PROGRESS REPORT REGARDING IMPLEMENTATION OF NATIONAL CLIMATE CHANGE POLICY (NCCP) AND ITS IMPLEMENTATION FRAMEWORK

(Source: Reuters)

Dr. Qamar uz Zaman Chaudhry, Climate Change Specialist

January 2021

United Nations Development Programme

Contents

1. Background

1.1. Introduction

The Pakistan's first National Climate Change Policy (NCCP) was approved by the federal cabinet in 2012, includes the persistent issues Pakistan faces and will continue to face in the future because of climate change. The major threats resulting from climate change in the country include extreme hydro-meteorological events such as floods and droughts, glacial recession, increased siltation of major dams, increased intrusion of saline water in the Indus Delta, rising sea level, migration, associated problems to agriculture and health. The devastating and now frequent effects of climate change are known to result in increased vulnerability and poverty and may be a major driver of conflict. The NCCP is guided by the overarching goal of mainstreaming climate change considerations across economic and social development priorities. Several objectives are laid out in support of this goal, on issues as diverse as inter--ministerial coordination, the development of institutional capacities, and access to climate finance.

The policy is divided into two broader themes, climate change adaptation and climate change mitigation. Within these themes, it also identifies several sectoral measures for the implementation of mitigation and adaptation actions, which are: i) energy, ii) water, iii) agriculture and livestock, iv) forestry and biodiversity v) disaster risk management vi) vulnerable ecosystems, vii) energy, viii) energy efficiency and conservation, ix) transport, x) urban planning, and xi) industries. The measures put forth in the NCCP provide a general framework for the development of specific Provincial Action Plans.

It is mentioned that in order to support the implementation of Action Plans and track progress, the NCCP required to establish an implementation committee at the federal and provincial level. The recent meeting of the Prime Minister's Committee on Climate Change was held in May 2019. Moreover, Provincial Committees are also recognized as key actors in the implementation of the climate change agenda introduce by the NCCP, which resonates with the enhanced roles of provinces on environment related issues following the 18th Amendment to the Constitution.

To ensure effective implementation of the Policy and subsequent Action Plans and to oversee progress in this regard, "Climate Change Policy Implementation Committees (NCCPIC)" was established at the federal and provincial levels. The details related to the Policy and its Implementation Framework (2014-2030) and NCCPIC is mentioned with main objective of the Policy as under:

1.2. Policy Goal

To ensure that climate change is mainstreamed in the economically and socially vulnerable sectors of the economy and to steer Pakistan towards climate resilient development provides a framework for addressing the issues that Pakistan faces or will face in future due to the changing climate. NCCP provides a framework for addressing the

issues that Pakistan faces or will face in future due to the changing climate.

1.3. Framework for implementation of National Climate Change Policy (2014-2030)

In 2013, the Climate Change Division developed the Framework for Implementation of Climate Change Policy1 (2014--2030) as a follow--up to the National Climate Change Policy, 2012, with the support from the United Nations Development Programme (UNDP). The Framework was developed as a catalyst for mainstreaming climate change concerns into decision making processes and developed a road map for implementation of objectives of NCCP by identifying activities, priorities and institutions. This document provides further directions to federal and provincial ministries, departments, and agencies to develop their implementation Action Plans.

The development of this Framework for Implementation of NCCP is a follow-up of the National Climate Change Policy (NCCP), providing broader framework concerning how to adapt to the changing impacts of climate and how to play a role in its mitigation. This Framework is developed keeping in view the current and future anticipated climate change threats to Pakistan's various sectors.

This framework builds on the NCCP by setting more concrete objectives and proposing strategic actions, which are classified as priority, short--term medium--term, or long--term actions, therefore the action plans are expected to define timelines with concrete actions with indicative resources from the private and public sector, international, bilateral and multilateral donors etc.

1.4. National Climate Change Policy Implementation Committee (NCCPIC)

In order to adopt a coherent strategy across all Provinces to deal with climate change threats, National Climate Change Policy Implementation Committee was constituted on 2nd April, 2014. NCCPIC is required to meet biannually. As of now, six meetings of NCCPIC have been convened.

1.5. Provincial Implementation Committees on Climate Change & Climate Change Units

Governments of Punjab, Sindh, AJK and Gilgit- Baltistan have notified Provincial Climate Change Implementation Committees in pursuance of the decision of first NCCPIC meeting and established Climate Change Units in Planning & Development Departments to deal with the climate change at provincial level.

[1] Government of Pakistan, Ministry of Climate Change. 2013. Chaudhry, QZ. et.al. Framework for Implementation of Climate Change Policy.

1.6. Formulation of Provincial Climate Change Polices & Action Plans

The Government of AJK has developed and approved its Climate Change Policy as well as Climate Change Action Plan covering some of the priority areas on afforestation, reforestation, biodiversity and hydropower. Whereas Government of Gilgit-Baltistan (GB) has formulated its Climate Change Strategy and Action Plan in pursuance of the decisions of National Climate Change Policy Implementation Committee (NCCPIC) to address climate change in GB.

KP also has an approved KP Climate Change Policy. Whereas, Governments of Sindh & Punjab after extensive consultations with stakeholders has developed draft Provincial Climate Change Polices and are in a process to finalize their draft polices and finally to get respective provincial cabinet's approval.

2. Major Climate Change Focused Initiatives / Projects Undertaken by the Ministry of Climate Change

Following are the major climate change focused initiatives / projects undertaken by the Ministry of Climate Change during the period 2014-2020 for implementation of NCCP. These projects are also identified in the Policy Implementation Framework 2014-2030, which includes priority, short term, medium term and long terms actions in various sectors of development.

2.1. Pakistan Climate Public Expenditure and Institutional Review (CPEIR) (2015 & 2017)

Ministry of Climate Change undertook a Climate Public Expenditure and Institutional Review (CPEIR)[2] to assess the level at which the GoP has so far been able to respond to the challenges of climate change, and to identify opportunities for further strengthening its response. The overall objective of this project was to carry out the (CPEIR) for Pakistan covering the Federal government and all the provinces including the regions of AJK, GB and FATA.

While a partial CPEIR – comprising of the Federal and KP governments was completed in May 2015 - LEAD Pakistan, in partnership with UNDP, was involved in coordinating the CPEIR 2016 which was expanded to include Balochistan, Sindh and Punjab in addition to updating the earlier CPEIRs of the Federal and KP governments.

The study aims at finding out climate change relevant spending in projects related to various provincial departments and federal ministries. The study looks into budget allocation of public funds assessing to what extent Pakistan is spending on projects and initiatives that directly or indirectly help tackle Climate Change. The study also looks into the relevant institutional set up and policy frameworks that guide these investments and recurrent expenses.

[2] UNDP Report 2017. Core Writing Team: Chaudhry QZ, Akhtar S, Shenaz L, Khalid Umer, Khan D, Masooma H: Pakistan- Climate Public Expenditures and Institutional Review (CPEIR).

This project had three key pillars: Policy Analysis, Institutional Analysis and Climate Public Expenditure Analysis. It also involved an analysis of the climate change policy framework and the monitoring framework of the three provinces of Punjab, Sindh and Balochistan.
An institutional analysis of the roles and responsibilities of the institutions and their capacities in formulating, implementing and coordinating climate responses were carried out. In addition, a review of the budgetary and planning process and its linkage to financing climate change policies and programmes (adaptation and mitigation) were also carried out. The total federal climate-related expenditure was estimated to be 8.5 percent of total national expenditures.

2.2. Climate Change Technology Needs Assessment (TNA). Supported by UNEP-DTU

The Technology Needs Assessment[3] (TNA) process identifies a country's development priorities[4]. These are derived from ongoing policies, programmes and projects, long-term vision documents as well as strategies for climate change mitigation and adaptation already in place. These development priorities are used along with climate mitigation and adaptation criteria for identifying highest priority (sub) sectors, and for prioritizing technologies for mitigation and adaptation within these (sub) sectors. Since 2001, more than 80 developing countries have conducted TNAs to address climate change. More recently, many countries have identified climate technology needs in their nationally determined contributions (NDCs). Developing countries receive support to conduct a TNA. With the support of Climate Technology Centre and Network (CTCN),

Pakistan's MoCC carried out Technology Needs Assessment (TNA) to produce implementable Technology Action Plans [5](TAP) in line with current best practices. Pakistan's Nationally Determined Contribution (NDC) which is rooted in Vision 2025 of Pakistan – a roadmap of economic growth, social inclusion and sustainable development. It is also aligned with the country's continued commitment to the issue of climate change as reflected in the National Climate Change Policy as well as national policies on agriculture, power, energy, energy efficiency, water and other sectors.

2.3. Clean Green Pakistan Movement. Prime Minister Launched in October 2018

The Prime Minister of Pakistan, Mr. Imran Khan, launched the Clean Green Pakistan Movement[6] (CGPM) on 13th October 2018. This national campaign underpins behavioral change and institutional strengthening while envisaging the need to address five components:

[3] Government of Pakistan, 2016. Chaudhry, QZ et.al: Technology Needs Assessment for Climate Change Adaptation. Available at: http://mocc.gov.pk/moclc/userfiles1/file/PAK%20TNA%20BAEF%20FINAL%20DEC%202016%20(29-3-17).pdf

[4] https://www.ctc-n.org/technologies/technology-needs-assessments#:~:text=The%20Technology%20Needs%20Assessment%20(TNA,and%20adaptation%20already%20in%20place.

[5] Government of Pakistan, 2017. Chaudhry QZ. et.al. Technology Needs Assessment for Climate Change Adaptation: TECHNOLOGY ACTION PLAN & PROJECT IDEAS. Available at: <http://mocc.gov.pk/moclc/userfiles1/file/PAK%20TNA%20BAEF%20FINAL%20DEC%202016%20(29-3-17).pdf>

[6] https://cleangreen.gov.pk/

plantation, solid waste management, liquid waste management/ hygiene, total sanitation, and safe drinking water. The CGPM has a specific focus on empowering the citizens to seek access to basic services but also making themselves equally accountable and responsible for Clean Green Pakistan. The Federal Government will make periodic reviews to appreciate the successes through different mechanisms like recognizing the best cities, universities, and institutions through giving awards and certificates for generating a healthy competition among the cities and citizens of Pakistan. The annual budget for the first year 2018-19 was PRS 802.69 million according to the PSDP Report.

2.4. Sustainable Forest Management (SFM). UNDP and MoCC. Started Jan 2016-Ending Dec 2021. Cost: USD 7,850,004

Objectives: To promote sustainable forest management in Pakistan's west Himalayan coniferous forests, scrub forests and riverine forests for biodiversity conservation, mitigation of climate change, and securing forest ecosystem services.

Sustainable forest management[7] is a means of protecting forests whilst offering direct benefits to people and the environment. It contributes to local livelihoods and offers environmental benefits such as carbon sequestration and conserving water, soil and biodiversity.

Less than 5 percent of Pakistan's total area is under forest cover, and 1.5 percent of these forests are lost every year. This has profound impacts on Pakistan's biodiversity, environment and agriculture. With climate change, such events are becoming more frequent and more devastating, pointing to the urgent need to conserve Pakistan's indigenous forests.

Poverty, weak controls and lack of awareness contribute to over-exploitation. Bringing communities into forest management and thereby helping them achieve sustainable livelihoods, can thus conserve forestland across Pakistan.

This project focuses on seven forest landscapes (145,300 hectares) containing three vulnerable and important forest types: temperate coniferous forests in Khyber Pakhtunkhwa, dry scrub forests in Punjab, and riverine forests in Punjab and Sindh.

2.5. Development of National Climate Change Gender Action Plan (ccGAP).GCF Readiness Support. US$ 526,971 Approval: Oct 2019

Pakistan ranks among the most vulnerable countries to the widespread and cross-sectoral impacts of climate change. The Global Climate Risk Index 2016 emphasizes that Pakistan is among those experiencing extreme weather events continuously and year after year; in 2014, for example, monsoons following periods of low rainfall affected 2.5 million people, destroying 130,000 homes and over 1 million acres of cropland.

At the same time, despite considerable gains in human development, gender inequality limits widespread social, political and economic security and well-being; according to the World

[7] https://www.pk.undp.org/content/pakistan/en/home/projects/sustainable-forest-management.html

Economic Forum's Global Gender Gap Report 2015, for example, Pakistan ranks 144 out of 145 countries worldwide. Pakistan recognizes that climate change affects women and men differently and that women and men have distinct capabilities as agents for change toward effective adaptation and mitigation. Narrowing the gender gaps will be essential to building climate preparedness and resilience for all.

To that end, the Ministry of Climate Change requests to partner with the International Union for Conservation of Nature and Natural Resources (IUCN) to develop a **national climate change gender action plan (ccGAP)**[8] to ensure national action across priority sectors is gender-responsive, complementing and enhancing its Readiness work. Through a multi-stakeholder, cross-sectoral, participatory approach, Pakistan's ccGAP process will build institutional and stakeholder capacity on gender and environment linkages; synergize national commitments already made both to gender and to climate action; and develop innovative projects for implementation that empower women and men alike as agents for change, including them in the project pipeline. A multi-part outcome, which includes integrating gender considerations in governance structures as well as preparation toward project proposals, the ccGAP process and the action plan itself will strengthen Pakistan's readiness for climate action and resilience.

The project will be focused on the capacity building of NDA and key stakeholders in the process of developing the ccGAP document. On-job training, workshop sessions, joint tools development and working together will support capacity building. The specific beneficiaries include: The government of Pakistan, specifically the NDA (Ministry of Climate Change) itself; its partner Ministries, agencies and organizations; the Ministry of Social Welfare; the Parliamentary caucus; National Disaster Management Authority (NDMA), National Rural Support Programme (NRSP), civil society members of Pakistan National Committee (PNC) of IUCN, Women organizations and networks, institutional gender focal points, National, subnational and international organizations working on climate change and their beneficiaries

2.6. Pakistan's Second National Communication (SNC)[9] on Climate Change to UNFCCC.

Pakistan ratified the United Nations Framework Convention on Climate Change (UNFCCC) in June 1994 and was among the first South Asian countries which realized the need to control the anthropogenic contribution to global climate change and need to respond effectively to its adverse impact. Under Article 4(1) of the UNFCCC, each party is required to submit, periodic, 'National Communications reporting inter alia an inventory of Greenhouse Gas (GHG) emissions by sources and removals by sinks, a general description of measures taken or envisaged to implement the Convention, and any other information considered relevant to achieving its objectives'. Pakistan submitted its Initial National Communication (INC) in 2003.

The Paris Climate Agreement in 2015 is seen as a landmark development, which has been a strategic milestone to develop a unanimous agreement worldwide to address the challenge of climate change. The Agreement has been instrumental in galvanizing actions to

[8] https://www.greenclimate.fund/sites/default/files/document/readiness-proposals-pakistan-iucn-strategic-frameworks.pdf

[9] Government of Pakistan. MoCC Pakistan Second National Communication on Climate Change to UNFCCC.

address the issue of climate change. After the Agreement, all the countries have submitted plans to implement their Nationally Determined Contributions (NDCs) to cut CO2 emissions. Currently, 197 parties to the Convention have submitted their NDCs and 150 have ratified the Agreement.

Pakistan's Second National Communication (SNC) on Climate Change has been prepared after rigorous research and analytical work and presents the case of Pakistan's unique vulnerabilities. SNC encompasses the challenges associated with integrating these concerns with policies and further translation into actions while touching finance, technology, capacity and awareness raising on climate change.

The process adopted for the preparation of SNC relies on the existing research and analytical competence of nodal national institutions dealing with the various thematic areas of the national communication. Institutional coordination and flow of information have been strengthened to make the reporting process more consistent and coherent. The Ministry of Climate Change has put an effective institutional structure in place to ensure the continuity of the national reporting process under the UN Framework Convention on Climate Change.

2.7. Brick Entrepreneurs in Pakistan's Learning to C.onstruct and Operate Zig-zag Brick Kilns. Supported by ICMOD, UNEP & DFID. 2018.

The Ministry of Climate Change with the support of International Centre for Integrated Mountain Development (ICIMOD)[10], the Climate and Clean Air Coalition (CCAC) of the United Nations Environment Programme (UNEP), and the Department for International Development (DFID) Nepal were working to scale up the adoption of zig-zag kiln technology and good brick production practices from Nepal to Pakistan which can yield up to 40% energy savings and up to 70% emission reduction.

During September 2018, 1500 brick kiln owners from 36 districts in Pakistan participated in five on-site training events held in Lahore, Multan, Islamabad, Faisalabad, and Gujranwala in Pakistan. ICIMOD organized these events in partnership with the National Energy and Efficiency Conservation Authority (NECCA), Ministry of Energy-Power Division, the Ministry of Climate Change (MOCC), and the Brick Owners Association of Pakistan (BKOAP) as well as technical partners from Nepal. The trainings were designed to stimulate demand for the technology and to facilitate brick entrepreneurs' understanding of the improved technology through a combination of classroom and practical on-site sessions at the kilns. Focused sessions oriented 50 engineers at the Pakistan Engineering Council on proper construction of zig-zag brick kilns; 10 of the engineers were women.

The events created awareness and trained brick entrepreneurs and workers in operating zig-zag kilns and precise brick stacking practices, and enhanced the capacities of entrepreneurs, workers, and engineers on cleaner brick firing practices and the construction of improved brick kilns. They also served as a platform to discuss country-specific issues and challenges and learn from the experiences of early adopters of these technologies in Pakistan.

[10] https://www.icimod.org/brick-entrepreneurs-in-pakistan-learn-to-construct-and-operate-zig-zag-brick-kilns/

Through this, an estimated 2,500 kiln entrepreneurs and stakeholders will be trained in zig-zag brick kiln construction, and obtain practical knowledge about good practices related to the brick production process in 10 cities, including improved design of fixed chimney bull trench kilns, especially designed for brick kilns in Pakistan. The effort is expected to encourage brick kiln owners to switch to improved brick kilns. Focused knowledge about proper construction technologies such as cleaner brick kilns using zig-zag technology can positively impact brick enterprises and the environment.

The "Training on Construction and Operation of Zig-Zag Brick Kilns" is a part of a wider skills transfer effort in Pakistan. There are around 20,000 brick kilns in Pakistan, of which just 18 are currently using clean technologies. It is hoped that at least 40 % of existing kilns in Pakistan will take up zig-zag or other clean technologies in the future.

2.8. Finalization and Submission of Pakistan's Nationally Determined Contributions (NDC)

The Paris Climate Agreement-2015 is globally seen as a landmark development, whose central aim is to strengthen the global response to the threat of climate change by limiting the global temperature rise this century well below 2 degrees Celsius by reducing carbon emissions. After the Agreement, all the countries have submitted plans to implement their Nationally Determined Contributions (NDCs) to cut CO2 emissions.

MoCC has submitted Pakistan's NDCs with mitigation and adaptation challenges that it faces and proposes actions that can assist in addressing these challenges through both domestic and international support.

Because at a time when global future emissions are set to grow rapidly, Pakistan has a huge potential for mitigation in almost all sectors of the economy. Based on economic analysis, a reduction of up to 20% in the projected emission figures for 2030 would require an investment of approximately USD 40 billion, calculated at current prices. Similarly, a reduction of 15 % in GHG emissions amounts to USD 15.6 billion whereas a 10 % reduction is calculated as USD 5.5 billion. It must be underscored that under the Common but Differentiated Responsibilities (CBDR) principle of the Paris Agreement, the indicated mitigation potential of Pakistan can only be realized through international support in the form of financial grants, technical assistance, technology transfer and capacity building.

2.9. Pakistan NDC-Partnership Technical Assistance. MoCC Initiative 2017.

The Islamic Republic of Pakistan's goal is to reduce greenhouse gas (GHG) emissions by 20 percent below its projected 2030 emissions under a business-as-usual (BAU) scenario. The country's NDC provided estimates for financing both mitigation and adaptation efforts to achieve this goal[11].

[11] https://ndcpartnership.org/sites/all/themes/ndcp_v2/docs/country-

Pakistan acknowledges adaptation as a priority given its high vulnerability to the effects of climate change and its acknowledgment that adaptation will be inevitable. The most critical sector within adaptation is agriculture—the country's main livelihood source. This consideration is being incorporated into the National Adaptation Plan (NAP) as well as sectoral and sub-national plans. Specific features of the adaptation roadmap include:

- Near-term vision (2020-2025): Developing a National Adaptation Plan (NAP); strengthening sub-national adaptation planning capacity; and enhancing disaster risk management capacity.

- Up to 2030 vision: Addressing the vulnerabilities within water, agriculture, and infrastructure sectors by improving irrigation; enhancing water resource management; improving emergency response mechanisms; implementing climate smart agriculture (CSA) programs; building climate-resilient infrastructure; and strengthening risk management systems.

- Long-term vision: Building a resilient society and economy so that climate change is mainstreamed into the economy.

- Support: Developing professionals in the field of climate change through education and training; and providing financial support with some support needed from the international community.

For mitigation, Pakistan is considering several options, categorized by priority level, that work across the energy and agriculture sectors:

- High Priority: Increase grid efficiency; improve coal efficiency; establish a large scale and distributed grid connected to solar, wind, and hydroelectricity; increase efficiency in irrigation motors and pumps; replace bulbs with light emitting diode (LED) light bulbs; scale up use of efficient electronics (stoves, water heaters); replace boilers and furnaces; improve irrigation and water management (general and in rice cultivation); agroforestry practices; and better use and management of manure.

- Medium Priority: Scale up the use of efficient technologies (space heaters, refrigerators, air conditioners); produce sustainable fertilizers; reduce methane production; and promote no-till farming.

- Low Priority: Carbon sequestration; improve roof insulation; adopt more productive breeds of cattle; implement ideal cropping patterns; and introduce genetically modified crops that are more carbon responsive.

The energy sector is the largest contributor to emissions in Pakistan, contributing 46 percent of total emissions, followed by agriculture (43 percent) and industrial processes (five percent), with expected growth in both energy and industrial processes. To better identify priority areas for the country's mitigation and adaptation efforts, Pakistan acknowledges the need to assess capacity building in three key sectors through the following activities:

- **Energy /** raise awareness, build technical expertise, and foster public sector capacity on energy efficiency;

- **Transport /** incentivize the use of efficient vehicles, modernize rail services, upgrade public transport systems, and build public sector monitoring and evaluation capacity; and

- **Agriculture /** pursue climate smart agriculture (CSA) and strengthen risk management systems.

The objectives of the NDC Partnership's technical assistance are:

- Embedding, integrating climate and development for greater coherence, heightened NDC ambition
- Achieving greater impact through better alignment and harmonization internally and externally
- Leapfrogging – leveraging in-country and global experience to achieve rapid results.

Unpacking Pakistan-NDCs:

- The output would be NDC roadmap envisages a cohesive framework for climate action in Pakistan
- Encourages greater coherence among different actors by mapping existing and planned interventions in support of climate resilient, low-carbon development
- Aligns climate action with national development priorities
- Consolidates, uses existing information to determine pathways that lead to rapid results
- Facilitates reporting on climate action by strengthening the emissions reporting process

2.10. MoCC Revising Pakistan's Nationally Determined Contributions (NDCs) under Paris Agreement for reducing GHG Emissions by 20%. June 2020.

Ministry of Climate Change (MoCC) being the National Responsible Government Agency has just started the work on the revision of Nationally Determined Contributions (NDCs)[12] and Global Climate Impact Study Centre (GCISC) was directed to provide technical inputs and liaise with National and Provincial Government Departments and Development partners in this regard.

According to Economic Survey 2019-20, Pakistan submitted its first NDC in November 2016, which commits to reduce up to 20 per cent of its 2030 projected GHG emissions, subject to the availability of international support.

Under the Paris Agreement, countries need to revise their NDCs every five years to cut greenhouse gas emissions (GHG) emissions to limit Earth's temperature rise and implement solutions to adapt to the effects of climate change. The updating of NDCs presents countries

[12] https://www.app.com.pk/national/mocc-to-revise-ndcs-under-paris-agreement-for-reducing-ghg-emissions-by-20-percent/

with significant opportunities to align their climate and development agendas to promote sustainable growth, but also presents challenges in reinventing policies and operations and mobilizing enough investment.

2.11. Transforming the Indus Basin with Climate Resilient Agriculture and Water Management. GCF Funded. NDA MoCC. Implementing Agency FAO. Project Cost-USD 47.7 million. Started March 2020 March-Completion March 2026.

Brief: Transforming agriculture in the Indus Basin by increasing resilience among the most vulnerable farmers and strengthening government capacity to support communities to adapt[13.]

Pakistan's vulnerability is linked to its arid to semi-arid climate, as well as its high dependency on a single river system along with snow and glacial meltwater to provide its agricultural water supply.

This project will develop the country's capacity to use the information it needs to adapt to the impacts of climate change on agriculture and water management by putting in place state-of-the art technology. It will build farmers' climate resilience through skills, knowledge and technology enhancement activities. It will also create a wider enabling environment for continuous adaptation. This project has an estimated lifespan of 20 years.

Project Summary: Food and Agriculture Organization of the United Nations (FAO)[14] has been tasked by the government of Pakistan to prepare a project proposal to tackle impact of climate change in Agriculture sector. This project is designed to increase the resilience to climate change of agricultural producers in Pakistan's Indus River Basin.

FAO experts in collaboration with national and other international experts and institutions started work to identify the impact of climate change on agriculture sector in the country in July 2017. Changes in water availability to agriculture sector were identified as the major climate impact on agriculture sector especially in the wake of temperature increase. FAO Representative, highlights "Agriculture consumes roughly 90 percent of all available fresh water supplies. Agriculture employs more than 40 percent of the labor force. It produces more than 90 percent of the country's food supply and it generates 75 percent of the country's export revenues. The agricultural sector is the second largest contributor to the national Gross Domestic Product (19.5%). In the context of changing climate, the nexus between water and agriculture is hugely important for Pakistan as a country".

FAO has engaged in a series of discussions with different stakeholders at federal, provincial and local level, including the Government of Pakistan to finalize a project that will help small farmers in selected districts of Indus basin to build their resilience and adapt to

[13] https://www.greenclimate.fund/project/fp108#overview

[14] http://www.fao.org/pakistan/news/detail-events/en/c/1126905/

climate change. The climate impact on agriculture sector was also analyzed and discussed with a wide range of stakeholders including communities, provincial governments, federal government, academia, civil society organizations and other international organizations.

The project is in final design stage. This project will directly benefit an estimated 1.5 million rural people and set-in place conditions could provide benefits for across the entire Indus Basin in Pakistan, an area with more than 90 million rural people that is the world's largest contiguous irrigation system, covers 18 million hectares, and provides 90% of the country's food supply. Service Chief for the FAO Investment center and Technical Team Leader explains "The project will achieve this by putting state of the art in the hands of Pakistan's top-level institutions responsible for monitoring weather and climate change, which will be brought together to pool data, information and knowledge resources. The project will institutionalize routine processes to analyze and communicate the knowledge acquired through the use of technology to authorities responsible for agriculture and water management. It will give to about 200,000 rural households in eight of the most vulnerable districts of the Indus River Basin provinces of Punjab and Sindh field level on-farm training in how to adapt their agricultural practices to the knowledge that they will receive about changing climate. The project will make the knowledge conveyed through training available to an additional 2.5 million rural households through information and communications technology application specifically designed".

The proposal is spearheaded by the Ministry of Climate Change, with strong engagement from the Ministry of National Food Security and Research and Ministry of Water at federal level, and the Secretaries of the Agriculture and Irrigation departments at provincial level. Three workshops were held to validate the contents of the proposal in Karachi, Lahore and Islamabad this month. The project proposal will be submitted to Green Climate Fund for financing. The Green Climate Fund (GCF) is a unique global initiative to respond to climate change by investing into low emission and climate-resilient development. GCF was established by 194 governments to limit or reduce greenhouse gas emissions in developing countries and to help adapt vulnerable societies to the impacts of climate change. The formulation team, led by TCIB and FAO Representative, includes officers from FAO HQ, RAP, FAO Pakistan Office and national consultants.

2.12. Adaptation Planning support for Pakistan through UNEP. MoCC Initiative. GCF Funded. Cost: USD 2,969,674. Started 2020 Duration 36 months.

Project Summary: Pakistan's high vulnerability to climate change stems from its dependency on climate sensitive sectors such as agriculture, water, natural resources and the environment, and socio-economic issues such as poverty[15]. Adaptation is therefore considered as a high priority for the country, as seen in the National Climate Change Policy (2012) and its Framework for Implementation (2013) and the recently enacted Climate Change Act (2017). In order to strengthen and articulate this commitment from policy to action, the country requires support to align and coordinate its adaptation efforts in a coherent manner, through the process to formulate and implement National Adaptation Plan with the objectives to:

[15] https://www.greenclimate.fund/document/adaptation-planning-support-pakistan-through-unep

a. Reducing the vulnerability to the impacts of climate change, by building adaptive capacity and resilience; and

b. Facilitating the integration of climate change adaptation, in a coherent manner, into relevant new and existing policies, programmes and activities, in particular development planning processes and strategies, within all relevant sectors and at different levels.

The reduction of vulnerability will be achieved through implementation of adaptation actions that are packaged into programmes and projects including facilitating the integration of climate change adaptation into existing strategies, policies, legal frameworks, and programmes. The current readiness and preparatory support proposal aim to achieve the objectives through:

a. The development and enhancement of the 'country's capacity' to coordinate and promote climate change adaptation (CCA) at systemic, institutional and individual levels; and help poor and climate vulnerable communities in adapting to and building resilience to adverse impacts of climate change;

b. The integration of CCA into existing and new policies, strategies, legal frameworks (legislation and regulations) and programmes;

c. The establishment and/or strengthening of a system to generate and share knowledge, experience, lessons learned, gaps and needs at international (NAP Expo, side-events during COPs sessions and SBs meetings), national and sub-national levels to advance CCA for the benefit of the poor people and the most vulnerable and ecosystem restoration as well as policy-makers at national and sub-national levels; and

d. The development of a strategy to implement, monitor and communicate adaptation benefits at different levels and scale up government efforts in adaptation efforts, and process of regularly updating National Adaptation Plan (NAP).

Consistent with the country's gender action plan and its commitment to the achievement of gender equality under the Agenda 2030 on Sustainable Development Goals, this support proposal will ensure the incorporation of gender perspectives in its various outputs and activities by giving emphasis to gender-responsive concerns through balanced participation of both men and women including the youth, elderly and marginalized group in the conduct of the training and awareness raising, consultations and fora as well as in conducting activities pertaining to vulnerability and risk assessments as well as selection and prioritization of adaptation interventions.

2.13. Collaboration with Collaborative Instruments for Ambitious Climate Action (CI-ACA)

This CIACA initiative assists country parties in the development of carbon pricing instruments for implementing their Nationally Determined Contributions (NDC) under the Paris Agreement and foster cooperative climate action with other jurisdictions. It builds on existing

NDC support projects, promotes awareness of carbon pricing and explore possibilities of joining carbon markets. CiACA projects are implemented with the assistance of the Regional Collaboration Centres. As such with the support of Regional Collaboration Centre (RCC) Bangkok, a study has been launched to explore the possibility of carbon pricing.

The objective of this study is to support in considering and drafting a proposed instrument (or set of tools) that provide a price signal on carbon emissions - in order to contribute to the achievement of the NDC of the country at the domestic level, considering the national context and priorities.

2.14. Revision of PC-I Form to Incorporate Climate Change Concerns

Revision of PC-I Form is underway to incorporate climate change concerns of projects. Planning & Development Division Islamabad in 2019 agreed in principal that all PC-I submitted for approval must incorporate the climate change concerns in the project document. However, formal amendment in the PC-I in this regard is still awaited.

2.15. Climate Resilient Urban Human Settlements Unit. July 2019-June 2024

To strengthen the city governments' capacity in engaging the line departments and agencies and also the non-state actors to effectively meet the urban development challenges throughout Pakistan, as per the international obligations of Federal Government to meet the UNEP; UNFCCC & UN-Habitat targets under Rio+20 Declaration; New Urban Agenda; and SDGs.

To plan and implement the harmonized Action Plans for developing "Climate Resilient Safe & Sustainable Cities", in collaboration with the Pakistan Urban Planning & Policy Centre[16] at Ministry of PD&R (Planning, Development& Reforms); along with the UN-Habitat (Pakistan); all Provincial Urban Units; and the Line Departments of P&D; Local Governments; Housing & Urban Development of the Governments of Gilgit & Baltistan and the AJK.

To facilitate Provincial Urban Units in launching community-motivated urbanization initiatives and in implementing urban projects; to facilitate their access to external funding with development partners and set aside international funds for adopting actions in developing Climate Resilient Cities, like the Adaptation Fund; Global Environment Facility and Green Climate Fund in addition to the increased Government's budgetary allocation.

2.16. Establishment of Pakistan WASH Strategic Planning & Coordination Facilitating Achievements of SDG 6.1 & 6.2. Period: July 2019-March 2023. Cost PKR 41.135 million

The UN Member States have principally agreed on the Post 2015 development agenda called the Sustainable Development Goals (SDGs). SDG 6.1 and 6.2 are directly related to WASH

[16] http://www.mocc.gov.pk/Projects

sector (water and sanitation)[17] which are required to be met within stipulated time-frame as per laid down targets.

Through a recently approved and notified decision of Federal Cabinet, Ministry of Climate Change has been accorded mandate of WASH sector coordination at the federal level alongside with the responsibility of reporting progress and sustaining stakeholder dialogue including all federating units as well as international development partners. Although erstwhile Ministry of Environment was directly involved in development to national policies in the areas of sanitation, drinking water and PATS, this role had ceased to exist after introduction of eighteenth amendment to constitution and subsequent decentralization. Through a recent decision of federal cabinet, Ministry of Climate Change has been re-assigned this central role for WASH sector strategic planning, reporting and coordination at the federal level, necessitating establishment of a strategic planning and coordination unit.

The present project aims to support establishment of such a unit at the federal level in Ministry of Climate Change. Once established, this Unit is expected to receive technical and material support from international development partners including Unicef and The World Bank. Establishment of this Unit will facilitate and fats-track progress towards achievement of SDG 6.1 and 6.2 for following specific outputs:

- Putting in place an effective coordination mechanism at national level involving all federating units and relevant development partners for developing harmonization, integration and synergies among key WASH stakeholders on WASH sector reforms;

- Promoting knowledge management, donor support, M&E, and periodic reporting mechanisms for SDGs 6.1 and 6.2 through close liaison with all federating units;

- Nurturing cross-sectoral linkages with other sectors (academia, private sector, CSOs working on themes of health, education, nutrition, DRM etc.) for putting in place a holistic approach for deepening and sustaining WASH sector reforms.

Under the project, in-house capacity of Ministry of Climate Change will be augmented to enable it perform its mandate in line with Federal Government's international commitments (including HLM, SACOSAN, SDGs attainment) in a technically sound manner, underscored by political consensus building and stakeholder collaboration. The Unit will also re-position Ministry of Climate Change to fully benefit from emerging national, regional and international deliberations and opportunities for augmenting and complimenting efforts of federating units for a robust institutional response to key WASH sector challenges in Pakistan. Last but not the least, the Unit will also serve as federal level nerve centre and jointly owned institutional platform for ensuring smooth collaboration and sustaining meaningful dialogue involving federal/provincial governments, civil society, private sector, academia and international development partners having stakes in WASH sector reforms in Pakistan.

[17] https://www.pc.gov.pk/uploads/annual2017/Ch22-EnvironmentClimateChange.pdf

2.17. Establishment of Climate Change Reporting Unit in Ministry of Climate Change. July 2019-June 2022. Cost PKR 44.346 million.

Major objective of this project is to "enhance institutional capacity of the Ministry of Climate Change, through developing a Climate Change Reporting Unit". This would enable the Federal Government/ Ministry of Climate Change (MoCC) on reporting with regards to Climate Change (and other allied subjects), as obligatory under international commitments, particularly the United Nations Framework Convention on Climate Change.

2.18. Ten-Billion Tree Tsunami Project.

The Billion Tree Tsunami was launched in 2014, by the government of Khyber Pakhtunkhwa (KPK), Pakistan, as a response to the challenge of global warming. Pakistan's Billion Tree Tsunami restores 350,000 hectares of forests and degraded land to surpass its Bonn Challenge commitment. The project aimed at improving the ecosystems of classified forests, as well as privately owned waste and farm lands, and therefore entails working in close collaboration with concerned communities and stakeholders to ensure their meaningful participation through effectuating project promotion and extension services. The projected was completed in August 2017, ahead of schedule.

The Billion Tree Tsunami Project is driven by the Government of Khyber Pakhtunkhwa's vision of green growth which ties in the needs for sustainable forestry development, generating green jobs, gender empowerment, preserving Pakistan's natural capital while also addressing the global issue of climate change.

On 3 September 2018, after becoming Prime Minister of Pakistan following the 2018 Pakistani general election, Imran Khan launched a 5-year, country-wide 10 billion tree plantation drive from Makhniyal, KPK to combat the effects of global warming. Actually, the whole concept of this initiative is the brainchild of Malik Amin Aslam, PM's Advisor on Climate Change.

Project Summary: The Programme 'Ten Billion Tree Tsunami Programme[18], Phase-I" Up-scaling of Green Pakistan Programme revised), (Revival of Forestry and Wildlife Resources in Pakistan) (Green Pakistan Programme) is being implemented in all provinces including GB, FATA and AJK through Ministry of Climate Change and Provincial/territorial Forest and Wildlife departments with a total cost of (3.652+1.065+0.087:4.804 Billion Rupees). Taking into consideration the state of depleted forest areas, the meager position of funding in forest and wildlife sector, the time required to complete and rehabilitate the plant able blank forest areas, to boost the present canopy cover and to enhance the biomass production through afforestation, extension activities and revival of wildlife resources, The Prime Minister of Pakistan inaugurated the Ten Billion Trees Tsunami Programme on 2nd September, 2018 during "Plant for Pakistan Day" event. Subsequently, the Federal Forestry Board was reactivated and its meeting was convened on 3rd October 2018 under the Chairmanship of Federal Advisor on Climate Change wherein discussions were held about developing implementation modalities for the Ten Billion Trees Tsunami Programme and it was decided to continue with the existing implementation framework of Green Pakistan.

[18] http://www.mocc.gov.pk/ProjectDetail/M2QzOWJmMjUtZTU3MC00NmFkLWE4YmMtZDFhMmRlOGU2NGRh

Programme as it has a strong provincial ownership through 50 % cost sharing. The Umbrella PC-I of the Green Pakistan Programme-Revival, of Forestry Resources in Pakistan has been approved by ECNEC on 25-01-2017 and now is being implemented across Pakistan. the PC-I of approved Green Pakistan Programme will be modified and up scaled by changing its title and scope and submitted to relevant forums for approval with the revised title and scope' The Programme is also in line with the International 2030 in Development Agenda known as Sustainable Development Goals (SDGs) with the specific targets 15.1 "ensure the conservation, restoration and sustainable use of terrestrial and inland freshwater ecosystems and their services, in particular forests, wetlands, mountains and dry lands, in line with obligations under international agreements. Target 15.2 "promote the implementation of sustainable management of all types of forests, halt deforestation, restore degraded forests and substantially increase afforestation and reforestation. Target 15.5 "Take urgent and significant action to reduce the degradation of natural habitats, halt the loss of biodiversity and protect and prevent the extinction of threatened species. Target 15.7 "Take urgent action to end poaching and trafficking of protected species of flora and fauna and address both demand and supply of illegal wildlife products. “The Federal Government would make an allocation of Rs. 71.29 billion on cost sharing basis for four years (2019-2023) to revive the forestry and an allocation of Rs. 10.54386 billion for wildlife resources of Pakistan. In view of the importance of this initiative, the programme warrants to be included in the 12th Five Year Plan.

Ten Billion Trees Tsunami Programme - Phase-I Up-scaling of Green Pakistan Programme (Revised) ECNEC 29.08.2019 PKR 125184.300

2.19. Scaling-up of Glacial Lake Outburst Flood (GLOF) risk reduction in Northern Pakistan[19]. March 2017- Dec 2021. Green Climate Fund Contributed US$ 20,829 million.

Due to rising temperatures, glaciers in Pakistan’s northern mountain ranges (the Hindu Kush, Himalayas and Karakorum) are melting rapidly and a total of 3,044 glacial lakes have developed in Gilgit-Baltistan (GB) and Khyber Pakhtunkhwa (KP). Of these, 33 glacial lakes have been assessed to be prone to hazardous glacial lake outburst flooding (GLOF). GLOF are sudden events which can release millions of cubic metres of water and debris, leading to the loss of lives, property and livelihoods amongst remote and impoverished mountain communities. Over 7.1 million people in GB and KP are vulnerable; in these areas, 26.7 percent and 22 percent of the population, respectively, are below the poverty line.

The Scaling-up of GLOF risk reduction in Northern Pakistan (GLOF-II) project is a continuation of the four-year ‘Reducing Risks and Vulnerabilities from GLOF in Northern Pakistan’ (GLOF-I) project. GLOF-I helped vulnerable communities prepare for and mitigate GLOF risks through early warning systems, enhanced infrastructure and community-based disaster risk management.

[19] UNDP. https://www.pk.undp.org/content/pakistan/en/home/projects/Glof-II.html

Objectives: GLOF-II builds on the measures piloted by GLOF-I and aims to empower communities to identify and manage risks associated with GLOFs and related impacts of climate change, strengthen public services to lower the risk of disasters related to GLOF, and improve community preparedness and disaster response. The project will also support the development of sustainable options for livelihoods in project areas, with a particular focus on the participation of women in ensuring food security and livelihoods.

Expected results: GLOF-II will scale up GLOF-I from its original two districts (one each in KP and GB) to cover 10 districts, benefiting 29 million people or 15 percent of the population of Pakistan. Expected results by the end of the project are:

- At least two policies reviewed and/or revised to address or incorporate GLOF risk reduction.
- In target communities, 95 percent of households able to receive and respond to early warnings and take the appropriate action.
- At least 250 small-scale engineering structures established to reduce the effects of GLOF events on livelihoods, such as tree plantation, controlled drainage and mini dams.
- Fifty weather monitoring stations to collect meteorological data in catchment areas; 408 river discharge sensors to collect river flood data. This data will inform hydrological modelling and help develop village hazard watch groups.
- To improve food security and reduce flood risks due to deforestation and inefficient water use, 65,000 women will be trained in home gardening, 240 water-efficient farming technologies will be installed and 35,000 hectares of land will be reforested

2.20. Sustainable Forest Management to Secure Multiple Benefits in Pakistan's High Conservation Areas. MOCC UNDP Supported. Jan 2016-Dec 2021. Cost US$ 7.850 million.

Objectives: To promote sustainable forest management in Pakistan's west Himalayan coniferous forests, scrub forests and riverine forests for biodiversity conservation, mitigation of climate change, and securing forest ecosystem services.

Project Summary: Sustainable forest management[20] is a means of protecting forests whilst offering direct benefits to people and the environment. It contributes to local livelihoods and offers environmental benefits such as carbon sequestration and conserving water, soil and biodiversity.

Less than 5 percent of Pakistan's total area is under forest cover, and 1.5 percent of these forests are lost every year. This has profound impacts on Pakistan's biodiversity, environment and agriculture. With climate change, such events are becoming more frequent and more devastating, pointing to the urgent need to conserve Pakistan's indigenous forests.

Poverty, weak controls and lack of awareness contribute to over-exploitation. Bringing communities into forest management and thereby helping them achieve sustainable livelihoods, can thus conserve forestland across Pakistan.

[20] https://www.pk.undp.org/content/pakistan/en/home/projects/sustainable-forest-management.html

This project focuses on seven forest landscapes (145,300 hectares) containing three vulnerable and important forest types: temperate coniferous forests in Khyber Pakhtunkhwa, dry scrub forests in Punjab, and riverine forests in Punjab and Sindh.

2.21. Snow Leopard and Ecosystem Protection Programme[21]. MOCC UNDP Supported. April-2016-Dec 2018. Cost. US$ 245,941

Objectives. The overall aim of the project is to promote a landscape approach for the survival of snow leopard and its prey species in Northern Pakistan by reducing threats and applying sustainable land and forest management in critical habitats. This will be through the four inter-related components of the project:

- Landscape level approach for snow leopard conservation
- Protected Area expansion and strengthening
- Participatory conservation in snow leopard model landscapes through sustainable community development
- Support for international cooperation and conservation and management actions informed by knowledge, awareness and monitoring and evaluation

These actions are aimed at conserving the snow leopards, wild prey and associated species and habitats contained within these landscapes through measures such as maintaining their ecosystem values and ameliorating climate change impacts, enhancing surveillance, monitoring and inter-provincial and trans-boundary cooperation to reduce wildlife crime and related threats, and improving knowledge and communication.

Project Summary: The high range Himalayan ecosystem in Pakistan is of critical importance for the biodiversity and ecosystems and forms an important life-support system for a large number of remote agro-pastoral and other communities that depend on it. It provides a number of essential ecosystem services – a source of fresh water, maintains hydrological functions, reduces erosion and sedimentation downstream, provides food security and maintains land races of food crops grown in much of Northern Pakistan. Hundreds of millions of people depend on these ecosystems for water for hydro power and agriculture, forage for livestock and food for themselves, mineral resources, medicinal and aromatic plants and their products. This region also provides a habitat for the globally endangered snow leopard (Panthera uncia) range that extends from the mountains of Central and Southern Asia across twelve range countries. Despite the immense biological, social-cultural and hydrological values of the Himalayan ecosystems, these natural ecosystems are under severe threat from high dependence of local communities on natural resources, pressures from economic development, selective removal of medicinal and aromatic plants, and the emerging threat of illegal wildlife

[21] https://www.pk.undp.org/content/pakistan/en/home/projects/Snow-Leopard-Ecosystem-Protection.html

trade and wildlife crime. To address these threats, the project is adopting a landscape approach to conservation and management by ensuring the key biodiversity areas, buffer zones, corridors and the region outside traditional protected areas that are critically important for conservation of endangered snow leopard and associated species and habitats. The project will support management of these key biodiversity areas in tandem with the sustainable use of resources and improvements in livelihoods of local communities living in the region.

2.22. Strengthening Community managed Protected Areas for Conserving Biodiversity and Improving Local Livelihoods in Pakistan (CMPA). GEF Trust Fund. Implementing Agency UNDP. Total Cost: USD 14,098,356.00 Approval-2020.

Project Summary: To strengthen Community-Managed Protected Areas (CMPA)22 through improved governance of Integrated Natural Resources Management (INRM), local livelihoods and ecomanagement of protected areas (PAs) in the mountain landscape of Gilgit-Baltistan (GB), Khyber Pakhtunkhwa (KP) and Punjab (Pb).

Government of Pakistan has an objective "to facilitate transition towards environmentally sustainable Pakistan by promoting afforestation, biodiversity conservation, and creating enabling environment". The proposed GEF project is directly align with the program objective and it has a strong support from the national government. The funds allocated for these interventions are managed by the provincial governments. The provincial governments of GB, KP, and Punjab are advocating strengthening community managed PAs and have expressed strong interest in co-financing the proposed project activities by providing grants through their public sector development funds.

In order to secure these grants, specific project documents (PC-Is) will be developed. Private sector (outfitters and tour operators) is already engaged in organizing and facilitating community-based trophy hunting, it has shown interest in making further investments for promoting wildlife-based tourism at the proposed project sites, especially in GB and Punjab. In addition to the strong support from the national and provincial governments, the local communities in GB, KP, and Pb that are engaged in community-based trophy hunting have indicated strong commitments to the proposed GEF project through in-kind and grant co-financing.

These local communities generate considerable revenue (an estimated US$80,000 to US$110,000 for markhor permits and estimated US$10,000 to US $15,000 for urial, wild sheep,) from these activities. As a result of revenue-sharing government policy, 80% of the permit fee

[22] https://www.thegef.org/project/strengthening-community-managed-protected-areas-conserving-biodiversity-and-improving-local

disbursed to the community-based organizations. developing facilities for encouraging wildlife-based tourism. The private sector actors will be actively engaged and encouraged to support conservation efforts by providing co-financing to the project activities. And under an agreement with the government, the communities are required to invest 30% of the community share back in conservation of wildlife populations, including patrolling and monitoring by Community Guards, wildlife surveys. At the PIF stage, indicative co-financing from the private sector is expected from local tour operators, outfitters, hoteling industry and local entrepreneurs.

2.23. Reducing Emissions from Deforestation and Forest Degradation (REDD+) Project: (MoCC-The World Bank). Targeted Support Pakistan 2nd Request Oct 2014

Project Summary: In response to the pressing global challenges of climate change, initiatives under the auspices of 'reducing emissions from deforestation and forest degradation' (REDD)23 have been implemented in over 30 developing and least-developed countries since 2005. The initiatives cover nearly every significant and vulnerable forest ecosystem worldwide. In this study we review six representative initiatives, two each from Africa, Asia and Latin America. Strength, weakness, opportunity and threat analysis is done to evaluate each initiative's policy framework, design, implementation and results thus far. The main policy and project implementation factors that appear to lead to effective and successful REDD project outcomes include having clearly formulated project design; governance, land tenure rights and capacity; equity and transparency; indigenous peoples' rights and knowledge; local–international coordination; and enhancing local and institutional capacities. Based on these findings, we provide recommendations for future REDD policy action and project implementation to make it work for the poor and achieve its intended goals.

2.24. Reversing Deforestation and Degradation in High Conservation Value Chilgoza Pine Forests in Pakistan. GEF Fund. Implementing-FAO. Executing-MoCC. Total Cost: 28,128,440. USD

Project Summary: Chilgoza forests[24] are occurring in the dry temperate zone of Pakistan. These forests grow between 2000 to 3350 meters above sea level in the Hindu-Kush Himalayan region of Pakistan. The chilgoza forests either occur in pure patches or mixed with other coniferous tree species like deodar, and blue pine. These forests hold tremendous importance from both ecological and economical perspective. Though the accurate value of this ecosystem is yet to be assessed, but this has high significance for its non-timber forest products including

[23] https://openknowledge.worldbank.org/handle/10986/13341?show=full

[24] https://www.thegef.org/project/reversing-deforestation-and-degradation-high-conservation-value-chilgoza-pine-forests

chilgoza nuts, medical plants, mushrooms, honey and biodiversity with positive contribution to the local livelihoods. However, these forests are under tremendous pressure due to the increased demand beyond their capacity. The main threats to the chilgoza ecosystem include unsustainable harvest, overgrazing, conversion to agriculture land natural disaster and climate change.

The proposed project is a part of the "The Restoration Initiative "with the objective of improved local livelihoods through increased productivity and enhanced services and functions of the chilgoza forests of Pakistan. The project will be operative in Sherani district of Balochistan, South-Waziristan Agency of FATA, Chitral district of Khyber Pakhtunkwa and Diamer district of Gilgit-Baltistan. The component 1 of the project is related to strengthen regulatory and policy environment for integrated and sustainable management of chilgoza forest ecosystem. The component 2 is related to the implementation of chilgoza forest landscape conservation, restoration and value chain development at community level. The component 3 will be addressing matter related to strengthening local institutions for integrated and sustainable management of chilgoza forest ecosystem, while the component 4 is covering knowledge, partnership, monitoring and assessment of chilgoza forest ecosystem. The project will bring around 30,000 hectares areas of chilgoza forests under sustainable forest management through active participation of the local communities. This will also include 3600 hectares under Assisted Natural Regeneration and 800 hectares under agroforestry and farm forestry.

The project, besides local benefits, will also contribute to the global environmental benefits by reduction of CO_2.

2.25. THE NATIONAL RURAL SUPPORT PROGRAMME (NRSP)-NRSP'S partnership with GCF & MOCC. NRSP GCF accreditation approved in 2018. READINESS SUPPORT PROJECT to STRENGTHEN NDA PAKISTAN. READINESS GRANT AGREEMENT FOR PAKISTAN (PAK-RS-001) SEPT 2016.

The National Rural Support Programme (NRSP) is a national entity whose mandate is to alleviate poverty by harnessing people's potential and undertake development activities in Pakistan. Relying on a presence in all four national provinces, NRSP is currently working with more than 3.3 million poor households organized into a network of community organizations in sectors such as microfinance and enterprise development, environmental and natural resources management, gender and development as well as infrastructure and technology development.

National Rural Support Programme (NRSP) being the largest Rural Support Programme in terms of outreach and development work in the country was recommended by the Ministry of Climate Change-MoCC (the NDA Pakistan) to engage with Green Climate Fund (GCF). Idea was

to engage NRSP[25] as the first and leading national implementing partner of GCF and MoCC in the county for the planning and execution of Climate Change Mitigation and Adaptation Initiatives. NRSP was issued NOC by MoCC to start the process of accreditation by the GCF in 2016 and it took 2 years to complete the process of accreditation of NRSP; which includes institutional assessment of NRSP carried out by Pwc and round of discussions with the GCF support teams. NRSP was formally accredited by GCF on December 12th, 2018 as the 1st ever National Direct Access Entity (DAE) in Pakistan. In all the above process Ministry of Climate Change was involved and consulted in each and every step; which was very productive. NRSP has now formally submitted its first Concept Note to GCF for review and approval.

National Rural Support Programme (NRSP) is the first ever national entity in Pakistan selected by the Green Climate Fund (GCF), after a detailed Financial Management Capacity Assessment (FMCA), to execute the readiness support fund. Following approval of a readiness request, legal arrangements are concluded in the form of a grant agreement with the grant recipient which includes and incorporates the Standard Conditions. This readiness grant[26] agreement was signed between GCF and National Rural Support Programme (NRSP) for readiness activities in Pakistan on 23 September 2016.

This readiness support aims to strengthen the institutional capacity; to manage climate finance, including the capacity to design, implement and monitor the institutional arrangements required at various levels and a clear and inclusive strategic framework as country programme and for the engagement with the Green Climate Fund. This readiness project is completed in 2018, achieving 100% of the targets. Following are the major components of this readiness support.

a. GCF COUNTRY FRAMEWORK FOR PAKISTAN

Development of Strategic Framework as Country's Programme for Pakistan on Climate Change Initiatives and Priorities for the engagement with the GCF is one of the major components of readiness support fund. Following steps were followed for the development of this country framework:

- Stock-take of the existing strategies, policies, and needs assessments including the Climate Change Policy, the vulnerability assessments and adaptation measures in place for Pakistan
- Through consultative process, identified investment priorities for engagement with the Fund and mapped them to GCF's impact areas

[25] http://www.nrsp.org.pk/gcf/

[26] https://www.greenclimate.fund/document/readiness-grant-agreement-pakistan-pak-rs-001

- Defined and disseminated broad alignment criteria in line with the Climate Change Policy and other policy objectives and priorities of the country and the GCF focus areas for prioritizing the potential programmes for the Fund

- Through the country coordination and stakeholder engagement process, developed a Country Programme identifying roles and responsibilities of key stakeholders, No-Objection-Procedures, programming priorities and entry points, alignment with Fund's objectives and Monitoring and Evaluation (M&E) framework etc

b. STAKEHOLDERS CONSULTATION

Objective of this activity was to consult and engage all relevant stakeholders including relevant federal and provincial government departments and ministries (climate change, environment, planning and development, forest etc) and other development organizations; during development of Strategic Framework as Country's Programme for Pakistan on Climate Change Initiatives and Priorities for the engagement with the GCF. First round of consultation was done in March, 2017 through organization of a stakeholder's consultation workshop in Muzaffarabad-AJK; in which more than 80 relevant stakeholders from all around Pakistan participated and who shared their valuable inputs. Another round of stakeholder's engagement was organized in September, 2017 in Lahore, Pakistan; in which the finalized country's framework for Pakistan was presented and approved. Private sector was also engaged during this stakeholder's consultation process.

c. HUMAN RESOURCE DEVELOPMENT

Human Resource Development component was made part of the readiness support so that expected future resources/funds from Green Climate Fund (GCF) could be implemented more efficiently. After finalization of the Country Framework staff of National Designation Authority (Ministry of Climate Change), potential implementation entities for GCF and representatives of development organizations were trained and made aware on the following:

- Strategic Framework as Country Programme on engagement with the GCF

- GCF coordination process and procedural mechanisms (including No-Objection-Procedures)

Exchange of experience with best practice NDAs and Entities around the world was also part of Human Resource Development component.

d. ASSESSMENT OF NIES ON GCF STANDARDS

Ministry of Climate Change recommend one potential National Implementation Entities (NIEs); who was supported to prepare for accreditation to be done by Green Climate Fund. This was Environment Protection Agency (EPA), Government of Punjab; which is planning for and

seeking accreditation from GCF. National Rural Support Programme hired Pwc Pakistan which carried out the detailed institutional assessment of EPA and shared a gap assessment report and plan to further seek GCF accreditation.

2.26. Generating Global Environmental Benefits from Improved Decision-Making Systems and Local Planning in Pakistan (UNDP project) (GEB).

Project Summary: Pakistan has a long history of environment planning and management however it was launch of its National Conservation Strategy (NCS) in 1992 that marked the beginning of its recent sustainability journey. Highlighting the importance of environmental information and its integration in broader economic development, NCS lead to the creation of a first set of national and provincial institutions that would carry this responsibility. Since then, several projects have been undertaken for the process. While significant environmental capacity and awareness have been created, sustainable environmental information management system and integration of environment and development remain to be adequately achieved.

The project would help achieve this by addressing the barriers to (a) regular availability of consistent and reliable environment data; (b) coordinated and robust environmental information management system, and (c) sustained commitment and capacity for sustainable development planning and legislation. In doing so, the project seeks to leverage the investments made previously building on the foundation these investments have laid.

3. Climate Change Focused Projects Undertaken by Other Federal Ministries, Attached Departments and Provincial Governments

Following are the major focused initiatives / projects undertaken by other federal ministries, attached departments and provincial governments during the period 2014-2020 for implementation of NCCP. These projects are also identified in the Implementation Framework 2014-2030, which includes priority, short term, medium term and long terms actions in various sectors of development.

Government of Sindh has undertaken projects of canal lining, urban efficiency, Government of Punjab has done clean energy projects by shifting of ten thousand schools to solar energy and waste to energy projects in Lahore, Government of Khyber Pakhtunkhwa has undertaken projects of hydropower and tree plantation, Govt. of AJK and G-B has undertaken projects in water, agriculture, forestry and clean energy by tapping of hydropower.

3.1. Enhance Community Local and National-Level Urban Climate Change Resilience to Water Scarcity, Caused by Floods and Droughts in Rawalpindi and Nowshera. Adaptation Fund Project. Jan 2019. Cost US$ 6.049 million.

Project Background and Context.[27]: Reducing flood and drought (water scarcity) issues are evolving as a government top-priority. Therefore, the government of Pakistan (through the AF designated authority) requested UN-Habitat to align project objectives and targets with government priorities, especially those in the new National Water Policy-2018 and National Flood Protection Plan 2016. Even though flood impacts and drought/water scarcity issues are often severe in high density urban areas, a national approach/ strategy to address this specifically in urban areas does not exist in Pakistan. Existing approaches dealing flood impacts and related drought/water scarcity issues are not comprehensive and water harvesting techniques are not given due consideration.

3.2. Recharge Pakistan: Building Pakistan's Resilience to Climate Change through Ecosystem-Based Adaptation for Integrated Flood Risk Management. (Flood Plain Management) World Wildlife Fund, Inc. GCF. Aug 2019 to ten years. Cost. USD 150 million.

The Indus River is Pakistan's lifeline, and is now experiencing catastrophic floods and droughts exacerbated by climate change. Pakistan relies on costly hard-infrastructure flood and water management measures with limited efficacy. This project will build Pakistan's climate resilience and water security through cost-effective ecosystem-based adaptation[28]. Recharge Pakistan will: increase water storage and recharge through wetlands, floodplains, and hill-torrents management; promote climate-adapted community-based natural resource management and livelihoods; and forge a paradigm shift to scale up this approach. This project unifies several Government entities in an unprecedented collaboration with WWF-Pakistan to effect nature-based solutions for crucial climate change adaptation in Pakistan.

[27] Adaptation Fund Project: https://docplayer.net/151947713-Project-programme-proposal-to-the-adaptation-fund.html

[28] https://www.greenclimate.fund/document/recharge-pakistan-building-pakistan-s-resilience-climate-change-through-ecosystem-based

3.3. Green BRT Karachi Project funded by Green Climate Fund. Period March 2020-March 2024. Cost USD 583.5 million.

Building a zero-emissions bus rapid transit (BRT)[29] system that is safe and accessible to all. Karachi is one of the most densely populated cities in the world with a population of 14.9 million, and is ranked very low in the 2017 Global Livability Report mainly due to its traffic congestion and induced air and noise pollution.

Its current public transportation system fails to provide mobility for all and is characterized by long commuter trip times, the rise of private vehicle ownership and paratransit modes, thus the decline in the use of public transport. Public transport services are currently only provided by informal para-transit vehicles. Vehicles in this informal network tend to be old and poorly maintained, leading to high fuel consumption, increased emissions, and higher operating costs. The vehicles are loaded beyond capacity to maximize passenger count which leads to very cramped conditions and serious safety issues to passengers as well as the general public.

This is the first dedicated low emissions Transport project presented to the Board. The project aims to establish a 30 kilometer, fully segregated bus rapid transit (BRT) system operated with the "world's first" bio-methane hybrid bus fleet. The project includes innovative features such as a dedicated biogas plant covering 100% of the fuel demand and the last mile connectivity via bikes and e-pedicabs and includes flood proofing of the road. The project has an estimated lifespan of 20 years.

3.4. Punjab Green Development Program Project. World Bank Funded 2018: US$ 430 million

The objective of the Punjab Green Development Program Project[30] for Pakistan is to strengthen environmental governance and promote green investments in Punjab. Pakistan, with a population of over 207 million people, is the world's sixth most populous country. In recent years, it has achieved continued economic growth and substantially reduced poverty. Provisional official estimates suggest that the gross domestic product grew by 5.8 percent for FY17-18, up from 5.4 percent in FY16-17, and the government growth target for FY19 is 6.2 percent. Fiscal and external imbalances may, however, erode these gains in future if not addressed.

The national poverty headcount declined from 64.3 percent in FY02 to 29.5 percent in FY14, however, inequality persists and the country continues to rank low on the human development index, at 147th out of 188 countries. Several factors, including rapid population growth,

[29] https://www.greenclimate.fund/project/fp085

[30] World Bank Funded: https://projects.worldbank.org/en/projects-operations/project-detail/P165388

industrialization, urbanization, and motorization, have resulted in growing environmental degradation and pollution.

On Yale's 2018 Environmental Performance Index, Pakistan ranked 169 out of 180 countries. It ranked 177 on the environmental health sub-index (air quality, water and sanitation, and exposure to heavy metals), ahead of only India, Nepal, and Bangladesh. Pollution is estimated to cause around 340,000 deaths per year in Pakistan, over 70 percent of which are due to air pollution. This represents a quarter of total annual deaths in the country, making Pakistan one of the world's most affected countries. A recent World Bank study estimated that in 2013 air pollution alone caused welfare losses and foregone labor output equivalent to 5.9 percent and 0.8 percent of gross domestic product, respectively. Furthermore, energy consumption in Pakistan has grown rapidly, contributing to increased emissions of both greenhouse gases (GHGs) and associated air pollutants.

3.5. Disaster & Climate Resilience Improvement Project (DCRIP)[31]. World Bank Supported. Cost: PKR. 3,242 million.

The Disaster and Climate Resilience Improvement Project for Pakistan aims to support restoration of flood protection infrastructure and strengthen government capacity to manage disasters and climate variability.

There are four components to the project, the first component being restoring flood protection infrastructure and upgrading flood management systems. This component aims to enhance physical resilience through the restoration, rehabilitation and improvement of critical flood protection infrastructure.

The second component is the managing disasters and climate variability. This component aims to strengthen the government's capacity to better manage disasters. This component will finance risk identification, institutional strengthening for improved management of disasters and enhancing fiscal resilience.

The third component is the project management. The project will be implemented through mandated government departments including Punjab Irrigation Department, Punjab Disaster Management Authority, and the State planning and development department. This component will support engagement of additional resources at Project Implementation Units (PIUs) within these departments.

Finally, the fourth component is the contingent emergency response. Following an adverse natural event that causes a major natural disaster, the government may request the Bank to re-allocate project funds to support response and reconstruction. This component would allow the government to request the Bank to reallocate financing from other project components to

[31] World Bank website: https://projects.worldbank.org/en/projects-operations/project-detail/P154036

partially cover emergency response and recovery costs. This component could also be used to channel additional funds should they become available for such an emergency.

3.6. Renewable Energy Development Section Investment Program (REDSIP) ADB Project Number: 2286-PAK January to June 2014

The final goal is to make proposed project up to the standard of environmental and ecological requirements. Under Technical Assistant (PPTA) extended by Asian Development Bank (ADB) for development of renewable energy resources[32] in the country and feasibility studies of Marala, Chianwali, Deg Outfall, Okara and Pakpattan Hydro Power Projects (HPPs) were updated by the ADB Consultants. Accordingly, a Loan Project Agreement was signed between Government of the Punjab and ADB vide No. 2286/87 – PAK for construction of five (05) Hydro Power Projects, and feasibility studies of additional five (05) HPPs and capacity development.

Part-A: Construction of five Hydro Power Projects (OCR Loan 2286-PAK)

1. Construction of Marala Hydro (7.62 MW) Hydro Power Project RD. 2+850, Distt. Sialkot
2. Construction of Deg Out-Fall (4.04 MW) Hydro Power Project RD.282+340, Sheikhupura
3. Construction of Pakpattan (2.82 MW) Hydro Power Project RD.112+350,Pakpattan Canal
4. Construction of Okara (4.16 MW) Hydro Power Project RD.199+000 LBDC, Distt. Okara
5. Construction of Chianwali (5.38 MW) Hydro Power Project RD.130+00 Distt. Gujranwala

Part-B: Feasibility Studies of additional five HPPs (OCR Loan 2286-PAK)

1. Lower Chenab Canal (LCC), (7.55 MW) Hydro Power Project, RD. 0 +000
2. Khanki Barrage (KB), (14.9 MW), Hydro Power Project Right Bypass
3. Qadirabad Barrage (QB), (23.00 MW), Hydro Power Project Right Bypass
4. Upper Chenab Canal (UCC), (3.58 MW), R Hydro Power Project D. 133+ 296
5. Qadirabad Balloki Link Canal (QBLC), (7.68 MW), Hydro Power Project RD. 304+985

3.7. 560 MW 11 New Wind Power Projects Initiated in Pakistan During 2019. IFC Providing USD 450 Million and ADB Providing USD 350 Million.

The Government of Pakistan, in the efforts to achieve greater energy security, through its Alternative Energy Development Board (AEDB) has signed implementation agreements and guarantees direct agreements with 11 wind independent power producers (IPPs) for 560 MW[33] of new wind energy capacity to serve the Pakistan grid.

These projects would provide more than 1.8 billion units of clean energy annually. The projects were agreed with the help of the private sector and development finance institution

[32] https://www.adb.org/sites/default/files/project-document/81598/34339-023-emr-08.pdf

[33] https://ieefa.org/pakistan-signs-deals-for-560mw-of-new-wind-power/

(DFIs) including the International Finance Corporation (IFC), CDC, FMO, and ICD, amongst others.

Six out of eleven wind projects are financed by the IFC, which on November 15, 2019 signed agreements to finance the so-called Super Six project portfolio with USD 450 million in debt. Those power plants, with a combined capacity of 310 MW, will be installed in the Jhimpir wind corridor[34] in Sindh province and will be able to generate enough electricity to cover the annual needs of 450,000 homes while offsetting around 650,000 tons of CO_2 emissions annually, IFC said in a separate statement. It will provide some USD 86 million in funds from its own account and USD 234 million mobilised from other lenders.

The government agency, which is tasked with promoting renewables installation in Pakistan, has signed the agreements for 560 MW wind capacity to help with the country's objective of having 30 percent renewables nationally by 2030 and cutting its dependence on fossil fuel imports.

In September, the Asian Development Bank (ADB) had decided to shortly approve a loan worth USD 350 million for reforms and financial sustainability programmes that aim to address fiscal, governance, technical and policy deficits in the Pakistan energy sector. These deficits have adversely impacted the sector's quality and efficiency of services, and the sustainability of energy infrastructure and finances, thereby challenging Pakistan's fiscal balance and macroeconomic stability.

Now Pakistan aims to increase its share of renewable energy with wind and solar from 4 percent to 20 percent by 2025. The Gul Ahmed Group, one of the companies in Pakistan behind a first of its kind program for six wind power projects in the Jhimpir corridor. The program, supported by IFC, is known as the Super Six projects.

3.8. Sustainable Land Management Programme to Combat Desertification in Pakistan[35] (SLM)-Phase-II - GEF I UNDP Assisted. 2015

Land is a scarce resource in Pakistan where 80 percent of the land is arid or semi-arid. The majority of the rapidly growing population depends on dry lands to support their livelihoods through agro-pastoral activities.

Unsustainable land management practices and increased demand for natural resources are the main causes of land degradation and desertification. Other causes include deforestation,

[34] Chaudhry, QZ. *An Investigation on Wind Power Potential of Gharo-Sindh, Pakistan.* Pakistan Journal of Meteorology Vol. 6, Issue 11

[35] UNDP Funded: https://www.pk.undp.org/content/pakistan/en/home/projects/SLMP-II.html

overgrazing, drought and floods. Unless unsustainable practices are addressed, land degradation will continue at an accelerated pace with adverse impacts on the structural and functional integrity of ecosystems, biodiversity and people's livelihoods.

One solution to this problem is sustainable land management (SLM), the use of land resources such as soil, water, animals and plants for the production of goods, to meet changing human needs, while ensuring the long-term productive capacity of these resources and maintenance of their functions within the natural environment.

The SLM programme (Phase I) paved the way towards using a long-term programmatic and results-based approach to combatting desertification and land degradation over entire landscapes in Pakistan. In Phase II, this is being scaled up to ensure sustainable management of land and natural resources in arid and semi-arid regions so that ecosystem functionality and critical ecosystem services are enhanced.

3.9. Flood 2014 Emergency Reconstruction and Resilience Project in AJ&K (Asian Dev. Bank Assisted) Total: Rs.6641.000 M (ADB: Rs.5977.000 M, AJK:Rs.664.000 M) 28 Aug 2015 31 Aug 2019 ECNEC 7,733.420 U.Rev. (6,907.356 F.Aid).

Salient features of this Asian Development Bank's funded Flood 2014 Emergency Reconstruction and Resilience Project[36] (FERRP) are as under. Under this project, a Climate Change Centre (CCC) at P&DD has been established. Repair work on 203 km roads and re-construction work of 166 km roads has been completed by April, 2019. Under World Bank assisted project (DCRIP), 33 out of 34 sub-projects of flood protection works were approved during the year 2018-19. At present, the execution of civil works under this project is in full swing. DCRIP with duration of 4 years is planned for completion during the financial year 2020-21.

[36] https://www.adb.org/projects/49038-001/main

3.10. Establishment of Specialized Medium Range Weather Forecasting Center (SMRFC) and Strengthening of Weather Forecasting System[37] (JICA Assisted).

This project worth Rs 2.5 billion was approved by the CDWP of the P&D Division in December 2014, and being implemented by PMD and broadly include establishment of a specialized Medium Range Forecasting Centre in PMD Head Office Islamabad and establishment of the Upper Air Observation System at five (5) locations at Chitral, Peshawar, Lahore, Quetta and Karachi. Establishment of environmental (weather related) Monitoring and Weather Surveillance Radar system in Islamabad is also included under the project.

The main objective of the project is to make available medium range forecasts (country wide, 3-10 days) using higher performance computer than current numerical prediction system. It will ensure timely dissemination of accurate severe weather forecasts and warnings to the important vulnerable districts of Pakistan as well as to obtain highly accurate rainfall intensity and to detect accurate weather situation by utilizing radar composite pictures (based on radar networking).

The implementation of this project will facilitate PMD and related disaster management authorities in improving efficiency and timely sharing of information, placement of timely pre-emptive and mitigation measures to avoid risk of loss of life and property in case of any hydro-meteorological disaster.

3.11. Sindh Resilience Project (World Bank Funded), Total Cost Rs. 12480.00 M (US $ 120.0 M) - WB Share Rs. 10316.70 M, GoS Share Rs. 2163.18 M. Irrigation Component (Rs. 9,984.00 M), (IDA-SUF Share (83 %) Rs. 8,320 M, GoS Share (17 %) Rs. 1664.00 M) (SDG # 6). PKR 1664.00 million. Started: 2016- Completion Aug 2024.

The Government of Sindh (GoS) through the Sindh Irrigation Department (SID) and Provincial Disaster Management Authority (PDMA) is undertaking a World Bank financed Sindh Resilience Project (SRP)[38] in various parts of Sindh Province. Physical interventions under SRP include i) rehabilitation/improvement of existing earthen embankments along River Indus; ii) construction of small rainwater recharge dams in the water scarce areas of the province; and c) construction of PDMA office building. During the first year of the SRP implementation, GoS intends to rehabilitate and improve Mulchand-Shah Bunder (MS), Sunda Hilaya (SH), Bughar-Ucheto (BU) and Indo embankments along Indus River. In compliance with the

[37] https://reliefweb.int/report/pakistan/establishment-specialized-medium-range-weather-forecasting-center-smrfc-and

[38] https://ewsdata.rightsindevelopment.org/files/documents/50/WB-P155350_gSrwY4E.pdf

national/provincial regulatory requirements and World Bank safeguard policies, an environmental and social assessment has been carried out to address the potentially negative impacts of the proposed interventions under SRP. As an outcome of this assessment, an Environmental and Social Impact Assessment (ESIA) has been prepared for the works to be carried out during the first year of SRP implementation; the ESIA includes an Environmental and Social Management Plan (ESMP). In addition, an Environmental and Social Management Framework (ESMF) has been prepared for sub-projects to be undertaken during the later years since their exact locations are not known and designs not available at this stage. An executive summary of the environmental and social assessment is presented in this document.

Aims and Objectives of the Study: The main aims and objectives of this environmental and social assessment are to:

- Provide information for decision-making on the environmental and social consequences of proposed project interventions;
- Establish an environmental and socioeconomic baseline;
- Determine potential environmental and social impacts and assess these in terms of severity, magnitude and timescale;
- Devise mitigations to address the identified environmental and social impacts;
- Promote environmentally and socially sound and sustainable development through the identification of appropriate enhancement and mitigation measures and monitoring programs that will be required to ensure development of the project without significant adverse impacts;
- Meet the provincial, national, international and WB standards;
- Public consultation and information disclosure, including amongst the local community;
- Preparation of ESIA (including ESMP) and ESMF, and
- Determine tentative costs for implementation of the ESMP.

3.12. Pakistan: Flood Emergency Reconstruction and Resilience Project[39]: ADB Funded. Punjab & AJK

The Asian Development Bank is working with Pakistan to rebuild and upgrade roads, bridges and other infrastructure damaged by the devastating September 2014 floods, which displaced over 2.5 million people. This project is rebuilding infrastructure to disaster-resilient standards in the worst-hit areas of Punjab Province and the districts of Haveli, Kotli and Poonch.

The project will contribute to the economic and social recovery of flood-affected areas in Punjab Province and the northern districts of Haveli, Kotli and Poonch (also known as _northern districts_) through the rehabilitation and reconstruction of high-priority infrastructure damaged and weakened during the floods in September 2014. The project focuses on the transitional phase of the emergency response for the rehabilitation and reconstruction of priority roads,

[39] https://www.adb.org/projects/49038-001/main#project-pds

bridges, irrigation and flood protection infrastructure damaged by the floods. Providing financing for the most urgently needed works, the loan and grant will enable the Government to redirect its own financing to housing and livelihood cash grants for the most vulnerable groups, thus restoring the economic activity essential to their survival. The project will also support ex ante disaster risk management (DRM) capacity building to mainstream resilience in development planning. Reconstruction of damaged and at-risk infrastructure in the flood-affected areas will use appropriate and cost-effective multi-hazard resistant design and construction standards to mitigate the potential impact of future disasters. The Project's design is based on the findings of the damage assessment reports prepared by the respective Punjab Planning and Development Departments (P&D) in January 2015 and facilitated by the Asian Development Bank (ADB) and World Bank, in close coordination with the federal government and other donors.

Project Rational: A late and concentrated monsoon, coupled with high flows in Pakistan's eastern rivers resulted in flooding in the northern regions of Pakistan, Punjab and Sindh provinces in September 2014. The flood affected 44 districts across the country. It led to the displacement of more than 2.5 million people, with major displacement and damage in central Punjab, which resulted in 367 deaths, and injured over 600 people. Nearly 110,000 houses were partially damaged or destroyed, over 1.1 million acres of agricultural land and 250,000 farmers were affected. This resulted in the loss of standing food, fodder or cash crops. Non-farm sources of livelihoods and services were also affected, including many small enterprises, manufacturing and processing businesses and losses of wage employment due to disruption of the economy.

3.13. Quaid-E-Azam 1000MW Solar Power Park (Bahawalpur) Quaid-E-Azam-Initiative of CHINA-PAKISTAN ECONOMIC CORRIDOR (CPEC). July 2015. Cost: USD 781 million.

Quaid-e-Azam Solar Power (Pvt.) Limited is a public-sector for' profit company established by the Government of the Punjab. The company has been established for the setting up of renewable energy projects in general and Solar Energy Power Projects in particular. Quaid-e-Azam Solar Power (Pvt.) Limited is the first ever utility scale solar power plant in the country. It aims to initiate solar energy programs and research projects with respect to Solar Energy power generation plants. Quaid-e-Azam Solar, seeks to achieve socio economic prosperity and sustainability for the nation, for the planet, for a better tomorrow. Profit Earned during 2018-19 is PKR 1.786 billion.

3.14. Turkish Investor ZORLU Enerji Wind Power Project 56.4 MW. Jampir, Sindh.

CEO AEDB and Zorlu Enerji and the Turkish investor signed the financial closing of the 56.4 Zarlu Wind Power Project. The equipment and turbines for the project arrived in Karachi and construction started in 2014.

In recognition of its wind power project in Pakistan, Zorlu Enerji Pakistan has been honored to receive the highly prized "Middle East Renewable Deal of the Year" by Project Finance Magazine. The prize distribution was held in Dubai. This international recognition augured well for the government of Pakistan, AEDB and Zorlu Enerji. Alternative Energy Development Board (AEDB) played a crucial role in helping Zorlu Enerji to initiate and setup this project.

3.15. Installation of Weather Surveillance Radar at Karachi (JICA assisted).Signed in JULY 2015. PRS 1.62 Billion.

The government of Japan agreed to replace the weather surveillance radar in Karachi with a grant of 1.95 billion Yen (approx. 1.6 billion PKR).

Four (Islamabad, Karachi, Dera Ismail Khan and Rahimyar Khan) out of seven meteorological radar systems in Pakistan were established under the grant aid of Japan. These four radars observe the precipitation of about 80% of the country. Among them, the existing Karachi radar system established in 1991 has played an important role in monitoring meteorological phenomena in the southern area and tropical cyclones which are formed over the Arabian Sea and the Bay of Bengal.

However, over passage of time and despite maintenance, the installed radars were losing their relevance to modern technology. In the wake of these imminent challenges, it is pertinent to shift from this analogue system to a modern digital Doppler mode radar. The new radar will have a 450 km radius of information processing for consumption of the Pakistan Meteorological Department (PMD). This will help the PMD to monitor the movement and development of severe weather systems to prepare more accurate and timely weather forecast and warning coastal areas in Sindh and Balochistan. Forecast for international shipping and aircrafts' traffic will also be improved. The Doppler mode is essential in achieving more accurate forecasting and longer forecast prediction times.

This Project is the first priority of the National Multi Hazard Early Warning System Plan which was a part of the National Disaster Management Plan (NDMP) formulated through Japan's assistance in 2012. In accordance with the NDMP, Japan has been extending various assistances such as replacement of the meteorological radar in Islamabad and installation of the Flood Forecasting System in collaboration with UNESCO. The Project agreed is expected to have synergies with these on-going and completed projects assisted by Japan.

The Government of Japan agreed that it would provide 1.6 trillion Yen (approximately 16 billion USD or Rs.1.4 trillion PKR) of public and private finance to developing countries, which include Pakistan, to counter climate change.

3.16. Punjab Government Subsidy on Installation of High Efficiency Drip/Sprinkle Irrigation System (HEIS). Punjab Irrigated-Agriculture Productivity Improvement Project 2014 to 2020-21.

The government "On-Farm Water Management wing of Agriculture Department" is providing subsidy to farmers for Installation of High Efficiency (Drip/Sprinkle Irrigation System (HEIS). The government provides 60 percent of total system cost for installation of HEIS on up to 15 acres. The government also provides 60 percent subsidy for construction of water storage pond, if needed, on the basis of site- specific technical requirements. The government provides 80 percent of total system cost for installation of HEIS on upto 15 acres.

3.17. Punjab Government Subsidy on Installation of Solar Systems for Operating High Efficiency Irrigation Systems (HEIS). Project: Promotion of High Value Agriculture through Solarization of Drip & Sprinkler Irrigation Systems (2019-20 to -2021-22).

The government provides 50 percent of total system cost. Government provides maximum upto Rs. 720,000, if the cost of solar powered pumping system at pond site is more than Rs. 1.2 million while the government will provide 60 percent of the cost when the total cost is less than Rs. 1.2 million.

Government provides upto maximum of Rs. 480,000 of total cost for installation of solar powered pumping system at dugwell site, if the cost of solar pumping system exceeds Rs. 800,000 while the government will provide 60 percent of the cost when the total cost is below Rs. 800,000.

3.18. Balochistan integrated water resources management & development project (World Bank). Period 2016. USD 200 million.

The World Bank in 2016 approved a $200 million credit to strengthen the Balochistan government's initiative for community-based water management for irrigation in the province. The development objective of the Balochistan Integrated Water Resources Management (IWRM) and Development Project is to strengthen provincial government capacity for water resources monitoring, management and to improve community-based water management for specific irrigation schemes in Balochistan. This project comprises three main components. The first component enhances institutional capacity, and information will support a gradual transition to IWRM approaches in Balochistan in line with the existing IWRM policy. It will support institutional restructuring, professional development, installation and operation of hydro-meteorological systems, and establishment of multi-agency river basin information

systems that provide public access to all available hydrometeorological data for the two project basins. It has two sub-components: i) It will support institutional strengthening and restructuring, and ii) It will support hydro-meteorological data collection and management to provide the required information platform for improved water resources planning. The second component, water infrastructure, and management investments will support the implementation of IWRM sectoral investments in the Nari and Porali basins within a framework of community mobilization and participation. This component has three sub-components: i) Construction and rehabilitation of irrigation and potable water supply facilities and flood protection infrastructure; ii) Related watershed and rangeland management, and iii) On-farm water management and agricultural production activities. The third component, project management, and technical assistance will finance expenditures associated with overall project implementation costs, including incremental costs associated with the Project Management Unit (PMU)[40] .

Though World Bank in March 2019 suspended the project over lack of funds proper disbursement and fiduciary control etc. However, the World Bank still plan to continue and support the provincial government[41.]

3.19. National Programme for Improvement of Watercourses in Pakistan-Phase-II: Launched during 2020. Total project cost is Rs 110.812 million over a period of 05 years.

During FY2020, above project have been launched under Prime Minister's Agriculture Emergency Programme to "Conserve and Increase Productivity of Water":

The programme[42] envisages lining of upto 50 percent of the total length of 62,210 water courses (reconstruction, additional lining, and new) inclusive of 14,932 Water Storage Tanks. This also includes the provision of 11,610 Laser Land Levelers on a 50 percent Agriculture 31 cost sharing basis (government's share to be capped at Rs 250,000 per beneficiary). Total project cost is Rs 110.812 million over a period of 05 years. Project will be implemented in the provinces of Punjab, Khyber Pakhtunkhwa, Balochistan including Gilgit-Baltistan (GB), Azad Jammu and Kashmir (AJK) and Islamabad Capital Territory (ICT).

The key objectives are:

40 World Bank, 2016. Balochistan Integrated Water Resources Management & Development Project ,2016 Available at: https://projects.worldbank.org/en/projects-operations/project-detail/P154255?lang=en

41 https://www.worldbank.org/en/news/press-release/2019/03/28/world-bank-statement-on-balochistan-integrated-water-resource-management-and-development-project

42 http://www.rehmanhabib.com/national-program-for-improvement-of-watercourses-in-pakistan.html#:~:text=National%20Program%20for%20Improvement%20of%20Watercourses%20in%20Pakistan%20Phase%2DII,with%20provision%20of%2016%2C120%20Nos.

- Social mobilization through capacity building of Water User's Associations/ Farmer Organizations
- Minimization of conveyance and field application losses
- Reduction in waterlogging and salinity
- Equity in water distribution
- Reduction in water disputes/thefts/litigation
- Motivation/participation of farmers
- Poverty reduction through employment generation
- Increase in crops yield/self sufficiency in food.

The work on improvement of 2,934 watercourses (inclusive of 395 water storage tanks) has been initiated whereas work on the improvement of 1,301 watercourses (inclusive of 207 water storage tanks) has so far been completed. Additionally, 1,200 units of laser land levelers have been distributed amongst the beneficiaries.

3.20. National Programme for Enhancing Command Area in Barani Areas of Pakistan was approved by ECNEC on 26th March, 2020 at a cost of Rs 25.345 billion.

The project will be implemented in all provinces including GB, AJK and ICT over a period of 05 years. The key [43]project outputs are:

- Construction of 2,664 farm ponds for storing rainwater from various sources
- Installation of 2,664 solar pumping systems on farm ponds for the operation of high efficiency irrigation systems
- Development of 4,156 dug wells for developing of the water source to promote irrigated agriculture
- Installation of 4,106 solar pumping systems at dug wells for the operation of high efficiency irrigation systems (in addition 50 Hydro Ram Pumps will be installed in GB to lift water from the river)
- Development/improvement of 2,432 watercourses carrying water from various sources for enhancing water conveyance efficiency at farm level
- Provision of 1,106 Laser Land Levelers to the farmers/service providers. Rough Land Levelling will also be done on 34,000 acres in Khyber Pakhtunkhwa

[43] http://ofwm.agripunjab.gov.pk/Barani_Project

- Provision of fruit plants, oilseeds/pulses crops and fodder/forage/range on 45,518, 112,189 and 81,676 acres, respectively, in command area of small/mini dams to ensure irrigated agriculture

3.21. National Flood Protection Plan-IV (NFPP-IV) and Related Studies to Enhance Capacity Building of Federal Flood Commission. Approved by ECNEC on 26th March, 2020. Total Cost PKR 332.246 Billion

The basic objective of NFPP-IV[44] is aimed at improving country-wide comprehensive flood management planning, implementation and monitoring to essentially achieve flood management objectives during next ten (10) years. An important aspect in development of NFPP-IV is the contribution and consent of all stakeholders (Provinces and Federal Line Agencies) were conducted to share findings of the study. The plan was prepared with category wise breakdown into structural and non-structural measures.

Ministry of Water and Power, Government of Pakistan through Federal Flood Commission (FFC) under Water Sector Capacity Building and Advisory Services Project (WCAP) program engaged National Engineering Services of Pakistan (NESPAK) in association with Deltares of The Netherlands for 'Development of National Flood Protection Plan-IV with the following objectives:

- Task-A: Develop 'National Flood Protection Plan-IV to be implemented during next 10 years; 2015-2025 based on innovative and integrated approach incorporating structural and non-structural measures for reducing floods, reducing susceptibility to flood damages and mitigating the flood impacts keeping in view constraints, gaps and lapses in the previous Flood Protection Plans, technical shortcomings and lessons learnt from past major flood events.
- Task-B: Develop a comprehensive inventory of the existing flood protection infrastructure of all regions of Pakistan (four provinces, Gilgit-Baltistan, FATA & AJ&K) constructed so far through various resources (Federal/ Provincial/Foreign Aided) and carry out benefit monitoring and evaluation of flood protection works, constructed under FPSP-I and II.

- Task-C: Carry out Floodplain Mapping & Zoning along all the Indus River and its major tributaries including Kabul and Swat rivers, identify high, medium and low flood risk areas up to district level and prepare River Act for restricting/prohibiting permanent settlements in high and medium flood risk areas.

[44] http://mowr.gov.pk/wp-content/uploads/2018/05/National-Flood-Protection-Plan-IV-NFPP-IV-1.pdf

- Task-D: For the capacity building of Federal Flood Commission, develop a reliable database/information system to store and retrieve required data and enhance data processing techniques for preparation and dissemination of Flood Reports, as approved by the FFC, among the concerned organizations and design a web based interface for effective data sharing with all stakeholders at the federal and provincial levels, including public.

3.22. Water Resources Studies for Climate-Resilient Water Resources Management in Baluchistan Pakistan. December, 2019. TA-9576(PAK).

The ADB has provided a capacity development technical assistance, TA 9576-PAK: Climate-Resilient Water Resources Management (the TA")[45] as an associated technical assistance with the ADB's loan project: Balochistan Water Resources Development Sector Project (BWRDSP) to the Government of Balochistan (GoB) through the Government of Pakistan (GoP). The Balochistan Irrigation Department (BID) is the executing agency and the Balochistan Agriculture and Cooperative Department (BACD) is the implementing agency for the TA.

The project adopts an integrated water resources management (IWRM) approach for the irrigation development activities. It supports implementation of the IWRM policy, and in turn supports and strengthens several principal elements of ADB's water policy, including: (i) improving the efficiency of water use and delivery, (ii) fostering water conservation and sustainability of infrastructure, and (iii) improving governance through beneficiary participation and capacity building. In addition to irrigation infrastructure, the project helps establish a water resource information system (WRIS) for improved water resource management and monitoring, and addresses watershed degradation by improving vegetative cover and undertaking physical interventions to reduce erosion in critical areas through integrated and participatory approaches.

Balochistan is highly vulnerable to climate change impacts that threaten resource-poor farmers and women in rural communities. The Government of Balochistan (GOB) approved the IWRM policy in 2006 with ADB's support2. The policy provides a comprehensive framework for the province to address water management and development using the basin approach, with water harvesting and groundwater recharging an integral part of watershed management. Since then, useful progress has been made in implementing the policies, but expected outcomes indicated in the policy have not been achieved due to lack of funds, weak institutional capacity, and poor data support.

The effective implementation of the IWRM policy requires quantitative, reliable surface water and groundwater data, which are extremely limited in Balochistan. Moreover, there is no WRIS in Balochistan. The coverage and reliability of hydrological data are particularly poor,

[45] https://www.adb.org/sites/default/files/project-documents/48098/48098-002-tar-en.pdf

preventing well-informed planning and management of water resources. The province formerly had a network to monitor scarce and depleted groundwater resources in Pishin–Lora basin and surface water in major river basins, but most of the monitoring network is no longer functional because of inadequate operational funding.

Balochistan lacks a provincial climate change policy, despite facing increased impacts from climatic variability coupled with extreme drought and flood events; meanwhile, the existing IWRM policy does not address potential risks, including droughts, floods, and groundwater depletion. The technical assistance (TA) will help strengthen Balochistan's institutional capacity to address exposed climate change impacts and risks; and build climate resilient and sustainable water resources management mechanisms that apply innovative, high-level WRIS technology. The TA is listed in the Pakistan country operations business plan, 2018-20203

The major objective of the assignment for the Climate-Resilient Water Resources Management Support is to help the BID and BACD to prepare and update knowledge, policy and regulatory frameworks for improved climate resilient water resources management.

3.23. World Bank Approved $300 Million for Pakistan to Build Resilience to Natural Disasters and Health Emergencies. Dec 2020. Sindh Resilience Project and the Solid Waste Emergency and Efficiency Project.

The World Bank's Board in Dec 2020 approved $300 million in financing for two projects in Pakistan—the **Sindh Resilience Project**[46] and the **Solid Waste Emergency and Efficiency Project.** These investments will bolster Pakistan's efforts to build resilience to natural hazards such as floods and droughts in the Sindh province, and will strengthen solid waste management in Karachi to tackle recurrent urban flooding and public health emergencies in the city.

"Building resilience to natural disasters and health emergencies is an important and urgent agenda in Pakistan, that will help save lives and protect the economy. The debilitating impact of recent floods in Karachi, droughts and extreme rainfall in Sindh, and of course the COVID-19 pandemic, make it imperative that risk reduction investments strengthen multi-sectoral dialogue and coordination at the city, provincial, and national levels to ensure protections for vulnerable communities and fight the spread of disease."

The US$200 million Sindh Resilience Project Additional Financing will help the government better manage climate and disaster risks, including floods, droughts, and public health emergencies. The project will strengthen linkages between disaster risk management and the health sector by establishing the Sindh Emergency Service to strengthen capacity for disaster preparedness and emergency response, including health crises such as COVID-19. The project also improves irrigation infrastructure to protect vulnerable communities living in

[46] https://www.worldbank.org/en/news/press-release/2020/12/08/world-bank-announces-300-million-for-pakistan-to-build-resilience-to-natural-disasters-and-health-emergencies

rural areas, which will directly benefit 750,000 citizens in drought-prone areas of Kirthar range hills and the Nagarparkar region in the Tharparkar District.

"The establishment of Sindh Emergency Service will greatly enhance the government's responsiveness to natural disasters and emergencies, particularly in a megacity like Karachi where many lives are lost due to insufficient emergency medical services. The project will also improve water security for rural communities that suffer from chronic malnutrition and poverty and are forced to migrate due to water insecurity."*

The US$100 million Solid Waste Emergency and Efficiency Project (SWEEP) will improve solid waste management services in Karachi – Pakistan's largest city of more than 16 million people – and upgrade critical solid waste infrastructure to reduce urban flooding and public health risks. The project focuses on emergency waste removal to restore stormwater drainage capacity before the next monsoon season, especially in vulnerable communities around drainage and waste collection sites. The project will improve living conditions for at least half a million residents of Karachi and increase protections for workers by introducing safety protocols that improve labor conditions.

4. Brief List of other Climate Change Related Projects Undertaken by Federal Ministries, Attached Departments and Provincial Governments during 2014-2020.

4.1. Water Sector

A. Federal

1. Construction of Rain Water Harvesting, Kasana Dam, Islamabad PKR,228.0 Million.
2. Construction of Rain Water Harvesting Ramma Dam, Islamabad PKR 1,657.0 Million.
3. Establishment of National Capacity Building Institute (NCBI) for Water Quality Management at Islamabad (KOICA assistance of 3M$/ Rs 258.00 Million. On turn key basis), PCRWR PKR 323.6 258.0 Million.
4. Land and Water Monitoring/Evaluation of Indus Plains by SMO CDWP 25.04.2018 PKR 410.000 Million.
5. Construction of Rain Water Harvesting Kasana Dam CDWP 02.05.2018 PKR 2629.420 Million
6. Indus 21 Water Sector Capacity Building & Advisory Services, Islamabad (World Bank) PKR 7,659.1 Million
7. Research Studies on Drainage, Land Reclamation, Water Management & Use of Drainage Water (IWASRI, Mona & LIM) (All Pakistan) PKR 475.0 Million
8. Strengthening the Technical Capacity of Office of Pakistan Commissioner for Indus Waters PKR 200.0 Million

B. Sindh

1. Revamping / Rehabilitation of Irrigation & Drainage System of Sindh PKR 16,795.0 Million
2. Sukkur Barrage Rehabilitation and Improvement Project PKR 1,873.0 Million

3. Revamping/Rehabilitation of Irrigation & Drainage System of Sindh (All over Sindh) PKR 16,795.0 Million
4. Nai Gaj Dam, Dadu Sindh (Medium) PKR 26,236.0 Million
5. Lining of Distributaries & Minors in Sindh (All over Sindh) PKR 13,828.3 Million
6. Construction of Small Storage Dams, Delay Action Dams, Retention Weirs & ISSO Barriers in Sindh (Multiple Districts) PKR 12,211.0 Million
7. Darwat Dam, Jamshoro Sindh (Medium) PKR 9,300.0 Million
8. Extension of Right Bank Outfall Drain from Sehwan to Sea, (RBODII), Dadu & Thatta District of Sindh PKR 64,663.0 Million
9. Strengthening of Jamro Canal, Sindh (District Nawabshah) (Federal Share) PKR 1,482.2 Million
10. Darwat Dam Project Jamshoro/Dadu. Cost 11767.87 M Provincial share Rs. 1656.560 M) ECNEC 22.05.2018 PKR 10111.310 Million
11. Demarcation of Groundwater Quality Zones in Indus Plain and Marginal Areas for Sustainable development and Management of Groundwater (Lower Indus Plain) PCRWR PKR 54.9 0.0 Million.
12. Study on wetlands especially Ramsar sites, in Sindh province. 53.8 Million
13. Study on impacts of Climate Change in Sindh including Floods and Rains 2010 and 2011. 36.25 Million.
14. Trans-Boundary Affects on Ground and Surface Waters along the Eastern Border of Pakistan, PCRWR DDWP 04.04.2016 PKR 49.447 Million.
15. Feasibility Study of Command Area Development of Darawat Dam with High Efficiency Irrigation System (SDG # 6). PKR 31.744 Million.
16. Procurement of Consultancy Services for Social and Environmental Impact Assessment of Disaster and Climate Resilience Enhancement Project (DACREP) (SDG # 13). PKR 13.112 Million.
17. Construction of Pumping Stations of 80 Cusecs to Control Water Logging Salinity and Drain out monsoon Water at Chamber, Tando Allahyar (SDG # 6). PKR 195.20 Million.
18. Boring & Installation of 250 Nos Tubewells of 2.0 Cusecs on Solar Energy (SDG # 6).PKR 2087.11 Million.
19. Proposed Drainage System and Solar Tube Well Installed at Cantonment Area of Pano Aqil, Sukkur (Revised) (SDG # 15). PKR 3472.00 Million.
20. Installation of Solar Tubewells in Umerkot (SDG # 6). PKR 519.33 Million.
21. Discharge Observation in the Command of Three Barrages and up-Gradation of Soil Mechanics & Hydraulic Laboratory Karachi and Workshop of Gauging Sub-Division Kotri (SDG # 6). PKR 199.99 Million.
22. Sindh Flood Emergency Reconstruction Project for Bunds & Canals (Flood 2010-11) ADB Loan Scheme (T M Khan, SBA, Jamshoro, Hyderabad, Ghotki, Khairpur, N. Feroze, Matiari, Larkana, Qamber, Dadu, Sujawal, Thatta, Kashmore, Sukkur, Shikarpur and Rahim Yar Khan (Punjab) - (Revised Total Cost Rs 26,905 M, ADB Share Rs.19,279.493 M & GoS share Rs.7,625.507 M) (SDG # 6) Total PKR 7625.507 Million.
23. Restoration of Flood Damages to Gaj Diversion Bund at RD-2+700, 5+000, 12+000 & 13+000 in Southern Dadu Division (SDG # 6). PKR 344.216 Million.
24. Nasrat Branch at RD-195 NIP side and Constructing Relief Escape for Gajrah Branch at RD-60 NIP side and Constructing Relief Escape for tail of Nasrat Branch system along Chan Bandhni distry at RD-22 (SDG # 6). PKR98.4 Million.

25. Conversion of Energy Source of the Pumping Station of Patni and Umerkash Wah on Solar Energy for Ensuring the Water Supplies in Tail Reach of Patni System & Construction of Bridge 500 ft from Katcha Bund Pano Akil (SDG # 6). PKR 225 Million.
26. Flood Protection Bund around Kashmore Cantt Mile 0/0 to 5/5+300 (Total Length 30,000) (Revised) (SDG # 6). PKR 308.763
27. Normal Emergent Flood / Rain Damages in Sindh (SDG # 6) PKR 495.00 Million.
28. Providing & Installation of Solar Energy System at 132 Mile Dadu Canal (Tail) Pumping Station Umerkot. (SDG # 6). PKR 199.82 Million
29. Providing / Installation of Solar Energy System on Barrages & Regional Offices in Sindh (SDG # 6). 196.941 Million.
30. Revamping / Rehabilitation of Irrigation & Drainage System of Sindh PKR 16,795.0 Million.
31. Restoration of Flood & Rain Damages Emergent Works (revised) (SDG # 7). PKR 459.505 Million
32. Emergent Works in Anticipation of Flood 2017 and Rain Emergency (SDG # 6). PKR 2334.207 Million.
33. Construction of Recharge Dam across Angai-II Nai in Central Kohistan (Revised) (SDG # 6). PKR 353.501
34. Construction of Gravity Weir / Recharge Dam across Gamrach Dhoro in Central Kohistan & Construction of Guwari Recharge Dam in Central Kohistan near Jhangara Taluka Sehwan (SDG # 6). PKR 484.608 Million.
35. Rehabilitation / Restoration of Malir Weirs – I, II, III & Thado Dam (SDG # 6). PKR 399.669 Million.
36. Construction of Three (03) Nos Recharge Dams Dillan, Naing & Mazarani Recharge Dam in Upper & Central Kohistan (Revised) (SDG # 6). PKR 876.990 Million.
37. Construction of Dams / Reservoirs of Rainy Water in Natural Flows of Hills in Taluka Nagarparkar U.C. Adhigam (SDG # 6). PKR 191.192 Million
38. Construction of 2 Nos. Small Dams at Achar Salar Goth, Bin Qasim Town (SDG # 6). 294.198 Million

C. Punjab

1. Improved Land and Water Conservation Practices to Enhance Waste Land Productivity in Thal Desert, PCRWR. 2017 PKR 43.3 Million
2. Construction of Papin Dam, Rawalpindi PKR 1,130.6 Million
3. Remedial Measures to Control Waterlogging due to Muzaffargarh & TP Link Canal, Kot Addu, District Muzaffargarh PKR 8,565.3 Million
4. Lining of Irrigation Channels (Distributaries & Minors) in Punjab PKR 30,996.2 Million
5. Irrigation System Rehabilitation Punjab (Phase-I) (All over Punjab) PKR 19,519.0 Million
6. Ghabir Dam, Chakwal Punjab (Medium) PKR 5,655.5 Million
7. Channelization of Nullah Deg, Punjab PKR 6,240.0 Million
8. Demarcation of Groundwater Quality Zones in Indus Plain and Marginal Areas for Sustainable development and Management of Groundwater (Lower Indus Plain) PCRWR PKR 54.9 0.0 Million.
9. Feasibility Study of Murunj Dam at Nila Kund on Kahal Hill Torrent Project (Punjab) Rajanpur, Punjab CDWP 12.02.2018 PKR 349.956 Million.

10. Raising of Shahpur Dam (Phase -I) PKR 261.174 million
11. Construction of Dadhocha Dam (PKR. 2,500 Million)

D. Balochistan

1. Construction of Sukleji Dam, Jhal Magsi PKR 1,500.0 Million
2. Construction of Tank Zam Dam - Feasibility Study PKR 80.0 Million
3. Construction of Umarzai Dam, Pishin PKR 150.0 Million
4. Construction of Garuk Storage Dam, District Kharan PKR 2,500.0 Million
5. Construction of Khazana Dam, Zimri Musakhail PKR 300.0 Million
6. Construction of Mara Tangi Dam, Loralai PKR 450.0 Million
7. Construction of Pissijal Dam and Command Area Development, Khuzdar PKR 250.0 Million
8. Construction of Storage Dam Yousaf Kach, Rud Mullazai, Pishin PKR 200.0 Million
9. Construction of Toiwar / Batozai Storage Dam, District Qilla Saifullah (Medium) PKR 4,344.7 Million
10. Construction of Abato, Daisara & Sanzala Dam, Chaman, Killa Abdullah PKR 300.0 Million
11. Construction of Badinzai Dam, Balochistan (Feasibility Study) PKR 298.4 Million
12. Construction of 100 Small Dams in Balochistan (Package-III 20 Dams) PKR 6,000.0 Million
13. Construction of 100 Small Dams in Tehsil Dobandi, Gulistan Qilla Abdullah and Chaman District Qilla Abdullah PKR 1,600.0 Million
14. Construction of 200 Small Check Dams for Groundwater Recharge of Quetta PKR 300.0 Million
15. Construction of Dam at Aghburg Area, Quetta PKR 150.0 Million
16. S Construction of mall Dams in Tehsil Khaliqabad, Kalat PKR 300.0 Million
17. Re-construction of Shadi Kour Dam, District Gwadar PKR 7,930.5 Million
18. Construction of Naulong Storage Dam, Jhal Magsi Balochistan (Medium) PKR 26,460.0 Million
19. Feasibility Study for Water Resource Development through Construction of Small & Medium Dams in Balochistan PKR 315.6 Million
20. Construction of Mangi Dam, Quetta (Federal Share 50:50) PKR 4,667.0 Million
21. Construction of Basool Dam, Tehsil Ormara, District Gwadar PKR 9,636.0 Million
22. Construction of 100 Delay Action Dam in Balochistan (Package-II, 26 Small Dams) (Multiple Districts) PKR 4,647.4 Million
23. Balochistan Effluent Disposal into RBOD (RBOD-III) (Multiple Districts) PKR 11,458.0 Million
24. Underground Water Survey, Quetta PKR 148.0 Million
25. Construction of Dosi Dam Pasni Area Gwadar CDWP 29.03.2018 PKR 475.904 Million
26. Construction of Garah Storage Dam Tehsil Wadh District Khuzdar CDWP 29.03.2018 PKR 462.160 Million
27. Construction of Bhundaro Storage Dam, Anjira Zehri area District Khuzdar CDWP 29.03.2018 PKR 400.000 Million
28. Construction of Jatti Small Storage Dam Lop Area Wadh District Khuzdar DDWP 28.01.2020 PKR 70.000 Million
29. Construction of Posti Storage/Delay Action Dam at Boolo Arbab in District Chagai DDWP 28.01.2020 PKR 123.130 Million.
30. Construction of Sari Kalah Delay Action Dam in U/C Raskoh District Kharan DDWP 28.01.2020 PKR 510.000 Million.

31. Construction of Small Dams in Khuzdar DDWP 01.11.2019 PKR 1000.000 Million.
32. Construction of Small Storage Dam at Sardari Goz Darkhalo, Tehsil Wadh, District Khuzdar DDWP 01.11.2019 PKR 80.000 Million.
33. Construction of Small Storage Dam Kunji Ferzabad District Khuzdar DDWP 28.01.2020 PKR 46.260 Million.
34. Construction of Small Storage Dam Shank Teshil Wadh District Khuzdar DDWP 28.01.2020 PKR 60.000 Million.
35. Construction of Winder Dam, District Lasbela ECNEC 16.03.2020 PKR 15230.000 Million.
36. Development of Water Resources by construction of Small Dams in District Zhob Balochistan DDWP 01.11.2019 PKR 480.000 Million.
37. Feasibility Study and Detailed Design of Burj Aziz Khan Dam, District Lora Pishin, Balochistan CDWP 19.02.2019 PKR 67.070 Million.
38. Integrated Water Resources Management in the Highly Depleted Pishin-Lora Basin of Balochistan, PCRWR PKR 48.9 Million.
39. Construction of Delay Action Dam at Zarkhune District Quetta DDWP 28.01.2020 PKR 100.000 Million.
40. Kachhi Canal Project (Remaining Works) Phase-I, District Dera Bugti ECNEC 16.03.2020 PKR 22921.000 Million.
41. Construction of 100 Dams in Balochistan (Package-IV) CDWP 08.06.2020 PKR 13512.725 Million.
42. Construction of Hushbalo Dam District Mastung DDWP 28.01.2020 PKR 350.000 Million.
43. Construction of Juli Storage/Delay Action Dam District Chagai DDWP 28.01.2020 PKR 244.740 Million
44. Construction of Karudi Storage/Delay Action Dam District Chagai DDWP 28.01.2020 PKR 131.000 Million.
45. Construction of Koh-e-Mahium Storage/Delay Action Dam in District Chagi DDWP 01.11.2019 PKR 350.000 Million.
46. Construction of Mashkicha Storage/Delay Action Dam District Chagai DDWP 28.01.2020 1 PKR 58.000 Million.
47. Construction of Mashraqi Koh-e-Sultan Storage Delay Action Dam at District chagai DDWP 28.01.2020 PKR 80.000 Million.
48. Construction of Peer Bari Storage Dam at Kach, District Khuzdar DDWP 01.11.2019 PKR 128.500 Million.
49. Sukleji Dam (Feasibility Study) District Bolan Balochistan DDWP 01.11.2019 PKR 161.000 Million.
50. Extension of Zandera Karez System along with Excavation & Contraction of conduct channel village Zandera, District Ziarat DDWP 29.01.2020 PKR 80.465 Million.
51. Construction of 10 Nos Small Storage Check dams Arenji Area, Wadh District Khuzdar DDWP 28.01.2020 PKR 504.430 Million.
52. Shore Protection of Pasni Town Balochistan PKR 941.0 0.0 Million
53. Construction of Toiwar / Batozai Storage Dam, District Killa Saifullah PKR 4,344.7 0.0 Million
54. Construction of Uch Wani Dam Chotair area Ziarat PKR 300.0 Million
55. Construction of Wam Tangi Dam District Harna PKR 300.0 Million
56. Abato Daisara & Sanzala Dam, Chaman PKR 300.0 Million
57. Construction of Badinzai Dam (Feasibility) PKR 298.4 Million
58. Construction of Burj Aziz Dam PKR 200.0 Million

59. Construction of 200 Dams in Killa Abdullah, Gulistan and Deobndai Tehsils PKR 3,816.0 Million
60. Construction of Bohir Maas Storage Dam Tehsil Wadh, District Khuzdar PKR 89.8 Million
61. Construction of Bodh ARO Storage Dam Angeera Zehri Area District Khuzdar PKR 400.0 Million
62. Construction of Dam at Aghburg Area Quetta PKR 150.0 Million
63. Construction of Garah Storage Dam Tehsil Wadh, District Khuzdar PKR 462.2 Million
64. Construction of Kangori Storage Dam Shah Noorani Area, Tehsil Wadh, District Khuzdar PKR 94.4 Million
65. Construction of Khaisar Patti Delay Action Dam, District Noshki PKR 114.8 Million
66. Rehabilitation and up gradation of Trimmu Barrage, Punjnad Head Works Sulemanki (PKR. 3,550 Million)

E. AJK

1. Raising of Mangla Dam Project Mangla, Mirpur (AJ&K) PKR 96,855.0 Million
2. Integrated Community Based Watershed Management in Muzaffarabad Forest Circle (Phase-II) 03 Sep 2018 30 Jun 2019 AKDWP PKR 69.456 Million
3. Integrated Community Based Watershed Management in Poonch Forest Circle (Phase-II) 03 Sep 2018 30 Jun 2019 AKDWP PKR 66.814 Million.
4. Integrated Community Based Watershed Management in Mirpur Forest Circle (Phase-II) 03 Sep 2018 30 Jun 2019 AKDWP PKR 64.064 Million
5. Integrated Community Based Watershed Management in Muzaffarabad Forest Circle (Phase-III) Un-App PKR 180.000 Million
6. Integrated Community Based Watershed Management in Poonch Forest Circle (Phase-III) Un-App PKR 220.000 Million.
7. Integrated Community Based Watershed Management in Mirpur Forest Circle (Phase-III) Un-App PKR 180.000 Million
8. Construction of Small Dam with its Irrigation distribution system at Randyam Nala &Khadora Nala (Sarhad),District Bhimber Un-App PKR 200.000 Million

F. GB

1. Satpara Dam Satpara Nullah near Skardu, Gilgit-Baltistan, PKR 4,480.0 Million
2. Diamer Basha Dam Project (Dam Part) ECNEC 17.04.2018 PKR 232000.000 Million
3. Diamer Basha Dam Project (Land Acquisition and Re-settlement) ECNEC 30.04.2020 PKR 175000.000 Million

G. KP

1. Raising of Baran Dam, Bannu PKR 2,500.0 Million
2. Construction of Small Dams in District Mansehra / Khyber Pakhtunkhwa PKR 6,660.9 Million
3. CRBC 1st Lift Cum Gravity Project, D.I.Khan PKR 61,066.8 Million
4. Flood Protection Marginal Bund, D.I. Khan (PC-II) PKR 30.0 Million
5. Remodeling of Warsak Canal System in Peshawar & Nowshera PKR 12,000.0 Million
6. Rehabilitation of Irrigation System in Khyber Pakhtunkhwa (All over KPK) PKR 8,484.2 Million
7. Dam Project (Detailed Engineering Design) Charsadda (Medium) (France) PKR 937.9 Million

8. Construction of Kurram Tangi Dam, North Waziristan, (Medium) (USA) PKR 21,059.3 Million
9. Construction of Gomal Zam Dam (17 MW) (South Waziristan) (Medium) (USA) 20,626.0 Million
10. Construction of Palai / Kundal / Sanam Dams (Multiple Districts of KPK) PKR 3,847.7 Million
11. Construction of 20 Small Dams in Khyber Pakhtunkhwa (Multiple Districts) PKR 3,500.0 Million
12. Chao Tangi Small Dam, SWA [KP] CDWP 25.05.2018 PKR 994.010 Million
13. Construction of Makh Banda Dam, District Kohat DDWP 28.01.2020 PKR 814.519 Million.
14. Construction of Khattak Banda Dam, Shakar Dara District Kohat DDWP 28.01.2020 1 PKR 460.544 Million.
15. Construction of Pezu Dam Project District Lakhi Marwat DDWP 28.01.2020 PKR 758.462 Million.
16. Increasing storage capacity and Improvement of Command Area of Tanda Dam CDWP 03.03.2020 PKR 2545.550 Million.
17. Chashma Right Bank 1st Lift Cum Gravity Project PKR 119,600.0 Million

4.2. Agriculture Sector

A. Federal

1. Establishment of Food Security Information System DDWP 24.02.2020 100.012
2. Updation of Agro Ecological Zones of Pakistan through Satellite and In-situ Data Mapping DDWP 24.02.2020 60.450
3. Quality Seed Production and Supply to the Farming Community for Ensuring Food Security in Pakistan DDWP 02.04.2020 PKR 764.105
4. National program for improvement of climate resilient watercourses in Pakistan Phase-II (PKR. 1,651 Million)

B. Punjab

1. Promotion of High value Agriculture through Solarization of Drip & sprinkler Irrigation Systems (PKR. 600 Million)
2. Developing Pothwar water stress region into an olive valley (PKR. 233 Million)
3. National Program for Enhancing Command Area of Small and Mini Dams in Barani Areas of Pakistan (PKR. 127 Million)
4. Upgradation of Hydrualic Research Station Nandipur, Gujranwala. World Bank assistance of $35m
5. Establishment of Strategic Planning Reform Unit in Irrigation Deptt (PC-II)
6. Strengthening Left Flood Embankment of link No.III (DCRIP)
7. Reclaiming Agriculture Land Affected due to Water Logging R.Y.Khan
8. Rehabilitation of Naushera Disty System. Approved PDWP 2014/07/01 Gujranwala
9. Irrigation Management of Hill torrent Flood Protection Rajanpur
10. Flood Protection Bund Basti Darbar Hazrat at Sultan Bahoo. Approved DDSC 2016/02/04 Jhang
11. Recharge of Aquifer for Groundwater Management Punjab, PKR. 582 Million
12. Protection of Bhakkar Flood Bund, Approved PDWP 2014/12/05 Bhakkar
13. Management of Hill Torrents in Irrigation Zone, (SORI, Kaha Hill torrent, Mithawan), Approved PDWP 2014/12/08 Dera Ghazi Khan,Rajanpur

14. Rasing and Stregh. of Sanawan Flood Bund D.G. Khan
15. Enhancing Capacity of Sheikhupura Drain, Approved PDWP 2016/07/15 Sheikhupura
16. Rehabilitation concrete Lining of sharqpur Disty system
17. Management of Flood Protection of Deg Nullah (Channelization and enhancing capacity of Basantar Nullah Un-Approved Sialkot
18. Rehabilitation of Eastern Siddiqe Canal
19. Construction of Flood Bund along River Indus from Raikh Bagh Wala Rajanpur
20. Selected Reaches of Jhang Flood Protection Bund Jhang and Thatta
21. Construction of Jhelum City Flood Protection Bund along Right Bank
22. Providing Flood Protection Bund along Left Bank of River Chenab
23. Remodeling of SMB Link Canal and enhancing Mailsi Syphon
24. Study on Aquifer Punjab at Sub Basin Determine Options (as on 27.4.17)
25. Extending Cantonment Flood Bund Downstream G.T. Road Bridge Jhelum
26. Rehabilitation and Upgradation of Fakhar Flood Bund Rajanpur
27. Emergent works / measures against the erosive action of river flows to protect Flood / Irrigation Infrastructure (PKR. 400 Million).

C. GB

1. Capacity building of water user Association and staff of Water Management GB. 27-11-2014 PKR 10.000 Million
2. Sustainable Management of Fish Resources in GB. un-app 59.000 Million.
3. Promotion of horticultural crops with special focus on off season vegetable farming in Diamer 08-02-2013 PKR 45.000 Million
4. Poverty reduction through promotion of Horticultural and Cereal Crop in District Diamer PKR. 35.000 Million
5. Poverty alleviation through farm income generation activities in Ghizer. PKR 56.000 Million.
6. Development and conservation of Fisheries resources in District Hunza-Nagar. 04-09-2014 PKR 10.000 Million

D. KP

1. Water Conservation in Barani Area of Khyber Pakhtunkhwa ECNEC 29.08.2019 5090.431

4.3. Energy Sector

A. Sindh

1. Establishment of Technical Supporting Units in Directorate of Alternative Energy for Wind, Solar & Bio-gas Technologies Karachi 60 Million
2. Feasibility Study for 50 MW Concentrated Solar Thermal Power Generation Project in Sindh 2014 19.691 Million.
3. Solar Powered LED Street Lights Model Project at Gadap Town, Malir, Karachi 36.8 Million
4. Establishment of planning & Monitoring Cell in E&AE Department 40 Million
5. Electrification of Primary Health Facilities Through Solar PV Technology.PKR 454 Million.

6. Evacuation of Power from 1224MW Wind Power Plants at Jhimpir Clusters(NTDC) ECNEC 24.11.2017 PKR 10752.610 Million
7. Evacuation of Power from Wind Power Projects at Jhimpir and Gharo Wind Clusters. PKR 12,572.7 Million.

B. Punjab

1. Solarization of Basic Health Units (Phase-I) (PKR. 430 Million)
2. Energy Efficiency & Conservation Programme (PKR. 417 Million)
3. Establishment of Mini Hydro Power Sites (PKR. 317 Million
4. Solar Solution for households in off-grid areas of South Punjab (PKR. 300 Million)
5. Design and Construction of Net Zero Energy Building. (ACEIP, DLI-8) (PKR. 131 Million)
6. Solar Solution for households in off-grid areas of South Punjab (PKR. 300 Million)
7. Installation of Solar Energy System at Supreme Court Branch Registry Office, Karachi. DDWP 19.03.2020 PKR 11.188
8. Solarization of Basic Heath Units (Phase-II)
9. Installation of 2.5 MW Solar Photovoltaic Power Plant at lslamia University Bahawalpur
10. 1200-MW LNG Based Power Plant Baloki PKR 92,527.9 Million.
11. 1200-MW LNG Based Power Plant, Haveli Bahadurshah PKR 98,227.3 Million.
12. Renewable Energy Development Sector Investment Programme (REDSIP)

C. Balochistan

1. Consultancy services for Feasibility Study of Solar Water Pumping in Balochistan area (NTDC) (Own Resources) CDWP 04.07.2019 PKR 154.400 Million

D. AJK

1. Neelum Jhelum Hydro Power Project (969 MW) (China, Kuwait, Saudi Arabia, IDB and OPEC) ECNEC 23.05.2018 PKR 506808.610 Million
2. Construction of 1.6 MW Hajira Hydro Power Project District Poonch 28 May 2015 30 Jun 2019 AKCDC PKR 399.589 Million
3. Upgradation of Kel-I Hydro Power Station,from 200 to 500 KW District Neelum. 28 May 2015 30 Jun 2019 AKCDC PKR 139.443 Million
4. Construction of 40.0 MW Dowarian Hydro Power Project District Neelum. Total Cost Rs.5973.390 Million (Local Share 22.3% = Rs. 1327.80 Million) 04 Mar 2015 04 Mar 2019 ECNEC 5,973.390 (4,645.590 F.Aid)
5. Construction of 35 MW Nagdar Hydro Power Project District Neelum. Total Cost Rs.6845.055 Million (Local Share 27.5%= Rs.1885.34 Million). 04 Mar 2015 04 Mar 2019 ECNEC 6,845.055 (4,959.720 F.Aid)
6. Construction of 1.0 MW Bhedi Doba Hydro Power Project District Haveli. 28 May 2015 30 Jun 2019 AKCDC PKR 227.859 Million Revised Cost: PKR 316.381 Million.
7. Construction of 14.4 MW Jhing Hydro Power Project District Muzaffarabad. Total Cost: Rs. 1813.850 Million Local Share: Rs. 915.000 Million 02 Oct 2015 31 Dec 2019 ECNEC PKR 915.000 Million

8. Construction of 4.0 MW Kapa Banamula Hydro Power Project (Phase-I) Leepa Valley District Jhelum Valley (Hattian Bala) 28 May 2015 05 May 2018 AKCDC PKR 395.513 Million PKR 454.840 15% Exc
9. Identification of New Hydro Power Potential & Preparation of Feasibility Studies in AJ&K (PC-II). 24 Feb 2017 30 Jun 2020 AKDWP PKR 66.742 Million
10. Construction of 3.2 MW Chamfall Hydro Power Project District Jhelum Valley Un-App PKR 747.899 Million
11. Construction of 3.0 MW Narrdigian Hydro Power Project District Jhelum Valley Un-App PKR 600.000 Million
12. Detailed Design & Feasibility Study for Construction of 1.0 MW Phullawai Hydro Power Project District Neelum Un-App PKR 8.000 Million.
13. Construction of 800 KW Kalsan Makri Hydro Power Project District Muzaffarabad (PDO Self-financing) Costing Rs. 210.000 Million.
14. 48 MW Jagran-II Hydro Power Project AJK PKR 11767.410 Million
15. Mangla Hydropower Training Institute (HPTI) AFD Grant, Mirpur Azad Kashmir PKR 486.2 Million.
16. Mangla Power Station Refurbishment & Upgradation of Generation Units (310 MW) PKR 52,224.3 Million.

E. GB

1. Evacuation of power from 2160MW Dasu Hydro Power Project HPP Stage-I (NTDC) CDWP 02.05.2018 PKR 85595.000 Million
2. 20 MW Hydro Power Project, Hanzil ECNEC 20.07.2016 PKR 6273.569
3. Introduction of Solar energy in Planning and Development Department GB 05-09-2014. PKR 59.651 milion.
4. 01MW Hydro power project at Nar and Ghoro, Skardu. PKR 165.738 Million
5. 1.5MW hydro power project Phase-III Sermik Skardu (Stage-1). PKR 224.3 Million
6. 1.5MW hydro power project Mendi Roundu. PKR167.701 Million
7. 1MW hydro power project Ganokh Kharmong. PKR 184.981 Million
8. 0.5MW hydro power project Hashupi Phase-II Shiger. PKR 125.611 Million
9. 04 Nos mini hydros of total capacity 0.6MW in Gultari area. PKR 156.032 Million.
10. Const. of 01 MW HPP at Kachura. PKR 158.594 Million.
11. Shifting of 0.5 MW unit H/S Shiriting to Gabis Kharmong. PKR 60 Million.
12. 1.5 MW H/Power Project Manthokha Ph-II. PKR 310.00 Million.
13. 1.5 MW H/Power Project Tolti Ph-III Kharmong. PKR 700 Million.
14. 02MW Hydro Power Project Ganji Roundu. PKR 200 Million.
15. Extention of TD lines from 01 MW Harghosil hydro power project to Olding village and Army. PKR 55 Million.
16. Feasibility study of 30 Nos. (127 MW) Hydro Electric Power Projects in GB (PC-II). (F.Aid) PKR 165.600 Million.
17. Procurement of machine tools & plants for hydroelectric workshop Gilgit Baltistan. PKR 97.692 Million.

18. Feasibility study for multipurpose Hydropower project of appropriate capacity on Gilgit River at Sakarkoi. PKR 20 Million.
19. Construction of 2.5 MW hydro power project at Dormoshko Gilgit (Stage-1). PKR 336.300 Million.
20. Const. of 1 MW Hydel Power Project at Juglot Sai Ph-II PKR 255.520 Million.
21. Construction of 3.5 MW Hydro Power Project Hamaran Bilchar Bagrote.PKR 393.022 Million.
22. Construction of 01 MW Hydro Power Project Danyore Gilgit. PKR 206.956 Million
23. Construction of 01MW Hydro power project at Nar and Ghoro, Skardu. PKR 165.738 Million.
24. Construction 1.5MW hydro power project Phase-III Sermik Skardu (Stage-1) PKR 224.200 miilion
25. Construction of 1.5MW hydro power project Mendi Roundu. PKR 272.200 Million.
26. Construction of 1MW hydro power project Ganokh Kharmong. 26-05-2012 184.981
27. Construction of 0.5MW hydro power project Hashupi Phase-II Shiger. PKR 125.611 Million.
28. Construction of 04 Nos mini hydros of total capacity 0.6MW in Gultari area. PKR 156.032 Million.
29. Const. of 01 MW HPP at Kachura. 26-05-2012 158.594. PKR Million.
30. Construction of 1.5 MW H/Power Project Manthokha Ph-II. PKR 310.000 Million.
31. Construction of 1.5 MW H/Power Project Tolti Ph-III Kharmong. PKR 284.700 milion.
32. Construction of 02MW Hydro Power Project Ganji Roundu. PKR 356.200 Million.
33. Feasibility study of 05MW HPP at Sadpara with peaking reservoir un-app PKR 15 Million.
34. Up-grading of 160 KW Hydro Power Station Tangir to 02 MW. 27-01-2014. PKR 343.857 Million.
35. Construction of 02 MW Hydro Power Project Botogah Ph-V. 27-01-2014 PKR 341.891 Million.
36. 14 Nos Micro Hydro Power Projects in District Diamer. 12-10-2012. PKR 60.000 Million.
37. Construction of Construction of 1.5 MW Hydro Power Project at Riakote Muthat. 27-01-2014 PKR 272..000 Million.
38. Construction of 01 MW Hydro Power Project at Giyal Shabakul Darel. 27-01-2014 PKR 223.938 Million.
39. Construction of 2.6 MW hydel projet at Darmadar 27-01-2014. PKR 344.124 Million.
40. Construction of 500 KW Hydro Power Project Asumber Ishkoman. 07-11-2013. PKR 118.921Million.
41. Construction of 01 MW Hydro Power Project Nazbar Ph-II 07-11-2013. PKR 178.196 Million.
42. Up-grading of transmissin line from 02 MW Hydro Power Project Batheraiz to Gahkuch HQ including 3 Km underground transmission line at Darkut. 29-05-2013 120.000
43. Construction of 01 MW Hydro Power Project Sherqila Ph-III 27-01-2014. PKR 208.329 Million.
44. Const. of 02 MW Hydro Power Project Dahiter Nagar, Gilgit. 27-01-2014. PKR 356.830 Million.
45. Const. of 2.00 MW Hydro Power Project at Hisper River Nagar-I 27-01-2014. PKR 382.800 Million.
46. Construction of 1.700 MW Hydro Power Project Hassan Abad Ph-V Hunza. 27-01-2014. PKR 356.450 Million.
47. Const. of 0.500 MW Hydro Power Project at Chalt NagarII. 07-11-2013. PKR 115.270 Million.
48. Const. of 0.500 MW Hydro Power Project Mayon Hunza. 07-11-2013. PKR 139.469 Million.
49. Construction of 1.5 MW Hydropower Project at Saltoro (Seth) 27-01-2014 290.731
50. Construction of 0.5 MW Hydro Power Project (Phase-II) at Keris 07-11-2013. PKR 134.7 Million.
51. Feasiblity study for construction of weir of 02 Nos Power Stations (1.2 MW Balaygond and 6 MW Balaygond I &II) under peaking facility of 4000 m3 water storage. 12-01-2015. PKR 10.00 Million.
52. Const. of 02 MW Hydro Power Project Dichal Dashkin Astore. 03-12-2014. PKR 344.772 Million.

53. Construction of 02 MW Hydro Power Project Yeshlteto Nullah Astore, Stage-I. 27-01-2014. PKR 333.815 Million.
54. Const. of 0.5 MW Hydro Power Project at Daskharam 07-11-2013. PKR 129.700 Million.
55. Construction of 01MW hydro power project at Tarishing Astore. 06-06-2014.PKR 189.939 Million.
56. Const. of 14 MW Hydel Power Project Naltar-V. Federal Funded.PKR 3843.753
57. Const. of 16 MW Hydel Power Project NaltarIII 04-03-2015. Federal Funded. PKR 2900.000 Million.
58. 30 MW Hydro Power Project Ghowari on Shayoke River (ADB FUNDED). PKR 7785.817 Million.

F. KP

59. Tarbela Fifth Extension Hydro Power Project (1410 MW) Sawabi ECNEC 20.12.2016 PKR 82361.600 Million.
60. Tarbela Fourth Extension Hydro Power Project (1410 MW) (Swabi) ECNEC 06.01.2020 PKR 122977.000 Million.
61. Chitral Hydel Power Station Capacity Enhancement From 1 MW to 5 MW CDWP 08.03.2017 PKR 2188.835 Million.
62. Dargai Hydroelectric Power Station Rehabilitation & Capacity Enhancement from 20 to 22 MW ECNEC 14.11.2018 PKR 4050.364 Million.
63. Dasu Hydro Power Project Stage-I (2160 MW) (District Kohistan, Khyber Pakhtunkhwa) ECNEC 07.11.2019 PKR 510980.200 Million.
64. Ghazi Barotha Hydropower Project (Feasibility) CDWP 06.08.2019 PKR 112.000 Million.
65. Warsak Hydroelectric Power Station 2nd Rehabilitation (242.96 MW) PKR 22,254.2 Million.
66. Golan Gol Hydro Power Project (106 MW) (Chitral) PKR 28,202.4 Million.
67. Keyal Khawar Hydro Power Project, Khyber Pakhtunkhwa, (Battagram) (128 MW) PKR 26,084.2 Million.

4.4. Environment Sector

A. Sindh

1. Study of Environment &Health Impacts of Pesticides & Chemical Fertilizer in Sindh. 33 Million
2. Study for E- Waste Management in Sindh province. 18.96 Million
3. Awareness & preparation of Action plan for improving Hospital Waste Management in public sector hospitals. 18.66 Million
4. Strengthening of Environmental Monitoring System in EPA. 194 Million
5. Enviromental Awareness & Education for Protection and Consevation of Natural resources in Sindh. 123 Million
6. Impacts of Pesticides &Chemeical Fertilizer in Sindh (Larkana, Karachi, Mirpurkhas, Jacobabad, Kashmore, Ghotki, Sukkur, SBA, T.A.Yar, Thatta & Badin.
7. Development & upgradation of Environmental Profile of Sindh through Environmental Information System (SDG # 13). PKRS 128 Million.

8. Study on Sea Intrusion Impacts in Coastal Areas of Sindh and to identify mitigation measures (SDG # 14, 15). PKRS 100 Million.
9. Establishment of fixed Air Quality Monitoring Stations in major cities of Sindh (SDG # 11 and 13). PKRS 100 Million.
10. Sarsabz Sindh Making Sindh Green and Environment Friendly (SDG 15). PKRS 599.944

B. Punjab

1. Retrofitting of Public Institutes as a part of Punjab Green Development Programme. (PKR. 500 Million). World Bank funded Punjab 2018.

C. AJK

1. Strengthening of Environmental Governance and Monitoring Support 28 Nov 2016 28 Nov 2019 AKDWP PKR 73.684 Million. C.C.
2. Strengthening of Legal Enforcement Framework of EPA.(SLEF),Phase-II. 02 Nov 2017 26 Oct 2020 AKDWP. PKR 31.161 Million.

D. GB

1. Mass awareness and understanding of climate change in GB . PKR 5.000 Million.
2. Environment/Environmental Management and Monitoring System in Gilgit-Baltistan. 22-08-2014. PKR 117 Million
3. Application of Environmental Impact Assessment and CDM on development projects. un-app PKR 20.000 Million.
4. Gilgit Environmental improvement Project- PCII (GDA). 22-08-2014. PKR 88.000 Million
5. Capacity building of wildlife Division Baltistan, Diamer and Gilgit Region. 19-08-2014. PKR 40.000 Million.
6. Establishment of high-Altitude wildlife Rehabilitation and Research Center GB Nalter. 19-08-2014. PKR 22.000 Million.
7. Participatory Management of CKNP Ph-II. 02-01-2015. PKR 106.106 Million.
8. Watershed Management in the Catchment Area of Sadpara Dam. PKR 50 Million
9. Impact studies, research and baseline sectoral studies for evidence-based Planning in GB. PKR 20.000 Million.

4.5. Disaster Risk Reduction (DRR)

A. Federal

1. Project Between Pakistan Meteorological Department and Marmara Research Centre (MRC), Turkey (IDB). CDWP 30.09.2015 PKR 101.0 Million
2. Strengthening of Early Warning System of Pakistan Metrological Department. 2017. PKR 19,154.0 Million.
3. Establishment of Pakistan Glacier Monitoring Network Upper Indus Basin Area Falling within KPK, Gilgit Baltistan, and Azad Jammu & Kashmir CDWP 08.06.2016 891.780

4. Disaster and Climate Resilience Improvement Project (IDA - World Bank Assisted) WB: Rs.2500.000 M 25 Jun 2015 31 Mar 2020 CDWP 2,500.000 (2,500.000 F.Aid) Million

B. Sindh

1. Monitoring Sea Level Rise, Sea Water Intrusion and Land Subsidence in Indus Deltaic Creek System with Special Reference to Sindh Coastal Cities flooding, NIO (CPEC Related Project) PKR 833 650.1 Million.

C. Punjab

1. Installation of Weather Surveillance Radar at Multan in the Islamic Republic of Pakistan CDWP 24.05.2018 PKR 1848.650 Million
2. Extension and rehabilitation of Qutab drain to protect floods(PKR. 500 Million)
3. Restoration of Lakhi Flood Bund and Protection Defence Flood Bund
4. Restoration of Hassuwali Flood Bund Along with its River Training
5. Checking Erosive Action at Gangwal Papin Marala Sialkot
6. Raising Strengthening of Right Flood Embankment along DKC

D. AJK

1. Flood 2014 Emergency Reconstruction and Resilience Project in AJ&K, funded by the Asian Development Bank, costing Rs.7,733.42 Million
2. Disaster and Climate Resilience Improvement Project in AJ&K funded by the World Bank, costing Rs. 2,500.00 Million.
3. Identification of Flood 2014 Emergency Reconstruction & Multi - Disaster Resilience Programme 19 May 2015 31 Mar 2020 AKDWP 22.122 75.698 R.Revised
4. GIS Based Multi Sectoral Thematic Mapping Programme in AJ&K 15 May 2018 30 Jun 2021 AKDWP 69.556
5. Continuation of Climate Change Center (CCC) 20 Nov 2018 31 Dec 2021 AKDWP 41.427
6. Support to Flood 2014 Emergency Reconstruction & Resilience Project in AJ&K, For Payment of salaries and Operational Costs 24 May 2019 31 Aug 2019 AKDWP 31.141

E. GB

1. Reducing Glacier Lake Outburst Flood Risks in Northern Pakistan (GLOF-I), Adaptation Fund
    a. $3,906,000
2. Scaling-up of Glacial Lake Outburst Flood (GLOF) risk reduction in Northern Pakistan, GLOF-II, GCF $20,829,397

F. KP

1. Establishment of Flood Forecasting & Warning System for Kalpani Nullah Basin, Mardan, Khyber Pakhtunkhwa. PKR 230.0 Million.

2. Construction and Improvement of Irrigation Infrastructure including Flood Protection Work, Channels, Road, Tube wells & Crossing Facilities in District Swabi DDWP 28.01.2020 PKR 710.897 Million.
3. Reducing Glacier Lake Outburst Flood Risks in Northern Pakistan (GLOF-I), Adaptation Fund
    a. $3,906,000
4. Scaling-up of Glacial Lake Outburst Flood (GLOF) risk reduction in Northern Pakistan, GLOF-II, GCF $20,829,397

4.6. Forestry and Biodiversity

A. Federal

1. Establishment of Geomatic Centre for Climate Change and Sustainable Development 48.5
2. Sustainable Land Management Programme to Combat Desertification in Pakistan. PKR 105.4 Million
3. Green Pakistan Programme PKR 2,000.0 Million
4. Green Pakistan Programme - Revival of Forestry Resources in Pakistan. PKR 3,652.1 Million
5. Green Pakistan Programme – Revival of Wildlife Resources in Pakistan. PKR 738.9 Million
6. Green Pakistan Programme -- Strengthening Zoological Survey of Pakistan undertaking immediate inventory of endangered wildlife species and habitats across Pakistan. PKR 76.7 0.0 Million.

B. Sindh

1. Conservation Development and Management of Indus Delta Mangroves to Check Sea Intrusion. PKRS 631 Million.
2. Possible Role of Mangroves in Curbing Sea Intrusion in Indus Delta. PKRS 698.11 Million
3. Rehabilitation, Restoration and Management of Flora and Fauna in Pai Forest of Afforstation Division. PKRS 77.714 Million.
4. Habitant Restoration and Promotion of Eco-Tourism through Development of Wildlife Safari in Booharki Forest, District Badin. PKRS 250 Million
5. Mass Scale Tree Plantation Outside Forest Area to Mitigate Climate Change Affects in Sindh. PKRS 705 Million.
6. Enhancing Tree Cover on State Forest Lands in Sindh (Badin, Thar, Jamshoro, T.Allahyar, Matiari, Umerkot, T.M.Khan Sukkur, Dadu, Khairpur, Ghotki, Shikarpur, Larkano, Jacobabad, Kamber, SBA, N.Feroze, Sanghar & Kashmore) (SDG 15). PKRS 708 Million.
7. Establishment and Management of Network of Biodiversity Parks in Sindh (Sukkur, Larkana, Ghotki, Khairpur, Matiari, Tharparkar, Thatta & Dadu. PKRS 494 Million
8. Geo-referred demorcation and construction of Earthen bunds for protection of forest land and upgradation of GIS Laboratory at Hyderabad (Larkana, Kandhkot, Shikarpur, Dadu, Sukkur, Ghotki, Khairpur, SBA, Sanghar, Thatta, T.M. Khan, Karachi, N. Feroze, Tharparkar, Jacobabad, Mirpurkhas and Badin) PKRs 246.48 Million
9. Strengthening of Forest Conservation to Combat Drought & Desertification & Improvement of Rangelands. PKRS 500 Milliom.

10. Planting of 1.25 Million Tree Saplings to Reduce Effects of Climate Change in Cities & Towns of Sindh. PKRS 500 Million
11. Conservation and Propagation of Bio-Diversity in District Tharparkar. PKRS 58.01 Million.
12. Diversity and Development of Eco- Tourism at Deh: Akro-II, Wetland Complex Wildlife Sactuary. PKRS 72.931 Million.
13. Rehabilitation & Improvement of Haleji and Langh Lake Wildlife sanctuary (C:107.184+R:43.787) (SDG # 13,15). PKR 150.971 Million.
14. Restoration of Habitat of Nara Game Reserve and Nara Wildlife Sanctuary. PKRS 50 Million
15. Establishment of Forest, Environment & W ildlife Institute of Research & Education. PKRS 400 Million.
16. Habitat Restoration & Development of W ater Harvesting facilities at Khirthar National Park.PKRS 40 Million.
17. Habitat Restoration & Development of Eco-Tourism at Indus Dolphin Reserve (C:26.082+R:20.918) (SDG # 13,15) PKR 47 Million.
18. Bio-diversity conservation, through improvement and rehabilitation of Keenjhar and Hudero Lake, Wildlife sanctuary (SDG # 13, 15). PKRS 80 Million.
19. Bio-diversity conservation of Kot Dinghano Wildlife sanctuary through community participation (SDG # 13,). PKRS 60 Million.
20. Green Pakistan Program-Revival of Forestry and Wildlife Resources in Pakistan (Ten billion Tree Tsunami Program, Phase-I Up-scaling of GPP) Sindh chapter (Total cost of Rs. 5827.400 Million, GoP share of Rs. 2811.050 Million and GoS share Rs. 3016.350 Million)(SDG# 14 & 15).
21. Demarcation Reforestation & Regeneration of Vacted Forest Land (SDG 15). PKRS 135 Million.
22. Completion of leftover/remaining targets of Bahman Nature Park Larkano (SDG 15). PKRS 60 Million.
23. Satellite Based Mapping of Forest Areas and Follow-up Satellite Service for Implementation of Sindh Sustainable Forest Management Policy 2019 (SDG 15).PKRS 320 Million.
24. Conservation & Management of Biodiversity & Development of Ecotourism at Deh Akro-II, Wetland Complex Wildlife Sanctuary. (C:26.323+R:46.60) (SDG # 13,15). PKR 72.932 Million.
25. Conservation of Marine & Fresh Water Turtle and allied Species (SDG # 13,15).PKR 60 Million.
26. Population Survey of Flagship Wildlife Species of Sindh (SDG # 13,15).PKR 40 Million.

C. AJK

1. Reforestation Program in Demarcated Forest of North AJ&K 16 Dec 2014 16 Dec 2017 AKCDC. PKR 219.254 Million
2. Reforestation Program in Demarcated Forests of South AJ&K 16 Dec 2014 16 Dec 2017 AKCDC PKR 221.669 Million
3. Establishment of Permanent Forests Nurseries in AJ&K 27 Mar 2012 27 Mar 2017 AKCDC PKR 398.722 Million
4. Protection of Forests from Fire in AJ&K (Phase-II) 29 Apr 2011 29 Apr 2016 AKCDC PKR 182.000 Million
5. Demarcation of Forests in AJ&K 28 Apr 2016 22 Apr 2018 AKCDC PKR189.147 Million
6. Support to Natural Regeneration in Demarcated Forests of AJ&K. (Phase-II) 06 Jun 2018 06 May 2021 AKCDC PKR 350.000 Million

7. Reforestation Program in Demarcated Forest of Muzaffarabad Forest Circle Un-App PKR 180.000 Million
8. Reforestation Program in Demarcated Forest of Poonch Forest Circle Un-App PKR 175.000 Million
9. Reforestation Program in Demarcated Forest of Mirpur Forest Circle Un-App PKR 170.000 Million
10. Biodiversity Conservation of Peer Lasura National Park(Fatehpur), Kotli and Establishment of Wildlife Park at Qadirabad (Bagh) and Pallandri Un-App PKR 100.000 Million
11. Biodiversity Conservation of Peer Lasura National Park(Fatehpur), Kotli. Un-App PKR 40.000 Million
12. Biodiversity Conservation of Peer Lasura National Park(Fatehpur), Kotli and Establishment of Wildlife Park at Qadirabad (Bagh) and Pallandri Un-App PKR 100.000 Million
13. Biodiversity Conservation of Peer Lasura National Park(Fatehpur), Kotli. Un-App PKR 40.000 Million

5. Conclusion

To achieve its vision of becoming an upper-middle-income country by 2025, Pakistan needs to develop policies and programs that promote an economy and society resilient to a range of shocks and stresses, including those induced directly and indirectly by climate change. As a demonstration of political commitment and ownership, Pakistan integrated the Sustainable Development Goals (SDGs) into its national development agenda in February 2016[47]. Pakistan was first such country to do so. This reorientation in approach was guided inter alia by lessons learnt from the implementation strategy of Millennium Development Goals (MDGs). A National SDGs Framework was launched in 2018 envisaging a national vision, plan and strategy to optimize, prioritize and localize the full potential of SDGs in Pakistan. In terms of institutional arrangement, task forces in the National and Provincial Parliaments have been established to review progress and facilitate legislative support for implementation.

Seven SDGs Support Units instituted at Federal and Provincial Government levels facilitate vertical and horizontal coordination among the stakeholders. Notwithstanding economic and financial challenges, Pakistan will continue to work towards achieving the SDGs through innovative, targeted and focused implementation strategies in the social, economic and environmental fields. Even as our carbon footprint is miniscule, the adverse impacts of climate change on Pakistan are enormous and imminent. Climate adaptation has become a forced reality for Pakistan. These factors notwithstanding, Pakistan has commenced actions to both protect the environment and contribute towards efforts to minimize the adversaries of climate change. Both adaptation and mitigation are reflected in our policy and implementation framework.

The GOP has taken some major steps toward climate actions by re-establishing the MOCC and preparing its NCCP and associated Framework. As discussed in Section 2, MOCC took 26 major Climate Change focused initiatives / projects in the past 8 years. Other federal Ministries, attached departments and provincial governments have also executed 23 major climate change related projects. These steps

[47] Parry, J-E. 2016. Review of current and planned adaptation action in Pakistan. CARIAA Working Paper no. 15. International Development Research Centre, Ottawa, Canada and UK Aid, London, United Kingdom.

set the direction of the country's climate change commitments to address the issue and identify priority actions to be taken in the immediate, short, medium, and long terms. Pakistan's Billion Tree plantation over 350,000 hectares was the first Bonn Challenge pledge to hit and surpass its commitment, through national resources. This project has now been up-scaled to 10 Billion Tree Tsunami – a five-year country-wide tree plantation drive to restore depleted forests and mitigate climate change. Moreover, programmes such as Clean and Green Pakistan as well as Recharge Pakistan have been launched. These Nature Based Solutions for Ecosystem Restoration are leading examples of climate action among developing countries, with co-benefits to improve bio-diversity and livelihood generation. Besides the major climate change related initiatives there are a number of sector specific initiatives either completed or in process by the MOCC and provincial ministries/departments. The water has been the core sector for building resilience and adaptation to climate change related vulnerabilities. As listed in the Section 4 other than the major initiatives/projects, there are 38 water related projects focused in Sindh, 11 in Punjab, 66 in Balochistan, 8 in AJK, 3 in GB and 17 in KP. In agriculture sector there are 27 initiative's underway in Punjab, 6 in GB and 1 in KP. Energy sector has also remained a priority sector for climate actions and large number of initiatives were undertaken in GB and AJK during recent years. DRR related major projects such as GLOFs are also underway in GB and KP.

However, a number of barriers to progress on adaptation action in Pakistan remains to be overcome. Most prominent among these is the need to strengthen institutions and build capacity at the national and subnational levels. While strong institutions are needed to deal climate change challenge at the federal level, there is perhaps even greater need to build knowledge and capacity at the provincial level, given the transition of responsibility for key sectors such as agriculture, water, health, and education under the 18th Amendment. At present, climate change policy and planning at the provincial level is quite limited, and the risks associated with this process are weakly understood. More effort is needed to mainstream climate change into provincial decision-making if Pakistan is to effectively prepare for the impacts of climate change. Greater awareness of the implications of climate change for achieving Pakistan's development goals is also required to more strongly advance integration of climate risk considerations into policy and planning processes within key ministries such as Finance, Water and Power, Planning and Development, Food Security, and Health Services Regulation and Coordination. Systems for monitoring and evaluating progress toward achievement of the goals and objectives outlined in the NCCP and associated Framework also remain to be established.

Climate change poses a significant threat to Pakistan—one that has the potential to accentuate existing food, water, and energy security concerns as well as increase tensions between social groups and regions. Greater effort is needed to better understand and communicate the risk posed by climate change; identify and promote options for effectively responding to climate change while advancing sustainable development; and strengthen the capacity of different levels of government, the private sector, and civil society to engage in adaptation planning and action. Investments in these actions will better enable Pakistan to achieve its development objectives in both the immediate future and the longer term.