these forests and have more crucial role in forest protection but do not have documented rights.
- Problems of coordination between different levels of governments particularly in Mangroves forests where Port Qasim Authority, Fishery Department and Forest Department will have significant influence on benefit distribution and flow of funds have not established any mechanism for interdepartmental coordination.
- In Kaghan disputes between owners and users over access to benefits from Guzara Forests may pose difficulty in REDD+PES implementation.
- Important forest associated land uses like rangelands/pastures are not covered under the working plans or management plans in the pilot areas. Similarly, NTFP, another important livelihood source of poor community, is also missed in working plan inventory and prescriptions both in temperate forests of Kaghan and Mangroves forests. Their management, therefore, neither is scientific/sustainable nor on record.
- Conflicting forest use/interests also create dilemma. Ignoring grazing needs of cattle in afforestation programs, for instance, is a source of dissatisfaction among local communities, especially the poor non-owner groups whose livelihood is based on livestock rearing. For examples thousands of nomads and other graziers are dependent on livestock grazing in Kaghan forests. Imposition of bar on grazing of animals in the forest may deprive these groups of their livelihoods if suitable alternates are not provided.
- In context of REDD+, the owner don't want to share the monetary benefits with non-owners in Kaghan to maintain their power and hierarchal superiority in the area and to avoid provision of any legal grounds to justify non owners claims on forest resources/uses.
- Resistance from user group may increase in Kaghan, as they are asked and expected to change their forest use behavior in favor of restricted use. The non-owner user group, however, won't get the financial benefits as the owners won't allow such shares to them. The question arises that why should users opt for a behavior change that doesn't have any financial return, rather burdening their livelihood.

- There are some apprehensions about the low revenue from REDD+ on account of prevailing prices for forest carbon credits. These low forest carbon incomes further compounded by low carbon sequestration capacity especially in temperate forests, high firewood needs of growing population, tourism industry and overgrazing etc. may further worsen the situation. In addition, the small numbers of the carbon units produced have to compete with tropical and Boreal forests that sequester tremendous amount of carbon. The influx of high number of carbon units in market from these forests will bring unit price further down and the project, apparently, may become economically non-feasible. As a result, the beneficiaries may lose their interest in sustainable use behavior.

- Owners in some areas of Kaghan have sold forest royalty to contractors. The influential contractors are more interested in commercial harvesting of forests than conservation and sustainable use.

2.14 Main Recommendations for Benefit Sharing Mechanism

Following recommendations emerge from different studies and models for designing effective benefit sharing systems:

• Integrate Benefits with development priorities

Communities have both core development needs (pertaining to security, water supply and sanitation, health, infrastructure development, education, etc.) and natural resources related development needs. It is not uncommon for community priorities to focus initially on the core development needs such as water supply, infrastructure, health, and education. Therefore, it is advisable that part of PES funds are channeled into these core development priorities of the community. Such PES funds can enable investments that address these core development needs and also help build long-term capacity to support sustainable livelihoods. Social assessments can help improve equity and integrate benefit-sharing schemes with broader planning and development priorities. When development priorities seek to benefit poor and vulnerable groups, the scale and timing of benefits are two critical factors. This recommendation is meant to increase the effectiveness of REDD+ program and the realization of co-benefits at the two pilot sites.

• Facilitate participatory design and decision-making

Robust involvement of all beneficiaries, local communities, women, civil society organizations, funders and other stakeholders alike in designing and administering benefit-sharing arrangements increases the likelihood of success over the long term, even if it takes longer to become operational. This recommendation will help in increasing equity, efficiency as well as effectiveness of the PES program at the two sites.

• Provide dispute settlement options

PES schemes combine a diverse set of actors who may depend on each other for results but may not have a history of working collaboratively. Experts recognize the value of grievance mechanisms to help manage disputes over PES benefits distribution. A formal process to resolve complaints helps

facilitate more equitable outcomes and minimize delays when conflicts arise. This will increase efficiency as well as effectiveness besides enhancing equity.

- Enable adaptive management

Given the complexity of scope and scale of PES interventions and the diversity of potential beneficiaries, it is important to build in mechanisms at the outset to incorporate lessons learned to generate improvements over time. Transparency helps generate information necessary to identify opportunities for improvement, while participatory monitoring and evaluation enables benefit arrangements to evolve with changing community needs. This recommendation will enhance the effectiveness of the program at the pilot sites.

- Prioritize beneficiaries based on objectives and equity

Uniform rules for benefit distribution may ignore important local context and be counterproductive to broad community participation, particularly where Ecosystem Services buyers pay royalties from license or enter into contracts providing payments for leaseholds or resource harvests. With no set or predictable formula to establish payments— and recognizing that benefits are limited—a broad perception of a "fair" benefit-sharing arrangement helps build trust and keep diverse actors constructively engaged in building long-term solutions. The recommendation is primarily meant to increase equity.

- Carefully consider rights and obligations

To realize lasting land use changes, it is critical to consider a broad scope of actors claiming statutory and customary rights as well as management and regulatory authority, as all may control how forest resources are used. Experiences with extractive industry arrangements suggest that clear oversight and formal management structures and funding priorities with strong transparency and reporting measures help ensure success. This recommendations will ensure a balance between rights and responsibilities under the PES scheme at the two pilot sites.

CHAPTER-3

IDENTIFY THE BUYERS AND SELLERS OF ECOSYSTEM SERVICES

3.1 Introduction

Most PES transactions involve three distinct stakeholder groups: buyers, sellers, and intermediaries. Each of these groups can consist of individuals, organizations, private businesses, and governments. These groups have certain specific characteristics and particular motivations to enter into a PES transaction.

3.2 Service Users or Buyers of Ecosystem Services

Historically, people have benefited from environmental services without making any payments for them. In many cases, however, there is now a well-identified set of people who not only benefit from an environmental service but are also willing to pay for it. These people include individuals (water users in a town), groups (airline and hotels), private businesses, utility companies, multinational corporations, private foundations, and even governments. In Ecuador, for example, the city of Quito pays upstream farmers to protect two watersheds that supply most of the city's water. Payments are made through an independent fund, established by the municipal water company and other local utility companies. Similarly, under its Conservation Reserve Program, the U.S. Department of Agriculture makes regular payments to local farmers for taking environmentally sensitive land out of crop production and planting it with grasses, trees, and other cover crops. This helps reduce soil erosion and water pollution and generates several other valuable environmental services. These PES schemes payments are about watershed related environmental services. They are paid in cash to secure the regulation of the quantity and quality of water in exchange for maintaining existing vegetation cover, for not felling trees, and for allowing natural regeneration. The payments are funded by fees collected from the water utility. Why are these organizations paying for environmental services? One factor contributing to willingness to pay for environmental services is their perceived shortage. Awareness in the society, that environmental services are crucial for sustaining life in the downstream areas, and devising workable binding agreements between buyers and sellers were also instrumental in success of PES in these cases. As ecosystems deteriorate, many valuable services are threatened. Various approaches are used to protect them – regulations on the use of natural resources, for example. But these approaches have had limited success where communities were not in the driving seat. The newest idea is to directly pay people to protect valuable ecosystems. The Nature Conservancy, for example, pays local land users to protect valuable biodiversity in tropical forests. Also, several new regulations and institutional innovations at the international level (the Kyoto Protocol and its successor the Paris Agreement to curb carbon dioxide emissions) and nationally (the U.S. Clean Air Act) require companies to comply with strict environmental standards. A cap and trade mechanism enables participating companies to keep their compliance costs low by allowing them to pay another company to provide an environmental service on their behalf. In carbon markets, such a company also can claim credits by planting trees to sequester carbon, or by paying landowners elsewhere to sequester carbon on its behalf. Government regulations also stimulated the well-known case in which New York City invested in upstream communities to protect streams feeding its water supply. The alternative was

to comply with an order by the U.S. Environmental Protection Agency to build a new water filtration plant. The PES arrangement saved the city billions of dollars.

Demand for environmental services is also generated by companies that wish to maintain goodwill among consumers. British Petroleum , the British oil giant, pays for carbon sequestration and other conservation projects to maintain its green image. British Petroleum piloted an internal carbon dioxide trading scheme in September 1998 to help the company achieve its target of a 10% reduction in GHG emissions from 1990 levels by 2010 with its targeted emission reductions to 30 million tCO2. During 1998-2000 prices were between US$17-20/tCO2 . In 2000, 2.7 million tCO2 were traded at a significantly lower average price of US$7.60/tCO2 (BP Amoco, 2001). In 2017 BP financed low carbon projects that resulted in emissions reductions of more than 12 million tonnes of CO_2 equivalent in Algeria, UAE etc.

In fact, the role of science is crucial in defining what exactly the service users are buying. Protecting an upstream catchment could generate hydrological benefits in the form of reduced sediment flow and improvement in the groundwater table. A hydroelectric power company may be interested only in the former, while a municipal water utility may be willing to pay for the latter. Thus, depending on the value that an environmental service holds for a particular buyer, science can help in identifying appropriate land uses. A related point is that scientific advances increase the capability to trace environmental services, making the buyer of an environmental service more confident of getting what it pays for. Improvements in measuring and estimating carbon emissions and carbon sequestration have enhanced PES arrangements in these areas, and continued scientific advances could stimulate demand for other types of environmental services in the future.

The nature of an environmental service also determines the geographic extent of its demand. Watershed services will be bought primarily by downstream communities in the same basin, while carbon sequestration services can be bought by someone living far away from where they are produced. Demand for biodiversity and scenic beauty can extend potentially from the local level to global.

3.3 Service Providers or Sellers of Ecosystem Services

Potential service providers or sellers of ecosystem services are land owners and users who are in a position to influence the quality or quantity of an environmental service through their conservation practices. Service providers can consist of individual forest owners, farmers, community groups, government agencies, and even private companies that can ensure the availability of an environmental service in return for payments. In the example of Quito, upstream farmers in the two watersheds are the service providers. Similarly, government agencies, private forest owners, farmers and companies that raise plantations to generate carbon sequestration offsets are service providers for carbon investors. Some key issues related to service providers are:

• The new institutional and technical innovations (e.g introduction of environmental fee or carbon offset schemes) that stimulate service users to purchase environmental services also create the incentive for land users to supply them.

• The nature of an environmental service determines its potential sellers. When a biodiversity hot spot is to be protected, all land users in the vicinity need to be involved in a PES program. On the other hand, a given quantity of carbon sequestration could be supplied jointly by a number of land users far away from each other.

• Local topography influences the cause-effect relationship between specific land-use practices and the environmental services they generate. People who are willing and able to adopt these practices on a voluntary basis can assume the role of service providers. However, not all environmental relationships are known with certainty. Therefore, creation of demand for environmental services is also contingent on the development of new scientific knowledge.

• Often, environmental services are produced by a group of land users adopting common practices. In such cases, apart from payments from service users, collective action will be required at the community level. For instance, in Sukhomajri, India, the entire village community eliminated open grazing in the upper watershed to protect the irrigation ponds downstream. Adoption of new landuse practices by only a few users on only a part of the catchment would not have helped save the irrigation ponds from silting.

• Property rights and norms in an area determine who can participate and who cannot. A PES program that pays local people to sequester carbon over a long time usually leaves out people who do not have land titles, because they may not be able to make long-term promises about land use. A community based project such as Nhambita Community Carbon Project in Mozambique includes all members of a particular community but leaves out others who are not members.

3.4 Intermediaries

Intermediaries are individuals, groups, NGOs, governments, donors, or private companies that help service users and potential suppliers set up successful PES transactions. Intermediaries perform various roles, the common purpose being to reduce transaction costs. These roles range from linking the service users and suppliers to taking over the implementation of the PES program itself. In early stages of a PES program, buyers need credible information on potential suppliers, their location, and the kind of environmental services they can provide. Similarly, service providers are looking for potential buyers who are willing to pay for an environmental service. Intermediaries help to bring the parties together, conducting negotiations and finalizing mutually beneficial agreements. When an environmental service is provided by more than one supplier, intermediaries can help organize these multiple providers into groups. These intermediaries not only recover their MRV and other costs but also earn profit through sale of carbon credits. For example, the Iowa Farm Bureau aggregates carbon sequestration offsets from different farmers in the United States before selling them to the Chicago Climate Exchange (CCX). If these farmers were to sell carbon offsets on their own, the transaction costs associated with registering with the exchange and completing necessary formalities would consume most or all of their earnings. Instead, the Farm Bureau cuts down transaction costs by achieving economies of scale. Similarly, when multiple service users are involved, intermediaries can negotiate contracts with service providers on their behalf. This often happens for hydrological services when a municipal water company sets up watershed protection contracts on behalf of all the residents of a city.

Intermediaries can also buy environmental services from local land users before supplying them to end consumers. Costa Rica's FONAFIFO buys different environmental services as a bundle from local landowners before unbundling them and supplying them separately to a mix of national and international buyers. Similarly, the local subsidiaries of TIST in India, Uganda, and Tanzania buy carbon offsets from individual farmers and then supply these credits to international investors. As a result, local land users do not incur costs of looking for international buyers and of setting up contracts with them.

Intermediaries provide useful ancillary services such as third-party monitoring and verification of PES contracts. For instance, FORECON provides third-party verification of carbon stocks for land users in Michigan before they can sell carbon offsets on the Chicago Climate Exchange (CCX). This verification provides an assurance to CCX members that they are purchasing standardized carbon offsets, which can easily be traded with other kinds of emission offsets available on the exchange. International donors and multilateral organizations such as the Global Environment Facility also help to kick-start new PES programs by covering their setup costs such as project preparation cost, registration cost and implementation cost etc. USAID and the Nature Conservancy helped to establish FONAG in Ecuador by providing it with seed money and covering some of the administrative costs. Similarly, the World Bank has formed four carbon funds that promote different kinds of emission reduction projects globally.

Finally, intermediaries play an important role in forming new policy. Agencies like International Center for Research in Agroforesry (ICRAF)and CIFOR (Center for International Forestry Research) use their global mandate and experience from implementing various PES programs to frame laws that are effective in protecting the environment, apart from being pro-poor.

3.5 Ecosystem Services Shortlisted for PES Scheme Development at two pilot sites

Discussions have been held with the stakeholders for shortlisting of potential ecosystem services for development as PES schemes in workshops held at Karachi, Quetta and Balakot. These are enumerated below:

3.5.1 Potential Ecosystem Services for PES Scheme Development in Coastal Areas of Pakistan

For Sindh Province:

- Protection of Fish and Shrimps Spawning Sites
- Coastal Protection
- Carbon Storage and Sequestration Schemes
- Shoreline Stabilization
- Pollution Control
- Biodiversity Conservation and Promotion of Eco-tourism

For Balochistan Province:

- Protection of Fish and Shrimps Spawning Sites
- Coastal Protection
- Carbon Storage and Sequestration Schemes
- Biodiversity Conservation and Promotion of Eco-tourism
- Shoreline Stabilization

3.5.2 Potential Ecosystem Services for PES Scheme Development in Moist Temperate Forests in Kaghan Valley of Pakistan

- Carbon Sequestration
- Watershed Protection
- Promotion of Eco-tourism
- Biodiversity Conservation
- Land Stabilization and Prevention and Control of Land Slides
- Promotion of Non-Timber Forest Products (NTFPs)

3.6 Potential Ecosystem Services Providers and Buyers for the Coastal Mangroves Ecosystem Services

Ecosystem Service	Components of Service	Quantification of Ecosystem Service	Potential Ecosystem Service Provider	Potential Ecosystem Service Buyer	Requirements for PES Scheme Development including Valuation Method
Coastal Zone and Habitation Protection	Three potential ways of coastal zone and habitation protection have tentatively been identified: a. Protection of coastal infrastructure, land areas and habitation from tsunami and other waves; b. Protection of coast adjacent lands from damages and sea intrusion into agricultural lands;	Quantification of the three components of this ecosystem service will be done through the following: In(a) case mitigation cost estimates from arranging coast protection against tsunami without mangrove forests; In(b) case also mitigation cost estimates from arranging embankments by other means than with mangroves;	Sindh Forest Department; Port Qasim Authority, Balochistan Forest Department and Mangrove Forest Dependent Communities,	Sindh Provincial Disasters Management Authority; Karachi City Government; Korangi and Landhi Industrial Estates; Towns and Communities.	Mitigation costs; replacement cost or avoided cost methods.

	c. Pollution abatement with mangroves.	In (c) we need to assess the potential of mangroves for pollution abatement.			
Protection of Fish and Shrimp Spawning Sites	Fish spawning sites inside mangrove forest: Assessment of fish spawning intensity (a) inside mangrove areas and (b) without mangrove forests – impacts on fish yields at both locations.	Quantification: In terms of: (a) fish yields; (b) biodiversity: overall (fish species richness etc.).	Sindh Forest Department; Port Qasim Authority, Sindh Fisheries Department, Balochistan Forest Department, Balochistan Fisheries Departt. and Fishing Communities.	Fish buyers and government.	Substitution of goods, loss of earning, mitigation of costs, productivity-based valuation, and similar methods.
Biodiversity Conservation and Promotion of Eco-tourism	Mangrove tree species are unique in that they establish a bridge between terrestrial/land systems and marine systems. Important animal species are e.g. migratory birds; dolphin; turtle and some mammals.	Arranging of bird and other animal watching tours by boats. This will need various infrastructure and protection from humans and livestock.	Sindh Forest Department; Port Qasim Authority, Sindh Fisheries Department, Balochistan Forest Department, Balochistan Fisheries Departt. Tourism Department and Fishing Communities.	Eco-tourists, international organizations and government.	New livelihood incomes, and biodiversity product prices, some checking with travel cost method.
Carbon sequestration	Two kinds have some potential: The mangrove forests themselves (below and above ground carbon as well as soil carbon); In strips along coast line – tree plantations of various suitable species to enhance carbon sequestration and protect mangroves from exploitation.	Quantification: Some baseline for mangrove forest area in respect of above ground carbon (AGC) and below ground carbon (BGC) does already exist to compare with cumulating BGC and AGC; Select locations for planting long strips of suitable mangroves species e.g. Avicinea marina , which will sequester carbon	Sindh Forest Department; Port Qasim Authority, Balochistan Forest Ddepartment and Mangrove Forest Dependent Communities.	Carbon buying and trading companies in the compliance and voluntary markets; Green Climate Fund; Bilateral and Multilateral Donors; Governments; etc.	Carbon sequestration calculations for REDD+ scheme or similar.
Shoreline Stabilization	Need for buffer zone on land shore inside mangrove forests with agroforestry: There are now large saline waste lands along the shoreline stemming from the lack of fresh water as a consequence of upstream irrigation network; The shoreline wastelands can still	Quantification: Based on amount of rehabilitated wastelands into farmlands with some suitable agricultural crops that stand some salinity. Additionally, there will be crop yields and wood products. Furthermore, new livelihoods and	Sindh Forest Department; Port Qasim Authority and, Sindh Agriculture Department, Balochistan Forest Department, Mangrove Forest Dependent Communities.	Land users; government and product buyers.	Financial market price, avoidance of cost, cost replacement, shadow price, substitution of goods, loss of earning, mitigation of costs, productivity-based valuation, and similar methods.

	partly be planted with suitable trees e.gt Acacia nilotica that can rehabilitate substantial amounts of salinity in the soils while adding nitrogen.	protection buffer zone against mangrove encroachment can be quantified somehow.			

3.7 Potential Ecosystem Services Providers and Buyers for the Moist Temperate Forest Ecosystem Services

Ecosystem Service	Components of Service	Quantification of Ecosystem Service	Potential Ecosystem Service Provider	Potential Ecosystem Service Buyer	Requirements for PES Scheme Development including Valuation Method
Watershed Protection	Three potential ways of watershed protection have tentatively been identified: a. Protection of riparian and downstream infrastructure, land areas and habitation from flood damages and other water eroding actions; b. Protection of adjacent agricultural and range lands from damages and water related soil erosion; c. Prolonged life of Mangla Dam for hydro-power generation with vegetated watershed areas.	Quantification of the three components of this ecosystem service will be done through the following: In(a) case mitigation cost estimates from arranging flood protection against flood damages without forests; In(b) case also mitigation cost estimates from arranging flood protection by other flood protection means than with bio-engineering measures; In (c) we need to assess the potential of vegetated watersheds for reducing sediment load into Mangla Dam and other reservoirs on River Kunhar and Jhelum.	KP Forest Department; Guzara Forest Owners; Other Forest Owners and Forest Using Communities.	KP Provincial Disasters Management Authority; Mangla Dam and WAPDA; Towns and Communities, Hydropower companies	Mitigation costs; replacement cost or avoided cost methods.
Promotion of Non-timber Forest Products (NTFPs) e.g. medicinal plants, honey, resin, wild nuts	NTFPs sites inside moist temperate forests: Assessment of NTFPs production intensity (a) inside moist temperate forest areas and (b) without forests – impacts on	Quantification: In terms of: (a) NTFPs yields; (b) biodiversity: overall (species and products richness etc.).	KP Forest Department; Guzara Forest Owners; Other Forest Owners and Forest Using Communities.	NTFPs buyers and various pharmaceutical companies.	Earnings from NTFPs, substitution of goods for NTFPs, loss of earning, mitigation of costs, productivity-based valuation, and similar methods.

	NTFPs yields at both locations.				
Biodiversity Conservation and Promotion of Eco-tourism	Moist temperate forest ecosystem; Saiful Muluk Lake, Lulusar Lake, Dodhiput Llake, Aanso Lake, Mahnoor valley; Landscape and pleasant weather in summer are unique in that they provide a relaxing visitation site for many tourists from within Pakistan as well as abroad. Important animal species are e.g. leopards; black bears; monkeys; pheasants; trout fish species and some other mammals and birds species.	Arranging of Saiful Muluk lake tours; bird and other landscape and wildlife watching tours. This will need various infrastructure and protection from humans and livestock.	KP Forest Department; Guzara Forest Owners; Other Forest Owners and Forest Using Communities.	Tourists, Hotel Industry, international organizations and government.	New livelihood incomes, and prices for biodiversity products, some checking with travel cost method.
Carbon sequestration	Two kinds have some potential: The moist temperate forests themselves (below and above ground carbon as well as soil carbon); Tree plantations of various suitable species to enhance carbon sequestration and protect moist temperate forests from exploitation.	Quantification: Some baseline for moist temperate forest area in respect of above ground carbon (AGC) and below ground carbon (BGC) does already exist to compare with cumulating BGC and AGC; Select locations for planting of suitable species which will sequester carbon and remove pressure on existing forest resources.	KP Forest Department; Guzara Forest Owners; Other Forest Owners and Forest Using Communities.	Carbon buying and trading companies in the compliance and voluntary markets; Green Climate Fund; Bilateral and Multilateral Donors; Governments; etc.	Carbon sequestration calculations for REDD+ scheme or similar.
Land Stabilization and Prevention of Land Slides	Need for land stabilization and prevention of land slides to protect highway, population and property with various bio-engineering and engineering measures. There are now large areas along the highway that are prone to landslides which need stabilization	Quantification: Based on amount of damages caused by bad lands rehabilitated with some suitable land stabilization and landslides control measures. Additionally, there will be savings from highways clearing from debris coming as a result of landslides onto the highway	KP Forest Department; Guzara Forest Owners; Other Forest Owners and Forest Using Communities.	Land users, government and product buyers.	Avoidance of cost, highway clearance cost from debris clearance, and similar valuation methods.

	with different landslides control measures.	and safety for human and property due to prevention of accidents due to blocked highway and slippery conditions created by the landslides.			

3.8 PES Contractual Arrangements Between Buyers and Sellers of Ecosystem Services

3.8.1 Issues in PES Contracting

Major issues that need to be addressed while entering into contractual arrangements between the providers of Ecosystem Services and buyers of those services *inter alia* include the following:

- Type of Agreement
    - Purchase Agreement: For carbon and biodiversity offsets
    - Service Agreement: For watershed services provision
- Terms Used in the Agreement
- Finding and Agreeing on the Right Level of Formality and Complexity
- Key Elements of PES Agreements
    - Definition of Parties
    - Definition of Ecosystem Services
    - Project Boundaries Establishment
    - Establishment of Baseline
    - Establishment of Monitoring System
    - Rights and Obligations of Parties
    - Project Duration
    - Prices for different Ecosystem Services
    - Price Changes related Provisions
    - Payments Amount
    - Payments Frequency and Schedule
    - Payments Duration
    - Payments Mode

- Risks and Risks Distribution between Parties
- Conflicts Resolution Mechanisms
- Non-Compliance related Provisions
- Force Majeure
- Provisions regarding Termination of Agreement
- Other Substantive Provisions
- Other Procedural and Miscellaneous Provisions

- Negotiating to get the Best Deals
- Special Considerations for PES Contracting
- Benefit Sharing Mechanism
- Costs involved (e.g opportunity cost, implementation cost)

3.8.2 Special Considerations

There are a number of special considerations for PES contracting, which can pose potential challenges. These will have to be kept in mind while designing PES contracts.

Consideration	Potential Challenges
Multiple seller, community sellers	Coordination, benefits distribution, project governance
Monitoring	Balancing cost vs. need for accurate measurements and monitoring
Verification	Selecting the standard, body, time and cost
Long-term Obligations	Unforeseen ecosystem disruptions, sellers' successors
Consequences of default	Small-scale seller inability to pay damages, buy replacement credits, etc.
Role of Intermediaries	Both governments and communities are at time averse to the role of intermediaries which may pose problems for PES schemes development
Disputes over Tenure	Disputes over tenure may arise at later stages of the agreement
Long duration of PES Agreements	PES agreements, particularly those for carbon credits tend to be of longer duration
Opportunity and Other Costs	Opportunity, transactions, validation, verification and implementation costs be too high and thus affect the financial viability of PES scheme
Diverse Costs and Risks Allocation	There are diverse costs and risks associated with PES agreements which need to be allocated equitably
Lack of existing Policies, Legal and Institutional Framework	Existing policies, laws and institutional frameworks lack provisions with regard to PES and ecosystem services

Lack of Awareness	There is an over-all lack of awareness about ecosystem services and PES
Lack of Capacity and Research	Capacity in all parties to the PES agreement tends to be low. Research on different aspects of PES is also low.

CHAPTER-4

TRAINING NEEDS ASSESSMENT AND TRAINING PLAN FOR CAPACITY BUILDING

4.1 Introduction

As per agreement executed between the Ministry of Climate Change/The National REDD+ Office and Pakistan Forest Institute, the later has to prepare the following manuals for awareness raising and capacity building of local communities:

- What is REDD+? A Guide for Local Communities.
- Risks and Benefits of REDD+.
- Climate Change and the Role of Forests – A Community Guide.
- A community guide for REDD+ PES monitoring.
- A Manual to measure forest carbon stock.

4.2 Training Needs Assessment of Local Communities

Training Needs of the local communities were assessed in the different workshops held in Karachi (for Sindh Province), in Quetta (for Balochistan Province) and in Balakot, Mansehra (for KP Province). Based on these consultative workshops, training needs of communities fall into the following categories:

- PES and REDD+ Related Conceptual Clarities
- PES and REDD+ Related Technical Aspects
- PES and REDD+ Related Community Involvement in Baseline Establishment
- PES and REDD+ Related Community Involvement in Monitoring, Measurement and Reporting
- PES and REDD+ Related UNFCCC and Other Donors Social and Environmental Safeguards
- PES and REDD+ Risks and Benefits and Benefits Distribution System
- PES and REDD+ Related Marketing and Contractual Agreements

4.3 Training Needs Assessment of Forest Departments

During the consultative workshops, training needs of Forest Departments and other stakeholders were also assessed. It is has to be noted that the level of training material for the professional staff will be of conceptual and advanced nature though, while those for para-professional staff will be of operational and field level. The following areas need special consideration for capacity building,

- PES and REDD+ Related Conceptual Clarities
- PES and REDD+ Related Technical Aspects
- PES and REDD+ Related Baseline Establishment as per standard methodologies
- PES and REDD+ Related Community Involvement in Monitoring, Measurement and Reporting as per standard methodologies
- PES and REDD+ Related UNFCCC and Other Donors Social and Environmental Safeguards addressing, respecting and reporting on
- PES and REDD+ Incentives Allocation and Benefits Distribution System development and implementation
- PES and REDD+ Related Marketing and Contractual Agreements development, execution and monitoring
- International Requirements for Implementation of PES Programs
- PES and REDD+ Related Policies Aspects
- PES and REDD+ Related Legal Aspects
- PES and REDD+ Related Institutional Aspects
- International Research and Experiences about PES Programs Design and Implementation

4.4 Training Needs Assessment of Other Departments and Stakeholders

Training Needs of other concerned departments were also assessed. Their training needs mainly relate to their support to local communities and Forest Departments in implementing PES provisions that related to their departments and sectors. These are listed below:

Department/Agency	Role in PES Aspect
Wildlife	Biodiversity Conservation and Eco-tourism development
Tourism	Eco-tourism development
Environment and EPA	Environmental Protection and Prevention of Pollution
Disaster Management Authorities	Landslides Prevention and Control; Coastal and Communities Protection
WAPDA	Watershed Protection
Fisheries	Fish and Shrimps PES program implementation
Port and Coastal Authorities	Coastal Protection and Pollution Prevention into the Sea

Industrial Estates	Pollution Prevention into the Rivers and Sea
City Governments	Pollution Prevention into the Sea and Rivers
Agriculture	Agricultural Land Development
Livestock	Livestock Grazing System Development for grazing in Forest Areas
Pharmaceutical Companies	Non-Timber Forest Products PES program implementation
Energy Companies	Forest Carbon Credits Sale
Utility Companies	Forest Carbon Credits and Water Services Sale

4.5 Training Plan for Capacity Building of Local Communities and Para-professional staff of Forest Departments, Other Departments (Wildlife, Fisheries, Tourism, Agriculture, Livestock, etc.) and Stakeholders

No	Module and Topic	Sub-Topics/Goal and Aim/ Learning Objectives	Target Participants	Method and Medium of Instruction	Potential Resource Persons/ Institutions	Proposed Time or Duration
A.	**Introductory and Basic Concepts of Ecosystem Services and Payments for Ecosystem Services**					
1.	Forest Ecosystem Services (Basic Topics)	– Provisioning Services – Regulating Services – Supporting Services – Cultural and Recreational Services – Drivers of Deforestation and Forest Degradation leading to deterioration of Forest Ecosystem Services	Local Communities Forest Guards and Foresters Para-professional staff of Wildlife, Fisheries, Agriculture, Livestock and Other relevant government departments	Lectures and Presenta-tions. Group work and Plenary Discussions Case Studies Medium of Instruction will be Urdu	PFI Provincial Forest Academies and Forest Schools	1 day (6-8 hrs)
2.	Ecosystem Service Identification, Quantification and Valuation (Basic Topics)	– Identification of Ecosystem Services – Quantification of Ecosystem Services – Valuation Methods – Valuation of Ecosystem Services	Local Communities Forest Guards and Foresters Para-professional staff of Wildlife, Fisheries, Agriculture, Livestock and Other relevant government departments	Lectures and Presenta-tions. Group work and Plenary Discussions Case Studies Medium of Instruction will be Urdu	PFI Provincial Forest Academies and Forest Schools	1 day (6-8 hrs)
3.	Payments for Ecosystem Services (PES)-Basic Topics	– Definition and Concept of PES – Objectives of PES – Appropriateness of PES as a Policy Approach – Types of PES and Funding Source – PES Design – Payment Details (Payment Amount, Payment Mode and Timing, Payment Differentiation, Contract Length, Payment Duration, etc.)	Local Communities Forest Guards and Foresters Para-professional staff of Wildlife, Fisheries, Agriculture,	Lectures and Presenta-tions. Group work and Plenary Discussions Case Studies	PFI Provincial Forest Academies and Forest Schools	1 day (6-8 hrs)

		– PES Conditionalities (Degree of Conditionality, Activity Based PES vs. Results Based PES, Unit of Responsibility and Control, Additionality, Leakage and Permanence, etc.) – Sites Selection for PES including criteria for site selection – Bundling of PES schemes – Advanced Issues in PES Design (Spatial Coordination, Paying Individuals or Groups, etc.) – Risks in PES – Avoiding Risks and Negative Impacts of PES on Poor – Training and Capacity Building Needs for Designing and Implementing PES schemes – Designing and Implementing a Training and Capacity Building Program for PES schemes	Livestock and Other relevant government departments	Medium of Instruction will be Urdu		
4.	Climate Change and the Role of Forests in Climate Change Mitigation and Adaptation-Basic Topics	– UN Framework Convention on Climate Change (UNFCCC) and Intergovernmental Panel on Climate Change (IPCC) – Paris Agreement – Major sources of Global GHGs – International response and Pakistan INDCs and country obligations – REDD+ and Designing and Implementing a REDD+ PES scheme – Green Climate Fund (GCF) and Ecosystem Based Adaptation Fund – Training and Capacity Building Needs for Designing and Implementing a REDD+ PES scheme – Designing and Implementing a Training and Capacity Building Program for REDD+ PES scheme	Local Communities Forest Guards and Foresters Para-professional staff of Wildlife, Fisheries, Agriculture, Livestock and Other relevant government departments	Lectures and Presenta-tions. Group work and Plenary Discussions Case Studies Medium of Instruction will be Urdu	PFI Provincial Forest Academies and Forest Schools	1 day (6-8 hrs)
5.	Manual for Measuring Forest Carbon Stocks (Basic Topics)	– Introduction – Inventory Planning – Field Measurements – Data Processing and Analysis – Quality Assurance and Quality Control	Local Communities Forest Guards and Foresters Para-professional staff of Wildlife, Fisheries, Agriculture, Livestock and Other relevant government departments	Lectures and Presenta-tions. Group work and Plenary Discussions Case Studies Medium of Instruction will be Urdu	PFI Provincial Forest Academies and Forest Schools	1 day (6-8 hrs)
6.	REDD+ and PES Community Monitoring (Basic Topics)	– Introduction – Requirements for Establishing a REDD+ and PES Projects – Guidance on Establishing Baselines – Monitoring and Methodological Guidance on Monitoring – Field Measurements and Standard Operating Procedures for Field Measurements – Data Analysis and Processing – Data Reporting – Integrating with Provincial and National Monitoring	Local Communities Forest Guards and Foresters Para-professional staff of Wildlife, Fisheries, Agriculture, Livestock and Other relevant government departments	Lectures and Presenta-tions. Group work and Plenary Discussions Case Studies Medium of Instruction will be Urdu	PFI Provincial Forest Academies and Forest Schools	1 day (6-8 hrs)

7.	Forests and Biodiversity Conservation (Basic Topics)	– UN Convention on Biodiversity (CBD) – Importance of biodiversity and threats to biodiversity – National obligations of CBD Aichi biodiversity targets, – Global Environment Facility (GEF) for CBD implementation – Designing and Implementing a Biodiversity PES scheme – Training and Capacity Building Needs for Designing and Implementing a Biodiversity PES scheme – Designing and Implementing a Training and Capacity Building Program for the PES scheme	Local Communities Forest Guards and Foresters Para-professional staff of Wildlife, Fisheries, Agriculture, Livestock and Other relevant government departments	Lecture and Presenta-tion. Group work and Plenary Discussions Case Studies Medium of Instruction will be Urdu	PFI/Forest and Wildlife Departments/ IUCN/ WWF/ SDPI/ PMNH/ LEAD	1 day (6-8 hrs)
8.	Forests and Watershed Management (Basic Topics)	– Role of forests in water yield and water quality regulation – Revised Universal Soil Loss Equation (RUSLE) – Role of Vegetation Cover Management Variable in RUSLE – Designing and Implementing a Watershed PES scheme – Training and Capacity Building Needs for Designing and Implementing a Watershed PES scheme – Designing and Implementing a Training and Capacity Building Program for the PES scheme	Local Communities Forest Guards and Foresters Para-professional staff of Wildlife, Fisheries, Agriculture, Livestock and Other relevant government departments	Lecture and Presenta-tion. Group work and Plenary Discussions Case Studies Medium of Instruction will be Urdu	PFI	1 day (6-8 hrs)
9.	Nature Based Eco-tourism (Basic Topics)	– Definition and Concept of Nature Based Ecotourism – Key Eco-tourism Resources – Principles of Eco-tourism – Benefits of Eco-tourism – Products for Eco-tourism – Building Institutional Framework for Eco-tourism – Designing an Ecotourism PES scheme – Avoiding Negative Impacts of Eco-tourism on the Landscape and Ecosystem Services – Role of Private Sector in Nature Based Ecotourism – Training and Capacity Building Needs for Designing and Implementing an Ecotourism Based PES scheme – Designing and Implementing a Training and Capacity Building Program	Local Communities Forest Guards and Foresters Para-professional staff of Wildlife, Fisheries, Agriculture, Livestock and Other relevant government departments	Lecture and Presenta-tion. Group work and Plenary Discussions Case Studies Medium of Instruction will be Urdu	PFI/Forest and Wildlife Departments/ IUCN/ WWF/ Tourism Departments	1 day (6-8 hrs)
10.	Forests and Non-Timber Forest Products (NTFPs)-Basic Topics	– Definition and Concept of NTFPs – Key NTFPs Resources – Principles and Criteria for Sustainable Collection of NTFPs – Benefits of Sustainable NTFPs Collection – Value Chain and Value Chain Promotion in NTFPs – Building Institutional Framework for NTFPs PES – Designing a NTFPs PES scheme – Avoiding Negative Impacts of NTFPs Collection on Biodiversity, Landscape and Ecosystem Services – Role of Private Sector in NTFPs PES – Training and Capacity Building Needs for Designing and Implementing a NTFPs Based PES scheme	Local Communities NTFPs Dealers and Traders Forest Guards and Foresters Para-professional staff of Wildlife, Fisheries, Agriculture, Livestock and Other relevant government departments	Lecture and Presenta-tion. Group work and Plenary Discussions Case Studies Medium of Instruction will be Urdu	PFI/Forest and Wildlife Departments/ IUCN/ WWF/ Tourism Departments	1 day (6-8 hrs)

		– Designing and Implementing a Training and Capacity Building Program				

Pakistan Forest Institute (PFI) will develop training modules and training material for these courses. PFI will also train master trainers amongst the para-professional staff of the following departments and stakeholders groups. These master trainers will then implement the training programs on continuous basis in their respective departments and communities.

- Forest Department: Para-professional staff
- Wildlife Department: Para-professional staff
- Fisheries Department: Para-professional staff
- Tourism Department: Para-professional staff
- Agriculture Department: Para-professional staff
- Livestock Department: Para-professional staff
- Local Communities

4.6 Training Plan for Capacity Building of Professionals of Forest and Other Departments

No	Module and Topic	Sub-Topics/Goal and Aim/ Learning Objectives	Target Participants	Method and Medium of Instruction	Potential Resource Persons/ Institutions	Proposed Time or Duration
A.	**Introductory and Basic Concepts of Ecosystem Services and Payments for Ecosystem Services**					
1.	Forest Ecosystem Services- Intermediate and Advanced Topics	– Provisioning Services – Regulating Services – Supporting Services – Cultural and Recreational Services – Drivers of Deforestation and Forest Degradation leading to deterioration of Forest Ecosystem Services	Professional staff of Forest, Wildlife, Fisheries, Agriculture, Livestock and Other relevant government departments	Lectures and Presenta-tions. Group work and Plenary Discussions Case Studies Medium of Instruction will be English	PFI Provincial Forest Academies and HRD Directorates	1 day (6-8 hrs)
2.	Ecosystem Service Identification, Quantification and Valuation- Intermediate and Advanced Topics	– Identification of Ecosystem Services – Quantification of Ecosystem Services – Valuation Methods – Valuation of Ecosystem Services	Professional staff of Forest, Wildlife, Fisheries, Agriculture, Livestock and Other relevant government departments	Lectures and Presenta-tions. Group work and Plenary Discussions Case Studies	PFI Provincial Forest Academies and HRD Directorates	1 day (6-8 hrs)

				Medium of Instruction will be English		
3.	Payments for Ecosystem Services (PES)- Intermediate and Advanced Topics	– Definition and Concept of PES – Objectives of PES – Appropriateness of PES as a Policy Approach – Types of PES and Funding Source – PES Design – Payment Details (Payment Amount, Payment Mode and Timing, Payment Differentiation, Contract Length, Payment Duration, etc.) – PES Conditionalities (Degree of Conditionality, Activity Based PES vs. Results Based PES, Unit of Responsibility and Control, Additionality, Leakage and Permanence, etc.) – Sites Selection for PES including criteria for site selection – Bundling of PES schemes – Advanced Issues in PES Design (Spatial Coordination, Paying Individuals or Groups, etc.) – Risks in PES – Avoiding Risks and Negative Impacts of PES on Poor – Training and Capacity Building Needs for Designing and Implementing PES schemes – Designing and Implementing a Training and Capacity Building Program for PES schemes	Professional staff of Forest, Wildlife, Fisheries, Agriculture, Livestock and Other relevant government departments	Lectures and Presenta-tions. Group work and Plenary Discussions Case Studies Medium of Instruction will be English	PFI Provincial Forest Academies and HRD Directorates	1 day (6-8 hrs)
4.	Climate Change and the Role of Forests in Climate Change Mitigation and Adaptation- Intermediate and Advance Topics	– UN Framework Convention on Climate Change (UNFCCC) and Intergovernmental Panel on Climate Change (IPCC) – Paris Agreement – Major sources of Global GHGs – International response and Pakistan INDCs and country obligations – REDD+ and Designing and Implementing a REDD+ PES scheme – Green Climate Fund (GCF) and Ecosystem Based Adaptation Fund – Training and Capacity Building Needs for Designing and Implementing a REDD+ PES scheme – Designing and Implementing a Training and Capacity Building Program for REDD+ PES scheme	Professional staff of Forest, Wildlife, Fisheries, Agriculture, Livestock and Other relevant government departments	Lectures and Presenta-tions. Group work and Plenary Discussions Case Studies Medium of Instruction will be English	PFI Provincial Forest Academies and HRD Directorates	1 day (6-8 hrs)
5.	REDD+ Mechanism- Intermediate and Advanced Topics	– Preparing for REDD+: REDD+ Strategy and Action Plan; NFMS and MRV; FREL/FRL; and Cancun Safeguards – Preparation of REDD+ Projects-Technical Considerations – REDD+ Financing Mechanisms – REDD+ Institutional Mechanisms – Legal Preparedness for REDD+ PES – Data Needs for REDD+ PES – Lessons from REDD+ in the World	Professional staff of Forest, Wildlife, Fisheries, Agriculture, Livestock and Other relevant government departments	Lectures and Presenta-tions. Group work and Plenary Discussions Case Studies Medium of Instruction will be English	PFI Provincial Forest Academies and HRD Directorates	1 day (6-8 hrs)

6.	Risks and Benefits of REDD+- Intermediate and Advanced Topics	– Potential Risks and Benefits of REDD+ – Environmental Benefits of REDD+ – Social Benefits of REDD+ – Economic Benefits of REDD+ – Risks of REDD+ – International Experiences and Lessons for Risks and Benefits	Professional staff of Forest, Wildlife, Fisheries, Agriculture, Livestock and Other relevant government departments	Lectures and Presenta-tions. Group work and Plenary Discussions Case Studies Medium of Instruction will be English	PFI Provincial Forest Academies and HRD Directorates	1 day (6-8 hrs)
7.	Forest Carbon Project Development Methodology (ies)	– Standards – Voluntary Market Standards-VCS – Compliance Market Standards – Gold Standards – Comparison of Standards – Methodologies – Baseline Establishment Methodologies – Monitoring Methodologies	Professional staff of Forest, Wildlife, Fisheries, Agriculture, Livestock and Other relevant government departments	Lectures and Presenta-tions. Group work and Plenary Discussions Case Studies Medium of Instruction will be English	PFI Provincial Forest Academies and HRD Directorates	1 day (6-8 hrs)
8.	Manual for Measuring Forest Carbon Stocks- Intermediate and Advanced Topics	– Introduction – Inventory Planning – Field Measurements – Data Processing and Analysis – Quality Assurance and Quality Control	Professional staff of Forest, Wildlife, Fisheries, Agriculture, Livestock and Other relevant government departments	Lectures and Presenta-tions. Group work and Plenary Discussions Case Studies Medium of Instruction will be English	PFI Provincial Forest Academies and HRD Directorates	1 day (6-8 hrs)
9.	Biodiversity Conservation and Biodiversity PES Project Development Methodology	– UN Convention on Biodiversity (CBD) – Importance of biodiversity and threats to biodiversity – National obligations of CBD Aichi biodiversity targets, – Global Environment Facility (GEF) for CBD implementation – Designing and Implementing a Biodiversity PES scheme – Biodiversity PES Project Development Methodology – Training and Capacity Building Needs for Designing and Implementing a Biodiversity PES scheme – Designing and Implementing a Training and Capacity Building Program for the PES scheme	Professional staff of Forest, Wildlife, Fisheries, Agriculture, Livestock and Other relevant government departments	Lectures and Presenta-tions. Group work and Plenary Discussions Case Studies Medium of Instruction will be English	PFI Provincial Forest Academies and HRD Directorates	1 day (6-8 hrs)
10.	Forests and Watershed Management and Watershed PES Project Development Methodology	– Role of forests in water yield and water quality regulation – Revised Universal Soil Loss Equation (RUSLE) – Role of Vegetation Cover Management Variable in RUSLE – Designing and Implementing a Watershed PES scheme	Professional staff of Forest, Wildlife, Fisheries, Agriculture, Livestock and Other relevant government departments	Lectures and Presenta-tions. Group work and Plenary Discussions Case Studies	PFI Provincial Forest Academies and HRD Directorates	1 day (6-8 hrs)

		– Watershed PES Project Development Methodology – Training and Capacity Building Needs for Designing and Implementing a Watershed PES scheme – Designing and Implementing a Training and Capacity Building Program for the PES scheme		Medium of Instruction will be English		
11.	REDD+ and PES Monitoring-Intermediate and Advanced Topics	– Introduction – Requirements for Establishing a REDD+ and PES Projects – Guidance on Establishing Baselines – Monitoring and Methodological Guidance on Monitoring – Field Measurements and Standard Operating Procedures for Field Measurements – Data Analysis and Processing – Data Reporting – Integrating with Provincial and National Monitoring	Professional staff of Forest, Wildlife, Fisheries, Agriculture, Livestock and Other relevant government departments	Lectures and Presenta-tions. Group work and Plenary Discussions Case Studies Medium of Instruction will be English	PFI Provincial Forest Academies and HRD Directorates	1 day (6-8 hrs)
12.	Nature Based Eco-tourism	– Definition and Concept of Nature Based Ecotourism – Designing an Ecotourism PES scheme – Avoiding Negative Impacts of Eco-tourism on the Landscape and Ecosystem Services – Role of Private Sector in Nature Based Ecotourism – Training and Capacity Building Needs for Designing and Implementing an Ecotourism Based PES scheme – Designing and Implementing a Training and Capacity Building Program	Professional staff of Forest, Wildlife, Fisheries, Agriculture, Livestock and Other relevant government departments	Lectures and Presenta-tions. Group work and Plenary Discussions Case Studies Medium of Instruction will be English	PFI Provincial Forest Academies and HRD Directorates	1 day (6-8 hrs)
13.	Require-ments for Realizing PES Schemes	– Threshold Conditions for PES (Addressing UNFCCC Cancun and World Bank FCPF Social and Environmental Safeguards; Instituting Appropriate Institutional Mechanisms; Identifiable Supply and Demand; Governance Factors; Tenure Rights in Land; Rights in Ecosystem Services; and Discernable Regulatory Regimes for PES) – Other Essential Conditions for PES (Ecosystem Services Baseline or Forest Reference Emissions Level/Forest Reference Level; National/Sub-national Ecosystem and Forest Monitoring System; Measurement, Monitoring, Reporting and Verification of Ecosystem and PES outcomes; Registries; Stakeholders Participation; and Technical Support) – Conditions for Streamlining PES (Maintaining a well-functioning PES and REDD+ Infrastructure; Facilitating Investments into PES and REDD+; Facilitating Incentives; Supportive Taxes/Tariffs; and PES and REDD+ Risks Mitigation)	Professional staff of Forest, Wildlife, Fisheries, Agriculture, Livestock and Other relevant government departments	Lectures and Presenta-tions. Group work and Plenary Discussions Case Studies Medium of Instruction will be English	PFI Provincial Forest Academies and HRD Directorates	1 day (6-8 hrs)
14.	Legal, Policy and Institutional Reforms in support of PES Program	– Existing Policies and their Gaps – Existing Laws and their Gaps – Existing Institutional Arrangements and their Weaknesses – Measures for Dealing with Policy Gaps	Professional staff of Forest, Wildlife, Fisheries, Agriculture, Livestock and	Lectures and Presenta-tions.	PFI Provincial Forest Academies and	1 day (6-8 hrs)

		– Measures for Dealing with Legal Gaps – Measures for Dealing with Institutional Weaknesses.	Other relevant government departments	Group work and Plenary Discussions Case Studies Medium of Instruction will be English	HRD Directorates	
15.	International Research and Experiences about PES schemes	– PES Projects related International Research and Experiences – Policy Reforms – Legal Reforms – Institutional Reforms – Designing of PES Schemes – Engagement of Multiple Stakeholders – Participation Agreements – Equity and Social Objectives – Synergies and Tradeoffs between Multiple Benefits – MRV – Sustainable Finance for PES – Grievance and Redress Mechanisms – Other	Professional staff of Forest, Wildlife, Fisheries, Agriculture, Livestock and Other relevant government departments	Lectures and Presenta-tions. Group work and Plenary Discussions Case Studies Medium of Instruction will be English	PFI Provincial Forest Academies and HRD Directorates	1 day (6-8 hrs)

Pakistan Forest Institute (PFI) will develop training modules and training material for these courses. PFI will also implement and train master trainers amongst the professional staff of the following departments and stakeholders groups. These master trainers will then implement the training programs on continuous basis in their respective departments through their HRD Directorates.

- Forest Department: Professional staff for all aspects of PES Program
- Wildlife Department: Professional staff for biodiversity conservation and eco-tourism
- Fisheries Department: Professional staff for fishes, shrimps and other marine life PES
- Tourism Department: Professional staff for eco-tourism PES
- Agriculture Department: Professional staff for agricultural productivity enhancement
- Livestock Department: Professional staff for grazing management
- Disasters Management Authorities: Professional staff for Communities Protection
- NHA-Professional staff for landslides prevention and control
- Coastal Authorities: Professional staff for coastal infrastructure protection
- Environmental Protection Agencies-Professional staff for environmental protection and Pollution control
- Universities-for PES related research

CHAPTER-5

DEVELOP AWARENESS RAISING/CAPACITY BUILDING MATERIAL (5 MANUALS)

Process has been started for development of awareness raising/capacity building manuals on the topics given below. The first three guides have been completed and are annexed with the current report. The last two manuals are under process and will be available for review within few days.

5.1 What is REDD+? A Community Guide

5.2 Risks and Benefits of REDD+

5.3 Climate Change and the Role of Forests- A Community Guide

5.4 REDD+ PES Monitoring-A Community Guide

5.5 A Manual to Measure Forest Carbon Stocks

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Annex-1

STAEMENT SHOWING THE LIST OF GUZARA ALONGWITH NAME OF MAJOR GUZARA OWNER IN KAGHAN FOREST DIVISION JABBA

Name of Forest Sub-Division/Range	Name of Guzara	Owner Name
	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

Garhi Habibullah Forest Range		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
		Sardar abdur Rasheed
	Batsangra GFC - 1 to 3 (589 Acres)	Sardar Mahwali
		Chaudary Khani Zaman
		Muhammad Irfan
		Sakhee Shah
	Tarrana Guzara C - 1 (58 Acres)	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
	Terreri 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
	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	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
Jared Forest Sub Division		Sartaj

	(9118 Acres)	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
		Niaz Muhammad Khan
		Azir-ur-Rehman
		Haji Gulab Khan

	Jared GFC - 1 to 8 (1301 Acres)	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
		Syed Farid Ahmad Shah
Balakot Forest Sub Division	Hungrai GFC - 1 to 4 (1024 Acres)	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
	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

Balakot Forest Sub Division		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**
	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
		Abdul Basit Khan
		Shad Muhammad Khan
		Ishtiaq Khan

Balakot Forest Sub Division	Jiggan GFC - 1 and 2 (455 Acres)	Ashfaq Khan
		Muhammad Haroon
		Babar Khan
		Muhammad Nawaz
	Mittikot GFC - 1 to 9 (1314 Acres)	Raza Muhammad Khan
		Muhammad Saleem Khan
		Liaqat Ali Khan
		Naseeb Alam Khan
		Qaisar Hayat Khan
		Muhammad Haroon Khan
		Muhammad Saeen
		Muqqadam
		Khanizaman
		Munir Khan
		Muhammad Farid Khan
	Bagir GFC - 1 to 15 (7155 Acres)	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
	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

Balakot Forest Sub Division		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 GFC 1 to 8 (3049 Acres)	1.Syed Muhammad Shah
	Rajwal GFC - 1 to 3 (3295 Acres)	2.Syed Salah-ud-Din Shah
	Doda GFC - 1 to 5 (996 Acres)	3.Syed Aziz Shah
	Pottendes GFC - 1 to 33 (4477 Acres)	4. Abdul Haq Shah
	Julgran GFC - 1 (52 Acres) Doda Kalas GFC – 1 (264 Acres)	5.Abdul Qadir Shah 6.Noor Muhammad Shah 7.Syed Bashir Shah
	Porr GFC- 1 (302 Acres)	8.Qamar Ali Shah
	Kinari GFC - 1 to 6 (1768 Acres)	9.Syed Tariq Shah

Kaghan Forest Sub Division	Bhimbal GFC - 1 to 4 (949 Acres)	10.Syed Muhammad Alam Shah
	Chitta Katha GFC – 1 (38 Acres)	11.Syed Humayun Shah
	Pludran GFC - 1 (124 Acres)	12.Shamas-ul-Haq Shah
	Doongi Seri GFC - 1 and 2 (764 Acres)	13.Gulab Shah
	Perthee GFC - 1,2 (524 Acres)	14.Syed Dilawar Shah
	Derseri GFC - 1 to 3 (739 Acres)	15.Abdul Jabbar Shah
	Battal GFC - 1 to 8 (1151 Acres)	16.Shah Abdul latif Shah
	Naran GFC - 1 to 8 (2277 Acres)	17.Amjad Hussain Shah
	Dhumduma GFC - 1 to 3 (1741 Acres)	18.Abdul Mahroof Shha
	Soach GFC - 1 to 7 (4509 Acres)	19.Syed Riaz Hussain Shah
	Batta Kundi GFC - 1 to 8 (6455 Acres)	20.Syed Waseem Shah
	Borawai GFC – 1 (1325 Acres)	21.Syed Masood Shah 22.Abdul Qadir Shah 23.Mian Ghualm Qasim
	Iarri GFC -1 (1453 Acres)	24.Mian Zia-ur-Rehman 25.Mian Manzoor Ahmad

Annex-II

ANALYSIS OF PAKISTAN NATIONAL WATER POLICY

Key Issues in the Water Sector of Pakistan

Pakistan is a semi-arid to arid country. Availability of fresh water resources is critical for the socio-economic development of its increasing population and environmental concerns emerging in the face of eminent climate change. Water resources management and development in Pakistan faces immense challenges for resolving many diverse problems. The most critical of these is a very high temporal and spatial variations of water availability. Nearly 81 % of river flows and 65% of precipitation occurs during the three monsoon months, while quality of groundwater largely varies with depth and location. Ever expanding water needs for the growing economy and the population for meeting its food and fiber requirements, and the advent of frequent floods and droughts, add to the complexity of water management. The sustainability of irrigated agriculture and its further expansion, is being threatened by a number of issues including the following:

- Growing need of water to meet requirements of rising population besides socioeconomic demands.
- Very high variations, both in terms of space and time, in the availability of water resources. Reduction in the availability of surface water, due to silting of dams.
- Lack of proper maintenance of the canal system leading to unsatisfactory service.
- Waterlogging and salinization of areas in various canal commands of Indus Basin System.

- Lack of commitment by various organizations on the need for provision of drainage network as a part and parcel of the irrigation network.
- Over exploitation of groundwater resources, thus, rendering large areas out of reach of poor farmers and exhaustion of groundwater aquifers.
- Pollution of aquifers due to lateral movement of saline water or upward movement of highly mineralized deep water.
- Lack of proper disposal of saline effluent.
- Contamination of river water due to disposal of industrial waste, household wastewater and field overflows contaminated with fertilizer and pesticides.
- Inadequate participation of consumers.
- Frequent floods and droughts.
- Lack of inter-provincial consensus on developmental strategy and mistrust between provinces on equitable water distribution.
- Proper pricing/valuation of water.
- Quality of water in all sub-sectors.

Objectives of Water Policy

Following are the stated objectives of the national water policy:

- Efficient management and conservation of existing water resources.
- Optimal development of potential water resources.
- Steps to minimize time and cost overruns in completion of water sector projects.
- Equitable water distribution in various areas and canal commands.
- Measures to reverse rapidly declining groundwater levels in low-recharge areas.
- Increased groundwater exploitation in high-recharge areas.
- Effective drainage interventions to maximize crop production.
- Improved flood control and protective measures.
- Steps to ensure acceptable and safe quality of water.
- Minimization of salt build-up and other environmental hazards in irrigated areas.
- Institutional reforms to make the managing organizations more dynamic and responsive.

Guiding Principles of Water Policy

- National water resource development and management should be undertaken in a holistic, determined and sustainable manner to meet national development goals and protect the environment.
- Planning, development and management of specific water resources should be decentralized to an appropriate level responding to basin boundaries.
- Delivery of specific water services should be delegated to autonomous and accountable public, private or cooperative agencies providing measured water services in a defined geographical area to their customers and/or members for an appropriate fee.
- Water use in society should be sustainable - with incentives, regulatory controls and public education promoting economic efficiency, conservation of water resources and protection of the environment - with a transparent policy framework.

- Shared water resources within and between nations should be allocated efficiently for the mutual benefit of all riparian users.
- Water sector activities should be participatory and consultative at each level, leading to commitment by stakeholders and action that is socially acceptable.
- Successful water sector reform requires a commitment to sustained capacity building, monitoring, evaluation, research and learning at all levels to respond effectively to changing needs at the national, basin, project, service entity and community level.

Strategies

- Prepare and adopt a national water policy and action agenda, based on a national water sector assessment
- Formation of a sector apex body and water law and strengthening of information and
- other institutions.
- Invest to manage the country's priority river basins, including development of physical infrastructure, institutions and capacity building.
- Increase the autonomy and accountability of service providers in the water supply
- and irrigation sectors.
- Develop incentives, regulations and awareness for sustainable water use.
- Manage the use of shared water resources and develop cooperation between and within countries.
- Enhance water information, consultation and partnerships.
- Invest in capacity building, monitoring and learning.

Major Thematic Areas of Water Policy

The water policy discusses and makes recommendations with respect to the following thematic areas:

- Integrated Planning and Development of Water Resources
- Irrigated Agriculture
- Municipal, Rural Water Supply and Sanitation
- Water for Industry
- Water for Hydropower
- Water Rights and Allocations
- Economic and Financial Management
- Groundwater
- Stakeholder Participation
- Flood Management
- Drought Management
- Drainage and Reclamation
- Water Quality
- Wetlands, Ecology and Recreation
- Information Management and Research
- Transboundary Water Sharing

- Institutional and Legal Aspects

Analysis of Institutional and Legal Aspects of Water Sector in Pakistan

Following are the main institutional and legal issues plaguing the water sector in Pakistan.

1. Weak Provincial Institutional Set-ups

Although, water is a provincial subject in Pakistan, the concerned provincial departments/agencies-Provincial Irrigation and Drainage Departments/Authorities-are weak and have not been adequately developed to shoulder their responsibilities pertaining to water sector issues. As a result, these provincial agencies do not have the requisite capacities to deliver on important responsibilities such as development of water resources and dealing with drainage and flood related matters in their respective provinces.

2. Inadequate Capacities of Water Wing in WAPDA at the federal level

The Water Wing of Federal Government has to perform a number of planning and coordination functions. These include planning, coordination and resolution of inter-provincial water issues through the Council of Common Interests. The Wing does not have the capacity and therefore has not been able to address some of the key issues pertaining to water development between different provinces.

3. Over-lapping Bodies and Gaps

There are certain organizations in the water sector, particularly at the federal level, which have over-lapping mandates and roles. For example, at the federal level there are three agencies which work on water sector issues. These include WAPDA, Indus River System Authority (IRSA) , Chief Engineering Advisor and Federal Flood Commission. There are not only duplications and over-laps but also gaps vis-à-vis mandates. These over-laps and gaps need to be rectified.

4. Weaknesses in Water Sector Laws

There are a host of laws that have a bearing on and are related to water sector in Pakistan at both the federal and provincial levels. Federal level laws for example include WAPDA Act 1958, Environmental Protection Act 1997, IRSA Act 1992, and different provisions of the Constitution of Pakistan under various articles on inter-provincial coordination and resolution of conflicts through the Council of Common Interests (CCI). Most of this legislation Is quite dated and requires proper review and revision in lights of those reviews.

Similarly, at the provincial level there are a number of laws. There is the Punjab Canal and Drainage Act of 1873, the Sindh Irrigation Act of 1879, and KP Canal and Drainage Act of 1873. In Balochistan there is an Ordinance 1980. These different provincial laws provide the main legal framework for the water sector. The Punjab Soil Reclamation Act, 1952 deals with the preparation and implementation of schemes concerned with the control of waterlogging and salinity. In KP there are a host of laws relevant to the sector. These include: KP River Protection Ordinance 2002, KP Irrigation and Drainage Authority Act 1997, KP Salinity Control and Reclamation of Land

Ordinance 1987, KP Rural Area Drinking Water Supply Scheme Act 1985, and KP Local Government Act, 2017.

For the promotion of Water Users Associations (WUA), Ordinances have been issued in the years 1981 and 1982 to provide legal cover for the formation and functioning of WUAs which have been largely restricted to the watercourse level.

The Provincial Water Accord, 1991 deals with apportionment of Indus River Waters between the provinces. The apportionment covers both the already developed water resources and also some provisions regarding future development and usages. IRSA Act, 1992 defines the institutional set up for distribution of surface waters between the provinces and the role of regulatory authority responsible for ensuring compliance with the Accord.

There are various provisions of these laws which overlap and also override each other in certain cases. This had to happen since each Act was separately drafted to cater for particular situations spread over more than a century.

Proposals for Improving Water Sector Performance in Pakistan

1. Institutional Development and Organizational Strengthening of Provincial Irrigation Institutions

To address the issue of weak institutional set-ups in the water sector at the provincial level, it is proposed that a proper management review of these provincial agencies is undertaken and their capacities are developed keeping in view their mandates.

2. Strengthening of the Water Wing of WAPDA at the Federal Level

Water will become an issue of life and death for Pakistan in the coming years. It is therefore proposed that the Water Wing of WAPDA be appropriately strengthened for coordinated planning, development and management of water and hydropower resources in the country.

3. Abolition of Over-lapping Bodies and Filling the Capacity Gaps

A management review of the mandates and roles of these various federal level bodies be undertaken alongside their capacities assessment. Based on these reviews proposals be developed for unification and consolidation of their roles and responsibilities so as to remove any duplicaton of efforts as well as bridge any capacity gaps.

4. Review, revision and reform of Water Sector Laws at the Federal and Provincial Laws

It is proposed that various provisions of the different water related Provincial Acts be appropriately studied, and then these different laws be revised and consolidated into one Provincial Water Act for that province. This revision and consolidation would remove the over-laps as well as bring to the present realities and requirements.

5. Development of an Action Plan to ensure implementation of certain key provisions of Water Policy, particularly those relating to Ecology, Wetlands and Recreational Uses of Water

An action plan needs to be developed to ensure timely and effective implementation of various provisions of Water Policy, particularly those related to ecology, wetlands and recreational uses of water. In particular, the implementation of the following provisions is of critical importance:

- Promotion of and greater use and institutionalization of the PES concept and Environmental Fiscal Reforms (EFRs) as policy tools for different natural resources conservation, including fresh waters, marine waters and their resources.
- Implementation of the National Wetland Management Plan to ensure that endangered habitats are registered, monitored and managed according to the overall needs of wetland species.
- Enforcement of the principle of "polluter pays" through strengthening of existing regulations for the protection of public health and environment.
- Promotion of proper land use, soil and water conservation and various other watershed management programs in various river basin areas in Pakistan.
- Minimization of negative environmental impacts in both downstream as well as upstream areas of various water storage reservoirs and other water storage, drainage and flood protection measures.
- Ensuring that sufficient fresh water is flowing through the rivers to the sea to maintain a sound environment for the conservation of the coastal ecosystems and for the fresh and brackish coastal fisheries. Environmental needs must be addressed while framing "release rules" from the major storage dams for hydropower and irrigation, to ensure sustainability of such areas as the Indus Delta.
- Promotion of the development of natural water bodies, where possible, for recreational uses.
- Ensuring that there is sufficient water of adequate quality for sustainable inland fisheries development.
- Reviewing the existing environmental legislation so as to bring them to serve the present environmental needs of the country and its constituent parts.
- Promotion and launching of program for raising public awareness and community education about environmental conservation, including water resources, mangrove forests and other wetland areas and coastal resources.