Part I: Project Information

GEF ID
10720

Project Type
FSP

Type of Trust Fund
GET

CBIT/NGI
CBIT **No**
NGI **No**

Project Title
Combating Climate Change through the Promotion and Application of Sustainable Biomass Energy Technologies in Pakistan (PASBET)

Countries
Pakistan

Agency(ies)
UNDP

Other Executing Partner(s)
Ministry of Climate Change (MoCC)

Executing Partner Type
Government

GEF Focal Area
Climate Change

Sector
Mixed & Others

Taxonomy

Focal Areas, Climate Change, Climate Change Mitigation, Financing, Energy Efficiency, Agriculture, Forestry, and Other Land Use, Renewable Energy, Technology Transfer, Influencing models, Transform policy and regulatory environments, Strengthen institutional capacity and decision-making, Convene multi-stakeholder alliances, Demonstrate innovative approache, Stakeholders, Civil Society, Community Based Organization, Non-Governmental Organization, Type of Engagement, Partnership, Information Dissemination, Participation, Consultation, Communications, Public Campaigns, Awareness Raising, Local Communities, Beneficiaries, Private Sector, SMEs, Gender Equality, Gender Mainstreaming, Sex-disaggregated indicators, Women groups, Gender results areas, Participation and leadership, Capacity Development, Knowledge Generation and Exchange, Access to benefits and services, Access and control over natural resources, Capacity, Knowledge and Research, Enabling Activities, Learning, Adaptive management, Innovation, Knowledge Generation

Rio Markers

Climate Change Mitigation

Significant Objective 1

Climate Change Adaptation

No Contribution 0

Biodiversity

No Contribution 0

Land Degradation

Significant Objective 1

Submission Date

11/3/2020

Expected Implementation Start

2/1/2023

Expected Completion Date

2/1/2028

Duration

60In Months

Agency Fee($)

326,709.00

A. FOCAL/NON-FOCAL AREA ELEMENTS

Objectives/Programs	Focal Area Outcomes	Trust Fund	GEF Amount($)	Co-Fin Amount($)
CCM-1-1	De-centralized renewable power with energy storage	GET	1,854,221.00	11,632,746.00
CCM-1-3	Accelerating energy efficiency adoption	GET	1,584,820.00	9,517,700.00
		Total Project Cost($)	**3,439,041.00**	**21,150,446.00**

B. Project description summary

Project Objective

Widespread application of sustainable biomass energy technologies for supporting socio-economic development of and reducing greenhouse gas (GHG) emissions from, the rural sector in Pakistan

Project Component	Financing Type	Expected Outcomes	Expected Outputs	Trust Fund	GEF Project Financing($)	Confirmed Co-Financing ($)

Project Component	Financing Type	Expected Outcomes	Expected Outputs	Trust Fund	GEF Project Financing($)	Confirmed Co-Financing ($)
Component 1: Establishment of Policy and Regulatory Framework for Sustainable Woody Biomass Energy Production and Utilization	Technical Assistance	1.1. Effective enforcement of policies and regulations on the sustainable production and use of woody biomass for energy generation and utilization in rural areas of Pakistan.	1.1.1. Completed comprehensive situational and feasibility analyses for mainstreaming woody biomass production in the agriculture and forestry sectors, including assessments of potential areas for sustainable woody biomass production and utilization[1] in Punjab, Khyber Pakhtunkhwa (KP), Sindh and Balochistan provinces[2]. 1.1.2. Developed and implemented policies and market-based regulatory framework for supporting woody biomass production and use, including national strategy for promotion of sustainable biomass energy production and utilization, using community-based woodlots and agroforestry production at the provincial level, and fiscal incentives for private-sector participation in woody biomass energy technology business. 1.1.3. Formulated and approved technical, management and operational standards in biomass energy development and utilization, woody biomass fired equipment and comprehensive biomass energy management. 1.1.4. Formulated energy-integrated development plans of 8 pilot towns two in each province of Punjab, KP, Sindh and Balochistan[3]. 1.1.5. Trained and qualified 60 provincial governments personnel (15 from each province) that provide technical support on sustainable production of woody biomass and enforcement of regulatory framework for biomass use for energy production and	GET	482,500.00	3,796,000.00

Project Component	Financing Type	Expected Outcomes	Expected Outputs	Trust Fund	GEF Project Financing($)	Confirmed Co-Financing ($)
Component 2: Promotion of Biomass Energy Production and Energy Efficient Utilization Technologies	Technical Assistance	2.1. Enhanced woody biomass production on forested, non-forested, and on farmlands to cater local biomass energy needs, including for power generation and rural industry operations.	2.1.1. Developed, disseminated, and applied guidelines for sustainable production and utilization of woody biomass. 2.1.2. Completed supply chain and market analysis and documented woody biomass demand and supply in the country. 2.1.3. Established farmers/communal forest nurseries over at least 300 hectares to provide planting stock for raising woody biomass in rural areas in the provinces of Punjab, KP, Sindh and Balochistan, including energy plantations over 40,000 ha of fast-growing native tree species at non-forested lands in selected districts each of these provinces for woody biomass supply. 2.1.4. Established and operational fuelwood production from 4.5 million trees of common fuelwood plant species on farmlands for supply of woody biomass for production and utilization of biomass energy in rural areas.	GET	141,500.00	4,171,000.00

Project Component	Financing Type	Expected Outcomes	Expected Outputs	Trust Fund	GEF Project Financing($)	Confirmed Co-Financing ($)
Component 2: Promotion of Biomass Energy Production and Energy Efficient Utilization Technologies	Investment	2.2. Increased investments in the application of technologies for the production, and energy efficient utilization of woody biomass energy	2.2.1. Completed and operational woody biomass-based energy generation technology demonstrations in 4 selected sites, one in each province of Punjab KP, Sindh and Balochistan showcasing the cost-effective application of decentralized woody biomass-based electricity generation and distribution (through mini/micro-grids)[1]. 2.2.2. Completed and operational four (4) demonstrations of cost-effective production of woody biomass fuels such as wood chips, briquettes, and pellets for use in decentralized woody-biomass based power generation and distribution. 2.2.3. Completed and operational demonstrations of the cost-effective applications of energy efficient woody biomass fired technologies and comprehensive energy management systems in selected energy end-use sectors in support of rural socio-economic development[2]. 2.2.4. Published and disseminated information about the results and impacts of the completed demonstrations as well as developed and adopted a sustainability and replication plan of decentralized woody biomass-based energy production and utilization for power and non-power applications. [1] This involves the installation of a collective total woody biomass-based power generation capacity of 5.4 MW in the 4 provinces to supply of electricity to supply unelectrified rural villages.	GET	2,034,708.00	7,637,400.00

Project Component	Financing Type	Expected Outcomes	Expected Outputs	Trust Fund	GEF Project Financing($)	Confirmed Co-Financing ($)
Component 3. Supporting Financial Requirements for Biomass Energy Technologies Initiatives	Technical Assistance	3. Adequate amounts of financial resources available for woody biomass energy technology application projects in the country	3.1. Established and operational investment and financing mechanisms for supporting the commercial viability and operation of woody biomass energy production for power and non-power applications, and the development of biomass energy industries. 3.2. Established and operational market-oriented mechanism for the enhanced development and utilization of biomass energy resources, energy efficiency and comprehensive biomass energy management systems for supporting sustainable rural socio-economic development. 3.3. De-risked biomass-based power generation projects, decentralized biomass-based energy generation in rural areas, and business plans for the GoP and private sector to facilitate financing and implementation.	GET	214,000.00	3,072,500.00

Project Component	Financing Type	Expected Outcomes	Expected Outputs	Trust Fund	GEF Project Financing($)	Confirmed Co-Financing ($)
Component 4: Biomass Energy Technology Capacity Building and Knowledge Management and Gender Mainstreaming	Technical Assistance	4.1. Enhanced local capacity, skills and knowledge in the development, installation, and operation of biomass energy technology systems in rural Pakistan	4.1.1. Developed and implemented gender sensitive capacity development training programs for the design, construction, operation, and maintenance of woody biomass-based energy production systems both for power (e.g., decentralized power generation and distribution) and non-power (e.g., industrial energy efficient wood-fired equipment) applications, as well as for strengthening institutional capacity for supporting sustainable biomass energy production and utilization. 4.1.2. Trained and qualified people (60 from each province) providing training on woodlot operations and management, woody biomass fuel production, and woody biomass-based power generation and distribution, including trained and qualified community members (600 men and 400 women) providing training on the promotion of the widespread applications of energy efficient wood-fired equipment. 4.1.3. Sensitized key value chain actors of biomass energy enterprises that provide technical services and invest in the applications of cost-effective, climate resilient and energy efficient woody-biomass energy technologies. 4.1.4. Knowledge products on lessons learned, best practices, etc. that are available through online repository for sharing experiences and replicating and scaling-up use of climate resilient and energy efficient biomass energy technologies.	GET	234,569.00	1,466,382.00

Project Component	Financing Type	Expected Outcomes	Expected Outputs	Trust Fund	GEF Project Financing($)	Confirmed Co-Financing ($)
Monitoring & Evaluation		Monitoring & Evaluation		GET	168,000.00	
				Sub Total ($)	**3,275,277.00**	**20,143,282.00**

Project Management Cost (PMC)

GET	163,764.00	1,007,164.00
Sub Total($)	**163,764.00**	**1,007,164.00**
Total Project Cost($)	**3,439,041.00**	**21,150,446.00**

Please provide justification

C. Sources of Co-financing for the Project by name and by type

Sources of Co-financing	Name of Co-financier	Type of Co-financing	Investment Mobilized	Amount($)
Recipient Country Government	Ministry of Climate Change (MoCC), Government of Pakistan	Public Investment	Investment mobilized	8,295,414.00
Recipient Country Government	Ministry of Climate Change (MoCC), Government of Pakistan	In-kind	Recurrent expenditures	2,198,853.00
Recipient Country Government	Government of the Punjab (Forestry, Wildlife & Fisheries Department)	Grant	Investment mobilized	2,099,547.00
Recipient Country Government	Government of the Punjab (Forestry, Wildlife & Fisheries Department)	In-kind	Recurrent expenditures	742,081.00
Recipient Country Government	Government of Sindh (Forest & Wildlife Department)	Grant	Investment mobilized	135,747.00
Recipient Country Government	Government of Sindh (Forest & Wildlife Department)	In-kind	Recurrent expenditures	135,747.00
Recipient Country Government	Ten Billion Tree Tsunami Programme, Government of Khyber Pakhtunkhwa	Grant	Investment mobilized	5,696,832.00
Recipient Country Government	Government of Balochistan (Forests & Wildlife Department)	Grant	Investment mobilized	63,877.00
Recipient Country Government	Government of Balochistan (Forests & Wildlife Department)	In-kind	Recurrent expenditures	1,202,348.00
GEF Agency	UNDP	In-kind	Recurrent expenditures	500,000.00
GEF Agency	UNDP	Grant	Investment mobilized	80,000.00

Sources of Co-financing	Name of Co-financier	Type of Co-financing	Investment Mobilized	Amount($)
			Total Co-Financing($)	**21,150,446.00**

Describe how any "Investment Mobilized" was identified

NOTE: In 2019, the Government of Pakistan launched a Ten Billion Tree Tsunami Program (TBTT-P), a national program for the revival of the forestry sector in the country. The proposed GEF PASBET Project builds on the interventions under the forestry component of this national program. The funds allocated for on-the-ground interventions are placed at the disposal of respective provincial governments, which are likely to be spent in the target districts of the project and will directly contribute to its objective. These TBTT-P resources are considered investments mobilized from the federal and provincial governments (i.e., public investments) under the PASBET Project. The provincial governments of Punjab, KP, Sindh, and Balochistan have shown their interest in promoting farm-forestry and raising woodlots for piloting biomass energy production technology demonstrations. Their allocated resources for these activities that are also part and parcel of the proposed project and are considered investments mobilized, including the grants they provide through their public sector development funds. *Based on a PKR-USD Exchange Rate of PKR 221 per USD 1. The stated co-financing amount in the co-financing letter is in PKR.

D. Trust Fund Resources Requested by Agency(ies), Country(ies), Focal Area and the Programming of Funds

Agency	Trust Fund	Country	Focal Area	Programming of Funds	Amount($)	Fee($)	Total($)
UNDP	GET	Pakistan	Climate Change	CC STAR Allocation	3,439,041	326,709	3,765,750.00
			Total Grant Resources($)		**3,439,041.00**	**326,709.00**	**3,765,750.00**

E. Non Grant Instrument

NON-GRANT INSTRUMENT at CEO Endorsement

Includes Non grant instruments? **No**

Includes reflow to GEF? **No**

F. Project Preparation Grant (PPG)

PPG Required **true**

PPG Amount ($)

150,000

PPG Agency Fee ($)

14,250

Agency	Trust Fund	Country	Focal Area	Programming of Funds	Amount($)	Fee($)	Total($)
UNDP	GET	Pakistan	Climate Change	CC STAR Allocation	150,000	14,250	**164,250.00**
				Total Project Costs($)	**150,000.00**	**14,250.00**	**164,250.00**

Core Indicators

Indicator 6 Greenhouse Gas Emissions Mitigated

Total Target Benefit	(At PIF)	(At CEO Endorsement)	(Achieved at MTR)	(Achieved at TE)
Expected metric tons of CO?e (direct)	64633	3238586	0	0
Expected metric tons of CO?e (indirect)	3059000	6477172	0	0

Indicator 6.1 Carbon Sequestered or Emissions Avoided in the AFOLU (Agriculture, Forestry and Other Land Use) sector

Total Target Benefit	(At PIF)	(At CEO Endorsement)	(Achieved at MTR)	(Achieved at TE)
Expected metric tons of CO?e (direct)				
Expected metric tons of CO?e (indirect)				
Anticipated start year of accounting				
Duration of accounting				

Indicator 6.2 Emissions Avoided Outside AFOLU (Agriculture, Forestry and Other Land Use) Sector

Total Target Benefit	(At PIF)	(At CEO Endorsement)	(Achieved at MTR)	(Achieved at TE)
Expected metric tons of CO?e (direct)	64,633	3,238,586		
Expected metric tons of CO?e (indirect)	3,059,000	6,477,172		
Anticipated start year of accounting	2022	2023		
Duration of accounting	5	10		

Indicator 6.3 Energy Saved (Use this sub-indicator in addition to the sub-indicator 6.2 if applicable)

Total Target Benefit	Energy (MJ) (At PIF)	Energy (MJ) (At CEO Endorsement)	Energy (MJ) (Achieved at MTR)	Energy (MJ) (Achieved at TE)
Target Energy Saved (MJ)				

Indicator 6.4 Increase in Installed Renewable Energy Capacity per Technology (Use this sub-indicator in addition to the sub-indicator 6.2 if applicable)

Technology	Capacity (MW) (Expected at PIF)	Capacity (MW) (Expected at CEO Endorsement)	Capacity (MW) (Achieved at MTR)	Capacity (MW) (Achieved at TE)
Biomass	5.40	5.20		
Solar Photovoltaic		4.16		
Biomass		8.32		

Indicator 11 People benefiting from GEF-financed investments

	Number (Expected at PIF)	Number (Expected at CEO Endorsement)	Number (Achieved at MTR)	Number (Achieved at TE)
Female	2,000	160,380		
Male	2,000	107,000		
Total	4000	267380	0	0

Provide additional explanation on targets, other methodologies used, and other focal area specifics (i.e., Aichi targets in BD) including justification where core indicator targets are not provided

Part II. Project Justification

1a. Project Description

Describe any Changes in Alignment with the Project Design with the Original PIF

The original design in the Outcome/Output Levels in the PIF stage was retained, except for the following minor necessary conceptual changes:

? Output 2.2.2: Completed and operational four (4) demonstrations of cost-effective production of woody biomass fuels such as wood chips, briquettes, and pellets for use in decentralized woody-biomass based power generation and distribution ? One additional demo included to make it one demo for each province.

? Output 2.2.4: Published and disseminated information about the results and impacts of the completed demonstrations as well as developed and adopted a sustainability and replication plan of decentralized woody biomass-based energy production and utilization for power and non-owner applications ? An activity on the preparation of a sustainability and replication plan added (Activity 2.2.4.2).

The other changes from the PIF to ProDoc are shown in Annex E.

? Exhibit E-2. Changes in Distribution of GEF Budget among Project Outcomes and Project Management

? Exhibit E-3. Changes in Distribution of Co-Financing among Project Co-financiers

All efforts were made to design the project in line with what were stated in the GEF-approved PASBET PIF. Nonetheless, there are minor and necessary changes that were made. These are summarized and explained in Annex F.

1a. Project Description

The objective of the PASBET Project is the widespread application of sustainable biomass energy technologies for supporting socio-economic development of and reducing greenhouse gas (GHG) emissions from, the rural sector in Pakistan. The project?s overall strategy is the removal of barriers to the achievement of this project objective. Component 1 of the project is comprised of technical assistance activities addressing the policy/regulatory and institutional barriers, and the expected

outcome is the effective enforcement of policies and regulations on the sustainable production and use of woody biomass for energy generation and utilization in rural areas of Pakistan. Component 2 is composed of two outcomes: (a) in the form of technical assistance, enhanced woody biomass production on forested, non-forested, and on farmlands to cater local biomass energy needs, including for power generation and rural industry operations, and (b) be in the form of investment for demonstrating applications of technologies towards increased investments in the application of technologies for the production, and energy efficient utilization of woody biomass energy. Component 3 is regarding supporting financial requirements for Biomass Energy Technologies Initiatives so that there will be adequate amounts of financial resources available for woody biomass energy technology application projects in the country. Component 4 addresses the barriers related to capacity development and awareness in the areas of biomass energy technology capacity building and knowledge management and gender mainstreaming towards enhanced local capacity, skills and knowledge in the development, installation, and operation of biomass energy technology systems in rural Pakistan.

1a.1) Global environmental and/or adaptation problems, root causes and barriers that need to be addressed (systems description)

The major causes of low level of application of woody biomass-based energy generation both for electricity production and non-power applications in the rural areas of Pakistan are the following:

? *Unsustainable use of woody biomass*: Increase in human population has led to higher demand of limited forest resources (timber, fuelwood, and fodder) in the whole of the country to meet livelihood and household needs (e.g., building and energy needs). It is expected that unsustainable biomass use practices will further lead to deforestation and forest degradation.

? *Use of inefficient methods/technologies for biomass energy conversion*: In Pakistan, rural industries that make use of woody biomass (e.g., tobacco curing) utilize energy inefficient equipment that consumes lots of woody biomass that often comes from unsustainable sources.

Pakistan is faced with the challenges in meeting the rural sector?s energy needs, which has hampered the economic growth and socio-economic development efforts of the Government. Many villages and towns in rural areas are still either without electricity or experience frequent power outages due to load-shedding. To address these challenges, the government has shown its commitment for electricity generation through renewable energy sources. Biomass energy, such as woody biomass, is now being considered as a promising and alternate source of energy for generating electricity and of heating for various production processes in the remote towns/villages of the country where the resources are

available and can be sustainably produced and utilized. In the case of woody biomass dual energy (electrical and/or thermal) generation, the developments in modern cogeneration technology that is already being used in the sugar industry, the sustainable commercial development, production, and utilization of this resource must consider the abovementioned issues to ensure that the country will fully benefit from its rational use.

Despite several baseline initiatives, many barriers still exist to realize the objective which were grouped into the following general barrier categories:

? Inadequate policy guidelines, regulatory framework, and institutional support for promoting woody biomass production for energy use and encouraging fuelwood production on farmlands
? Limited woody biomass production on forested, non-forested, and on farmlands for use in power generation and rural industry operations
? Limited commercial applications of technologies for the production, and energy efficient utilization of woody biomass energy
? Limited financial investment and economic incentives for woody biomass production and application of energy efficient technologies and adoption of innovative approaches for woody biomass energy conversion and use
? Limited capacity, awareness, and knowledge about the environmental benefits of using efficient technologies.

1a.2) Baseline scenario and any associated baseline projects

The total power generation capacity in the country is around 25,000 MW, out of this RE-based electricity production accounts for only 1,558 MW. Over-reliance on fossil fuel for power generation will worsen climate change impacts on the country, which already stands at number eight of countries affected by the climate change. By utilizing the potential of RE production, Pakistan could not only meet its growing energy needs, but also help in reducing GHG emissions. To achieve the production of RE, actions are required both at the national and provincial levels. However, the situation has changed with the 18th constitutional amendment in 2010 when the subject of energy was largely decentralized by giving autonomy to provinces to regulate policy measures and take initiatives for energy production, including linked to power production from renewable resources like biomass. Preliminary analysis of baseline scenario shows that the provinces have taken steps and launched number projects and programs for RE production, including biomass conversion to energy which provide a solid baseline for the proposed project.

There are many major on-going and planned baseline projects/programs being undertaken by the federal and provincial governments of the selected four provinces viz., Punjab, KP, Sindh, and Balochistan as seen in Table 3 of the PASBET ProDoc, which are significantly linked with, feed into, and integrated by the PASBET Project in terms of the following programmatic outputs:

a. RE-based distributed power generation will get traction in Pakistan

b. Woody biomass supply will increase as result of increase of forest cover

c. Biomass-based residue and MSW-derived fuel will be introduced as a viable and bankable fuel option for power generation and non-power applications

d. Improved, sustainable and reliable fuel wood supply for power and non-power projects.

In terms of biomass resources, the PASBET Project will mainly focus on woody biomass conversion for energy production, including the supply chain such as energy plantations, fuelwood from farmlands and discarded woody waste. However, possibility of using biomass from other sectors e.g., agriculture residues (wheat straw, rice rusk/straw, and cotton sticks) will also be explored. The current biomass conversion practices in Pakistan are largely direct burning which is both inefficient and polluting in additional CO2 emissions, whereas modern biomass energy conversion technologies (e.g., direct combustion and gasification) exists in the international market and are already proven technologically viable. In 2020, around 710 GWh is being generated using biomass.

The successful completion of all the baseline projects and programs will bring Pakistan closer to transitioning towards zero/low-carbon towns and villages and to achieving its NDC energy and environment targets. However, the existence of the identified barriers, if not properly and timely addressed will greatly affect the realization of these goals. Improvements in the baseline efforts of the country to achieve zero/low carbon rural town and village development are necessary. Such improvements call for the removal of the identified existing barriers. The removal of such barriers through the PASBET project interventions will not only achieve the desired transformation of the current rural development pathway into something that leads to low/zero carbon footprint but also contribute to the realization of the climate change mitigation NDC targets of the country which is currently being updated and PASBET contributions can be included in the NDC plans and targets.

1a.3) Proposed alternative scenario with a brief description of expected outcomes and components of the project

The PASBET project is expected to bring about an increased utilization of indigenous renewable energy (RE) resources for meeting the electricity and other energy requirements of the country. It will facilitate the realization of an alternative scenario in the country?s energy sector characterized by an increased share of RE (excluding hydro) in the power generation mix of the country by 2030 as per the GOP?s plan, with woody biomass contributing significantly compared to that at present. Such scenario means Pakistan meeting its growing energy needs, with reduced carbon and environmental footprints. In such scenario, the provinces can enforce energy policy measures and take initiatives for energy production, including linkage to power production from renewable resources like biomass.

Using a barrier-removal approach to address the identified barriers, the proposed strategy will involve the implementation of the incremental activities resulting from the gap analysis between what are available from the baseline projects and the existing status of the problems and the desired outcomes that the project aims to attain. Thus, the PASBET will build upon the baseline projects which are being implemented in parallel towards removing all the identified barriers as they are integrated at the national level by the executing agencies. Hence, the program will be sustained by the relevant agencies and stakeholders after the PASBET is completed in five years in pursuit of the desired outcomes. By building on, and complementing, supplementing, or augmenting, PASBET and the baseline projects aim to remove all identified barriers in a combined approach.

The desired essential changes in the current energy situation in the rural sector in Pakistan will facilitate the widespread application of sustainable biomass energy technologies and such transformations will significantly contribute to the sector?s socio-economic development. The widespread application of such energy technologies, particularly those that utilize woody biomass, will also bring about reduction in the greenhouse gas (GHG) emissions from this sector.

These changes are expressed as the following outcomes:

? Effective enforcement of policies and regulations on the sustainable production and use of woody biomass for energy generation and utilization in rural areas of Pakistan

? Enhanced woody biomass production on forested, non-forested, and on farmlands to cater local biomass energy needs, including for power generation and rural industry operations

? Increased investments in the application of technologies for the production, and energy efficient utilization of woody biomass energy

? Improved availability of financial resources available for woody biomass energy technology application projects; and,

? Enhanced local capacity, skills and knowledge in the development, installation, and operation of biomass energy technology systems.

The following describe the Components of the project as explained in detail in the Project Document and the proposed ways in which the barrier removal strategy will be carried out to realize them:

Component 1: Establishment of Policy and Regulatory Framework for Sustainable Woody Biomass Energy Production and Utilization

This Component addresses the policy, regulatory, institutional barriers in sustainable production and use of woody biomass for promoting efficient biomass energy technologies to reduce GHG emissions from the rural areas corresponding to Outcome 1 above from the delivery of the planned outputs of the activities that will comprise Component 1. The activities involve developing policy guidelines and market-based regulatory framework that support woody biomass production and utilization for energy production both for power and non-power applications. The power applications will focus on decentralized power generation and distribution (through mini/micro-grids) in the unelectrified areas where woody biomass is available either from forest residues or fuel trees that are commercially grown in community-operated woodlots and farmlands. The effective implementation of this strategy would help in establishing community-based energy plantations and promoting fuelwood production on farmlands in potential districts of Punjab, KP, Sindh, and Balochistan. A capacity development program will be organized and conducted under Component 4 in support of Component 1 activities and outputs. Technical, management and operational standards will be formulated and approved for biomass energy development and utilization, woody biomass fired equipment and comprehensive biomass energy management.

Component 2: Promotion of Biomass Energy Production and Energy Efficient Utilization Technologies

Component 2.1: Woody Biomass Production and Supply.

Corresponding to Outcome 2.1, this Component focuses on understanding the technical aspects of and enhancing woody biomass production on forested, non-forested, and on farmlands to cater the local biomass energy needs, including for power generation and rural industry use in unelectrified or poorly electrified areas of the country. The activities include providing technical support for improved biomass production, including sustainable supply of planting stock of fast-growing native plant species, and managing supply chain of woody biomass with the involvement local entrepreneurs and SMEs. This includes the development and dissemination of guidelines among stakeholders and partners, supply chain and market analysis, related technical and financial support.

To enable this, the following guidelines and standards are to be developed:

? Sustainable production and utilization of woody biomass
? Biomass supply chain and market analysis
? Future commercial operations of nurseries
? Fuel wood plantation, production, and utilization study

Supply of sustainable woody biomass is most critical barrier for this project. Without removing this barrier, the whole project would never achieve its objective. The Project is focusing on generation of sustainable woody biomass in the country starting in the selected 8 districts of the four target provinces. There are already few forested lands in the target districts, but all the existing forests are non-sustainable and if further wood is gathered from them, forest cover will shrink further. Under the Billion Tree Tsunami Project, Government of Pakistan is planning to grow forests and non-forested lands which could provide sustainable source of woody biomass. Under Component 2.1, a detailed feasibility study of the available area will be carried out to determine fast growing forest tree species, and best woody biomass harvesting techniques.

Component 2.2: Woody Biomass Fuel Production and Utilization

The second sub-component of Component 2 is comprised of activities that will deliver outputs to bring about Outcome 2.2 to collectively bring about increased investments in the application of technologies for the production and energy efficient utilization of woody biomass energy. The activities that will be carried out will address the technological barriers by promoting and showcasing biomass energy efficient technologies and adoption of innovative practices for woody biomass energy conversion and utilization. Cost-effective applications of EE woody biomass fired technologies and comprehensive energy management systems in selected energy end-use sectors in support of rural socio-economic development will be demonstrated. Among these is the design, engineering, construction, commercial operation, and maintenance of woody biomass fired power generation and distribution systems in the 4 provinces for the supply of electricity to selected unelectrified rural villages. These will showcase the cost-effective application of decentralized woody biomass-based energy generation and distribution (through mini/micro-grids). There will be non-power applications of innovative and energy efficient wood-fired industrial equipment as an alternative to coal to reduce GHG emissions from rural industries. The project will have four (4) sets of demonstration activities under Component 2.2, with one set of demonstrations in each province which will comprise of three (3) demo components:

? Demo 1: Woody-biomass gasification power generation and distribution (includes gasifier, gas engine, solar PV with BESS, and the micro-grid system)
? Demo 2: Woody-biomass fuel production system (covers harvesting, storage, transport, and processing of woody biomass fuel)
? Demo 3: Woody-biomass fired equipment applications (EE wood-fired industrial combustion systems)

Each demo will have some unique or distinctive features that differentiate them from province to province. The size of each demo may vary slightly depending on the detailed biomass assessment study (to be carried out under Component 1) and available resources for demo purposes. For planning purposes and considering available fund resources, a typical biomass gasifier that could support 50kW

power generating capacity has been evaluated to be technically and economically viable. The manner of implementation and business modeling will also differ from province to province since this will depend on the power supply and demand characteristics, rural electrification status and co-financing packaging. Hence, this will consist of four possible typical technology and business cases and technology diffusion approaches for each province that could find relevant applications as they are replicated in other districts of the province or in some other provinces in the coming years.

On the operational aspect, each demo set is an integrated showcasing of the applications of woody-biomass resource development and energy generation that will comprise of the following: (a) Distribution of farming/forestry tools and devices for effective and sustained growing and harvesting of woody biomass from fuel wood forests/plantation; (b) Design and construction of biomass storage areas; (c) Application of appropriate cost-effective biomass pre-treatment technologies; (d) Installation of a woody biomass fired power generation system that will produce and distribute electricity to consumers in the surrounding villages; (e.) A mini -grid system will be installed for supplying the electricity to consumers (40 to 50 households in surrounding village); and (f.) A 40kW PV Solar system with battery energy storage system (BESS) will be installed as a back-up facility to be operated and maintained as a commercial business.

A key driver of the business model is the collection of fees for electricity sales and the utilization of part of revenues for the operation, repair, and maintenance of the various systems. Each demo is about the commercial operation of a woody biomass-fired energy production and distribution system (power or non-power application). This can be community-owned and operated, or private-sector owned and operated, or government-owned and private sector operated, etc. This further explains the different case studies that can be done for each province typifying the collection system for such energy production and supply business cases. At the fifth year of the project a Sustainability and Replication Plan will be developed and adopted to guide the post-project plans in pursuing the replication and/or up-scaling of the biomass-based systems in coming years. The strategy and plans will be based on the experiences gathered and evaluated from the demonstration activities. This is envisaged to establish the confidence not only of the stakeholders but also the financing and market-based sectors in the four provinces onwards to their other districts or other similarly situated provinces in the country.

Component 3. Supporting Financial Requirements for Biomass Energy Technologies Initiatives

Component 3 includes activities that will focus on the removal of financial barriers to woody biomass production and application of energy efficient technologies and adoption of innovative approaches for woody biomass energy conversion and use, including biomass energy production for power and non-power applications, corresponding to expected Outcome 3. The realization of this outcome will involve establishing and operationalizing financial mechanisms for supporting commercial viabilities and operations of woody biomass energy production for both power and non-power applications and development of biomass energy industries at potential locations in targeted districts. The establishment of proper marketing and supply chain is crucial for the demonstration of the woody biomass energy production technologies. For this purpose, market-oriented mechanism will be established for the development and utilization of biomass energy resources, energy efficiency and comprehensive

biomass energy management systems for supporting sustainable rural socio-economic development. These interventions will support creation of ?green jobs? and produce benefits for the rural people, especially marginal segments of the society and climate vulnerable communities and help in avoiding potential exposure of these people to COVID-19 or threats from future pandemic. Feasible financial schemes for setting up biomass energy technologies application projects, woody biomass-based energy generation, and EE wood-fired equipment production business will be supported, as well as decentralized biomass-based energy generation initiatives in rural areas. Business plans/models for the district governments and private sector to facilitate financing and implementation of woody biomass energy production projects will be developed.

Component 4: Biomass Energy Technology Capacity Building and Knowledge Management and Gender Mainstreaming

Component 4 is comprised of activities that will primarily address the capacity, awareness and information barriers associated with biomass energy production and utilization technologies. Enhanced local capacity, skills and knowledge in the development, installation, and operation of biomass energy technology systems in rural Pakistan is the expected outcome from the delivery of the planned outputs of this project component. Therefore, building local capacities, creating awareness, generating, and disseminating technical knowledge, and gender mainstreaming steps across the project interventions will be the key elements of this component. This will involve the design (based on a capacity needs assessment) and implementation of gender sensitive capacity development training programs for the design, construction, operation, and maintenance of woody biomass-based energy production systems both for power and non-power applications, as well as for strengthening institutional capacity for supporting sustainable biomass energy production and utilization. Training of trainers will also be carried out to enable capacity development on woodlot operations and management, woody biomass fuel production, and woody biomass-based power generation and distribution, and on the promotion of the widespread applications of energy efficient wood-fired equipment. Outreach activities will also be provided to key value chain actors of biomass energy enterprises to enhance their capacity and motivate them to provide technical services and invest in the applications of cost-effective, climate resilient and energy efficient woody-biomass energy technologies. Knowledge products on lessons learned, best practices will be produced and disseminated through online repository for sharing experiences and replicating and scaling-up use of climate resilient and energy efficient biomass energy technologies.

1a.4) Alignment with GEF focal area and/or Impact Program strategies

The PASBET Project is in line with the GEF-7 Climate Change focal area investment strategy and its goal ?to make transformation shifts toward low emission and climate-resilient development pathways.? It fits well under the focal area Objective 1: ?promote innovation and technology transfer for sustainable energy breakthroughs?, which calls for facilitating innovative solutions, including technologies, management practices, supportive policies, and financial mechanisms that encourage private sector engagement for technology transfer and innovation to deliver sustainable energy solutions that control, reduce, and prevent GHG emissions. The project components are well aligned

with two entry points of the GEF-7 Climate Change Mitigation Objective: (a) de-centralized renewable power with energy storage, and (b) accelerating energy-efficiency adoption.

The project will develop and demonstrate the application of new business models that ensure sustainable woody biomass production and supply and decentralized woody biomass-fired power generation and distribution, which will collectively bring about reduced rural carbon emissions and air pollution. This will be supplemented by the promotion of innovations (e.g., processed woody biomass like pellets, briquets, chips etc.) and technology transfer in the rural villages and towns to support socio-economic development in an environment-friendly manner.

Energy efficient wood-fired equipment will also be promoted in the rural areas where the project demonstration activities will be carried out. Particularly in unelectrified rural areas where rural households and rural industries use woody biomass as energy source. The current use of woody biomass in these areas are very energy wasteful because of the wood-fired equipment (e.g., boilers, kilns, tobacco curing barns). Improving the efficiency of such equipment and making the wood-fired thermal energy processes optimal will contribute to energy savings and GHG emission reduction and reduced air pollution.

1a.5) Incremental/additional cost reasoning and expected contributions from the baseline, the GEFTF, LDCF, SCCF, and co-financing

While the Pakistan Government are pursuing initiatives that lead to increased share of renewable energy in the country?s national energy mix, the current measures will not be enough unless a holistic approach is adopted that consider all potential renewable energy resources. Substitution of fossil fuel by renewable energy resources such as woody biomass, promoting and facilitating commercial sustainable woody biomass production and supply, and application of energy efficient biomass energy conversion technologies would contribute to the country?s efforts to address climate change challenges. The current biomass energy conversion practices in Pakistan are practically direct burning, which is inefficient and contributing to GHG emissions, whether it is woody biomass used for cooking and space heating, or rural industry thermal operations. Efficient biomass energy conversion technologies have been applied in the country in various energy end use sectors, and have proven successful in reducing, if not eliminating, GHG emissions by virtue of their displacement of fossil fuels that would typically be used in such energy consuming operations and processes. There are indeed major challenges stacked up against the widespread application of energy efficient biomass energy conversion technologies in the country, as well as in sustainable woody biomass production. The GEF resources requested for this project will be targeted to remove these identified major barriers/challenges. The envisioned barrier removal activities that will be carried out under this project are practically the incremental activities that the requested GEF funding will support. Without GEF support, rural communities in Pakistan would continue to rely on traditional use of non-sustainable fuelwood to meet their energy needs. Inefficient wood-fired industrial equipment (e.g., kilns, boilers), coupled with increasing growth of rural energy consuming enterprises, will lead to unsustainable production, and use of biomass resources, thus increasing the chances of further increase in deforestation--loss of carbon stock. Hence increased GHG emissions.

1a.6) Global environmental benefits (GEFTF) and/or adaptation benefits (LDCF/SCCF)

The Project is designed to generate multiple global environmental benefits (GEB). The primary GEB is the reduction in GHG emissions by promoting the cost-effective application of sustainable biomass energy efficient technologies such as biomass-based power generation and innovative practices for woody biomass energy conversion and utilization. Such technologies are intended to directly contribute to reducing GHG emissions in the rural areas and towns, including the introduction and application of improved wood-fired industrial thermal equipment such as efficient wood-fired boilers, kilns, and furnaces and tobacco curing barns.

The desirable impacts that can be realized with the achievement of the project objective are: (1) improved sustainable socio-economic development; and (2) Improved local environment and minimized unhealthy conditions from the use of inefficient biomass energy technologies and equipment.

With successful project implementation and completion, and achievement of the expected project outcomes and objective, Pakistan?s rural areas will be enabled to significantly shift towards a low carbon development path. Such transformation will bring about benefits to the entire rural sector in the following aspects: 1) environmentally, since burning less fossil fuels will allow to reducing the emissions of GHG and particulate matter and with woody-biomass utilization, burning wood to produce electricity emits carbon dioxide into the atmosphere, but planted trees will flourish and capture the emitted carbon dioxide; 2) health benefits for the rural households occupants, since direct combustion of fossil-fuels in rural households is typically done in a very inefficient and uncontrolled way, with dangerous solid and gaseous emissions in closed spaces; 3) financially, because PASBET also includes activities devoted to the development and demonstration of the application of proven and biomass-based (particularly woody biomass) energy technologies including their design, engineering, implementation, operation and maintenance and market development; and 4) security, with more indigenous energy generation, the scattered rural villages and towns will be less dependent on imported petroleum and increased supply of reliable and accessible energy transmission and delivery.

The contribution that the PASBET Project will bring in Pakistan?s rural sector in the selected provinces, and potentially to other provinces that have good woody biomass potential, is the strategy taken to shift a significant portion of its energy generation in rural villages and towns towards clean technologies along the low carbon emissions development roadmap. The demos on woody biomass production and utilization to energy proposed have been designed for villages selected in several different regions based on socio-economic and environmental prerequisites. This approach will facilitate replication and scale-up of the demo activities in most, if not all, other rural villages, and towns where woody biomass can be grown systematically and productively.

Some expected replications of these applications are to be facilitated during the project implementation period and will be in operation towards the end of the project or just after the end of the project. Based on the preliminary line up of demonstration woody biomass-based electricity production as presented in Annex 12, the quantity of direct and consequential GHG emission reduction that can potentially be realized from the barrier removal activities of the project is about 3.12 million tons of CO2 by the end

of the project?s 10-years influence period. It is estimated that about 195,050 tons of direct GHG emission reduction can be potentially achieved during the five-year implementation period of the PASBET Project. These estimates of GHG emission reductions are based on the identified demos and the potential replications. The actual GHG emission reductions will be determined during the detailed design of the demos under the project?s Components 2.1 and 2.2.

1a.7) Innovativeness, sustainability, and potential for scaling up.

?

Innovation: The project promotes and facilitates commercial production and utilization of sustainable woody biomass in energy deficient remote districts of the country. The application of decentralized power generation and distribution in these areas using available sustainable woody biomass resources is a new and innovative endeavor in Pakistan. To sustainably support the operation of such system, the Project includes the design practical environment friendly fuelwood supply systems that involve the establishment of energy plantations and promoting farm-forestry for enhancing forest cover and woody biomass resources with the involvement of local communities and private sector. This is an innovative model that would generate important lessons and best practices for wider applications across the country. The introduction of energy efficient biomass energy technologies (specifically using sustainable woody biomass) and the adoption of innovative practices for biomass energy conversion and utilization are expected to substantially contribute to reducing GHG emissions, improving local environment and minimizing unhealthy conditions due to smoke/smog produced from the use of inefficient wood-fired technologies and equipment. Through the project?s collaborative approaches, incentive measures and sustainable supply chain development local entrepreneurs? and the private sector?s interest in venturing and investing in the production and sustainable use and benefits of woody biomass are expected to be realized.

Sustainability: The sustainability of project interventions is ensured by building on the earlier initiatives of the government and private sector for curbing deforestation and enhancing tree cover in the country. A strong linkage and collaboration with government?s on-going initiatives (Clean and Green Pakistan, TBTT-P, REDD+ Readiness project, SFM, SLM projects etc.) helps in creating sustainability. The involvement of relevant federal government agencies, provincial forestry departments, local community leaders, woody biomass traders and entrepreneurs, and private sector into every aspect of project designing and implementation enhances ownership of project interventions and improved/sustainable access and benefit sharing. The project?s enabling environment and capacity building efforts for the widespread applications of woody biomass energy generation technologies and energy efficient wood-fired equipment for the industrial sector of the target remote rural areas, as well as the raising of energy plantations for the sustainable supply of woody biomass are expected to help in maintaining health environment promoting local livelihoods through sustainable production and utilization of woody biomass, thus reducing pressure on natural ecosystems and GHG emissions.

Scaling-up: The innovative ideas and practices under the three proposed components of the project can be replicated and scaled-up to other parts of the country, especially in Sindh and Baluchistan. Raising energy plantation on barren lands and trees grown on farmlands will provide a major economic incentive to rural communities to expand these activities to other potential sites to earn the hard cash through production and sale of woody biomass to wood-fired thermal equipment used in rural

industries and at the same time reducing threats to natural forests and reducing GHG emission from the introduction of efficient technologies. Lessons learned and knowledge generated through on-the-ground project interventions will help in replicating and scaling-up best practices at the national, sub-national and regional levels.

1b. Project Map and Coordinates

Please provide geo-referenced information and map where the project interventions will take place.

Geo-reference/Coordinates Proposed PASBET Districts

Province/District	Coordinates
Punjab	
Layyah	31.0998? N, 71.0022? E
Bhakkar	31.8621? N, 71.3824? E
Khyber Pakhtunkhwa	
Kaghan	34?50?N 73?31?E
Kalam	35.4801?N 72.5874?E
Sindh	
Badin	24?39?26?N 68?50?26?E
Sujawal	24?36'23" N and 68?4'19"E
Balochistan	
Jaffarabad/Sohbatpur	28.3009? N, 68.1908? E/28.4871? N, 68.6440? E
Dera Bugti	29.0278? N, 69.0970? E

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More details are provided in Annex F.

1c. Child Project?

If this is a child project under a program, describe how the components contribute to the overall program impact.

2. Stakeholders

Select the stakeholders that have participated in consultations during the project identification phase:

Civil Society Organizations

Indigenous Peoples and Local Communities

Private Sector Entities

If none of the above, please explain why:

Please provide the Stakeholder Engagement Plan or equivalent assessment.

Based on the stakeholder analysis, the project?s key players include MOCC, EAD, MoPDR, Provincial Forestry Departments, AEDB, NEECA, Research and Academic Institutions, Civil Society Organizations/ Community Based Organizations/Farmers? Associations MOF, NDRC, MEE, local communities/governments, and the private sector. They will take active part in the implementation of the PASBET project activities and cooperate in the monitoring and reporting as well as knowledge management process in preserving and disseminating knowledge on lessons learned and practices to aid in decision making while the others will assume either supporting or beneficiary roles.

The cross-sectoral and participatory nature of the project requires involvement of wide range of stakeholders at different stages of project implementation. Below is the framework for the stakeholder areas of responsibilities. Since there was limited opportunity to conduct a meeting with intended representatives of the project stakeholders, the list and roles of stakeholders will be validated and a comprehensive ?stakeholders participation strategy? with a clear road map will be developed from the following stakeholders? roles and duties during the inception phase of the project involving also local user groups, traders, and entrepreneurs, including both men and women will be devised.

The key stakeholders that were identified through the project development process are listed in table below.

Stakeholders Roles and Duties during the Project Implementation

Stakeholders	Roles and Duties during Project Implementation
Ministry of Climate Change (MoCC)	MoCC oversees inter-provincial coordination of forestry-related matters and is responsible for overseeing the implementation of the Project with the provincial forest departments, chairs the Project Board in monitoring and decision-making in policy, strategy, and action plans for the Project to ensure sustainable management of woody biomass in the country. Being the Implementing Partner, it is also responsible for meeting international obligations under various Multilateral Environmental Agreements (MEAs). The Ministry will also be the executing agency to facilitate the inter-provincial coordination during implementation phase of the project and ensure inter-sectoral coordination with the relevant ministries (particularly for energy, forestry, environment sectors for planning, implementing, monitoring and taking actions on implementation issues and barrier removal for sustainable biomass production, decentralized power generation and introducing efficient woody biomass energy conversion technologies.
Economic Affairs Division (EAD) and Ministry of Planning Development and Reforms (MoPDR)	The EAD and MoPDR will provide guidance in project planning and implementation phase, including coordination with Finance, and Development Planning ministries to realize the co-financing commitments of the project. The Centre for Rural Economy (CRE) operating under the MoPDR will support and recommend ways and means in filling gaps in woody biomass based rural economy and to study its value chain and recommend ways and means to improve supply chain for meeting needs producers and consumers, as well small farmers.

Stakeholders	Roles and Duties during Project Implementation
Provincial Forestry Departments	The provincial Forest Departments of Punjab, KP, Sindh, and Balochistan will actively plan and implement the project activities, procurement and technology demonstrations that are committed by the Departments in terms of co-financing resources, site selection, planning, technical support, implementation, and stakeholder engagements. They will also oversee the management, operation and maintenance of the demonstration facilities, plantations, fuel processing and logistics, and the storage facilities for in the, as well as provide technical support for raising energy plantation and ensure realization of the provincial co-financing inputs of the project.
Ministry of Energy (Power Division) ? Alternative Energy Development Board (AEDB)	AEDB, being mandated by the Federal Government to facilitate, promote, and encourage development of Renewable Energy in Pakistan and with a mission to introduce Alternative and Renewable Energies (AREs) at an accelerated rate, it will provide technical support in the implementation of the project activities on the formulation of policies, programs and initiatives through private sector that are supportive of woody biomass energy generation, in line with achieving sustainable economic growth. It will provide advice on the in the planning and implementation of transfer of technology and development of local technical services on woody biomass resources.
Ministry of Energy (Power Division) - National Energy Efficiency & Conservation Authority (NEECA)	NEECA, being the federal focal agency for initiating, catalyzing, and coordinating all energy efficiency and conservation activities in different sectors of economy, will provide support in developing mechanisms and procedures for conservation and efficient use of energy. NEECA has been charged with a wide range of responsibilities. They will support the development and enforcement of policies and regulatory frameworks during the project implementation. NEECA will also take lead role for technology transfer, capacity development and organization of trainings for capacity building of individual, SMEs, and private sector in designing and using energy efficient wood-fired industrial equipment.
Research and academic institutions	National and provincial research institutions including Pakistan Forest Institute and National University Science and Technology (NUST) will be engaged in the development and implementation of capacity building programs for farmers, woody biomass producers, traders, and other actors involved in biomass supply chain. Moreover, the Global Change Impact Studies Centre (GCISC) of MoCC will lead in the relevant research and development activities of the project and support establishing online Knowledge Management (KM) repository.
Civil Society Organizations/ Community Based Organizations/ Farmers? Associations[1][1]	CSOs/local CBOs including Women Organizations being important stakeholders will be informed and be engaged through consultative meeting and stakeholders? workshops to seek their input and identify their roles during implementation of project activities. Farmers? association will be established and involved in raising woodlots and promoting fuelwood production on farmlands.

Stakeholders	Roles and Duties during Project Implementation
Private Sector (Electric Power Producers and Rural Industries)	Private sector such electric power producers, woody biomass traders, rural industry companies will be involved in the project planning and implementation by continuing to hold special consultative sessions with biomass energy consumers and individual meetings as well as ensuring the active participation, leading to investments by the private sector during implementation of the project. This will include controlling deforestation, raising energy plantations, and introducing energy efficient technologies. They will also be encouraged to provide co-financing the project activities and derive GHG emissions reduction benefits and making investments for raising woodlots and technology transfer.
International NGOs, UN Agencies, and Donors.	International NGOs like International Renewable Energy Agency (IRENA), ICIMOD, and ACARDA which have been involved in renewable energy (including biomass energy) studies, assessments, and mapping, will share information resources in relevant areas necessary in project implementation. Similarly, UN Agencies?UNIDO, FAO and UNDP will continue to be involved in special studies and bio-energy resource mapping. Multi-lateral donors such World Bank and Asian Development Bank will continue assisting Pakistan for assessment of and tapping renewable energy potential in the country.

There is a big potential for the private sector to participate in the Project implementation and become a major key stakeholder and player with regards to woody biomass production and utilization for energy generation in power and non-power application. At present, there is yet to happen more significant private sector engagement. To remove one of the barriers identified and is herewith being addressed by the Project is the development and facilitation of the adoption of policies, rules, and regulations on the private sector engagements in biomass-based development activities at the provincial level. The country has adopted a decentralized approach in the execution and administration of the government programs at the provincial level. There are some cases of privately owned energy plantations which are referred to as woodlots on private lands. The situation is varied across the four provinces selected under the Project. The Ten Billion Tree Tsunami (TBTT) Project will provide a big boost and resources on public and private farmlands. The provincial governments through the Forest Departments are providing various forms of subsidies to the tree farmers through different development projects to increase tree cover on private farmlands using varied modes of participation in achieving the goals in tree plantation coverage. On the fuel wood utilization for energy generation, the Government has launched many related projects and established platforms where private sector participation will be encouraged. The Project has included feasibility studies of sustainable woody biomass fuel production facilities which are envisaged to attract private sector investments, particularly in Component 2.2, where commercial models will be demonstrated during the Project and planned for replication and upscaling in the coming years.

The main private actors will be woody biomass-based small and medium enterprises (SMEs), and businesses engaged in woody biomass fuel production, their role/involvement in the rural electrification program of the country, in promoting energy efficient biomass energy technologies in rural industries, raising energy plantation, and woody biomass energy production and supply. These entities will be encouraged to participate in: (a) woody biomass energy generation and supply; (b)

woody biomass supply chain analysis and identification of market needs; (c) raising energy plantations and wood lots; (d) development of business-based energy models for woody biomass based SMEs in collaboration with local communities; (e) development of partnership with the project for transfer of technology and introduction of best practices for reducing GHG emissions from the energy consuming operations in rural industries; and, (f) capacity building and knowledge management interventions targeting biomass production and promoting biomass energy efficient technologies in power and non-power applications, and public awareness raising campaigns. The Project will develop and facilitate the adoption of a platform for synchronizing its policy and regulatory development activities with significant policies that are found relevant to the development of biomass energy for rural electrification with potential private sector involvement such as in: National Electricity Policy 2021, Energy Regulations, NEPRA licensing, public-private partnership in power generation of the Government that shifted to the provincial administration where there are different approaches, legal frameworks and policies for each province in a decentralized authority and execution as overseen by the Public Private Partnership Authority (PPPA) as amended in 2021. The Project has therefore included in its activities the policy development and adoption for widening the public private participation in energy generation.

Follow-up Stakeholder Consultations

During the project development stage, the project development team (PDT) including the concerned UNDP-Pakistan personnel conducted consultation meetings with the key stakeholders such as the Ministry of Climate Change, Ministry of Planning Development and Reforms, provincial Forest Departments, and provincial Energy Departments. However, there was limited opportunity for a broader and detailed stakeholder consultation, particularly with local communities and other local government departments due to COVID-19 restrictions. The public health restrictions during the pandemic led to closure of government offices and private businesses and strict protocols for keeping social distancing. Hence, the limited interaction with stakeholders in the communities where many of the planned project activities (e.g., demonstrations) will be implemented.

During the inception phase of the project, the project team and the technical personnel that will be onboarded will come up with a concrete plan for carrying out more detailed consultations with the project stakeholders particularly those that were not consulted during project design stage, such as other provincial government departments, community leaders and district/local government institutions in the project areas. Follow-up consultations will also be done, when and if necessary, with the key stakeholders that were consulted during the design phase of the project. The following is a summary of stakeholder engagement activities that will be carried out in preparation for, and during the project inception phase:

? Telephone calls to stakeholders to organize meetings, follow-up with appointments and provide further information for stakeholders;

? Email exchange with stakeholders to provide further information on project scope, demonstrations, and value-adding initiatives for the project;

? Attendance in specific meetings with the PDT staff and the identified potential co-financers, and implementers of identified baseline project to learn about potential synergies from such projects and share project information;

? Organized stakeholder consultations;

? Field visits and focus group discussions on project plans, benefits, risks, impacts and community interest and engagement; and,

? Focus group discussion with women on gender roles related to the planned project activities, benefits, risks, impacts and interest and engagement.

Subsequently, the information that will be gathered during these consultations will be used in preparing a more detailed Stakeholder Engagement Plan. Such plan will also specify, among others, the roles, and responsibilities of various project participants/stakeholders such as: (a) Linkages and coordination between participants and activities; (b) Role of each participant in the delivery of project outputs; and (c) Strengthening of links to project stakeholders. The plan will be presented during the project?s inception meeting for discussions and endorsement of the stakeholders.

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[1] The discussions with the local communities were mainly part of the stakeholder consultation activities that they have done under the Government?s Ten Billion Tree Tsunami Program. The discussions under that program were done through workshops and focused consultations and were in line with the objective to pave the path for job creation for common people through green initiatives. The government is focused to increase the number of private nurseries for raising plants to generate the economic opportunities. Hence, the discussions with the local communities in the planned project districts was, among others, on how the proposed project will build on the planned technical and financial support that will be provided to local farmers and community organizations under the program for establishing farmers/communal nurseries to provide planting stock for raising woody biomass on forested, non-forested and farmlands by involving individual farmers and community organizations. Among the discussions that were carried out with stakeholders were with the technical personnel of the Provincial Forestry Departments, who themselves are regularly in touch with local communities including those communities in the planned project districts. The Forestry personnel informed the project proponents about the suggestions of the local communities in comprehending the

key challenges to tackling deforestation and in coming up with concrete measures to tackle the issue with other innovative measures such as the planned interventions of the proposed project.

In addition, provide a summary on how stakeholders will be consulted in project execution, the means and timing of engagement, how information will be disseminated, and an explanation of any resource requirements throughout the project/program cycle to ensure proper and meaningful stakeholder engagement

Select what role civil society will play in the project:

Consulted only; Yes

Member of Advisory Body; Contractor; Yes

Co-financier;

Member of project steering committee or equivalent decision-making body;

Executor or co-executor;

Other (Please explain)

Based on the stakeholder analysis, the project?s key players include MOCC, EAD, MoPDR, Provincial Forestry Departments, AEDB, NEECA, Research and Academic Institutions, Civil Society Organizations/ Community Based Organizations, Farmers? Associations, local communities/governments, and the private sector. They will take active part in the implementation of the PASBET project activities while the others will assume either supporting or beneficiary roles.

The key stakeholders that were identified through the project development process are listed with roles and responsibilities in detail in **Annex 8** of the Project Document.

3. Gender Equality and Women's Empowerment

Provide the gender analysis or equivalent socio-economic assesment.

The highlights of the gender analysis are as follows:

a. According to the Global Gender Gap Index, Pakistan is currently ranked as the second worst country in the world, scoring very poorly on most of the gender equality parameters. Health is one the primary issues that women face in the country: despite being the sixth most populous country in the world with a very high fertility rate of 3.8 children per woman, there are gaps in the fulfillment of women?s reproductive rights and access to quality healthcare for women throughout the country. Pakistan suffers

from a lack of access to quality family planning services throughout the country, which has resulted in one of the highest unmet needs in Asia. This prevents women from meaningfully participating in educational and economic life outside of the household and from making informed choices about their sexual and reproductive lives.
b. Gender-based violence is also prevalent in both the rural and urban areas along with women suffering from domestic abuse, honor killings and sexual violence to institutional discrimination. Barriers also exist in the access to education for women in the country which has resulted in a lower literacy rate for women (47%) compared to men (71%). Enrolment rates in schools are alarmingly low for girls. 32% percent of primary school age girls are out of school, compared with boys. This gender gap differential continues into secondary forms of education: only by 13% of young women are still enrolled in middle school. This has long term effect for women in the economic sphere where they constitute a small part of the workforce, and their earnings are significantly lower compared to their male counterparts.
c. Moreover, these multidimensional gender inequalities have gotten worse because of covid-19 with regions of high fragility, conflict and poverty suffering the most from this change: the women in these areas are now exposed to greater health risks as well as potential loss of income. With women being confined to their homes for longer period s of time, the burden of unpaid care work on them has increased and they are more vulnerable to gender-based violence.

The key elements of the gender action plan are summarized as follows:

a. Women and men share different roles and responsibilities in the biomass-based energy production process: both have knowledge about, and varying skills in, use of resources such as fuelwood for energy production use. Women?s vital contributions to the process through the collection and use of firewood, however, are not always fully acknowledged and given the importance that it deserves. One of the primary reasons for this is the lack of gender-differentiated perspectives in biomass research and documentation, which itself has not been undertaken at an extensive scale at the provincial or national level. Both genders? perspectives need to be a part of biomass studies to ascertain the efforts required for setting up fuelwood plantations and biomass-based energy production.

b. The Gender Action Plan as elaborated in Annex 9, therefore, is built upon:
? Comprehensive collection of gender-related information and sex-disaggregated data to get a more holistic picture of the scenario in project areas
? Incorporation of gender concerns in the project results framework and the monitoring and evaluation plan that the project is based on which will assist in the formulation of interventions for specific outcomes.

Annex 9 of the PASBET Project Document presents more details of the Gender Analysis and Gender Action Plan for the Project.
Does the project expect to include any gender-responsive measures to address gender gaps or promote gender equality and women empowerment?

Yes

Closing gender gaps in access to and control over natural resources;

Improving women's participation and decision making Yes

Generating socio-economic benefits or services or women Yes

Does the project?s results framework or logical framework include gender-sensitive indicators?

Yes

4. Private sector engagement

Elaborate on the private sector's engagement in the project, if any.

There is a big potential for the private sector to participate in the Project implementation and become a major key stakeholder and player with regards to woody biomass production and utilization for energy generation in power and non-power application. At present, there is yet to happen more significant private sector engagement. To remove one of the barriers identified and is herewith being addressed by the Project is the development and facilitation of the adoption of policies, rules, and regulations on the private sector engagements at the provincial level since the country adopted a decentralized approach in the execution and administration of the government programs. There are some cases of privately-owned energy plantations which are referred to as woodlots on private lands. The situation is varied across the four provinces selected under the Project. The Ten Billion Tree Tsunami (TBTT) Project will provide a big boost and resources on public and private farmlands. The provincial governments through the Forest Departments are providing various forms of subsidies to the tree farmers through different development projects to increase tree cover on private farmlands using varied modes of participation in achieving the goals in tree plantation coverage. On the fuel wood utilization for energy generation, the Government has launched many related projects and established platforms where private sector participation will be encouraged. The Project has included feasibility studies of sustainable woody biomass fuel production facilities which are envisaged to attract private sector investments, particularly in Component 2.2, where commercial models will be demonstrated during the Project and planned for replication and upscaling in the coming years.

The main private actors will be woody biomass-based small and medium enterprises (SMEs), and businesses engaged in woody biomass fuel production, their role/involvement in the rural electrification program of the country, in promoting energy efficient biomass energy technologies in rural industries, raising energy plantation, and woody biomass energy production and supply. These entities will be encouraged to participate in: (a) woody biomass energy generation and supply; (b) woody biomass supply chain analysis and identification of market needs; (c) raising energy plantations and wood lots; (d) development of business-based energy models for woody biomass based SMEs in collaboration with local communities; (e) development of partnership with the project for transfer of technology and introduction of best practices for reducing GHG emissions from the energy consuming operations in rural industries; and, (f) capacity building and knowledge management interventions targeting biomass production and promoting biomass energy efficient technologies in power and non-power applications, and public awareness raising campaigns. The Project will develop and facilitate the

adoption of a platform for synchronizing its policy and regulatory development activities with significant policies that are found relevant to the development of biomass energy for rural electrification with potential private sector involvement such as in: National Electricity Policy 2021, Energy Regulations, NEPRA licensing, public-private partnership in power generation of the Government that shifted to the provincial administration where there are different approaches, legal frameworks and policies for each province in a decentralized authority and execution as overseen by the Public Private Partnership Authority (PPPA) as amended in 2021. The Project has therefore included in its activities the policy development and adoption for widening the public private participation in energy generation.

5. Risks to Achieving Project Objectives

Elaborate on indicated risks, including climate change, potential social and environmental risks that might prevent the project objectives from being achieved, and, if possible, the proposed measures that address these risks at the time of project implementation.(table format acceptable):

The description on how the project risks were identified is shown in the SESP (ProDoc **Annex 5**) and how they will be mitigated are included in ProDoc **Annex 6**: UNDP Risk Register. The following summary includes impact and probability, mitigation measures (preventive or alleviative), owner and status.

Description	Type	Impact & Probability	Mitigation Measures	Owner	Status

Description	Type	Impact & Probability	Mitigation Measures	Owner	Status
Unexpected cultural or security barrier/situation (e.g., law and order) may delay project implementation in some project districts or hinder activities	Social Political Organizational	I =3 P=1 Medium	*Preventive*: Awareness campaigns and information drive on the value and benefits of the project for all stakeholders and local leaders that they may be motivated to continuously support the successful implementation of the project. Insecure project sites were avoided in the selection of target demonstration and logistics areas. By adopting a participatory approach and involving all local stakeholders, risks related to social instability is reduced. In addition, the project?s partnerships with local entrepreneurs and biomass traders will be established through regular consultation and feedback to ensure that project interventions continue even under moderate security threats. *Alleviative*: Proper coordination with the provincial line department, security agencies and district administration during field activities reduce/eliminate security threats or cultural barriers during the field operations. Consultations with the local leaders and stakeholders on the nature of the concern or barrier and involve them in the solution of the problem and means to avoid recurrence with the realization of the overall benefit of the project interventions to the communities and to realize sense of ownership.	Provincial departments PMU MOCC	No Change

Description	Type	Impact & Probability	Mitigation Measures	Owner	Status
Resistance or low levels of participation of individual entrepreneurs and SMEs	Social Political Organizational	I =3 P =1 Medium	*Preventive:* The project will involve individual entrepreneurs, SMEs, local communities, leaders, biomass traders and rural industries to enhance appreciation of the benefits. Wherever possible, their legitimate interests and socio-economic needs will be safe guarded. *Alleviative:* The project will explore the possibilities of providing incentives (social, economic, and technological) to local farmers and entrepreneurs to encourage their participation in project designing and implementation.	PMU MOCC	No Change

Description	Type	Impact & Probability	Mitigation Measures	Owner	Status
Project activities and approaches might not fully incorporate or reflect views of women and girls and ensure equitable opportunities for their involvement and benefit; and there is a risk that a prolonged or recurrent COVID-19 pandemic would exacerbate gender inequality, including risk of GBV. And potential occurrence of discriminations against women based on gender, especially regarding participation in design and implementation or access to opportunities and benefits.	Social Political Organizational	I =3 P =1 Medium	*Preventive:* The project will implement gender mainstreaming as an integral part of the process and will be incorporated at all levels of implementation. The use of environmentally friendly technology will play a role in reducing the harmful effects of fuelwood use for women. More importantly, women will be involved in participatory discussions at all stages of the projects keeping in mind the cultural and social norms of the region. Women will also be given decision making powers at all levels to ensure that their input makes a difference and helps to improve their lives. A gender expert will also be hired to sensitize project and government staff on gender issues so that any steps and polices that are formulated inculcate the concerns of women in the region. A **Gender Action Plan** has been prepared and will be implemented for the project. This plan, includes and addresses GBV issues and considers the issues faced by women in all project aspects and steps that are taken to involve women in the decision-making process, empower them in various positions, reduce any violence and threats that they face including those related to the environment. In addition, the project **ESMF** will define specific environmental and social safeguard procedures for the project, including consideration of gender related risks. The **Stakeholder Engagement Plan** and M&E Plan also ensure participation and engagement of women and girls so that all relevant issues are tackled, and	PMU MOCC	

Description	Type	Impact & Probability	Mitigation Measures	Owner	Status
Natural disasters (including those linked to climate change) may slow or prevent project implementation.	Environmental	I =3 P =3 Medium	*Preventive*: The project is designed for increasing resilience of forest plantations and among communities prone to natural disasters. Selection of demo sites has considered likelihood of these possibilities. In the event of a natural disaster (e.g., floods, drought) improved woody biomass management, including raising wood lots and growing fuelwood trees on farmlands will reduce the damages and impacts of climate change. Considering the potential climate change events (e.g., monsoon flooding, high ambient temperatures, drought), the site selection of project demo units and logistics facilities have been considered in the stakeholder consultation in the PPG stage. During the implementation the facilities will be designed in such a way that these will be resilient and comply with internationally accepted infrastructure design and engineering standards. *Alleviative*: Should there be any occurrence during the implementation, the project management will inform immediately the local disaster management units to activate pre-arranged response plans in case of emergencies to protect lives and properties.	PMU MOCC	No Change

Description	Type	Impact & Probability	Mitigation Measures	Owner	Status
COVID-19 pandemic could limit mobility and communication among stakeholders, especially travel to field project sites and stakeholders? consultations during the project designing and implementation phases.	Operational Environmental	I =2 P =4 Moderate	*Preventive*: in the situation of prolonged effects of COVID-19, the MOCC as Implementing Partner, in coordination with the Provincial Departments and the PMU will continue to make use of the strategies applied in the GOP?s and the UNDP?s (and other UN Agencies? and Donors?) successes in curtailing the spread of COVID-19 and suppressing social and economic impacts of this pandemic in the implementation of the design and operational requirements of the installations of the project. These include safety-net for the poor, localized, micro level smart-lockdowns, and use of electronic media for communicating with the provincial governments, development agencies, donors, and local community leaders. The lessons learned during the pandemic will be fully considered in maintaining effective communication with stakeholders and partners. *Alleviative*: Moreover, during the implementation, should there be inevitable situations due to surges of cases affecting the communities that would necessitate remedial and stop gap measures, the Provincial Departments and local hosts of the demo facilities and fuel logistics systems shall implement corrective activities for decentralized actions, adjustments and geographic clustering that would be limiting the extent of travelling to and from and within the project sites in accordance with established local protocols while minimizing the effects to the project implementation and to	PMU MOCC	No Change

Description	Type	Impact & Probability	Mitigation Measures	Owner	Status
Local communities and farmers do not adhere to forestry interventions and sustainable production of woody biomass in their agriculture fields.	Environmental Technical	I =3 P =5 Low	*Preventive*: Participatory nature and incentives measures associated with raising energy plantations and use of efficient technologies are built-in design to encourage communities/farmers to adhere to the proposed interventions. Furthermore, compliance measures will be ensured with sufficient guidelines and local organizational requirements that involve proper checks and balances during the implementation of the project will help in mitigating this risk. Public awareness on benefits and program requirements shall reinforce the targeted campaigns, as well as market linkages and financing windows will be implemented to encourage farmers to fuelwood production to maximize fuelwood production on less productive lands. *Alleviative*: In case of actual deviations from agreed plans and commitments, attention of responsible parties and local leadership should be warranted, and appropriate decisions and corrective actions should be initiated promptly. Effective monitoring of corrective actions and adherence to project objectives shall be encouraged and if possible, incentives in whatever form shall be mobilized from co-financed resources until commercial mode of operation follow from successful demonstrations.	PMU MOCC	No Change

Description	Type	Impact & Probability	Mitigation Measures	Owner	Status
Introduction of improved wood-fired equipment in areas having standing natural forests may create a perverse incentive that leads to more production than replacement of inefficient methods leading further degradation of natural forest.	Social Political Organizational Environmental	I =3 P =1 Medium	*Preventive*: The project will ensure that all power generation and EE equipment introduced in applicable rural industries have appropriate licenses and following regulatory standards and guidelines to be monitored by the provincial forest departments and local authorities. For this purpose, a proper certification scheme is part of project design. Moreover, areas with closer natural forests will be avoided for project interventions. The project shall implement the awareness and capacity building activities that are designed to encourage efficient fuel wood burning equipment and forest conservation practices. *Alleviative:* Proper check and balance will be maintained to ensure that use of woody biomass is sustainable and does not exceed the production limits. The possibility of using alternate biomass e.g., crop residuals will also be explored.	PMU MOCC	No Change

Description	Type	Impact & Probability	Mitigation Measures	Owner	Status
Woody biomass use could exceed production. Even fast-growing species will take up to five years to mature. Moreover, climate change risks (flash floods and prolonged drought) and rainfall variability could impact production of woody biomass.	Social Technical Environmental	I =4 P =1 Medium	*Preventive:* The project will develop specific criteria during the implementation to validate the areas that support operations of rural industries that use wood as fuel that will include evidence of (i) availability of woody biomass, (ii) access to market supplies, and past production experience. The project will implement the standards and applicable criteria in fuel plantations location planning and permitting in coordination with the Provincial Departments. *Alleviative:* In case of supply/demand imbalance during the project implementation, a monitoring system will be established and sustained. The use of wood biomass by the relevant rural industries will be carefully monitored and regulated with active involvement of provincial forestry departments and the local community leadership.	PMU MOCC	No Change

Description	Type	Impact & Probability	Mitigation Measures	Owner	Status
Improved and efficient wood-fired equipment to be introduced may not be suitable under the local conditions and plantation-based woody biomass production enterprises, especially if woodlots were not well-established and managed.	Social Technical Operational	I =2 P =2 Medium	*Preventive:* The project will encourage the use of the modern fuelwood-fed gasifiers, and application of energy-efficient wood-fired equipment (e.g., kilns and boilers) that will be demonstrated by the project. These technologies that have already been used, technically proven and their performance accepted. The findings and performance results provided by recent relevant project studies have been useful in selecting practical and economically viable fuel wood technologies. These technologies will be adopted for reducing GHG emissions that are indeed the appropriate technology to be introduced for wood-fired commercial/residential applications and industrial equipment operations. Moreover, technology transfer must be adaptable to local communities? preferences, affordable, and easily accessible. The project seeks to mitigate this risk by recommending appropriate technologies based on the proper feasibility studies. *Alleviative*: A mechanism for certification appropriate/efficient technologies/equipment will be introduced and enforced with the involvement of concerned departments and agencies and potential users. In addition, disincentives (fines, penalties etc.) will be introduced to reduce the severity of this risk.	PMU MOCC	No Change

Description	Type	Impact & Probability	Mitigation Measures	Owner	Status
The Project may create adverse biodiversity impacts to habitats, ecosystems, and ecosystem services; and activities in the communities.	Environmental	I = 2 L = 2 Low	*Preventive:* The risk assessment will be validated during the early part of Year 1 as part of the ESMF and ESMP development and adoption. A participatory approach will be in place at all stages of the project to maximize the involvement of the appropriate agencies dealing with animal habitats and ecosystems, community members keeping in mind the legally protected areas as well as the cultural context in the areas. A mechanism for a biodiversity action plan and implementation will be adopted and enforced with the involvement of concerned departments and agencies and potential users. In addition, disincentives (fines, penalties etc.) will be introduced to reduce the severity of this risk. *Alleviative*: In case of reported incidences of adverse biodiversity impacts to habitats, ecosystems, and ecosystem services; and activities within or adjacent to critical habitats and/or environmentally sensitive areas, including legally protected areas, areas proposed, proper investigation, consultation and remedial measures will be adopted and enforced to prevent recurrence. Due penalty for responsible acts will be bestowed based on approved sanctions and disincentives.	PMU MOCC	

Description	Type	Impact & Probability	Mitigation Measures	Owner	Status
MoCC?s lack of insurance coverage of assets may result in major losses in case of manmade or natural disaster.	Financial	I = 3 L = 3 Moderate	*Preventive:* Since MoCC has no insurance cover for any of the assets, the MoCC will obtain insurance cover at least for all its significant assets to avoid risk of any major losses in case of manmade or natural disaster. *Alleviative*: In case of reported incidences of major losses due to manmade or natural disaster, the insurance coverage will be applied following the terms and conditions of the insurance policy and the appropriate adjustments and instruments to cushion the impact of the unfavorable event.	PMU MOCC	
Potential shortcomings in the integrity of financial data due to the lack of an automated financial system by the MoCC.	Financial	I = 3 L = 3 Moderate	*Preventive:* Following the recommendation made in the October 2021 micro assessment, the MoCC will implement an automated financial system to increase the integrity of data and to optimize the benefit of a financial and management reporting system *Alleviative:* Should there be breach of the integrity and security of the automated financial system, due investigation and validation will be immediately done and when there is proven breach and security intrusion, corresponding penalty and sanction will be levied to the responsible individuals. Corrective actions in the system should be developed and adopted immediately.	PMU MOCC	

Description	Type	Impact & Probability	Mitigation Measures	Owner	Status
Risk related to procurement and contract administration due to lack of automated procurement system	Financial	I-3 L=3 Moderate	*Preventive:* Similarly, with recommendations of the micro assessment of MoCC conducted in October 2021, MOCC will develop and implement an automated procurement system; prepare procurement reports; formalize a process of vendor prequalification; and develop a system of maintaining supplier database ad performance evaluation. *Alleviative*: Should there be breach of the integrity and security of the automated procurement and contract administration system, due investigation and validation will be immediately done and when there is proven breach and security intrusion, corresponding penalty and sanction will be levied to the responsible individuals. Corrective actions in the system should be developed and adopted immediately.	PMU MOCC	

•If further assessment and management plan(s) are to be undertaken during project implementation, particularly referring to incidental risks, such as COVID-19 related risks, etc. then such plans should be prepared as the project commences during the inception stage.

6. Institutional Arrangement and Coordination

Describe the institutional arrangement for project implementation. Elaborate on the planned coordination with other relevant GEF-financed projects and other initiatives.

Section 1: General roles and responsibilities in the projects? governance mechanism

The Implementing Partner for this project is the Ministry of Climate Change (MoCC). The project will be implemented based on the proposed implementation modality - UNDP Full Country Office (CO) support to National Implementation Modality (NIM) with the Ministry of Climate Change as implementing partner.

Microassessments and a review of the resolution of pending assurance activity issues will be conducted to assess whether there have been improvements in the capacities, policies, and internal controls of the IP/MoCC, and review changes to the implementation arrangements and cash transfer modality. UNDP support services to the Government (IP) for CO support to NIM includes the recruitment and recurrent management services of PMU staff, procurement, and engagement of Responsible Parties during the project implementation.

Based on the results of MCA, demonstrating concrete steps taken by MoCC to resolve recurring high risk audit issues relating to the following (but not limited to) internal controls, possible adjustments to the implementation arrangements to a full NIM Implementation modality may be considered along with changes in relevant cash transfer modality in accordance with HACT Framework.

1. Financial management and accounting of UNDP funds where UNDP funds are managed and utilized under Government oversight in accordance with applicable government regulations, rules, and procedures; and

2. compliance with applicable government procurement regulations, rules, and procedures; and

3. compliance with applicable government recruitment and personnel management regulations, policies, and procedures.

However, if the 3rd party assessment results fail to demonstrate the above, UNDP will continue to provide support to MoCC in implementation under CO support to NIM.

Responsible Parties: During the 5-year implementation period of the PASBET Project, the MoCC, as the implementing partner will require the cooperation and services of several responsible parties to implement or support the implementation of the project activities. This will include Forest and Energy Departments of respective provinces, Alternative Energy Development Board, National Energy Efficiency and Conservation Authority, Power Distribution Companies and Natural Gas Supply Companies. The Project Development Team (PDT) has undertaken necessary consultation with these stakeholders and gathered their initial buy in. Forest departments are partnering with PASBET project as co-financing partners whereas rest will be formally taken on board at the inception stage. Under CO Support to NIM, UNDP shall sign a Letter of Agreement (LOA) with the relevant entities among these that will be designated as RPs and engage them to execute the activities in their respective area of responsibility.

Project Stakeholders: Please refer to the Stakeholder Engagement Plan in Sec. IV and to **Annex 8** of ProDoc.

The cross-sectoral and participatory nature of the project would require involvement of wide range of stakeholders at different stages of project implementation. Therefore, a comprehensive ?stakeholders participation strategy? with a clear road map will be developed during the inception phase of the project. A mechanism for involvement local user groups, traders, and entrepreneurs, including both men and women will be devised. Following are the stakeholders of the Project:

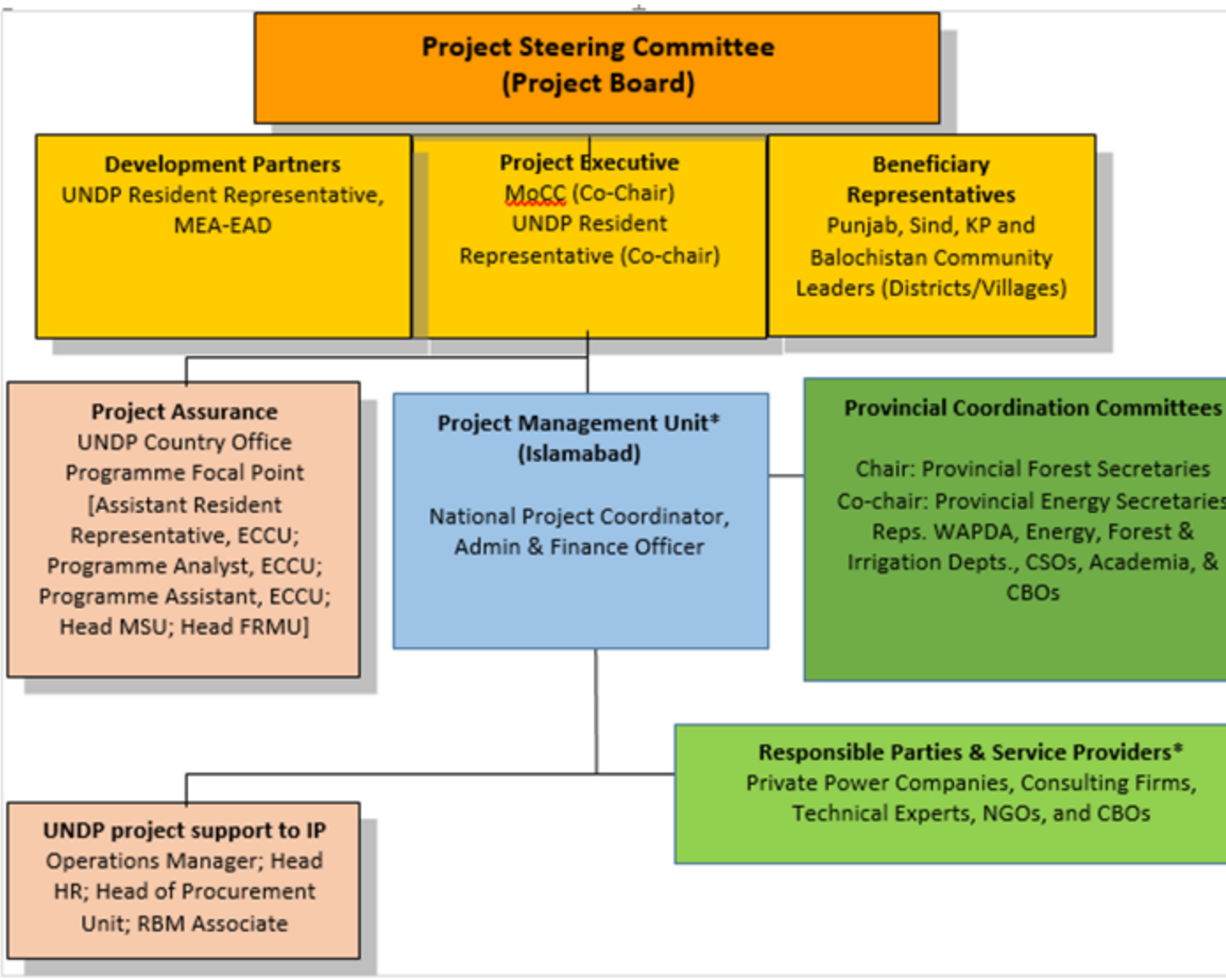
? Ministry of Climate Change (MoCC)
? Provincial Forestry Departments
? Provincial Energy Departments
? Ministry of Energy (Power Division) ? Alternative Energy Development Board (AEDB)
? Ministry of Energy (Power Division) - National Energy Efficiency & Conservation Authority (NEECA)
? Civil Society Organizations/ Community Based Organizations/
? Private Sector
? (Electric Power Producers and Rural Industries)
? International NGOs, UN Agencies, and Donors.

The project target groups will be engaged in decision making for the project through the Project Board consultation and meetings to be coordinated by the Project Management Unit (PMU). The broader governance environment may include various stakeholder groups. The engagements will also be done though the activities under each project component relevant to policy making, data gathering, participation and procedural documentation. In this way, the project?s governance will be integrated within the wider governance arena considering the capacity building of project management capability in the project organization as well as the target groups.

UNDP is accountable to the GEF for the implementation of this project. This includes overseeing project execution undertaken by the Implementing Partner to ensure that the project is being carried out in accordance with UNDP and GEF policies and procedures and the standards and provisions outlined in the Delegation of Authority (DOA) letter for this project. The UNDP GEF Executive Coordinator, in consultation with UNDP Bureaus and the Implementing Partner, retains the right to revoke the project DOA, suspend or cancel this GEF project. UNDP is responsible for the Project Assurance function in the project governance structure and presents to the Project Steering Committee and attends Project Steering Committee meetings as a non-voting member.

A firewall will be maintained between the delivery of project oversight and quality assurance performed by UNDP and charged to the GEF Agency Fee and any support to project execution performed by UNDP (as requested by and agreed to by both the Implementing Partner and GEF) and may be charged to the GEF project management costs (only if approved by GEF).

Section 2: Project governance structure



* The Technical Specialists, M&E Officer and Communication Officer will be hired as consultants. Support staff will be hired as contracted personnel as necessary.
* Responsible Parties & Service Providers shall not serve on the Project board to avoid a conflict of interest.

First line of defense:
? UNDP oversight of project support to IP cannot be UNDP staff providing project assurance or providing programmatic oversight support to the RR.

Second line of defense:
? Regional Bureau oversees RR and Country Office compliance at portfolio level.
? BPPS NCE RTA oversees technical quality assurance and GEF compliance. BPPS NCE PTA oversees RTA function.

? UNDP GEF Executive Coordinator and Regional Bureau Deputy Director can revoke DOA/cancel/suspend project or provided enhanced oversight.

The UNDP Resident Representative assumes full responsibility and accountability for oversight and quality assurance of this Project and ensures its timely implementation in compliance with the GEF-specific requirements and UNDP?s Programme and Operations Policies and Procedures (POPP), its Financial Regulations and Rules and Internal Control Framework. A representative of the UNDP Country Office will assume the assurance role and will present assurance findings to the Project Steering Committee, and therefore attends Project Steering Committee meetings as a non-voting member.

UNDP project support: The Implementing Partner and GEF OFP have requested UNDP to provide support services in the amount of USD 80,000 that will be funded by UNDP cash co-financing as specified in the Letter of Agreement (LOA) for the project duration, however this has to be agreed and approved by GEF for UNDP to provide such execution support services. The execution support services ? whether financed from the project budget or other sources ? will be set out in detail and agreed between UNDP Country Office and the Implementing Partner in a Letter of Agreement (LOA). This LOA is attached to this Project Document (Annex 16).

During the project implementation, a 3rd party micro-capacity assessment (MCA) will be carried out to assess readiness of the proposed IP/MoCC for implementing the project under Full National Implementation Modality (NIM).

Based on the results of the MCA, demonstrating concrete steps taken by MoCC to resolve recurring high risk audit issues relating to the following (but not limited to) internal controls, possible adjustments to the implementation arrangements to a full NIM Implementation modality may be considered along with changes in relevant cash transfer modality in accordance with HACT Framework.

? Financial management and accounting of UNDP funds where UNDP funds are managed and utilized under Government oversight in accordance with applicable government regulations, rules, and procedures; and
? compliance with applicable government procurement regulations, rules, and procedures; and
? compliance with applicable government recruitment and personnel management regulations, policies, and procedures.

However, if the 3rd party results fail to demonstrate above, UNDP will continue to provide support to MoCC in implementation specially carrying out procurements under CO support to NIM. The execution support services ? whether financed from the project budget or other sources - have been set out in detail and agreed between UNDP Country Office and the Implementing Partner in the LOA. This LOA is attached to this Project Document in Annex 16.

To ensure the strict independence required by the GEF and in accordance with the UNDP Internal Control Framework, these execution services will be delivered independent from the GEF-specific oversight and quality assurance services.

Section 3: Segregation of duties and firewalls vis-?-vis UNDP representation on the Project Board

As noted in the Minimum Fiduciary Standards for GEF Partner Agencies, in cases where a GEF Partner Agency (i.e. UNDP) carries out both implementation oversight and execution of a project, the GEF Partner Agency (i.e. UNDP) must separate its project implementation oversight and execution duties, and describe in the relevant project document a: 1) Satisfactory institutional arrangement for the separation of implementation oversight and executing functions in different departments of the GEF Partner Agency; and 2) Clear lines of responsibility, reporting and accountability within the GEF Partner Agency between the project implementation oversight and execution functions.

In this case, UNDP?s implementation oversight role in the project ? as represented in the Project Steering Committee and via the project assurance function ? is performed by Assistant Resident Representative, Programme Analyst, Programme Assistant, Environment and Climate Change Unit (ECCU), Head MSU, Management Support Unit (MSU), Finance Manager, Finance & Resource Management Unit (FRMU). UNDP?s execution role in the project (as requested by the implementing partner and approved by the GEF) is performed by the operations staff who are accountable to Operations Manager and these staff will have no oversight roles. They are Head of Human Resources Unit, Travel Associate, HR Officer, Head of Procurement Unit, Procurement Officer, and RBM Associate, Management Support Unit.

Roles and Responsibilities of the Project Organization Structure

a. Project Board: All UNDP projects must be governed by a multi-stakeholder board or committee established to review performance based on monitoring and evaluation, and implementation issues to ensure quality delivery of results. The Project Board (also called the Project Steering Committee in some projects) is the most senior, dedicated oversight body for a project. The members of the PB/PSC will be finalized after the CEO endorsement of the project by GEF and in accordance with UNDP Programme and Operation Policies and Procedures (POPP).

The two main (mandatory) roles of the project board are as follows:

1) **High-level oversight of the execution of the project by the Implementing Partner** (as explained in the ?Provide Oversight? section of the POPP). This is the primary function of the Project Steering Committee and includes annual (and as-needed) assessments of any major risks to the project, and decisions/agreements on any management actions or remedial measures to address them effectively. The Project Board reviews evidence of project performance based on monitoring, evaluation and reporting, including progress reports, evaluations, risk logs and the combined delivery report. The Project Board is responsible for taking corrective action as needed to ensure the project achieves the desired results. The project quality assurance report and vertical fund reports should be discussed with the PSC, along with management actions to improve quality. PB decisions are made in accordance with standards to ensure management for development results: best value for money, fairness, integrity, transparency and effective international competition.

2) **Approval of strategic project execution decisions of the Implementing Partner** with a view to assess and manage risks, monitor and ensure the overall achievement of projected results and impacts and

ensure long term sustainability of project execution decisions of the Implementing Partner (as explained in the ?Manage Change? section of the POPP).

Requirements to serve on the Project Board:

? Agree to the Terms of Reference of the Board and the rules on protocols, quorum and minuting.

? Meet annually; at least once.

? Disclose any conflict of interest in performing the functions of a Project Board member and take all measures to avoid any real or perceived conflicts of interest. This disclosure must be documented and kept on record by UNDP.

? Discharge the functions of the Project Board in accordance with UNDP policies and procedures.

? Ensure highest levels of transparency and ensure Project Board meeting minutes are recorded and shared with project stakeholders.

Responsibilities of the Project Board:

? Consensus decision making:

o The Project Board provides overall guidance and direction to the project, ensuring it remains within any specified constraints, and providing overall oversight of the project implementation.

o Review project performance based on monitoring, evaluation and reporting, including progress reports, risk logs and the combined delivery report;

o The Project Board is responsible for making management decisions by consensus.

o In order to ensure UNDP?s ultimate accountability, Project Board decisions should be made in accordance with standards that shall ensure management for development results, best value money, fairness, integrity, transparency and effective international competition.

o In case consensus cannot be reached within the Board, the UNDP representative on the board will mediate to find consensus and, if this cannot be found, will take the final decision to ensure project implementation is not unduly delayed.

? Oversee project execution:

o Agree on National Project Coordinator?s (NPC) tolerances as required, within the parameters outlined in the PASBET Project Document, and provide direction and advice for exceptional situations when the NPC?s tolerances are exceeded.

o Appraise annual work plans (AWPs) prepared by the Implementing Partner for the Project; review Combined Delivery Reports (CDRs) prior to certification by the implementing partner.

o Address any high-level project issues as raised by the National Project Coordinator and project assurance.

o Advise on major and minor amendments to the project within the parameters set by UNDP and the donor and refer such proposed major and minor amendments to the UNDP BPPS Nature, Climate and Energy Executive Coordinator (and the GEF, as required by GEF policies);

o Provide high-level direction and recommendations to the PMU to ensure that the agreed deliverables are produced satisfactorily and according to plans.

o Track and monitor co-financed activities and realisation of co-financing amounts of this project.

o Approve the Inception Report, GEF annual project implementation reports, mid-term review and terminal evaluation reports.

o Ensure commitment of human resources to support project implementation, arbitrating any issues within the project.

? Risk Management:
o Provide guidance on evolving or materialized project risks and agree on possible mitigation and management actions to address specific risks.
o Review and update the project risk register and associated management plans based on the information prepared by the Implementing Partner. This includes risks related that can be directly managed by this project, as well as contextual risks that may affect project delivery or continued UNDP compliance and reputation but are outside of the control of the project. For example, social and environmental risks associated with co-financed activities or activities taking place in the project?s area of influence that have implications for the project.
o Address project-level grievances.

? Coordination:
o Ensure coordination between various donor and government-funded projects and programmes.
o Ensure coordination with various government agencies and their participation in project activities.

The composition of the Project Board must include the following roles:

1. **Project Executive**: This is an individual who represents ownership of the project and chairs the Project Board. The Executive is normally the senior national counterpart for nationally implemented projects. The Project Executive is designated after the project is CEO endorsed by GEF in accordance with UNDP Programme and Operation Policies and Procedures (POPP).

MoCC, as the implementing partner, and UNDP RR represents the Project Executive, and chairs the Project Board. The Executive is responsible for the project, supported by the Beneficiary Representatives and the Development Partners. The Executive?s role is to ensure that the project focusses throughout its life cycle on achieving its objectives and delivering outputs that will contribute to higher level outcomes. The Executive must ensure that the project gives value for money, ensuring cost-conscious approach to the project, balancing the demands of Beneficiary Representatives and Development Partners.

Specific Responsibilities (as part of the above responsibilities for the Project Board)

o Ensure that there is a coherent project organization structure and logical set of plans.
o Set tolerances in the AWP and other plans as required for the National Project Coordinator.
o Monitor and control the progress of the project at a strategic level.
o Ensure that risks are tracked and mitigated as effectively as possible.
o Brief relevant stakeholders about project progress.
o Organize and chair Project Board meetings.

2. **Beneficiary Representatives**: Individuals or groups representing the interests of those groups of stakeholders who will benefit from the project. These will not be any entity who has been engaged as Responsible Partner during project implementation. Their primary function within the board is to ensure

the realization of project results from the perspective of project beneficiaries. Often representatives from civil society, industry associations, or other government entities benefiting from the project can fulfil this role. There can be multiple beneficiary representatives on a Project Board. The Beneficiary representatives are:

- Provincial Government, Punjab
- Provincial Government, Sind
- Provincial Government, KP
- Provincial Government, Balochistan

The Beneficiary Representatives are responsible for validating the needs and for monitoring that the solution will meet those needs within the constraints of the project. The Beneficiary Representative role monitors progress against targets and quality criteria. This role may require more than one person to cover all the beneficiary interests. For the sake of effectiveness, the role is not split between too many people.

Specific Responsibilities (as part of the above responsibilities for the Project Board)

- Prioritize and contribute beneficiaries? opinions on Project Board decisions on whether to implement recommendations on proposed changes.
- Specification of the Beneficiary?s needs is accurate, complete, and unambiguous.
- Monitoring of the implementation of activities at all stages to ensure that they will meet the beneficiary?s needs and are progressing towards that target.
- Evaluation of the impacts of potential changes from the beneficiary point of view.
- Risks to the beneficiaries are frequently monitored.

3. **Development Partners**: Individuals or groups representing the interests of the parties concerned that provide funding, strategic guidance and/or technical expertise to the project. The Development Partners is United Nations Development Programme (UNDP).

The Development Partners? primary function within the Board is to provide guidance regarding the technical feasibility of the project.

Specific Responsibilities (as part of the above responsibilities for the Project Board)

- Make sure that progress towards the outputs remains consistent from the Development Partners perspective.
- Promote and maintain focus on the expected project output(s) from the point of view of project development management.
- Ensure that the technical and financial resources required for the project are available.
- Contribute technical and financial opinions on Project Board decisions on whether to implement recommendations on proposed changes.
- Arbitrate on, and ensure resolution of, any technical and financial priority or resource conflicts.

b. Project Assurance: Project assurance is the responsibility of each project board member; however, UNDP has a distinct assurance role for all UNDP projects in carrying out objective and independent project oversight and monitoring functions. UNDP performs quality assurance and supports the Project Board (and Project Management Unit) by conducting objective and independent project oversight and monitoring functions, including compliance with the risk management and social and environmental standards of UNDP. The Project Board cannot delegate any of its quality assurance responsibilities to the National Project Coordinator. Project assurance is independent of project execution.

c. Project Management ? Execution of the Project: The National Project Coordinator (NPC) has 2 sets of tasks to carry out for the PASBET Project. These are: (a) coordination of the management and implementation of the project activities (20%); and (b) provision of technical coordination of, and technical support to, the promotion, design, implementation of the project's demonstration activities (80%). The NPC is the senior most representative of the PMU and is responsible for coordinating the day-to-day management of the project on behalf of the Implementing Partner, including the mobilization of all project inputs, supervision over project staff, responsible parties, consultants, and sub-contractors. The NPC shall present key deliverables and documents to the board for their review and approval, including progress reports, annual work plans, adjustments to tolerance levels and risk registers.

The NPC will also provide technical and coordination roles in collaboration with MoCC, and other project partners (e.g., for demonstrations), provincial officers and provincial government institutions, and UNDP[1]. UNDP shall recruit PMU staff to execute their respective duties under their area of responsibility. The recruitment will be carried out by UNDP under the LoA signed with the IP/MoCC for CO support to NIM. UNDP will also provide induction and regular training to PMU staff on UNDP procedures and policies so that they may effectively execute their roles and responsibilities.

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[1] Per the agreement among the project proponent and key stakeholders, the National Project Coordinator (NPC) will be coordinating the management and implementation of the PASBET Project activities on behalf of the Implementing Partner (MoCC). Selected MoCC personnel will be assigned to assist the NPC in the management of the project activities. Moreover, the PMU will also be supported by the UNDP in the execution of the project. While also involved in project activities coordination, bulk of the tasks of the NPC involves the provision of technical assistance and coordination work to PMU in implementing the project?s demonstration activities, particularly in the technical specifications, standards to be followed, TOR/Contract preparation, RFQ and bidding documentation, selection and engagement of the biomass energy technology service providers and contractors for the demo activities and supervision of the testing, initial operation, and performance evaluation of the demo units.

A designated representative of the PMU is expected to attend all Board meetings and support committee processes as a non-voting representative. The primary PMU representative attending board meetings is the NPC.

The GEF has financed several forestry sector projects in the past and some of these are still on-going, whose experiences and lessons learned will be used in the project design and their application for ?combating climate change through the application of sustainable woody biomass energy technologies.? The proposed project will take into consideration the scope, plans, and achievements of these projects and involve their teams and respective government officials to ensure complementarity and develop synergies with these projects and avoid duplication of interventions and project areas. The UNDP together with the MoCC will continue to coordinate and synergize with relevant on-going GEF projects during the project implementation stage. The following GEF projects of potential relevance with the proposed project are currently being implemented in Pakistan:

? *FAO?s GEF Project for Reversing Deforestation and Degradation in high-conservation value Chilgoza pine forests in Pakistan (9516)*: FAO is implementing a GEF funded project in collaboration with provincial Forests Departments and with the involvement of the local communities. The proposed project will work closely with the Chilgoza project to utilize complementarities and synergies.
? *Sustainable Forest Management (SFM) to Secure Multiple Benefits in Pakistan?s High Conservation Value Forests (5660)*: This is another on-going GEF Project targeting adoption of integrated approach for the management of high conservation value forests that will generate global biodiversity conservation and carbon sequestration benefits and provide ecosystem services to local communities and enhance resilience across three different landscapes. The proposed project will closely coordinate with SFM project and build on the lessons learned, best practices documented, and training material produced, especially on restoration and rehabilitation of degraded forests, and raising block plantations.
? *Sustainable Land Management Program to Combat Desertification in Pakistan (4754)*: This GEF project is near completion and focuses on creating enabling environment for sustainable land management (SLM), building local capacities, establishing SLM information system, and providing incentives for sustainable management of land and water resources. The proposed project will benefit the training products, best practices documented, raising shelterbelts and woodlots, and land use planning guidelines developed under this project.
? *Pakistan Snow Leopard and Ecosystem Program (PSLEP) - 9231:* This is another GEF project being implemented in the mountain landscape of Pakistan with a GEF grant of USD 4.6 million. The proposed project will benefit from the lessons learned and experiences derived from this project, particularly sustainable forest management practices, and fuelwood collection.
? *Promoting Sustainable Energy Production and Use From Biomass In Pakistan (3921)*: This is another GEF project being implemented in the SME sector across Pakistan with a GEF grant of USD 1.73 million. The proposed project will benefit from the lessons learned and experiences derived from this project, particularly technology selection and piloting. PASBET can learn from the implementation experiences and build on the results of this project.

Coordination with other non-GEF Initiatives

There are several other non-GEF projects funded by donors and federal and provincial governments. The Project will coordinate and establish linkages with these projects. The most prominent ones include:

? *ADB Energy Sector Reforms and Financial Sustainability Program* ? This program is aimed at addressing, among others, energy infrastructure policy constraints in Pakistan?s energy sector. ADB is

financing the program with support from its development partners such as the Export?Import Bank of Korea.

? *Ten Billion Tree Tsunami Program (TBTT-P)*: The Government of Pakistan has recently launched TBTT-P (Phase-I) with financial layout of Rs.125 billion (US$806 million) by up-scaling the Green Pakistan Program for the revival of the forestry and wildlife sectors in the country.

? *Pakistan REDD+ Readiness Preparation Project*: In compliance of Cancun agreement, Pakistan is implementing REDD+ activities to mitigate climate change through reducing carbon emissions from forestry sector with a World Bank grant of US$ 3.8 million REDD+ Readiness programme.

? *Renewable Energy and Energy Efficiency (REEE II)*: The GIZ-funded project aims to contribute effectively to the energy transition in Pakistan toward renewable energy. The 8.1 million EUR project is commissioned by the German Federal Ministry for Economic Cooperation and Development (BMZ). PASBET will build on the micro-grid development component of the REEE II project.

7. Consistency with National Priorities

Describe the consistency of the project with national strategies and plans or reports and assesments under relevant conventions from below:

NAPAs, NAPs, ASGM NAPs, MIAs, NBSAPs, NCs, TNAs, NCSAs, NIPs, PRSPs, NPFE, BURs, INDCs, etc.

The PASBET project is consistent and aligned with the national strategies and plans or reports and assessments under relevant conventions:

? UNFCCC National Communications (NC)

? UNFCCC Biennial Update Report (BUR)

? UNFCCC National Determined Contribution

? UNFCCC Technology Needs Assessment

? UNCCD Reporting

National Policies, Strategies and Action Plans	Consistency and Alignment
Pakistan 2025-- One Nation and one Vision, 2014	PASBET is consistent and aligned with this high level and long-term strategic national document on climate change as part of Pakistan?s commitment to fulfil obligations under UNFCCC. Its targeted GHG emission reduction is directly linked with the introduction of biomass-based production and energy generation using efficient technologies. This document sets goals for responding to climate change, to promote long term sustainability, conservation, and protection of natural resources.

Pakistan?s Nationally Determined Contribution (NDC)	PASBET manifests Pakistan?s response to the global warming and climate change challenges by aligning to the strategy for sustainable development, environmental protection, SDGs, and UNFCCC objectives. It lays down the potential contribution to the projected increase in GHG emissions based on massive changes in land use and deforestation due to use of biomass in energy generation (power and non-power) and biomass-fueled industrial processes. The document estimates total GHG emissions around 405 metric tons of CO_2e equivalent as of 2015, and the project figure is around 1603 metric tons of CO_2e by 2030 and maintain land use change and forestry related emissions at 29 metric tons of CO_2e by 2030.
TNA?Report Climate Change Mitigation, 2016	PASBET considered the findings and recommendations of Pakistan?s Technology Need Assessment (TNA) Report 2016. The reports stresses that local environmental and health impacts of unsustainable and inefficient traditional biomass fuels and GHG emissions can be mitigated through clean, renewable energy alternatives. PASBET?s contribution through biomass-based technologies provides the means to enhance Pakistan?s present low rural per-capita consumption of energy through effective access to power in rural electrification, greater renewable energy use for non-power and industrial application and provides income generation opportunities for local communities and reduced burden on rural women and children for traditional biomass fuel collection and use.
National Climate Change Policy (NCCP)	The Project directly contributes to Pakistan?s aim to climate change mitigation and climate change mainstreaming into economically and socially vulnerable sectors. This project includes activities that support the NCCP through: integrating cost effective climate change mitigation in forestry and energy sectors; strengthening inter-ministerial and inter-provincial decision making, coordination mechanisms, resource mobilization and administration for woody biomass production and utilization; facilitating effective use of opportunities (e.g. economic) through public-private partnership and investment in biomass energy generation (power and non-power) through introduction of efficient technologies and more effective business and financing models.
Alternative and Renewable Energy Policy (ARE Policy 2019)	The government replaced the 2006 policy on Development of Renewable Energy for Power Generation with Alternative and Renewable Energy (ARE) Policy in 2019 to create a conducive environment for the sustainable growth of the ARE sector in Pakistan. PASBET is aligned and consistent with the ARE Policy 2019 which includes a variety of investment options for tapping different ARE resources for on-grid and off-grid applications as well as encouraging consumer-driven applications that could be biomass-based. With the comprehensive and wider framework for grid energy generation as well as applications by commercial and domestic consumers, PASBET is designed to tap this potential and includes demonstrations to convince private sector and public administrators about the investment possibilities in bankable and de-risked biomass-based projects.
National Forest Policy 2015	PASBET is also aligned with the National Forest Policy (NFP) 2015 on increasing forestry cover and tapping the woody potential for energy generation for rural electrification and non-power application. Its project outcomes and outputs are directly linked three objectives of the NFP?1) promoting ecological, social, and cultural functions of forests through sustainable management and use of forest produce including woody biomass, 2) facilitating implementation of international conventions and agreements related to forestry, wetlands, biodiversity, and climate change. The policy calls for launch of mass afforestation program and provide incentives for promoting farm forestry, urban forestry, commercial and industrial forestry by promoting private investments for increasing woody biomass in the country.

Ten Billion Tree Tsunami Programme (TBTTP)	PASBET is aligned and fits synergistically with Pakistan?s TBTTP (Phase-I). The various TBTTP interventions under the forestry component to be implemented in Punjab, KP, Sindh and Balochistan provide the upstream woody fuel resource development and fuel plantation aspects of the biomass-based fuel production and energy (power and non-power) generation. The TBTTP becomes a compatible counterpart of the GoP to mobilize financing support on the fuel development side in terms of co-financing and partnership arrangement with the PASBETT at the national and provincial/district levels.
National Electricity Policy (NEP) 2021	PASBET?s policy and regulatory components links very well with the NEP 2021 which provides the general framework for Government and private sector to enter and directly participate. The provisions of the NEP are relevant to the use of biomass (maybe applicable also to other REs for energy and power generation) with potential areas of private sector participation. A multi-pronged approach for indigenization will be adopted, which shall include promoting local content, transfer of technology, and R&D across the value chain of the power sector. Subject to Article 157(2) of the Constitution, the Provincial Governments may make their own electricity policies (including generation, transmission & distribution) and execute related projects within their boundaries without the requirement of selection by IGCEP (Indicative Generation Capacity Expansion Plan) if such projects are not connected to the national grid and do not impose any obligation on any Federal Government entity. Subject to Alternative and Renewable Energy Policy 2019, as amended from time to time, the concerned Government entity may issue a letter of support to the projects, that have been issued letters of intent by the Provincial Governments till June 20, 2021, and intend to sell electricity to a Government entity, if such projects are selected by IGCEP
Public?Private Partnership (PPP) Regulation in Pakistan	Likewise, PASBET will link with the public?private partnership (PPP) regulation in Pakistan as one of the government processes that shifted to the provincial level. As a result, the provincial governments have the primary responsibility of developing and implementing their own PPP policies and legislation. In this regard, the provincial governments of Punjab, Sindh, and Pakhtunkhwa have initiated key developments with respect to their individual PPP jurisdictions. The Public Private Partnership Authority (PPPA), established by virtue of the PPPA Act 2017 was amended by the PPPA Amendment Act 2021. The PPPA, among other responsibilities shall advise, facilitate, and actively support the implementing agency to develop and structure, as needed, the qualified projects at all stages of the project cycle such as identification, planning, tendering, bidding, contract award, and implementation and standardize contractual provisions and develop sector-specific provisions and templates including a model PPP agreement for qualified projects.

8. Knowledge Management

Elaborate the "Knowledge Management Approach" for the project, including a budget, key deliverables and a timeline, and explain how it will contribute to the project's overall impact.

Annex 10 of the ProDoc elaborates on this. The achievement of PASBET?s development outcomes at the broader national level, anchors in the knowledge management strategy and plan for the project. This is most especially of the active role of local communities and governments at provincial and district levels. This system encourages an environment where people?s and institution?s experience, learning and wisdom

are valued; and where internal processes are structured to support people or its users in creating, sharing, and using the pertinent knowledge gained. KM is very crucial for the long-term success and sustainability of results of the PASBET Project especially with the sustainability and replication plan that the project aims to deliver before the end of the project implementation. The plan defines the following:

? KM within the project structure and stakeholder network
? KM plans by involving relevant projects, programs, initiatives & evaluations in Pakistan
? KM processes to capture, assess and document info, lessons, best practice & expertise generated during implementation
? KM tools and methods for knowledge exchange, learning & collaboration
? KM outputs to be produced and shared with stakeholders, among these products (and their tentative delivery schedule) are the following:

KM Product	Brief Description	Delivery Schedule
Woody Biomass Resources in Pakistan	This is comprised of comprehensive situational and feasibility analyses and supply chain and market analyses on woody biomass production, and sustainable woody biomass production and utilization.	3Q 2024
Woody Biomass Energy Development and Utilization Policies in Pakistan	This is comprised of the results of the project?s activities on the development and implementation of policies and market-based regulatory framework for supporting woody biomass production and use, including approved technical, management and operational standards.	2Q 2025
Energy Planning in Rural Areas with Woody Biomass Resources	This presents the formulated energy-integrated development plans that are developed for the pilot towns of the project.	3Q 2024
Woody Biomass Production	This presents the design, establishment, and operational farmers/communal forest nurseries for providing planting stock for raising woody biomass in woodlots and farmlands.	1Q 2026
Woody Biomass Energy Generation Technologies and Applications	This presents the results of the demonstrations of the cost-effective application of decentralized woody biomass-based electricity generation and distribution (through mini/micro-grids).	2Q 2026
Woody Biomass Fuels Production	This is about the results of the demonstration on the establishment and operationalization of cost-effective woody biomass fuels production facilities, and applications of energy efficient woody biomass fired technologies.	3Q 2025
Financing Woody Biomass Energy Production	This is about the investment cost of establishing and commercial operation of woody biomass energy production, as well as potential investment and financing mechanisms for supporting the commercial viability and operation of woody biomass energy production.	4Q 2024

Recommended Woody Biomass Energy Generation Projects in Pakistan	This is about the de-risked biomass-based power generation projects, decentralized biomass-based energy generation in rural areas, and business plans for the GOP and private sector to facilitate financing and implementation.	3Q 2025
Woody Biomass Capacity Development Program	This is about the capacity development training programs for the design, construction, operation, and maintenance of woody biomass-based energy production systems both for power and non-power applications.	1Q 2027

The project has budgeted ample resources to realize the desired contribution of KM and learning to overall project impact and sustainability. The PASBET project will continue to develop and implement a knowledge management strategy and plan during project implementation based on this KM framework to achieve the improved awareness and capacity development of the pertinent GOP ministries and agencies and all stakeholders that will be involved in the project at the national and provincial levels. These will be about cost-effective applications of woody biomass-based energy generation for decentralized power generation and distribution, and for industrial productive use applications.

The project will develop and implement plans for dissemination and strategic communications. Disseminating the results of the various activities of the project is essential in achieving the widespread application of woody biomass-based energy generation in the country starting from the provincial level achievements, and possibly in other countries of the same circumstances as Pakistan.

The sustainability of the KM system will form part of the exit strategy that aims a knowledge base be handed over to MOCC before the Project ends for it to support the implementation of the replication plan and post-project sustainability to achieve the desired project?s long-term outcomes in GHG emission reduction and economic and social benefits.

9. Monitoring and Evaluation

Describe the budgeted M and E plan

Annex 4 and Section VI of the ProDoc present the Monitoring Plan for the PASBET Project. It should be noted that there are indicators for M&E of the Gender Action Plan in **Annex 9** that will also be taken into consideration when implementing this project M&E Plan. The detailed monitoring plan will be developed and implemented by the project during the inception period.

The monitoring plan matrix includes for each Outcome the indicators in the Project Results Framework, with its mid-term and end of project targets, description of indicators and targets, data sources and collection methods, responsible unit, mans of verification and assumptions.

Monitoring Plan for the PASBET Project

Monitoring	Indicators	Targets		Description of indicators and targets	Data source & Collection Methods	Frequency	Responsible for data collection	Means of verification	Assumptions
		Mid-term	End of Project						
Project objective: Widespread application of sustainable biomass energy technologies for	**Indicator 1:** No. of direct project beneficiaries disaggregated by gender (individual people) ? Male ? Female	? 64,000 ? 42,800	? 160,380 ? 107,000	Beneficiaries attributable to the project activities and outputs	Project M&E and activity reports and interviews of beneficiaries after implementation of activities	Quarterly	PMU/MOCC	Project M&E and activity reports. Measurement of increased income of beneficiaries after implementation of activities	No unexpected cultural or security barriers that hinder activities

Monitoring	Indicators	Targets		Description of indicators and targets	Data source & Collection Methods	Frequency	Responsible for data collection	Means of verification	Assumptions
		Mid-term	End of Project						
supporting socio-economic development of and reducing greenhouse gas (GHG) emissions from, the rural sector in Pakistan.	***Indicator 2:*** Cumulative GHG emission reduction from the rural sector of Pakistan, tCO_2	51,520	195,050	Including biomass energy generation in project demos, replication, and baseline projects attributable to PASBET	Annual energy supply and consumption reports submitted by relevant national and local governments, etc.	Quarterly	PMU/MOCC	Regular periodic operations report from each sustainable biomass energy technology application demo and replication in demo towns/villages. Project M&E and activity reports.	Continuous commitment, support & active participation of the national/local government in low carbon rural development, as well as in meeting the renewable energy targets of the country Realization of committed co-financing from the national/local governments in the implementation of project activities and monitoring systems

Monitoring	Indicators	Targets		Description of indicators and targets	Data source & Collection Methods	Frequency	Responsible for data collection	Means of verification	Assumptions
		Mid-term	End of Project						
	Indicator 3: Cumulative Biomass-based Electricity in rural areas in Pakistan, GWh	**1.5**	**98.2**	Relevant generation from biomass attributable to the Project	Project M&E and activity reports	Monthly	PMU, MOCC, DISCOs and rural electrification-agency	Annual energy supply and consumption reports in relevant national and local governments, etc.	Continuous commitment, support & active participation of the national/local government in low carbon rural development
	Indicator 4: Cumulative number of new jobs created in the application of sustainable biomass energy technologies and techniques in the rural areas. ? Male ? Female	? 1,460 ? 1,380	? 3,660 ? 3,450	Number of jobs related to biomass energy production, power generation and use in various activities	Project M&E and activity reports	Quarterly	PMU, MOCC, DISCOs and rural electrification-agency and local government	Trade and commerce reports. Data gathering on the no of people employed in all job categories	No unexpected cultural or security barriers that hinder activities

Monitoring	Indicators	Targets		Description of indicators and targets	Data source & Collection Methods	Frequency	Responsible for data collection	Means of verification	Assumptions
		Mid-term	End of Project						
Project Outcome 1: Effective enforcement of policies and regulations on the sustainable production and use of woody biomass for energy generation and utilization in rural areas of Pakistan.	***Indicator 5:*** Cumulative number of sustainable biomass energy projects in rural areas that are facilitated by approved and effectively enforced policies and laws/regulations that promote the commercial production and use of sustainable biomass-based energy.	8	32[2]	Biomass-based projects supported from all components	Project M&E and activity reports	Monthly	PMU/MoCC	Project activity (baseline and incremental) reports. Government reports on the implementation of the approved sustainable biomass energy development and utilization policies and regulations. Project M&E reports	Continuous consistent commitment of the national and local governments in politically supporting RE and EE initiatives in rural towns/villages. No competing value-added uses of woody biomass.
	Indicator 6: Cumulative number of rural villages that develop and implement energy-integrated development plans that include the commercial production and utilization of sustainable woody biomass.	**4**	40[3]	Villages that have been supported by the project	Project M&E and activity reports	Quarterly	PMU, MOCC, DISCOs and rural electrification-agency and local government	Reports by responsible agency	Continuous consistent commitment of the national and local governments in politically supporting RE and EE initiatives in rural towns/villages

Monitoring	Indicators	Targets		Description of indicators and targets	Data source & Collection Methods	Frequency	Responsible for data collection	Means of verification	Assumptions
		Mid-term	End of Project						
	Indicator 7: No. of developed, approved, enforced, and implemented and enforced as part of the RE law to include market-based targets of biomass based energy, particularly woody biomass	**2**[4]	**5**[5]	Actual policy instruments passed and implemented	Project M&E and activity reports	Quarterly	PMU/MOC	Documentation of the approved and promulgated regulations and policy instruments in the Output 1.2 activities (baseline and incremental) reports. Project M&E reports.	
	Indicator 8: Cumulative no. of standards for equipment to use woody biomass for energy generation and EE utilization established and enforced	**3**[6]	**4**[7]	Standards that are developed by the project and approved by authorized agencies	Project M&E and activity reports	Quarterly	PMU/MOCC	Documentation of the approved and promulgated regulations and policy instruments in the Output 1.2 activities (baseline and incremental) reports. Project M&E reports.	

Monitoring	Indicators	Targets		Description of indicators and targets	Data source & Collection Methods	Frequency	Responsible for data collection	Means of verification	Assumptions
		Mid-term	End of Project						
Project Outcome 2.1: Enhanced woody biomass production on forested, non-forested, and on farmlands to cater local biomass energy needs, including for power generation and rural industry operations.	***Indicator 9:*** No. of established and commercially operated sustainable woody biomass production facilities.	**1**	**3**[8]	Woody production facilities supported by the Project	Project M&E and activity reports	Quarterly	PMU/MOCC	Forest industry reports Trade and commerce reports	Continuous consistent commitment of the national and local governments in politically supporting RE and EE initiatives in rural towns/villages
	Indicator 10: Cumulative number of entities that are interested and planned to invest in sustainable woody biomass fuel production. ? Local Gov?ts ? Private Sector entities	? ? 1 ? 1	? ? 4 ? 2	Number of projects on fuel production supported by the project	Project M&E and activity reports	Quarterly	PMU/MOCC and forest departments	Forest industry reports Trade and commerce reports	Continuous consistent commitment of the national and local governments in politically supporting RE and EE initiatives in rural towns/villages

Monitoring	Indicators	Targets		Description of indicators and targets	Data source & Collection Methods	Frequency	Responsible for data collection	Means of verification	Assumptions
		Mid-term	End of Project						
	Indicator 11: Average annual local production and consumption of sustainable woody biomass fuel, tons/year	38,071 [9]	**95,178**	Including all production and consumption of biomass fuels used of r power and non-power uses	Project M&E and activity reports	Quarterly	PMU/MOCC, Department of Energy and forest departments	Forest industry reports Trade and commerce and energy departments reports	Continuous consistent commitment of the national and local governments in politically supporting RE and EE initiatives in rural towns/villages
Project Outcome 2.2: Increased investments in the application of technologies for the production, and energy	***Indicator 12:*** Cumulative amount of fossil fuel energy displaced by sustainable woody biomass fuels. * Power Applications, ktoe *Non-Power Applications, ktoe	**1,500** **150**	**3,800[10]** **300**	Including all production and consumption of biomass fuels used of r power and non-power uses	Project M&E and activity reports	Monthly	PMU/MOCC, Department of Energy and forest departments	Forest industry reports Trade and commerce and energy departments reports	Continuous consistent commitment of the national and local governments in politically supporting RE and EE initiatives in rural towns/villages

Monitoring	Indicators	Targets		Description of indicators and targets	Data source & Collection Methods	Frequency	Responsible for data collection	Means of verification	Assumptions
		Mid-term	End of Project						
efficient utilization of woody biomass energy.	***Indicator 13:*** Cumulative number of private sector entities that are interested and plans to invest in sustainable woody biomass-based energy projects in rural towns and municipalities	**3**	**5**	Private companies that have registered and started implementation	Project M&E and activity reports	Monthly	PMU/MOCC, Department of Energy and forest departments	Forest industry reports Trade and commerce and energy departments reports	Continuous consistent commitment of the national and local governments in politically supporting RE and EE initiatives in rural towns/villages

Monitoring	Indicators	Targets		Description of indicators and targets	Data source & Collection Methods	Frequency	Responsible for data collection	Means of verification	Assumptions
		Mid-term	End of Project						
Outcome 3: Adequate amounts of financial resources available for woody biomass energy technology application projects in the country.	***Indicator 14:*** Cumulative number of sustainable biomass energy projects whose funding are sourced from other sources of funds apart from national/local government. * Sustainable woody biomass fuel production * Sustainable woody biomass-based power generation and distribution * Sustainable woody biomass-based energy generation and utilization.	**? 4** **? 4** **? 4**	**? 8** **? 8** **? 8**	Projects that are funded by private sector	Project M&E and activity reports	Monthly	PMU/MOCC, Department of Energy and forest departments	Forest industry reports Trade and commerce and energy departments reports	Continuous consistent commitment of the national and local governments in politically supporting RE and EE initiatives in rural towns/villages

Monitoring	Indicators	Targets		Description of indicators and targets	Data source & Collection Methods	Frequency	Responsible for data collection	Means of verification	Assumptions
		Mid-term	End of Project						
	Indicator 15: Cumulative number of financing schemes/mechanisms adopted by financial institutions for supporting sustainable biomass energy initiatives in Pakistan.	**1**	**2**	Financial mechanisms that are by banks and financial institutions	Project M&E and activity reports	Monthly	PMU/MOCC, Department of Energy and forest departments	Forest industry reports Trade and commerce and energy department reports	Continuous consistent commitment of the financing institutions, national and local governments in politically supporting RE and EE initiatives in rural towns/villages
Outcome 4: Enhanced local capacity, skills and knowledge in the development, installation, and operation of biomass energy technology	***Indicator 16:*** Cumulative number of sustainable biomass woody energy projects designed, implemented, and maintained by rural towns and municipalities	**4**	**32**	Pertinent projects supported and attributable to PABET?s area of responsibility	Project M&E and activity reports	Monthly	PMU/MOCC, Department of Energy and forest departments	Forest industry reports Trade and commerce and energy department reports	Continuous consistent commitment of the financing institutions, national and local governments in politically supporting RE and EE initiatives in rural towns/villages

Monitoring	Indicators	Targets		Description of indicators and targets	Data source & Collection Methods	Frequency	Responsible for data collection	Means of verification	Assumptions
		Mid-term	End of Project						
systems in rural Pakistan.	***Indicator 17:*** Cumulative number of operational woody biomass-based power generation system installations in rural towns and municipalities.	**4**	**16**	Including installations supported by the project in the 4 provinces	Project M&E and activity reports	Monthly	PMU/MOCC, Department of Energy and forest departments	Forest industry reports Trade and commerce and energy department reports	Continuous consistent commitment of the financing institutions, national and local governments in politically supporting RE and EE initiatives in rural towns and villages
	Indicator 18: Cumulative number of energy consumers in rural areas that are utilizing: woody biomass-based energy generating and consuming equipment (persons)	**1,120**	**2,240**	Number of users of biomass based production and energy generation in the 4 provinces selected	Project M&E and activity reports	Monthly	PMU/MOCC, Department of Energy and forest departments	Forest industry reports Trade and commerce and energy department reports	Continuous consistent commitment of the financing institutions, national and local governments in politically supporting RE and EE initiatives in rural towns/villages

[1] Data collection methods should outline specific tools used to collect data and additional information as necessary to support monitoring. The PIR cannot be used as a source of verification.

[2] This is 4 projects x 2 districts x 4 provinces

[3] This is 10 villages in each 4 provinces

[4] This includes: (a) Regulation to promote woody biomass and the corresponding Woody Biomass National Road Map; (b) Tariff application developed and submitted to NEPRA for biomass based electricity; (c) microgrid systems are made part of national grid code; (d) Inclusion of biomass as energy resource in the National Rural electricity policy; and (e) Community-based Natural Resource Management as part of National and Provincial Forestry Policy

[5] All five (5) policies that are approved and enforced in line with the targets of Biomass based power generation included in the National RE Policy.

[6] Standards developed for: (a) energy plantation; (b) biomass energy conversion; and (c) biomass user technologies

[7] Standards opted by relevant authorities and provincial authorities as part of the procurement

[8] In total there are 3 new sustainable woody biomass production facilities are expected to be completed by the end of the project, one in each province of Punjab, Sindh and Balochistan)

[9] To generate 5.4 MW of biomass-based power generation it is estimated that total of 95,178 Ton of woody biomass is required annually. By mid-term at least 40% of this wood should be available from the sourcing.

[10] If 5.4 MW is generated using fossil fuel (e.g., NG based genset) it will require fossil fuel energy equivalent of 3.8 ktoe. Similar energy can be displaced by sustainable woody biomass fuels. By mid-term it is estimated that 40% of the total will be completed.

The monitoring and evaluation plan has a budget share of USD 168,000.

GEF M&E requirements	Indicative costs (US$)	Time frame
Inception Workshop and report	3,000	Inception Workshop within 2 months of the First Disbursement
M&E of GEF core indicators and project results framework	3,000 per year	Annually and at mid-point and closure.
GEF Project Implementation Report (PIR)	None	Annually typically between June-August
Monitoring all risks	2,000 per year	On-going.
Monitoring of social and environmental safeguard screening	2,000 per year	On-going.
Monitoring of stakeholder engagement plan	2,000 per year	On-going.
Monitoring of gender action plan	2,000 per year	On-going.
Project Board Meetings	2,000 per year	Annually
Reports of Project Board Meetings	None	Annually
Lessons learned and knowledge generation	2,000 per year	Annually

GEF M&E requirements	Indicative costs (US$)	Time frame
Supervision missions	None	Annually
Oversight missions	None	Troubleshooting as needed
Mid-term GEF and/or LDCF/SCCF Core indicators and METT or other required Tracking Tools	10,000	Before mid-term review
Independent Mid-term Review (MTR)	35,000	3Q 2025
Terminal GEF and/or LDCF/SCCF Core indicators and METT or other required Tracking Tools	10,000	Before terminal evaluation
Independent Terminal Evaluation (TE)	35,000	4Q 2027
Translation of MTR and TE reports into English	None	As needed
TOTAL indicative COST	**168,000**	

10. Benefits

Describe the socioeconomic benefits to be delivered by the project at the national and local levels, as appropriate. How do these benefits translate in supporting the achievement of global environment benefits (GEF Trust Fund) or adaptation benefits (LDCF/SCCF)?

The Project is designed to generate multiple global environmental benefits (GEB). The primary GEB is the reduction in GHG emissions by promoting the cost-effective application of sustainable woody biomass energy efficient technologies such as biomass-based power generation and innovative practices for woody biomass energy conversion and utilization. Such technologies are intended to directly contribute to reducing GHG emissions in the rural areas and towns, including the introduction and application of improved wood-fired industrial thermal equipment such as efficient wood-fired boilers, kilns, and furnaces with their own inherent social and economic benefits.

The GHG emissions that are attributable to the project will come from the woody biomass energy production and woody biomass energy technology application activities that will be carried out under the project. Such applications in the rural sector areas of selected districts of the 4 provinces - Khyber Pakhtunkhwa, Punjab, Sindh and Balochistan) are intended to facilitate reduced GHG emissions from energy activities of the country. Some expected replications of these applications are to be facilitated during the project implementation period and will be in operation towards the end of the project or just after the end of the project.

11. Environmental and Social Safeguard (ESS) Risks

Provide information on the identified environmental and social risks and potential impacts associated with the project/program based on your organization's ESS systems and procedures

Overall Project/Program Risk Classification*

PIF	CEO Endorsement/Approval	MTR	TE
Medium/Moderate	High or Substantial		

Measures to address identified risks and impacts

Elaborate on the types and risk classifications/ratings of any identified environmental and social risks and impacts (considering the GEF ESS Minimum Standards) and any measures undertaken as well as planned management measures to address these risks during implementation.

While all risks are identified as ?Moderate? or below, since there are multiple risks across many of the standards, the overall risk-rating for the project is ?Substantial?.

Supporting Documents

Upload available ESS supporting documents.

Title	Module	Submitted
PIMS 6542_Updated Annex 5 - Pasbet - SESP - clean	CEO Endorsement ESS	
PIMS 6542 PAK PASBET SESP 280920_final	Project PIF ESS	

ANNEX A: PROJECT RESULTS FRAMEWORK (either copy and paste here the framework from the Agency document, or provide reference to the page in the project document where the framework could be found).

The project results framework can be found in Section V of the Project Document.

This project will contribute to the following Sustainable Development Goal (s): *SDG 7, SDG 13, SDG 8, SDG 11*						
This project will contribute to the following country outcome (UNDAF/CPD, RPD, GPD): *CPD Outcome 6: Enhanced resilience and socioeconomic development of communities*						
Strategy	**Objectively Verifiable Indicator**				**Means of Verification**	**Critical Assumptions**
	Description	**Baseline**	**Mid-Term**	**End-of-Project**		
OBJECTIVE: Widespread application of sustainable biomass energy technologies for supporting socio-economic development of and reducing	***Indicator 1***: No. of direct project beneficiaries disaggregated by gender (individual people) ? Male ? Female	? N.A. ? N.A.	? 64,000 ? 42,800	? 160,380 ? 107,000	Project M&E and activity reports. Measurement of increased income of beneficiaries after implementation of activities	No unexpected cultural or security barriers that hinder activities

This project will contribute to the following Sustainable Development Goal (s): *SDG 7, SDG 13, SDG 8, SDG 11*						
This project will contribute to the following country outcome (UNDAF/CPD, RPD, GPD): *CPD Outcome 6: Enhanced resilience and socioeconomic development of communities*						
Strategy	**Objectively Verifiable Indicator**				**Means of Verification**	**Critical Assumptions**
	Description	**Baseline**	**Mid-Term**	**End-of-Project**		
greenhouse gas (GHG) emissions from, the rural sector in Pakistan.	***Indicator 2***: Cumulative GHG emission reduction from the rural sector of Pakistan, tCO_2	**0**	**51,520**	**195,050**	Annual energy supply and consumption reports submitted by relevant national and local governments, etc. Regular periodic operations report from each sustainable biomass energy technology application demo and replication in demo towns/villages. Project M&E and activity reports.	Continuous commitment, support & active participation of the national/local government in low carbon rural development, as well as in meeting the renewable energy targets of the country Realization of committed co-financing from the national/local governments in the implementation of project activities and monitoring systems.
	Indicator 3: Cumulative Biomass-based electricity in rural areas in Pakistan, GWh	**0**	**1.5**	**98.2**	Annual energy supply and consumption reports in relevant national and local government agencies, etc. Project M&E and activity reports	Continuous commitment, support & active participation of the national/local government in low carbon rural development, as well as in meeting the renewable energy targets of the country.

This project will contribute to the following Sustainable Development Goal (s): *SDG 7, SDG 13, SDG 8, SDG 11*						
This project will contribute to the following country outcome (UNDAF/CPD, RPD, GPD): *CPD Outcome 6: Enhanced resilience and socioeconomic development of communities*						
Strategy	**Objectively Verifiable Indicator**				**Means of Verification**	**Critical Assumptions**
	Description	**Baseline**	**Mid-Term**	**End-of-Project**		
	Indicator 4: Cumulative number of new jobs created in the application of sustainable biomass energy technologies and techniques in the rural areas. ? Male ? Female	N.A.[2]	? 1,460 ? 1,380	? 3,660 ? 3,450	Trade and commerce reports. Project M&E and activity reports. Monitoring report on no. of people employed in all job categories	No unexpected cultural or security barriers that hinder activities
COMPONENT 1: Establishment of Policy and Regulatory Framework for Sustainable Woody Biomass Energy Production and Utilization						
Outcome 1: Effective enforcement of policies and regulations on the sustainable production and use of woody biomass for energy generation and utilization in rural areas of Pakistan.	***Indicator 5***: Cumulative number of sustainable biomass energy projects in rural areas that are facilitated by approved and effectively enforced policies and laws/regulations that promote the commercial production and use of sustainable biomass-based energy.	0	8	32[3]	Project activity (baseline and incremental) reports. Government reports on the implementation of the approved sustainable biomass energy development and utilization policies and regulations. Project M&E reports.	Continuous consistent commitment of the national and local governments in politically supporting RE and EE initiatives in rural towns/villages. No competing value-added uses of woody biomass.

This project will contribute to the following Sustainable Development Goal (s): *SDG 7, SDG 13, SDG 8, SDG 11*						
This project will contribute to the following country outcome (UNDAF/CPD, RPD, GPD): *CPD Outcome 6: Enhanced resilience and socioeconomic development of communities*						
Strategy	**Objectively Verifiable Indicator**				**Means of Verification**	**Critical Assumptions**
	Description	**Baseline**	**Mid-Term**	**End-of-Project**		
	Indicator 6: Cumulative number of rural villages that develop and implement energy-integrated development plans that include the commercial production and utilization of sustainable woody biomass.	0	**4**	40[4]	Project activity (baseline and incremental) reports. Government reports on the implementation of the approved sustainable biomass energy development and utilization policies and regulations. Project M&E reports.	Continuous consistent commitment of the national and local governments in politically supporting RE and EE initiatives in rural towns/villages. No competing value-added uses of land for wood lots and energy plantations.
	Indicator 7: No. of developed, approved, enforced, and implemented concrete regulations and policy instruments as part of the RE law to include market-based targets of biomass-based energy, particularly woody biomass	**0**	**2[5]**	**5 Implemented and enforced[6]**	Documentation of the approved and promulgated regulations and policy instruments in the Activity 1.3.1 to 1.3.3 Project activity (baseline and incremental) reports. Project M&E reports	
	Indicator 8: Cumulative no. of standards for equipment to use woody biomass for energy generation and EE utilization established and enforced	**0**	**3[7]**	**4[8]**	Documentation of the approved and promulgated regulations and policy instruments in the Activity 1.3.1 to 1.3.3. Project activity (baseline and incremental) reports. Project M&E reports	
COMPONENT 2: Promotion of Biomass Energy Production and Energy Efficient Utilization Technologies						

This project will contribute to the following Sustainable Development Goal (s): *SDG 7, SDG 13, SDG 8, SDG 11*						
This project will contribute to the following country outcome (UNDAF/CPD, RPD, GPD): *CPD Outcome 6: Enhanced resilience and socioeconomic development of communities*						
Strategy	**Objectively Verifiable Indicator**				**Means of Verification**	**Critical Assumptions**
	Description	**Baseline**	**Mid-Term**	**End-of-Project**		
Outcome 2.1: Enhanced woody biomass production on forested, non-forested, and on farmlands to cater local biomass energy needs, including for power generation and rural industry operations.	***Indicator 9***: No. of established and commercially operated sustainable woody biomass production facilities.	**0**[9]	**1**	**3**[10]	Forest industry reports Trade and commerce reports Project M&E and Activity Reports.	Continuous consistent commitment of the national/local governments and stakeholders in politically supporting sustainable biomass energy technology applications for rural development.
	Indicator 10: Cumulative number of entities that are interested and planned to invest in sustainable woody biomass fuel production. * Local Governments * Private Sector entities	**0** **0**	**1** **1**	**4** **2**	Forest industry reports Trade and commerce reports Project M&E and Activity Reports.	Continuous consistent commitment of the national/local governments and stakeholders in politically supporting sustainable biomass energy technology applications for rural development.

This project will contribute to the following Sustainable Development Goal (s): *SDG 7, SDG 13, SDG 8, SDG 11*						
This project will contribute to the following country outcome (UNDAF/CPD, RPD, GPD): *CPD Outcome 6: Enhanced resilience and socioeconomic development of communities*						
Strategy	**Objectively Verifiable Indicator**				**Means of Verification**	**Critical Assumptions**
	Description	**Baseline**	**Mid-Term**	**End-of-Project**		
	Indicator 11: Average annual local production and consumption of sustainable woody biomass fuel, tonnes/year	0[11]	38,071[12]	**95,178**	Forest industry reports Trade and commerce reports Project M&E and Activity Reports.	Continuous consistent commitment of the national/local governments and stakeholders in politically supporting sustainable biomass energy technology applications for rural development.
Outcome 2.2: Increased investments in the application of technologies for the production, and energy efficient utilization of woody biomass energy.	***Indicator 12***: Cumulative amount of fossil fuel energy displaced by sustainable woody biomass fuels. * Power Applications, toe *Non-Power Applications, toe	 **0** **0**	 **1,500** **150**	 **3,800[13]** **300**	Forest industry reports Trade and commerce reports Project M&E and Activity Reports.	Continuous consistent commitment of the national/local governments and stakeholders in politically supporting sustainable biomass energy technology applications for rural development.

This project will contribute to the following Sustainable Development Goal (s): *SDG 7, SDG 13, SDG 8, SDG 11*						
This project will contribute to the following country outcome (UNDAF/CPD, RPD, GPD): *CPD Outcome 6: Enhanced resilience and socioeconomic development of communities*						
Strategy	**Objectively Verifiable Indicator**				**Means of Verification**	**Critical Assumptions**
	Description	**Baseline**	**Mid-Term**	**End-of-Project**		
	Indicator 13: Cumulative number of private sector entities that are interested and planned to invest in sustainable woody biomass-based energy projects in rural towns/municipalities .	**0**	**3**	**5**	Project activity (baseline and incremental) reports. Documents on each implemented sustainable woody biomass energy technology demonstration. Project M&E reports.	Continuous consistent commitment of the national/local governments and stakeholders in politically supporting sustainable biomass energy technology applications for rural development.
COMPONENT 3: Supporting Financial Requirements for Biomass Energy Technologies Initiatives						
Outcome 3: Adequate amounts of financial resources available for woody biomass energy technology application projects in the country.	***Indicator 14***: Cumulative number of sustainable biomass energy projects whose funding are sourced from other sources of funds apart from national/local government.				Annual Reports on the planned & implemented sustainable woody biomass energy projects that are financed through the adopted financing scheme(s). Project M&E reports Project activity (baseline and incremental) reports. Documents on the financial schemes/ mechanisms from financial institutions.	
	* Sustainable woody biomass fuel production	? **0**	? **4**	? **8**		
	* Sustainable woody biomass-based power generation and distribution	? **0**	? **4**	? **8**		
	* Sustainable woody biomass-based energy generation and utilization.	? **0**	? **4**	? **8**		

This project will contribute to the following Sustainable Development Goal (s): *SDG 7, SDG 13, SDG 8, SDG 11*						
This project will contribute to the following country outcome (UNDAF/CPD, RPD, GPD): *CPD Outcome 6: Enhanced resilience and socioeconomic development of communities*						
Strategy	**Objectively Verifiable Indicator**				**Means of Verification**	**Critical Assumptions**
	Description	**Baseline**	**Mid-Term**	**End-of-Project**		
	Indicator 15: Cumulative number of financing schemes/mechanisms adopted by financial institutions for supporting sustainable biomass energy initiatives in Pakistan.	**0**	**1**	**2**	Project M&E reports Project activity (baseline and incremental) reports. Documents on the financial schemes/ mechanisms from financial institutions.	Continuous consistent commitment of the national/local governments and stakeholders in politically supporting sustainable biomass energy technology applications for rural development.
COMPONENT 4: Biomass Energy Technology Capacity Building and Knowledge Management and Gender Mainstreaming						
Outcome 4: Enhanced local capacity, skills and knowledge in the development, installation, and operation of biomass energy technology systems in rural Pakistan.	***Indicator 16***: Cumulative number of sustainable biomass woody energy projects designed, implemented, and maintained by rural towns/municipalities	**0**	**4**	**32**	Post-evaluation reports on completed capacity development programs. Annual Reports on the planned & implemented sustainable biomass energy projects that are designed, operated, and maintained by rural towns/municipalities Project M&E reports Project activity (baseline and incremental) reports.	Continuous consistent commitment of the rural town/municipal authorities and stakeholders in supporting sustainable woody biomass energy development and utilization projects.

This project will contribute to the following Sustainable Development Goal (s): *SDG 7, SDG 13, SDG 8, SDG 11*						
This project will contribute to the following country outcome (UNDAF/CPD, RPD, GPD): *CPD Outcome 6: Enhanced resilience and socioeconomic development of communities*						
Strategy	**Objectively Verifiable Indicator**				**Means of Verification**	**Critical Assumptions**
	Description	**Baseline**	**Mid-Term**	**End-of-Project**		
	Indicator 17: Cumulative number of operational woody biomass-based power generation system installations in rural towns/ municipalities.	**0**	**4**	**16**	Annual Reports on the planned & implemented sustainable biomass energy generation and distribution facilities operated and maintained by rural towns/municipalities Project M&E reports Project activity (baseline and incremental) reports.	Continuous consistent commitment of the rural town/municipal authorities and stakeholders in supporting sustainable woody biomass energy development and utilization projects.
	Indicator 18: Cumulative number of energy consumers in rural areas that are utilizing woody biomass-based energy generating and consuming equipment (persons)	**0**	**1,120**	**2,240**	Project M&E reports Market survey reports and data on reduction in amount of woody biomass used by the beneficiaries on quarterly basis	

[1] No. of people with access to electricity in rural areas (80.15 mil, 58.7% of rural population) https://trackingsdg7.esmap.org/country/pakistan

[2] No. of people with jobs in rural areas. Refined activity participation rates in rural areas: 47.1% (Male 68.%, female 25.6%). Govt of Pakistan Labour Force Survey 2017/18

[3] This is 4 projects x 2 districts x 4 provinces

[4] This is 10 villages in each 4 provinces

[5] This includes: (a) Regulation to promote woody biomass and the corresponding Woody Biomass National Road Map; (b) Tariff application developed and submitted to NEPRA for biomass based electricity; (c) microgrid systems are made part of national grid code; (d) Inclusion of biomass as energy resource in the National Rural electricity policy; and (e) Community-based Natural Resource Management as part of National and Provincial Forestry Policy

[6] All five (5) policies that were approved are enforced in line with the targets of Biomass based power generation included in the National RE Policy.

[7] Standards developed for: (a) energy plantation; (b) biomass energy conversion; and (c) biomass user technologies

[8] Standards opted by relevant authorities and provincial authorities as part of the procurement

[9] In eight target districts there are few forests from where local community is using fuel wood. However, those forests cannot be characterized as sustainable wood biomass production facilities

[10] In total there are 3 new sustainable woody biomass production facilities are expected to be completed by the end of the project, one in each province of Punjab, Sindh and Baluchistan)
[11] From ESMAP Biomass mapping study it is estimated that 747,250 m^3 fuel is available to be and used for energy generation in the country.

The data for annual average of woody biomass local production and consumption for our eight target districts is not available.

Once all four the provincial forest departments are onboarded to gather the data for existing forests size, and the wood fuel generated from each district. This value cannot be estimated.

It is also important to mention the methodology used by forest department to measure the production & consumption of wood fuel.

Alternatively, we can also put this indicator to 0, as there no existing sustainable woody biomass production and consumption is place.

(Indicator, cannot give any value under this indicator)

[12] To generate 5.4 MW of biomass-based power generation it is estimated that total of 95,178 Tonne of woody biomass is required annually. By mid-term at least 40% of this wood should be available from the sourcing.

[13] If 5.4 MW is generated using fossil fuel (e.g. NG based genset) it will require fossil fuel energy equivalent of 3.8 ktoe. Similar energy can be displaced by sustainable woody biomass fuels. By mid-term it is estimated that 40% of the total will be completed.

ANNEX B: RESPONSES TO PROJECT REVIEWS (from GEF Secretariat and GEF Agencies, and Responses to Comments from Council at work program inclusion and the Convention Secretariat and STAP at PIF).

Exhibit B-1

Responses to GEFSec Comments on 11 and 17 November 2022

Comment & Response	Reference

Part I ? Project Information: Focal Area Elements	
1. Does the project remain aligned with the relevant GEF focal area elements as presented in PIF (as indicated in table A)?	
a. On core-indicators: **Comment**: a) The target for ?Indicator 6 Greenhouse Gas Emissions Mitigated? is different in the results framework than core indicator table. The target in the core indicator table should be explicitly mentioned in the Annex A (results framework). **Response**: The value indicated for ?Greenhouse Gas Emissions Mitigated?, i.e., **Indicator 2: Cumulative GHG emission reduction from the rural sector of Pakistan, tCO2** is the **end-of-project** target. In this case, it is 195,050 tCO_2, which is expected to be realized by 2028. This is also the amount stated in Annex 12B: Estimation of Potential GHG Emission Reduction from the PASBET Project (PASBET ProDoc, pp. 199-200). The values stated in the Core Indicator Sheet in Annex 14: GEF and/or LDCF/SCCF Core indicators (PASBET ProDoc, p. 202) are the **estimated direct and indirect GHG emission reductions by the end of 10-years influence period after end-of-project**. These are 3.239 million direct GH emission reduction and 6.477 million indirect GHG emission reduction. Both are expected to be realized within the accounting period of 2023-2038, not during the end-of-project.	ProDoc: Annex 12B, pp 199-200; Annex 14, p. 202
Comment: b) Neither the M&E Plan, nor the Results Framework, describe the means of verification, sources, frequency of updates and methodology. Please include these elements in the M&E section. **Response**: Annex 4: Monitoring Plan shows the tabular summary of M&E plan (PASBET ProDoc, pp. 115-121). It shows for each indicator of each project outcome the following: Description of each indicator and target; Mid-Term and EOP target values; Data source & Collection Methods; Frequency; Responsible entity for data collection; Means of verification and Assumption. This table has been included in Sec. VI: Monitoring and Evaluation (M&E) Plan of the PASBET ProDoc (pp. 72-79) before Table 4: M&E Plan and Budget. This Monitoring Plan is based on the Project Log Frame or Results Framework (CERDoc: Annex A)	ProDoc: Sec VI, pp.72-79; Annex 4 CERDoc: Annex A

b. On co-financing: **Comment**: Please provide summary of each Investment Mobilized co-financing under the ?Investment Mobilized? description section. **Response**: The summary description of the ?Investment Mobilized? co-financing (*see next paragraph*) has been included below Part I, Section C (Confirmed Sources of Co-financing for the Project, by Name and by Type) of the CEO Endorsement Request Document. *In 2019, the Government of Pakistan launched a Ten Billion Tree Tsunami Program (TBTT-P), a national program for the revival of the forestry sector in the country. The proposed GEF PASBET Project builds on the interventions under the forestry component of this national program. The funds allocated for on-the-ground interventions are placed at the disposal of respective provincial governments, which are likely to be spent in the target districts of the project and will directly contribute to its objective. These TBTT-P resources are considered investments mobilized from the federal and provincial governments (i.e., public investments) under the PASBET Project. The provincial governments of Punjab, KP, Sindh, and Balochistan have shown their interest in promoting farm-forestry and raising woodlots for piloting biomass energy production technology demonstrations. Their allocated resources for these activities that are also part and parcel of the proposed project and are considered investments mobilized, including the grants they provide through their public sector development funds.*	CERDoc: Part 1, Sec. C

c. On Stakeholder engagement: **Comment**: Stakeholder engagement: Information provided in the portal section on stakeholder engagement states that ?Since there was limited opportunity to conduct a meeting with intended representatives of the project stakeholders, the list and roles of stakeholders will be validated and a comprehensive ?stakeholders participation strategy? with a clear road map will be developed from the following stakeholders? roles and duties during the inception phase?. Please provide further information on these limitations and also outline a more concrete framework for consultations in the inception phase, including means of engagement, dissemination of information, roles, and responsibilities in ensuring effective Stakeholder Engagement	
Response: During the project development stage, the project development team (PDT) including the concerned UNDP-Pakistan personnel conducted consultation meetings with the key stakeholders such as the Ministry of Climate Change, Ministry of Planning Development and Reforms, provincial Forest Departments, and provincial Energy Departments. However, there was limited opportunity for a broader and detailed stakeholder consultation, particularly with local communities and other local government departments due to COVID-19 restrictions. The public health restrictions during the pandemic led to closure of government offices and private businesses and strict protocols for keeping social distancing. Hence, the limited interaction with stakeholders in the communities where many of the planned project activities (e.g., demonstrations) will be implemented. During the inception phase of the project, the project team and the technical personnel that will be onboarded will come up with a concrete plan for carrying out more detailed consultations with the project stakeholders particularly those that were not consulted during project design stage, such as other provincial government departments, community leaders and district/local government institutions in the project areas. Follow-up consultations will also be done, when and if necessary, with the key stakeholders that were consulted during the design phase of the project. The following is a summary of stakeholder engagement activities that will be carried out in preparation for, and during the project inception phase: ? Telephone calls to stakeholders to organize meetings, follow-up with appointments and provide further information for stakeholders; ? Email exchange with stakeholders to provide further information on project scope, demonstrations, and value-adding initiatives for the project; ? Attendance in specific meetings with the PDT staff and the identified potential co-financers, and implementers of identified baseline project to learn about potential synergies from such projects and share project information; ? Organized stakeholder consultations; ? Field visits and focus group discussions on project plans, benefits, risks, impacts and community interest and engagement; and, ? Focus group discussion with women on gender roles related to the planned project activities, benefits, risks, impacts and interest and engagement. Subsequently, the information that will be gathered during these consultations will be used in preparing a more detailed Stakeholder Engagement Plan. Such plan will also specify, among others, the roles, and responsibilities of various project participants/stakeholders such as: (a) Linkages and coordination between participants and activities; (b) Role of each participant in the delivery of project outputs; and (c) Strengthening of links to project stakeholders. The plan will be presented during the project?s inception meeting for discussions and endorsement of the stakeholders.	ProDoc: Annex 8, pp 163-164

d. On the budget: **Comment**: *1. The budget is off margins. Please make sure the table fits into the portal. If not, Council Members will not be able to review the budget when circulated.* **Response**: The Project?s budget table has been reformatted to fit into the GEF Portal.	
Comment: *2. National Project Coordinator is being charged to a component. Per Guidelines, the costs associated with the project?s execution have to be covered by the GEF portion and the co-financing portion allocated to PMC. The co-financing allocated to PMC is 1.14 million, and around 10 million of co-financing is represented in grants, please review, and revise it, so that the project staff can be appropriately charged to toe PMC (GEF and co-financing portion).* **Response**: The National Project Coordinator (NPC) has 2 sets of tasks to carry out for the PASBET Project. These are: (a) coordination of the management and implementation of the project activities (approximately 20%); and (b) provision of technical coordination of, and technical support to, the promotion, design, implementation of the project's demonstration activities (approximately 80%). With regard to project management, per the agreement among the project proponent and key stakeholders, the NPC will be coordinating the management and implementation of the PASBET Project activities on behalf of the Implementing Partner (MoCC). Selected MoCC personnel will be assigned to assist the NPC in the management of the project activities. Moreover, the PMU will also be supported by the UNDP in the execution of the project. With regard to technical coordination and support, the bulk of the tasks of the NPC involves the provision of technical assistance and coordination work in implementing the project?s demonstration activities, particularly in the technical specifications, standards to be followed, TOR/Contract preparation, RFQ and bidding documentation, selection and engagement of the biomass energy technology service providers and contractors for the demo activities and supervision of the testing, initial operation, and performance evaluation of the demo units. We have made adjustments to the budget to more accurately reflect this 20%/80% split, as well as clarifications in the text description of the NPC function. With regard to budget, 20% of the total budget for the NPC cost is now charged to the Project Management Cost (PMC) for the NPC?s project management services. UNDP has also provided new, additional cash-cofinancing of USD 80,000 to cover its execution support. The rest (80%) of the budget for the NPC cost is charged to Component 2.2 for the NPC?s technical coordination and technical support services. Moreover, it should be noted that the allocated co-financing for PMC is actually the collective project management costs of each subsumed baseline activity or project of the forestry department of the project?s partner provinces.	ProDoc: Sec VII; Governance & Management Arrangements p. 89 Footnote 63. Sec: XI: Total Budget and Work Plan; Budget Notes 17 (p. 99) and 36 (p. 101)

Comment: 3. Only one (the CEO Endorsement Request Portal view) out of four documents was selected. Being this project implemented by UNDP, the latest ProDoc, Review Sheet and Checklist needs to be selected for circulation. Please get all these documents when recommending the project again. **Response**: The GEF Agency has uploaded to the GEF Portal a complete package of documents that include the revised CEO Endorsement Request document; Project document; this document on Responses to the GEFSec Comments and the UNDP Checklist.	
4. Are the confirmed expected amounts, sources and types of co-financing adequately documented, with supporting evidence and a description on how the breakdown of co-financing was identified and meets the definition of investment mobilized, and a description of any major changes from PIF, consistent with the requirements of the Co-Financing Policy and Guidelines?	
Comment: a. The UNDP co-financing is all in-kind. Please consider some cash co-financing, say $80,000, to cover the cost of UNDP's execution functions. **Response**: The UNDP co-financing to the project has been enhanced with the addition of US$ 80,000 cash co-financing to cover the cost of UNDP?s support to the MoCC in the execution of the project. This is in Annex 16 of the PASBET ProDoc. This additional co-financing is also indicated in the revised table in Part 1, Sec. C of the PASBET CEO ER Document.	ProDoc: TBWP Budget Note 40; Annex 16
Comment: b. In Table C of the CEO ER document, please use the exact names of the co-financers and the correct amounts as shown in the financing letters. Currently, the name of the co-financer of Ten Billion Tree is not in Table C. It seems that the UNDP used PKR170/US$1 as the exchange rate. Per today's exchange rate, it should be PKR221/US$1. Please consider revising the amount of co-financing in Table C to match the amounts in the co-financing letters. **Response**: The co-financing table in the CEO ER document has been revised to indicate the exact names of the co-financing entities, as well as the adjusted USD equivalent of co-financing amount (i.e., in PKR) stated in each co-financing letter. The adjusted amount is based on the suggested current PKR-USD exchange rate of PKR 221 per USD 1.	CERDoc: Part 1, Sec C
Private Sector Engagement **If there is a private sector engagement, is there an elaboration of its role as a financier and/or as a stakeholder?**	

Comment: Yes, the role of the private sector is elaborated on page 41. During project implementation, please try to engage woody biomass-based private SMEs to co-finance the project. **Response**: Agree. The private sector co-financing for the project, particularly for the demos will be followed up and confirmed during the project inception period. Negotiations will continue to establish the cooperation arrangement with further project promotion and presentation of the benefits to and necessary involvement of the private sector. It should be noted that the demo activities of the project are about the commercial operation of a woody biomass-fired energy production and distribution system (power or non-power application) systems that can be community-owned and operated, or private-sector owned and operated, or government-owned and private sector operated, etc. The proposed demos of the project involve the engagement of the private sector to further bolster the objective of promoting low-carbon, low-pollution, and nature positive solutions to support rural socio-economic development in the country. Hence, efforts will be done during the project implementation to facilitate increased investment both from the public and private sectors for promoting biomass energy efficient technologies and scaling-up innovative practices for biomass energy production and utilization at the rural industry levels. To encourage private sector interest, the project includes activities that will develop business plans/models for the district governments and private sector to facilitate financing and implementation of woody biomass energy production projects will be developed. The aim here is to intervene and catalyze participation of private and public capital cost-effectively.	
Knowledge Management **Is the proposed ?Knowledge Management Approach? for the project adequately elaborated with a timeline and a set of deliverables?**	

Comment:
Not completed yet. Please use a table to elaborate the deliverables of knowledge management against a timeline.

Response:
The PASBET Project will deliver various outputs that will be documented and included in the planned repository for sharing experiences in making the demonstrations successful and in replicating and scaling them up further after the project is completed using the demonstrated climate resilient and energy efficient woody biomass energy technologies. The following is a tentative list of planned knowledge management (KM) products that the project will produce and their respective tentative delivery schedule.

ProDoc: Sec IV; Output 4.4, pp. 55-56

Annex 10

CERDoc: Section 8 Knowledge Management, pp. 38-39

KM Product	Brief Description	Delivery Schedule
Woody Biomass Resources in Pakistan	This is comprised of comprehensive situational and feasibility analyses and supply chain and market analyses on woody biomass production, and sustainable woody biomass production and utilization.	3Q 2024
Woody Biomass Energy Development and Utilization Policies in Pakistan	This is comprised of the results of the project?s activities on the development and implementation of policies and market-based regulatory framework for supporting woody biomass production and use, including approved technical, management and operational standards.	2Q 2025
Energy Planning in Rural Areas with Woody Biomass Resources	This presents the formulated energy-integrated development plans that are developed for the pilot towns of the project.	3Q 2024
Woody Biomass Production	This presents the design, establishment, and operational farmers/communal forest nurseries for providing planting stock for raising woody biomass in woodlots and farmlands.	1Q 2026
Woody Biomass Energy Generation Technologies and Applications	This presents the results of the demonstrations of the cost-effective application of decentralized woody biomass-based electricity generation and distribution (through mini/micro-grids).	2Q 2026
Woody Biomass Fuels Production	This is about the results of the demonstration on the establishment and operationalization of cost-effective woody biomass fuels production facilities, and applications of energy efficient woody biomass fired technologies.	3Q 2025
Financing Woody Biomass Energy Production	This is about the investment cost of establishing and commercial operation of woody biomass energy production, as well as potential investment and financing mechanisms for supporting the commercial viability and operation of woody biomass energy production.	4Q 2024
Recommended Woody Biomass Energy Generation Projects in Pakistan	This is about the de-risked biomass-based power generation projects, decentralized biomass-based energy generation in rural areas, and business plans for the GOP and private sector to facilitate financing and implementation.	3Q 2025

GEFSec Decision/Recommendation: Is CEO endorsement recommended? *(applies only to projects and child projects)*	
Comment: Not at this time. Please address the comments above. **Response**: The project proponent has responded adequately to the GEFSec comments and are looking forward to the CEO endorsement of the proposed project.	

Exhibit B-2

Responses to GEF Council Comments (December 2020)

Comment & Response	Reference
Germany Comments	
Comment: *B-1.1: The proposal and its objectives are particularly relevant for Pakistan considering the current situation in the environmental (air pollution), energy (30% renewable energy by 2030) and climate change (20% less CO2 emissions by 2030) sector. However, the advancement of a technology sector (such as the promotion of biomass with USD 24 million) should be integrated into a national energy and climate strategy.* **Response**: The proposed PASBET Project fits very well, and is aligned with, the Government of Pakistan?s (GoP?s) relevant biomass energy development and utilization, and other renewable energy programs. These include the National Climate Change Policy (NCCP), Alternative and Renewable Energy Policy (ARE Policy 2019), National Forest Policy 2015, Ten Billion Tree Tsunami Programme (TBTTP), National Electricity Policy (NEP) 2021, Public?Private Partnership (PPP) Regulation in Pakistan and others. Pertinent and specific components of these programs have been included as baseline activities of the Project. In this regard, the Project includes interventions that will facilitate the integration of technology advancement and applications into the planning, coordination and implementation of the activities that are aligned with the national energy and climate mitigation strategy.	ProDoc: Sec. II; Table 4.
Germany requests that the following requirements are considered during the design of the final project proposal:	

Comment & Response	Reference
Comment: *B-1.2: Germany requests that the establishment of a policy and regulatory framework for sustainable woody biomass energy production and utilization is mentioned in component 1 and contributes to an overall integrated energy plan. This was already suggested by the documents ?Pakistan 2025 One Nation - One Vision? (?there is an urgent need to develop an integrated energy development plan?, May 2014) as well as in the ?Renewable Readiness Assessment Pakistan? (April 2018) provided by IRENA. Recommended actions included the development and implementation of an integrated energy plan as well as setting of targets for renewable energies.*	
Response: The Project includes the delivery of Output 1.4: Formulated energy-integrated development plans of 8 pilot towns, two in each province of Punjab, KP, Sindh and Balochistan. The activities that will deliver this output are intended to address the barrier: Lack of capacity of the local governments in carrying out energy integrated development planning. Feasibility studies will be conducted, and energy-integrated action plans of 8 pilot towns (2 in each province) will be developed for sustainable woody biomass production and supply for generating biomass energy. The demos will showcase the applications of woody-biomass resource development and energy generation that will comprise the full range of the fuel wood upstream and downstream cycle within the communities they cover. The experience and knowledge gathered and evaluated from the demos will become important inputs in the policy and regulations formulation at the local provincial and district level under the existing decentralized government system. The Project will facilitate the raising of the recommendations derived at the local level to the development national integrated energy plan and targets which is particularly important in further integrating everything in the sustainability and replication plan to be developed in Activity 2.2.4.2 to deliver Output 2.2.4: Published and disseminated information about the results and impacts of the completed demonstrations as well as developed and adopted a sustainability and replication plan of decentralized woody biomass-based energy production and utilization for power and non-power applications.	ProDoc: Sec. IV, Outputs 1.4 and 2.2.4

Comment & Response	Reference
Comment: *B-1.3: We further request that additional indicators relating to the additionality of measures to achieve national renewable energy targets shall be added in project design, as well as in the M&E system.* **Response**: The objective of the project is the widespread application of sustainable biomass energy technologies for supporting socio-economic development of and reducing greenhouse gas (GHG) emissions from, the rural sector in Pakistan. The current, and this far, initiatives in Pakistan to develop and utilize biomass resources for energy are focused on the use of agricultural waste such as bagasse, particularly in the country?s sugar industry. While woody biomass is also used in rural communities, most of the resources that is used are those collected from the forest, timber industry waste, and in some cases illegal tree cutting. Most of the woody biomass that are gathered and used are from non-sustainable sources. There is no big-scale use, commercially operated woody biomass-based energy production facilities, let alone an integrated system for growing, harvesting, storage, transport, and processing of wood biomass. Building on the current forestry development, and renewable energy (e.g., biomass) programs of the GOP, the proposed project, while covering biomass, is focused on the promotion of the application of woody biomass as fuel for energy production for power and non-power applications. This is clearly additional to what the GOP is currently doing regarding RE development and utilization in the country, which are geared towards to achieving the country?s %RE share target. Hence, the project results framework include indicators for the expected outcomes from the project that are mainly focused on woody biomass-based energy generation and distribution, as well as on woody biomass fuel production and utilization (e.g., *Cumulative number of rural villages that develop and implement energy-integrated development plans that include the commercial production and utilization of sustainable woody biomass; Cumulative no. of standards for equipment to use woody biomass for energy generation and EE utilization established and enforced; : No. of established and commercially operated sustainable woody biomass production facilities; : Average annual local production and consumption of sustainable woody biomass fuel, tonnes/year; Cumulative amount of fossil fuel energy displaced by sustainable woody biomass fuels; Cumulative number of operational woody biomass-based power generation system installations in rural towns/ municipalities, etc.*). These indicators are included in the M&E that the project implementing partner will develop for the monitoring/tracking of the realization of the mid-term and end-of-project targets of these indicators.	ProDoc : Sec : M&E Plan, Section VI

Comment & Response	Reference
<u>Comment</u>: *B-1.4: We request that the proposal should more clearly differentiate between agricultural waste and woody biomass, as there is an apparent confusion in the PIF. It appears that the PIF only prioritizes woody biomass. If this is indeed the focus, it should be better explained why, especially in the context of many reforestation projects in Pakistan at the moment. It appears very counterintuitive to focus on ?the establishment, operation and maintenance of dedicated fuelwood lots or energy plantations?. Moreover, forest residues are of environmental value and should not be considered as waste products.*	
<u>Response</u>: The Project focuses on woody biomass which not only include fuel trees from fuel wood plantations but also forest residues, as well as wood processing residues. Previous biomass resource scoping studies could not draw any conclusion on the potential availability of woody biomass and wood residue, as there were many large discrepancies in reporting. Further data collection and validation of existing data on wood biomass availability was recommended for complete assessment of availability of woody biomass. Among the options for Pakistan to reduce GHG emissions, particularly in the rural areas of the country, is the utilization of sustainable biomass energy resources. The GOP?s ARE policy, in mentioning biomass, does not explicitly mention woody biomass. Instead, it mentions bagasse and other agricultural waste. Further, National Forest policy talks about integrating forests with economic sectors. Energy efficient stoves have been explicitly mentioned as part of the Mitigation Options in Energy Demand Sector in Pakistan?s INDC. The promotion of the use of processed woody biomass (chips, briquettes, and pellets) as fuel for wood-fired energy equipment in rural industries is also covered in the project, also as an energy efficiency measure to reduce current wasteful uses of woody biomass as energy resource.	ProDoc: Sec. II; Challenges in the Energy Sector

Comment & Response	Reference
Comment: *B-1.5: Regarding air pollution, we request to outline the contribution, additionality, and theory of change of the project?s measures in the Pakistani context in more detail. The statement that the issue of air pollution could be ?eradicated? in Pakistan looks very ambitious. Therefore, it is important to answer the questions of ?how? and ?when?, especially if the project does not have a focus on agricultural waste.* **Response**: The project proponents agree that ?eradicate? is not appropriate; and instead ?minimized? is suggested. It was in the context of the proper and sustainable use processed biomass (e.g., bagasse, agricultural and forest wastes, and woody biomass, that the notion of significant pollution reduction can be achieved. In the case of sustainable woody biomass, its contribution to pollution reduction is in the context of it replacing the use of fossil fuels in the energy activities in rural areas. It is also on the premise that the woody biomass is processed into easily combustible forms, such as chips, briquettes, and pellets. The shift to the use of processed woody biomass in improved energy efficient wood-fired equipment (e.g., wood-fired industrial kilns and boilers) is expected to bring down air pollution from energy inefficient solid fuel fired equipment. In this regard, the efficient use of woody biomass as fuel for industrial processes is also another step towards reduction of air pollution in rural communities that can bring about improved household and community health. While woody biomass has been used in some rural industries, the introduction of the use of processed woody biomass and improved energy efficient wood-fired equipment is expected to bring about incremental GHG emission reductions from reduced woody biomass fuel consumption. This is part of the incremental/additional aspect of the project, which is expected to stimulate private sector interest in processed woody biomass fuel production. Moreover, since the current biomass energy utilization in the country are focused on bagasse and agricultural waste, the woody biomass-based energy generation and utilization interventions under the PASBET Project are clearly additional to the current biomass energy development and utilization initiatives of the country.	ProDoc: Sec. II; Overcoming Challenges, p. 12.
Comment: *B-1.6: Further, the project design should include further information on cooperation, co-financing, and additionality of measures, compared to other bilateral and multilateral donor projects, as well as national initiatives in the agriculture, public health, and climate change sector.* **Response**: The baseline initiatives in the 4 partner provinces are presented in PASBET Project Document. These include (a) Distributed generation schemes through renewable energy; (b) Nationwide tree planting (Ten Billion Tree Tsunami Program); (c) Raising of fuel wood species plantation; (d) Promotion of energy plantation; (e) Electrification of Villages through solar/alternate energy; etc. The project proponents have discussed with the owners/implementers of these projects/programs suggesting the potential improvements and additional innovative features that can bring about global environmental benefits, as well as local benefits to the rural communities. The relevant components of these baseline Initiatives, which are supported by different donors are subsumed into the PASBET Project, as-is, or as improved or modified activities to deliver the PASBET expected outputs. Table 4 in the ProDoc shows the list of ongoing and planned biomass-related baseline Projects and Initiatives and how these are linked to PASBET.	ProDoc : Sec. II ; Baseline initiatives, p. 20; Section III, p. 25

Comment & Response	Reference
Comment: *B1.7: Especially the link to the new Pakistan NDC that is currently being developed, would be relevant. CO_2 emissions cuts by this project, may be included in the new NDC.* **Response**: The Project?s long term CO_2 reduction will contribute to some extent to the country?s NDC achievements especially if the replication plan that will be developed under the project will be adequately funded and successfully implemented. UNDP is the key partner in the current work of the country on its NDC update. The PASBET Project?s GHG emission reduction target will contribute to the achievement of the country?s NDC targets.	CERDoc : Part II, Sec. 1a.2, p.10
Comment: *B-1.8: Regarding ownership and governance, Germany requests that the limited capacity/competence of the MoCC to manage such projects and coordinate so many different actors from different political levels is taken up as a major risk in the project design. Even if we understand that the MoCC is a FP of GEF, some mitigation solutions should be developed.* **Response**: The MOCC?s ownership and capacity in implementing the project and other similar projects has been a subject of discussion between MOCC and UNDP in regards implementation arrangement during the project design stage. The proposed implementation arrangement is CO support to NIM (national implementation management). The project will be implemented under the UNDP Country Office support to NIM with Government as Implementing Partner for the first year. At the end of Year 1 implementation, UNDP will collaborate with the MoCC to conduct a third-party review, and to assess possible adjustment to the implementation arrangements in line with UNDP and GEF policies, with a view to consider full NIM modality.	ProDoc: Sec. VII: Governance and Management Arrangements,
Norway/Denmark Comments	
Comment: *B-1.8: In support of the comments from the STAP Review about the need to justify why the project is only proposing biomass as an option for renewable energy it would be very pertinent to have an approach that ensure the promotion of biomass for energy does not negatively impact food security.* **Response**: The Project design has focused on woody biomass consistent with what has been approved in the PIF. The lands that will be used for fuelwood plantations are generally those that are marginal and relatively not fit for food crops. The forest departments in the partner provinces will guide and ensure the appropriate selection of the lands that will be used as fuelwood plantations for growing the fuel wood trees that will be used as feed to the woody biomass-fired energy generation installations that will be carried out under the project. It should be noted that the communities that will be engaged in the project are also concerned about food security. Therefore, in the planning and allocation of the acreage for fuelwood plantations, this food security and agricultural concern will be taken into consideration during stakeholder consultations in the project sites.	ProDoc: Sec III; Component 2; Outputs 2.1.3 and 2.1.4

Comment & Response	Reference
Comment: *B-1.9: The proposal does not seem to have addressed the issue of cultural preferences with regards to sources of energy for cooking and thus the need to be very focused and sensitive regarding activities focused on behaviour change.* ***Response***: Specifically, this project will not be covering the promotion of woody biomass-fired cook stoves. In terms of the non-power application of woody biomass, the applications in rural industries will be the focus. Nonetheless, considerations of cultural preferences will be covered in the project?s capacity development and RE promotional activities. For example, on the capacity development programs, there is Activity 4.1.1 that includes discussions on cultural factors and cultural preferences aside from gender issues, that could result in affect behavior changes in regards the choices of fuels to be used in day-to-day activities such as cooking and heating in rural communities.	ProDoc: Sec. III; Output 4.1, Activity 4.1.1.
United States Comments	
Comment: *B-1.10: This project is well considered given the need for reforestation, resource management, industry development, energy provision within the framework of green growth and CO_2 reductions. Additionally, it fits in very well with previous intentions, policies, and existing projects. However, it needs of considerable investigation before it can support its financial and value chain sustainability.* **Response**: The project proponents agree with the comment that considerable research work must be done in ensuring the sustainability of the country?s green growth and GHG emission reduction framework. Firstly, the risks involved concerning financial feasibility and overall sustainability are assessed. Those aspects that tend to be risky, initial feasibility studies on the introduction of biomass-based technologies in energy generation and electrification are to be carried out at the community and pilot scale level as basis for selecting them for demonstration. Secondly, de-risking proposed woody biomass-based energy projects and ensuring their sustainability are amply covered in Component 3 of the project, as well as technical, management and operational standards that will developed and established under Component 1. The relevant policies and strategies that will be developed are also geared towards facilitating development and investments on sustainable woody biomass-based energy development and utilization initiatives.	ProDoc: Sec. III, Component I, Output 1.1; Component 3, Output 3.1
Comment: *B-1.11: We would like to see further development on the policy and implementation plans, and additional information on resource availability and distribution channels.* **Response**: Biomass resource availability, fuel preparation facilities, logistics and distribution networks will be developed under Component 1 of the project. These include the development and adoption of the support policies and plans for the development of woody biomass fuel production, processing, and distribution facilities. The planned activities also include the formulation of the policies, the detailed implementing rules and regulations and market-based regulatory frameworks for supporting sustainable woody biomass production and use.	ProDoc: Sec. III, Component 1, Outputs 1.1 and 1.2.

STAP Rating: Minor issues to be considered during project design

Comment	Response
STAP Overall Assessment of the Project Proposal	
IRENA's report on Renewables Readiness Assessment Pakistan[1] indicates that the country has tremendous renewable energy potential, including hydro, wind, solar, as well as biomass feedstocks. Given the diverse option for renewable pathways in the country and considering that the biomass option could negatively impact food production and security, it is essential to justify why the project is selecting only this renewable energy option. A comparative analysis showing why biomass renewable is the best option for rural Pakistan is encouraged as the project is developed further.	As outlined in its National Climate Change Policy, the Govt of Pakistan is poised moving towards low carbon pathways thus exploring multiple options of renewable energy generation to cope with the overwhelming energy demand within the country on one hand, and to keep its emissions to the lowest possible, on the other. Whilst the renewable energy potential in all sectors including hydro, wind and solar have already been/being explored and projects developed, the appetite for generating clean energy from biomass sources yet remains unexplored?the Government of Pakistan would therefore like to proceed with this option under the proposed PASBET project of facilitating the widespread utilization of available biomass (particularly woody biomass) resources in the country. Part of exploring this option is the demonstration/ piloting of the cost-effective, sustainable application of woody biomass-fired energy generation for power and non-power applications in the rural areas of the country, with the view of replication and/or scaling such initiatives in the future. As far as the impact on food production is concerned, the project proponents have already highlighted in the PASBET PIF that demos/pilots that will be carried out will be on degraded and barren lands not suitable for food production but for the raising local fast-growing tree species. The areas suitable for food production will not be included in the project thus avoiding the risk of competing with food production and ensuring its security. Moreover, the project will take steps during the project design (PPG) stage to run a comparative analysis to further confirm and take informed decisions in the design of the project activities.
Furthermore, there is substantial agricultural residue availability in the country[2][2], which could be a better option that may not compete with crop production; why is this not also prioritized?	As explained above, all such options have already been explored in Pakistan whereas renewable energy generation from biomass remains unexplored. The government of Pakistan deems the latter as an innovative and clean approach and would proceed for it under the proposed PASBET Project. Please see last para in the response to the previous comment above regarding competition with crop/ food production.

A key concern is around the upscaling of this technology. The proponents of the project stated the following on page 20 of PIF: "it is estimated that agricultural waste materials could generate 56% of Pakistan's electricity, and woody biomass could sustainably generate 9.5% of the peak demand." However, there is no citation provided for this assertion, which seems highly exaggerated. A citation and some further details are needed for this quoted amount.	Noted?the percentages quoted in the PIF are correct and taken from the technical paper titled ?**Agricultural Waste Biomass Energy Potential in Pakistan?** (Saeed, M.A et al. 2015[3][3])

A narrative and diagram of the project theory of change were provided in the PIF, but the diagram is not legible because of the image's low resolution. Further, the ?theory of change? narrative and diagram only present the project output, outcomes, and desired impacts. It doesn't show or explain the needed elements of an adequate theory of change. The underlying assumptions, pathways, alternative plans, and medium- and long-term impacts required for a complete theory of change were missing. We suggest that the theory of change should be redone and re-evaluated by the GEF secretariat. We refer the project proponent to STAP's theory of change primer[4][4] for more information on developing ToCs.	Thanks for the suggestions. Apologies if the ToC diagram is not legible. The ToC diagram in the PIF is based on the initial logical framework analysis (LFA) that was carried out to establish the project?s results framework (PIF, Part I, Sec. B). It shows the elements of the project that are within its sphere of control (outputs), sphere of influence (outcomes) and sphere of interest (desirable impacts). Based on LFA, the project?s theory of change will be verified, confirmed, and clearly defined during the project design activities, which will start with a more detailed LFA. This will be done through the conduct of a 3-day stakeholder workshop that will be attended by the relevant stakeholders and partners of the proposed project. In this workshop the participants will further identify barriers and verify those that were already identified during the project concept stage (i.e., PIF development stage). The barrier analysis will establish the cause-and-effect relationships of these barriers. Having established the cause-and-effect relationship in a form of a problem tree, an objectives analysis will be carried out to determine the means and ends relationships of the various desirable, realistic, and achievable objectives in a form of an objectives tree. The objectives tree presents the various potential pathways by which the desired medium term and long-term impacts (e.g., increased greenhouse gas reduction in the phosphate chemicals industry (PCI) in China) will be achieved. Based on the objectives tree, the following elements of the project will be defined: (a) goal; (b) objective; (c) outcomes that will contribute to the realization of the project objective; (d) outputs that have to be produced to contribute to the realization the project outcomes; and (e) baseline and incremental activities that will deliver the project outputs. The objectives tree will also point to the logical assumptions that will be considered in the project. The appropriate SMART indicators will be defined for the project objective, and for each project outcome. The baseline and target value, means of verification and critical assumption for each indicator will also be defined by consensus among the project stakeholders and partners. The project log frame will be finalized by consensus among the project stakeholders and partners. The fully defined project log frame will embody the theory of change that the project intends to bring about. The approach for achieving the change will be guided by the agreed project log frame, with a clear rationale backed by credible evidence, integrating gender concerns into the approach.

In Component 1, the project intends to mainstream woody biomass production into the agriculture and forestry sector. It is essential to show how doing this will not impact food security and the livelihoods of people. Apart from the competition for land between energy wood and crop production, biomass energy production's economic attractiveness may divert farmers away from food production. Also, how will energy wood production on farmland impact farm biodiversity, negatively or positively? How will the project manage these concerns? We refer the project proponent to relevant publications related to these issues[5][5]:	Mainstreaming woody biomass production into agriculture and forestry sectors will not have negative impact on food security and local livelihoods, as raising trees on farmlands is common and has been practice in the region for centuries. In fact, tree cover on farmland is increasing in the country, while natural forests are declining. Moreover, energy plantations will only be established on saline, waterlogged and infertile (sand dunes and barren) lands, thus minimizing the chances of competition with crop production. This will also provide an economic incentive for landowners to reclaim their non-productive lands, which ultimately be converted for crop production. Furthermore, raising woodlots by establishing block plantations will improve tree cover in the targeted areas, which will have a positive impact on biodiversity through creating new habitats for insects, birds, small and large mammals, and will enhance soil microbial biodiversity. In addition, the safeguarding measures to be taken under the project will help in avoiding negative effects local ecosystems and biodiversity, if any. The selected project districts of Punjab, KP, Sindh, and Balochistan fall under arid and semi-arid regions of the country, where agro-ecosystem depends either on rainfall or canal water irrigation. Forested lands are limited, and vast areas lie barren or have only shrubby vegetation. Raising woodlots by establishing block plantations of fast- growing native tree species will improve tree cover in the targeted areas, which will have a positive impact on biodiversity through creating new habitats for insects, birds, small and large mammals, and will enhance soil microbial biodiversity. There will be improved insect and avian biodiversity and nesting site opportunities. Further, effective safeguarding measures will be taken to avoid negative effects local ecosystems and biodiversity. For instance, biodiversity and safeguards specialists will be made part of PPG team. Assessments and feasibility studies will be conducted in the selected districts. The proposed locations in selected districts will be thoroughly and carefully selected. Further, a Biodiversity Action Plan will be prepared at PPG to ensure that the indicated risks are effectively and efficiently curtailed.
We recommend that the project consider the possibility of producing wood on lands that may not be suitable for crops, such as contaminated soils and arid lands.	This is noted and is already explained above. Just to reiterate, the energy plantations and wood lots will be raised on saline, water-logged, non-productive arid lands, such as sand dunes and barren patches to be used for land development, e.g., along the newly excavated Kachhi Canal in Dera Bugti District of Balochistan province.

The calculation of the greenhouse gas emissions mitigation benefits of this project is not adequately described. The following assertion needs a methodology: "Based on the preliminary line up of demonstration woody biomass-based electricity production as presented in Annex D, the quantity of direct and consequential GHG emission reduction that can potentially be realized from the barrier removal activities of the project is about 3.1million tons of CO2 by the end of the project's 10-years influence period. It is estimated that about 64,633 tons of direct GHG emission reduction." (page 32 of PIF) Annex D was not included in the PIF ? GEF secretariat should check and verify as the net calculations for such biomass fuel generation are critically important to understand if the Global Environmental Benefits will credibly accrue. The proponents should particularly review the following papers, which caution on calculating benefits from biomass energy production. Please refer to this resource page to inform your calculations accuracy[6][6].	Annex D is included in the PASBET PIF submission in the GEF Portal. It is also included in the GEF-approved PASBET PIF. The project proponents have conservatively estimated the potential GHG emission reduction that is attributable to the project. The estimates are only from woody biomass utilization for electricity production. Not included are the potential energy savings and associated GHG emission reductions from the application of energy efficient wood fired equipment used in industries (e.g., kilns/boilers). The potential energy savings and GHG emission reduction from the use of sustainable fuel wood (chips, briquettes, and pellets) in electricity production and for productive uses in rural industries will be estimated during the detailed design of the project. The application of woody biomass power generation will be carried out in areas of the 4 provinces (Khyber Pakhtunkhwa, Punjab, Sindh and Balochistan) where there are significant potentials for forest waste supply, woodlots, and woody biomass energy (electrical and thermal) generation. The target electricity consumers are in the residential and industrial sectors in these 4 provinces. This will be in towns/villages in the service areas of existing power distribution companies that are not yet electrified. The available sustainable woody biomass resources that are available in these areas will be utilized for power generation and the generated electricity will be supplied to the currently non-electrified households and rural industries. As described in Annex D, based on data from the NEPRA, State of Industry Report 2019 (2019 electricity consumption in the residential sector and industries), and based on the country's %RE electricity target of 30% by 2030 and considering the forecast trend of RE-based power generation capacity in the country, the estimated electricity consumption in these 2 major sectors in the planned project areas that can potential be produced using renewable energy resource would be about 9,812 GWh in 2030. Considering a very modest contribution to the RE electricity generation using woody biomass of about 1.5% by 2030, the amount of woody biomass electricity production is estimated to be about 196.2 GWh that year. That amount of electricity can be generated by a 26.4 MW woody biomass-fired power generation plant. Such amount of woody-biomass generated electricity will translate to a GHG emission reduction of about 107,147 tons of CO_2 (based on a grid emission factor of 0.546 tons CO_2/MWh) in that year. By 2030, the project would have influenced the cumulative generation of about 673.3 GWh of woody biomass-based electricity, a 26.4 MW of woody biomass-fired power generation capacity, and a cumulative GHG emission reduction of 367,642 tons CO_2. By the end of the 10 years influence period after the end-of-project, the estimated cumulative woody biomass-based electricity generation is about 5,722 GWh. The total woody biomass-based power generation would be about 181 MW, and the cumulative GHG emission reduction is about 3,123,943 tons CO_2.

If well designed and properly implemented, the project should deliver other benefits aside from climate change mitigation. Air pollution, biodiversity, land degradation, and job creation co-benefits are possible from the project. But the project could also negatively impact air pollution, biodiversity, land degradation, and food security if not well designed. These need to be considered as the project is designed further.	Well noted. The PPG exercise will include the conduct of technical studies on the potential negative impacts of the project, such as air pollution, biodiversity loss, land degradation, and food security from biomass energy production units. With a clearer understanding of such potential negative impacts, appropriate preventive and alleviative mitigation actions will be developed as part of the project design activities.
The effect of climate change was noted, but a detailed climate risk addressing climate projection for the project's location and how climate change may impact the specific project interventions was not done. Given that this project will involve crop production and energy infrastructure, climate change is a significant risk factor. We recommend that the project proponent carry out a detailed climate risk assessment based on the prevailing and projected climate change situation in Pakistan and develop measures to mitigate the identified risks. Refer to additional references[7][7].	This is well noted. In addition to what were described in Annex E of the GEF-approved PIF, a detailed climate risk assessment will be carried out at during PPG stage based on the projected climate change situation in Pakistan. Detailed climate risk assessments in the different project areas will be carried out keeping in view the climate change scenarios in Pakistan. Appropriate preventive and alleviative mitigation actions will be developed as part of the project design activities.
GEF CC Program Manager Questions :	
Will the land use for biomass plantation conflict with the land use for good production? If so, how to deal with the conflict?	The land use for biomass plantation will not conflict with other land use for food production, including land allocated for food/crop production. As detailed in responses above, only degraded, and arid land, which are not suitable for food production, will be used for energy plantation. Moreover, only wood waste generated from farm-forestry activities will be utilized for energy production which is already consumed as fuelwood for domestic use. If in any event, conflict will arise, this will be carefully monitored through the monitoring mechanisms that will be built in the project design and addressed accordingly as part of the alleviative mitigation measures of the project.

[1] https://irena.org/publications/2018/Apr/Renewables-Readiness-Assessment-Pakistan

[2] Ibid

[3] Saeed, MA, Irshad, A, Sattar, H et al. (3 more authors) (2015) Agricultural Waste Biomass Energy Potential In Pakistan. In: Proceedings of the International Conference held in Shanghai, P.R. China. International Bioenergy (Shanghai) Exhibition and Asian Bioenergy Conference, 21-23 Oct 2015, Shanghai, P.R. China. ISBN 9788889407134

[4] https://stapgef.org/theory-change-primer

[5] Dauber and Mikaye 2016: https://link.springer.com/article/10.1186/s13705-016-0089-5;

WRI, 2015: https://www.wri.org/publication/avoiding-bioenergy-competition-food-crops-and-land

[6] https://www.ieabioenergy.com/iea-publications/faq/woodybiomass/;
https://www.climatehubs.usda.gov/hubs/northern-forests/topic/carbon-and-wood-based-bioenergy

[7] Favero, A., Daigneault, A., & Sohngen, B. (2020). Forests: Carbon sequestration, biomass energy, or both? Science Advances, 6(13), eaay6792. https://doi.org/10.1126/sciadv.aay6792

Walker, T., Cardellichio, P., Gunn, J. S., Saah, D. S., & Hagan, J. M. (2013). Carbon Accounting for Woody Biomass from Massachusetts (USA) Managed Forests: A Framework for Determining the Temporal Impacts of Wood Biomass Energy on Atmospheric Greenhouse Gas Levels. Journal of Sustainable Forestry, 32(1?2), 130?158. https://doi.org/10.1080/10549811.2011.652019

Actions Taken in regards the STAP Rating:

During the PPG exercise, UNDP scheduled a dialogue with the STAP member screener (Saleem H. Ali) to review the actions taken to address the technical and/or scientific issues raised. The dialogue took place on 30 August 2021. The responses to the STAP comments were discussed and the STAP Reviewer agreed to the planned action of the project development team.

Exhibit B-4

Responses to GEFSec Comments 30 October 2020

Comment & Response	Reference
Stakeholder Engagement	

<u>Comment</u>: *Provide a description of the stakeholder consultations that took place with Indigenous Peoples and Local Communities, civil society organizations and private sector entities, as indicated in the Stakeholders section.*	
<u>Response</u>: The project proponents? discussions with the local communities were mainly part of the stakeholder consultation activities that they have done under the Government?s Ten Billion Tree Tsunami Program. The discussions under that program were done through workshops and focused consultations and were in line with the objective to pave the path for job creation for common people through green initiatives. The government is focused on increasing the number of private nurseries for raising plants to generate economic opportunities. Hence, the discussions with the local communities in the planned project districts was, among others, on how the proposed project will build on the planned technical and financial support that will be provided to local farmers and community organizations under the program for establishing farmers/communal nurseries to provide planting stock for raising woody biomass on forested, non-forested and farmlands by involving individual farmers and community organizations. Among the discussions that were carried out with stakeholders were with the technical personnel of the Provincial Forestry Departments, who themselves are regularly in touch with local communities including those communities in the planned project districts. The Forestry personnel informed the project proponents about the suggestions of the local communities in comprehending the key challenges to tackling deforestation and in coming up with concrete measures to tackle the issue with other innovative measures such as the planned interventions of the proposed project. In marking the box ?Indigenous Peoples and Local Communities?, the main intention is to point out during the PIF development stage, the project proponents have consulted local communities in the planned project districts.	PIF: Part II, Sec. 2, Footnote 16, p. 20. Part II, Sec. 2, p. 18
Gender Mainstreaming	

Comment:
The PIF does not include sufficient information on any relevant gender dimensions related to the project context or components. Provide some additional information on gender dimensions related to the project context (e.g., gender dimensions related to woody biomass production in the agriculture and forestry sectors in Pakistan) and or project components such as promoting Biomass Energy Production and Energy Efficient Utilization Technologies or financing for Biomass Energy Technologies Initiatives).

Response:
A more detailed assessment will be done on the various aspects of gender equality and mainstreaming will be carried out during the project design and development (PPG). Such assessment will determine how the project will facilitate gender equity in the woody biomass production in the forest areas and farmlands, as well as in the demonstration of the cost-effective applications of woody biomass energy production and energy efficient wood-fired equipment in rural industries, as well as in providing financial support for biomass energy technologies initiatives. During the project conceptualization (i.e., PIF development), the project proponents did not have enough information about the current gender equity situation in the planned project districts in the 4 project provinces. Nonetheless, the project proponents have taken note of the potential barriers which limit the active participation of both the genders (men and women) in agricultural operations and towards gender disparity in agricultural extension. Like in agriculture, it is envisioned that woody biomass production and utilization for power and non-power applications will involve both men and women in various operations and processes. And like in agriculture, there may exist gender disparity with reference to biomass energy technology extension, education, and other advisory services, perhaps due to the existing social, cultural, and religious norms in the society of Pakistan. In this regard, the following indicative gender equality actions are recommended actions in the project design and implementation that will enable reduction of the existing or potential inequalities and comply with national and international gender regulations and best practices. During the PPG stage, the details of these indicative recommended actions, as well as others that will be identified later, will be determined.

? The project design is guided by principles of gender equality and women?s empowerment. Qualified and capable women is given equal opportunity in the decision-making and strategic project design process.

? The project will involve the implementation of policy barrier removal activities, and in that regard, the proposed policies, regulations, standards on the application of sustainable woody biomass energy production and utilization technologies in the 4 provinces shall be gender responsive.

? The project proponents will formulate a gender action plan for the project and ensure thorough implementation.

? Inclusion of gender equity as a criterion for providing/distribution of goods and services to communities in the project districts in the implementation of project activities.

? The strengthening of the existing governance structures that promote gender equality and leadership in local governance structures in agriculture and forest sectors in the 4 provinces to support project implementation is covered sufficiently in the implementation of activities that are for removing institutional barriers.

? Promotion of information exchange and learning for men, women, and youths in the communities within the project districts, as part of the project knowledge management and information dissemination activities. Community people have access to information sharing sessions.

? Collection of gender disaggregated data during trainings, workshops, discussions, interviews, or focus group interaction of the project?s capacity

PIF : Part II, Sec. 3, pp. 21-22

<u>Comment</u>: *Revisit the checked gender tag that the project expects to closing gender gaps in access to and control over natural resources. There is nothing in the PIF that suggests that this project would contribute to closing this gap.* **<u>Response</u>**: Thank you for pointing this. It is actually an inadvertent mistake on the part of the project proponents to mark all the boxes. This has already been rectified in the revised PIF document.	PIF : Part II, Sec. 3, p. 21.

Exhibit B-5

Responses to GEFSec Comments 29 September 2020

Comments & Responses	Reference
Part I ? Project Information	
2. Are the components in Table B and as described in the PIF sound, appropriate, and sufficiently clear to achieve the project/program objectives and the core indicators?	
<u>Comment</u>: *In the outputs for activities 1.1.4 and 1.1.5, please put numbers to indicate how many towns and how many government people to be targeted.* **<u>Response</u>**: Thank you for the suggestion. The proposed Outputs 1.1.4 and 1.1.5 have been revised to indicate the required information. The energy-integrated development plans will be formulated for 8 pilot towns (2 towns in each province of Punjab, Khyber Pakhtunkhwa (KP), Sindh, and Balochistan). Around 60 government personnel, 15 from each province from relevant line department/agencies will be trained for providing technical support on sustainable woody biomass production and in the enforcement of regulatory frameworks and laws regarding woody biomass energy production and utilization.	PIF: Part I, Sec B, pp. 1-4

Comment: *In Component 2: Promotion of Woody Biomass Energy Production and Energy Efficient Utilization Technologies, the project will plant fast-growing native tree species on forested and non-forested land in selected districts of Punjab, KP, Sindh, and Balochistan. Please justify how the project will not affect biodiversity negatively in the wood and how the project will not impact the local community people from perspectives of home relocation and income reduction.* **Response**: The selected project districts in Punjab, KP, Sindh, and Balochistan are in arid and semi-arid regions of the country, where agro-ecosystem depends either on rainfall or canal water irrigation. Forested lands are limited, and vast areas lie barren or have only shrubby vegetation. Raising woodlots by establishing block plantations of fast- growing native tree species will improve tree cover in the targeted areas, which will have a positive impact on biodiversity through creating new habitats for insects, birds, small and large mammals, and will enhance soil microbial biodiversity. There will be improved insect and avian biodiversity and nesting site opportunities. Effective safeguarding measures will be taken to avoid negative effects local ecosystems and biodiversity. During the project design and development (PPG) stage, the services of a biodiversity and safeguards specialist will be engaged to carry out the assessments and feasibility studies in the selected districts. The proposed locations in selected districts will be thoroughly and carefully selected. Furthermore, a Biodiversity Action Plan will also be prepared during the PPG stage to ensure that the potential risks are verified and come up with the appropriate preventive and alleviative risk mitigation measures. All woody-biomass production related interventions, including raising forest nurseries, energy plantations, and fuelwood on farmlands, will be carried out on private lands with the involvement of local communities. Hence, there will be no issues regarding home relocation or human displacement. Moreover, these forestry-related operations will help in increasing household income and alleviating poverty from the rural landscape through establishing sustainable woody-biomass production and marketing system run by the local communities with the technical backstopping by the government personnel of the line departments.	PIF : Part II, Sec. 1a.3, pp. 14.
Comment: *In Component 2 for the sub-component of INV, please articulate the number of sites for technology demonstration. Please split the budget for the component and show the amount for the INV sub-component. The budget for INV in Component 2 should be significant!* **Response**: there will be demos in each of the 4 provinces for woody biomass-based energy generation technology applications. There will be 4 sites (one per province) for the woody biomass-based power generation and distribution demos. There will be at least 4 sites (one per province) for the industrial demos where the cost-effective applications of energy efficient wood-fired industrial equipment will be showcased, plus the 3 pilots for showcasing improved woody biomass fuel production technologies for producing wood chips, briquettes, and pellets. The exact site locations and number in each province will be determined by the feasibility studies that will be conducted during the project design and development (PPG) stage. As suggested, the total budget for Component 2 has been significantly increased by reallocating portions of the original budgets in Components 3 and 4 to its INV sub-component.	PIF: Part II, Sec. 1a3, Component 2, p. 15 PIF: Part I, Sec. B, pp. 2-3.

Comment: *Component 3 is NOT investment; it is a TA component. Please change INV into TA. The GEF project budget for TAs in Components 3 and 4 is too much. Please consider moving GEF funding of $400,000 in Component 3 and $400,000 in Component 4 to the sub-component of INV in Component 2.* **Response**: Agree. Component 3 is comprised of TA activities. The financing type has been changed to TA. In line with the reviewer?s suggestion, US$ 300,000 from the original GEF funding for Components 3 and US$400,000 from the original GEF funding for Component 4 have been shifted to the INV sub-component of Component 2. As result, the GEF funding for the INV sub-component of Component 2 is substantially enhanced.	PIF : Part II, Sec. B, pp. 2-3.
Comment: *On pages 12 and 13 for Components 2 and 3, please elaborate how the project will benefit the local community in terms of green job creation to deal with COVID-19.* **Response**: The interventions that are proposed under the project, e.g., raising forest nurseries, energy plantations, and fuelwood on farmlands will involve local people thus helping creating ?green jobs? and increasing household income and alleviating poverty. These interventions that involve working closely with nature enhances resilience. Hence, this helps in recovery from pandemics like COVID-19 and other similar threats in the future. including looming dangers of climate change and natural disasters like flashfloods and prolonged droughts. In the light of the current Covid-19 pandemic situation in the country, the investment activities of the proposed project will be designed to not only to demonstrate the relevant technologies that the project is promoting but also to support more resilient livelihoods and infrastructure that enables green recovery from COVID-19 impacts and building future resilience. The envisioned demos of the project will engage the private sector to further bolster the objective of promoting low-carbon, low-pollution, and nature positive solutions for to support rural socio-economic development in the country.	PIF: Part II, Sec. 1a.3, p. 15 PIF: Part II, Sec. 1a.3, p. 15
3. Are the indicative expected amounts, sources, and types of co-financing adequately documented and consistent with the requirements of the Co-Financing Policy and Guidelines, with a description on how the breakdown of co-financing was identified and meets the definition of investment mobilized?	
Comment: *In GEF7, minimum co-financing ratio of 1:7 is expected for a CCM project in Pakistan. Please raise the co-financing to more than $24 million.* **Response**: The follow-up discussions with the project proponent and partners resulted in an agreement to raise the project co-financing to more than $24 million to raise the co-financing ratio to 1:7.	PIF: Part I, Secs. A, B and C.
6. Are the identified core indicators in Table F calculated using the methodology included in the correspondent Guidelines? (GEF/C.54/11/Rev.01)	
Comment: *In the Indictor section, the PIF shows that the carbon emission benefits are generated from Carbon Sequestered or Emissions Avoided in the AFOLU (Agriculture, Forestry and Other Land Use) sector (Indicator 6.1). The GHG emission reduction benefits will be from renewable energy investment. Please change it into Indicator 6.2.* **Response**: Thanks for pointing out the inadvertent mistake. The indicated amount of GHG emission reduction in Annex B has been moved to Indicator 6.2.	PIF: Annex B

Part II ? Project Justification	
6. Are the project?s/program?s indicative targeted contributions to global environmental benefits (measured through core indicators) reasonable and achievable? Or for adaptation benefits?	
Comment: *Yes. The GHG emission reduction estimation is shown in Annex D, but more accurate calculation is needed in the PPG stage. At CEO RE stage, more accurate data should be used to calculate the global environment benefits. For example, carbon emission factors in individual local power systems (not a general number of 0.546 tons CO_2/MWh) should be used for the calculation.* **Response**: Agreed. More detailed and robust GHG emission reduction estimates will be done during the project design and development stage. The 0.546 tons CO2/MWh is Pakistan?s Combined Emission Factor (as of 2017). More updated emission factors will be used during the project?s PPG stage.	
Does the PIF/PFD include indicative information on Stakeholders engagement to date? If not, is the justification provided appropriate? Does the PIF/PFD include information about the proposed means of future engagement?	
Comment: *The indicative information on Stakeholders engagement is shown on pages 16-18. The agency has not started the engagement yet. It will do so in the PPG stage. During the PPG stage, please take into account the impact of COVID-19 and take measures to help stakeholders to better cope with the impact of COVID-19. In the CEO ER document, please write a specific section on this issue and actions to deal with it from the perspectives of both the local communities and the government.* **Response**: The project development team will carry out the required stakeholders? consultations during the PPG stage, not only for data gathering but also for the preparation of the project?s Stakeholder Engagement Plan. Detailed analysis of emerging ?risks? and ?opportunities? in the context of COVID-19 pandemic and its impact on the project will be evaluated in the light of GEF Guidelines of 22 August 2020 and considered while designing of the project interventions. The project activities will be designed to mitigate impacts of COVID-19 and related issues and challenges. The lessons learned and various successful practices that were employed by the federal and provincial governments and private sector in addressing COVID-19 issues in the implementation of development projects in the country will be integrated in the design of the stakeholders? involvement, and implementation and management arrangements of the proposed project.	PIF: Part II, Sec. 2, p. 20 Sec. 5, pp. 22 Annex F
Does the project/program consider potential major risks, including the consequences of climate change, that might prevent the project objectives from being achieved or may be resulting from project/program implementation, and propose measures that address these risks to be further developed during the project design?	
Comment: *On pages 19-20, please consider one more risk and the mitigation measures: Impact of COVID-19 on the project. Please elaborate how the project will move the barriers in communication among the stakeholders or travelling among the project sites due to COVI-19. If it is difficult to address this issue at the PIF stage now, please do so in the PPG stage and report it in the CEO ER stage.* **Response**: Agreed. A risk focusing on COVID-19 impacts and mitigation measures to address it have been included in the list of potential risks. This risk will be further examined during the PPG stage and reported back in the CEO Endorsement Request document.	PIF: Part II, Sec. 5, p. 22

Is the institutional arrangement for project/program coordination including management, monitoring and evaluation outlined? Is there a description of possible coordination with relevant GEF-financed projects/programs and other bilateral/multilateral initiatives in the project/program area?	
Comment: *Not completed. On pages 20-22, please make a diagram to show the coordination relationship among various stakeholders and projects. This is to make a clearer presentation for readers.* **Response**: The indicative project ?organogram? has been included in the PIF. It shows the indicative project management and coordination mechanism with key project stakeholders and beneficiaries.	PIF: Part II, Sec. 6, pp. 23-24
Is the proposed ?knowledge management (KM) approach? in line with GEF requirements to foster learning and sharing from relevant projects/programs, initiatives, and evaluations; and contribute to the project?s/program?s overall impact and sustainability?	
Comment: *The information is imbedded widely in the PIF. On pages 23, please add a few bullets to show where (page numbers or paragraph numbers) the following issues are addressed in the PIF: 1. an overview of existing lessons and best practice that inform the project concept; 2. plans to learn from relevant projects, programs, initiatives & evaluations; 3. proposed processes to capture, assess and document info, lessons, best practice & expertise generated during implementation; 4. proposed tools and methods for knowledge exchange, learning & collaboration; 5. proposed knowledge outputs to be produced and shared with stakeholders; 6. a discussion on how knowledge and learning will contribute to overall project impact and sustainability; and, 7. plans for strategic communications.* **Response**: Please refer to Annex G for a brief summary of the indicative knowledge management plan for this project.	PIF: Annex G
Are environmental and social risks, impacts and management measures adequately documented at this stage and consistent with requirements set out in SD/PL/03?	
Comment: *Yes. The Environmental and Social Safeguard sheet is uploaded to the GEF Portal. It is better if the agency can write one additional paragraph on how the project will benefit the local community people from the perspective of green job creation and income generation to deal with COVID-19.* **Response**: The description of how the project will benefit the local community in the context of green job creation and income generation during the Covid-19 pandemic have been included in the PIF. Further details regarding how the project will address Covid-19 and how the risks and opportunities from this pandemic will be considered in the proposed project are presented in Annex F.	PIF: Annex F
Part III ? Country Endorsements	
GEFSEC DECISION RECOMMENDATION	
Is the PIF/PFD recommended for technical clearance? Is the PPG (if requested) being recommended for clearance?	
Comment: *Not at this time. Please address the comments above.* **Response**: The project proponents have adequately responded to the comments/suggestions provided in the GEF Secretariat review. They look forward to the technical clearance of the PIF and the GEF CEO Approval.	

ADDITIONAL COMMENTS	
Additional recommendations to be considered by Agency at the time of CEO endorsement/approval.	
Comment: *During the PPG stage, please take into account the impact of COVID-19 and make a plan to help stakeholders to better cope with the impact of COVID-19. In the CEO ER document, please write a specific section on this issue and actions to deal with COVID-19 from the perspectives of both the local communities and the government.* **Response**: Agreed. As per the reviewer?s advice, at the PPG stage special attention will be given to COVID-19 impacts and a plan of action (e.g., CRMP) will be prepared to help stakeholders, especially private sector, and local communities for better copping with COVID-19 impacts, if any. An inclusive section (building on what were presented in Annex F) will be included in the CEO Endorsement Request on issues and actions needed to deal with COVID-19 both at the level of the local communities and government. The GEF guidelines of August 27, 2020, will be used to devise such actions.	PIF: Annex F

ANNEX C: Status of Utilization of Project Preparation Grant (PPG). (Provide detailed funding amount of the PPG activities financing status in the table below:

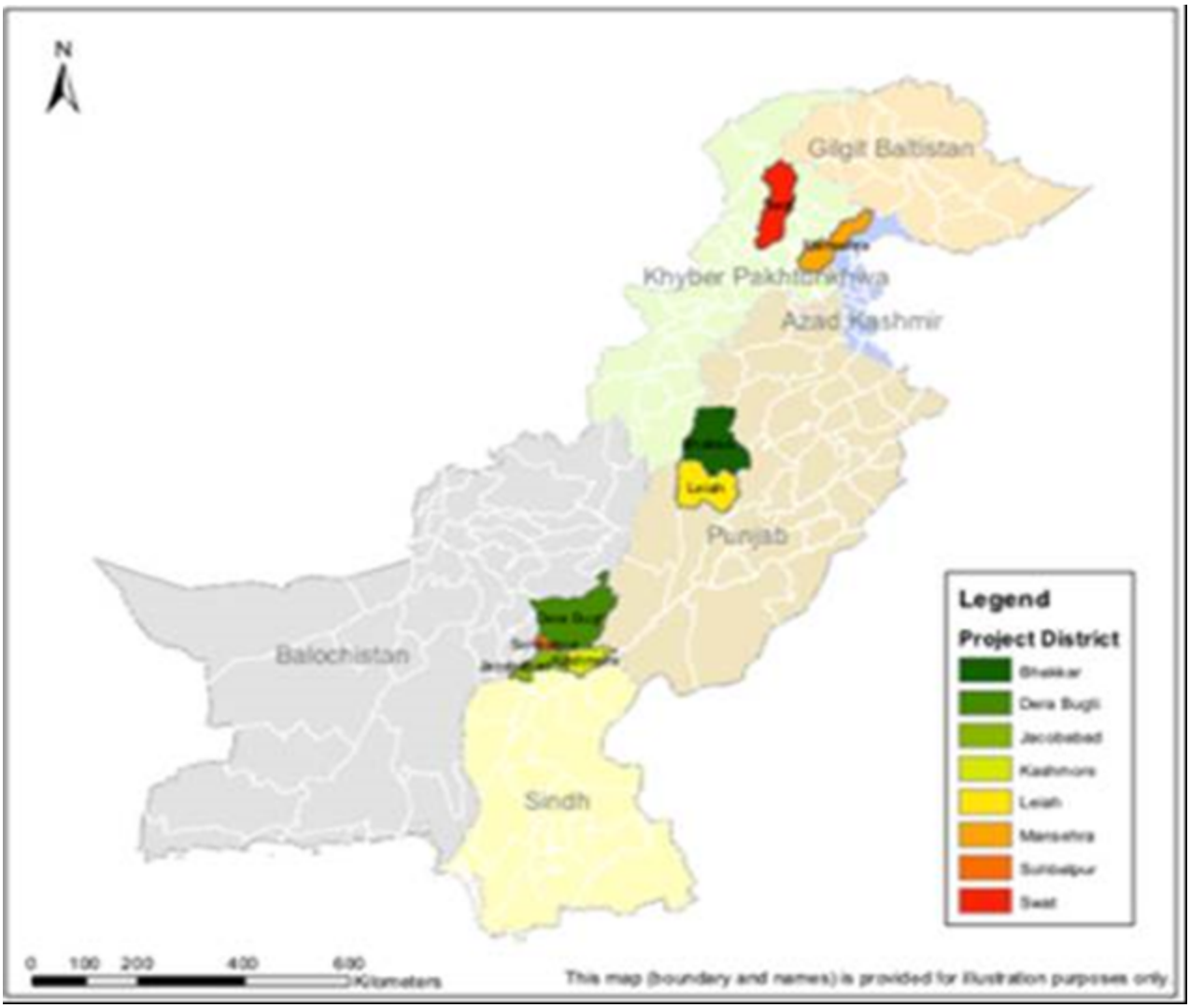
PPG Grant Approved at PIF:	**$150,000**		
Project Preparation Activities Implemented	***GETF/LDCF/SCCF Amount ($)***		
	Budgeted Amount	***Amount Spent To date***	***Amount Committed***
International Consultants	32,500	9,750	22,750
Local Consultants	81,100	62,898	18,202
Travel	19,400	5,675	13,725
Trainings, Workshops	17,000	207	16,793
TOTAL	**150,000**	**78,530**	**71,470**

ANNEX D: Project Map(s) and Coordinates

Please attach the geographical location of the project area, if possible.

Province/District	**Coordinates**
Punjab	
Layyah	31.0998? N, 71.0022? E
Bhakkar	31.8621? N, 71.3824? E
Khyber Pakhtunkhwa	
Kaghan	34?50?N 73?31?E
Kalam	35.4801?N 72.5874?E
Sindh	
Badin	24?39?26?N 68?50?26?E

Sujawal	24?36'23" N and 68?4'19"E
Balochistan	
Jaffarabad/Sohbatpur	28.3009? N, 68.1908? E/28.4871? N, 68.6440? E
Dera Bugti	29.0278? N, 69.0970? E



ANNEX E: Project Budget Table

Please attach a project budget table.

Expenditure Category	Detailed Description	Component (USDeq.)							Total (USD eq.)	Responsible Entity * (Executing
		Component 1	*Component 2*	*Component 3*	*Component 4*	*Sub-Total*	*M&E*	*PMC*		

		Outcome 1	***Outcome 2.1***	***Outcome 2.2***	***Outcome 3***	***Outcome 4***					Entity receiving funds from the GEF Agency)[1]

Equipment	Purchase and installation of equipment for demo projects, including the critical spare parts and O&M cost of demo plants (Year 2-5) $ 1,675,768 Under each demo, the following are the major items that will collectively make up an integrated system for woody biomass-based power generation and utilization in the selected rural sites in each of the four provinces: ? Biomass Collection, Storage, Transportation, Pre-treatment (US$ $ 193,632) ? Woody biomass-fed gasifier plant and gas engine for electricity generation (US$ $ 119,392) ? Solar PV power for back up or augmentation to meet the village			1,675,768			1,675,768			1,675,768	MoCC	

Equipment	Equipment including IT devices and services needed for the Projects various activities and knowledge management storage of projects data/information					27,000	27,000			27,000	MoCC

Contractual Services ? Individual	This is 80% of the total budget for the National Project Coordinator (NPC), representing the cost for NPC's task of providing technical coordination and technical assistance work in implementing the project's demo activities regarding the technical specifications, standards to be followed, TOR/Contract preparation, RFQ and bidding documentation, selection and engagement of the biomass energy technology service providers and contractors for the demos and supervision of the testing, initial operation, and performance evaluation of the demo facilities		144,197			144,197			144,197	UNDP	

Contractual Services ? Individual	(a) For salary of Admin/Financial Officer (AFO) at USD 16,995 in Year 1 & 2 increasing at around 10% annually from Year 3 up to Year 5 or 5-year total of USD 95,658(b) This is 20% of the total budget for the National Project Coordinator (NPC), representing the cost for the NPC's project management related tasks. The 80% represents the cost for the NPC's technical tasks (mainly for the technical coordination and technical assistance tasks on the project demonstration activities (See Budget Note #17). The total NPC cost corresponds to the standard NPSA Step10 rate						0	131,711	131,711	UNDP	

Contractual Services ? Company	Technical assistance by consultancies, companies, or other service providers; or though appropriate agreement between the MoCC and provincial line departments. If the IP requests UNDP to provide support service in engaging Responsible Parties (RPs) through the Letter of Agreement, UNDP will engage RPs on behalf of the IP and follow UNDP?s rules and regulation. Activity 1.1.1: Conduct woody biomass resource assessment as contracted services (Year 1) (Lump sum total US$ 50,000). Activity 1.4.1, Site selection for 8 sites (Year 1) (Lump sum total US$ 45,000). Activity 1.1.2:	155,000					155,000			155,000	MoCC

Contractual Services ? Company	Technical assistance by consultancies, companies, or other service providers; or though appropriate agreement between the MoCC and provincial line departments. If the IP requests UNDP to provide support service in engaging Responsible Parties (RPs) through the Letter of Agreement, UNDP will engage RPs on behalf of the IP and follow UNDP?s rules and regulation. Activity 2.1.1: To review the ESSP screening checklist to update the risks and mitigation measures as part of the EIA process of the government before the actual installation of the demos and develop the ESMP as may be required in		20,000				20,000			20,000	MoCC

Contractual Services ? Company	Technical assistance by consultancies, companies, or other service providers; or though appropriate agreement between the MoCC and provincial line departments. If the IP requests UNDP to provide support service in engaging Responsible Parties (RPs) through the Letter of Agreement, UNDP will engage RPs on behalf of the IP and follow UNDP?s rules and regulation. Other contractual services including daily manpower services facility operation, maintenance, housekeeping, and other ancillary support services during commissioning of demos (Year 2-5) (US$ 4,000 $ every			16,000			16,000			16,000	MoCC

Contractual Services ? Company	Technical assistance by consultancies, companies, or other service providers; or though appropriate agreement between the MoCC and provincial line departments. If the IP requests UNDP to provide support service in engaging Responsible Parties (RPs) through the Letter of Agreement, UNDP will engage RPs on behalf of the IP and follow UNDP?s rules and regulation. Activity 3.1: Financial Advisory Firm to advise on strategies and action plans in ensuring adequate amounts of financial resources available for woody biomass energy technology application projects in the country (Year 3) (Lump sum				100,000		100,000			100,000	MoCC

Contractual Services ? Company	Technical assistance by consultancies, companies, or other service providers; or though appropriate agreement between the MoCC and provincial line departments. If the IP requests UNDP to provide support service in engaging Responsible Parties (RPs) through the Letter of Agreement, UNDP will engage RPs on behalf of the IP and follow UNDP?s rules and regulation. Contracted services for local companies providing support and ancillary services on how to operate and maintain biomass technologies for demonstration sites not covered by the EPC contractors.					11,000	11,000			11,000	MoCC

International Consultants	Activity 1.3.1: Technical and operational standards for biomass-based power generation (Year 3) (US$ 800/day, total US$ 25,000). Activity 1.3.2: Technical and operational standards for energy conservation (Year 3 & 4) (US$ 800/day, total US$ 25,000). Activity 1.3.3: Technical and operational standards for energy management system (Year 4) (US$ 800/day, total US$ 25,000). Activity 1.5.2: International trainer (Year 4) (US$ 800/day for 50 person-days, total US$ 40,000).	115,000					115,000			115,000	MoCC

International Consultants	Activity 2.1.1: For development of guidelines of sustainable production and utilization of woody biomass, with Biodiversity Action Plan drawn from the international experience and development standards that is expected to be brought in by the IC. The IC will develop the action plan and recommend strategies in close coordination with the NC, as well as and leading the whole activity so that the desired Outputs will be realized within the timeline and quality standards. (Year 1) (US$ 800$/day, total US$ 30,000)		30,000				30,000			30,000	MoCC

International Consultants	Cost of International Technical Consultant Services prorated over the year (Year 1 - 5) to provide technical advice, review of other consultants' and EPC contractors' deliverables and support to PMU on project demos implementation and in related activities in the Components. The IC is tasked to design and produce the information packages from the information as gathered by the project and recommend a communication and dissemination plan. The following details on the activities are part of the International Technical Consultant inputs that needs to be budgeted as deliverable s. Activity			113,343			113,343			113,343	MoCC	

International Consultants	International consultant for capacity building (US$ 800/day, total US$ 18,000)					18,000	18,000			18,000	MoCC
International Consultants	International Consultant and Team Head for Mid-Term Review (Year 2), including travel costs (US$ 30,000). International Consultant and Team Head for Terminal Evaluation (Year 5), including travel cost (US$ 30,000)						0	60,000		60,000	UNDP

Local Consultants	Activity 1.2.1: Biomass tariff expert (Year 2) (US$ 400/day, total US$ 25,000). Activity 1.2.2: Provincial policy for off-grid sustainable biomass power generation (Year 3) (US$ 400/day, total US$ 25,000). Activity 1.2.3: National roadmap for sustainable biomass generation (Year 4) (US$ 400/day, total US$ 25,000). Activity 1.5.1: Consultant for conducting trainings for government staff at PFI (US$ 400/day, total US$ 25,000)	100,000					100,000			100,000	MoCC

Local Consultants	Activity 2.1.2: Assistance to the IC in gathering data, coordination with local authorities and stakeholders and documentation for development of guidelines of sustainable production and utilization of woody biomass, with Biodiversity Action Plan (year 1) (US$ 400/day, total US$ 20,000). Activity 2.1.4: Established and operational fuelwood production (Year 1) (US$ 400/day, total US$ 20,000)Activity 2.1.3: Biomass supply chain and market analysis (Year 2) (US$ 400/day, total US$ 20,000)		60,000				60,000			60,000	MoCC

Local Consultants	Salary of Gender-Communications Consultant to provide technical services in aspect of gender mainstreaming in the project demos in the selected demo areas and its population in support for Activity 2.2.1, 2.2.2 and 2.2.3 (Year 2-4) (US$ 400/day, total US$ 30,000). Salary of M&E ? Safeguards Consultant to provide technical services in aspect of monitoring and evaluation (M&E) as well as implementing the risk-based management (RBM) action plans and developing social and environmental management framework, grievance redress mechanism; conducting feasibility studies; monitoring of activities			70,000			70,000			70,000	MoCC	

Local Consultants	Activity 3.1 Financial Expert (Year 3) (10,000 $). Activity 3.2 Financial Expert (Year 4) (7,000 $)Activity 3.3 Financial Expert (Year 5) (7,000 $)				24,000		24,000			24,000	MoCC
Local Consultants	National consultants for capacity building (US$ 400/day, total US$ 58,000)					58,000	58,000			58,000	MoCC
Local Consultants	National consultants for Mid-Term Review and Terminal Evaluation, including travel costs						0	80,000		80,000	UNDP

Trainings, Workshops, Meetings	Activity 1.1.1: Stakeholder consultation (Year 1) (US$ 5,000). Activity 1.4.1: Training and development workshop (Year 1) (US$ 2,000). Activity 1.1.2: Stakeholder consultation & training session (Year 2) (US$ 2,500). Activity 1.1.3: Stakeholder consultation & training session (Year 2) (US$ 2,500). Activity 1.5.1: National training and development workshop for the preparation and planning of the capacity building program for provincial governments personnel (Year 3) (US$ 10,000)Activity 1.5.2: Implementation of the	32,000					32,000			32,000	MoCC

Trainings, Workshops, Meetings	Activity 2.1.1 & 2.1.2 & 2.1.4: Awareness raising events each year for dissemination of results and stakeholder consultation sessions (Year 1) (US$ 9,000). Activity 2.1.3: Awareness raising events each year for dissemination of results and stakeholder consultation sessions (Year 2) (US$ 3,000)		12,000				12,000			12,000	MoCC
Trainings, Workshops, Meetings	Awareness raising events each year for dissemination of results			8,800			8,800			8,800	MoCC
Trainings, Workshops, Meetings	Awareness raising events for dissemination of results and stakeholder consultation sessions				90,000		90,000			90,000	MoCC

Trainings, Workshops, Meetings	Training, workshops, and conferences for capacity building activities, the specific breakdown will be determined based on the results of the needs analysis and recommendations.					50,000	50,000			50,000	MoCC
Trainings, Workshops, Meetings	M&E related training, workshops, and conferences (Year 2) (US$ 4,000). M&E related training, workshops, and conferences (Year 5) (US$ 4,000)						0	8,000		8,000	MoCC
Trainings, Workshops, Meetings	Annual board meeting and workshops for 5 years						0		2,953	2,953	MoCC

Travel	Activity 1.1.1: Woody biomass assessment (Year 1) (US$ 3,000). Activity 1.1.2: Technical and financial feasibility (Year 2) (US$ 3,000). Activity 1.4.1: Site selection for 8 sites (Year 1) (US$ 5,500). Activity 1.2.1: Biomass tariff expert (Year 2) (US$ 2,000). Activity 1.2.2: Provincial policy for off-grid sustainable biomass power generation (Year 3) (US$ 2,000). Activity 1.3.1: Technical and operational standards for biomass-based power generation (Year 3) (US$ 3,500). Activity 1.3.2: Technical and operational standards	72,500					72,500			72,500	MoCC

Travel	Activity 2.1.1: National travel for development of guidelines of sustainable production and biodiversity action plan (Year 1) (US$ 2,000). Activity 2.1.1: National travel for EIA and ESMP (Year 2) (US$ 2,000). Activity 2.1.2: National travel to support the facilitation and coordination of the development of a detailed study on supply chain of biomass, including market analysis for determination of biomass consumption, production, and pricing by the international and national consultants (Year 1) (US$ 2,000). Activity 2.1.4: Established and		10,000				10,000			10,000	MoCC	

Travel	Travelling for project staff for M&E of activities under component 2.2 (Year 2 - 5) (US$ 6,600)			6,600			6,600			6,600	MoCC
Travel	Local travel and related expenses for capacity building, awareness, knowledge management, partnerships, co-financing consultations, workshops, and demonstration sites for Consultants and PMU staff.					45,000	45,000			45,000	MoCC

Travel	Travel for Mid Term Review (Year 2), for monitoring related M&E activities regarding GEF and/or LDCF/SCCF Core indicators and METT or other required Tracking Tools (US$ 10,000). Travel for Terminal Review (Year 5), for monitoring related M&E activities regarding GEF and/or LDCF/SCCF Core indicators and METT or other required Tracking Tools (US$ 10,000)						0	20,000		20,000	UNDP
Office Supplies	Activity 2.1.4: Budget for fuel wood plantation in target districts (Year 2) (US$ 5,000)		5,000				5,000			5,000	MoCC

Office Supplies	For various supplies needed in the capacity building activities					3,200	3,200			3,200	MoCC
Office Supplies	General office stationaries (Year 1-5) (US$ 1,000 per year)						0		5,000	5,000	MoCC
Other Operating Costs	Activity 1.5.1: Printing of project reports and promotional materials with assistance by the national consultant (Year 3) (US$ 4,000). Activity 1.5.2: Printing of project reports and promotional materials with assistance by the international consultant (Year 4) (US$ 4,000)	8,000					8,000			8,000	MoCC

Other Operating Costs	Activity 2.1.2: Printing of project reports and promotional materials with assistance by the international and national consultant (Year 1 & 2) (US$ 4,500)		4,500				4,500			4,500	MoCC
Other Operating Costs	Printing & production including print of awareness materials etc. for capacity building activities					22,369	22,369			22,369	MoCC
Other Operating Costs	Project audit Year 1 to 5 (US$ 4,820 per year)						0		24,100	24,100	UNDP
Grand Total		482,500	141,500	2,034,708	214,000	234,569	3,107,277	168,000	163,764	3,439,041	

* Remark: UNDP will provide full support services in the first year of implementation and may transition to full NIM in subsequent years subject to satisfactory outcome of 3rd party assessment demonstrating the IP/MOCC is ready to take the full accountability and responsibility under NIM.

ANNEX F: (For NGI only) Termsheet

Instructions. Please submit an finalized termsheet in this section. The NGI Program Call for Proposals provided a template in Annex A of the Call for Proposals that can be used by the Agency. Agencies can use their own termsheets but must add sections on Currency Risk, Co-financing Ratio and Financial Additionality as defined in the template provided in Annex A of the Call for proposals. Termsheets submitted at CEO endorsement stage should include final terms and conditions of the financing.

ANNEX G: (For NGI only) Reflows

Instructions. Please submit a reflows table as provided in Annex B of the NGI Program Call for Proposals and the Trustee excel sheet for reflows (as provided by the Secretariat or the Trustee) in the Document Section of the CEO endorsement. The Agencys is required to quantify any expected financial return/gains/interests earned on non-grant instruments that will be transferred to the GEF Trust Fund as noted in the Guidelines on the Project and Program Cycle Policy. Partner Agencies will be required to comply with the reflows procedures established in their respective Financial Procedures Agreement with the GEF Trustee. Agencies are welcomed to provide assumptions that explain expected financial reflow schedules.

ANNEX H: (For NGI only) Agency Capacity to generate reflows

Instructions. The GEF Agency submitting the CEO endorsement request is required to respond to any questions raised as part of the PIF review process that required clarifications on the Agency Capacity to manage reflows. This Annex seeks to demonstrate Agencies? capacity and eligibility to administer NGI resources as established in the Guidelines on the Project and Program Cycle Policy, GEF/C.52/Inf.06/Rev.01, June 9, 2017 (Annex 5).