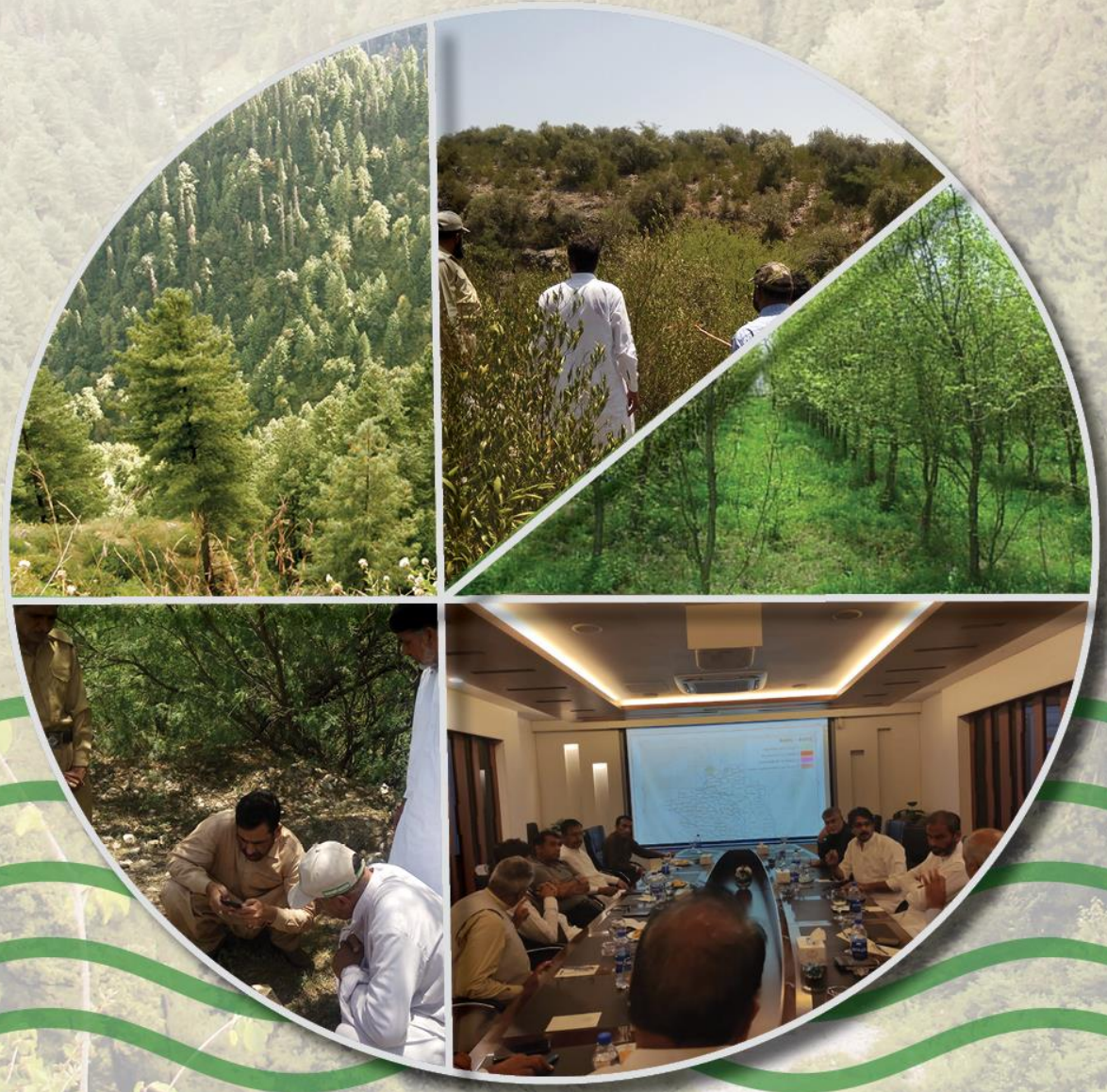
Provincial REDD+
ACTION PLAN
Punjab
2022-2031



REDD+ Pakistan

Prepared under the REDD+ Readiness Preparation Project for Pakistan financed by Forest Carbon Partnership Facility (FPCF), implemented by Federal Ministry of Climate Change (MoCC) through National REDD+ Office (NRO), Islamabad.

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ACRONYMS

ADB	Asia Development Bank
AFOLU	Agriculture, Forestry and Other Land Use
FAO	Food and Agriculture Organization of United Nations
FCPF	Forest Carbon Partnership Facility
FGD	Focus Group Discussion
FGRM	Feedback Grievances and Redressal Mechanism
FREL/ FRL	Forest Reference Emission Level/ Forest Reference Level
FSMP	Forestry Sector Master Plan
GB	Gilgit Baltistan
GGI	Green Growth Initiative
GHG	Green House Gases
GIS	Geographic Information System
GPS	Global Positioning System
IPCC	Intergovernmental Panel on Climate Change
KP	Khyber Pakhtunkhwa
LULUCF	Land Use, Land Use Change and Forestry
MoCC	Ministry of Climate Change
MRV	Measurement Reporting and Verification
NDC	Nationally Determined Contribution
NFI	National Forest Inventory
NFMS	National Forest Monitoring System
NGOs	Non-Governmental Organizations
NRO	National REDD+ Office
NRS	National REDD+ Strategy
OIGF	Office of the Inspector General of Forests
PES	Payment for Ecosystem Services
PFMP	Participatory Forest Management Plan
PRAP	Proposed Remedial Action Plan
PRMC	Provincial REDD+ Management and Coordination Committees
PRMU	Provincial REDD+ Management Unit
REDD+	Reducing Emissions from Deforestation and Forest Degradation; and the Role of Conservation, Sustainable Management of Forests and Enhancement of Forest Carbon Stocks in Developing Countries
R-PP	REDD+ Readiness Preparation Proposal
SESA	Strategic Environmental and Social Assessment
SFM	Sustainable Forest Management
SES	Social and Environmental Safeguards
SLMS	Satellite Land Monitoring System
TBTTP	Ten Billion Tree Tsunami Project
UN	United Nations
UNFCCC	United Nation's Framework Convention on Climate Change
WB	World Bank
WGs	Working Groups

SUMMARY

The Pakistan National REDD+ Strategy was approved in 2021. This Provincial REDD+ Action Plan (PRAP) has been developed to contribute to the strategy's objectives and sustainable management of the forest resources of Punjab.

Preparation of Punjab's PRAP took a multi-stakeholder participatory approach. The overarching purpose of the PRAP is to increase benefits from sustainably managed and enhanced forest resources for the people contributing to their livelihood and at the same time mitigating climate change. The specific objectives of this document are to (i) Outline actions in line with ground realities to address the prioritized drivers and barriers with context specific actions[1] and related budget (ii) Improve health of the forest ecosystems by reducing deforestation and forest degradation and enhancements of biomass and ultimately carbon (iii) Define effective implementation and monitoring of REDD+ actions to address the drivers (iv) Identify social and environmental risks associated with proposed actions and suggest risk mitigation (v) Propose a clear benefit sharing mechanism associated with implementation of REDD+ activities, and (vi) Identify areas for enabling policy, legal and institutional arrangements in favour of implementing PRAP.

The PRAP outlines actions that support investment on improving local livelihoods to address local drivers of deforestation and degradation in order to achieve sub national and national REDD+ and forest policy objectives. The PRAP identifies measures and interventions that will contribute to national and global goal of reducing emissions. The Punjab Forests, Wildlife and Fisheries Department as custodian of its forests advocates that REDD+ policies and measures are designed locally and with full involvement of local institutions and communities.

The total area of the Punjab is 205,344 km² (25% of total land cover of Pakistan) and out of this 3.1%[2] land is under forest cover. The forestry resources of Punjab are classified into five different categories viz. coniferous forest (9%), scrub forests / rangelands (41%), riverine forests (9%), irrigated plantations (27%) and rangelands (14%). Irrigated plantations form one of the most valuable forests in the province with species of commercial importance and short rotation firewood meeting 10% of the total firewood needs of the province[3].

The main drivers of deforestation prioritized by the stakeholders included (i) Large infrastructure development (roads, housing, urban expansion etc.) (ii) illegal encroachment of land for non-forestry purposes (iii) Surface mining. Three drivers of forest degradation were prioritized by the stakeholders (i) Illegal fuelwood / timber extraction (ii) prevalence of forest fires, and (iii) Water scarcity in dry and arid forest regions. These drivers were analysed by the stakeholders and several underlying causes were identified.

The PRAP proposes several actions to address underlying causes of deforestation and degradation. In addition, it aims achieving energy efficiency and promoting alternative sources of energy to address the main cause of degradation i.e., extraction of firewood for energy. The second highest priority is given to land use policy development and amendment of rules to ensure no harm to forest resources during large infrastructure and housing projects necessary for development of people. Mapping resources and effective implementation of regulation to curb conversion of land to other land uses are also identified in this PRAP. Additional efforts needed to improve forest resources include improving enabling policy environment for REDD+ implementation (participatory monitoring system, benefit sharing mechanism, forest law enforcement and implementation strengthened, capacity building of actors on forest monitoring system), introducing alternative incomes and

1 A set of interlinked activities that form a coherent actions for counteracting a driver of deforestation, forest degradation and/ or barriers to expansion of a forest carbon enhancement activity.
2 The Punjab Forest Policy 2019. https://pbit.punjab.gov.pk/system/files/Punjab%20Forest%20Policy%202019%20Draft.pdf
3 Punjab Forest Policy 2019

livelihood opportunities for rural households, promoting sustainable forest-based enterprises and vocational education, and Forest based Payments from Forest Ecosystem Services (PES).

One of the key actions identified in this PRAP is continuation and refining participatory approach to forest management in which the province has already travelled a long way. In addition, integration of trees on private lands (as in case of TBTTP) has been emphasized to promote sustainable solutions to energy demands on forests.

The PRAP will make a traction through Participatory Forest Management Plans (PFMPs) with an approach that encourages harvesting trees on a rotational basis so that timber and fuel may be produced and used sustainably for local use. The PRAP suggests activities aimed at enhancing forest stocks so that forests continue to see improvement for effective REDD+ results.

Punjab Forests, Wildlife and Fisheries Department will follow a site specific, landscape approach in PFMPs in which various actions are planned and implemented in a coordinated way, aiming at maximizing economic, social and environmental benefits.

The total indicative financial size of this PRAP is PKR 2,140 million for ten years (2022-2031).

1 INTRODUCTION

Pakistan signed and ratified the United Nations Framework Convention on Climate Change (UNFCCC) in 1994. Pakistan also initiated a national dialogue on REDD+ in 2010 and submitted its REDD+ Readiness Preparation Proposal (R-PP) to the World Bank Forest Carbon Partnership Facility (FCPF) in 2014. The Federal Ministry of Climate Change through its Office of the Inspector General of Forests has been implementing Readiness activities after approval of R-PP in 2014 with financial and technical support from FCPF along with other bilateral initiatives and UN-REDD target support fund.

One of the key outputs[4] of REDD+ Readiness activities was preparation of a National REDD+ Strategy (NRS) for Pakistan. This strategy was drafted with a vision that forests provide ecosystem services and livelihood support on a sustainable basis. Development of this strategy required an assessment of direct and underlying drivers of deforestation and forest degradation at the national, provincial and local levels, and barriers to enhancement of biomass and forest area. The process for strategy development also required identification of measures necessary to effectively address these drivers and barriers. For the implementation of NRS recommendations, it is important to elaborate the drivers and barriers at sub-national and local levels. To undertake these tasks at the sub-national and local level, the strategy suggested development of Provincial REDD+ Actions Plans (PRAPs) and Participatory Forest Management Plans (PFMPs).

The PRAP of Punjab is therefore in line with the recommendation of the NRS. This document provides details on province specific drivers of deforestation and forest degradation and describes actions to address them in order to improve forest resources of the province. The actions also aim to strengthen opportunities and address challenges for strengthening REDD+ readiness at the provincial level.

1.1 Context

1.1.1 Area, Location and topography

The word Punjab comes from the Persian words Panj (five) and aab (water), meaning land of the five rivers. Punjab has remained a region of great significance throughout history. It has been the seat of many great historical civilizations and empires. Punjab's culture and society has been shaped by many influences. Following the fall of the Indus valley civilization, Punjab has been controlled by Arab, Persian, Mughal, Sikh and British conquerors. Every era of conquest has had significant impact on the society, culture, flora and fauna of Punjab. Over the course of hundreds of years Punjab's landscape has been transformed by introduction of new land utilization policies, architecture, agriculture techniques, crops, plantation etc. One of the most significant influences on Punjab's landscape has been the introduction of a vast canal network by the British that transformed the erstwhile semi-desert landscape into rich fertile plains. This led to the establishment of canal colony districts and the rapid development of Punjab.

Punjab covers an area of 205,344 square kilometers[5] between 27° 65‟ to 34° 02‟ North Latitudes & 69° 29‟ to 75° 64‟ East Longitudes. Most of the landmass of the British era Punjab region falls in Pakistan. Punjab is nested between the borders of Khyber Pakhtunkhwa province and the federal capital area of Islamabad to the North and south-west, to the North-East is Azad Jammu and Kashmir, to its South-East is India (Indian Punjab & Rajasthan) and to the South-West is the province of Sindh. This strategic location has been of great significance for invaders both militarily and economically. The province is divided into 36 districts and 127 Tehsil towns[6]. Lahore is the provincial capital and the main economic hub of the province.

4 National REDD+ Strategy, National Forest Monitoring System, Safeguard Information System, Forest Reference/ Emission Level
5 https://punjab.gov.pk/punjab_quick_stats
6 https://punjab.gov.pk/punjab_quick_stats

Punjab enjoys a diverse topography that adds to its cultural, social and economic capital. Punjab's landscape mostly consists of fertile alluvial plains of the Indus River and its four major tributaries, the Jhelum, Chenab, Ravi, and Sutlej rivers which traverse Punjab north to south. The landscape is amongst the most heavily irrigated on earth and canals can be found throughout the province. Punjab also includes several hilly regions, including the Suleman Mountains in the southwest part of the province, the Margalla Hills in the north near Islamabad, and the Salt Range which divides the most northerly portion of Punjab, the Pothohar Plateau, from the rest of the province. Sparse deserts are found in southern Punjab near the border with Rajasthan and near the Suleman Range. Punjab also contains part of the Thal and Cholistan deserts.

1.1.2 Demographic and socioeconomic pattern

As per the 2017 Pakistan Census Report, the total Population of Punjab is approx. 110 million[7] (Male: 51%; Female: 49%) accommodated within 17.2 million households constituting 52.9% of the total population of Pakistan. Punjab's population density stands at 535.63 persons per square kilometer, the highest in Pakistan. The rural and urban population constitute 63.1% (69,442,450) and 36.9% (40,547,205) of the total population, respectively. The province is almost entirely Muslim, with a small Christian minority. Punjabi is the mother tongue of the great majority of the population. The main written language is Urdu, followed by English. The major ethnic groups are the Jat, Rajput, Arain, Gujar, Awan and sparse settlements of Pathan and settlers of other ethnicities. The population of Punjab is increasing at an average 2.13% per annum and will cross 140.459 million by 2030 and 187.319 million by 20508, if growth continues at current rates. Rural to urban migration trends have also seen to be increasing over the years. The provincial economic outlook is reflected in terms of GDP as USD170 billion compared to national GDP of USD314.588 billion, which is 54.2% of national GDP[9]. The per capita GDP of Punjab is USD1545 as compared to USD1641 (nominal) for Pakistan.

Punjab's economy is mainly agricultural, although industry makes a substantial contribution. The province is playing a leading role in agricultural production with almost 53% of its total land under cultivation due to the courtesy of irrigation system. It contributes about 68% to annual food grain production in the country. 51 million acres is cultivated, and another 9.05 million acres are lying as cultivable waste in different parts of the province. Cotton and rice are important cash crops contributing substantially to the national exchequer. Attaining self-sufficiency in agriculture has shifted the focus of the strategies towards small and medium farming, stress on barani areas, farms-to-market roads, electrification for tube-wells and control of water logging and salinity. Punjab is also a mineral rich province with extensive mineral deposits of coal, rock-salt, dolomite, gypsum and silica-sand. Punjab is one of the more industrialized provinces in Pakistan; it manufactures textiles, machinery, electrical appliances, surgical instruments, bicycles and rickshaws, floor coverings, and processed foods[10]. Pakistan's main north-south road and railway connect Lahore with Islamabad, the capital of Pakistan, to the north and with the ocean port of Karachi to the south. Punjab is connected by road or railway to India, China, and Afghanistan, and its major cities are linked by road. Punjab has the largest economy in Pakistan, contributing most to the national GDP, especially dominant in the service and agriculture sectors. With its contribution ranging from 52.1% to 64.5% in the Service Sector and 56.1% to 61.5% in the Agriculture Sector, it is also major manpower contributor because it has largest pool of professionals and highly skilled (technically trained) manpower in Pakistan.

1.1.3 Flora and fauna

Due to its arid to semi-arid climate, Punjab is devoid of thick forest cover. The main natural vegetative features are plains occupied by shrubs, bushes and grass and vast rangelands that support domesticated animals and wildlife. Punjab's main productive forest resource is in the form of irrigated plantations which were established in 1866 to meet the demand for energy derived from wood. These plantations have expanded to 0.283 mha,

7 https://portal.pnd.gog.pk/Content/Files/Reports/Gilgit%20Baltistan%20at%20a%20Glance%20New%20Design%202020%20Final_210554160.pdf
8 Projection is based on the current rate of population growth reported in census report 2017.
9 https://finance.punjab.gov.pk/system/files/WPBudget-2020-21.pdf
10 www.britannica.com/place/Punjab-province-Pakistan

one of the largest being the Changa Manga[11]. Punjab's total forest area in the year 2000 stood at 0.59 million ha[12] (FAO,2009). These include riverine forests commonly known as 'belas' along river flood plains, range land, scrub forest, irrigated plantations and coniferous forests in the northern parts of Punjab. Native species of many kinds of trees and shrubs inhabit these forests though population pressure and modernity has had its toll on the health of Punjab's indigenous flora and fauna. Very little wildlife habitat has been left untouched. Sparse populations of the Punjab Urial, jackal, mongoose, jungle cat, civet cat, scaly anteater, desert cat, and the wild hare thrive in these areas. Hog deer and chinkara deer are found in riverine tracts in areas bordering other states. Crop residues and wild growth support reasonable populations of black and grey partridges. Diverse variety of game birds such as the Great Indian Bustard, houbara bustard, pintail, common sand grouse, black partridge, quail (several varieties), kunj and nester (pigeons) are of interest. A large variety of ducks, waterfowls, and other migratory birds can be found on the banks of rivers, canals and other water reservoirs/ bodies.

1.1.4 Climate

The climate of Punjab ranges from extremely hot summers to mild foggy winters. The land is hydrated by summer monsoons and by the five rivers which run longitudinally through the province. Summers are hot from May to July, followed by monsoon rainfall from the Bay of Bengal from August to September which breaks the heat spell. These bring precipitation to the northern parts of the province. The Southern parts of the province receive rainfall from southwest winds from over the Arabian Sea[13]. Punjab's temperature ranges from -2^0 to 45^0C but can reach 50 °C (122 °F) in summer and can touch down to −10 °C in winter in the mountain parts of the province. Climatically, Punjab has three major seasons[14]: Punjab is divided into 14 agro-ecological zones based on temperature, rainfall, humidity and soil types by FAO.

- Hot weather (April to June) with maximum temperature as high as 51°C.
- Rainy weather (July to September) with average rainfall between 96 cm sub-mountain region and 46 cm in the plains.
- Cold / Foggy / mild weather (October to March) with the lowest temperature as low as 2.0°C.

1.1.5 Overview of forest resources

The total area of the Punjab is 205,344 km² (25% of total land cover of Pakistan) and out of this 3.1%[15] land is under forest cover representing 5.5% of total forest cover of Pakistan i.e., 4,786,831 ha[16]. The forestry resources of Punjab are classified into five different categories viz. coniferous forest (9%), scrub forests (41%), riverine forests (9%), irrigated plantations (27%) and rangelands (14%).

The forests are chiefly characterized by the extensive growth of conifer tree species or commonly known as pine trees. These forests are located in Murree, Kahuta and Kotli Sattian tehsils of district Rawalpindi. The coniferous forests, based on altitude and species composition are divided into two types i.e., sub-tropical Chir Pine forest and Himalayan moist temperate forests. These forests are bounded in the east by river Jhelum, in the Northwest by province of Khyber Pakhtunkhwa (KP) and in the south by sub-mountainous areas of Rawalpindi and Gujjar Khan tehsils.

The scrub forests grow in the foothill and lower slopes of Himalaya in Punjab. The main mountain ranges occupied by these forests are Salt Range, Kala Chitta Range and Suleman Range. They are mainly distributed in the districts of Rawalpindi, Chakwal, Jhelum, Attock, and a small portion in district Khushab and D.G. Khan. Most of these forests lie between 1500 to 3000 feet above the sea level.

11 www.fao.org/3/am623e/am623e00.pdf
12 www.fao.org/3/ca4869en/ca4869en.pdf
13 https://pbit.punjab.gov.pk/system/files/Punjab%20Climate%20Change%20Policy.pdf
14 www.adb.org/sites/default/files/publication/357876/climate-change-profile-pakistan.pdf
15 The Punjab Forest Policy 2019. https://pbit.punjab.gov.pk/system/files/Punjab%20Forest%20Policy%202019%20Draft.pdf
16 https://redd.unfccc.int/files/1._unfccc_frel_pakistan__final_with_proofread_-final.pdf

Irrigated Forest Plantations form one of the most valuable forests in the province and their management comes high on the list of the functions of the Punjab Forest Department. These are man-made forests and are in shape of blocks of tree plantation in the canal irrigated tract. These plantations were among the world pioneer in the forest practices. All the major irrigated plantations are established along the railway lines. The basic species raised in these plantations was “Shisham" (*Dalbergia sissoo*) with a shorter rotation to produce firewood. These plantations now meet about 10% of the total firewood needs of the province[17]. All the major irrigated plantations in Punjab are managed under an approved Management Plans, prepared for a period of 10 to 20 years.

The riverine forests are found along the rivers of Ravi, Chenab, Jhelum and Indus in various districts under the administrative control of Forest Department. Few forests along river Ravi falls in Lahore and Sheikhupura district. However, in case of Chenab, there are several riverain forests along both sides of river located in Sialkot, Gujranwala and Gujrat district. But only few forests are present along river Jhelum. Indus is the biggest river which provide irrigation water, besides being a source of hydel power generation. The riverain forests located on either side of Indus River are not only greater in number, but also constitute larger area. The riverain forests of Indus River are mainly located in Muzaffargarh, D.G. Khan and Layyah district of the province. In addition to the compact forest area, the department also manages linear plantations along provincial highways and canals (Figure 1).

17 Punjab Forest Policy 2019

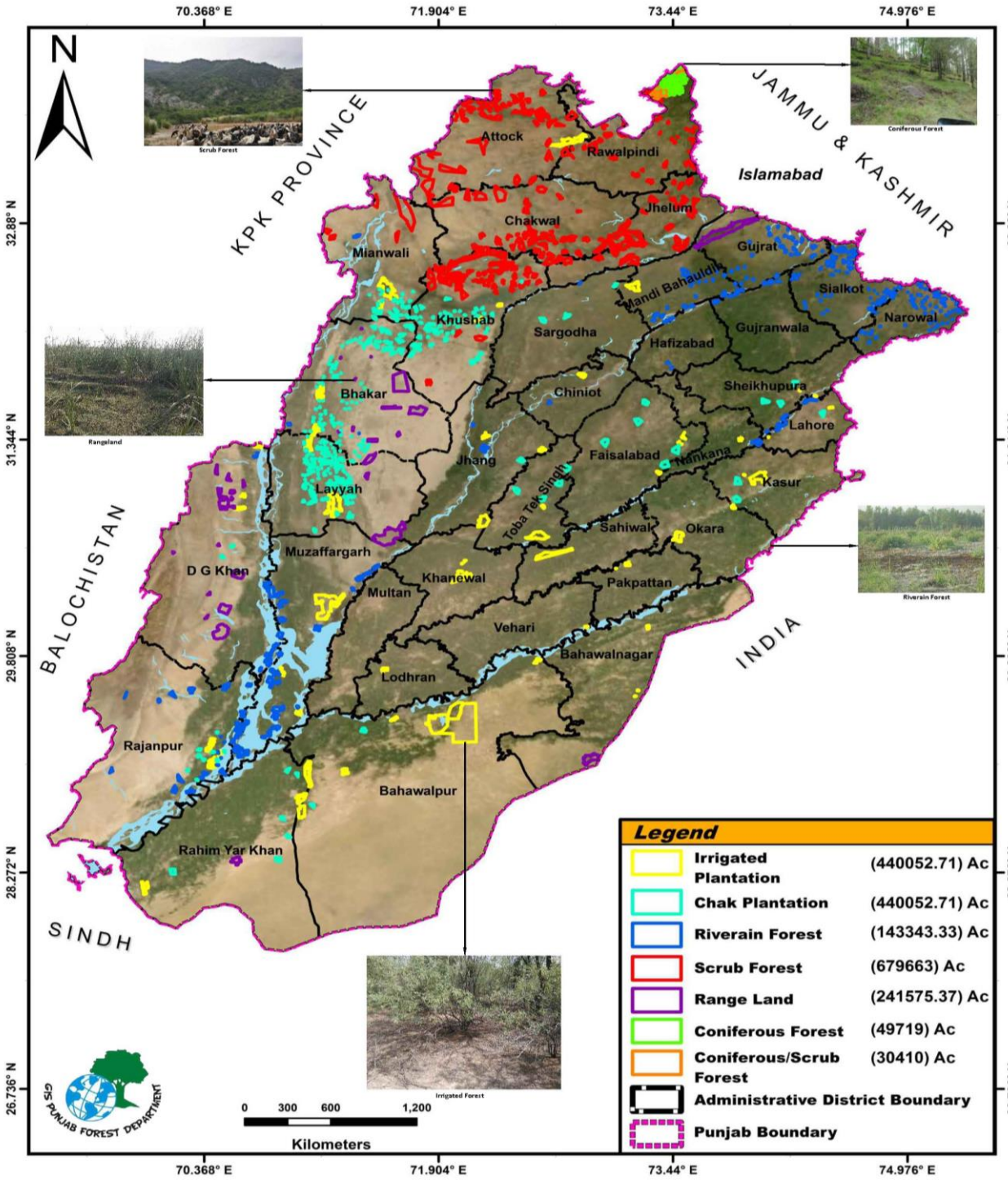


Figure 1: Forest map of Punjab[1] (source: Punjab Forest Department 2022)

The Government of Pakistan has launched the largest ever afforestation program in the history of the country i.e., the Ten Billion Tree Tsunami Programme (TBTTP). This four-year flagship national program (2019-2023) will increase the existing forest area of the country, including Punjab. During 2016-2025, 561.978 million plants will

be planted and/or regenerated to restore on 4,379 sites over an area of 150,476 hectares[18] contributing to overall national sequestration potential of 148.76 MtCO2e emissions by the year 2030.

Broadly, in Punjab, particularly in rural areas, communities depend on forest resources for their livelihoods. Land tenure rights may also be classified as 'formal or *de jure*' or 'customary or *de facto*'. Formal property rights are those that are explicitly acknowledged by the state whereas informal property rights are those that lack official recognition and protection. Customary property rights are exercised by local communities by virtue of their historical relationship with the forests on which their survival depends. Some customary rights are given formal recognition thereby blurring the distinction between formally recognized rights and customary rights. The Guzara forest owners and concessionists have their decades old legal right (ownership/concessions) in forest ownership and use. Other non-owner users can use forests only on the permission of Forest Department and legal owners under customary arrangements. However, where the power of owners/concessionists or writ of state is weak, the forests are controlled and used by other non-owner user groups which give rise to conflicts and result in deforestation and forest degradation. Therefore, wherever settlements have not been drawn, neither land boundaries nor ownership are clear, a clarification of land tenure rights is essential in order to understand the existing relationship that people have with land and to assess where and how REDD+ can be incorporated in the current tenure system.

Like elsewhere in Pakistan, the State charges royalties and taxes from owners and right holders on the income generated from the sale of trees (FAO, 1974). The provisions of the Forest Act of 1927 (the amendments made therein in 2016 in its application to Punjab and rules and notifications made from time to time in respect of Punjab Forests[19]) and the Land Revenue Act of 1867 (amended as the Punjab Land Revenue Act of 1967 – Article 50) remain the main legal instruments that determine the legal aspects of landownership, including of forest land. However, it only covers the existing power system and entitlements to management of forests and lacks clarity on unrecognized claims (carbon pools), legal and customary jurisdictions of rights, access and use patterns with respect to resources and various stakeholder categories and their stakes. Table 1 provides an overview of forest tenure system in Punjab.

18 Source: Punjab Forest Department, 2022
19 https://fwf.punjab.gov.pk/rules_and_regulations

Table 1: Forest tenure system in Punjab

Legal Category / Tenure Regime		Forest type	Rights	Area and locations	Management Arrangement
Government Forests	Reserved Forests	• Irrigated Plantations • Riverine Forest • Scrub Forest • Coniferous • Scrubs	• Timber sale proceed: 100% government • Community rights: Usufruct rights[20]: Deadwood, NTFP/ controlled grazing, litter	322,790.40 ha	Owned (proprietary rights) by the government. Administered, regulated and managed by the Government through Forest Department. Managed through working plans.
	Protected Forest	• Irrigated Plantation • Rangelands • Riverine Forests • Scrub Forest • Coniferous/scrub • Coniferous forest • Desert	• Proprietary rights: Government • Community rights: Usufruct rights: Timber for domestic use, deadwood, NTFP, grazing.	219,654.65 ha	• Owned (proprietary rights), administered, regulated and managed by the Government through Forest Department. • Managed through working plans.
	Un-classed Forest	• Riverain Forests • Range land • Irrigated Plantations • (Chak Plantations) • Scrub Forest	• Property rights: Government • Communities: Rights and concessions of grazing, grass cutting, and collection of dry wood etc. (Wajib ul Arz), two trees for construction after 3 years, one tree for burial	112,695.18 ha	Salvage felling only in the riverain (Need based)
	Civil Rakh	Scrub Forests	• Property rights: Revenue department and managed through Forest department • Communities: Some rights and concessions of grazing, grass cutting, and collection of dry wood etc. (Those documented in the Wajib ul Arz).		Managed under working plans of the division
	Resumed Land	Scrub Forests	• Property rights: Land and trees taken over by the Government under various	2,116.91	Managed by the Forest Department

[20] A usufruct is a legal right accorded to a person or party that confers the temporary right to use and derive income or benefit from someone else's property. While the usufructuary has the right to use the property, they cannot damage or destroy it or dispose of the property

Legal Category / Tenure Regime		Forest type	Rights	Area and locations	Management Arrangement
			land reforms (Wastelands, agriculture lands) and special regulation • Communities: Right of way, grazing and firewood collection		
	Chos Act Areas Lands protected under "The Punjab Land Preservation Act (1900[21])"	Scrub Forests	• Government: Management rights • Communities: Some rights and concessions of grazing, grass cutting, and collection of dry wood etc. (Wajib ul Arz)	79.54 ha	Regulated with restriction and prohibited land use and land conversion for soil conservation and groundwater regulation
	Municipal Reserved Forest and Miscellaneous	Scrub forests	• Government: Management rights • Communities: Grazing, firewood collection and NTFPS, litter, deadwood. Grazing not allowed	16,919.3 ha	FD managing on behalf of TMA as a lessee, lease money paid to TMA @ Rs. 1,250,000 for municipal forest area per annum; Commercial felling under the WPs
Private Forests	Guzara Forests	• Scrub Forest • Coniferous Forest	• Land, Trees (Category A, (Chir, kail, deodar) property of the government • Category B of individual / community and can cut without permission of the FD for meeting domestic needs.	68,236 ha	Commercial felling with the approval of Guzara committee under the Deputy Commissioner, DFO Guzara acting as technical advisor to the DC, (60% community, 20% Guzara fund and 20% replenishment of the area felled)
	Section 38 Forests Forests protected at request of owners (Section 38 of the Forest Act 1927[22])	• Riverain Forest • Scrub Forest	Government: Land and trees decisions are approved by the Government Communities: land and trees; some uses can be exercised conditionally with the approval of government	13,897.59 ha	• Privately owned lands voluntarily and temporarily put under the control of Punjab Forest Department, for conservation and preservation of soil and vegetation • Govt: 20% from sale proceed as management fee; Community: 80% from sale proceed.
			Total forest area	**672,787.05 ha**	

21 http://punjablaws.gov.pk/laws/16.html
22 http://punjablaws.gov.pk/laws/40.html

1.2 Structure of Punjab Forest, Wildlife and Fisheries Department

The Punjab Forests, Wildlife and Fisheries Department (PFWF) comprises three component departments (i) Forests (ii) Wildlife and Parks, and (iii) Fisheries Department which are administratively governed by Secretary PFWF. The PFWF is technically headed by Chief Conservator of Forests, whereas Environment Department is technically headed by Director Environment. The functions and structure of PFWF is described below.

1.2.1 Forests Department

The resources managed by the forest department include compact plantation i.e., coniferous/scrub Forests (80,129 acres), Scrub forests (679,663 acres), rangelands (241,575 acres), irrigated plantations (440,052 acres) and riverain forests (143,343 acres). Moreover, it also manages the linear plantations of the province, i.e., canal side plantations (33,795 km), roadside plantations (10,665 km) and rail side plantations (2,580 km). In addition to the public sector forestry resources, tree covers exist in farmlands both in the form of woodlots and linear avenues along the field boundaries and watercourses.

1.2.2 Wildlife and Parks Department

The Punjab Wildlife & Parks Department has a network of field formations working throughout the province for effective protection, preservation, conservation, and management of wildlife resources. The department maintains the following facilities for in-situ and ex-situ conservation of wildlife resources:

- Zoos / Zoological Gardens-7
- Wildlife Parks-13
- Safari Zoo-1

For smooth functioning of the department, various policies are formulated and periodically reviewed for implementation. These strategies focus on sustainable conservation and management of wildlife through public participation and liaison with national and international organizations. The department has succeeded to conserve and preserve the vanishing wildlife species.

1.2.3 Fisheries Department

The Punjab has an extensive expanse of fisheries resources with great potential. The major natural resources include rivers, canals, reservoirs, lakes, and waterlogged areas etc. covering a total area of about 3 million hectares (7.5 million acres). Besides sustainable exploitation of natural resources, the fish culture activities in private sector have been considerably increased in the last two decades. At present about 81,350 acres have been brought under fish culture and total fish production is 113,500 metric ton annually. An organogram of the PFWFD is provided in Figure 2.

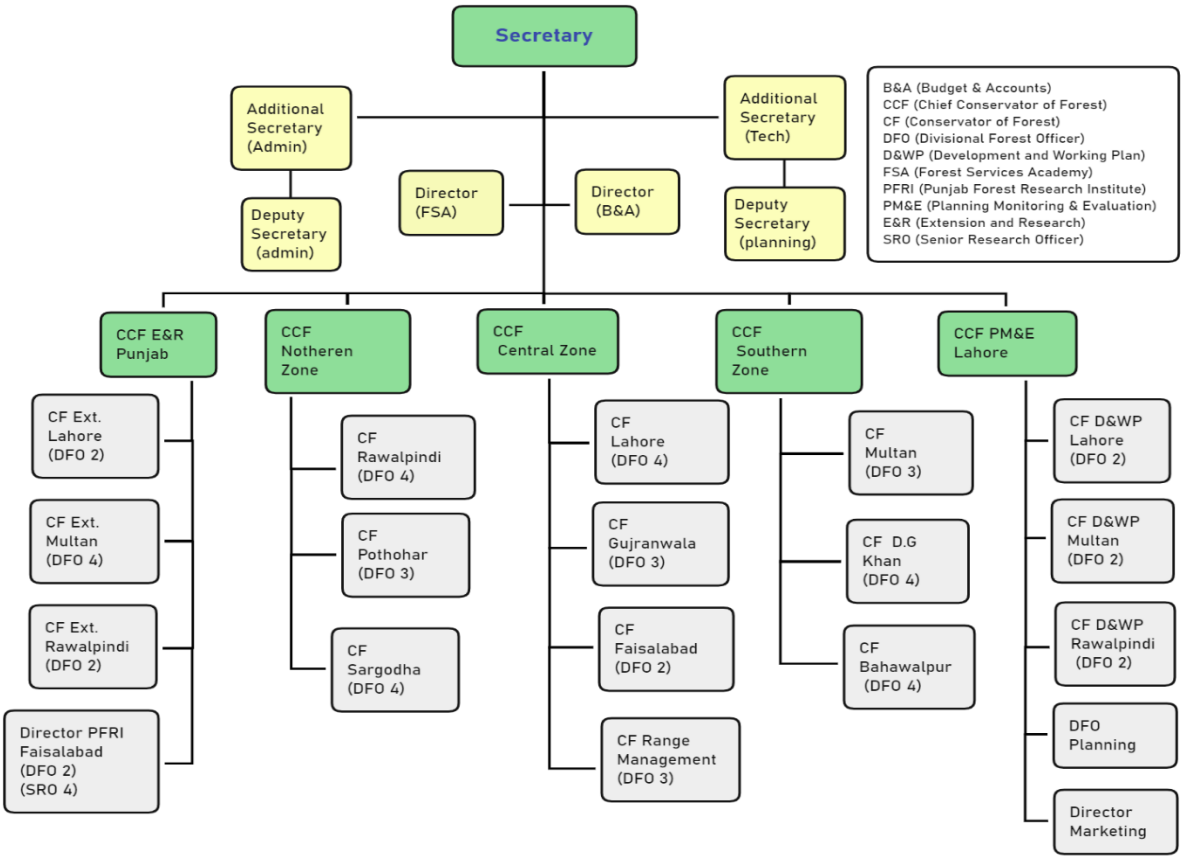


Figure 2: Organizational chart of Punjab Forest Department

1.3 Stakeholders Roles and Responsibilities

The PFWF and local communities are the key stakeholders of the province with the highest stake in REDD+. Scrutinizing illegal activities (mostly forest encroachment and illegal cutting and trafficking of forest trees) mainly entails support to joint forest management activities, implementation of forest enhancement, and coordination with other key agencies. The department also recognizes contribution from local community, other relevant government institutions, and CSOs/NGOs for their engagement in forest development, sustainable management and capacity building activities.

There are five key groups of forest stakeholders in Punjab having different (and at times overlapping) social and economic interests and influence in forest management related decisions and their implementation:

i. Guzara forest owners who, in practice, control and use forest for their basic needs (timber, firewood, grazing, grass cutting, fodder collection, NTFP collection etc and get revenue through commercial forest sale.
ii. Forest communities without ownership rights mostly involve as labour force in commercial forest harvesting and are highly dependent on forests and ranked as poor forest dependent communities. Poverty and disputes with owners may compel this group for deforestation and forest degradation through illegal activities like smuggling etc.
iii. Forest department is the custodian of forests in Punjab province. Majority of the forests except Guzara forests are owned by the department. Forest department is responsible for management and development of the forests in the province and can contribute directly to deforestation and forest degradation due to poor forest governance, lack of interest in forest management, etc.

iv. Nomadic graziers (Bakarwals) who visit scrub forests annually during winter and stay in these areas for four to five months. These Bakarwals browse their goats and cause damage to the crop due to excessive grazing.

v. The landless farmers living in the vicinity of forests/ rangelands whose main source of income is rearing of livestock. For grazing of about 0.5 million camels, buffalos, cows, sheep and goats on rangelands, the Forest Department issues grazing permits on nominal charges. These livestock contribute to improving the meat, milk, hides and wools production, resulting in increase in GDP of the country.

A complementarity among stakeholders may reduce the risk of conflicting uses and priorities towards forest resources leading to forest degradation. Table 2 presents some of the key stakeholders that are relevant in implementing different REDD+ initiatives in the province including government, civil society, national and international organizations, communities, development projects, media, private sector etc.

Table 2: Key REDD+ stakeholders in Punjab

Key stakeholder Group	Stakeholders	Roles in Forest Management
Government Institutions	• Forest and Wildlife Department • Agriculture Department • Environment Department • Mineral Department • Planning and Development Department • Tourism Department	• Responsible for implementing REDD+ Action Plan • Providing conducive policy, legal and institutional environment for forest management planning, administration and technical support, monitoring and control of illegal activities, coordination with other government and non-government agencies
Communities	• Individual households, woodland owners, forest users and dwellers • Organized communities such as biodiversity conservation or forest conservation committees or their apex institutions • Women organizations in the villages or their apex organizations • Organization of forest user/ forest owners	• Have a direct stake in REDD+ benefit and thus conserve forest resources for a longer term while responsibly using forest resources according to *de jure* or customary laws • Forming local community groups to efficiently support planning & implementation of forestry programmes, projects and/ or activities • Provide local knowledge to understand the drivers/ agents of deforestation and forest degradation • Ensuring participatory inputs for development of forest management and operational plans • Implement forest conservation, protection, and management which mainly includes plantations, record of harvesting and preventing forests associated crimes (illegal cutting and trafficking of forest trees etc.). • Engage in forest monitoring activities and strengthen the participatory monitoring process to ensure transparency of monitoring outputs (e.g., increase or decrease in carbon stocks)
Civil Society Organizations	• Local NGOs interested in development sectors with implication on communities and forests • Citizens' fora and collectives for opinion building • National NGOs interested in development sectors with implication on communities and forests.	• Organize and strengthen community organizations • Mobilizing civil society for effective public sector development policies in forestry sector • Create platforms for dialogue on forest management issues • Promote rights issues particularly of children, women, youth and marginalized groups living in or adjacent to forest areas • Promote voices/concerns of poor and marginalized social groups • Offer implementation of development interventions when required
International organizations	• International NGOs interested in development sectors with implication on communities and forests • Multi-lateral organizations with political power to influence policy and global opinion • International donor organizations	• Providing advocacy, advisory, and technical roles in developing or modifying policies that grant or protect local people's equitable access to forest resources • Facilitate advocacy for environmental conservation and public awareness • Build capacity of government and local communities to plan, implement and maintain forest protection and conservation activities • Helping government institutions and local communities to implement the programmes and specific activities inherent in the forestry sector's changed policies e.g., REDD+ • Generate finances for forest development activities (including research & technology development.

Key stakeholder Group	Stakeholders	Roles in Forest Management
Private Sector	• Wood based industries • Banks/ microfinance Institutions • Private investors and traders • Technology developers and vendors	• Investing in sustainable forest management through sustainable business opportunities such as carbon tradeoffs, timber processing and trade; NTFP business; eco-tourism business etc. • Providing access to microfinance services, local production and promoting jobs • Creating alternative opportunities for local economies through employment and income generation benefits from the market for local communities and forest owners. • Creating linkages through public-private partnership to contribute to participatory planning for reducing illegal and unsustainable activities
Media	• Print media, newspapers • Electronic media including public and private sources • Social media • Institutional communique, newsletters and magazines	• Social watch in justice to weaker stakeholders (women, landless, poor) in forest management by highlighting equity issues • Mentoring and influencing decision making of government and other stakeholders on benefit-oriented forest management • Report illegal activities and highlight good practice • Inform the public on key programs and activities; and ensure rights to information • Bring opinion-makers, policy makers and implementers, private sector, communities and other stakeholders together through effective communication and information sharing for identifying problems and common solutions.
Academia and research	• Forest Services Academy, Ghoragali, Murree • Punjab Forestry Research Institute Gatwala Punjab • Provincial and national education and research institutions offering education and research support relevant Punjab.	• Conduct research on forestry & allied disciplines • Impart professional forestry education • Arrange training courses for foresters, farmers, NGO's etc. • Conduct critical and neutral studies on good practice; forest diversity and environmental changes and trends • Study dynamics of drivers of deforestation and forest degradation and forest enhancement and compare effectiveness of solutions • Silvicultural-based sustainable forest management and solutions

2 METHODOLOGY

The main goal of the Punjab's Provincial REDD+ Action Plan (PRAP) is to serve as a strategic set of options to addressing drivers of deforestation, forest degradation and barriers to enhancement, while ensuring local livelihoods and incentives from REDD+ activities and aligning with National REDD+ objectives of Pakistan.

2.1 Main objectives

The main objectives of the Provincial REDD+ Action Plan (PRAP) are as follows:

1 Outline strategic options to address the prioritized drivers and barriers with context specific actions[23] and related budget
2 Improve the health of forest ecosystems by reducing deforestation and forest degradation and enhancement of forest biomass
3 Define effective implementation and monitoring of REDD+ actions to address the drivers
4 Identify social and environmental risks associated with interventions and propose mitigation
5 Propose a clear benefit sharing mechanism associated with implementation of REDD+ activities
6 Identify areas for enabling policy, legal and institutional arrangements in favor of implementing PRAP

2.2 Steps followed in preparing PRAP

The PRAP for the province has been prepared in a stepwise and a highly interactive process entailing consultations with representatives of the multiple stakeholders and with institutional memory holders of the subnational entity. In addition, some of the most updated secondary data, policy documents and research references have been consulted as a founding base for discussions and interventions proposed in this action plan. The methods followed for the development of Punjab PRAP are based on international best practices and examples, particularly within Asian countries[24]. The methodological steps are summarized below.

2.2.1 Review of literature

A detailed review of literature was conducted on drivers of deforestation and forest degradation in Punjab. This included review of existing documents available with Ministry of Climate Change, the department and online sources. Available maps were reviewed to understand administrative boundaries, land use, land use change, forest cover and forest cover change. This information was then presented to the stakeholders for triangulation and discussions on the drivers of deforestation and degradation.

2.2.2 Multi-stakeholder consultation

A consultation workshop was held in the province to undertake the tasks listed below. Since many of the drivers and barriers originate outside forestry sector, participation of relevant actors, other than

23 A set of interlinked activities that form a coherent strategy for counteracting a driver of deforestation, forest degradation and/ or barriers to expansion of a forest carbon enhancement activity.
24 https://lib.icimod.org/record/33717 https://www.unredd.net/documents/un-redd-partner-countries-181/asia-the-pacific-333/a-p-partner-countries/viet-nam-183/communication-knowledge-sharing-2000/communication-and-knowledge-sharing-materials-2002/leaflets-and-brochures-2009/17322-viet-nam-infobrief-series-viet-nams-experience-with-developing-provincial-redd-action-plans-prap.html?path=un-redd-partner-countries-181/asia-the-pacific-333/a-p-partner-countries/viet-nam-183/communication-knowledge-sharing-2000/communication-and-knowledge-sharing-materials-2002/leaflets-and-brochures-2009, https://lib.icimod.org/record/33672

the forest sector was ensured in the workshop so that views of all relevant actors are documented (Annex I).

A. Prioritization of already known drivers
The participants of the workshop shortlisted drivers of deforestation and forest degradation (based on their impact) and causal links from the list that was taken from the NRS and literature.

Following elements were considered while prioritizing drivers:

- Consider the level of future threat (increasing, decreasing or stay unchanged)
- Consider its impact on forest quality, biomass density and area
- Build consensus by scoring prioritization of drivers of deforestation and forest degradation
- Drivers of deforestation and forest degradation need to be spatially linked with their geographic and socio-economic contexts
- Establish cause and effect linkages between drivers to identify problem trees (some drivers are more the effects than drivers)
- Identify barriers to enhancement of forest (biomass) as specifically as possible

A consensus-based scoring was conducted for prioritization of drivers of deforestation and forest degradation for further analysis.

B. Causal analysis of the prioritised drivers
- The drivers of deforestation and forest degradation as well as barriers to enhancement activities prioritised [25] by stakeholders were debated in a moderated group exercise.
- Cause and effect of all drivers were analysed. The group prepared cause and effect problem trees so that interventions may be defined to remove causes as far as possible.
- The geographical hotspots of the drivers identified and spatially mapped by experts for quantification.
- The hotspots of drivers identified by the stakeholders, were randomly verified in the field.

C. Solutions and actions
- Identify strategic solutions to address causal factors identified in the earlier exercise
- Identify actions to address prioritised drivers and underlying causes
- The actions were verified through field visits for their relevance to the geographic contexts.

D. Analysis of social and environmental safeguards
Social and environmental safeguard analysis of the proposed actions and risk reduction and mitigation measures to address safeguard issues. Potential safeguards of the proposed actions were discussed and analyzed founded on the Environmental and Social Safeguard Analysis (SESA) study conducted under Pakistan's REDD+ Readiness process[26] and tailored to the Punjab's provincial context.

E. Focus group discussions
Focus group discussion (FGDs) were also held with local stakeholders (including communities) where the proposed actions were presented, and risk mitigation measures were identified.

25 The participants were encouraged to identify new driver, if any, or split / merge earlier drivers identified before prioritization exercise.
26 https://www.redd-pakistan.org/wp-content/uploads/2021/06/Strategic-Social-and-Environmental-Assessment-PAkistan.pdf

2.2.3 Expert group consultations

The analysis from multi-stakeholder session and FGDs was peer reviewed by expert groups and improved. This is the stage where a few important issues related to REDD+ implementation were elaborated including:

- Outline overall distribution mechanism for potential carbon benefits emerging REDD+ activities
- Capacity needs assessment of the stakeholders in connection with REDD+ implementation
- Identify measures to address capacity gaps and enhance existing capacities
- Monitoring indicators and protocols for proposed actions
- REDD+ benefit sharing mechanism proposed to monitor distribution of benefits
- An indicative budget for interventions

2.2.4 Quantitative analysis of deforestation and degradation

A spatial analysis was conducted to understand changes in forest leading to conversion from forest to other land cover classes (deforestation). In this study, 2008 and 2012 land cover maps at level 1 (6 IPCC classes) were used for the spatial mapping. At the province level, using a 6x6 land cover classes matrix was generated to assess the conversion of the forest area to other land cover land cover classes (i.e., Forest to Cropland, Forest to Grassland, Forest to Settlement, Forest to Wetland and Forest to Other land). No recent studies are available for quantification of degradation. Therefore, degradation hotspots were identified by the stakeholders during the interactive session in the PRAP workshop and were mapped accordingly after random field verification.

2.2.5 Drafting and endorsement of the PRAP

Using the material collected, the PRAP was developed which includes immediate, medium and long-term intervention. The PRAP also include monitoring protocols, safeguards and actors relevant to implement actions.

The plan was endorsed on 21st April 2022 by the Provincial REDD+ Management Committee (note attached in Annex – II). Feedback and observations from the PRMC were integrated into the plan and a revised draft was shared with the department.

3 Desk review: Direct and indirect drivers of deforestation and forest degradation

The Punjab government recognized REDD+ as financial incentive-based forest management scheme likely to incentivize ongoing forest management initiatives to address Drivers of Deforestation and forest Degradation (DoDD) and associated behavioral change among the local communities. The intent and approach of the government on REDD+ have been described in this REDD+ Action Plan.

The NRS provided a strong base to initiate the identification and prioritization process of province specific DoDD and barriers to enhancement. These drivers were further verified through desk review of other studies on DoDD. The summary of these references is given in **Table 3**. It is to be emphasized that Punjab's forestry resources have received a lot of interest from researchers and, therefore, the references in the table may not be complete. Therefore, a dialogue among major stakeholders was held to further validate this prioritization of drivers for further analysis:

Table 3: Major drivers of deforestation and forest degradation determined from literature review (Punjab)

Deforestation	Infrastructure development (roads, housing societies, transmission lines)	Encroachment of land for various purposes including conversion to crops	Mining especially surface mining		
Literature Reference	• Draft NRS (2018) • Pakistan's R-PP (2013) • Shahzad et al. (2015) • Rahim et al. (2011) • Tanvir et al. (2002)	• Draft NRS (2018) • Pakistan's R-PP (2013) • Shahzad et al. (2015) • Ashraf et al. (2014) • Wani (2002)	• Draft NRS (2018) • Pakistan's R-PP (2013)		
Forest Degradation	Unsustainable wood Extraction (fuelwood and timber)	Subsistence agricultural practices	Over grazing	Forest Fires	Reduced fresh water for riverine forests
Literature Reference	• Draft NRS (2018) • Pakistan's R-PP (2013) • Tanvir et al. (2002) • Azhar et al. (2011) • GoP (1992a and b)	• Draft NRS (2018) • Pakistan's R-PP (2013) • Rahim et al. (2011)	• Draft NRS (2018) • Pakistan's R-PP (2013) • Maan and Chaudhry (2001)	• Draft NRS (2018) • Pakistan's R-PP (2013) • Shahzad et al. (2015)	• Draft NRS (2018) • Pakistan's R-PP (2013) • Ahmad (2016)
Challenges to forest enhancement	Forest Fires	Grazing	Limited water availability	Lack of research Lack of capacity on modern silvicultural practices	Poor design of management plans and funds
Literature Reference	• Shahzad et al. 2015	• Maan and Chaudhry 2001	• Omer et al 2004; • Ahmad 2016	• Tanvir et al 2002, • Omer et al 2004	• Abidi et al. 2012; • Ahmad 2016

4 ANALYSIS OF DIRECT AND INDIRECT DRIVERS OF DEFORESTATION AND FOREST DEGRADATION

The following sections provide details on direct and indirect or underlying causes of deforestation and forest degradation and barriers to forest (biomass) enhancement.

4.1 Drivers of Deforestation

4.1.1 Prioritization of drivers of deforestation

The drivers listed from the literature and the spatial map with quantification of drivers of deforestation were presented to the stakeholders for further discussion and prioritization in the consultation process. Three drivers were qualified by the stakeholders based on their experience and foresight on future threat, biomass and forest area impacts, for further analysis and deliberation in the PRAP (**Table 4**).

Table 4: Ranking of direct drivers of deforestation

Direct Driver	Location (s)	Future Threat	Future Biomass/ Carbon Impact	Future Forest Area Impacted	Total
(1: Very Low, 2: Low, 3: Medium, 4: High, 5: Very High)					
Infrastructure development/ settlement (housing schemes, roads, electric poles etc.)	Murree, Takht Pari, Margalla, Rawalpindi district, Bhakkar, Khanewal, Bahawalpur, Attock, Lodhran	5	4	3	12
Illegal encroachment in all three types of forest (scrub, conifers, riverine)	Lohi Bher, Takht Pari, Maira, (Rwp/ ISB)	5	4	2	11
Mining (especially surface mining including blasting)	Khushab, Attock, Chakwal, Jhelum, Taxila, Chiniot, Sargodha, Sheikhupura	3	3	3	9

Table 5 provides an overview of causes of drivers of deforestation. Locations were noted by the participants as hotspots of the prioritized drivers (**Table 6**). The problem tree with the three prioritized drivers of forest deforestation is presented in **Figure 3.**

Table 5: Direct and indirect causes of deforestation

Direct Drivers	Underlying/ Indirect Drivers
Infrastructure development e.g., roads and settlement etc.)	• High demand for housing/ settlement associated with unregulated growth of housing/ infrastructure and new right of ways • Lack of or inefficient land use planning and policy • Lack of coordination for effective land use planning and policies between line departments (such as planning, local government and forests) • Low priority for forestry sector • Weak forest governance
Illegal encroachments (scrub, conifers, riverine)	• Conversion to agriculture and abandonment due to loss of lands to salinity and water logging • Undue influential pressure for commercial crops • Weak monitoring, reporting and enforcement system • Weak law enforcement due to elite influence and power dynamics

Mining in forest areas	• Weak implementation of mining rules • Poor-compliance to EIA guidelines • Need for active coordination between Forest, Mines and Minerals department

Table 6: Locations/ hotspots of prioritized drivers of deforestation

Locations of prioritised drivers of deforestation		
Clearing of forestland for infrastructure development	**Illegal encroachments**	**Clearing of forestland for mining purposes**
Murree, Takht Pari, Margalla, Rawalpindi district, Bhakkar, Khanewal, Bahawalpur, Attock, Lodhran	Lohi Bher, Takht Pari, Maira, Rawalpindi	Khushab, Attock, Chakwal, Jhelum, Taxila, Chiniot, Sargodha, Sheikhupura

4.1.2 Quantification of drivers of deforestation

A spatial analysis was conducted to understand the changes from forest to other land cover classes (deforestation).

In this study, 2004 and 2008 land cover maps at level 1 (6 IPCC classes) were used for the spatial mapping (Figure 4). At the province level land cover classes were assessed by generating a 6x6 land cover change classes matrix to assess conversion of the forest area to other land cover. According to analysis 26.42% forestland was converted to other land uses. (i.e., Forest to Cropland 8.32%, Forest to Grassland 2.22%, Forest to wetland 1.54%, Forest to Settlement 0.03%, and Forest Other land 14.31%).

Field verification of these drivers on some of the hotspots was conducted and evidence was collected through photos and conversation with local stakeholders.

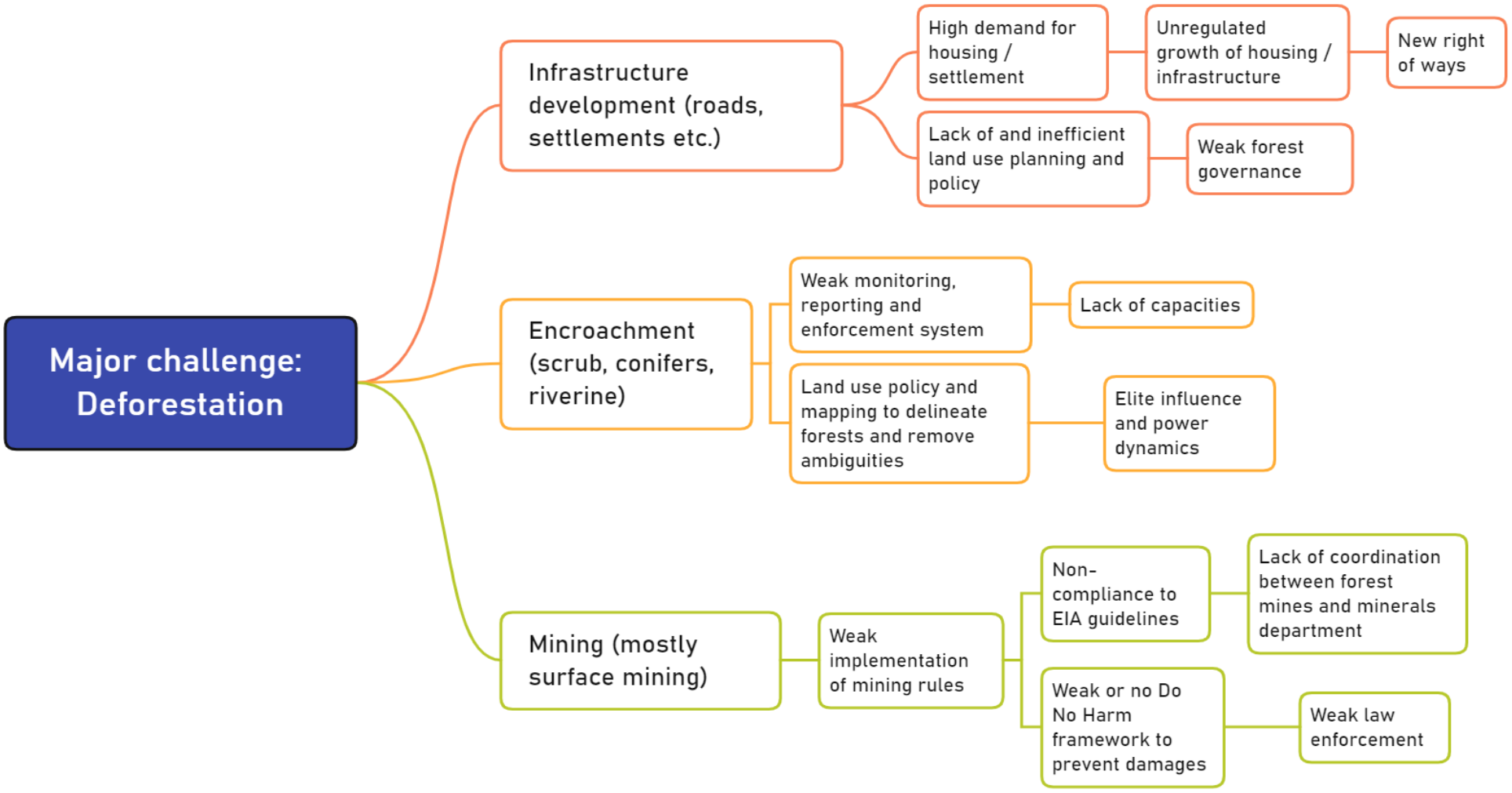


Figure 3: Problem Tree of Deforestation

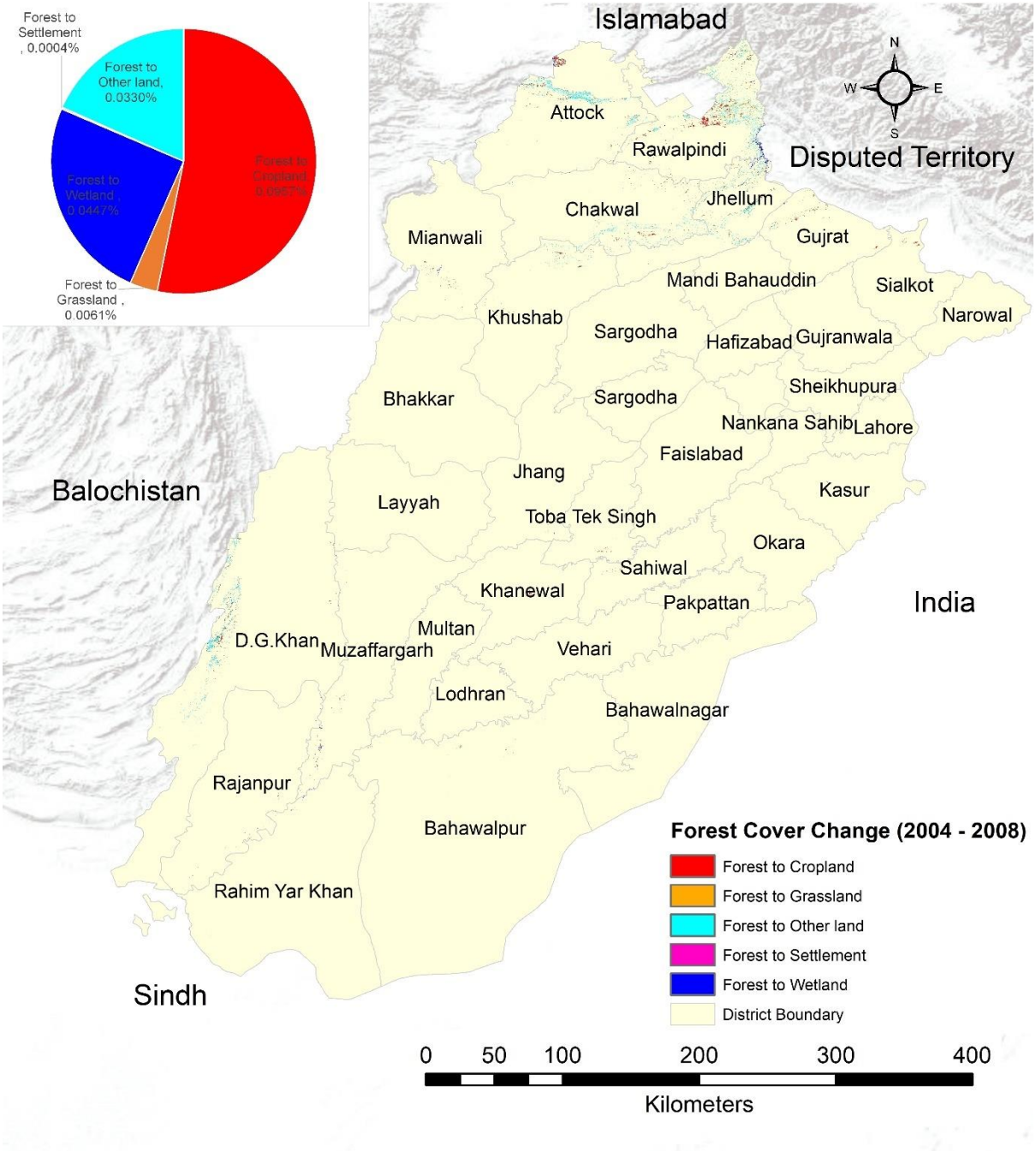
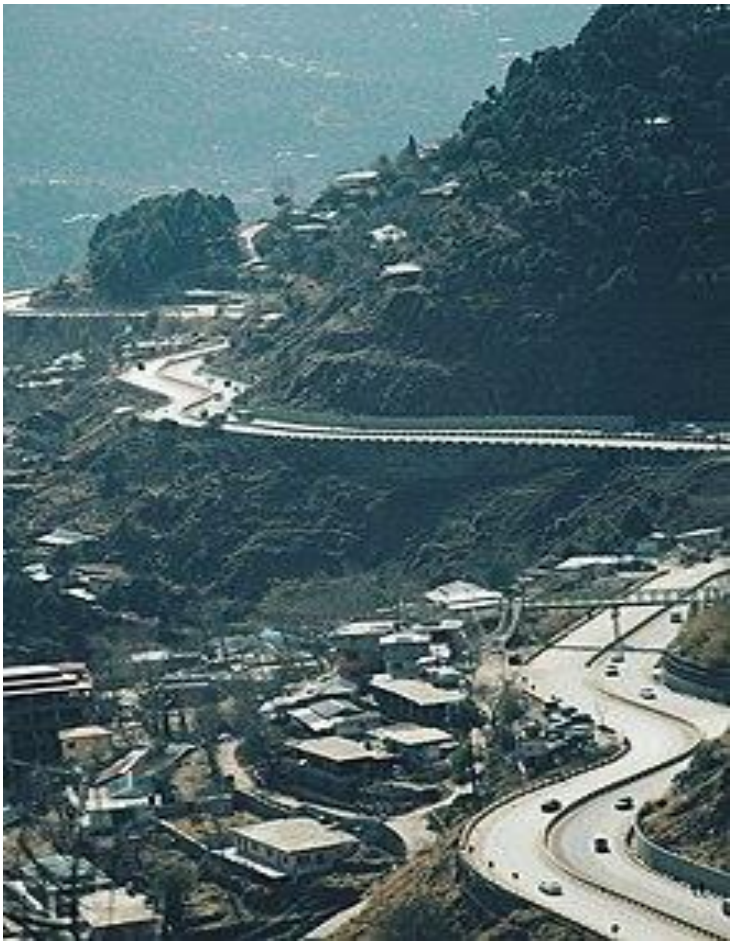


Figure 4: Forest cover of Punjab 2004-2008

The above map is based on the change analysis undertaken by National REDD+ office, Ministry of Climate Change for the years 2004 and 2008. This analysis is being updated for 2016 and 2020 under a different assignment which may conclude later. This map may be updated with the latest analysis.



Picture 1: Infrastructure development and housing in Murree hills

Picture 2: Infrastructure development and housing in Murree hills 2

Picture 3: Encroachment of forestland for commercial agriculture (Bahawalpur)

Picture 4: Mining in Punjab (coal mines Khushab)

4.2 Drivers of forest degradation

4.2.1 Prioritization of drivers of forest degradation

A ranking exercise by the stakeholders led to prioritizing three drivers of forest degradation for further deliberation in the PRAP process for Punjab (**Table 7).**

Table 7: Ranking of direct drivers of forest degradation

Direct Driver	Location (s)	Future Threat	Future Biomass/ Carbon Impact	Future Forest Area Impacted	Total Score
1: Very Low, 2: Low, 3: Medium, 4: High, 5: Very High					
Water scarcity (arid regions)	Irrigated plantations, deserts, Thal/ Cholistan	4	4	3	11
Fuel wood extraction	Scrub forests (Attock, Chakwal, Rwp (scrub-rangelands/ conifers), Kharian, Bhakkar, Jhelum, Khushab), plantations	3	3	2	8
Forest fires (intentional/natural/due to negligence)	Kahota, Murre, Kotli Satian (conifers), Attock, Jhelum, Chakwal, Khushab, Mianwali (Scrub)	1	3	1	7
Livestock grazing	Scrub/ rangelands/ Bela, Jhelum, Kharian, Chakwal, Attock, Khushab, Rwp,	2	1	2	5

Water shortage accompanied with frequent and recurring drought has been identified as a driver of degradation. Punjab has a major irrigation infrastructure managed through canal network. Over time the efficiency of this system has declined and supply of water in the canals has reduced. Irrigated plantations receive less water. In addition, recuring drought in Pakistan (including in Punjab and adjoining watersheds from where water intake is received in the downstream feeding rivers) stress irrigation canals. There is a competition for water between agriculture and irrigation plantations. This problem is exacerbated by lack of water efficient techniques in irrigation (both for crops and forests).

Moreover, extraction of firewood, timber, fire incidents and overgrazing are further impacting forest growth. The ever-growing population and limited access to alternative options have resulted in increasing demands for wood and wood-products from a small natural forest resource base. **Table 8** further describes direct and indirect drivers.

Table 8: Direct and Indirect causes of forest degradation

Direct Drivers	Underlying/ Indirect Drivers
• Water scarcity (in arid regions)	• Poor watershed management associated with lack of integrated forest/ watershed management plans • Lack of water efficient irrigation technologies • Lack of coordination between irrigation/ water and Forest department for feeding irrigated plantations
• Illegal fuelwood/ timber extraction	• High forest dependency for firewood and timber for energy and construction associated with lack of/ poor access to alternative energy sources by local communities • Lack of wood alternatives for energy and construction • Lack of alternative income sources for enhancing affordability for alternatives

	• Weak monitoring and law enforcement mechanism associated with poor institutional capacity (technical, human, mobility and communication) • Weak participatory governance structure including community participation
• Forest fires (intentional, negligence)	• Intentional fires by pastorals associated with un-regulated grazing system • Negligent/ intentional fires by tourists/ locals associated with lack of awareness among tourists/ locals and poorly managed tourism

Table 9 provides hotspots with drivers of degradation. The prioritized drivers for degradation were further cross checked with secondary literature and random field verification of the hotspot locations identified by the participants and mapped (Figure 5).

Table 9: locations of prioritised drivers of forest degradation for the PRAP – Punjab

Locations of prioritised drivers of forest degradation		
Water Scarcity (arid regions)	**High demand for firewood**	**Forest fires**
Irrigated plantations, deserts, Thal/ Cholistan	Scrub forests (Attock, Chakwal, Rwp (scrub-rangelands/ conifers), Kharian, Bhakkar, Jhelum, Khushab), plantations	Kahota, Murre, Kotli Satian (conifers), Attock, Jhelum, Chakwal, Khushab, Mianwali (Scrub)

The problem tree with the three prioritized drivers of forest degradation is presented in Figure 6.

4.2.2 Quantification of drivers of forest degradation

No recent studies are available for quantification of degradation. However, the a high fuel wood consumption for Punjab has been recorded, which has implication for natural and planted forests.

The Government of Pakistan conducted a first baseline study in 2003-2004 on "Supply and Demand of Fuelwood and Timber for Household and Industrial Sectors and Consumption Pattern of Wood and Wood Products in Pakistan". The study revealed that the availability of forests in Punjab in 2002-2003 was 0.008 hectare (ha) per capita of the population. The study also revealed that the total supply of timber and fuel wood from state forests was merely 0.097 million m³. On the other hand, the fuelwood consumption in Punjab province was 14.837 million m³ (industrial: 17.27%; commercial: 2.73%; domestic fuelwood: 80%) in 2003 that was anticipated to increase to 19.794 million m³ in 2018. The use of industrial timber was 6.665 million m³ in 2003 which was anticipated to increase to 8.891 million m³ in 2018. The supply gap of wood was 15.14 million m³ in 2003 that was anticipated to grow to 22.33 million m³ in 2018[27]. The Punjab Forest Department chalked out their afforestation and rehabilitation programmes under TBTTP to tackle the additional area in order to achieve targeted wood production and increasing productivity level through intensive management of existing forest resources.

27 Supply and Demand of Fuelwood and Timber for Household and Industrial Sectors and Consumption Pattern of Wood and Wood Products in Pakistan ((Maanics Int., 2004).

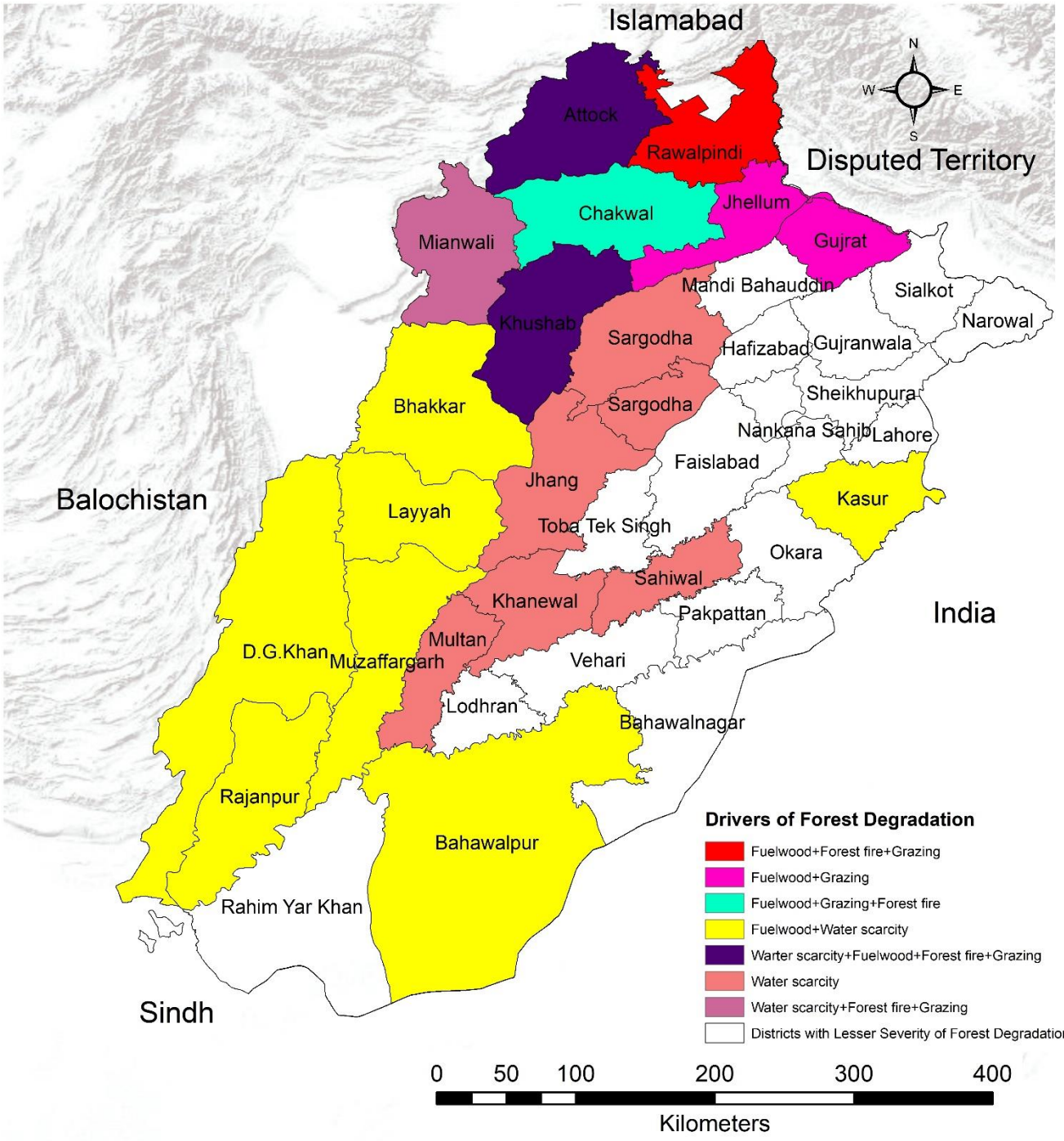


Figure 4: Hotspot areas of forest degradation in Punjab

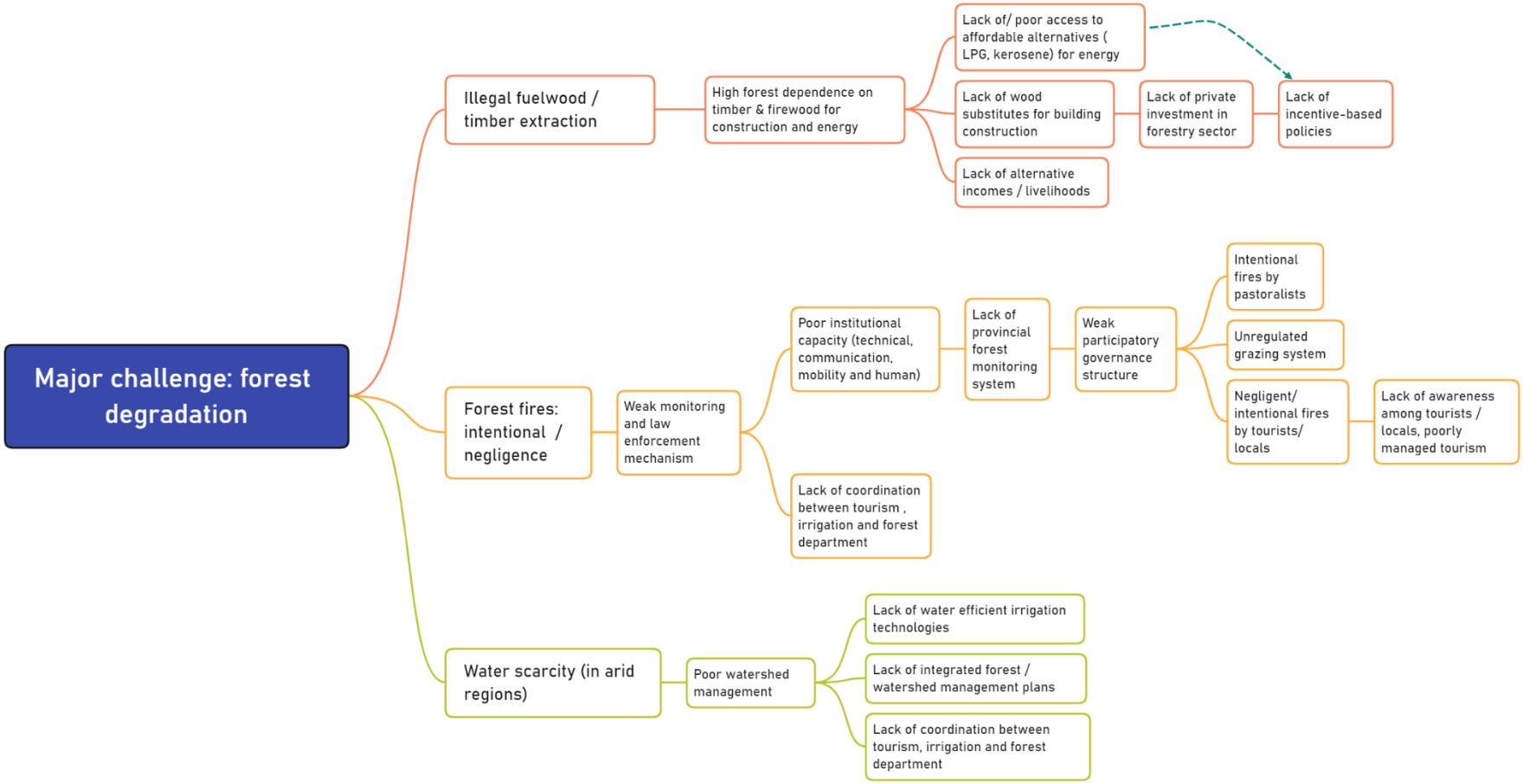


Figure 5: Problem tree of forest degradation

Picture 6: Firewood transportation – Thal desert

Picture 5: Droughts affecting forest resources (natural and irrigated forests)

Picture 8: Grazing pressure in scrub forests

Picture 7: Forest fire in Chir forests of Punjab

4.3 Barriers to enhancement of forest biomass

4.3.1 Prioritization of barriers

The Government of Punjab is committed to enhance the provincial forest biomass through conservation, development, and sustainable management of forest resources. This commitment is manifested through different measures already in place contributing to lands restoration, biodiversity conservation and inclusive conservation of existing natural forests. The stakeholders rated two enhancement options. They agreed that reforestation and restoring forests through sustainable forest management and conservation are the best options for Punjab (Table 10).

Table 10: Ranking of options to overcome enhancement barriers/ challenges

Carbon Enhancement Activities	Location (s)	Future Potential Area	Future Biomass/ Carbon Impact	Total Score
(1: Very Low, 2: Low, 3: Medium, 4: High, 5: Very High)				
Forest Restoration, SFM, Conservation	Chakwal, Rwp, Bhakkar, Jhelum, Attock	4	4	**8**
Reforestation	At provincial level	3	3	**6**
Afforestation	At provincial level	2	3	5

4.3.2 Analysis of barriers

The prioritized forest enhancement initiatives face several barriers (policy, economic, institutional, social and technological). These barriers were elaborated by the stakeholders during consultation sessions (Table 11). The problem tree with prioritized barriers of enhancement activities is presented in Figure 7.

Table 11: Barriers to enhancement of forest biomass

Major Barriers	Underlying challenges
Policy/ governance barriers	• Lack of efficient land use policies and land use monitoring • Lack of incentive-based forest policy implementation • Weak implementation and monitoring of existing policies
Institutional barriers	• Weak outreach of department to the people associated with poor level of community participation and sole reliance on law enforcement which does not work • Lack of coordination mechanism with non-forestry actors • Limited or no do no harm standards to curtail damages of land use on forest land (e.g., mining)
Technological barriers	• Limited knowledge/ lack of geo-spatial tools and monitoring technology • Low capacity to adopt to modern silvicultural practices
Social barriers	• Trust deficit from community leading to low interest and participation • Forest fires / damaged regeneration • Free grazing / compacting of land and loss of regeneration
Economic barriers	• Lack of access to international markets (PES, REDD+) • Lack of value chain promotion of NTFPs, fruits and forest ESs • Weak business plans to attract private sector (NTFPs)

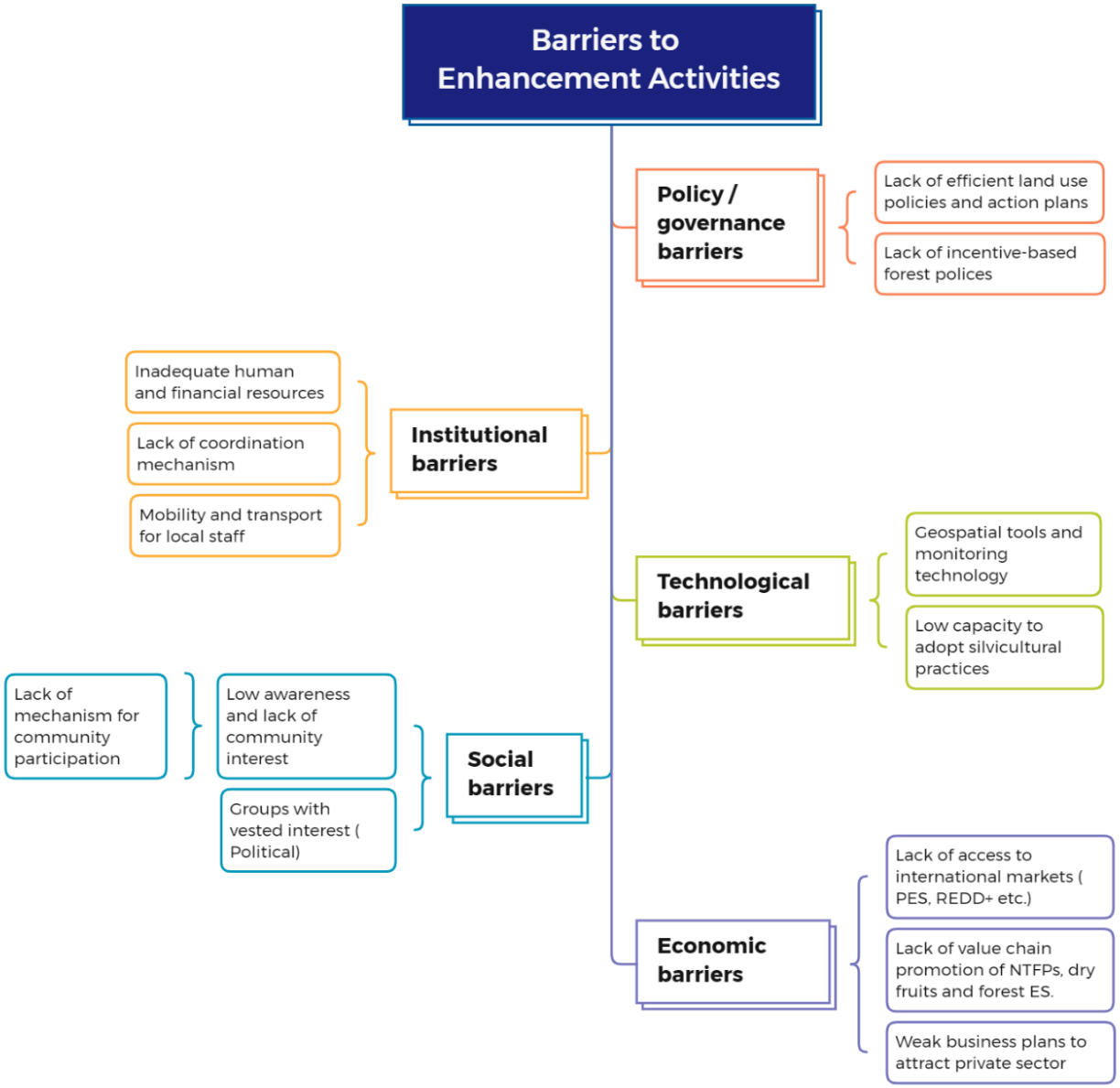


Figure 6: Problem tree of barriers to forest carbon enhancement

5 ACTIONS TO MANAGE DRIVERS, UNDERLYING CAUSES AND BARRIERS

This chapter elaborates on solutions for reducing the rate of deforestation and forest degradation in Punjab and activities for enhancing forest carbon stocks. Different solution pathways have been elaborated and presented in this section.

5.1 Addressing drivers of deforestation

This section documents actions for addressing direct and indirect drivers of deforestation. An action plan is given in Table 12.

5.1.1 Overall actions necessary to curb the drivers of deforestation

Poorly planned infrastructure development, illegal encroachment into forest land, and mining are mostly due to non-availability of strategic land use planning and guidance, poor sectoral coordination as well as lack of policy incentives resulting in poor governance, illegal occupancy of forest land and weak law enforcement and management strategies. REDD+ implementation will be effective when policies and frame conditions for forestry and non-forestry sectors are in sync with each other. REDD+ implementation should include (i) an inclusive governance framework and sound forest monitoring system to timely detect and report land use changes and (ii) well-defined interventions with associated potential benefits to enhance contributing interest from stakeholders.

In addition, a strong support from community institutions needs to be sought to bank on them as an extended implementation arm of policy decisions. Participatory forest management planning is, therefore, essential to manage and overcome drivers of deforestation and forest degradation to assure dividend for the resource as well as for the concerned stakeholders.

Therefore, the PRAP stakeholders suggested that the root cause of the problem (deforestation and forest degradation) needs to be addressed first to improve most immediate forest governance issues particularly the overlapping polices and decisions which are made without inter-sectoral consultation and institutional coordination. In summary, following immediate actions will be necessary to improve governance and reduce deforestation:

- *Ensure clarity on land use* for expansion of infrastructure development and housing facilities. This will include formulation of land use policy and mapping to establish benchmarks and secure forestlands. Advocacy campaign for effective institutionalization and implementation of land use planning and policy will be required.

- *Improved and participatory monitoring mechanisms* to flag encroachments and/ or clearing of forest land to other land uses on timely basis. This includes establishment and implementation of Provincial Forest Monitoring System at sub national level and link this with the national forest monitoring system to detect changes. The institutional structure of the sub-national monitoring and MRV system needs to be revised and strengthened through institutionalising community participation, launch of capacity building programmes for forest staff as well as organized community institutions.

- *Coordination between departments* (esp. forest, planning, land revenue, agriculture/ livestock, mining) for planning and monitoring. This may include reconstituting PRMC and other REDD+ forums in Punjab for informed, timely and inclusive decision making.

5.1.2 Reduce Forest land use change for infrastructure development/ settlements

Infrastructure development and expansion of settlements without proper land use planning is one of the reasons for natural resources degradation, deforestation and forest degradation. Forest land use has not long been a particular focus of land use planning in the province. However, increasing human populations with growing infrastructure needs locally has resulted in the transformation of forests to other land use types such as settlements, mining, technical infrastructure, etc. Strong institutions and clear strategic and incentivized land use policy guidelines help in effective, participatory, sustainable and coordinated management and monitoring of forestry land and resources. A recognition of the multiple production, protection and service functions of the large proportion of forests in the province justifies and impels the adoption of innovative concepts such as adaptive strategy development and strategic spatial planning approaches to ensure an appropriate integration of forests and their management in land use planning and development at local, landscape and provincial level.

This PRAP proposes following main interventions areas as a collective solution to the address forest land use change:

- Provincial forest policy developed and implemented
- Policy for NOC of settlement schemes revised and made stricter
- New right of ways discouraged
- Land use planning and policy developed and implemented
- Integrated land use monitoring indicators/ tools developed
- Improved forest governance through improved coordination between line departments

5.1.3 Reduce Illegal encroachments into forest land

Illegal encroachments are mostly by the power elites and private companies operating in the area to pursue their own vested economic and political interests by building roads, tourist infrastructure and markets and office complexes etc. The forest department lacks the capacity and the authority to enforce its mandate, and lacks support from local government. This PRAP proposes following actions to reduce illegal encroachments into forest lands:

- Law enforcement (including Judicial processes such as arrest, prosecution and, in some cases, conviction of violators) and monitoring strengthened
- Provincial forest monitoring system established and strengthened
- Institutional monitoring capacity (human, mobility) enhanced
- Forest management improved
- Political influence reduced through launch of advocacy awareness campaign

5.1.4 Reduce forest land use change due to mining activities

Though the scale of this driver is low, however, this might expand in future if not addressed in time. The EIA guidelines are available and strong coordination is required among forest and mining department to effectively implement EIA guidelines. Realizing the impact of mining on forest resources the Forest and mining departments have signed an MoU for better coordination and introduced the system of NoCs for mining permits by the forest department. Capacity building of forestry and mining officials is also required to implement these guidelines. The solution tree with strategic options to address drivers of deforestation is presented in Figure 8.

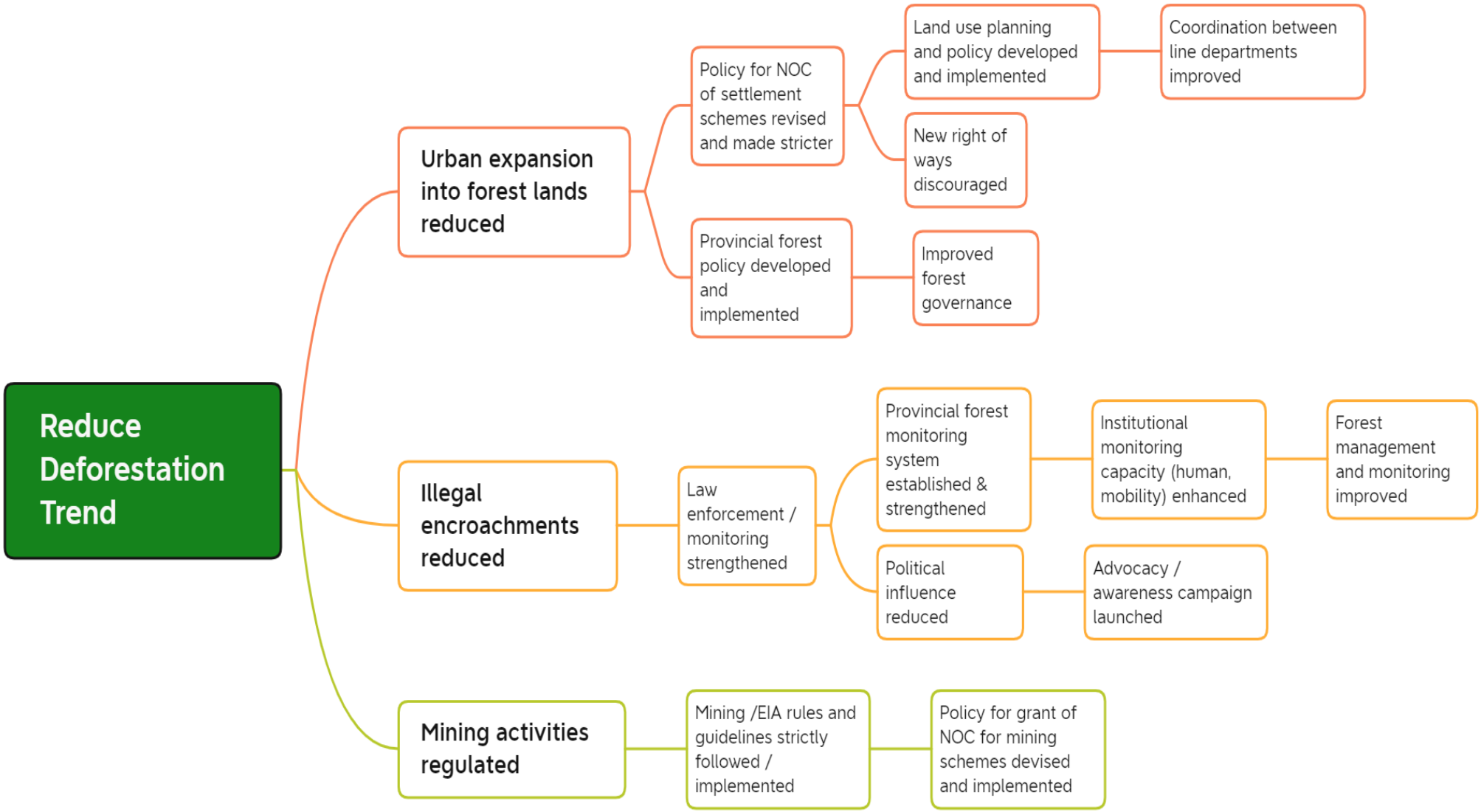


Figure 7: Solution tree of deforestation

Table 12: Addressing prioritized drivers of deforestation

Driver	Key underlying causes	Proposed Actions to address the underlying causes	Indicative Timeframe			Responsible Agencies/Actors		Indicative targets	Indicative Budget (PKR mil.)
			Short term (1-3 yrs)	Medium term (1-7 yrs)	Long term (1-10 yrs)	Lead	Support		
Clearing of forestland land for infrastructure development/ settlements	Poorly planned expansion of infrastructure/ settlements	• Complete demarcation of forest boundaries and linking with the digital land records • Establish land use maps and clear ground marking • Procedure for provision of NOCs for settlement schemes • Include NOC system in land use policy • Monitor land use and early detection of problems	√			Forest department	Planning, Housing, Land Revenue, communities	Land use policy and related rules with very clear do no harm standards to prevent damages to forest lands	25
	In-effective or lack of land use planning and policy	• Inter-departmental committee on land use planning established • Land use monitoring committee and tribunals established • Review policies of agriculture, forests, tourism, water and power, and land revenue in terms of land use planning • Develop integrated monitoring indicators and tools for sectoral land use monitoring and mapping • Implement land use policy	√	√		Forest department	Departments of Planning, housing, land revenue, Tourism, communities		30
	New right of ways due to lack of effective forest policy	• Review and compile the existing policy measures and suggest where the loopholes are • Identify linkages with other government policies that touch on forest to reveal where policy coordination may improve • Identify areas of improvement and submit policy working papers and notification	√			Forest department	Departments of Agriculture, Tourism, Mining, water, livestock, and communities	Improved rules and notifications to reduce the problem	15
	Ineffective coordination system	• Reconstitute PRMC, other relevant bodies • Support establishment of REDD+ institutions under PRAP • Improve coordination between relevant departments • Regular meetings and implementation of decisions	√			Forest department	Local government, finance department	PRMC notification and minutes	20

Illegal encroachment of forest land for agriculture	Weak monitoring, law enforcement/ judiciary process	• Implement Provincial Forest Monitoring and MRV System in Punjab • Improved and participatory monitoring mechanisms • Capacity building of community institutions • Enhance technical knowledge of forestry staff/ stakeholders on forest monitoring systems (including spatial monitoring • Strengthening existing GIS lab through provision of modern geo-spatial/ forest carbon inventory tools and equipment • Regular reporting and draw lessons	√	√		Forest department	Department of law, judiciary and local government		100
	Lack of priority for forestry sector	• Present PRAP and sensitize high influence groups to acquire their support • Prepare and implement lobby and advocacy action plan • Monitoring and evaluation and follow up activities • Organise special awareness seminars for provincial political leadership and local communities to attract political will and community support • Organize media workshop for journalists to enhance their motivation to promote REDD+ in the region • Support publishing stories in favour of green initiatives	√	√		Forest department	Media, local politicians		30
Clearing of forest for mining	Unsustainable mining activities	• Assess and specify (EIA) guidelines in forestry related development projects • Establish a tool (do no harm mandatory guidelines) that integrates forest and other environmental laws and protocols to ensure effective law enforcement • Develop policy guidelines for the grant of NOC for mining activities • DFOs/ PGIU staff is trained on sector specific EIA guidelines to ensure regular monitoring and adherence to the sector specific Environmental Impact	√	√	√	Forest department	Mining department, local administration, law department		40

5.2 Social and environmental risks of proposed actions

This section provides an analysis of any social or environmental harm on people or resources as a result of proposed actions. Major social and environmental risks associated with implementation of actions are given in **Table 13**:

Table 13: Social and environmental risks associated with implementation of proposed actions in Punjab

Risk	Likelihood[28]	Impact	Mitigation measure
The risk of undue influence of privileged groups & arbitrary unilateral decisions by government and/ or domination of decision-making processes and discussion by powerful stakeholders	• Low	• Medium •	• Ensure active representation of communities to provide for local input into forest decision-making • Ensure maximum and effective participation of all stakeholders (particularly local communities and poor and marginalised groups including women)
The risk of legal clarity on carbon rights (property, credit, benefit, management), tenure rights may lead to competing claims	• Low	• Low	• Clarify and legalize carbon/ tenure rights; work in progress by REDD+ / MOCC
Forest conversion in the process of delimitation of forest and private land boundaries in conflict areas as soon as the encroachers learn that they are likely to be removed or relocated.	• Medium	• Medium	• This needs to be countered by a very early awareness raising campaign, including use of electronic media. • Deforestation prior to this process would disqualify the encroachers from receiving any kind of support or incentive.
A centralized technology-oriented monitoring system is misperceived as an attempt to centralize forest resources.	• High	• High	Conduct awareness campaign at community level to address misperceptions

5.3 Addressing drivers of forest degradation

This section documents actions for addressing direct and indirect drivers of forest degradation. The solution tree with strategic options to address drivers of deforestation is presented in **Figure 9.** An action plan is given in **Table 14**.

5.3.1 Overall actions necessary to curb the drivers of forest degradation

Founded on prior experience of participatory forest management in other provinces, capacity development in participatory forest management within the department is essential for reducing the rate of forest degradation in Punjab and would also help to conserve and enrich forest resources. Monitoring may also become efficient and effective when both government officials and forest users have become technically sound in participatory forest management and monitoring as a result of capacity building.

In addition, the complexity of the underlying causes of forest degradation warrants a stronger focus on improved forest governance which is self-accountable and accountable to the communities and citizens. Some of these measures are already available within reformed frame conditions and a matter of effective implementation.

28 Likelihood Chances of this risk becoming real. The impact refers to extent to which this will sabotage REDD+ implementation and its effectiveness

Establishment of an effective and transparent forest monitoring system and coordination mechanism are also necessary to determine if the forest governance and management measures are going in the right direction. Regular change analysis in forest resource will determine chronic underlying causes and help identifying revised solutions if the solutions already determined are not effective.

In summary, following overall actions are necessary to address forest degradation issues:

- ***Ensure implementation of participatory forest management and monitoring practices*** through development of PFMP plans. This is to assure that communities are part of the management structure at local level and forests cannot be conserved with department's command and control system only.

- ***Integration of forest degradation at local level into a centralised, functional, and empowered forest monitoring system and PFMP*** to timely detect changes in forest density classes and confirm direction of measures. A common monitoring system with cross elements able to track total impact of actions against drivers of deforestation and forest degradation needs to be achieved in the province.

- In addition, an ***effective institutional coordination*** system with non-forestry stakeholders needs to be in place to remove bottlenecks and underlying causes of forest degradation as a team (e.g., agriculture, livestock, energy)

- ***Awareness of politicians, legislature, media, and citizens*** is necessary to enhance political and public will for supporting sustainable management of forest resources with institutionalised community participation.

5.3.2 Address water scarcity in dry and arid regions

Sustainable management of water resources in arid/ dry regions is an important area of protection against water scarcity/ drought impacts in Punjab. There is need of long-term measures focusing on improving irrigation/ rainwater management and governance; investigating business and farm diversification strategies (e.g., selecting drought tolerant varieties, addressing desertification that cause land degradation in drylands) and reinforcing legal, policy and institutional frameworks for drought risk mitigation and dryland development. On the other hand, water efficient technologies to address droughts are essential to address forest degradation due to climate induced droughts coupled with technical and technological barriers for enhancement of forests. The following actions are proposed to address water scarcity in arid/ dry forest regions:

- Develop provincial climate change policy to set provincial priorities and guidance to identify and address the spatial, social and environmental nature of current and future climate risks (particularly water scarcity and climate induced droughts), hazard exposures, vulnerabilities and adaptive capacities. This needs a strong lobbying and awareness campaign at provincial level targeting politicians, media and youth.

- Integrated watershed management practices need to be adopted through development of effective watershed management plans in arid/ dry land areas. Important activities that need to be considered in these plans may be development of water ponds to save rainwater and reduce downstream flooding in Barani/ rainfed forest catchments, development of check dams along upland water courses to reduce the sediment load and soil erosion, and planting drought resistant tree species by developing troughs along water ponds

5.3.3 Reduce pressure and demand for firewood

One of the key drivers of severe forest degradation in Punjab is the pressure on natural forests for firewood for heating and cooking due to lack of alternate energy sources. Even fuelwood shortage is grave in many areas and people are forced to purchase fuelwood at a very high cost. Therefore, effective measures are required to deal with multiple options to address forest degradation – knowing the fact that the communities are also in search for cheaper and easy to access energy options and improve quality of their lives. Demand and supply gap may also be reduced by putting saline and water-logged lands to use by raising forest plantation which may help reclaiming lands as well as providing wood. Alternative sources of fuelwood for heating and cooking can reduce the demand for fuelwood from the degraded natural forests. Promotion of fuel-efficient cook stoves, solar panels and energy plantations on barren/ private lands may also reduce the rate of degradation in natural forests. Based on underlying causes, the PRAP proposes four actions as a collective solution:

Enhance forest base in hotspot areas suffering shortage of firewood. This action constitutes supporting forest enhancement schemes to increase forest base for a greater and consistent supply of energy wood as well as other carbon and non-carbon benefits.

Providing alternatives livelihoods to improve affordability to alternative firewood and timber options may be part of strategy. The livelihoods of the local communities, seasonal migrants and nomads are mostly associated with livestock rearing who are highly dependent on forest resources to graze their livestock resulting in forest degradation. Therefore, this PRAP proposes following alternative actions to reduce high livelihood dependency on forests:

- Silvo-pastoral and agro-forestry systems promoted, adopted supported with provision of grants and material to enhance ecosystem productivity and stability through integrated management of soil and water resources and animal diversification. This must be supported through local awareness raising, capacity development and provision of incentives to make farm / energy / agro-forestry more attractive for citizens and communities. The activities may include combining trees (or other woody species) and animal production, allowing for planting multi-purpose (energy and palatable) scattered trees and shrubs in pastures, establishing fodder banks and fruit orchards, live fences, wind breaks, grazing under newly raised plantations at suitable sites to meet local demands, alley cropping, multilayer tree gardens and intensive animal husbandry (ranching). Because silvo-pastoral and agroforestry systems incorporate multiple dimensions (environmental, productive, economic, and cultural), it is important to design them according to the local circumstances and include specialists from different disciplines. There are some successful experiences in the country with agroforestry systems, and it is already considered a high priority mitigation option for the agriculture sector in the NDC.
- In order to make silvo-pastoral practices successful and effective, large-scale awareness raising and capacity building of all the stakeholders (particularly local communities, seasonal migrants, and nomadic groups) will have to be carried out on a regular basis.
- Identify and provide access to potential markets enabling local communities to sell their agriculture products
- Incentive based PES Schemes designed and implemented. The PES scheme is aimed at compensating forest owners or users to ensure a certain level of health in specific ecosystems to maintain or improve environmental services that the forest provides, including the increase in forest carbon stocks and reduced deforestation and forest degradation. PES schemes can be effective if PES is managed in such a manner that economic returns directly reach the forest-dependent communities (including users, owners, nomads, and seasonal migrants). However, the overall socio-economic feasibility of PES will depend on alternative income generation options available to local communities at the local level in an easy-to-access manner.

Alternative and more efficient energy sources promoted and provided on pilot basis. The alternative energy refers to doing away from use of firewood for heating and cooking. Efficient energy refers to methods which lead to reduced consumption of firewood for multiple benefits (cooking beside water heating or space heating along water heating). Proven models of fuel-efficient stoves need to be shortlisted and promoted through market-based solutions since free distribution of stoves has failed several times in other parts of country. One way of market-based solution is to train local hardware stores on approved design and provide them a start-up incentive so that the stoves continue to be build and sold. The introduction of alternative energy sources, cook stoves and kilns must be designed jointly with the end-users because no one single model can provide a feasible solution for energy needs in all areas. It is important to highlight that fuel efficient stoves are considered as a high priority mitigation alternative in Pakistan's Nationally Determined Contribution to UNFCCC. Similarly, smart startups may be supported to promote solar energy for cooking. Where funds and potential are available, small hydropower projects may be introduced for a longer-term benefit.

Use of forest wood substitution for construction through a market-based solution needs to be promoted by providing attractive incentive to the businesses. Until and unless market is incentivized for introduction of affordable alternative building material, the prices will not go down and citizens will find it hard to use alternative options.

There is a need to ***strengthen local community participation*** in forest management to strengthen communal controls on free grazing (and associated practices such as forest fire), which is chiefly responsible for damaging natural regeneration. Suitable context specific measures need to be encouraged for integration in the PFMPs.

5.3.3 Reduce Forest Fires (intentional/ natural/ negligent)

Forest fires are among the main factors causing huge damage to forest ecosystem and in larger context climate change. In Punjab, forest fire occurs when the forest burns either naturally or by anthropogenic activity (tourism, pastorals) which brings loss of organic matter, forest degradation and greenhouse gases emissions, mainly carbon dioxide and methane. Natural forest fire includes an unplanned burning of forest due to lighting mostly in dry season. Human-induced Forest fire results due to carelessness of people (tourists and pastorals) when they leave burning woods after cooking, cigarettes or an unauthorized burning practice e.g., shifting cultivation, fuelwood collection. Most of the fire events occur in Rawalpindi and Attock. In 2019, almost 1000 ha and more than 2000 ha of forest area was burnt in Attock and Rawalpindi, respectively[29]. The following action are proposed to reduce fire events in forest areas:

- Integration of forest fire monitoring (both spatial and ground based) into sub-national forest monitoring system
- Law enforcement mechanism improved
- Institutional capacities (technical, human, mobility, communication) on forest fire prevention and management enhanced
- Timely forest fire detection and reporting system through structured participation of local communities
- Grazing practices organised and regulated to control intentional/ negligent fire events by pastorals
- Responsible eco-tourism promoted
- Awareness raising among tourists/ pastorals/ locals on forest conservation
- Coordination between line departments (tourism, forest, and livestock) improved

29 https://earthenable.wordpress.com/2019/10/09/forest-fires-in-pakistan-a-geospatial-analysis/

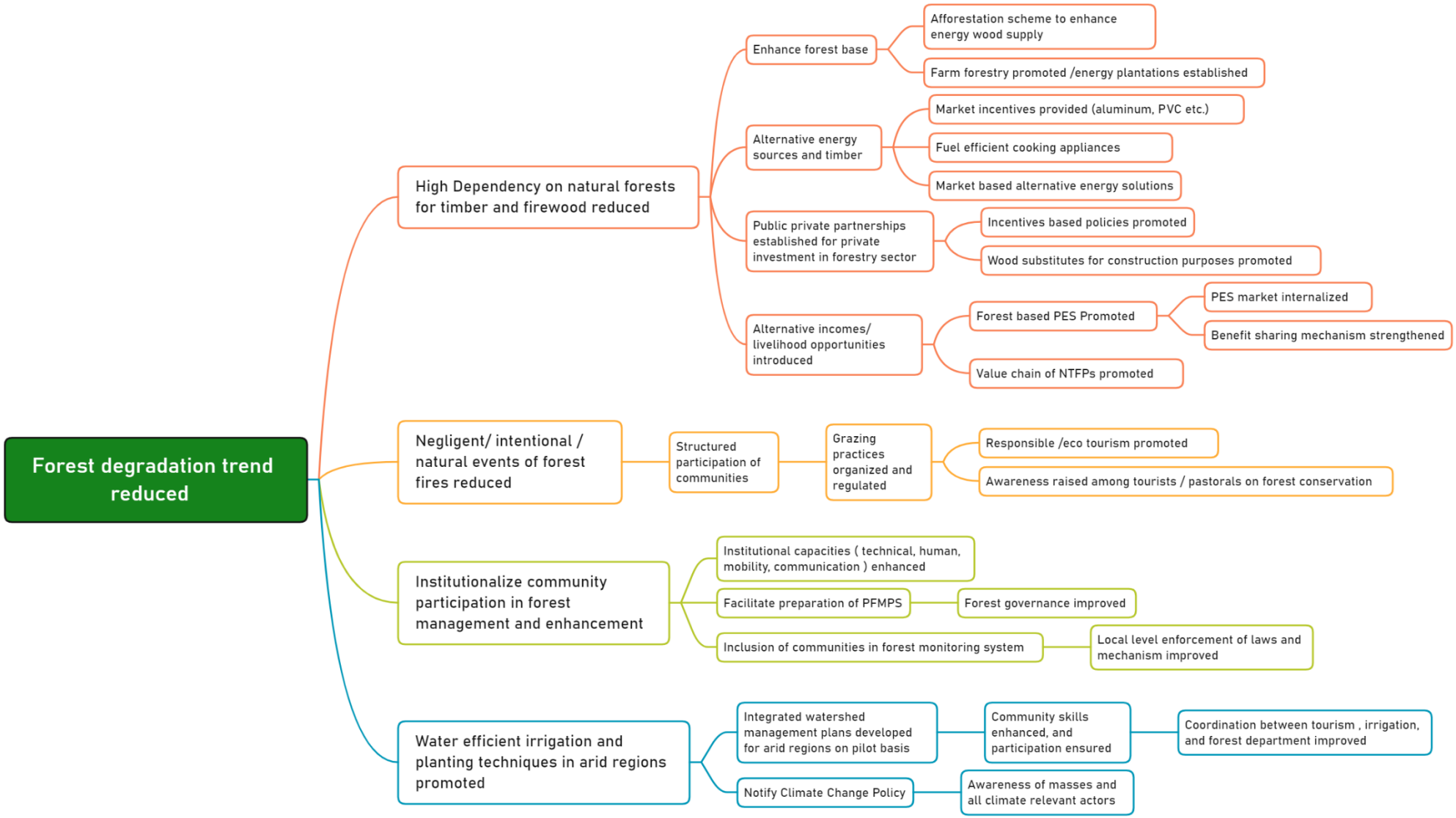


Figure 8: Solution tree of degradation - Punjab

Table 14: Addressing drivers of forest degradation

Driver	Key underlying causes	Proposed Actions to address the underlying causes	Indicative Timeframe			Responsible Actors		Indictive targets	Indicative Budget (PKR mill.)
			Short term (1-3 yrs)	Medium term (1-7 yrs)	Long term (1-10 yrs)	Lead	Support		
Water Scarcity/ droughts (Ariid regions)	Looming water scarcity in Punjab	• Develop provincial climate change policy with focus on: ▪ Spatial analysis of climate risks, identifying water scarcity hotspots + mitigation options ▪ Highlight the role of forests / natural habitats ▪ Provide implementation, monitoring plan at provincial level ▪ Awareness of communities and relevant departments	√			Planning and Development Department	Forest department All line department, communities	Climate change policy and coordination mechanism	20
	Poor water and watershed management	• Aggressive watershed management measures in drought prone areas biological and structural means (e.g., small dams) • Engage communities in watershed management activities • Awareness raising on water conservation (crops and domestic)	√	√	√	Forest department	Local communities,	At least 10 watershed sites in drylands	200
	Improved coordination among actors	• Engage with agriculture department on systematic application of water efficient / spate techniques at catchment level • Engage NGOs and private sector to promote drought mitigation actions in forestry and agriculture	√	√	√	Forest department	NGOs, Agriculture, communities	Dryland management techniques popularized	165
High demand for firewood and timber	Lack of supply of energy wood	• Undertake studies to know the extent of dependence on forests for firewood • Identify afforestation / enhancement schemes on forestlands • Promote energy plantations on private land (incl. incentives for reclaiming saline and water-logged lands through trees) • Engage private sector, to provide finance for plantings • Establish and monitor energy plantations	√	√	√	Forest department Community	Private sector, communities		225
	Lack of non woody alternatives	• Improve fuel efficiency of cooking appliances • Identify hardware vendors + train hardware and promote	√	√	√	Forest department	Market actors, communities		25
		• Incentivise market based alternative energy solutions • Market incentives to promote alternative wood substitutes • Awareness campaign launched on alternative options	√	√	√	Forest department	Energy actors (public, private)		65
	Lack of alternatives to support local livelihoods	• Silvo-pastoral and agro-forestry systems promoted, adopted supported with provision of grants and material • Encourage forest SMEs (NTFP, growing planting stocks)	√	√		Forest Department	Private sector, communities		80
		• Identify Forest based PES schemes[30] for conservation. • Develop benefit sharing mechanism and implement	√	√		Forest department			90

30 A Payment for Ecosystem Services (PES) scheme is aimed at compensating *forest owners or users* to ensure a certain level of health in specific ecosystems to maintain or improve environmental services that the forest provides, including the increase in forest carbon stocks and reduced deforestation and forest degradation. The basic idea of a PES scheme is that forest owners or direct users can ensure the provision of environmental service for the enjoyment and use of those who can compensate for it. PES schemes would create a positive incentive to keep or improve forested areas (in quality or extension) and to avoid other activities that destroy or degrade the forest. PES schemes should also promote alternative sustainable activities to provide additional income to forest owners or users. NRS, 2018

Driver	Key underlying causes	Proposed Actions to address the underlying causes	Indicative Timeframe			Responsible Actors		Indictive targets	Indicative Budget (PKR mill.)
			Short term (1-3 yrs)	Medium term (1-7 yrs)	Long term (1-10 yrs)	Lead	Support		
Forest Fires	Forest fires affecting natural regeneration	• Integration of forest fire monitoring (both spatial and ground based) into sub-national forest monitoring system • Institutional capacities (technical, human, mobility, communication) on forest fire prevention and management enhanced • Grazing practices organised and regulated to control intentional/ negligent fire events by pastorals • Responsible eco-tourism promoted • Awareness raising among tourists/ pastorals/ locals on forest conservation	√	√	√	Forest Department	Departments of Tourism, Livestock and Fire brigade, Local administration		85
Lack of effective forest monitoring at local level	Weak implementation of participatory approach	• Integrate community based forest monitoring and alerts in provincial Forest Monitoring System • Institutionalise participatory forest management through legal measures • Prioritize forest areas / specific sites for PFMP • Conduct and implement PFMP by allocating necessary resources and ensure participatory monitoring	√	√	√	Forest department	Communities	At least 10 PFMPs	850
		• Improve communities monitoring capacities to contribute to forest monitoring (compliance with laws, watch and monitor forest fires, grazing etc.) • Establish FGRM to address issues at any stage of community engagement / PFMP implementation	√			Forest department		At provincial level	10

5.4 Social and Environmental Risks of Proposed Actions

This section provides an analysis of any likely social or environmental harm on people or resources as a result of proposed actions for addressing underlying causes of forest degradation. Major social and environmental risks associated with implementation of actions are given in Table 15.

Table 15: Social and environmental risks associated with implementation of proposed actions in Punjab

Risk	Likelihood[31]	Impact	Mitigation measure
The risk to biodiversity from higher tendency to use exotic fast-growing species for silvo-pastoral/ agroforestry systems	• Medium	• Low	Establish SOPs for incentivised agroforestry schemes and production systems including how species will be selected for different types of ecological conditions.
Alternative energy / building material are expensive to afford by common people and their hardship increases.	• High	• Medium	Provide policy incentives to market players and regulate market prices.
Rebound effect of alternative energy with risks of higher emissions	• Medium	• High	Careful analysis of options with energy actors; and provide incentives for low emission start-ups and up scaled solutions
A centralized technology-oriented monitoring system is misperceived as an attempt to centralize forest resources.	• High	• Medium	Run awareness campaign at community level to address misperceptions
The risk of elite capture in participatory forest management	• Medium	• Medium	Active participation of field staff of the forest department and local communities essential to ensure inclusiveness
Rebound effect of unsustainable energy options with high emission risks	• Medium	• Low	Together with energy actors, carefully analyse alternatives and encourage cleaner options with providing market support and encouraging smart start-ups.
Disputes within community when participatory community groups try to counter deforestation or free grazing	• High	• Medium	Strong skills are needed at the DFO level to mediate such disputes. Communities need to be equipped with legal justifications to counter stubborn elements; ensure graziers have suitable alternatives; ensure grievance redressal mechanism works.

31 Likelihood Chances of this risk becoming real. The impact refers to extent to which this will sabotage REDD+ implementation and its effectiveness

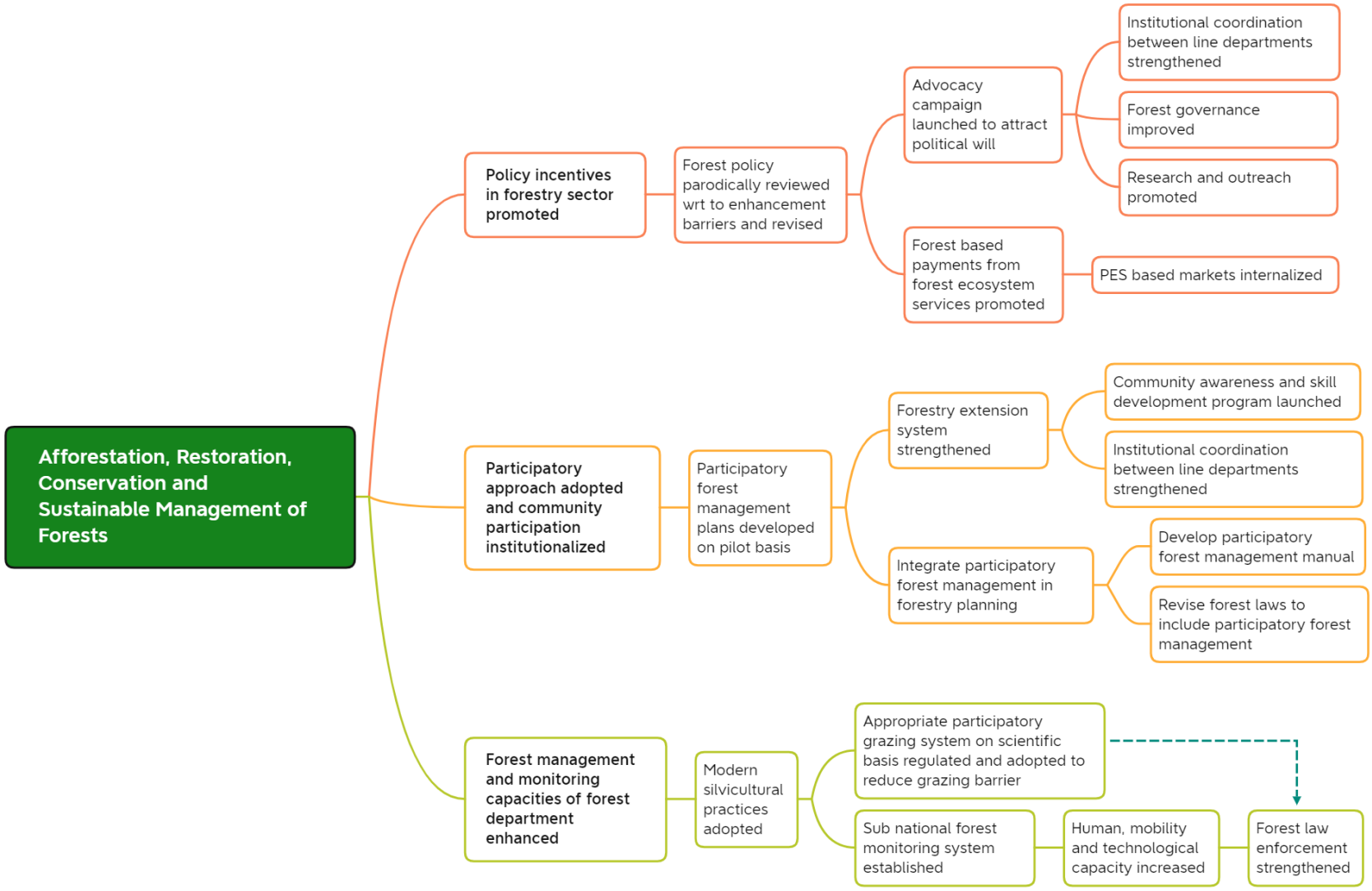
5.5 Removing barriers to enhancement activities, Sustainable Forest Management and Forest Conservation

Multi-stakeholder consultation led to identifying a number of measures to remove potential barriers to enhancement activities. Some of these measures overlap with the solution pathways for addressing underlying drivers of deforestation and forest degradation and thus have already been explained in the earlier section. These are compiled in Table 16. The solution tree with strategic options to address barriers to enhancement prepared by the participants during consultation workshop is presented in Figure 10.

Table 16: Key results identified from solution tree of barriers of enhancement

Policy incentives in forestry sector promoted
• Provincial Forest policy revised to include prescriptions necessary for REDD+ implementation in the province and implemented • Advocacy campaign launched to attract political will • Forest based payments from ecosystem services promoted • PES based markets internalised • Research and outreach promoted • Forest governance improved through strengthening of Institutional coordination between departments
Participatory approach adopted and community participation institutionalized
• Participatory forest management plans developed on pilot basis • Forest extension system strengthened and aligned with the emerging demands from forests • Community awareness and skill development program launched
Forest management and monitoring capacities of forest department enhanced
• Modern silvicultural practices adopted • Sustainable Forest Management piloted in various forest types • Sub-national forest monitoring system established • Appropriate participatory grazing system on scientific basis regulated and adopted to reduce grazing pressure • Human mobility and technological capacity increased • Forest law enforcement strengthened

In case of Pakistan and Punjab both the barriers to Sustainable Forest Management and Forest conservation are seen together under the overall barriers to forest restoration as these are more cross cutting and many drivers of deforestation and forest degradation also qualify as barriers and while addressing those priority drivers of deforestation and forest degradation, the barriers to SFM and forest conservation will also be addressed.


Afforestation, Restoration, Conservation and Sustainable Management of Forests
Policy incentives in forestry sector promoted
Forest policy parodically reviewed wrt to enhancement barriers and revised
Advocacy campaign launched to attract political will
Institutional coordination between line departments strengthened
Forest governance improved
Research and outreach promoted
Forest based payments from forest ecosystem services promoted
PES based markets internalized
Participatory approach adopted and community participation institutionalized
Participatory forest management plans developed on pilot basis
Forestry extension system strengthened
Community awareness and skill development program launched
Institutional coordination between line departments strengthened
Integrate participatory forest management in forestry planning
Develop participatory forest management manual
Revise forest laws to include participatory forest management
Forest management and monitoring capacities of forest department enhanced
Modern silvicultural practices adopted
Appropriate participatory grazing system on scientific basis regulated and adopted to reduce grazing barrier
Sub national forest monitoring system established
Human, mobility and technological capacity increased
Forest law enforcement strengthened

5.6 Indicative Budget

A total indicative budget for the actions identified in the Provincial REDD+ Action Plan is **PKR 2110** million. This may include public funding as well private investment (including projects financed by international donors and NGOs to support PRAP actions). **Table 17** summarizes the Action Plan budget for short term, medium term and long-term activities while **Figure 11** shows proportions of Indicative budget for short-, medium- and long-term interventions.

Table 17: Budget for Short Term Activities (2022-2023) of Intervention Packages of PRAP

	Indicative Budget (PKR mill.)			
Proposed actions	**Short term (1-3 years)**	**Medium term (1-7 years)**	**Long term (1-10 years)**	**Total**
Forest enhancement / afforestation schemes	50	75	100	225
Improve agriculture productivity & agroforestry in drought prone areas	25	50	90	165
Alternative livelihoods (NTFP, skills)	30	50	0	80
Payment for Eco-system Services schemes	35	55	0	90
Effective Provincial Forest Monitoring and MRV System	60	30	10	100
Land use policy, mapping, and enforcement	30	20	0	50
Climate change policy and awareness campaign	20	0	0	20
Improve coordination among departments	5	5	0	10
Promote sustainable alternative energy / timber sources	15	30	20	65
Improve fuel efficiency of cooking appliances	20	5	0	25
Watershed management for drought mitigation and improved water flow	50	100	50	200
Forest fire management and social control in natural fire prone forests	25	30	30	85
Implement participatory forest mgt. & monitoring	150	300	400	850
Systematic drought mitigation strategy / actions	25	0	0	25
Review existing policy and measures on right of way, mining, awareness	25	25	20	70
Special incentives to manage saline and water-logged areas	20	30	30	80
Total	**585**	**805**	**750**	**2140**

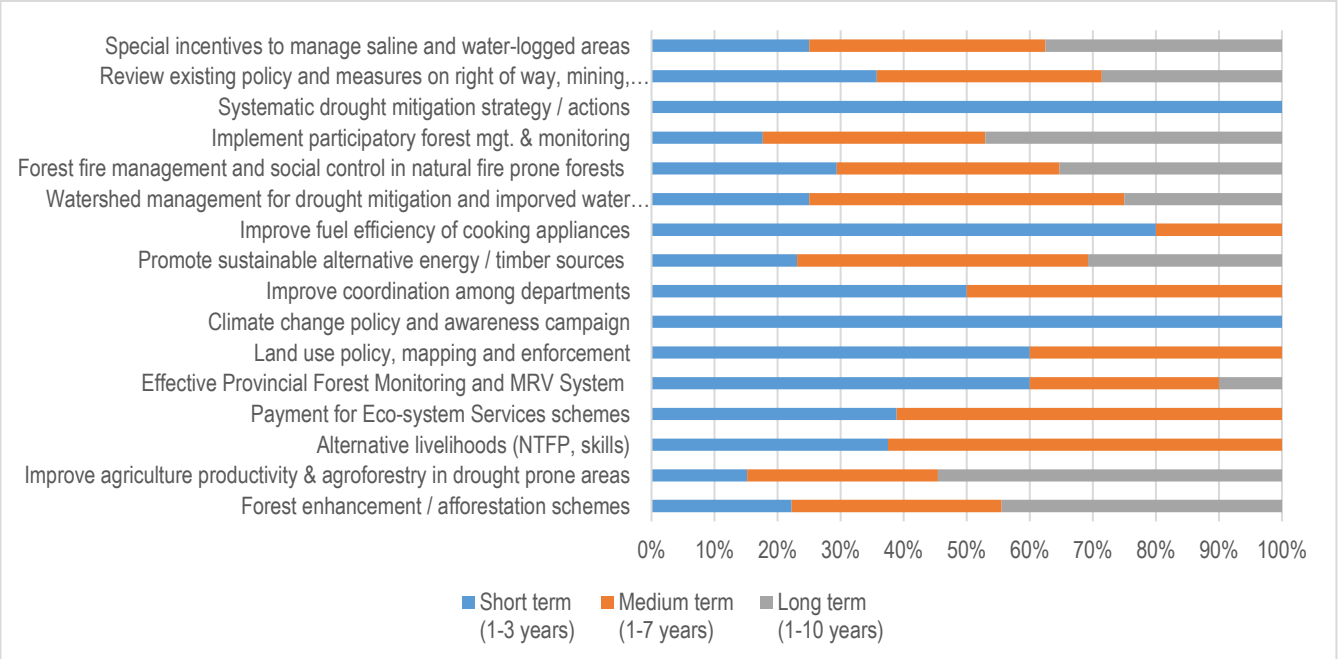


Figure 9: Indicative budget proportions Punjab PRAP 2022-2031

6 BENEFIT SHARING MECHANISM

A benefit sharing mechanism for Punjab was discussed and analyzed during multi-stakeholder workshop for Provincial REDD+ action plan.

A fund-based model for REDD+ benefit sharing is proposed and kept flexible to cope with diverse stakeholders in various land tenure situations (Figure 12). A contract agreement between communities and FD will provide legal grounds for REDD+ implementation and benefit sharing. The REDD+ benefit sharing model comprises of 'vertical' (flow of fund between different institutions from international/federal/regional to divisional level) and 'horizontal' (benefits distributed laterally between participants at the local level) components. The monitory returns from REDD+ activities (carbon credits sale) would be divided into three heads i.e., government share (80% for Reserve and protected forests), community share (20% of the net PES income from protected forests after deduction of government share and taxes etc.), 30 % to be spent on the rehabilitation of the protected forests, 30% to be spent on infrastructure development activities for the benefit of the forest dependent communities within protected forests.

The government share and developmental share would be utilized for execution of REDD+ plans to improve livelihood of locals (especially the non-owner and other deprived segments like poor and women). Each REDD+ plan (through its management committee) will define its Yearly Plan of Operation (YPO) for grant of annual funds and submit receipts for the expenditures of the same to the quarter concerned (divisional office). The plan must also balance the human use rights with stress on environment and will ensure sustainable use of resources.

This PRAP proposes a formal arrangement between local stakeholders and Forest Department to provide legal grounds for REDD+ implementation and sharing of Carbon and non-Carbon benefits. In the proposed REDD+ benefit sharing model, the monetary returns from REDD+ activities (carbon credits sale) would be divided differently for different forest tenures into various heads. There are a few fundamental principles to be followed:

1. The final decision for sharing the Carbon benefits with entities outside the province will rest with the provincial government as the owner of land and natural resources in the province.
2. The decision to engage with voluntary market or buyers of Carbon credits either directly by the province with voluntary markets or via Federal Ministry of Climate Change will also rest with the provincial government in the best interest of forest resources and beneficiaries.
3. REDD+ benefits need to be seen independently of timber benefits. In case of scientific harvesting through sustainable forest management, the sale proceeds will be distributed exactly as stipulated for Reserved, Protected, Guzara or any other legal categories of the forests. In case of REDD+ benefits, the same proportion of revenue sharing do not have to be applied since Carbon is a new product and the revenue will be generated due to reduced deforestation and forest degradation.
4. A greater share to the forest owners, right holders and users will result in better REDD+ benefits since most of the drivers to be removed originate at that level. The forest owners, right holders, forest users and forest department staff must be incentivised to contribute more to addressing drivers.
5. The owners' and non-owners' share will be divided into cash and kind. In kind benefit distribution will be ensured in the shape of schemes which have a direct contribution to reducing drivers of deforestation and forest degradation and forest enhancement.

6. The cost of transaction for individual REDD+ case under negotiation with a potential buyer will not be more than 10% of the total potential revenue so that maximum benefits may be retained for different stakeholders.

Punjab's benefit sharing mechanism is presented in **Figure 12**.

1. **Reserved and Protected forests**
    i. The department will be entitled to 80% share from both Reserved and Protected forests.
        1. The MoCC will be entitled for 5% share out of the government's share on case-to-case basis.
        2. 10% will be retained by the Government of Punjab
        3. 10-20% will be allocated to Forest department field staff as an incentive
        4. The remaining 65-75% will go to forest development and enhancement activities
    ii. Customary right holders are entitled to 20% REDD+ benefits from Reserved and Protected forests. This fund will be spent on development activities related to

2. **Private forest/Guzara**
    i. The private owners will receive 80%. A significant proportion of these funds will be spent on development schemes related to REDD+ in consensus with owners.
    ii. The government will be entitled to 10% share and will be spent on forest development and enhancement activities
    iii. Customary right holders are also entitled to 10% REDD+ benefits, spent on local development

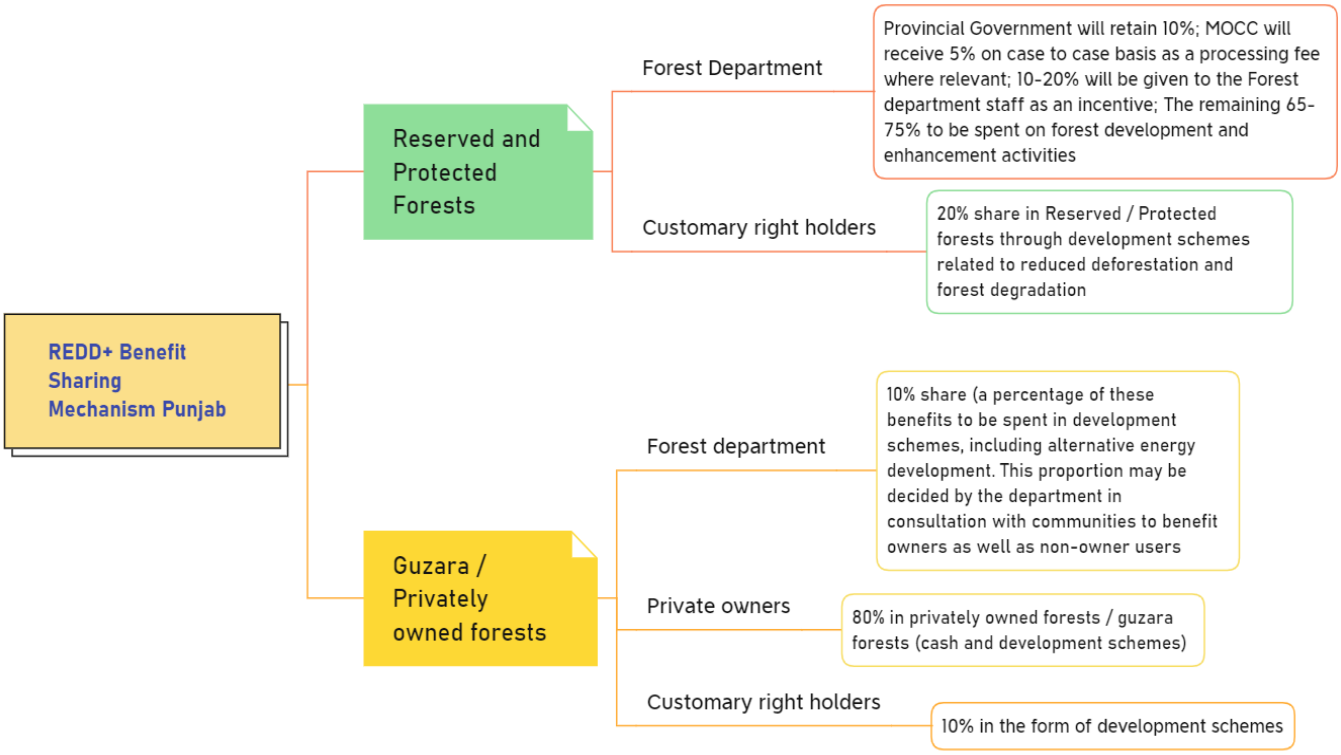


Figure 10: Flow Chart of Carbon and non-Carbon Benefit Sharing Accrued from REDD+ Programme

7 INSTITUTIONAL ARRANGEMENTS FOR IMPLEMENTATION OF PRAP

7.1 Institutional anchorage of REDD+ and responsibilities

The NRS established REDD+ institutions at national and sub-national level. However, during consultative workshop, the participants proposed the establishment of a number of other institutional set-ups at provincial level, regional/forest circle and district/local levels. In addition, it also proposes the establishment of certain thematic working groups to guide implementation of the various technical aspects of the strategy. For synchronizing the PRAP with NRS, the organogram for REDD+ Implementation in Punjab as envisioned in NRS is shown in Figure 13

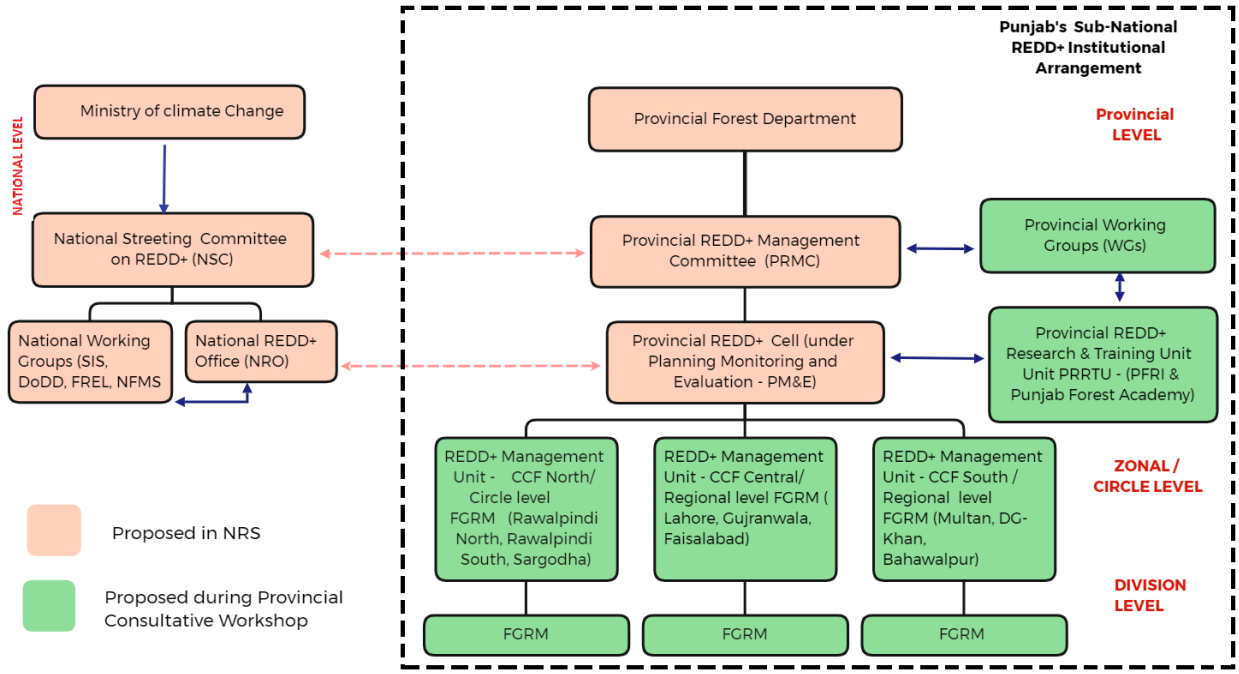


Figure 11: Sub-national REDD+ Institutional arrangements for Punjab

- **Provincial REDD+ Management Committee:** This committee will be headed by the Secretary Forests and will perform as an advisory and steering body in preparation of REDD+ policies, plans, laws and institutional mechanisms in addition to carrying out previously determined mandate and supervisory functions.
- **Provincial REDD+ Thematic Working Group:** Four groups are proposed to provide technical guidance as follows:
    a. Technical working group on FREL/FRL.
    b. Technical working group on Provincial Forest Inventory and MRV.
    c. Technical working group on REDD+ Social and Environmental Safeguards and Grievance Redress Mechanism.
    d. Technical working group on REDD+ Finance
- **Provincial REDD+ Cell/ Provincial REDD+ Management Unit:** This unit will be responsible for designing and implementation of REDD+ strategies and action plans at the provincial, administrative and zonal/ circle level in consonance with the national and international framework. The provincial REDD+ Cell/ Provincial REDD+ Management Unit (PRMU) will be established in the office of CCF Planning, Monitoring and Evaluation. The REDD+ cell/ PRMU will be headed by the Project Director/ Provincial REDD+ Coordinator/ Provincial REDD+ focal person of Punjab REDD+ Programme.

- Provincial REDD+ Research Unit/ Committee
  The provincial REDD+ research unit will be based in Punjab Forest Research Institute (PFRI) Faisalabad while the training unit will be based in Punjab Forest Academy, Ghora Gali. A research committee will be formed representative of all administrative units to promote and coordinate research on REDD+ related thematic areas. This committee will also perform Quality Control checks on satellite based and forest inventories.
- Three Zonal REDD+ Management Units: The Zonal REDD+ Management Units (ZRMUs) will be established in Rawalpindi, Lahore, and Multan. These regional units will (i) support the provincial REDD+ Cell and oversee field and implementation activities of the pilot REDD+ project sites, (ii) undertake awareness raising/capacity building activities for forest staff and local communities, and (iii) collaborate with forest circles and divisions.
- Forest Circle Level REDD+ Social and Environmental Safeguards (SES) and Grievance Redress Mechanism (GRM): The circle level SES and GRM will be coordinated by the respective Conservator of Forests and will ensure adherence to the Social and Environmental Safeguards.
- Forest Division Level REDD+ FGRM: The division level SES and GRM will be chaired by the Divisional Forest Officer of the Forest Division concerned. It will work as Think Tank and resource pool for the Provincial REDD+ Management Committee. It also will serve as platform for discussions on and resolution of REDD+ related issues at the district level. It will provide data and information on REDD+ implementation at the district level to the provincial REDD+ Management Committee.

7.2 Feedback, Grievance Redressal Mechanism (FGRM)

A Feedback Grievance Redress Mechanism (FGRM) has been designed[32] at national level as part of national REDD+ readiness process to enable clear and effective handling of complaints or conflicts arising from the implementation of REDD+ activities. The FGRM is designed on the principles of legitimacy, accessibility, predictability equitability, transparency, rights compatibility and enabling continuous learning. The Standard Operating Procedures – SOPs for FGRM are defined and integrated into Safeguard Information System – SIS (www.pakistansis.com). A systematic stepwise procedure will be adopted for FGRM: i) Receipt and registration of feedback, grievance or complaint; ii) Investigation of the grievance or complaint; iii) Resolution to the utmost satisfaction of parties and in accordance with the rules, and; iv) Monitoring of implementation of the agreed resolution. These steps are in accordance with the FCPF guidelines. In total 30 working days are contemplated from the moment the complaint is received until its disposal. A summary of the SOPs of FGRM is given in (Table 18). The aggrieved parties may decide to use the FGRM in preference to other available mechanisms.

The grievance redressal is also part of the existing provincial forest related policies and programmes in which complaint procedures are already defined and platforms to lodge complaints are available. The Punjab province has also established its provincial FGRM for REDD+ following guidance from the national FGRM. This action plan proposes the DFO office as the main FDRM since it is locally located and is best known to the forest communities. The DFO office needs to publicize a specific desk, phone number and email address through which written complaints may be registered. If not resolved, the matter will be reported to the higher levels. The system is not operational yet, however efforts will be made to operationalize this to first sensitize DFO level staff on how to operate FGRM. Mass awareness campaign on REDD+ will also include publicity of FGRM so that they can access platforms made available to them to provide their feedback and lodge complaints.

32 https://www.redd-pakistan.org/wp-content/uploads/2015/08/Draft-Final-Report_final.pdf.

Table 18: Recommended FGRM mechanism

Steps		Process	Processing days	Responsibility to Receive and Deal with Complaint	Communication Tools/ Channel	Outcome
1st		Receipt and registration of complaint / grievance	Five business days	Divisional level FGRM	**Channels**: Email, complaint box, specific desk, phone number	The Complaint is received, registered, lodged and sent to complaint officer at DFO level
2nd		Investigation	Fifteen business days	Designated Complaint Officer	**Tool**: Diagnostic questions to gather information about relevant actors/ parties, nature of complaint, the request made by claimant and position of other party, violated, or recognised legal rights, supporting witness, evidence, and prayers from parties **Channel**: Complaint officer to contact directly with the claimant and other relevant parties	The complaint is resolved or taken to a relevant level for resolution. Comprehensively document grounds for complaint and record support from rules.
3rd		Resolution	Fifteen business days	Designated Complaint Officer	**Tool**: Written response about decision process **Channel**: Face to face meeting with parties and mutual discussion at appropriate level i.e., district, village, or province	A signed agreement.
4th		Monitoring	3 – 12 months	Provincial REDD+ focal person	**Tool**: The FGRM monitoring database from which the information will be analysed **Channel**: Coordinated FGRM monitoring system between DFO and provincial REDD+ Cell	The patterns of complaints recognized, the causes of the complaint are identified, and the effectiveness of handling of complaints by PRMUs evaluated.

7.3 Assessment of existing capacities and coordination

This capacity assessment was guided by the following:

1. Capacity-Based Needs Assessment (CBNA) report of 2014[33] (updated in 2017-2018[34]) to ensure consistency and comparability in reporting the capacity gaps;
2. Discussion on department's human and technical capacities during REDD+ Readiness consultations (R-Package)
3. Consultations on assessment of technical and extension systems at sub national level

The Forest department has its own financial management mechanism and human resources following the government financial management guidance to manage both public and international funded projects.

The Punjab province has established institutional capacities and resources to implement REDD+. However, there is no designated staff for financial management of REDD+ activities, in particular, at provincial level. The PRAP recommends dedicated REDD+ unit with essential support system (including Provincial Forest Monitoring Unit) since during the implementation phase, REDD+ will not be a part time task to be performed by an officer occupied with other responsibilities.

The province has also established its provincial Feedback Grievance Redressal Mechanism for REDD+ following guidance from the national FGRM. However, it is not yet operational and may require capacity building at Circle and lower levels to make it functional. A start may be taken from pilot PFMPs and expanded to other specific interventions.

The communication strategy is not yet available and information sharing tools/ channels need to be identified and accessible to public in English and Urdu to keep the stakeholders informed about the REDD+ processes and progress. This is the reason that this discussion came up again during PRAP consultation and one of the outputs exclusively focuses on establishing REDD+ implementation framework.

Punjab Forest Department has institutional capacity for regular spatial forest monitoring and ground-based inventory, however the mapping and reporting capacities in compliance to the requirements of IPCC's Forest carbon emission reporting are limited. The department also has well established independent SLMS Section/Unit comprising of combined GIS/RS Lab with required human resources including SLMS expert, RS analyst, GIS analyst, GIS Operators, IT expert, system engineers and trained surveyors. Computer and IT infrastructure are also adequate to undertake provincial level SLMS workflow. The Forest Department also possesses high end DGPS survey equipment and has recently acquired mapping grade professional UAV for monitoring the plantations. However, the department lacks licensed newer versions of RS/GIS software. Expertise is available for imagery data acquisition, processing and analysis including field data collection for SLMS based data development. Additionally, FD has developed web-based forest management information system (MIS) integrating WebGIS application in the MIS platform.

Punjab forest department also has capacities of forest inventories for timber management, fuel wood and plantations activities for both commercial and non-commercial purposes. Forest inventories are

33 https://www.unredd.net/documents/un-redd-partner-countries-181/asia-the-pacific-333/a-p-partner-countries/pakistan-1129/implementation-technical-including-tors-1845/mrv-and-monitoring-1852/15245-pakistan-nfms-capacity-building-needs-assessment-report.html?path=un-redd-partner-countries-181/asia-the-pacific-333/a-p-partner-countries/pakistan-1129/implementation-technical-including-tors-1845/mrv-and-monitoring-1852

34 https://www.redd-pakistan.org/wp-content/uploads/2019/02/Capacity-Needs-Assessment-Technical-Capacity-Enhancement.pdf

undertaken in irrigated and non-irrigated plantations (including linear plantations) to prepare management plans. Adequate number of qualified and trained human resources including a separate GIS Lab capable to support the sub-national level NFI is available. Sufficient quantity of field and measurement equipment, including modern equipment such as relascope, vertex transponders and high precision drone cameras are also available. For the full operationalization of sub-national NFI, a consistent methodology, capacity enhancements in planning and designing of sampling, inventory measurements, carbon and GHG inventory, QA/QC, analysis and reporting is deemed necessary. Upgrading of computer hardware and licensed software is also required.

7.4 Alignment with policy

National REDD+ Strategy

The NRS provides the overall guiding framework for implementing REDD+ at national and sub-national level. The Punjab PRAP is aligned with the NRS REDD+ vision of optimizing forest ecosystem services and livelihood support on a sustainable basis and is consistent with the goals and objectives of NRS as given below:

i. Contribute significantly to reducing GHG emissions through avoided deforestation and forest degradation and to enhancing forest carbon stocks in order to mitigate climate change
ii. Provide sustainable flow of environmental services from forest ecosystems
iii. Make available alternatives for sustainable livelihoods to people dependent on forests
iv. Provide the required institutional, legal, and economic conditions to ensure the sustainable management of forest resources and ecosystems
v. Create the necessary governance for the implementation of cross-sectoral policies
vi. Ensure awareness of stakeholders concerning the role of forest in sustainable development, climate change and REDD+

Based on the wider goal of NRS, the objective of this PRAP, as mentioned in section 2, is to contribute to achieve the targets set out in the NRS.

National Forest policy (2016)

The approved National Forest Policy 2016 has two main policy objectives i.e. (i) the expansion of forest cover and (ii) the curbing of deforestation and promotion of forest conservation. Under these objectives, the National Forest Policy envisages for both the implementation of REDD+ and the full transfer of benefits arising therefrom, such as payments for preserving carbon stock, to forest owners and right-holders. This PRAP is, therefore, designed to contribute to the objectives of National Forest Policy through implementation of REDD+ at sub-national level in Punjab.

Punjab Forest Policy (2019)

This PRAP also contributes to the objectives of Draft Punjab Forest Policy 2019 that emphasizes on avoiding and discouraging commercial exploitation of forest resource on state forestland and enhancing intangible benefits like environmental / ecological, socio-cultural and regulatory functions. The draft Punjab Forest Policy 2019 prefers increasing and conserving such resources as biological reserve and ecological assets for providing eco-system services and to devise and support measures such as REDD+, PES etc. to enhance the role of forests in mitigating the impact of environmental degradation and climate change effects.

Punjab Land Utilization Authority Ordinance 1981

The authority wan promulgated under the ordinance to maximize the use of available lands with the authority to confiscate public or private public lands being not developed, cultivated or properly utilized and hand over the management of those land developed by the Authority to any person for crop

production, orchard raising, afforestation, range development and improvement, dairy and livestock farms.

Alignment with Provincial Sectoral Development Planning

This PRAP encompasses multi-sectors and issues as agriculture, infrastructure, energy, tourism, livestock, economic growth and poverty reduction. The prioritized IPs are closely aligned with provincial sectoral development plans and promote co-ordination and cooperation with all relevant stakeholders. Also, as already mentioned the PRAP is not a static document and requires a dynamic or periodic planning process involving the provincial institutions and key informants or stakeholders reviewing and modifying the PRAP in the light of the experience gained from implementing the IPs.

7.5 Monitoring needs

Monitoring of actions is a critical aspect of this PRAP that helps to ensure effective implementation of the actions and tracking any undesirable change in time for alerting remedies. Regular monitoring must be in place with trained human resources. The PRAP proposes a well-defined and implementable Provincial REDD+ Forest Monitoring and MRV system in Punjab. A Provincial REDDD+ Monitoring Unit (PRMU) is recommended in Lahore with Circle level monitoring units supporting the system.

Monitoring of PRAPs will take place at three levels:

1. Individual actions at intervention and output level to address drivers / underlying causes – recurring monitoring
2. Monitoring of safeguards remedies to assure there are no social or environmental implications – project / action-based monitoring while assuring that grievances are addressed and agreed solutions are implemented. For this FGRM has been set up at divisional and circle level that will report to provincial REDD+ management unit for further incorporation into provincial forest monitoring system.
3. Overall impact of actions on forest health and drivers of deforestation and forest degradation – medium and long-term monitoring

Currently, monitoring indicators for REDD+ related activities are being defined as part of sub-national forest monitoring system. However, forests have been monitored as per the standard methods/ protocols of working plans in addition of regular field staff visits and reporting. There is need of standardization and consistency in these procedures and methods for forest (including natural forests) monitoring at provincial and national level. Several forest related monitoring tools already exist which need to be harmonized with new tools required for monitoring of PRAP without creating parallel systems and data redundancy. Table 19 documents some of the currently known indicators, which were also discussed during PRAP consultations, that may help Punjab Forest department to embed in the forest monitoring system formally, permanently and firmly.

Since land and forest management within Punjab are the responsibility of multiple government institutions (departments of agriculture, forestry, tourism, livestock, land revenue, planning and finance etc.) depending on the land cover specifications, a monitoring system that caters for all the aforementioned three levels is necessary to be designed by REDD+ management unit. There is a need to establish a thorough process for planning, collecting, processing, analyzing, reporting and verifying data, based on required capacities, guiding methodologies and tools which the Punjab government recognizes as a need for adequate and sustainable institutional arrangements for forest monitoring system at provincial level.

Table 19: Forest monitoring indicators and tools/ mechanisms at federal and provincial level

REDD+ activities	Summary of proposed actions	National monitoring indicators	Provincial monitoring indicators	National monitoring tools	Provincial monitoring tools
Deforestation	Clear demarcation of lands with digital records Stricter NOC policy and min. harms to forests Comply discouraging new right of ways Strict legal compliance against encroachment Regulate mining activities through improved coordination and existing policies and strict do no harm measures on expansion	Changes in national forest cover and land area (ha)	Encroachment for agriculture and other purposes and surface mining; in future large conversion of forests to infrastructure development	NFMS (SLMS) and other international studies e.g., FAO's FRA **Actors:** NRSC, OIGF, NRO, GCISC, Provincial Forest departments, Academia	Provincial Forest Monitoring and MRV System in which regular staff / community surveillance are integrated. **Actors:** PRMC, Provincial REDD+ management unit, Academia, communities
Forest Degradation	Manage high dependency on forests for firewood and timber by introducing multiple means (energy plantations, market incentives for alternative energy, etc.). Supplement this reduced pressure by alternative income sources for rural youth to discourage illegal firewood sale Community participation in forest planning and management and play its role in managing forest fires and checking unsustainable extraction of firewood	Decrease in forest density (percentage of forest cover), soil land degradation/ erosion, grazing, forest fires	Water scarcity, firewood extraction, over grazing, firewood collection (legal and illegal), forest fires	NFMS (SLMS and NFI) Social/economic surveys **Actors:** NRSC, OIGF, NRO, GCISC, Provincial Forest departments, academia	Provincial Forest Monitoring and MRV System in which regular staff / community surveillance are integrated; density-based forest cover assessment **Actors:** PRMC, Provincial REDD+ management unit, Academia, communities
Enhancement of Forest Carbon Stocks	Institutionalize community participation approach in forest management Managing drought by water efficient techniques and encourage dry afforestation Incentivize enhancement schemes coupled with advocacy campaigns and motivational messages A strong Provincial Forest Monitoring and MRV System in place and fully equipped with capacities	Areas (in ha) afforested/ reforested/ regenerated. No of plants planted each year	Forest restoration / SFM (area in ha), Afforestation (area in ha), reforestation (no. of plants/ area reforested in ha), regeneration (counting of no. of plants and area regenerated in ha)	SLMS, NFI, Afforestation/ reforestation plans, annual plantation targets/ reports from provinces, official statistics provided by other institution on plantations **Actors:** NRSC, OIGF, NRO, GCISC, Provincial Forest departments, academia, NGOs	Provincial Forest Monitoring and MRV System in which regular staff / community surveillance are integrated; post activity visits, counting of trees on regular basis to assess survival percentage **Actors:** PRMC, Provincial REDD+ management unit, divisional forest offices, communities, NGOs, academia
Conservation	Reducing urban expansion into the forests including large scale schemes through high level policy discussions and measures on major issues in view of rapidly growing population Introduce at least 2 PES examples to model the approach	Conservation policies/ laws/ regulations, protected area notifications of government	Implementation of laws, regulations etc., SFM, PES implementation; fire management	Protected area networks, enacted laws/regulations, guided by national Policy guidance **Actors:** NRSC, OIGF, NRO, GCISC, Provincial Forest departments, academia, NGOs	Enforcement of laws/ regulations (enforcement checks); SFM, PES targets; reduced fire incidents **Actors:** PRMC, Provincial REDD+ management unit, divisional forest offices, communities, NGOs, academia
Sustainable Management of Forests	Plan and implement at least 10 Participatory Forest Management Plans and build capacity of communities and field staff Based on the learnings from PFMP development and implementation develop laws for institutionalizing SFM	No of Management Plans at national level	Participatory Forest Management Plans (forest types/ area covered)	Review reports of Implementation progress from provinces **Actors:** NRSC, OIGF, NRO, GCISC, Provincial Forest departments, academia, NGOs	Review of implementation progress of PFMPs in different forest types / area covered **Actors:** PRMC, Provincial REDD+ management unit, divisional forest offices, communities, NGOs, academia

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Annex – I: List of participants of provincial consultative workshop

List of participants Punjab PRAP, R-PACKAGE			
S.No.	**Name**	**Designation**	**Department**
1	Mr. Muhammad Asif	Secretary	Forests, Wildlife & Fisheries Department
2	Mr. Shahid Rashid Awan	Additional Sectary (Technical)	Forests, Wildlife & Fisheries Department
3	Mr. Noor Khan	Chief Conservator Forest - PME	Punjab Forest Department
4	Mr. Iftikhar Farooqui	DFO / former REDD+ focal person	Punjab Forest Department
5	Dr. Masood Arshad	Senior Director	WWF Pakistan
6	Mr. Muhammad Afrasiyab	GIS / MRV Expert	National REDD+ Office
7	Mr. Abdul Wahab	GIS / Data Analyst	Punjab Forest Department
8	Mr. Rana Mahmood Akhtar	Chief Planning	Punjab Agriculture Department
9	Mr. Abdul Munaf Qaimkhani	REDD+ Facilitator Multistakeholder dialogue	Helvetas
10	Mr. Syed Nadeem Bukhari	Provincial Coordinator KP	Helvetas
11	Mr. Kamran Hussain	REDD+ Strategy Expert	Helvetas
12	Mr. Raja Tariq Mehmood	Provincial Coordinator Punjab	Helvetas
13	Mr. Hamad Khalid Satti	Research Officer	Helvetas
14	Dr. Hammad Gilani	Remote Sensing Specialist	Helvetas
15	Mr. Sajid Hussain	Research Officer	Helvetas
16	Mr. Abdul Razzaq	CF Extension Rawalpindi	Punjab Forest Department
17	Mr. Amir Sohail Malik	DFO Murree	Punjab Forest Department
18	Mr. Ashfaq Bashir Bhutta	DFO Rawalpindi North	Punjab Forest Department
19	Mr. Sajjad Haider Zaidi	DFO II, Working Plan Rawalpindi	Punjab Forest Department
20	Mr. Rifat Ullah Khan	RFO II, Working Plan Rawalpindi	Punjab Forest Department
21	Mr. Shaukat Ali Khan	DFO, Working Plan	Punjab Forest Department
22	Mr. Saqib Mehmood	CF Rawalpindi North	Punjab Forest Department
23	Mr. Imtiaz Hussain Siddiqui	DFO Rawalpindi South	Punjab Forest Department
24	Mr. Jamil Ahmed	CF Development and Working Plan Rawalpindi	Punjab Forest Department

Annex – II: Endorsement note of provincial REDD+ Management Committee

No. SO (P & D) 10 – 3 / 2016
GOVERNMENT OF THE PUNJAB
FORESTRY, WILDLIFE & FISHERIES
DEPARTMENT

Lahore the **13th** May, 2022

To

Dr. Arjumand Nizami,
Country Director,
Helvetas Swiss Intercooperation,
Islamabad

SUBJECT: - ENDORSEMENT OF PROVICNIAL REDD+ ACTION PLAN FOR 2022 - 31

I am directed to refer to the subject noted above and to state that the sub-committee was constituted under the convenorship of Director Forest Services Academy, Ghoragali Murree in-pursuance of the decision taken during meeting held in this department to review the Provincial REDD+ Action Plan Punjab 2022 – 31. The Director, Forest Services Academy, Ghora Gali, Murree has apprised that a meeting was held with the team of Helvetas and after detailed deliberation, necessary amendments have been agreed by the team of Helvitas. The Director FSA submitted endorsement through letter No. 547/FSA dated 29th April, 2022 **(Annexure-I)**.

I am further directed to convey that this department endorses the Provincial REDD+ Action Plan 2022 – 31.

13.05.2022
(SHAHID SULEMAN)
SECTION OFFICER (P & D)

OFFICE OF THE
DIRECTOR FOREST SERVICES ACADEMY
GHORA GALI MURREE #:-0331 5551094
@:-directorfsa@hotmail.com

To

The Additional Secretary (Technical)
Government of the Punjab,
Forest, Wildlife & Fisheries Department,
Lahore.

NO. 547 /FSA **Dated: 29-4-2022**

Subject: **ENDORESEMENT OF PROVINCIAL REDD+ ACTION PLAN FOR PUNJAB 2022-2031**

Reference: SO(P & D) 10-3/2017 REDD+ (P-6) dated 20-04-2022

Provincial REDD+ Action Plan Punjab for 2022-2031 presented by Helvetas Swiss Inter-cooperation Pakistan in the meeting of Provincial REDD+ Management Committee Punjab dated 12-04-2022, is hereby endorsed after making necessary amendments in the light of observations made in the meeting dated 12-04-2022.

(IFTIKHAR UL HASSAN FAROOQI)
Director
Forest Services Academy,
Ghora Gali, Murree

CC:

Mrs. Arjumand Nizami Country Director Helvetas Swiss Inter Cooperation Pakistan for information.

Provincial REDD+ ACTION PLAN

Punjab

2022-2031

Prepared under the REDD+ Readiness Preparation Project for Pakistan financed by