



CONCEPT NOTE PROPOSAL FOR SINGLE COUNTRY

PART I: PROJECT/PROGRAMME INFORMATION

Title of Project/Programme: Sustainable Actions For Ecosystems Restoration in Pakistan (SAFER Pakistan)

Country: Pakistan

Thematic Focal Area: Multi-Sector Project

Type of Implementing Entity: Regional Implementing Entity

Implementing Entity: International Centre for Integrated Mountain Development

Executing Entities: United Nations Children's Fund (UNICEF) Pakistan
National Rural Support Programme (NRSP)

Amount of Financing Requested: 10,000,000 (in US Dollars Equivalent)

Project Formulation Grant Request (available to NIEs only): Yes ☐ No ☐

Amount of Requested financing for PFG: 0 (in US Dollars Equivalent)

Letter of Endorsement (LOE) signed: Yes ☒ No ☐

Stage of Submission:

☐ This concept has been submitted before

☒ This is the first submission ever of the concept proposal

In case of a resubmission, please indicate the last submission date: N/A

Project/Programme Background and Context:

General Context

Climate change has multifaceted impacts, and Pakistan is one of the most climate-impacted countries in the world. The key climatic concerns in Pakistan include increased temperature, water stress, climate-related diseases, extreme changes in precipitation patterns, decreased agricultural productivity, unchecked urbanisation, and climate migration. The need for Pakistan to enhance its adaptive capacity, strengthen its resilience, and reduce its vulnerabilities to these shocks is evident.

These challenges require an acceleration towards an innovative and adaptive approach to managing the Indus's water resources, adapting to the increasing volatility of its availability, and warning communities of impending dangers. This must be coupled with systems and knowledge required for effective disaster risk reduction (DRR) and community-based flood early warning systems (CBFEWS), complementing ecosystem-based adaptation. Early warning information comes from individuals or organisations that generate a risk message and send it to the concerned authorities and vulnerable communities.

Evidence suggests that global climate change will exacerbate the stresses that Pakistan faces. The Intergovernmental Panel on Climate Change (IPCC) reports and ICIMOD studies have consistently ranked the Indus among the most vulnerable natural systems to global climate change. Pakistan is consistently ranked among the ten most vulnerable countries to the effects of global climate change, primarily due to the fragility of the Indus system. An average temperature increase of 1 degree Celsius over the last century (see Chart 1 above) and highly erratic and

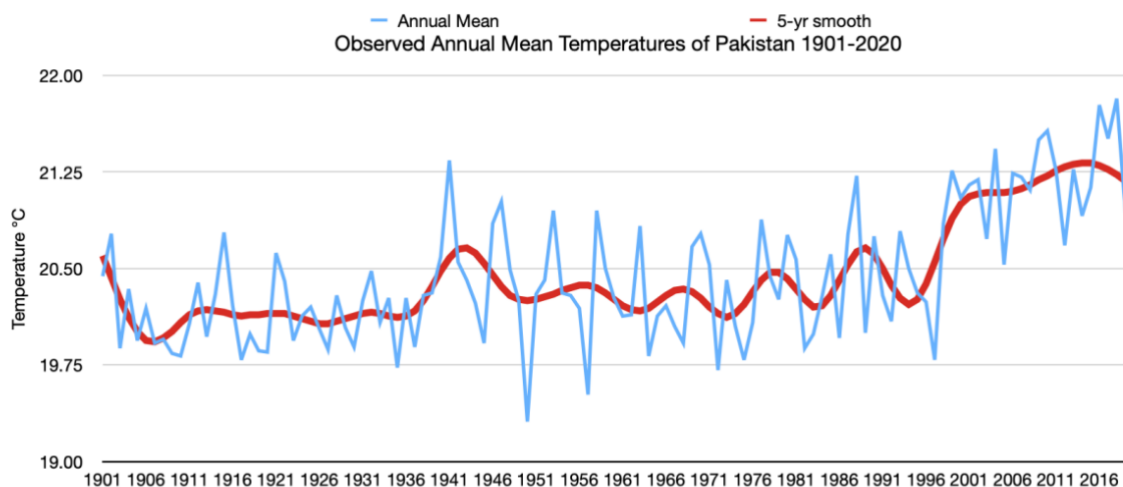


Chart 1 - Increase in average temperature in Pakistan 1901-2020

extreme weather events demonstrate the reality of this. Pakistan's vulnerability to the climate challenge is evident, as is its need, and commitment to adapting. Global warming is also expected to increase heat stress and water demand across Pakistan.

Climate change's impact on Pakistan is particularly acute due to the vulnerability of the Indus River system, the fragile ecosystems interlinked with particularly mountainous ones, and the management of its water. In the upper Indus Basin, accelerated glacial melting will increase the risks of dangerous glacial lake outburst floods. Furthermore, the Indus, in particular, is highly dependent on the meltwater of the Hindu-Kush Himalaya, drawing nearly half its volume from these sources, more so than any other river in the region (see Figure 1). 90% of Pakistan's people and over three-quarters of its economy reside in the Indus Basin. Its waters irrigate more than 80% of Pakistan's arable land. Nine of the ten largest cities in Pakistan

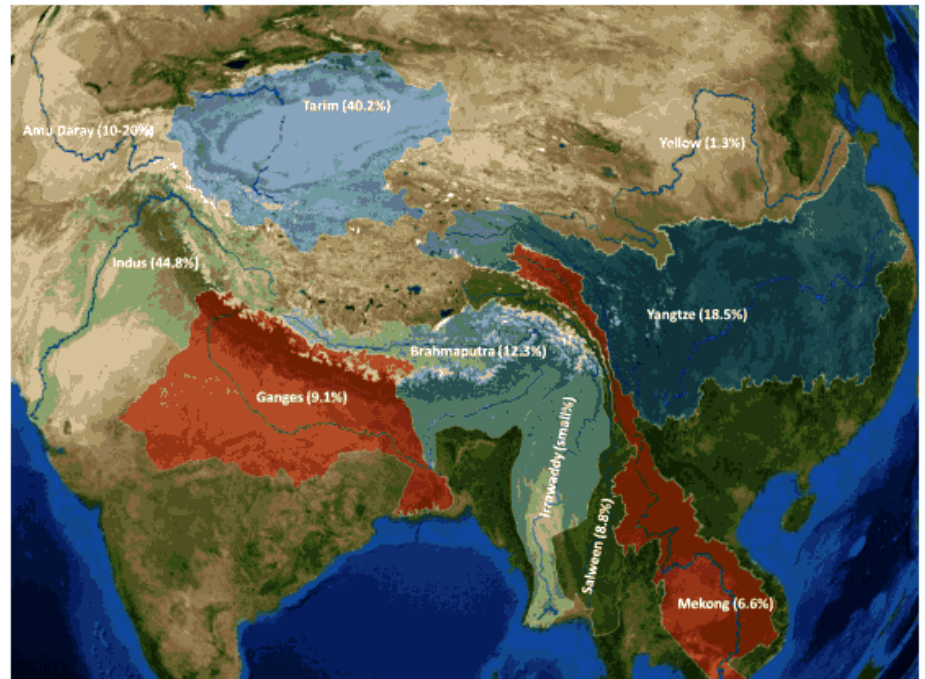
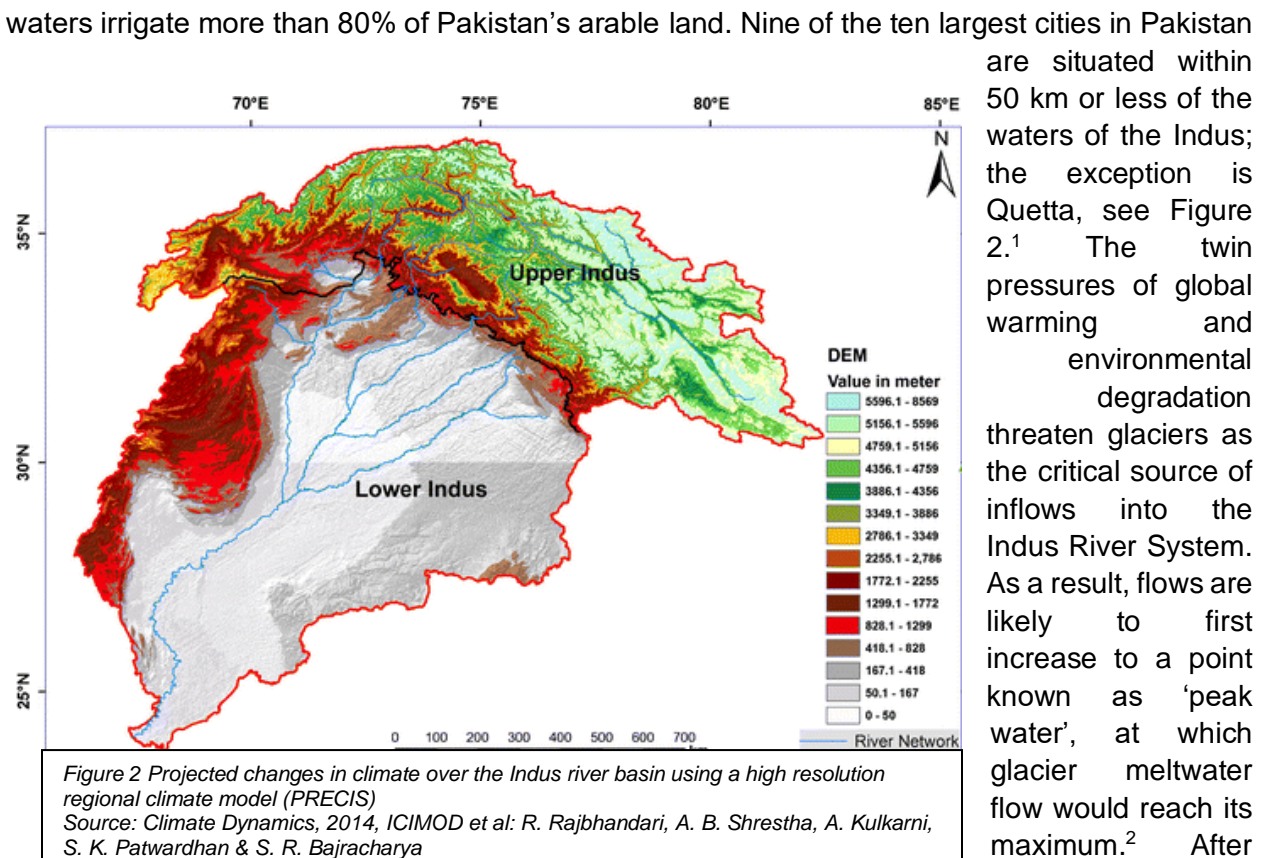


Figure 1: Predicted Percentage of Glacial Melts Contributing to Basin Flows in the Himalayan Basins. (Source: UNEP-GRID, 2012. Measuring Glacier Change in the Himalayas. GEAS Thematic Focus, September 2012.)



are situated within 50 km or less of the waters of the Indus; the exception is Quetta, see Figure 2.¹ The twin pressures of global warming and environmental degradation threaten glaciers as the critical source of inflows into the Indus River System. As a result, flows are likely to first increase to a point known as 'peak water', at which glacier meltwater flow would reach its maximum.² After

¹ <https://www.livingindus.com/>, retrieved 20.02.2023

² David J. Molden, Arun B. Shrestha (2022) The Great Glacier and Snow-Dependent Rivers of Asia and Climate Change: Heading for Troubled Waters, ICIMOD, retrieved 20.02.2023 [link](#)

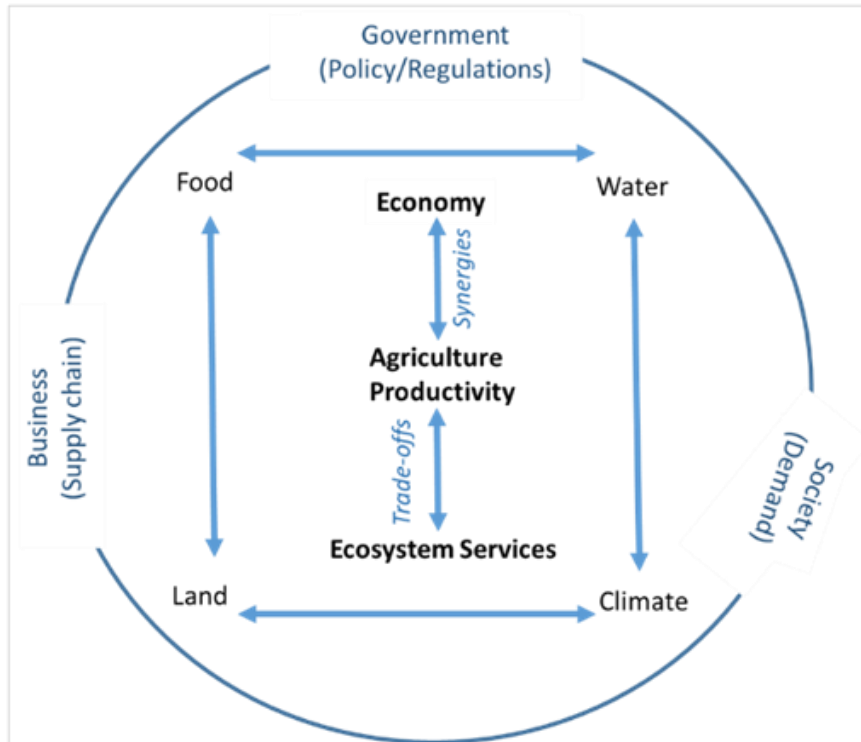
that, flows are likely to decline. This will imply a period of prolonged volatility in terms of the flow of the Indus within any given year. Anticipating these fluctuations and modelling their evolution over time to inform the adaptive management of water resources is critical for a resilient and thriving population in the Indus Basin.

However, water is quickly becoming scarce in Pakistan, especially in arid and semi-arid areas. Water scarcity problems are exacerbated by population growth, horizontal and vertical expansion of agriculture, and urbanisation. Pakistan, with a total area of 796,095 km², mainly lies in an arid to semi-arid climate. Sustainable groundwater management requires that there should be a balance between water abstraction and recharge. Since groundwater abstraction is more than recharging, efforts are needed to restore the aquifer artificially and control the groundwater abstraction using management techniques.

Springs are a crucial part of groundwater systems. Springs and their significance for water security in the Hindu Kush Himalayas are not yet fully integrated into concepts of river basin management. Nor are the livelihood implications of changes in these springs considered sufficiently in programmatic design. Moreover, springs should be more considered in matters of administration and conservation. Springshed management adds significant value and an important dimension to conventional water management approaches. It is an essential component of an integrated approach in the Indus Basin. Due to frequent earthquakes since 2005, many springs have changed their course or dried up.³ Developing an inventory of springs and assessing the availability of water there throughout the year will be an essential contribution to the area of water development and management and has been identified as a priority by the National Agriculture Research Centre. Furthermore, it is a crucial adaptive piece in addressing the volatility of glacial meltwater availability. When combined with communal ponds and an effective system of locally owned springshed rejuvenation and management, it can smooth out the flood and drought cycles locally. This can empower communities along the river to become resilient and adapt to the new climate reality.

³ The New Humanitarian (2006), Pakistan: Water a major challenge for earthquake survivors, retrieved 20.02.2023 [link](#)

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Figure 3 Water, environment and society interconnections. (Adapted from Daher BT, Mohtar RH (2015) Water–energy–food (WEF) Nexus Tool 2.0: guiding integrative resource planning and decision-making. Water Intstitute)

Disconnected sectoral and provincial approaches result in fragmented management of basin resources hampering effective basin-scale management and larger mutual gains. ICIMOD and other institutions working water and climate risks have produced credible knowledge water and climate future scenarios in key basins of the Hindu Kush Himalaya (HKH). Some work is done their potential impacts on various sectors like energy, agriculture and the environment.

However, there

remains an untapped potential for this knowledge of water-climate scenarios to be integrated more comprehensively into national policies to render local communities more resilient and adaptive. These government policies could play an important role in transforming water use practices and governance (Figure 3).

Remote sensing and land use modelling can quantify water use practices and associated changes effectively.⁴ It can identify the primary socioeconomic drivers relevant to each projection and evaluate the impacts of projected changes on critical economic and social indicators related to ecosystem services and land degradation.

Ecosystem or Nature-based solutions (NBS) are essential to creating a robust, resilient local approach to adaptation. They are actions that encourage the protection, sustainable management, and restoration of natural or modified ecosystems to address societal challenges while simultaneously supporting human well-being and biodiversity benefits. Innovations, particularly in technology and economy, supported by nature have been gaining increasing attention recently, including endorsement by the Secretary General of the United Nations. NBS are seen as a crucial step towards climate change adaptation by the United Nations Framework

⁴ Uddin, Kabir. (2019) "Operational Flood Mapping Using Multi-Temporal Sentinel-1 SAR Images: A Case Study from Bangladesh", ICIMOD, Geophysical Institute, University of Alaska Fairbanks

Convention on Climate Change and other global agencies, including the Global Center on Adaptation. Sustainable Development Goals have been expressly framed to enhance NBS. Renewable energy, clean transport, recycling, and circular economy are a few NBS that can contribute to economic growth without burdens on nature. They can also contribute to water resources management by improving water availability, improving water quality, and reducing risks of water-related extreme events. NBS use or mimic natural processes to enhance water availability (e.g., soil moisture retention, groundwater recharge), improve water quality, and reduce risks associated with water-related disasters and climate change. Currently, water management remains heavily dominated by traditional, human-built infrastructure. Also, the enormous potential for NBS remains under-utilised, including green infrastructure that can cost-effectively substitute, augment, or work in parallel with grey infrastructure. Specifically, community ponds can restore springsheds and store water for irrigation that would otherwise flood fields.

Apart from water scarcity, the increased temperatures, varied precipitation, and monsoon patterns, and increased emissions have resulted in a greater frequency of extreme weather events, as witnessed in the 2022 devastating impact of flooding that severely affected over 84 districts of Pakistan, leaving nearly 33 million people including 10 million children in need of humanitarian assistance. As per the Rapid Needs Assessment (RNA) conducted by humanitarian partners in the flood-affected locations of Sindh, Balochistan, Punjab, and Khyber Pakhtunkhwa, 5.4 million people (16%) from the 33 million people in flood-affected 84 districts moved from the use of protected to unprotected drinking water sources and 6.3 million people (19%) lost household sanitation with an estimated 950,000 household latrines damaged.

The recently launched Post-Disaster Needs Assessment (PDNA) estimates damages worth 575 million USD with additional losses of 112 million USD in the WASH sector. The damages include over 4,000 water supply schemes and 2,700 sanitation schemes, managed mainly by the Public Health Engineering Department (PHED). Data collected indicates that 1,346 plans were destroyed. Insignificant data on community and private infrastructure was available, though an estimated two-thirds of the affected population access these services. The resilient reconstruction needs of the WASH sector have been estimated at 327 million USD. This estimate considers both infrastructure and investment in sustainable operation and maintenance of these systems.

While there are some commitments by International Financial Institutions for the reconstruction and restoration of public infrastructures, there needs to be more resources available for community and household WASH infrastructure. Therefore, this project, in partnership with UNICEF and NRSP, plans to reconstruct and upgrade some of the community structures in such a manner that we not only build back better but, in the process, also lay the basis for the planning, design and delivery of climate proofed WASH services in the future.

Gender and Child Dimension of the Context

Women and Children are most vulnerable to the impacts of climate change. As climate changes bring a greater frequency and intensity of drought, floods, heatwaves, air pollution and, disease, it is critical to prioritise getting children at the centre of climate mitigation and adaptation efforts. The gender division of labour in Pakistan is highly skewed, especially when agricultural, pastoral, and wage labour are combined with household, community, and casual labour. With high rates of male out-migration that is a feature of the whole region, women's workloads in these domains of

work have intensified without corresponding increases in access to resources and inclusion in decision-making. Women continue to be constrained by unequal power relations, gender biases, and sometimes under-representation, resulting in limited access to resources and control over critical natural resources. Thus, the marginalisation of women's work contributions relative to men renders them more vulnerable and at risk vis-a-vis men. Therefore, climate change risks and vulnerability have a fundamental gender dimension⁵. Climate-related disasters may disrupt local security safety nets, leaving women and children unaccompanied, separated, or orphaned due to the erosion and breakdown of normal social controls and protections, making them especially vulnerable to human trafficking. Economically impoverished mountain families are particularly vulnerable to being deceived with false offers of remunerated work and education for girls, trapping them into a well-established system of forced labour and exploitation. This vulnerability extends to women and children's ability to react to early warning signals. For instance, women may be unable to act on the information they receive because it is often disseminated primarily in public places to which many women do not have easy access. Even when women receive warnings, they can be constrained by cultural norms restricting their freedom of public movement.⁶

As climate catastrophes erode livelihoods, out-migration tends to be primarily working-aged men, leaving women and children in areas exposed to persistent risks of climate-caused natural disasters at a higher rate. Climate change also poses significant challenges to realising children's rights under the Convention on the Rights of the Child (CRC). As a signatory to the CRC, Pakistan is committed to protecting children's rights from climate change impacts. Women and children are disproportionately tasked with carrying potable and non-potable water for the household. Accordingly, effective adaptive measures must take a gender-inclusive approach to reach the most significant number of affected individuals.

Institutional Response Context

On 6 June 2021, the Government of Pakistan, in collaboration with UNICEF Pakistan and other partners, launched the global UN Decade of Ecosystems Restoration 2021-2030 to prevent, halt and reverse ecosystems' degradation on every continent and every ocean. Being in the leadership role, Pakistan can demonstrate workable models to meet this aim to the rest of the world. The Government of Pakistan has prioritised promoting NBS as actions to protect, sustainably manage, and restore the natural and modified ecosystems that address societal challenges effectively and adaptively, simultaneously benefiting people and nature. UNICEF is also the lead partner organisation for the Water Sector in the joint 'One UN' programme of all UN organisations and the Government of Pakistan. All interventions of UNICEF are part of the One UN programme and are implemented in collaboration with the Government of Pakistan. The Ministry of Climate Change is the government counterpart of UNICEF at the federal level for all water and climate change sector programmes.

Pakistan is a founding regional member country of ICIMOD. The incumbent Secretary of the Ministry of National Food Security and Research formally represents Pakistan in the ICIMOD Board of Governors. Pakistan and ICIMOD have been working together for the mountain agenda in the Hindu Kush Himalayan region with policymakers, experts, planners, and practitioners. ICIMOD supports Pakistan in capacity building, strengthening institutional capacity, research, and

⁵ Gurung Goodrich, Chanda (2017) Status of Gender, Vulnerabilities and Adaptation to Climate Change in the Hindu Kush Himalaya, ICIMOD

⁶ D'Cunha, J. (1997). Engendering disaster preparedness and management. Asian Disaster Management News

demonstrations, and providing regional and international platforms through workshops, conferences and symposia to share knowledge. Together with Pakistan, ICIMOD has emphasised the importance of enhancing and strengthening partnerships to develop and customise methodologies and tools and carry out innovative applied research to support future programme development. ICIMOD's partner institutes in Pakistan include government agencies, academics, local research institutions, universities, and NGOs.

Furthermore, ICIMOD serves as the secretariat for the Upper Indus Basin Network (UIBN). The UIBN is a voluntary and informal knowledge and research network of national and international researchers working in the basin. It aims to foster coordination in climate, cryosphere, water, hazards, and vulnerability, and adaptation research. The UIBN promotes coordination and collaboration to improve understanding of current and future water availability, demand, and hazards and develop solutions for local and national stakeholders. The UIBN supports the Indus Basin Initiative in building resilience to climate change impacts by improving the current understanding of climate change, cryosphere, and water resources, and strengthening networks for developing water and hazard management solutions.⁷

UNICEF and the Pakistan Council on Research of Water Resources (PCRWR) have studied innovative artificial techniques coupled with integrated watershed management using NBS to enhance groundwater recharge. They have also assessed the feasibility of promoting simple and low-cost-high-efficiency irrigation systems to control abstraction in Pakistan. Recently UNICEF Pakistan and PCRWR have conducted a feasibility study on selected locations.

To replicate best practices on Indus River basin ecosystem restoration and NBS in the Water sector, it is imperative to strengthen the institutions, systems, and knowledge management of the Government of Pakistan. After the 18th amendment to the constitution of Pakistan, power for many sector implementations devolved to provinces, and the federal government's role has become limited to policy guidance, coordination, and reporting. However, the institutional arrangements at the federal level under the Revised National Climate Change Policy 2021 and Updated Nationally Determined Contributions (NDC-2021) can be used to strengthen the system both at the federal and provincial levels. UNICEF has recently supported the Ministry of Climate Change in conducting a Capacity Needs Assessment (CNA) for performing drinking water, sanitation, and climate change functions. In contrast, UNICEF's partnership with PCRWR, the Ministry of Water Resources, includes major capacity development and knowledge management components. UNICEF is also conducting a study on institutional capacities, legislation, and mandate-related gaps of federal and provincial government institutions in the water and climate change sector for providing technical support to the government in the next five years of Country Programme 2023-25.

The Government of Pakistan has recognised these challenges and is striving to seize the opportunities inherent in the evolution of its relationship with the Indus valley to promote a transition to a greener and more climate-adaptive future. Of relevance are three initiatives:

1. Clean Green Pakistan Index: This is a keystone governmental initiative that will frame the overall intervention approach of the proposed action. It will also be the Government of Pakistan's main tool for monitoring the progress of the proposed action over a key

⁷ About UIBN, retrieved 20.02.2023 [link](#)

performance indicator dashboard. This will not replace the Project's own monitoring, evaluation and learning framework but rather complement it and ensure coherence with the goals of the Government of Pakistan. The indicators of relevance can be found under the heading “safe drinking water”, with a contribution to the Index’s objective of “Knowledge and Practice”, “Voice and Accountability”, and “Participatory Monitoring and Evaluation”.⁸

2. The Resilient Recovery, Rehabilitation, and Reconstruction Framework Pakistan (4RF): A Post-Disaster Needs Assessment (PDNA), undertaken by the Government of Pakistan, indicated that recovery estimates of over USD 16 billion would be required from the devastating floods of 2022. Sindh was the province worst affected by the disaster, followed by Balochistan, Khyber Pakhtunkhwa, and Punjab. Based on the PDNA, the Asian Development Bank, the European Union, United Nations Agencies, and the World Bank Group (collectively the Core Group) have supported the Government of Pakistan in developing a Resilient Recovery, Rehabilitation, and Reconstruction Framework (4RF). It provides an overarching framework for planning, financing, implementing and monitoring Pakistan’s resilient recovery, rehabilitation and reconstruction efforts.⁹
3. Living Indus: This is an umbrella initiative and a call to action to lead and consolidate initiatives to restore the ecological health of the Indus within the boundaries of Pakistan, which is most vulnerable to climate change. Extensive consultations with the public and private sectors, experts, and civil society led to a ‘living’ menu of 25 preliminary interventions focusing on NBS and ecosystem-based adaptation approaches to protect, conserve, and restore natural, terrestrial, freshwater, coastal and marine ecosystems in the Indus Basin.¹⁰

For the Proposed Project to ensure a durable impact, it will need to complement the above initiatives. Furthermore, close cooperation with the Government of Pakistan will be required to provide continued relevance, effectiveness, and efficiency, and an adaptive approach to project management must be taken. The proposed action’s Steering Committee will strengthen the interlinkages with the ongoing country initiatives.

⁸ Clean Green Pakistan, retrieved 27.02.2023, [link](#)

⁹ Pakistan Floods 2022: Resilient Recovery, Rehabilitation, and Reconstruction Framework (4RF), retrieved 18.02.2023, [link](#)

¹⁰ Living Indus, retrieved 20.02.2023, [link](#)

Project/Programme Objectives:

To meet the above-outlined challenges, the Proposed Project seeks to achieve the following objectives:

General Objective: To **reduce the vulnerability and increase the adaptive capacity** of the population residing in Pakistan's Indus Basin to respond and adapt to the impacts of climate change through improved adaptive water management and construction/rehabilitation of green community infrastructures through community engagement and NBS.

Specific Objective 1: To **enhance ecosystem resilience** in response to climate change through adaptive NBS solutions, including landscape restoration.

Specific Objective 2: To **increase community resilience** to climate variability and change in Pakistan's Indus Valley by upgrading and constructing climate-resilient water supply and sanitation facilities.

Specific Objective 3: To **strengthen institutional capacity** to reduce risks associated with climate-induced socioeconomic and environmental losses at national, provincial, and district levels.

Specific Objective 4: To **strengthen awareness and ownership of adaptation and climate risk reduction processes** at the local level through improved knowledge management, communication, and advocacy for enhanced adaptation practices for reducing climate-related risks at all levels.

Project/Programme Components and Financing:

Project/Programme Components	Expected Concrete Outputs	Expected Outcomes	Amount (US\$)
1. Ecosystem resilience	<p>1.1 Springshed mapping in the selected pilot sites of Pakistan's upper Indus Basin.</p> <p>1.2 Community-managed springs rejuvenated in select pilot sites and monitored in Pakistan's Upper Indus Basin.</p> <p>1.3 Groundwater mapping and construction of groundwater recharge facilities in selected water-scarce locations in the middle and lower Indus Basin.</p> <p>1.4 Riverbanks are reinforced through NBS, mitigating erosion of habitable and arable land adjacent to the river in pilot sites, and preventing material loss due to climate-induced disasters.</p>	Increased ecosystem resilience in response to climate change and variability-induced stress in Pakistan's Indus Basin.	2,100,000
2. Community adaptive capacity for water supply and sanitation sector	<p>2.1 Communities can better access drought-resilient water supply facilities by storing water through communal ponds in pilot sites in water-scarce locations.</p> <p>2.2 Green climate-resilient community, water supply Infrastructure, constructed in selected sites.</p> <p>2.3 Piloting Industrial and urban effluent treatment model, including salinity control plan for improving water quality in selected locations in the Indus Basin.</p>	Increased adaptive water supply and sanitation infrastructure capacity in selected Indus Basin communities with high exposure to climate-related hazards.	3,300,000
3. Adaptive Institutional Capacity	<p>3.1 Strengthened regulatory framework and institutional capacity on groundwater governance and water resource management.</p> <p>3.2 Existing government initiatives (e.g., Indus and Clean Green Pakistan programme) coordination and monitoring systems strengthened for improved collaboration on climate adaptation.</p> <p>3.3 Glacial lakes in Pakistan Indus</p>	Strengthened institutional capacity to reduce risks associated with the effects of climate-induced socioeconomic and environmental losses related to water resource management and DRR.	2,200,000

Project/Programme Components	Expected Concrete Outputs	Expected Outcomes	Amount (US\$)
	<p>Basin and areas of widespread permafrost extent are mapped, especially in areas of Gilgit Baltistan and Khyber Pakhtunkhwa not covered by UNDP project Scaling-up of Glacial Lake Outburst Floods risk reduction in Northern Pakistan (GLOF-II) project.</p> <p>3.4 DRR mechanisms and CBFWS at target districts have a strengthened capacity to prevent loss of life due to climate-induced disasters.</p>		
4. Awareness Creation and Knowledge Management	<p>4.1 Targeted Communities practice adaptive behaviours to climate change to manage the impacts of climate change, enhance adaptive capacity, and reduce overall vulnerability by achieving long-lasting behavioural changes through awareness creation interventions.</p> <p>4.2 Catalogue of water sector stakeholders with geographical presence and capacities for partnership in the Indus basin completed.</p> <p>4.3 Secondary analysis of water, sanitation, hygiene, and climate datasets with catchment delimitations within the Indus River basin initially completed and updated annually.</p> <p>4.4 Secondary analysis regularly disseminated and used in targeted advocacy.</p>	Improved knowledge and practices of communities and practitioners on climate change adaptation and climate risk reduction.	816,977
6. Project/Programme Execution cost			867,580
7. Total Project/Programme Cost			9,284,557
8. Project/Programme Cycle Management Fee charged by the Implementing Entity (if applicable)			715,443
Amount of Financing Requested			10,000,000

Projected Calendar:

Indicate the dates of the following milestones for the proposed project/programme

Milestones	Expected Dates
Start of Project/Programme Implementation	1 May 2024
Mid-term Review (if planned)	31 January 2026
Project/Programme Closing	31 October 2027
Terminal Evaluation	31 December 2027

PART II: PROJECT / PROGRAMME JUSTIFICATION

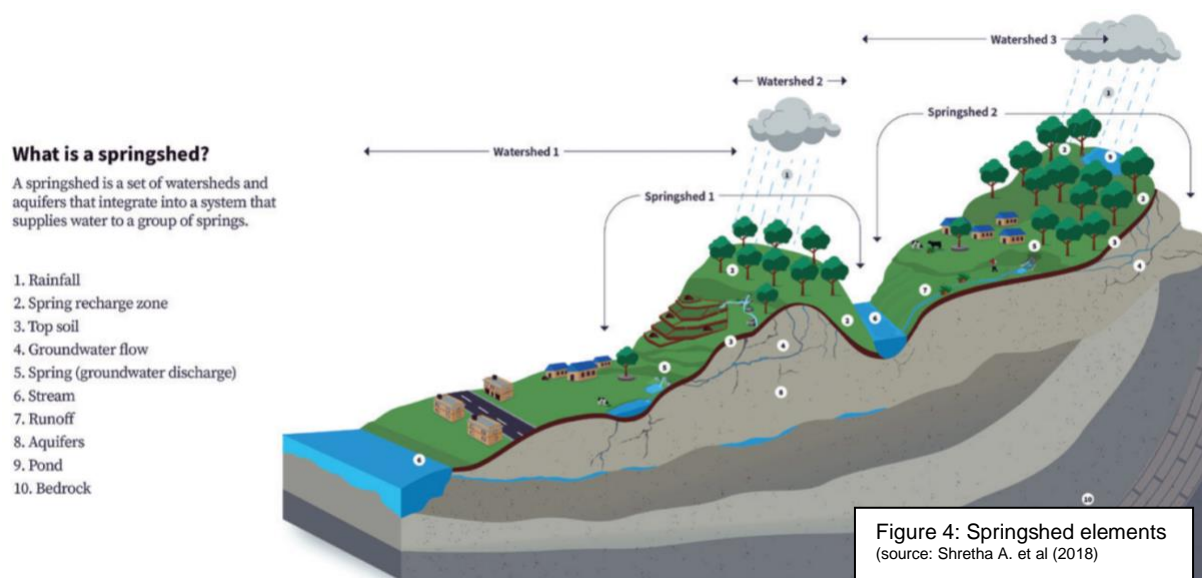
A. Describe the project/programme components, particularly focusing on the concrete adaptation activities of the project, and how these activities contribute to climate resilience.

The Proposed Project is divided into four components (i) Ecosystem resilience, (ii) Community adaptive capacity, (iii) Adaptive institutional capacity, and (iv) Awareness creation and knowledge management. Climate change is steadily increasing average temperatures in Pakistan. It is also causing more variability in rainfall patterns. This project aims to reduce community and national vulnerability related to water management in Pakistan's Indus Basin while increasing their adaptive capacity to respond to said challenges. This will be achieved through the following concrete activities that will assist Pakistan in taking informed decisions on practical adaptation actions to respond to climate change based on sound scientific, technical and socioeconomic information while considering the current and future climate change and variability in the Indus valley:

Component 1: Ecosystem Resilience: This component dovetails with the Living Indus Initiative through two main pathways, which aim to restore ecosystem degradation to improve ecosystem services and water assets maintained or improved under climate change and variability-induced stress. Springshed and groundwater rejuvenation and management in pilot sites in the Upper and Lower Indus to support governmental and communal up-scaling, increase groundwater availability during climate-induced droughts, and improve groundwater quality in general (see Figure 4 below). The core purpose of this component is socially inclusive spring revival. This will contribute to the conservation and rejuvenation of springs, improving groundwater recharge using a multi-disciplinary water resource management approach – one based on local and scientific hydrogeological knowledge, and mechanisms for inclusive governance. The project aims to improve policies and programmes around water resource management through action research, capacity building, and the development of a Decision Support System (DSS) and guidelines for implementing water management interventions tailored

to the diverse contexts of the IHR.¹¹ Specific activities under this heading are proposed as follows:

- Mapping all springsheds in the Upper Indus to produce evidence-based information and knowledge to generate comprehensive information about the springshed, including web-based maps, GPS locations of springs, and basic socioeconomic information.
- Coordinate with governmental counterparts to identify potential pilot sites based on criteria related to vulnerability to climate-induced water management shocks and the relevance of the Proposed Project to communal priorities.
- Setting up a Data Monitoring System in select pilot communities to collect long-term spring discharge data, groundwater levels, water quality information, and rainfall data with the help of the local community by setting up instruments and data monitoring systems.
- Analyse social and governance systems related to springs to understand current water use patterns, their socioeconomic implications, and the institutions and governance systems in place for managing springs.
- Undertake participative hydrogeological mapping, conceptual layout development, and recharge area identification. This will produce a detailed study of rocks, rock structures, streams, and springs in the selected areas of the Indus Basin and prepare geological and hydrogeological maps and cross-sections.
- Develop springshed management and governance protocols at the local level and link these to Provincial Water Acts.
- Measure the impact of spring revival and groundwater recharge activities. Continued monitoring activities described in the steps above are necessary to correctly gauge and understand the impacts of the springshed management practice and groundwater recharge intervention and adjust accordingly, enabling resilience-focused local decision-making.



¹¹ Shrestha, R. B., Desai, J., Mukherji, A., Dhakal, M., Kulkarni, H., Mahamuni, K., Bhuchar, S., and Bajracharya, S. (2018), Protocol for reviving Springs in the Hindu Kush Himalayas: A Practitioner's Manual, ICIMOD

- Riverbank stabilisation in the Upper Indus: this activity is a hazard management measure to overcome riverbank erosion through bioengineering using sea buckthorn in eroded or endangered areas. Sea buckthorn is a high-altitude mountain niche shrub known for its ecological, nutritional, and economic benefits. Growing at elevations ranging from 4000 to 14,000 feet, the plant can withstand extreme temperatures of up to minus 40 degrees Celsius. The plant controls soil erosion, and its fruit, rich in Vitamin C, is known for its antioxidants and anti-inflammatory properties. Sea buckthorn has high demand in the international market for use in food, medicine, and beauty products. This approach has the added benefit of generating income through orchard management and handicraft production and reinvesting the earnings into local education, health, and social welfare efforts. This approach builds on ICIMOD's experience in the Passu Valley in its 2017 project Support to Rural Livelihoods and Climate Change Adaptation in the Hindu Kush Himalaya (Himalica) initiative. It developed a local sea buckthorn value chain in Gilgit-Baltistan, Pakistan. The aim was to provide an alternative livelihood option for mountain women and men in the region. This proven concept will be scaled up under the Proposed Project.



Seabuckthorn has breathed life back into our valley. In the long term, these bushes control erosion, stabilize and convert barren areas into cultivable land over time. Until that happens, the bushes provide us fuelwood that we can use or sell. The seabuckthorn seeds have medicinal properties that we can sell for a good price.'
Tahira Begum. President of the Women Organization Passu

- Strengthening existing government initiatives of Living Indus and Clean Green Pakistan for improved adaptation capacity, sector coordination, monitoring and expanded citizen participation in climate change adaptation. This included strengthening/establishing coordination and monitoring structures at the national and provincial levels. It will also revamp and expand the Clean Green Pakistan Champions Programme (CGPCP)'s web portal and mobile phone application to expand its registration capacity and ensure equitable inclusion of girls, the poor, and persons with disabilities through special incentives and awards, which will be added onto the platform. This support will also include evidence generation for advocacy and policy formulation, establishing District Youth Forums for Climate Action in selected districts, developing institutional linkages and using the digital platform to disseminate public messages on climate change issues.

Component 2: Increased Community Adaptive Capacity. This component will focus on improving the adaptive capacity of community water supply and sanitation infrastructure in selected high-risk locations, addressing water scarcity and building flood-resistant and climate-resilient green community infrastructure. The following are the key activities under this component:

- Coordinate with governmental counterparts to identify potential pilot sites based on criteria related to vulnerability to climate-induced water management shocks and the relevance of the Proposed Action to communal priorities.
- Develop communal ponds in the identified pilot sites, including establishing communal pond management committees. Community ponds in pilot sites will enable improved salinity control and increase water storage capacity for communities. Approximately 50% of land in the Lower Indus region is affected by salinity, presenting a significant threat to agricultural productivity, food security and livelihoods in this region. While construction of the Left Bank Outfall Drain (LBOD) in 1997 attempted to relieve the issue by removing saline drainage from affected districts into the Arabian Sea, it also resulted in the region's ecological deterioration due to its faulty design and poor management. LBOD drains not only saline wastewater but also untreated effluent and municipal wastewater along with flood water into the Indus Delta, further adding to the delta's ecological deterioration. Design failures and encroachments in outfall drains have caused the worst floods in the history of Pakistan currently.¹²
- Restore natural waterways (Dhoras) to recharge creeks in select sites and Install water quality meters for improved monitoring at selected sites. This will be mainly by constructing ditches and trenches designed to suit the topographic and geological conditions of the target sites to increase the volume of runoff recharging the groundwater. Automatic water quality meters will be installed in existing water wells and any developed surface water systems with automatic data loggers linked to a centralised system for data collection and monitoring.
- Construct/upgrade green, sustainable, safe and climate-resilient community WASH infrastructure and services. Build back better, and restore access to basic drinking water through climate resilient water infrastructure to ensure access to a safe and sustainable water supply for priority high-risk locations for climate change risks like flooding and drought. In addition to improved infrastructure (raised handpumps, flood-resistant and protected water supply systems, installation of solar pumps etc.).
- Reduction of industrial and urban effluent in the Lower Indus. Pakistan treats less than 1% of wastewater in the Indus Basin, falling short of the SDG goal of being able to treat 50 % of the wastewater generated. Despite the existing legal provisions for treating wastewater from industrial, domestic, and municipal sources, 99% of wastewater is discharged untreated in open drains, eventually entering the Indus River System. Of the 99%, about 75% comes from untreated urban and rural residential wastewater.¹³ This directly affects the health and sustainability of the Indus River system, and all that depends on the basin, including human, terrestrial, and aquatic life. Untreated wastewater further contributes to climate change with a GHG footprint three times that of the same wastewater treated in a traditional wastewater treatment plant. Of the 388 cities in Pakistan, only eight have wastewater treatment facilities, with some only partially functioning. Establishing and strictly implementing adequate effluent treatment facilities for industries and municipalities along the Indus is critical. This should be supplemented using NBS (water-based or substrate based) for wastewater treatment. Due to cost-intensive solutions following specific activities are proposed.
 - Support governments in building Public-Private Partnerships across the basin to treat wastewater through a combination of grey and green infrastructure, supported by an incentive program for the local community, municipalities, and businesses. The project will make PPP feasibility studies and partner mapping for selected locations for sustainable

¹² Pakistan: National Drainage Program (Credit No. 2999-PAK), (2004), World Bank, retrieved 20.02.2023 [link](#)

¹³ Islamic Republic of Pakistan: Institutional Transformation of the Punjab Irrigation Department to a Water Resources Department, (2021), Asian Development Bank, retrieved 20.02.2023 [link](#)

waste collection and disposal.

- Evaluate existing best practices and construction of pilot NBS for Decentralised Wastewater Treatment (DWT) at selected sites for demonstration and advocacy for replication elsewhere in settlements around the Indus River.
- Provide technical support, innovative and lateral learning platform, and equipment to service providers unable to operate Sewage Treatment Plants (STPs).
- Develop technical training courses for technicians and operators of STP and DWT at selected Local Government Academies (LGAs), five Water and Sanitation Authorities (WASA) Academy/Public Health Engineering Departments (PHEDs)/Capital Development Authority (CDA) along with technical backstopping with the collaboration of academia.

Component 3: Adaptive Institutional Capacity: This component will focus on strengthening national, provincial and district government structures to improve the regulatory framework, policy implementation and increasing capacities for adaptation of climate change risks focusing on water resource management, DRR and a CBFWS. The CBFWS is an integrated system of tools and plans managed by and for communities, providing real-time flood warnings to reduce flood risks. Its caretaker is the main source of information. The caretaker must verify the information generated by the instrument to generate correct flood early warning information. All information delivered from the source needs to be reliable, timely, and consistent. The source person needs to correctly type out the trigger message for the alarm units. Furthermore, the caretaker should formulate a clear and standardised warning message so that the intended recipients can fully understand the message and act accordingly. The following are the key activities under this component:

- Provincial Water Acts on Water resource management and groundwater governance. Pakistan is the fourth largest groundwater extractor in the world, extracting from the Indus Basin Aquifer, the second most overstressed aquifer globally. It is also the world's largest groundwater exporter, reflecting the volume of groundwater used in the country's water-intensive export products such as rice, leather, and textiles. Groundwater provides more than 50 % of Punjab's agricultural water requirement, at least 20% for Sindh and 50% for Balochistan. In addition, groundwater serves more than 70% of Pakistan's drinking water requirement.¹⁴ Groundwater is the main buffer against the unpredictability of climate change and irregularity of surface water flows but is largely suffering from problems of unsustainable over-abstraction and pollution – largely due to poor groundwater governance in the country. Pakistan's commitment to sustainable governance of its groundwater resources is reflected in recent legal and institutional changes for groundwater management. At the federal level, the National Water Policy of 2018 has called for creating a Groundwater Authority in Islamabad. At the provincial level, the Punjab Water Act of 2019 and the Khyber Pakhtunkhwa Water Act of 2020 have designated the newly formed provincial water resource commissions with authority to issue licenses for the abstraction and disposal of groundwater for agricultural, domestic, industrial, and mining purposes. Implementation of effective groundwater governance is lacking both at the federal and provincial levels. The Proposed Project will build capacity and improve support needed for implementing existing provincial groundwater legislation and enacting water acts in Balochistan and Sindh province for sustainable groundwater governance. Additionally, the issue of springshed management remains largely unaddressed, linking to the activities envisaged under Component 1. Specific

¹⁴ National Water Policy of Pakistan, (2018), Government of Pakistan Ministry of Water Resources, retrieved 20.02.2023, [link](#)

activities proposed under this heading are:

- Conduct gap analysis of groundwater legislation at the provincial and federal levels and recommend and support implementing tangible actions for drafting new or enacting existing groundwater acts.
- Strengthen the newly promulgated provincial water regulatory authorities and support the government in establishing two new provincial water regulatory authorities.
- Support key government activities for improving coordination among water sector stakeholders, especially the government departments from different provincial/area governments.
- Support water regulatory authorities in the effective enforcement of regulations.
- Strengthen local DRR mechanisms, especially concerning gender equality-related outcomes. This heading addresses the need for a gender equality and social inclusion (GESI) approach to DRR outlined in the Sendai Framework. Furthermore, the Convention on the Elimination of All Forms of Discrimination Against Women (CEDAW) Committee General Recommendation 37, with reference to climate change-related risks, provides guidance on how to interpret and apply CEDAW in disaster risk management (DRM) and climate change adaptation. This provides the basis for international norms in making and implementing gender-sensitive Disaster Risk Management legislation. This was more closely examined in the South Asian and Hindu Kush context in the 2022 ICIMOD study “State of gender equality and climate change in South Asia and the Hindu Kush Himalaya”, in which it was found that Pakistan’s 2022 Climate Change Gender Action Plan was a good example. The plan is considered a tool to enhance knowledge and capacities, identify gaps and enabling conditions, and build coordination and actions to strengthen gender-responsive strategies and results to meet the country’s climate change objectives. It aims to integrate gender and climate fully in key sectors of the economy, particularly agriculture and food security, water and sanitation, disaster risk management, forests and biodiversity, coastal management, energy, and transportation. Activities envisaged under this heading are meant to complement the Plan and are as follows:
 - Undertake a participative communal gender audit to ensure that DRR measures are gender equitable.
 - Codesign a context-specific DRR and CBFWS based on linking pilot sites in a chain of communication and cooperation; specific attention will be given to using communal ponds for flood water overflow retention to reinforce resilience to drought.
 - Hold a competition for local DRR adaptive solutions, linking this with entrepreneurs under Component 3, and the sea buckthorn erosion prevention.
- Integrate cryosphere risk mapping and monitoring into the DRR mechanism. Given that the Indus draws almost half of its volume from meltwater and its upper reaches are fed by glacial melting, any DRR approach requires the cryosphere dimension. Specifically, Glacial Lake Outburst Floods (GLOF) pose a persistent and growing threat considering the warming trends. Work under the UNDP project Scaling-up of Glacial Lake Outburst Floods Risk Reduction in Northern Pakistan (GLOF-II) project remains incomplete regarding mapping rock glacier (permafrost-related) dammed lakes. Accordingly, the following activities are proposed:
 - Use the work conducted by the GLOF2 UNDP/GCF-funded project as a baseline

(which included ICIMOD GLOF data as input) to map glacial and areas of widespread permafrost extent.

- Map rock glacier (permafrost-related) dammed lakes and evaluate hazards to identify Potentially Dangerous Glacial Lakes (using ICIMOD's classification system applied in Koshi, Gandaki and Karnali river basins) and areas at risk of permafrost thaw as well as modelling the volume of lakes and possible discharge downstream in a GLOF.
- Identify the most vulnerable downstream areas regarding livelihoods and infrastructure and advocate with government counterparts for their inclusion in the DRR mechanism.
- Installation of CBFEWS jointly with local communities and DMAs in the most vulnerable areas based on the work above and link these to the DRR mechanisms.

Component 4 – Awareness Creation and Knowledge Management: In this component, the project will focus on awareness creation at the community level, including developing knowledge management products and advocacy focused on climate change adaptation and risk reduction. This component will ensure that knowledge of climate adaptation and adaptive practices explored in the context of this project is made into widely accessible sectoral and communal resources through the clean green Pakistan Initiative. It will also feed information into the Clean Green Pakistan Index to support its stated objectives of “voice and accountability” and “participatory monitoring and evaluation”.

The following are the key activities in this component:

- This component will promote awareness of measures that communities and individuals can take to proactively adapt to and manage the impacts of climate change, enhance adaptive capacity, and reduce overall vulnerability by achieving long-lasting behavioural changes. This is a critical component to increase enthusiasm and support, stimulate self-mobilisation and action, and mobilise local knowledge and resources. This will be implemented through several ways of communication, including dissemination of IEC materials, organisation of public meetings and training, communication and information through social and mass media and using informal networks for information dissemination.
- In addition to public awareness campaigns, the project will create targeted awareness in selected communities in high-risk locations across the Indus basin. These awareness efforts will focus on adaptation practices for resilience and context-specific hazards and risks at individual, household and community levels.
- Raising political awareness is another vital component of the project targeting policymakers, politicians, and other key actors in the adaptation policy process.
- Knowledge Management. ‘Water Initiatives for Ecological Restoration of Indus River Basin’ is a substantive demonstration of various innovative technologies, NBS, community-led and managed techniques, and a diverse display of options that water sector stakeholders can adopt and replicate at scale to meet more considerable climate change adaptation outcomes in Pakistan. This is only possible with an integrated approach to knowledge management, coordination and sharing. Specific activities under this heading include:
 - Catalogue of appropriate technologies and NBS for different Indus River basin

geographical zones.

- Development of Technical papers on specific activities of the programme for replication elsewhere.
- Catalogue of water sector stakeholders from the private sector, academia and research organisations, development, and donors, CSO and CBOs, and government/semi-government organisations with geographical presence and capacities for partnership in the Indus basin.
- Development of success stories/case studies.
- Secondary analysis of water, sanitation, hygiene, and climate datasets with catchment delimitations within the Indus River basin on an annual basis and dissemination for advocacy, decision making and use for community and other stakeholders.
- Development of Indus Water Atlas web portal with GIS modelling and geotagging.
- Developing Indus Water KM stakeholders' network for improved communication, coordination, and dissemination of knowledge with Indus River basin habitants.
- Supporting eco-journalism through youth lead Citizen's Reports on Climate Resilient Watersheds in the Indus River basin in six selected districts and linkage development with private sector media houses.

B. Describe how the project/programme provides economic, social and environmental benefits, with particular reference to the most vulnerable communities, and vulnerable groups within communities, including gender considerations. Describe how the project/programme will avoid or mitigate negative impacts, in compliance with the Environmental and Social Policy and Gender Policy of the Adaptation Fund.

The Proposed Project benefits from the existence of a new Climate Change Gender Action Plan, which considers the substantive themes addressed in this Project. To ensure continued alignment with emerging Government of Pakistan initiatives and priorities related to its implementation, the partners will constitute a Steering Committee that will include a representative of the National Commission on Status of Women. The Steering Committee will designate a pool of GESI experts to examine the following questions:

- Are the existing relevant GESI responsive policies and practices, and where are the gaps and needs?
- Are the practices and policies advocated for by the Project responding to identified GESI gaps?
- Where are there opportunities for coordination with local women's groups and organisations within the water sector, and how to increase their participation with provincial water regulatory authorities?
- Do springshed management approaches incorporate GESI priorities, promote inclusive

participation in planning, implementation and monitoring, and have mechanisms to ensure accountability for GESI commitments?

- How are Indigenous knowledge products and local best practices being collected, and how are they being made available? Is access equitable?

Additionally, under Component 2, the riverbank restoration process will be gender inclusive, building on ICIMOD's experience in Passu Valley. The women of Passau eagerly joined forces with development partners to test an innovative approach yet already recognised for anti-erosion characteristics locally. Wild sea buckthorn has long been found in the Upper Indus and has been valued for land-stabilising properties, as a source of fuelwood and for the valuable medicinal seeds they produced. However, they had never been cultivated as a line of defence against the elements. Following interest from Passu Development Organization's Women Organization to reform the barren land surrounding their village, ICIMOD, with WWF, provided a small grant to plant and water 5000 saplings along an eroded stretch of land. Women in the community demonstrated their ability to responsibly handle finances and undertake rigorous labour as required, managing the funds to purchase and transplant saplings, making provisions for irrigation and carrying water up embankments to water the bushes.

Under Component 3, not only will the 60% girls' participation quota be a way to amplify the participation and empowerment of women as entrepreneurs, but the aforementioned pool of GESI experts will audit the local methodologies and practices to ensure that the green adaptive accelerators are a safe space for women and girls, and take into account feminine hygiene needs, and social constraints to the expression of their entrepreneurship.

C. Describe or provide an analysis of the cost-effectiveness of the proposed project/programme.

Even without accounting for climate change, the economic cost to Pakistan of the present state of water resource management is estimated to be USD 12 billion per annum (4% of GDP). Degradation of the Indus Delta costs Pakistan another USD 2 billion. Both numbers may be underestimated given the unavailability of robust ecological and social costs. IPCC and ICIMOD projected scenarios underline the need for an adaptive approach to the management of water resources of the Indus in Pakistan. Changes in water availability affect energy and industry, eventually affecting macroeconomic performance. Khan et al. (2020) estimate that, under the extreme scenario, by 2050, agriculture production will decrease in Pakistan and a decline in GDP of 3.7 per cent of base value – a total loss of over US\$ 19.5 billion to the Pakistan economy, primarily due to water management challenges. Impact of Climate Change on Children in Pakistan study -2021 of the Ministry of Climate Change shows that almost 66% of climate change-related loss to Pakistan will be because of water, temperature and related effects on agriculture, diseases, and nutrition. In all of South Asia, the projected changes in the future availability of meltwater and groundwater depletion will require rapid adaptation to a more resilient form of water management, a more innovative approach to disaster risk reductions, and early warning.

Accordingly, when considering the cost-effectiveness of the Proposed Project, it is crucial to take the potential cost of inaction as a baseline cost to be mitigated. Working with the basic assumption that the Indus meets at least a simple majority of Pakistan's water needs amounts to \$6 billion per annum, plus the \$2 billion in lost revenue due to the degradation of its delta, yields a per annum estimated cost of Indus degradation of \$8 billion. The Proposed Project will not be able to mitigate this total loss, however, it will lay the foundation for a gradual comprehensive mitigation.

Compared to other approaches, the Proposed Project has a definitive advantage in that Both ICIMOD and UNICEF have long-standing working relations with the Government of Pakistan. They will not require any additional office infrastructure and minimal additional staff. This will allow a larger share of the budget to go to the national executing partner, the NRSP, which benefits from having an existing structure at the local level. This means that the actual costs to the Adaptation Fund will be comparatively low, as no new structures will be created, and the implementation on the ground will be undertaken primarily by national authorities, which will simultaneously strengthen national ownership of the Project's outcomes.

D. Describe how the project/programme is consistent with national or sub-national sustainable development strategies, including, where appropriate, national adaptation plan (NAP), national or sub-national development plans, poverty reduction strategies, national communications, or national adaptation programs of action, or other relevant instruments, where they exist.

The Project aligns with the Government of Pakistan's National Climate Change Policy objectives on Integrated Water resource management, water storage, risk reduction, awareness creation, pro-poor gender-sensitive adaptation and enhanced institutional capacity building. The Project is also directly contributing to the key objectives of the draft National Adaptation Plan: (i) develop disaster management institutions, mechanisms and capacities that are capable of addressing multiple hazards and raising the resilience, efficiency and effectiveness of the whole systems, (ii) improve awareness of issues related to mitigation of climate change-induced disasters through public participation, (iii) ensure that infrastructure resilient to the impact of climate change, particularly to extreme weather events, (iv) prioritise climate-related risks based on the assessment and identifying technology and infrastructure options to improve resilience in the Water, Sanitation and Hygiene (WASH) sector, and (v) address the essential knowledge gap about climate change

The project is also directly contributing to the Pakistan NDCs on improving irrigation and water resource management, building resilience through NBS and protection of ecosystems and biodiversity, improving the climate resilience of communities through improved development outcomes in the WASH sector, mitigating impacts of extreme events through preparedness and capacity building and promoting 3Rs and improve waste management practices.

The Project, designed under the framework of the Living Indus Initiative, will directly contribute to seven of the 25 priority actions linked to knowledge management, nature-based watershed management, community ponds, sustainable groundwater governance, green infrastructure, industrial and urban effluent treatment and salinity control,

The proposed programme will also contribute to targets set by Pakistan under Sustainable Development Goals (SDGs), especially those related to Clean Water and Sanitation (SDG-6) and Climate Change (SDG-13).

E. Describe how the project/programme meets relevant national technical standards, where applicable, such as standards for environmental assessment, building codes, etc., and complies with the Environmental and Social Policy of the Adaptation Fund.

The project will fully comply with the Environmental and Social Policy of the Adaptation Fund, and all activities will adhere to the Environmental and Social Principles of the Fund. It will also adhere to ICIMOD's Environmental and Social Safeguards Policy 2020, which aims to enhance the sustainable benefits of ICIMOD's work and avoid unnecessary harm to the environment and affected communities.

Regulatory requirements concerning the protection and conservation of the environment and various environmental resources, as well as the protection of the social environment from adverse impacts associated with project activities, have been set out by the Government of Pakistan and will be upheld during project implementation to their strictest requirements.

Regarding the construction of communal ponds, the project will comply fully with Section 3102 of the 2021 Building Code of Pakistan where applicable. In instances where the Code is not applicable, it will refer to previous environmental assessments of the proposed methodologies undertaken by ICIMOD. Without these, a stand-alone environmental assessment shall be conducted in cooperation with local authorities.

Regarding compliance with the Adaptation Funds Environmental and Social Policy, the implementing partners commit to abide by the Principles outlined in Section B of the policy. The GESI pool of experts will serve to safeguard the social principles, and a second pool of experts will serve to ensure that environmental considerations are duly integrated into the Proposed Project's activities. These two pools of experts will jointly advise the Steering Committee on applying the do-no-harm principle and will signpost opportunities to do good. During the inception phase, after identifying the pilot communities, the pool of experts will undertake an Environmental and Social Management Plan (ESMP), aligned with Pakistan's national standards and Adaptation Fund Policy. The ESMP will be reviewed and updated as part of the Mid-Term Review.

F. Describe if there is duplication of project/programme with other funding sources, if any.

Great effort has been undertaken to ensure that the Proposed Project will not duplicate any activities currently funded or foreseen by the Government of Pakistan or otherwise known to the partners. On the contrary, the project concept design team has worked to ensure that the Proposed Project is complementary not only to governmental initiatives (as noted in previous sections) but also to strengthen outcomes of complementary projects, as outlined in the table below:

No	Relevant Project / Programme	Description	Goals	Complementary potential	Project Timeline
1	Clean Green Pakistan	The CGCP is designed to seek the participation of the citizens voluntarily for keeping the cities clean, improving civic amenities, and creating in them the spirit and sense of owning their habitats and cities. Any citizen of Pakistan aspiring to be the Clean Green Champion will volunteer to contribute to activities under the following five key pillars of the Clean Green Pakistan Movement.	Strengthen the knowledge and practices among communities about cleanliness and climate change; Ensure the voice of participation of the people as an integral part of Clean Green Pakistan; Empower the local councils to monitor and review their cities on set performance indicators; Create a competitive environment among the neighbourhoods and cities for a sustainable clean green Pakistan.	The Proposed Project will support the generation of knowledge relevant to communal DRR, water management, and adaptive measures. The Proposed Project will provide support at the local level empowering local authorities to lead on climate adaptation.	2018 – (no set end date)
2	Living Indus	an umbrella initiative and a call to action to lead and consolidate initiatives to restore the ecological health of the Indus within the boundaries of Pakistan, which is most vulnerable to climate change. Extensive consultations with the public sector, private sector, experts, and civil society led to a 'living' menu of 25 preliminary interventions, which focus on NBS and ecosystem-based adaptation approaches to protect, conserve, and restore natural, terrestrial, freshwater, coastal and marine ecosystems in the Indus Basin.	Mobilise a movement of ideas and action at every level of state and society that aspires to repair and restore a thriving and healthy Indus for today and tomorrow.	The Proposed Project complements this initiative by feeding into 10 of the 25 preliminary menu interventions.	2022 – (no set end date)
3	The Resilient Recovery, Rehabilitation, and Reconstruction Framework Pakistan (4RF)	The 4RF document provides programmatic priorities, policy framework, institutional arrangements, financing strategy, and implementation arrangements for resilient recovery, rehabilitation, and reconstruction in the aftermath of the 2022 floods. Urgent actions have been proposed to meet these needs. Interventions worth USD 16.6 billion have been proposed and prioritised over short (1-year, medium (2-3 years) and long-term (4-7 years) horizons covering sectoral policy and operational reforms, investments/programs for recovery, rehabilitation, and reconstruction, and institutional	Ensure that transformational measures are implemented to ensure resilient recovery and reduce the impact on developmental gains so as not to hinder the progress of future generations. It also provides a foundation for the country to build and strengthen long-term resilience to climate-induced disasters.	The 4RF may be an important source of community-level vulnerability information that could inform the Government of Pakistan's selection of priority pilot communities for the Proposed Project.	2022 – 2029 (approximately)

No	Relevant Project / Programme	Description	Goals	Complementary potential	Project Timeline
		effectiveness. Recovery interventions will be integrated and multi-sectoral.			
4	Scaling-Up Of Glacial Lake Outburst Flood (GLOF) Risk Reduction In Northern Pakistan	This is a UNDP-implemented 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 community-based CBEWS, enhanced infrastructure and community-based disaster risk management. ICIMOD has provided considerable technical support to this project.	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 GLOFs, and improve community preparedness and disaster response. The project will also support the development of sustainable livelihood options in project areas, with a particular focus on the participation of women in ensuring food security and livelihoods.	The Proposed Project cryosphere will complement the current geographic coverage of GLOF Phase II and link the communities to a community-led DRR system that reaches further downstream, leveraging the impact of GLOF and increasing the cost-effectiveness of the proposed Project.	2017 - 2023
5	Transforming the Indus Basin with Climate-Resilient Agriculture and Water Management	This GCF-funded FAO-implemented 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.	Transform agriculture in the Indus Basin by increasing resilience among the most vulnerable farmers and strengthening government capacity to support communities to adapt.	The Proposed Project will increase the availability of groundwater, which is essential for irrigation. Furthermore, the Proposed Project's community-led DRR mechanisms will serve to mitigate some degree of crop loss, and the erosion countermeasures will preserve arable land. Accordingly, it will significantly strengthen the GCF-funded project's impact.	2019 - 2026
6	Enhancing community, local and national level urban climate change resilience to water scarcity, caused by floods and droughts	This Adaptation Fund-supported and UN-Habitat implemented project is focused on resilient water harvesting facilities and district/city-level spatial strategies to assess climate change-related floods, droughts and water scarcity to plan for and manage climate change risks.	The main objective of the Proposed Project is to "enhance community, local and national-level urban climate change resilience to water scarcity, caused by floods and droughts in Rawalpindi and Nowshera cities."	Scaling of solutions on water conservation and managing climate change risks piloted at Nowshera and Rawalpindi in the larger areas through collaboration with national and provincial agencies.	2020-2023

G. If applicable, describe the learning and knowledge management component to capture and disseminate lessons learned.

The success and scalability of the Proposed Project hinge largely on the creation, cataloguing and effective dissemination of sectoral learning. Accordingly, Component 4 - Awareness Creation and Knowledge Management reflects this importance. The proposed concept will be able to avoid duplication and maximise results through synergies, leveraging resources and lessons learned with other projects. The Proposed Project will build on, complement, learn from, and augment the results of other projects in Pakistan's Indus Basin. This will build on ICIMOD's 40 years of experience as a regional knowledge broker. In this context, ICIMOD has worked closely with its eight regional member countries to ensure that its organisational commitment to outcomes aligns with areas of regional relevance and that the knowledge produced is actionable and relevant to international, regional, national, and local partners. Accordingly, capturing and disseminating lessons learned will be an integral part of the fourth component.

Organised demonstration of proven solutions in pilot communities would also encourage peer-to-peer learning and increase the potential of adoption and scaling of climate resilient and adaptive solutions by local communities and governments. ICIMOD's experience in Nepal reiterates the importance of peer-to-peer learning in spawning community-led adaptation interventions. Specifically, ICIMOD's Knowledge Park at Godavari can be seen as an example of the impact generated through this methodology.¹⁵ This park has been serving as a community resource platform since 1993. The relevant methodologies developed and piloted include improved nitrogen-fixing and erosion reduction through hedgerows in sloped agriculture and improved kiwi and avocado cultivation technologies. These are examples of ICIMOD's expertise in identifying context and climate suitability mapping across communities and managing and disseminating practical knowledge on climate adaptation.

¹⁵ http://lib.icimod.org/record/31695/files/Godavari_InfoSheetsU.pdf

H. Describe the consultative process, including the list of stakeholders consulted, undertaken during project preparation, with particular reference to vulnerable groups, including gender considerations, in compliance with the Environmental and Social Policy and Gender Policy of the Adaptation Fund.

The Proposed Project has been developed in close consultation with the Ministry of Climate Change, the Ministry of Water Resources, and the Provincial Public Health Engineering and Local Government departments. In addition, the Proposed Project also used the outcomes of multiple consultations with stakeholders for the development of the Post Disaster Needs Assessment (PDNA) in September/October 2022, and the Development of Resilient, Reconstruction, Rehabilitation Recovery Framework (4RF) in December 2022, for flood recovery and reconstruction where building back adoptive community infrastructure. Ecosystem resilience and community resilience were identified as critical priorities. A midterm review will be conducted and will lead to a proposal to this end. Lessons learned regarding adaptation activities, responsiveness to locally expressed needs, local implementation, and awareness-raising of the population will be drawn.

Upon selection of the pilot sites, the Steering Committee's pool of experts will undertake community-level consultations prior to beginning any work. This will be gender-sensitive to create a context-specific enabling environment for communal participation. These consultations will be conducted with particular reference to distributing benefits and encouraging the participation of vulnerable groups, including gender considerations.

I. Provide justification for funding requested, focusing on the full cost of adaptation reasoning.

As per the Nationally Determined Contributions of 2021 of Pakistan: Pakistan's biggest domestic climate change challenge is adaptation, as Germanwatch has ranked Pakistan as the 8th most affected country in the world from 2000–2019. Pakistan's vulnerability to climate change and climate-induced extreme events and its consistent appearance in the top 10 ranking of the Global Climate Risk Index by Germanwatch has placed the country, along with Haiti and the Philippines, in a new category of countries being recurrently affected by catastrophes both in the long-term index as well as in the index for the respective year. ND-Gain Index⁵ has placed Pakistan as the 39th most vulnerable country and the 27th least ready' country in the world to address the impacts of climate change. This is borne out of the fact that in Fiscal Year (FY) 2020, 40% of households suffered from moderate to severe food insecurity⁶ and, therefore, cannot absorb further climate shocks to food systems.

Additionally, the World Bank has also noted in its Country Climate and Development Report (CCDR) for Pakistan that: "Many of the underlying concerns raised after the similar 2010 floods were not addressed, including outdated river management systems and drainage networks, deforestation and land degradation, the proximity of people, infrastructure and farmland to flood plains, the lack of disaster preparedness and other systematic mainstreaming of adaptation interventions, such as early-warning and rescue systems." It goes on to note that "action to build resilience and adapt to climate risks is imperative for Pakistan—and is an integral part of a sustainable and equitable national growth strategy."

Given the centrality of the Indus Basin to Pakistan's national water resource management, it is a crucial element of the country's vulnerability to the effects of climate change and requires urgent adaptive actions to prevent significant loss of life and property due to climate-induced disasters. The 2018 National Water Policy notes: "The impacts of Climate Change like intensification of floods, erratic monsoon rains and frequent droughts are major concerns for Pakistan. Other likely effects on water resources could include: (...) (i) Recession of the Himalayan, Karakoram and Hindukush glaciers, threatening water inflows into Indus River System, (...) (ii) Increased intrusion of saline sea water in the Indus delta, adversely affecting coastal agriculture, mangroves and fisheries."

Accordingly, the climate-related risks are known, and the Proposed Project draws on evidence-based measures that align both with the priorities of the Government of Pakistan and the outcomes of the Adaptation Fund. This initial investment has the potential to mitigate the anticipated loss of life and property due to climate-induced disasters.

J. Describe how the sustainability of the project/programme outcomes has been taken into account when designing the project/programme.

Centring on performance-based and bottom-up approaches, the Proposed Project will build legitimacy, opportunities, and ultimately technical, institutional, and operational sustainability at local levels while encouraging improvements over time and encouraging communities to adopt the pilot community solutions in a contextually appropriate manner. Sustainability will be ensured as i) institutional processes for climate change adaptation mainstreaming will be put into place; (ii) capacities of local governments will be strengthened; iii) better management of climate risks will stabilise livelihoods; iv) lessons learned will facilitate further improvement of the NBS water management solutions deployed and adapt them to a wider range of environmental, geographic and social contexts in Pakistan.

Sub-district technical staff will be engaged during the project (as well as in the design of the project during full proposal development). Capacity building will be integral to all components of the project, so their technical capacity will be further improved, particularly regarding the technical aspects of climate change adaptation. These empowered local experts will advocate for adopting the adaptive NBS water management solutions deployed in the context of the Proposed Project. The participatory nature of the project will equip the local community members with technical knowledge and skills through continued engagement and hands-on practice to instil a sense of ownership in the project and a continued engagement with the technical aspects of climate change adaptation beyond the life of the project.

K. Provide an overview of the environmental and social impacts and risks identified as being relevant to the project/programme.

The project is conceptualised and will be fully designed to have a positive environmental and social impact, based on lessons learned from and synergies with other projects, as well as through extensive consultations with stakeholders, target communities, and relevant authorities. The local-level appropriate activities will be selected by communities and will be designed to create an overall positive impact on the environment with special attention to minimise any collateral environmental effects. The project at the concept note level was assessed for environmental and social risks under the 15 principles set out in the AF ESP. The potential risks and the need for further assessment were identified, as presented in the table below.

Checklist of environmental and social principles	No further assessment required for compliance	Potential impacts and risks – further assessment and management required for compliance
<i>Compliance with the Law</i>	X	No risks anticipated
<i>Access and Equity</i>	X	The pool of experts will undertake local-level gender audits to ensure that the assumptions made at the design phase at the national level hold true at the local level, and in the case that they do not programming is adapted to ensure they are safeguarded. Furthermore, through the inclusive and participative methodologies applied access and equity will stand at the heart of implementation. This assertion is based on past ICIMOD experiences in riverbank erosion prevention in the Passu Valley and communal pond and springshed restoration projects in Kavre, Nepal.
<i>Marginalised and Vulnerable Groups</i>	X	While every household in the project area will have equal opportunity to project interventions, there is a low risk that priority setting will be done inadequately and prevent some access to the project. Clear and transparent criteria will be implemented, including selecting participants for the training sessions and workshops. Measures will be in place to enable this project to closely monitor all targeted beneficiaries to assure equal access of men, women, youth, and the most vulnerable groups. Indicators in this regard will be included in the Monitoring and Evaluation Plan. A description of the project, its benefits, and the process by which the project ensures fair and impartial access to benefits (such as statement of non-discrimination) will be produced and communicated within each community.

Checklist of environmental and social principles	No further assessment required for compliance	Potential impacts and risks – further assessment and management required for compliance
<i>Human Rights</i>	X	The Proposed Project respects and adheres to all relevant human rights conventions and national and local laws. All interventions will respect and promote human rights, including equality, freedom of expression, association, education, and access to information. The Steering Committee's pool of experts will apply a human rights lens in the community gender audit, the elaboration on the Environmental and Social Management Plan (ESMP), and its mid-term review.
<i>Gender Equality and Women's Empowerment</i>	X	Although there are low risks of social exclusion of women, there are project targets for the active participation of women (50% and above). The executing entity will ensure that all interventions adhere to the AF gender policy and ensure women have full and equal opportunities to participate and receive equitable social, health, and economic benefits. The full consultative process will be carried out with the participation of gender experts to ensure that the proposed AF project is responsive to various gender needs and roles such that project activities effectively respond to the unique needs of women and men. Project activities will be specifically designed to be gender sensitive. The project will promote and empower women leadership in public spaces and decision-making.
<i>Core Labour Rights</i>	X	Members of the pool of experts shall screen all activities and interventions to ensure that they comply with the requirements laid out in the project's Environmental and Social Management Framework and Environmental and Social Policy. Communities will need to adhere to the Labour Standards of Pakistan and the core labour standards of the International Labour Organisation in the design and implementation of the project.
<i>Indigenous Peoples</i>	X	The design of all the components, activities, and interventions will ensure that the local communities and Local tribal peoples involved are consulted and benefit from the interventions according to their needs.

Checklist of environmental and social principles	No further assessment required for compliance	Potential impacts and risks – further assessment and management required for compliance
<i>Involuntary Resettlement</i>	X	There will be no Involuntary Resettlement in this project. All infrastructure interventions will be small-scale and the land to be used for these interventions will come from public land.
<i>Protection of Natural Habitats</i>	X	Implementing ecosystem-based adaptation activities, such as tree planting for erosion protection, should positively affect the protection of natural habitats. However, an Environmental and Social Impact Assessment will be conducted to inform and strengthen the minimisation of impacts on natural habitats from the implementation of activities and interventions.
<i>Conservation of Biological Diversity</i>	X	Some project activities, such as NBS interventions, are more likely to positively affect the conservation of biological diversity. However, an Environmental and Social Impact Assessment will be conducted to inform and strengthen the minimisation of impacts on biological diversity from project activities and interventions.
<i>Climate Change</i>	X	The Proposed Project activities will not generate nor emit significant greenhouse gases and will not exacerbate climate change. On the contrary, project activities such as tree planting will help mitigate climate change's impacts in the selected areas. Should any activities or interventions show risks of generating emissions, a risk assessment (and, where possible, a greenhouse gas emissions calculation) will be conducted to ensure the project adequately addresses the causes or impacts of climate change brought about by project implementation and provide pathways to low carbon development.
<i>Pollution Prevention and Resource Efficiency</i>	X	The Proposed Project will not release pollutants, and energy and material resource efficiency will be embedded in the project design.
<i>Public Health</i>	X	The Proposed Project will not have harmful impacts on public health. On the contrary, project activities will be more likely to improve air and water quality and have the potential to improve public health measures. The project will ensure that the targeted populations will not face restrictions on their access to public healthcare. The project will also promote social distancing and safe

Checklist of environmental and social principles	No further assessment required for compliance	Potential impacts and risks – further assessment and management required for compliance
		farming and sanitary measures in line with national requirements to prevent the spread of COVID-19.
<i>Physical and Cultural Heritage</i>	X	Initial consultations have not identified the presence of physical and cultural sites. However, further assessment will be done to verify this. All projects and interventions will be designed and implemented to avoid the alteration, damage, or removal of any physical, cultural resources, cultural sites, and sites with unique natural values recognised as such at the community, national or international level. Additionally, interventions will not prevent access and use of such physical and cultural sites.
<i>Lands and Soil Conservation</i>	X	The project activities will aim to avoid negative impacts on lands and soil. On the contrary, project activities such as tree planting will likely positively affect land and soil conservation. However, an Environmental and Social Impact Assessment will be conducted to inform and strengthen the minimisation of impacts on land and soil, where applicable.

PART III: IMPLEMENTATION ARRANGEMENTS

A. Demonstrate how the project/programme aligns with the Results Framework of the Adaptation Fund

Project Objectives ¹	Project Objective Indicator(s)	Fund Outcome	Fund Outcome Indicator	Grant Amount (USD)
To enhance ecosystem resilience in response to climate change through adaptive NBS solutions, including landscape restoration.	<p>Springshed and groundwater mapping complete.</p> <p>Springs in selected pilot sites are rejuvenated.</p> <p>Springshed management is included in district-level adaptation policies and strategies.</p> <p>Recharge facilities in selected pilot sites are functional.</p> <p>Access to water for human consumption and other uses increases in the pilot communities.</p>	Outcome 5: Increased ecosystem resilience in response to climate change and variability-induced stress.	5.1. No. and type of natural resource assets created, maintained, or improved to withstand conditions resulting from climate variability and change (by type of assets).	2,100,000
To increase community resilience to climate variability and change in Pakistan's Indus Valley, by upgrading and constructing climate-resilient water supply and sanitation facilities.	<p>Communities are more resilient to drought and floods, reducing the overall loss of life and property due to climate-induced disasters.</p> <p>Industrial and urban effluent treatment model is adopted in 3 sites.</p> <p>3 PPPs implementing the Industrial and urban effluent treatment model are in place.</p>	Outcome 2: Strengthened institutional capacity to reduce risks associated with climate-induced socioeconomic and environmental losses.	2.2. Number of people with reduced risk to extreme weather events.	3,300,000
To strengthen institutional capacity to reduce risks associated with climate-induced socioeconomic and environmental losses at national, provincial and district levels.	<p>Groundwater governance is improved through policy and practice, that takes gender equality and social inclusion into account.</p> <p>Pilot communities, districts and provinces have an increased capacity to minimise exposure to climate variability risks.</p> <p>A functional DRR and CBFWS are in place that link pilot upstream and downstream communities.</p>	Outcome 2: Strengthened institutional capacity to reduce risks associated with climate-induced socioeconomic and environmental losses.	2.1. No. and type of targeted institutions with increased capacity to minimise exposure to climate variability risks.	2,200,000

To strengthen awareness and ownership of adaptation and climate risk reduction processes at the local level through improved knowledge management, communication and advocacy for improved adaptation practices for reducing climate-related risks at all levels.	Percentage of the targeted population aware of predicted adverse impacts of climate change and appropriate responses Number of Secondary water analyses distributed.	Outcome 3: Strengthened awareness and ownership of adaptation and climate risk reduction processes at the local level.	Percentage of the targeted population aware of predicted adverse impacts of climate change, and of appropriate responses.	816,977
Project Outcome(s)	Project Outcome Indicator(s)	Fund Output	Fund Output Indicator	Grant Amount (USD)
Increased ecosystem resilience in response to climate change and variability-induced stress in Pakistan's Indus Basin.	Percentage of community members in pilot sites who have increased access to water. Reduction in cost incurred by pilot communities due to floods and droughts.	Output 5: Vulnerable physical, natural, and social assets strengthened in response to climate change impacts, including variability	5.1. No. and type of natural resource assets created, maintained or improved to withstand conditions resulting from climate variability and change (by type of assets).	2,100,000
Increased adaptive capacity of water supply and sanitation infrastructure in selected Indus Basin communities with high exposure to climate related hazards.	Rise in groundwater levels and equitable availability in pilot sites. Improved coherence in interventions targeting water management in Pakistan's Indus Basin. Improved water quality in the Indus River adjacent to pilot sites.	Output 2.1: Strengthened capacity of national and regional centres and networks to respond rapidly to extreme weather events.	2.1.1. No. of staff trained to respond to, and mitigate impacts of, climate-related events. 2.2.1. Percentage of population covered by adequate risk-reduction systems.	3,300,000
Strengthened institutional capacity to reduce risks associated with the effects of climate-induced socioeconomic and environmental losses related to water resource management and DRR.	Increased efficacy in government policies aiming to improve water management and climate adaption in Pakistan's Indus Basin. Reduction of loss of life and property in pilot communities due to climate induced disasters.	Output 7: Improved integration of climate-resilience strategies into country development plans. Output 2.2: Targeted population groups covered by adequate risk reduction systems.	2.1.2. Capacity of staff to respond to, and mitigate impacts of, climate-related events from targeted institutions increased. 1.1. No. and type of projects that conduct and update risk and vulnerability assessments.	2,200,000
Improved knowledge and practices of communities and practitioners on climate change adaptation and climate risk reduction.	% increase in population awareness of the risks and impact of climate change, and awareness of effective adaptive resilience measures. Actors in the sector are more aware of the evidence base available for the design of interventions related to water management in Pakistan Indus Basin.	Output 3: Targeted population groups participating in adaptation and risk reduction awareness activities.	3.1.2 No. of news outlets in the local press and media that have covered the topic.	816,977

PART IV: ENDORSEMENT BY GOVERNMENT AND CERTIFICATION BY THE IMPLEMENTING ENTITY

A. Record of endorsement on behalf of the government²

<i>Mr. Muhammad Farooq Senior Joint Secretary Ministry of Climate Change Government of Pakistan</i>	28 February, 2023
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**GOVERNMENT OF PAKISTAN
MINISTRY OF CLIMATE CHANGE**

F. No. 1-2023/KOICA/Living-Indus

Islamabad, the 28th February, 2023

Subject: **ENDORSEMENT FOR SUSTAINABLE ACTIONS FOR ECOSYSTEM
RESTORATION IN PAKISTAN (SAFER PAKISTAN)**

Ministry of Climate Change as designated authority for the Adaptation Fund in Pakistan, confirms that the above national project proposal is in accordance with the government's national priorities in implementing adaptation activities to reduce adverse impacts of, and risks, posed by climate change in Pakistan.

2. Accordingly, the concept is endorsed for submission to Adaptation Fund. If approved, the project will be implemented by the International Centre for Integrated Mountain Development and executed by the National Rural Support Programme of Pakistan, and the United Nations Children's Fund (UNICEF) Pakistan.

**Adaptation Fund Board
Secretariat**


(Muhammad Farooq)
Sr. Joint Secretary (Dev)

CC:

Dr. Saima Shafique, Director, MoCC, Islamabad

B. Implementing Entity certification

I certify that this proposal has been prepared in accordance with guidelines provided by the Adaptation Fund Board, and prevailing National Development and Adaptation Plans of the Islamic Republic of Pakistan and subject to the approval by the Adaptation Fund Board, commit to implementing the project/programme in compliance with the Environmental and Social Policy and the Gender Policy of the Adaptation Fund and on the understanding that the Implementing Entity will be fully (legally and financially) responsible for the implementation of this project/programme.

Name & Signature

Implementing Entity Coordinator:



Michelle Guertin

Head of Business Development and Resource
Mobilisation

International Centre for Integrated Mountain
Development

Date: *February*
27th, 2023

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