# 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 (ICIMOD) |
| **Executing Entities:** | United Nations Children's Fund (UNICEF) Pakistan<br>National Rural Support Programme (NRSP)<br>The United Nations Entity for Gender Equality and the Empowerment of Women (UNWomen) |
| **Amount of Financing Requested:** | $9,995,275 (in U.S 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: 18 June 2023

**Project/Programme Background and Context:**

***General Context***

Pakistan, ranked eighth in GermanWatch's Long-Term Climate Risk Index 2021, is one of the world's most climate-impacted countries. Pakistan grapples with recurrent climate-induced crises, including heatwaves, droughts, floods, and food shortages. The pressing imperative for Pakistan lies in enhancing adaptive capacity, resilience and vulnerability reduction against these shocks. The Indus River is central to this challenge, playing a pivotal role in South Asian economies. Originating from the Western Himalayan glaciers, the Indus Basin comprises six main rivers (the Indus, Jhelum, Chenab, Ravi, Sutlej, and Kabul), irrigating over 16 million hectares. With heavy reliance on meltwater recharge, the water-stressed semi-arid basin hosts the globe's most extensive transboundary irrigation system. Pakistan confronts water scarcity in withdrawals and per capita water availability.1 The Indus River contributes 25% of Pakistan's GDP. It supports nearly 90% of its food production.[1] It draws 45% of its overall flow from snow and ice meltwaters in the Himalayas, Hindu Kush, and Karakorum (HKHK). Rising climate change and anthropogenic black carbon (BC) deposits will expedite glacier melting, altering the flow of the vital Indus River system and seriously impacting Pakistan's economy and ecology.[2] A 2020-2021 World Bank report estimates the water shortage will increase to 32% by 2025.[3] Due to these cumulative shocks, hard-won gains in terms of poverty reduction may stall or be reversed. The 2022 floods in Pakistan underscore the urgency. Intense rainfall flooded the Indus, affecting and estimated 33 million people and causing 1,500 deaths.[4] After the 2022 flood, a Rapid Need Assessment estimated that 5.4 million people (16% of the 33 million) in 84 affected districts shifted to unsafe drinking water sources. About 1.8 million people have had water services restored in the year since, leaving 3.6 million still without services due to the flood. The assessment revealed inadequate climate-resilient infrastructure, emphasizing the need for climate-resilient and green investments in Pakistan's WASH sector. This, alongside policies, regulatory frameworks and capacity building, is required for Pakistan to adapt to future climate shocks. Whereas previous water resource management interventions in the Indus Basin focused on structural engineering for the Indus Basin Irrigation System (IBIS).

Pakistani communities, especially women, are becoming more vulnerable to disaster-driven displacement, partly due to gender roles and patriarchal norms. Discrimination in employment and land rights persists for women. Considering climate-induced shocks, sustainable peace and security require women's full and equal participation. The crucial and meaningful role of women in humanitarian response, disaster management and preparedness and in building resilient communities remain underappreciated.[5] However, the persistent presence of women in positions of political power ranging from former Prime Minister Benazir Bhutto to the present Minister of Climate Change HE Sherry Rehman demonstrate there is an openness to woman leadership in Pakistan. This success could extend to local levels to tackle the monumental challenge of climate change in the vital Indus Basin.

Meeting these challenges demands a swift shift to an integrated, innovative, and adaptive Indus water resource management approach to counter growing availability volatility. This moment also offers a unique opportunity for gender-inclusive outcomes. The project is tailored to the diverse landscapes and communities along the Indus, and aligned with existing national plans and initiatives, notably the 2022 Living Indus Initiative,[6] and Resilient Recovery, Rehabilitation, and Reconstruction Framework (4RF)[7], and aligns with the 2023 National Adaptation Plan (NAP). This project targets five specific climate change adaptation challenges confronted by Indus Basin residents:

1. **Cryosphere Risks:** Melting glaciers, snowpack, and permafrost, which can lead to catastrophic floods, avalanches and landslides in the upper basin.
2. **Springshed Management:** Springs vital for rural and urban water sources in the Middle Basin are drying.
3. **Groundwater Management and Resilience of Community Water Supply Services:** Depleting groundwater and inadequate infrastructure in the Middle Basin Plains hinder access to water. Unregulated groundwater use and poor supply systems, damaged by floods and contamination, further impact domestic water services.
4. **Ecosystem-based Solutions:** Increased urbanization, droughts and floods have increased the urban effluent reaching the Indus, increasing pollution and constraining access to clean water in the Middle and Lower Basin.
5. **Surface Water Conservation:** Unsustainable water use and climate impact threaten the lower Basin. Community ponds for floodwater storage and restored waterways offer solutions.
6. **Adaptive capacities and empowered communities for strengthened resilience:** National and provincial institutions and Indus

[1] Janjua, S., Hassan, I., Muhammad, S., Ahmed, S., & Ahmed, A. (2021, October 4). Water management in Pakistan's Indus Basin: challenges and opportunities. *Water Policy*, *23*(6), 1329–1343.

[2] World Bank Group. 2022. Pakistan Country Climate and Development Report. CCDR Series; Washington, DC.

[3] Lytton,Lucy; Ali,Akthar; Garthwaite,Bill; Punthakey,Jehangir F.; Saeed,Basharat Ahmed.Groundwater in Pakistan's Indus Basin : Present and Future Prospects (English). Washington, D.C. : World Bank Group.

[4] Otto, F. E. L., Zachariah, M., Saeed, F., Siddiqi, A., Kamil, S., Mushtaq, H., Arulalan, T., AchutaRao, K., Chaithra, S. T., Barnes, C., Philip, S., Kew, S., Vautard, R., Koren, G., Pinto, I., Wolski, P., Vahlberg, M., Singh, R., Arrighi, J., Clarke, B. (2023, March 17). Climate change increased extreme monsoon rainfall, flooding highly vulnerable communities in Pakistan. Environmental Research: Climate.

[5] UN Women. (2023). Women, peace and security and humanitarian action in Pakistan. Retrieved from link

[6] Living Indus. (2023). Living-Indus-Investing-in-Ecological-Restoration-Final-Version. doi:10.1111/j.1467-8330.2008.00709.x

[7] UNDP. (2022). Final 4RF. doi:link

Basin's communities co-create and adopt innovative adaptation solutions (practices, tools and technologies) and strategies (local and provincial development plans, and national and provincial policies and regulatory frameworks) for comprehensive climate resilience, building ownership and knowledge, and driving uptake beyond the project.

***Cryosphere Disaster Risk Reduction Context***

The Indus Basin's cryosphere, over 40% of the basin area (highest in the HKH region), feeds 300 million people. It is increasingly vulnerable due to climate change due to rising temperatures and altered precipitation. Hazards such as Glacial Lake Outburst Floods (GLOFs), Avalanches, Glacier surges (GSs), Glacial Collapses (GCs) Ice/Landslide Dammed Lakes, and sudden draining of englacial water bodies are intensifying, straining mountain communities, infrastructure, and livelihoods. Addressing this requires holistic mitigation and adaptation efforts. This presents an opportunity to recognize and reverse gender discriminatory practices embedded in local culture, specifically disaster risk reduction (DRR) must be considered as a long-term effort to reduce the vulnerability of women.[9] The drastic rising temperatures in northern Pakistan have led to the formation and expansion of supraglacial lakes, posing flood risks to downstream communities (see Figure 1).[8] Cryosphere-related climate risk investments, especially for GLOF hazards, have begun. GLOF-I (2011-2015), funded by the Adaptation Fund, now extended to 12 districts in KP and GB provinces via GCF-funded GLOF-II (2016-2024). Advanced early warning systems are in progress across the 12 districts, yet community-based risk management and grassroots capacity building emphasized in GLOF-I remain limited, including gender considerations. Women's involvement in leadership and inclusive disaster risk management (DRM) is essential for bolstering community resilience. [9]

According to the 2021 World Bank Pakistan Country Profile warming in Pakistan was estimated at 0.57°C over the 20th century. Warming has accelerated more recently, with 0.47°C of warming measured between 1961–2007. Warming is strongly biased towards the winter and post-monsoon months (November–February). These troubling trends are set to continue and conspire to put the high-altitude communities in Gilgit-Baltistan and Khyber Pakhtunkhwa at increasing risk. The Government of Pakistan has approved the first National Master Plan for a Flood Telemetry System to monitor the major tributaries of the Indus in Pakistan. This underlines the importance of flood telemetry and creates an opportunity to fully integrate low-cost and effective Community-Based Monitoring and Early Warning Systems (CB-MEWS) developed by ICIMOD and its Pakistani partners at the communal level and its scaling up.

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.)

Furthermore, a more community-based approach complementing the UNDP GLOF II work presents a significant opportunity for a gender equality and social inclusion (GESI) approach to DRR, as outlined in the Sendai Framework. Furthermore, the Convention on the Elimination of All Forms of Discrimination Against Women (CEDAW) Committee General Recommendation 37, concerning climate change-related risks, provides guidance on interpreting and applying CEDAW in DRM and climate change adaptation. This provides the basis for international norms in making and implementing gender-sensitive DRM 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 positive regional example. The plan is considered a tool to enhance knowledge, capacities, coordination and actions to strengthen gender-responsive climate strategies aligning with national objectives.

***Springs Context***

Springs are a crucial part of groundwater systems. There needs to be more clarity regarding springs (that dissociate springs from groundwater systems), which create misaligned policies that exacerbate the problem. Springs are also part of complex socio-technical and informal governance systems with pronounced gender, equity, and cultural dimensions, and these systems are not well understood as well, again leading to inappropriate policies and interventions. ICIMOD has developed an integrated community-based methodology and piloted it in Pakistan and Nepal. The learning generated from these experiences has been incorporated into a gender orientation note for springshed management.[10] Nor are the livelihood implications of changes in these springs considered sufficiently in programmatic design, especially considering that they contribute up to 25% of rural and municipal water in the mid-hills Mid-Basin around Malakand, and Hazara. Making them critical aspects of non-surface water, non-pumped groundwater

[8] Ashraf, A., & Rustam, M. (2020). Monitoring Supraglacial lakes Formation and Risk of Outburst Flooding in the Himalayan Cryosphere of Pakistan. *International Journal of Environment*,
[9] UNDP. (2021). Climate equity: Women as agents of change. Retrieved from link
[10] ICIMOD. (2018). Spring manual 2018. ICIMOD Library. Link.

resources that these communities require to meet their water needs. This has led the project design team to prioritize them as areas of intervention for this project. This underlines the need to consider springs more regarding administration and conservation. It is an essential component of an integrated approach in the Indus Basin, especially in light of recent droughts and floods. Due to frequent earthquakes since 2005, many springs have changed their course or dried up.[11] Developing an inventory of springs and assessing water availability at the municipal level throughout the year will be essential to adaptive and climate-resilient water resource development and management. The National Agriculture Research Centre has identified this approach as a priority.[12] Furthermore, it is a crucial adaptive piece in addressing the volatility of glacial meltwater availability. Combined with communal ponds and an effective locally owned Springshed Revival and Management system, 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. In collaboration with the Pakistan Agricultural Research Council, ICIMOD has organized several training workshops in Pakistan in the past 5 years, the proposed project will build on this cooperation and deepen the integration of the gender dimension therein.

***Groundwater Management and Resilience of Community Water Supply Services Context***

Pakistan ranks fourth in global groundwater extraction, heavily using the Indus Basin Aquifer, the second most overstressed globally. It's the world's leading groundwater exporter, sustaining water-intensive exports like 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.[13] Despite its role as a climate change buffer, over-extraction and pollution, driven by poor governance, challenge groundwater. Future sustainability is uncertain; maintaining agriculture use strains other sectors and limits drought resilience. Around 12 billion cubic meters of irrigation water must be reallocated in three decades, with IBIS performance a pivotal factor.[14] Pakistan's drive for sustainable groundwater governance is evident in recent legal and institutional reforms. The 2018 National Water Policy seeks a Groundwater Authority in Islamabad, while the Punjab Water Act (2019) and Khyber Pakhtunkhwa Water Act (2020) empower provincial water resource commissions to license groundwater use. Yet, effective governance implementation lags at both federal and provincial tiers. Groundwater scarcity is rising, notably in Khyber Pakhtunkhwa Province. Population growth, expanding agriculture, and urbanization worsen water scarcity. Pakistan's arid to semi-arid climate covers 796,095 km2. With excessive groundwater extraction and limited recharge, artificial aquifer restoration and abstraction management are crucial. Fragmented management due to disjointed sectoral and provincial approaches hinder basin-wide effectiveness and shared benefits. The project will build capacity and improve support for implementing existing provincial groundwater legislation and enacting water acts in Khyber Pakhtunkhwa and Sindh provinces for sustainable groundwater governance for reliable access amid climate change, aiding adaptation efforts.

Remote sensing and land use modeling can effectively quantify water use practices and associated changes.[15] 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.

In addition, the resilience of WASH infrastructure tapping from groundwater like design and construction standards, resilience of WASH physical infrastructure, reliability/yield of wells and water quality protection are the significant factors of vulnerabilities of WASH services in flood and other disaster-prone areas. The Post-Disaster Needs Assessment (PDNA) report launched in January 2023 estimates damages worth 575 million USD with additional losses of 112 million USD incurred 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 schemes are entirely destroyed. More data on community and private infrastructure was needed, an estimated two-thirds of the affected population access these services. The resilient reconstruction needs of the Sector overall have been estimated at 327 million USD. This estimate considers infrastructure and investment in sustainable operation and maintenance of these systems.

***Ecosystem-based Adaptations (EBAs) Context***

EBAs 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. Currently, water management in Pakistan remains heavily dominated by traditional, human-built infrastructure. The potential for EBAs remains under-utilized, including green infrastructure that can cost-effectively substitute, augment, or work in parallel with grey infrastructure.

[11] The New Humanitarian (2006), Pakistan: Water a major challenge for earthquake survivors, retrieved 20.02.2023 link
[12] Sharma, S., & Adhikari, R. (2020). The potential of springs for climate-resilient mountain livelihoods in the Hindu Kush Himalayas. Working Paper No. 25. International Centre for Integrated Mountain Development (ICIMOD). Retrieved from link
[13] National Water Policy of Pakistan, (2018), Government of Pakistan Ministry of Water Resources, retrieved 20.02.2023, link
[14] World Bank, (2022), Country Climate and Development Report (CCDR) Pakistan, retrieved 26/05/2023, link
[15] 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

This potential is even more relevant considering the strain of urbanization in Pakistan; it is above the regional average in terms of its urban population, as per the World Bank Database.

Pakistan treats less than 1% of wastewater in the Indus Basin, falling short of the Sustainable Development Goal (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.[16] 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 nature-based solutions (NBS) (water- or substrate-based) for wastewater treatment. Constructed wetlands are less expensive and more cost-effective treatment solutions that use natural processes, local materials for construction, and low-cost and skill requirements for operation and maintenance. The installations include the construction of basins, lining, filling of different strata with selected filtration materials, plantation of vegetation and outlet of the treated water. Depending on the specific locations of the wetlands, the treated water can be used for irrigation, watering public parks or augmenting domestic water supply, rendering communities more resilient. UNICEF and its partners have successfully tested constructed wetlands as NBS for sewage treatment in a decentralized manner for small settlements of an average of 200 households.

***Surface Water Conservation Context***

Apart from water scarcity, the increased temperatures, varied precipitation, monsoon patterns, and increased emissions have resulted in a greater frequency of extreme weather events, as witnessed in the 2022 devasting 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 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 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 PHED. Data collected indicates that 1,346 plans were destroyed. Insignificant community and private infrastructure data were available, though an estimated two-thirds of the affected population accessed these services. The resilient reconstruction needs of the WASH sector have been estimated at 327 million USD. This estimate considers infrastructure and investment in sustainable operation and maintenance of these systems.

Therefore, this project, in partnership with UNICEF and NRSP, plans to reconstruct and upgrade some of the community structures in such a manner that not only builds back better but, in the process, also lays the basis for the planning, design and delivery of EBA WASH services in the future. Community rainwater harvesting community ponds that contribute to reducing runoff, improving water quality and creating additional access to water supply during the dry seasons. In addition to providing additional water storage for extreme dry seasons and reducing runoff during the rainy season, community ponds will enable improved salinity control and increase groundwater recharge. Approximately 50% of land in the Lower Indus region, specifically in Sindh province, is affected by salinity, presenting a significant threat to agricultural productivity, food security and livelihoods.

***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 prioritize getting children at the center of climate mitigation and adaptation efforts. The gender division of labor in Pakistan is highly skewed, especially when agricultural, pastoral, and wage labor are combined with household, community, and casual labor. 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, marginalizing 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 dimension[17]. 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

[16] 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

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

particularly vulnerable to forced labor and exploitation. This vulnerability extends to women's 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.[18]

As climate disasters affect livelihoods, working-age men migrate, exposing women and children to persistent climate-caused natural disaster risks. Urbanization, a form of internal migration, follows this trend. Climate change also challenges children's rights under the CRC, which Pakistan signed. Women and children bear water burdens, so gender-inclusive adaptation is crucial for widespread impact. The gender dimension in developing local DRR mechanisms is a critical consideration. The need for a GESI approach to DRR is outlined in the Sendai Framework.

The Sendai Framework highlights four priorities. The CEDAW Committee General Recommendation 37 guides gender-sensitive DRM and climate adaptation, forming international norms. Explored in the 2022 ICIMOD study "State of Gender Equality and Climate Change in South Asia and the Hindu Kush Himalaya," Pakistan's 2022 Climate Change Gender Action Plan stands out as a good example. It enhances knowledge and capacities, identifies gaps, and strengthens gender-responsive strategies in sectors (e.g., agriculture, water, DRM, forests and biodiversity, coastal management, energy, and transportation).

***Institutional Response Context***

In July 2023, Pakistan launched its inaugural NAP, a significant step toward climate resilience. It emphasizes five core priorities, with the first being the agriculture-water link. Strategies here focus on climate-smart farming, modernizing irrigation services, long-term agriculture growth strategies, and managing river flow under different climates. The NAP also addresses energy, health, and DRM sectors. Pioneering in Pakistan, it stresses urgent community adaptive capacity and overall environmental resilience. The project aims to implement NAP elements and support Pakistan's government in its implementation.

On June 6, 2021, with UNICEF and partners, Pakistan launched the global UN Decade of Ecosystem Restoration 2021-2030 to prevent, halt and reverse worldwide ecosystem degradation. As a leader, Pakistan can showcase effective models to meet this aim. The government prioritizes promoting EBAs to protect, sustainably manage, and restore ecosystems, addressing societal challenges while benefiting people and nature. UNICEF, a key partner in the 'One UN' program, collaborates with Pakistan's government for water and climate initiatives. The Ministry of Climate Change is UNICEF's federal counterpart.

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 HKH region with policymakers, experts, planners, and practitioners.

UNICEF and the Pakistan Council on Research of Water Recourses (PCRWR) have studied innovative artificial techniques coupled with integrated watershed management using NBS to enhance groundwater recharge. They have also assessed the feasibility of 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.

Strengthening Pakistan's institutions, systems, and knowledge is vital for replicating successful Indus River basin ecosystem restoration and NBS in the Water sector. Following the 18th constitutional amendment, many sectors' implementation devolved to provinces, with the federal role shifting to guidance, coordination and reporting. Still, institutional setups under the Revised National Climate Change Policy 2021 and Updated Nationally Determined (NDC-2021) offer federal and provincial levels the potential to strengthen the system. UNICEF supports this process through Capacity Needs Assessments (CNA), partnering with PCRWR and the Ministry of Water Resources for capacity development and knowledge management (KM). UNICEF's ongoing study aims to bridge institutional gaps in water and climate sectors, supporting the government over the 2023-2025 Country Programme.

In 2021, the Ministry of Climate Change and Environmental Coordination (MoCC&EC), with the technical and financial support of UNICEF, conducted a climate risk assessment of the WASH sector in the 4 provinces of Pakistan, which included hazard, exposure, vulnerability and capacity assessments for the WASH sector and proposed solutions to reduce vulnerabilities and increase capacities of climate change adaptation of the sector. The proposed solutions include technology choices, infrastructure design and construction, governance structures and financing alternatives.

The Government of Pakistan has recognized 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. 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.[19]

[18] D'Cunha, J. (1997). Engendering disaster preparedness and management. Asian Disaster Management News
[19] Living Indus, retrieved 20.02.2023, link

2. 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 critical performance indicator dashboard.[20]
3. The 4RF: A 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. It provides an overarching framework for planning, financing, implementing and monitoring Pakistan's resilient recovery, rehabilitation and reconstruction efforts.[21]

***The Transboundary Basin Context***

The project has considered the transboundary nature of the Indus Basin, which originates in China, flows through India into Pakistan, and is fed by the Kabul River from Afghanistan. Of all the parties with a stake in the basin, the most critical challenge to consider is the Indus Water Treaty (IWT). Currently, the IWT faces uncertainties and challenges, with limited prospects for change. The treaty, signed in 1960 between India and Pakistan, has prevented major conflicts over the river. Pakistan, heavily dependent on the Indus River, is among the most water-stressed nations. Combined with the gender dimension of outmigration prevalent in Pakistan, this will also negatively impact women, who tend to have less access to migration as an adaptation strategy. This is both the case for internal and international migration.[22] Growing water stress, population growth, and hydro-development aspirations strain the existing water-sharing arrangements. The effects of climate change pose a significant challenge to the Indus Basin and the long-term water security of both India and Pakistan. The Himalayan glaciers, a crucial water source for the Indus River system, are expected to diminish further, leading to changes in water flow and reduced groundwater recharge. Increasing water stress and population growth in the region intensify the demand for water resources. Furthermore, this dynamic is likely to complicate the climate security nexus, with ever-increasing inter and intra-communal competition over access to water resources risking an exacerbation of inequitable gender dynamics.

International mediation led by the World Bank plays a defining role in resolving disputes and ensuring compliance. In summary, the IWT has successfully managed water disputes between India and Pakistan for several decades, and throughout prolonged tension, its future outlook is uncertain, but many stakeholders have a significant interest in it continuing in force unchanged, which is the most likely medium-term outcome.

Opportunities exist amid these circumstances. Transboundary scientific exchange continues, facilitated by ICIMOD, which leads the Upper Indus Basin Network (UIBN) secretariat. UIBN, voluntary and informal knowledge and research network, connects national and international researchers, coordinating climate, cryosphere, water, and adaptation research. It enhances understanding, solutions, and stakeholder engagement for water availability, hazards, and resilience. UIBN reinforces the Indus Basin Initiative's role in climate change adaptation. This underscores the significance of basin-wide approaches for shared risk mitigation beyond national levels.

**Project/Programme Objectives:**

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

To **reduce the vulnerability and increase the adaptive capacity** of the population residing in Pakistan's Indus Basin to respond to the impacts of climate change through improved CB-MEWS, resilient land use planning, increased water access, and reduced pollution levels.

It is structured into six distinct components:

1. **Cryosphere CB-MEWS:** Community and institutional capacity to anticipate and respond to climate-generated cryosphere hazards are improved, reducing the likelihood of loss of life and property.
   Aligned with Adaptation Fund Outcomes:
   - 1: Reduced exposure to climate-related hazards and threats.
   - 2: Strengthened institutional capacity to reduce risks associated with climate-induced socioeconomic and environmental losses.
2. **Springshed Management:** Community and institutional capacity to restore, manage and revive springs is enhanced, increasing local resilience and climate adaptive capacity in the face of changing precipitation patterns in a gender-inclusive manner.
   Aligned with Adaptation Fund Outcomes:
   - 1: Reduced exposure to climate-related hazards and threats.
   - 2: Strengthened institutional capacity to reduce risks associated with climate-induced socioeconomic and environmental losses.
   - 3: Strengthened awareness and ownership of adaptation and climate risk reduction processes at the local level.
   - 5: Increased ecosystem resilience in response to climate change and variability-induced stress

[20] Clean Grean Pakistan, retrieved 27.02.2023, link
[21] Pakistan Floods 2022: Resilient Recovery, Rehabilitation, and Reconstruction Framework (4RF), retrieved 18.02.2023, link
[22] International Labour Organization (ILO), Female Labour Migration from Pakistan: A Gender Perspective, Publication: Geneva: ILO, 2019. Link

- 7: Improved policies and regulations that promote and enforce resilience measures

3. **Groundwater Management and Resilience of Community Water Supply Services:** Community and institutional capacity to mitigate and reverse groundwater depletion due to climate-induced trends, increasing local resilience and climate adaptive capacity and establish/upgrade climate resilient water supply infrastructure to provide sustainable water supply services for vulnerable and risk-prone communities with the promotion of efficient use of groundwater for domestic use
   Aligned with Adaptation Fund Outcomes:
   - 1: Reduced exposure to climate-related hazards and threats.
   - 2: Strengthened institutional capacity to reduce risks associated with climate-induced socioeconomic and environmental losses.
   - 3: Strengthened awareness and ownership of adaptation and climate risk reduction processes at the local level.
   - 4: Increased adaptive capacity within relevant development sector services and infrastructure assets
   - 7: Improved policies and regulations that promote and enforce resilience measures
4. **Ecosystem-based Solutions:** Community and institutional capacity to transform an ecological liability into a climate adaptive asset is increased, by cleaning and using wastewater, reducing reliance on pumped water, and rendering communities more adaptive.
   Aligned with Adaptation Fund Outcomes:
   - 1: Reduced exposure to climate-related hazards and threats.
   - 3: Strengthened awareness and ownership of adaptation and climate risk reduction processes at the local level.
   - 4: Increased adaptive capacity within relevant development sector services and infrastructure assets
   - 5: Increased ecosystem resilience in response to climate change and variability-induced stress
5. **Surface Water Conservation:** Community and institutional capacity to reduce surface water waste and increase its storage for productive use is increased, allowing communities to adapt to climate-induced shocks.
   Aligned with Adaptation Fund Outcomes:
   - 1: Reduced exposure to climate-related hazards and threats.
   - 2: Strengthened institutional capacity to reduce risks associated with climate-induced socioeconomic and environmental losses.
   - 4: Increased adaptive capacity within relevant development sector services and infrastructure assets
6. **Adaptive capacities and empowered communities for strengthened resilience to climate change:** Institutional capacity strengthened to reduce risks associated with climate-induced socioeconomic and environmental losses at national, provincial, and district levels. The adaption solutions and strategies applied through the project and the risks they address are communicated to the population of the Indus Basin in Pakistan, and the knowledge generated on their contextual appropriateness and up-scaling potential are documented, increasing the sectoral knowledge base and driving uptake beyond the project. This component will not only serve as an asset for the project but also be the foundation for an overall KM platform for the Living Indus Initiative.
   Aligned with Adaptation Fund Outcomes:
   - 2: Strengthened institutional capacity to reduce risks associated with climate-induced socioeconomic and environmental losses.
   - 3: Strengthened awareness and ownership of adaptation and climate risk reduction processes at the local level.
   - 7: Improved policies and regulations that promote and enforce resilience measures
   - 8: Support the development and diffusion of innovative adaptation practices, tools and technologies

**Project/Programme Components and Financing:**

Each component is subdivided into two to three distinct output categories:

1. **Knowledge gap filling, or ground-truthing** ensures contextual appropriateness of the individual adaptive measure and includes communities in deploying the solutions and their sustainability.
2. **Community-level interventions** that increase the adaptive capacity of members of the communities, with a view to a gender-inclusive approach.
3. **Institutional changes** or advocacy thereof, codeveloped with the local authorities that consolidate and enable scale-up of the adaptive outcomes at the local and provincial level. These component-level outputs will be integrated into a national policy output under component 6, led by the Ministry of Climate Change of Pakistan, to ensure a cohesive and coordinated approach across the local level interventions across Components 1-5.

The complex investments made by the project will all be in small-scale protective and basic service infrastructure and ecosystems. These investments are being fully identified and costed through a comprehensive environmental and social safeguard compliance analysis and consultations described below, a comprehensive Environmental and Social Risk Management Plan, which includes a gender-inclusive grievance mechanism, is being formulated and will be attached to the final proposal.

| Project Components | Expected Concrete Outputs | Expected Outcomes | Amount (US$) |
|---|---|---|---|
| 1. Cryosphere Disaster Risk Reduction | 1.1 Scientific and Community based risk mapping prepared<br>1.2 Community Risk Preparedness and Resilience strengthened through Capacity Building and Community Based Early Warning Systems<br>Procedural Linkage Between Local and Provincial Disaster Management Strengthened | Loss of life and property due to climate-induced cryosphere multi-hazards is reduced, and community resilience in the target sites in Khyber Pakhtunkhwa and Gilgit Baltistan is strengthened. | $1,711,000 |
| 2. Springshed Revival | 2.1 Comprehensive web-based mapping of springshed in Malakand and Hazara generated, incl. GPS locations of springs, discharge data, water quality information, hydrogeological information, water use patterns and their socio-economic implications identifying the most critical springs feeding into rural and municipal water supplies.<br>2.2 Recharge measures co-developed and implemented such as improved springshed practices, land use planning, bioengineering methods supporting nature-based solutions in Malakand, and Hazara, in a gender inclusive manner.<br>2.3 Strengthened local institutional capacity on springshed governance linked to water resource management, considering adaptation measures anticipating future climate change impacts, and linking to Component 6 on national level. | Communities in Khyber Pakhtunkhwa, and Hazara have increased access to spring water leading to more climate adaptive water use in the targeted communities in a gender inclusive manner. | $933,000 |
| 3. Groundwater Management and Resilient Community Water Supply | 3.1 Groundwater mapping and groundwater recharge facilities completed in selected water-scarce locations in the upper and Middle Basin including establishing/ strengthening operation, maintenance, and management structures.<br>Green climate-resilient community, water supply Infrastructure, constructed in selected sites with 100 solar-powered water points and 60 lead line hand pumps including establishing/ strengthening operation, maintenance, and management structures. | 3.1 Groundwater use is more adapted to mitigating climate change related shocks, mitigating loss of income and health impacts<br>3.2 Communities in flood prone areas provided with sustainable and climate resilient water supply services | $2,308,000 |
| 4. Ecosystem-Based Adaptation | 4.1 Climate change and WASH data analysis completed in select urban areas in the Middle Indus Basin, including targeted impact forecasts under RCP 4.5 and 8.5 to select intervention sites, including site-specific feasibility studies and environmental and social impact assessments.<br>Eight (8) Constructed wetlands as an NBS for sewage treatment installed in a decentralized manner including establishing and strengthening operation, maintenance and management structures. | WASH infrastructure in communities is more adaptive to climate change induced shocks in the targeted communities in the Middle Indus Basin, with up-scaling of the NBS solutions across the basin as contextually appropriate. | $700,000 |
| 5. Surface Water Conservation | 5.1 Comprehensive study on natural waterways, called Dhoras, and community ponds co-developed with the government in Sindh, resulting in the selection of 15 intervention sites.<br>Restoration/rehabilitation of 15 selected waterways and ponds in Sindh Province, including installation of automatic water quality monitoring systems and establishing and strengthening operation, maintenance and management structures. | Loss of life, property and livelihood due to climate induced shocks is reduced in the targeted communities, and communities are able to recover from said shocks more rapidly and effectively. | $1,080,000 |
| 6. Adaptive capacities and empowered communities for strengthened resilience to climate change | 6.1 Strengthened provincial and national capacities to apply innovative social and technological tools for establishing and enforcing human centered and gender transformative systems of climate change adaptation and accelerate the progress towards managing the Indus water resources<br>6.2 Climate change and WASH data analysis, catchment delineation for Indus River basin and development and dissemination of KM products including catalogues, technical papers, case studies and human-interest stories<br>Communities take lead in actions of awareness raising and behavioral change activities in their communities that increase uptake of new adaptation solutions and resilience creation. | Improved knowledge and practices of communities and policymakers on climate change adaptation and climate risk reduction lead to the mitigation of climate change induced loss of life and property. | $1,681,000 |
| 6. Project/Programme Execution cost | | | $799,235 |
| 7. Total Project/Programme Cost | | | $9,212,235 |
| 8. Project/Programme Cycle Management Fee charged by the Implementing Entity (if applicable) | | | $783,040 |
| Amount of Financing Requested | | | $9,995,275 |

**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 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. For the case of a programme, show how the combination of individual projects will contribute to the overall increase in resilience.**

The proposed project addresses five distinct impacts of climate change and the risks arising from them that the population of Pakistan's Indus Basin faces: (1) Cryosphere related hazards in the Upper Basin; (2) Drying up of springs linked to rural and municipal water supplies in the Middle Basin; (3) Depletion of groundwater levels and lack or limited climate resilient water supply facilities in the Middle and Lower Basin; (4) Increasing toxicity of urban effluent in the Lower Basin; and (5) Dwindling availability of surface water for households in the Lower Basin. To address these climate-related threats to the population of Pakistan's Indus Valley, the project mobilizes the expertise of four partners:

1. International Centre for Integrated Mountain Development (ICIMOD): ICIMOD is an intergovernmental knowledge center working on behalf of the people of the HKH. With 40 years of experience with the government of Pakistan.
2. The United Nations Children's Fund (UNICEF): UNICEF is responsible for providing humanitarian and developmental aid to children worldwide. It has been instrumental in supporting the government of Pakistan in ensuring a safe and clean community with adequate water and sanitation for every child. It is the sector lead for basic social service sectors for Pakistan's UN Sustainable Development Cooperation Framework (UNSDCF).
3. The National Rural Support Programme (NRSP): Is a not-for-profit Pakistani organization and the most extensive Rural Support Programme in the country for outreach, staff and development activities. NRSP's mandate is to alleviate poverty by harnessing people's potential and undertaking development activities in Pakistan. It has a presence in 72 Districts in all four Provinces.
4. The United Nations Entity for Gender Equality and the Empowerment of Women (UNWomen): UN Women is the global champion for gender equality, developing and upholding standards and creating an environment where every woman and girl can exercise her human rights and live up to her full potential. UN women support the Government of Pakistan as they develop their commitments and take action on gender-responsive climate change mitigation and adaptation. UN Women has been producing evidence to better understand the importance of inclusive natural resource management for sustaining peace and reducing security risks and to better understand the nexus between disaster preparedness, conflict and gender in Pakistan.

Bringing together the combined expertise and field-level capacity of these partners, six distinct adaptation measure components will be deployed to empower local communities and policymakers at the provincial and national levels to adapt to the above-outlined climate change challenges:

1. CB-MEWS and site planning reduce the loss of life and property due to cryosphere hazards in the Upper Basin.
2. Revived and community-managed springs that reduce water stress and improve the quality of municipal water supplies in the Middle Basin.
3. Groundwater recharge and governance practices reduce the depletion of the groundwater table, increasing water available for households in disaster prone areas through green and climate-resilient water supply facilities using solar and hand pumps in the Middle Basin.
4. Ecosystem-Based Adaptation in the form of constructed wetlands in the Middle and Lower Basin that treat increasingly toxic urban effluent, decreasing pollution and water stress in the Lower Basin.
5. Surface water conservation through the construction of community ponds and rehabilitation of waterways increases water availability to water-deprived communities in the lower Basin.
6. Adaptive capacities and empowered communities for strengthened resilience to climate change through technical support for developing adaptive policies, strategies, regulatory framework and institutional and HR capacity building; producing and disseminating KM products and community mobilization for sustainable climate action.

By rooting the proposed project in Pakistan's Living Indus Initiative, it is framed in the broader intervention logic that has been driven and is owned by the Pakistan government and benefits from coordinated support from the UN Country Team. This, combined with the system strengthening under Component 6, will ensure that these evidence-based adaptation solutions are deployed coherently at the project level and become accessible and scalable solutions for communities, development practitioners and policymakers. Therefore, reducing the costs of projects/programmes to implement climate-resilient measures in the future.

Below is an outline of the activities envisaged per component:

***Component 1: Cryosphere Disaster Risk Reduction (led by ICIMOD)***

Initial site selection criteria were:[23]

1. Existence of potentially dangerous glacier lakes: Meltwater from retreating glaciers often forms a glacier lake (usually moraine-dammed or ice-dammed). The GLOFs database and other lake inventories were used, including lake location, area, modeled or measured volume in some cases, and elevation. This information is used to identify glacier lakes that have the potential to cause GLOFs.
2. Extensive lakes of more than 200 thousand square meters area with a history of past damages flooding events. Large glacier lakes with a history of causing significant damage to infrastructure and property demand particular attention and require targeted interventions.
3. A history of recurring floods and GLOFs and glacial floods: Past events can provide valuable data on the frequency, magnitude, and impact of GLOFs, and glacial floods from subsurface water bodies to aid the development of appropriate response strategies.
4. Vulnerable community downstream: Downstream communities and infrastructure from potentially dangerous glacier lakes are vital. The presence of densely populated areas and critical infrastructure (e.g., roads, bridges, power plants, and agricultural land), necessitate priority interventions.
5. Permafrost or potential risk of debris flow: The presence of permafrost in the region can amplify the risk of debris flows, which GLOFs and other hazards may trigger. Permafrost or frozen ground is extensive at high elevation in this region. The combination of thawing permafrost near a glacier lake increases the potential danger and needs to be considered when developing strategies to manage cryosphere hazards.
6. Physical Accessibility: The sites have good physical access.

Sites that will be targeted under this Component based on the consultative process are:

| Provinces | Divisions | District | Tehsil or community |
|---|---|---|---|
| Gilgit Baltistan | Gilgit Baltistan | Ghizer | Ishkoman Valley/ Manjawa Valley/ Sher Qilla valley |
| Gilgit Baltistan | Gilgit Baltistan | Hunza Valley | Hassan Abdal valley |
| Gilgit Baltistan | Gilgit Baltistan | Hunza Valley | Shimshal valley |
| Gilgit Baltistan | Gilgit Baltistan | Gilgit | Bagrot Valley |
| Khyber Pakhtunkhwa | Chitral | Chitral | Reshun Valley |
| Khyber Pakhtunkhwa | Chitral | Chitral | Susoom Valley/Kalash Valley |

**Output 1.1: Scientific and Community based risk mapping prepared**

Activities under Output 1.1:

1.1. Hazard maps based on Earth Observation and GIS (Geographic Information Systems) to confirm the present level of hazard upstream affecting communities in Ishkoman Valley, Manjawa Valley, Sher Qilla valley, Hasaan Abad valley, Shimshal valley, Bagrot Valley, Reshun Valley, Susoom Valley, Kalash Valley.

1.2. Assess the vulnerability and exposure of communities in the selected sites.

1.3. Conduct participatory community-level risk assessments of the targeted vulnerable communities using an existing method that has been tested in other river basins to identify potentially dangerous glacier lakes based on previous collaborative work with AKAH Pakistan and National Disaster Management Authority's guidelines in the selected sites to strengthen their resilience to climate change-induced disasters.

**Output 1.2: Community Risk Preparedness and Resilience Strengthened through Capacity Building and CB-MEWS**

Activities under Output 1.2:

2.1 Establish Community Watch Groups to undertake necessary preparedness actions and measures.

2.2 Prepare a participatory community monitoring plan, including the need for contextually appropriate technological measures that supplement community members' monitoring.

2.3 Co-design and establish a gender-responsive CB-MEWS[24] based on Output 1 for hazards such as permafrost-triggered GLOF, glacial floods, landslides, rainfall-induced floods, and avalanches.

2.4 Deploy the identified technology to enhance monitoring and increase warning time.

2.5 Prepare evacuation plans in response to potential cryosphere-related hazards and establish evacuation routes and shelter zones cooperating with the respective Disaster Management Agencies. The plan will address communication and information dissemination, evacuation, search and rescue, first aid and health, transportation, shelter management, safe drinking water and sanitation, provision of relief, and collection of data systematically.

2.6 Establish networking and communication channels to disseminate early warning information in a larger network to provide lead time for preparedness.

[23] (1) GLOFs Data:link; (2) Glacial Lake Inventory: link; (3) Permafrost Probability: link; (4) Population Data of Pakistan: link; (5) Infrastructure location: link ; (6) National Boundary of Pakistan: link; (7) Basin Boundaries: Extracted using Shuttle Radar Topographic Mission (SRTM) Digital Elevation Model (DEM) downloaded from link

[24] Refer to Community Based Flood Early Warning System for the Hindu Kush Himalaya: Resource Manual | HimalDoc (icimod.org) for detailed process, and the gender specific methodlogical details can be found in Multiscale Integrated River Basin Management Module 3.

2.7 Combine CB-MEWS with real-time satellite data for timely risk identification and communication.
2.8 Build community capacity to understand and respond to potential hazards (using existing CBDRMs) and community-based hazard monitoring and risk resilience in cooperation with the respective Disaster Management Agencies.
2.9 Integrate long-term sustainability of the CB-MEWS through creating DRR basket funds and including the CB-MEWS approach in the DRR plan of local government, and respective Disaster Management Agencies.

**Output 1.3: Procedural Linkage Between Local and Provincial Disaster Management Strengthened**

Activities for Output 1.3:

3.1 Engage local leaders and policymakers to incorporate cryosphere-related risk in flood zonation and infrastructure planning.
3.2 Leverage the evidence on emerging hazards to formulate recommendations on disaster response standard operating procedures and advocate for their implementation with local authorities.
3.3 Coordinate with provincial Disaster Management Agencies and local authorities to integrate CB-MEWS solutions in their annual plans for long-term sustainability and encourage up-scaling at the provincial level.

***Component 2 Springshed Revival and Management (Led by ICIMOD)***

Initial site selection criteria were:

1. Springs that are essential to municipal water supplies;
2. Sites that would provide the largest potential impact in terms of beneficiaries reached

Sites that will be targeted under this Component based on the consultative process are:

| Provinces | Divisions | District | Tehsil or community |
|---|---|---|---|
| Khyber Pakhtunkhwa | Malakand | Buner | Daggar |
| Khyber Pakhtunkhwa | Hazara | Abbottabad | Abbotabad (Nathia Gali) |
| Khyber Pakhtunkhwa | Hazara | Mansehra | Mansehra (Shinkiari) |
| Khyber Pakhtunkhwa | Malakand | Lower Dir | Andezi (Chakdara) |

**Output 2.1: Comprehensive web-based mapping of springshed in Malakand and Hazara generated, incl. GPS locations of springs, discharge data, water quality information, hydrogeological information, water use patterns and their socio-economic implications identifying the most critical springs feeding into rural and municipal water supplies.**

Activities for Output 2.1:

1.1 Compile Springs Inventory and a web-based information system (GPS location, Biophysical characters, gender-social and economic information)
1.2 Identify critical springs and climate impacts: (1) Assessing water discharge and contribution to rural and municipal water for life and livelihoods; and (2) Climate change impact assessment on the identified vital/crucial springs.
1.3 Prepare participatory hydrogeological maps: (1) Study of rocks, rock structures, and streams; (2) Geological cross-sections.

**Output 2.2: Recharge measures co-developed and implemented, such as improved springshed practices, land use planning, bioengineering methods supporting NBS in Malakand, and Hazara.**

Activities of Output 2.2:

2.1 Co-design recharge solutions based on participatory approach supported by science and evidence collected through Output 1.
2.2 Support the local monitoring 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.
2.3 Install Data Monitoring Systems in select pilot communities to collect long-term spring discharge data, groundwater levels, water quality information, and rainfall data in a participative manner.
2.4 Promote community-led springs management (e.g., Springs User Groups) and deliver the existing springshed management and monitoring training to community members in the selected communities.
2.5 Strengthen local community institutions for operations, maintenance and equitable benef
2.6 it sharing in a gender-inclusive manner.

**Output 2.3: Strengthened local governance framework and institutional capacity on springshed governance linked to water resource management, considering adaptation measures anticipating future climate change impacts, relating to Component 6 at the provincial and national level.**

Activities for Output 2.3:

3.1 Document cost-benefit analysis and impact assessment
3.2 Co-develop guidelines and protocols for local-level management and operations to support responsible and sustainable use of spring water resources. The issues related to Resource Protection, Allocation and Permits, Monitoring and Enforcement, Conservation and Efficiency and Adaptive Management will be addressed in this component of adaptation actions.
3.3 Strengthen policy, regulation, and governance. In this component, issues related to Legal Framework, Regulations, Institutional

Structures, Allocation and Prioritization, and Compliance will be addressed locally and linked to Component 6 at the national and provincial levels, integrating springs water governance mechanisms into national water policies and regulations.

***Component 3: Groundwater Management and Resilient Community Water Supply Services (led by UNICEF)***

Initial site selection criteria were:

1. For groundwater mapping and recharge - Locations with low groundwater yield and high groundwater depletion and limited alternative water sources affected water supply services
2. For Climate Resilient Water Facilities- Communities and water supply services affected/prone to flooding, availability of groundwater resources, Locations not covered by PHED water supply systems and other IFI and government projects.

Sites that will be targeted under this Component based on the consultative process are:

| Provinces | Divisions | District | Tehsil or community |
|---|---|---|---|
| Khyber Pakhtunkhwa | Malakand | Swat | VC Qambar |
| Khyber Pakhtunkhwa | Malakand | Swat | VC Tindodag |
| Khyber Pakhtunkhwa | Malakand | Swat | VC Islampur |
| Khyber Pakhtunkhwa | Malakand | Swat | NC Khawja Abad |
| Khyber Pakhtunkhwa | Malakand | Swat | NC Sharif Abad |
| Khyber Pakhtunkhwa | Malakand | Swat | NC Landikas |
| Khyber Pakhtunkhwa | Peshawar | Charsadda | Charsadda |
| Khyber Pakhtunkhwa | Peshawar | Nowshera | Nowshera |
| Khyber Pakhtunkhwa | Malakand | Swat | Bahrain |
| Sindh | Sukkur | Sukkur | Bachal Shah |
| Sindh | Sukkur | Sukkur | Kandhra |
| Sindh | Sukkur | Khairpur | Kot deji |
| Sindh | Sukkur | Khairpur | Sobho Dero |
| Sindh | Sukkur | Khairpur | Kambat |
| Sindh | Mirpur Khas | Mirpur Khas | Digree |
| Sindh | Mirpur Khas | Mirpur Khas | Kot Ghulam Muhammad |
| Sindh | Mirpur Khas | Mirpur Khas | Sindhri |
| Sindh | Mirpur Khas | Mirpur Khas | Hussain Bux Mari |
| Sindh | Mirpur Khas | Mirpur Khas | Shujabad |
| Sindh | Mirpur Khas | Umerkot | Samaro |
| Sindh | Mirpur Khas | Umerkot | Umer kot |
| Sindh | Mirpur Khas | Tharparkar | Diplo |
| Sindh | Hyderabad | Sujawal | Jati |
| Sindh | Hyderabad | Sujawal | Mirpur Bathoro |

**Output 3.1: Groundwater mapping and groundwater recharge facilities completed in selected water-scarce locations in the Middle Basin, including establishing/ strengthening operation, maintenance and management structures.**

***Activities for output 3.1***

3.1.1 Conduct comprehensive groundwater study and mapping in Swat district of Khyber Pakhtunkhwa province.

3.1.2 Conduct a feasibility study and identify 6 sites for the construction of groundwater recharge facilities.

3.1.3 Construct ditches and trenches designed to suit the topographic and geological conditions of selected sites to increase the volume of runoff recharging the groundwater.

3.1.4 Install water quality meters will ensure avoiding maladaptation of contaminating the groundwater.

3.1.5 Establish and train community-based structures for the operation and maintenance of the facilities.

3.1.6 Develop technical training courses for technicians and operators of Sindh and KP Local Government Academies (LGAs), along with technical backstopping with the collaboration of academia.

**Output 3.2: Green climate-resilient community, water supply Infrastructure, constructed in selected sites with solar-powered pumps and hand pumps, including establishing/strengthening operation, maintenance, and management structures.**

**Activities for output 3.2**

3.1.4 Conduct an assessment of flood-affected community water supply systems in six flood-affected districts of Sindh province and identify vulnerable locations not covered by other interventions.

3.1.5 Construct/upgrade 100 solar-powered water facilities benefiting 150,000 people in Mirpurkhas, Umerkot, Sujawal, Badin, Khairpur and Sukkur districts of Sindh and Charsada, Swat and Nowshera districts of KP province.

3.1.6 Construct climate-resilient 60 handpumps together with lead pipelines benefiting 15,000 people in Mirpurkhas, Umerkot, Sujawal, Badin, Khairpur and Sukkur districts of Sindh to build back better approach in flood-affected areas.

3.1.7Establish/strengthen community water management structures, including training WASH committees and local technicians.

***Component 4: EBAs (led by UNICEF)***

Initial site selection criteria were:

1. locations where untreated sewage is released to streams and open ponds close to settlements, causing high pollution of the env and pose an increased health risk.
2. Locations where there is space and community willingness to participate on the implementation of constructed wetlands.

Sites that will be targeted under this Component based on the consultative process are:

| Provinces | Divisions | District | Tehsil or community |
|---|---|---|---|
| Khyber Pakhtunkhwa | Peshawar | Charsadda | Shabqadar |
| Khyber Pakhtunkhwa | Malakand | Swat District | Tehsil Madian |
| Khyber Pakhtunkhwa | Peshawar | Nowshera | Nowshera |
| Sindh | Sukkur | Sukkur | Bachal Shah |
| Sindh | Sukkur | Sukkur | Kandhra |
| Sindh | Sukkur | Khairpur | Sobho Dero |

**Output 4.1: Climate change and WASH data analysis completed in select urban and semi urban areas in the Middle Indus Basin, including targeted impact forecasts under RCP 4.5 and 8.5 to select intervention sites, including site-specific feasibility studies and environmental and social impact assessments.**

***Activities for Output 4.1***

4.1.1. Conduct secondary WASH, environment and climate change data analysis for target locations.

4.1.2. Undertake site-specific environmental and feasibility assessments while ensuring the contextual appropriateness of the intervention at eight selected sites in Charsadda, Swat and Nowshehra districts of KP province and Sukkur and Khairpur districts of Sindh province sit, including vegetation selection.

**Output 4.2: Eight (8) Constructed wetlands as an NBS for sewage treatment installed decentralized, including establishing and strengthening operation, maintenance, and management structures.**

***Activities for Output 4.2***

4.2.1. Install constructed wetlands in eight selected sites benefiting 22,400 people in the Charsadda, Swat and Nowshera districts of KP province and Sukkur and Khairpur districts of Sindh province based on proven UNICEF methodology, reducing urban effluent and increasing water availability.

4.2.2. Strengthen existing government and community structures to operate and maintain the wetlands.

4.2.3 Provide technical support, innovative and lateral learning platform, and equipment to service providers unable to operate Sewage Treatment Plants (STPs).

**Component 5: Surface Water Conservation (led by UNICEF)**

Initial site selection criteria were:

1. Locations where breakage of flood water to settlements from the natural streams due to different human activities - Dhoras
2. Locations where very high groundwater salinity and limited fresh water available for domestic use
3. Locations feasible for construction/upgrading of community ponds

Sites that will be targeted under this Component based on the consultative process are:

| Provinces | Divisions | District | Tehsil or community |
|---|---|---|---|
| Sindh | Bhanbore (Thatta division) | Sujawal | Jati |
| Sindh | Bhanbore (Thatta Division) | Sujawal | Mirpur Bathoro |
| Sindh | Bhanbore (Thatta Division) | Sujawal | Shah Bandar |
| Sindh | Mirpur Khas | Umerkot | Samaro |
| Sindh | Mirpur Khas | Umerkot | Umer kot |
| Sindh | Mirpur Khas | Tharparkar | Chachro |
| Sindh | Mirpur Khas | Tharparkar | Diplo |
| Sindh | Mirpur Khas | Tharparkar | Islamkot |
| Sindh | Mirpur Khas | Tharparkar | Mithi |
| Sindh | Mirpur Khas | Sanghar | Sinjoro |

**Output 5.1: Comprehensive study on natural waterways, called Dhoras, and community ponds co-developed with the government in Sindh, resulting in the prioritization of 15 intervention sites.**

**Activities for Output 5.1**

5.1.1. Undertake local ground-truthing of catchment feasibility studies and designing, construction/upgrading of ponds, including lining, silt traps, water filtration units, and water collection points with hand/and solar pumps.

5.1.2. Detailed designs and BOQs for 15 community pond sites, including site plans.

**Output 5.2: Restoration/rehabilitation of 15 selected waterways/ponds in Sindh Province, including Installation of automatic water quality monitoring systems and establishing and strengthening operation, maintenance and management structures.**
**Activities for Output 5.2**

1.2.1. Restore/rehabilitate selected natural waterways in the Sujawal, Umerkot, Sanghar, and Tharparkar districts of Sindh sites,
1.2.2. Install automatic water quality monitoring systems to ensure real-time monitoring in the target catchment location.
1.2.3. Construct/upgrade 15 communal ponds benefiting 30,000 people in the Umerkot, Sanghar, Sujawal and Tharparkar districts of Sindh province.
1.2.4. Establish communal pond management committees will be implemented as a pilot project to promote climate adaptation by communities to ensure water supply during drought which is becoming more and more unpredictable due to ongoing climate change.

**Component 6: Adaptive capacities and empowered communities for strengthened resilience to climate change**

The scope of Component 6 is primarily a "whole of basin" but secondarily national. It is fully integrated into the Government of Pakistan's Living Indus Initiative and will be led by UNICEF in close coordination with the MoCC&EC, UN Women and NRSP.

**Output 6.1: Strengthened provincial and national capacities to apply innovative social and technological tools for establishing and enforcing human-centered and gender-transformative systems of climate change adaptation and accelerate the progress towards managing the Indus water resources.**

**Activities for Output 6.1**

6.1.1. Conduct gap analysis of groundwater legislation at the provincial and federal levels and recommend and support implementing tangible actions for drafting new groundwater acts in KP and Sindh provinces.
6.1.2. Co-Develop and advocate for improved groundwater policies and regulations in Sindh and KP to maintain sustainable groundwater extraction and resilient use patterns.
6.1.3. Facilitate the development of participatory and gender-responsive water management adaptation plans with target communities that foster constructive resilience of communities and individuals and address climate security stressors.
6.1.4. Develop and deploy capacity-building support to regulatory authorities in KP and Sindh to effectively enforce groundwater regulations.
6.1.5. Facilitate application of new social technologies and gender-responsive approaches in consultation, co-developing processes and capacity-strengthening activities, including establishing community watch groups, trainings and developing policies and strategies.
6.1.6. Advocate for establishing National Water Regulatory Authority as per findings of ongoing UNICEF study on 'legislative gap analysis in climate resilient WASH sector.
6.1.7. 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.
6.1.8. Support the government of Pakistan in improving coordination among water sector stakeholders in Sindh and KP provinces, especially the government departments from different provincial/area governments, through KM products.

**Output 6.2: Climate change and WASH data analysis, catchment delineation for the Indus River basin and development and dissemination of KM products, including catalogues, technical papers, case studies and human-interest stories.**
**Activities for Output 6.2**

6.2.1. Integrate the CGPCP data into the Living Indus Knowledge Platform: **Crowdsourcing Knowledge Platform.**
6.2.2. Organize a **workshop to validate the indicators for contextual appropriateness**, focusing on Sindh, KP and GB.
6.2.3. Undertake **district-level training sessions in 15 districts** of the proposed programme in Sindh, KP and GB provinces to train the district government staff in data collection and data entry in CGPI web portals.
6.2.4. **Expand the national database of the CGPI**, housed in the Ministry of Climate Change, on which district governments report regular data from two provinces for 55 predefined indicators of five major components of this programme, i.e., Water, Sanitation, Hygiene, Liquid and Solid Waste Management and Plantation.
6.2.5. Provide **technical support to the Ministry of Climate Change** to review the climate adaptation data against indicators being reported by districts.
6.2.6. Support the initial p**roduction of three six-month database analyses an**d dissemination to decision-makers and stakeholders at the national and provincial levels as part of the Living Indus Initiative monitoring mechanism.
6.2.7. **Create a comprehensive database of all climate adaptive NBS and EBAs technologies** used in the Indus Basin, their cost, efficacy, and contextual prerequisites.
6.2.8. **Development of National Indus Water Atlas web portal** with GIS modeling and geotagging.
6.2.9. Support 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.

6.2.10. Support production and dissemination of KM products, including One Catalogue of appropriate technologies and NBS for different Indus River basin geographical zones, four technical papers on specific activities of the programme for replication elsewhere, One Catalogue of water sector stakeholders from the private sector, academia and research organizations, development, and donors, CSO and CBOs, and government/semi-government organizations with geographical presence and capacities for partnership in the Indus basin and six success stories/case studies.

**Output 6.3: Communities take the lead in awareness-raising and behavioral change activities in their communities that increase the uptake of new adaptation solutions and resilience creation.**

**Activities for Output 6.3**

**6.3.1. Build Public-Private Partnerships (PPPs)** across the basin with private sector actors in the sanitation, construction and finance sectors.

**6.3.2.** Expand the 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.

**6.3.3.** Conduct a participatory review of potential adaptation measures of communities, along with an analysis of gender sensitivity of the current adaptation measures and policies and regulations of climate adaptation that will guide infrastructure investments.

**6.3.4. Establish District Youth Forums** for Climate Adaptation and Action in Hunza, Gilgit, Sawat, Nowshera, Peshawar, Sukkur, Khairpur, Sanghar and Karachi districts for developing institutional linkages and using the digital platform to disseminate public messages on climate change adaptation issues.

**6.3.5.** Facilitate the development of participatory and gender-responsive water management adaptation plans with target communities that foster constructive resilience of communities and individuals and address climate security stressors.

**6.3.6. Develop an advocacy campaign** to replicate the project adaptation solutions and use its knowledge products in cooperation with the PPP elsewhere in settlements around the Indus River.

**6.3.7. Co-develop success stories/case studies** that can be transformed into short social and traditional media promotional material to raise public awareness.

**6.3.8. Undertake public awareness campaigns** in Hunza, Gilgit, Sawat, Nowshera, Peshawar, Sukkur, Khairpur, Sanghar and Karachi districts, focusing on adaptation practices for resilience and context-specific hazards and risks at individual, household and community levels.

**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.**

UN Women supports the Government of Pakistan in realizing its 4RF vision by consolidating locally informed evidence on gender and climate security linkages in flood-affected provinces in Gilgit Baltistan and Sindh. These results, which will be forthcoming in the third quarter of 2023, will inform the final proposal. A series of consultations will collect evidence on a) the connections between women's lived experiences of climate change and human security; and b) women's practices and adaptation strategies to mitigate and respond to such insecurity; and c) synergies between women's lived experiences and practices and government-led climate change adaptation and resilience efforts. By documenting the practices of women's participation in climate adaptation and mitigation of human security risk, the document will seek to support the planning and implementation of community-based early recovery and disaster preparedness efforts that will usefully inform the resilience of the most exposed areas. Under the Fund's Environmental and Social Policy (ESP) and Gender Policy (GP) of the Adaptation Fund of 2013, the importance of ensuring the inclusion of vulnerable groups in consultative and decision-making processes is highlighted.

Furthermore, as per the 15 Principles of the ESP, several fundamentally apply to any project, and require close cooperation with governmental counterparts, notably: Principle 1 - compliance with the law; Principle 4 - human rights: and Principle 6 - core labor rights. To this end, engagement with the Ministry of Climate Change and local officials has been prioritized in screening the technical outputs and the selected project sites. The screening of ESP compliance has been integral to all levels of the 4 phased consultation process, this has resulted in an initial risk assessment per component. Please note that the consultation process is outlined in detail in subsequent sections. The primary risks have been identified. These will feed into the Environmental and Social Impact Assessment (ESIA), which will be integrated into the full proposal. The project development team identified the primary risks across the 15 ESP principles. Then the final level of both national screening and, Adaptation Fund ESP principle compliance screening was undertaken. This includes ensuring that community members are engaged in decision-making and are empowered to participate in implementation, which will be crucial to designing the grievance mechanism and further integrating a gender-inclusive approach to project governance in the full proposal. Under the decision of the Adaptation Fund Board, the partners will organize further community-level consultations that are designed to provide a space for women, youths and socially marginalized groups to guide

the design of the ESIA and grievance mechanism, as well as integrate them in project governance at the local level.

*Table of Economic, Social, and Environmental Benefits by component:*

| Type of Benefit | Baseline | With/after Project |
|---|---|---|
| Economic | **Cryosphere-**In the Upper Basin, cryosphere hazards like avalanches, glacial surges, GLOFs etc., increasingly destroy the livelihood basis of communities. | Communities are more able to adapt to cryosphere hazards both in the long term through integration into site planning and in the short term in terms of community-based early warning systems.<br><br>Policymakers at the local level are empowered to better anticipate cryosphere risks to inform climate resilient infrastructure planning, reducing the loss of property in case of cryosphere disasters, and more able to anticipate these disasters reducing response times. |
| | **Springs-** In the Middle Basin, rural and municipal water supplies relying on springs are increasingly strained, resulting in a loss of income opportunities. | Communities are empowered to adapt their practices in terms of communal springshed management to increase water availability for essential for life and livelihoods in the face of climate change induced shocks.<br><br>Policymakers at the local level are more able to plan resilient income creation investments and mitigate the impact of water scarcity on the health and well being. |
| | **Groundwater and Resilient Community Water services-** In the upper and middle Basin, groundwater levels are being depleted at unsustainable rates resulting in a loss of income opportunities<br><br>Water supply services for communities in middle and lower basin damaged by recurrent flooding which led to economic losses for reconstruction and rebuilding | Communities are empowered to adapt their practices in terms of groundwater management to increase water availability for economic purposes, reducing the volatility of income opportunities due to water scarcity.<br><br>Green and Climate resilient community water supply facilities will provide economic benefits by reducing operation and maintenance costs and reducing cost of damages due to climate change risks like flooding. Sustainable water services improve the health conditions and reduce HH medical costs.<br><br>Improved building local knowledge and skills and create livelihood for community members. |
| | ***EBAs*** – In the Middle and Lower Basin, increasingly toxic urban effluent is endangering communities and ecosystems, increasing health expenditures | Communities are empowered to adapt their practices in terms of wastewater treatment through EBAs to increase water availability for economic purposes and reduce health expenditure by households incurred for medical treatment through reducing pollution.<br><br>Constructed Wetlands have lower operation and maintenance costs compared with conventional waste treatment facilities which reduces expenditure on O&M which in turn reduce the HH expenditure for sewage collection and disposal costs.<br><br>By engaging communities for construction activities, the project will contribute for building local knowledge and skills and create livelihood for community members.<br>Policymakers at the local level are more able to plan resilient water-dependent income creation investments. |
| | **Surface Water Conservation-**In the Lower Basin, surface water scarcity is leading to use of saline and brackish ground water by the majority of communities and increased cost of water treatment, loss of income and increased health costs | Communities are empowered to adapt surface water conservation practices to increase freshwater availability and improve ground water quality through increased recharge. This will reduce cost of water treatment as surface water need simple filtration while saline ground water needs expensive treatment options like reverse osmosis systems.<br><br>Increased water availability improve access to water supply for hygiene, sanitation and other domestic use which will improve health conditions of communities and reduce cost of treatment. |
| | **Adaptive capacities and empowered communities –** Lack of proper spring shed management, groundwater management and reduction of cryosphere risks regulations and strategies led to unregulated extraction of ground water, unfair use of existing resources and increased risk of communities which resulted loss of | Federal, provincial and district level government institutions supported to develop and enforce adaptive policies guidelines and regulations which will reduce cost of expenditure for emergency responses, increase equitable water supply services across the target locations and create revenue for the government through optimal charges of water consumers including from agriculture and industrial users. |

| Type of Benefit | Baseline | With/after Project |
|---|---|---|
| | income for government, high capital investment to reach communities in water scarce locations due to unbalanced use and poor health due to limited-service coverage<br><br>Limited coordination capacity monitoring and information management capacity of new and existing climate change initiatives at all levels which led to duplication of efforts, limited use of available climate financing streams and advocacy for resources<br><br>No proper KM platform to document local and indigenous community adaptation practices, introducing new practices from experiences of other countries and to increase investment on scaling up of community-based adaptation<br><br>Limited/lack of awareness on impact of climate change, individual/community maladaptation practices increased exposure and vulnerabilities of communities for different climate change related hazards and risks which in turn led to loss of household and community assets and infrastructure | Improved coordination, IM and evidence generation capacity at federal and provincial level will have an economic benefit by improving efficiency, reducing duplications and expanding access to new financing for climate change adaptation<br><br>Targeted KM products and platforms for experience sharing, advocacy and programme design will have an economic benefit by increasing investment for adaptation improve efficiency as it leads to focused intervention based on experience of the past in different locations<br><br>Enhanced knowledge and awareness on impact of climate change, resilient individual and community adaptation practices will reduce the exposure and impact of climate change hazards and in turn reduce economic losses at all levels for replacement of lost assets and infrastructure. |
| Social | **Cryosphere-** In the Upper Basin, the retreating glaciers and the associated increase in risks increase poverty and vulnerability of high-altitude communities driving urbanisation, which contributes to the already unsustainable strain on urban infrastructure; furthermore, climate-induced cryosphere hazards destroy downstream infrastructure, including bridges and hydroelectric production sites resulting in decreased accessibility and reduced access to productive energy in the upstream communities, further increasing rural flight pressures. | Communities exposed to cryosphere risk will be more able to adapt and respond to them, increasing resilience and increasing the likelihood of their remaining in their communities of origin.<br><br>Local leaders will be able to make better informed decisions on investment in transportation and energy infrastructure and their climate proofing, as well as anticipating and responding to such disasters more effectively. |
| | **Springs-** In the Middle Basin, rural and municipal water supplies rely on up to 25% of spring water; these are increasingly drying up and polluted, increasing the cost of water, and reducing its availability and quality, leading to increased community vulnerability and competition for scarce resources. | Communities in the Middle Basin are more able to ensure that springs feeding municipal water supplies are revived and cleaner, reducing their vulnerability and decreasing community conflict resulting from competition for scarce clean water resources.<br><br>Local leaders are able to use policy incentives and community engagement to replicate the results in other communities. |
| | **Groundwater and Resilient Community Water Services-**Groundwater is being depleted at an unsustainable rate; Pakistan is the fourth largest groundwater extractor and largest groundwater exporter in the world, and the Indus Basin Aquifer is the second most overstressed aquifer globally; this is leading to increased competition for limited water resources and creating inter-communal conflict and ressentiment by some segments of the society not served because of | Communities are more able to use groundwater in a more sustainable manner while ensuring that the recharge of the groundwater levels is maximized through NBS in combination with solar and hand water pumps, decreasing the scarcity of groundwater, increasing its quality and reducing community vulnerability and inter-communal competition. |

| Type of Benefit | Baseline | With/after Project |
|---|---|---|
| | unregulated use by others<br><br>Water supply service infrastructure recurrent damage and lack of access to water due to extreme weather events led to seasonal displacement, increased risk of gender-based violence and lost school days for children for fetching water or because of lack of water in the learning facilities | Climate resilient water supply facilities will have a very high social benefits by providing sustainable and accessible services which will reduce displacement, reduce gender-based violence and support to maintain and increase school enrolment |
| | ***EBAs*** Ecosystems and the communities that benefit from them are increasingly in danger as urbanisation increases from increased household untreated effluent, posing serious health risks due to water contamination and release to the communal areas | Constructed wetlands can create a green facility where communities can benefit from clean and green environment. Reduce risk of conflict between neighborhoods arising from releasing of wastewater to open drains and communal land.<br><br>Opportunities created for other communities to adopt the constructed wetlands approach in order to scale up the social impact of the project in cooperation with the private sector. |
| | **Surface Water Conservation-**Scarcity of surface water in the lower basin contributes to communal competition and negative health outcomes due to unsustainable levels of water consumption in the context of climate-related changes in precipitation changes. | Community members are more resilient to climate-induced changes in precipitation patterns, reducing the negative impact of saline water on community health outcomes by providing fresh water alternative, increase social cohesion due to need of community participation on the implementation and management of community ponds and reduce conflicts due to scarce resources by increasing the water availability in target locations.<br><br>The project will create opportunities for other communities to adopt the community pond approach in order to achieve analogous results, scaling up the social impact of the project in cooperation with the private sector. |
| | **Adaptive capacities and empowered communities –** Lack/limited knowledge and awareness on impact of climate change at communities and households combined with limited regulatory frameworks and poor enforcement capacity at all levels created irresponsible and unequitable use of existing water resources mainly ground water which led to a major social problem where only the reach and privileged take advantage of lack of regulation at the cost of the poor and marginalized which created conflict and resentment | With enhanced awareness, KM platforms and project supported regulatory frameworks and improved capacities equitable water use will be improved, communities better preprepared for future climate induced disasters and knowledge, innovations and new technologies will be disseminated across different locations which will improve social cohesion, reduce resentment against some groups and reduce conflict as the government will have enhanced control of water use across the Indus basin.<br><br>Local leaders have access to evidence on risk of the cryosphere, existing hydrogeological situation of springs and ground water, community-level practices, and policy recommendations which will support for creating enabling environment through policy and regulatory framework development/review, enhance capacities for implementation and enforcement roles of the government which in turn reduce community vulnerabilities and improve sustainable social services |
| Environmental | **Cryosphere-**Currently, management of cryosphere hazards relies on the construction of hard infrastructure; this perpetuates unsustainable site planning in a non-resilient manner and triggers negative environmental consequences such as habitat loss and increasing erosion potential. | Communities use improved site and land planning practices to avoid the negative environmental impacts of unsustainable and non-resilient construction practices.<br><br>Policymakers benefit from an improved evidence base that informs environmental risk assessments and asset depreciation calculations regarding downstream infrastructure investment. |
| | **Springs-** Springsheds are not mapped or well understood in terms of their catchment area; therefore, they are increasingly drying up and becoming polluted; this leads to negative environmental consequences both for the communities that depend on the springs and the ecosystems that serve essential environmental functions, resulting in negative health outcomes for humans and a loss of local biodiversity. | Communities are aware of the extent of their springsheds, the consequences of their pollution, how to recharge them and how to govern the equitable distribution of its flow, reducing the negative health impacts and reducing the impact of human settlement on local biodiversity.<br><br>Local leaders have access to a low-cost, community-driven methodology for reviving springs and, by extension protecting public health and contributing to local biodiversity; furthermore, through partnerships with the private sector, they will be equipped to scale up this approach, scaling the associated benefits through linkages to the national adaption strategy and Living Indus Initiative. |
| | **Groundwater and Resilient Community Water** | The project will construct nature based ground water recharge facilities in the locations identified for |

| Type of Benefit | Baseline | With/after Project |
|---|---|---|
| | **Services-**Groundwater is being extracted at unsustainable levels; this can result in lower lake levels, land subsidence and sinkhole formation in areas of heavy withdrawal.<br><br>Most of existing water supply infrastructure not designed and constructed based on the aquifer recharge capacity which affects the ground water availability for the future and damage aquifers with over pumping. In addition, their energy source is mainly main gridlines which are not available as required and most of the time using standby generators which increase the operation and maintenance cost as well as contribute for CO2 emissions. | water scarcity and depletion of ground water which will have a positive environmental contribution by balancing the ground water recharge and extraction and protecting aquifers from damages due to over extraction and improving ecosystem resilience.<br><br>The climate resilient water supply systems planned by this project will be designed based on detailed hydrogeological study with solar and hand pump installations for optimum use of the ground water as per the capacity of the aquifers. In addition, the technologies planned by the project (solar and hand pumps) are both very low operation and maintenance and no negative impact to the environment. |
| | ***EBAs-*** untreated wastewater from urban and semi urban areas released to the environment manly to perineal and seasonal river streams is polluting waterways and leading to ecosystem destruction and subsequent biodiversity loss, negatively impacting the health of communities. | The constructed wetlands planned by the project will have a positive environmental contribution by improving water quality, increasing vegetation cover and creating micro-ecosystems that can increase local biodiversity. |
| | **Surface Water Conservation-** Saline and brackish ground water and other climate-related effects have left parts of the lower Basin in a precarious situation leading to maladaptation of water extraction practices and resulting in environmental degradation and increased salinity of ground water due to low recharge and increasing sea water intrusion. | The community ponds will support communities to have access to alternative fresh water sources and increase ground water recharge and reduce ground water salinity. The rehabilitated waterways will also reduce flush flooding and improve the overall ecosystem at local level |
| | **Adaptive capacities and empowered communities –** Limited institutional capacity for enforcing environmental laws and regulations, limited knowledge on environment friendly practices at local level and limited knowledge platforms on introducing and promotion of innovative and environment friendly technologies | The institutional capacity building, activities, KM products and platforms and awareness creation activities planned by the project will have a positive contribution to the environment by building the capacity for monitoring and enforcement of environment laws and regulations, enhanced awareness, knowledge, skills and improved positive practices in the targeted communities will contribute to maintain clean environment in target locations with a potential adaptation by neighboring districts and villages |

The Fund's ESP and GP underline the importance of ensuring the inclusion of marginalized and vulnerable groups in consultative and decision-making processes. Furthermore, most of the 15 ESP principles fundamentally apply to the project, and require close cooperation with governmental counterparts, and screening of ES risks, ES assessment according to the applicable national and/or sub-national legislation, ES management planning, and monitoring of ES management compliance. ICIMOD being an accredited regional implementing entity, has a robust environmental and social management system (ESMS) in place which will help ICIMOD in planning and monitoring the project implementation through two environmentally and socially responsible executing entities (UNICEF and NRSP) in an environmentally and socially safeguarded manner.

**At the Concept Note stage**, the project components and outputs (through activities), have been screened and categorized for any environmentally and socially adverse impacts through an extensive consultative process. The resultant ES categorization is at Annex 1. Based on this risk categorization and project's response strategy, the table at Section K about the project's compliance the Fund's ESP has been completed with explanations against each of the 15 principles.

The project's design has been meticulously crafted through a comprehensive and collaborative consultative process, engaging various stakeholders at different levels to ensure the utmost relevance and effectiveness. The following highlights the key efforts undertaken:

- **Engagement with the MoCC&EC:** A thorough review of the proposed community-level targeting and validation of districts or tehsils, along with corresponding adaptive interventions, has been conducted in close consultation with the MoCC&EC. This step ensures alignment with the planning of the six project components, maximizing their applicability and impact.
- **Collaborative Synergies with UNCT Members:** The Living Indus Initiative has fostered collaboration with UNCT stakeholders, particularly those involved in projects within similar thematic or geographic contexts. Notable engagements include:
    - Cryosphere: UNDP's GLOF II
    - Springs: FAO's Nature-Based Watershed Management
    - Groundwater: UNDP's Green Infrastructure for Flood Control and Groundwater Recharge
    - Ecosystem-based Adaptation: ILO's Indus Clean-up: Industrial and Urban Effluent Treatment
    - Surface Water Conservation: WFP's 100,000 Community Pounds
- This collective effort has culminated in a refined list of intervention sites, validated by NRSP to ensure adequate existing capacity for implementation at the district level. Furthermore, the project development team has meticulously assessed risks across the 15 ESP principles, prioritizing the application of the do-no-harm principle and the avoidance of maladaptation.
- **Local Stakeholder Engagement and Validation:** The proposed sites and interventions were presented to relevant local stakeholders for comprehensive discussions and validation on a component-specific basis. Key actors involved in this process included:
    - GB Disaster Management Authority (GBDMA) - Component 1
    - KP Disaster Management Authority (KPDMA) - Component 1
    - Climate Energy and Water Research Institute (CEWRI) - Component 2
    - GB Local Government & Rural Development Department
- **Grassroots Consultations:** At the local level, the project has ensured robust consultations through:
    - Key informant interviews with civil society representatives
    - Focus group discussions with community members. These consultations were held in various regions, including: (i) Kailash Valley Birir, Chitral, Khyber Pakhtunkhwa, (ii) Bagrote Valley, Gilgit-Baltistan, and (iii) Malakand and Hazara Division, Khyber Pakhtunkhwa.
- These consultations form the bedrock for compliance screening for both national legislation and Adaptation Fund's ESP. These assess the contextual appropriateness of proposed adaptation solutions, gender-related risks and opportunities, as well as additional environmental and social risks identified in the screening process. The active involvement of community members in decision-making and implementation empowers them and shapes the design of the grievance mechanism, while promoting a gender-inclusive approach to project governance.

**Future Steps:** In accordance with the Adaptation Fund Board's decision, further community-level consultations will be organized to provide a platform for women, youths, and marginalized groups to guide the design the full proposal. An initial Es impact assessment, ES management planning, grievance redressal mechanism, and project governance at the local level will be undertaken and devised as part of the feasibility at this stage. This will ensure that the project remains responsive, inclusive, and tailored to the unique needs and aspirations of the communities it aims to serve.

**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 DRR, 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 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 implementation of the projects at community level and strengthening the institutional and human resource capacity of the government at all levels. This means that the actual costs to the Adaptation Fund will be comparatively low, as no new structures will be created.

The project will emphasize investment in green and resilient hard infrastructure which is low-cost and community-based. Each vertical component will spend between 65 and 50% of its budget on deploying these solutions. Where the project invests in soft measures, these will produce one of three benefits leading to cost-effective adaptive outcomes:

- Supporting the capacity to construct, replicate and maintain the constructed hard.
- Strengthening tehsil/district/division/province level planning capacity to sustain and scale up the benefits of the project and increase the efficacy of national budgeting in light of climate-induced shocks.
- Supporting the implementation of the NAP and the overall knowledge base available to the partners of the Living Indus Initiative, and the sector more generally.

This approach will ensure that the adaptation benefits per dollar invested are leveraged while producing concrete per beneficiary impact in the communities of intervention, empowering policymakers through increased knowledge and inter-linages with the relevant private sector actors. These results will be further bolstered at the sectoral development level through the component on awareness raising and KM. All methods drawn on in this project have been designed, tested and benchmarked against alternatives to ensure not only cost-efficiency but also contextual appropriateness. The below table is indicative in nature, the demographic statistics for Pakistan are currently being finalized and will be published before the end of the 4th quarter of 2023:

| Component/ Outputs | Target area | No of Benef. | Cost per Benef. | Economic Benefit | Logic |
|---|---|---|---|---|---|
| 1.1: Scientific and Community based risk mapping prepared | Ishkoman Valley<br>Manjawa Valley<br>Sher Qilla Valley<br>Hassan Abdal Valley<br>Shimshal Valley | 70,500 | 32.74 | Information on location specific exposure to risks is available to the community, local leaders, and through Component 6 to provincial and national authorities | Cryosphere hazards are rapidly changing and evolving phenomenon, accordingly a localized risk mapping informs the specific community based monitoring required. |
| 1.2: Community Risk Preparedness and Resilience strengthened through Capacity Building and Community Based Early Warning Systems | | | | Loss of life mitigated through disasters.<br><br>Destruction of infrastructure and new construction due to disaster mitigated. | Through the use of land use planning practices and policies that take into account cryosphere hazards, the destruction of property incurred by new construction can be mitigated. |
| 1.3: Procedural Linkage Between Local and Provincial Disaster Management Strengthened | | | | | Cryosphere hazards such as GLOFs occur with very little warning; linking expert analysis to CB-MEWS will increase the time of warning before reducing the loss of life. |

| Component/ Outputs | Target area | No of Benef. | Cost per Benef. | Economic Benefit | Logic |
|---|---|---|---|---|---|
| 2.1: Comprehensive web-based mapping of springshed in Malakand and Hazara generated | Daggar<br>Abbotabad (Nathia Gali)<br>Mansehra (Shinkiari)<br>Andezi (Chakdara): | 135,000 | 6.91 | Rural and Municipal water supplies relying on springs are stabilized in terms of availability and improved in terms of quality, reducing loss of income due to water scarcity. | Springs in the area of intervention are drying up; revitalizing these springs can buffer the climate-induced increase volatility of precipitation without the construction of expensive large infrastructure, rather using the existing natural subterranean aquifer formations . |
| 2.2: Recharge measures co-developed and implemented | | | | | Practices that ensure waste disposal on the springshed is prohibited, and that small scale catchments over the springshed at hydro-geologically determined locations increase the rate of recharge. |
| 2.3 Strengthened local governance framework and institutional capacity on springshed governance linked to water resource management | | | | | Finally, when combined with flow monitoring and water use governance, the cost efficacy gains are leveraged and sustained. |
| 3.1 Groundwater mapping and groundwater recharge facilities | Susoom Valley/Kalash Valley | 30,000 | 14.6 | Conservation and recharging of groundwater in Khyber Pakhtunkha Province of Pakistan yield economic benefits through sustainable water management, empowering communities to enhance water availability for economic purposes, reducing income volatility caused by water scarcity, and enabling local policymakers to plan resilient water-dependent income creation investments. | By actively managing and preserving groundwater resources, it ensures the long-term availability of water for various uses. sustainable practices for groundwater management help maintain water levels at a sustainable rate, preventing overexploitation and depletion. This ensures a continuous and reliable water supply, which is crucial for economic activities. |
| 3.2 Green climate-resilient community, water supply Infrastructure, | Sindh - Mirpurkhas, Umerkot, Sujawal, Badin, Khairpur and Sukkur districts<br>Khyber Pakhtunkhwa Charsadda, Swat and Nowshera districts | 165,000 | 12.4 | Green and Climate resilient community water supply facilities will provide economic benefits by reducing operation and maintenance costs and reducing cost of reconstruction due to damages as a result of climate change disasters like flooding. Sustainable water services improve the health conditions of the community and reduce HH medical costs. In addition, the time saving from fetching water can also be used for other economic activities by beneficiaries<br>By engaging communities for construction works, the project will contribute for building local knowledge and skills and create livelihood for community members. | The logic for the economic benefit of the climate resilient community water supply infrastructure is that making them resilient reduce the cost of recurrent reconstruction after every heavy monsoon season. Using green and low-cost energy alternatives like solar and handpumps reduce operation and maintenance and in turn reduce cost of water for households. |
| 4.1 Climate change and WASH data analysis | Khyber Pakhtunkhwa Province Charsadda, Swat and Nowshera districts<br><br>Sindh Province - Sukkur and Khairpur districts | NA | NA | Data on feasibility of construction of wetlands will be available for targeted districts with estimated costs which will be available for government and other development partners to use for implementation which will save time and money for other partners that may be used for feasibility studies. The document can also be used for resource mobilization that can bring additional resources in the targeted areas which will have economic benefits | By having comprehensive study in targeted areas, the project will help not only identifying sites for implementation by this project but also additional sites for future implementation of similar projects. These readily available projects will help the local governments and CSO to mobilize additional resources |

| Component/ Outputs | Target area | No of Benef. | Cost per Benef. | Economic Benefit | Logic |
|---|---|---|---|---|---|
| 4.2 Constructed wetlands as an NBS for sewage treatment | Khyber Pakhtunkhwa Province Charsadda, Swat and Nowshera districts<br><br>Sindh Province - Sukkur and Khairpur districts | 22,400 | 19.65 | Constructed wetlands act as natural filters that efficiently remove pollutants and contaminants from household effluent. By treating and reusing household effluent through constructed wetlands, the demand for freshwater resources is reduced. This conservation of water resources is particularly crucial in areas facing water scarcity and increasing urbanization. Constructed wetlands contribute to climate change resilience by serving as a sustainable wastewater management solution. They can accommodate fluctuating water flows, including heavy rainfall events and periods of drought, thus providing resilience to changing climate conditions. | Constructed wetlands can be cost-effective compared to conventional wastewater treatment systems. They often require less energy and maintenance, and the construction materials can be locally sourced. This makes them a more affordable and sustainable option, especially for communities with limited financial resources. |
| 5.1 Comprehensive study on natural waterways, in targeted districts of Sindh, | Sindh Province- Sujawal, Umarkot, Tharparkar and Sanghar districts | NA | NA | Comprehensive study output will help to have appropriate and optimum designs of restoration activities which will have an economic benefit by recommending cost effective and contextualized solutions which reduces inefficient use of resources for construction and restoration | The logic is by spending some funding for comprehensive study it will have an economic benefit for the project as it will reduce the risk of design and construction mistakes and make right investment for different components of the project |
| 5.2 Restoration/ rehabilitation of 15 selected waterways and community ponds | Sindh Province- Sujawal, Umarkot, Tharparkar and Sanghar districts | 30,000 | 32.5 | Surface water conservation practices will help to increase freshwater availability and improve ground water quality through increased recharge. This will reduce cost of water treatment as surface water need simple filtration while saline ground water in the target areas needs expensive treatment options like reverse osmosis systems.<br>Increased water availability improve access to water supply for hygiene, sanitation and other domestic use which will improve health conditions of communities. Community ponds and rehabilitated waterways contribute to increased water availability for economic activities, including agriculture, livestock, and aquaculture. This supports income generation and food security within the community. By managing water resources effectively, communities can mitigate the negative effects of climate variability, maintain stable agricultural production, and sustain livelihoods. | The cost-effectiveness of EBAs, such as community ponds and rehabilitated waterways, stems from lower infrastructure costs, sustainable maintenance requirements, multiple co-benefits, community participation and ownership, resilience and flexibility, and risk reduction. These factors make these approaches economically efficient for communities to adapt to climate change. |

| Component/ Outputs | Target area | No of Benef. | Cost per Benef. | Economic Benefit | Logic |
|---|---|---|---|---|---|
| 6.1 Strengthened regulatory framework and institutional capacity | Federal -MoCC&EC and MoWR<br>Provincial – Sindh, KP and GB | NA | NA | Federal, provincial and district level government institutions supported to develop and enforce adaptive policies guidelines and regulations which will reduce cost of expenditure for emergency responses, increase government revenue for other capital investment and increase access to water supply services in unreached communities and support equitable water supply services across the target locations<br><br>Improved efficiency of project implementation and, reduced duplications and increased financing for the country for climate change adaptation | The logic of the economic benefit of this intervention is by investing on strengthening capacities for implementation and enforcement of policies with the right policy and regulatory frameworks will reduce misuse of water resources which increase water availability for other activities that will lead to additional economic benefits. In addition, this can generate revenue from heavy water users like commercial agriculture and industrial use which can help for capital investment to expand coverage and reach more vulnerable people with services<br><br>The logic of the economic benefit of this output is that improved coordination, IM and evidence generation capacity at federal and provincial level will have an economic benefit by improving efficiency, reducing duplications and expanding access to new financing for climate change adaptation |
| 6.2 Knowledge Management | National<br>Sindh<br>KP<br>GB | NA | NA | Increased investment for similar projects, lower cost of piloting similar approaches and technologies in different locations and increased knowledge and skills of practitioners | The logic of the economic benefit of their output is that targeted KM products and platforms for experience sharing, advocacy and programme design will have an economic benefit by increasing investment for adaptation improve efficiency as it leads to focused intervention based on experience of the past in different locations<br><br>Potential of knowledge and skill transfer to other locations outside the targeted districts |
| 6.3 Community behavior change and awareness creation | Sindh<br>KP<br>GB | 900,000 | 0.6 | Reduced exposure and impact of climate change hazards for communities and households which in turn reduce household and aid expenditure for relief and reconstruction. In addition, enhanced knowledge and awareness will lead to improved healthy practices and reduce household expenditures on treatment | The logic for the economic benefits for this output is that enhanced knowledge and awareness on impact of climate change, resilient individual and community adaptation practices will reduce the exposure and impact of climate change hazards and in turn reduce economic losses at all levels for replacement of lost assets and infrastructure. |

The table above demonstrates the cost-effectiveness logic of the selection of investments to be implemented under the project within the Pakistani context. This shows that the benefits provided, especially in terms of improved safety and resilience, were a key consideration in the selection of investments to be carried forward to the proposal.

**Cost And Alternatives Analysis Of Proposed Adaptation Options.**

This table will be refined at the activity level in the full proposal; please note that under the cost-effectiveness criteria, "future cost of climate change refers to the anticipated lowering, return to median or heightening of the cost through the individual adaptation solution.

| Adaptation Solution | Cost Effectiveness Criteria (high/medium/low/none) | | Alternative Action | Cost Effectiveness Criteria (high/medium/low/none) | |
|---|---|---|---|---|---|
| Cryosphere CB-MEWS – non–structural measures | Future Cost of Climate Change | L | Structural Measures (e.g. Gabion Walls, check dams etc…) | Future Cost of Climate Change | H |
| | Project Efficiency | H | | Project Efficiency | M |
| | Community Involvement | H | | Community Involvement | M |
| | Cost | L | | Cost | H |
| | Environmental and social safeguarding risks | L | | Environmental and social safeguarding risks | H |
| Springs Revived | Future Cost of Climate Change | L | Surface water diversion and treatment | Future Cost of Climate Change | H |
| | Project Efficiency | H | | Project Efficiency | M |
| | Community Involvement | H | | Community Involvement | M |
| | Cost | L | | Cost | H |
| | Environmental and social safeguarding risks | L | | Environmental and social safeguarding risks | H |
| Groundwater recharge, combined with solar and hand pumps | Future Cost of Climate Change | L | Rainwater Harvesting with conventional Motorized water supply systems | Future Cost of Climate Change | M |
| | Project Efficiency | H | | Project Efficiency | M |
| | Community Involvement | H | | Community Involvement | H |
| | Cost | L | | Cost | M |
| | Environmental and social safeguarding risks | L | | Environmental and social safeguarding risks | M |
| Constructed Wetlands | Future Cost of Climate Change | L | Industrial Waste Water Treatment | Future Cost of Climate Change | M |
| | Project Efficiency | H | | Project Efficiency | M |
| | Community Involvement | H | | Community Involvement | L |
| | Cost | L | | Cost | H |
| | Environmental and social safeguarding risks | L | | Environmental and social safeguarding risks | M |
| Community Ponds and rehabilitated waterways | Future Cost of Climate Change | L | Large scale water treatment and recycling systems | Future Cost of Climate Change | L |
| | Project Efficiency | H | | Project Efficiency | H |
| | Community Involvement | H | | Community Involvement | L |
| | Cost | L | | Cost | H |
| | Environmental and social safeguarding risks | L | | Environmental and social safeguarding risks | M |

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

The proposed project aligns with Pakistan's national climate-related policies and commitments in several ways:

- NAP 2023: Under the climate impacts that plan seeks to address it specifically lists: (i) flooding and water scarcity in GB and KP due to glacial retreat, which Component 1 and 2 explicitly address (ii) groundwater overuse which components 3 and 5 address (iii) Component 4 explicitly supports the governments stated adaptive priority of building urban resilience in light of an increasingly urban population.
- The proposed programme will also contribute to targets set by Pakistan under SDGs, especially those related to Clean Water and Sanitation (SDG-6) and Climate Change (SDG-13).
- Reduced climate hazard exposure: The project focuses on enhancing warning systems, resilient land use planning, and water access, lowering climate-related community risks. This aligns with the 2021 Pakistan National Climate Change Policy's (PNCCP) goal of bolstering remote sensing and GIS for glacier and snow monitoring. Remote sensing supports planning, while community-based solutions (e.g., CB-MEWS) minimize sudden disaster impacts. Remote sensing data aids climate-resilient

land planning, echoing the 2022 Living Indus Initiative and local CB-MEWS expansion under the GCF-funded GLOF II project.

- Strengthened institutional capacity: The project aims to enhance community and institutional capacity to anticipate and respond to climate hazards, restore and manage springs, mitigate groundwater depletion, and implement ecosystem-based solutions. This aligns with Pakistan's commitment to strengthening institutional capacity to reduce risks associated with climate-induced socioeconomic and environmental losses. The Government of Pakistan launched Clean Green Pakistan Movement (CGPM) in November 2019, and the Clean Green Pakistan Index (CGPI) is its core pillar. This city/tehsil and neighborhood-level index aims to rank them according to their cleanliness and greenery. The CGPI performance indicators include safe drinking water, solid waste management, liquid waste management/hygiene, plantation, and total sanitation. The project seeks to contribute to this commitment at the community and institutional levels.
- Strengthened awareness and ownership at the local level: By enhancing awareness and ownership of adaptation and climate risk reduction processes locally, the project aligns with Pakistan's goal of strengthening awareness and ownership of climate-related processes among communities. The project will directly support two policy measures outlined in the PNCCP, notably: (1) Develop a national climate change awareness program involving communities, as well as climate change relevant ministries and departments; and (2) Ensure advocacy and awareness regarding the importance of water and energy conservation and the impact of climate change on various sectors (e.g., forest ecosystems, biodiversity), using mass media, PPPs, students and community mobilization; and incorporate these issues into the formal education systems at all levels.
- Increased ecosystem resilience: The project focuses on increasing resilience to climate change and variability-induced stress, mainly by restoring and managing springs and implementing ecosystem-based solutions. In 2019, the Pakistan government launched its innovative 'Ecosystem Restoration Initiative to facilitate the transition towards environmental resilience by mainstreaming adaptation and mitigation through ecologically targeted initiatives.
- Support for KM and upscaling: The project emphasizes awareness creation, KM, and documentation of adaptation solutions and strategies. This aligns with Pakistan's commitment to support the development and diffusion of innovative adaptation practices, tools, and technologies and to expand the uptake of successful approaches beyond the project. This is aligned closely with the aims of the 2022 Living Indus Initiative, which UNICEF and NRSP were involved in developing, and which envisages a living menu of 25 preliminary interventions. Among them: A Living Indus Knowledge Platform: Crowdsourcing knowledge; the project will aim to use its cross-cutting component as a first step towards this item, ensuring the knowledge generated is scaled up and carried forward by all Living Indus partners.

Concerning the complementarity of Pakistan's 2021 Updated NDCs:

| NDC – Priority Area | Corresponding Project Component Output |
|---|---|
| Strengthening the capacity to coordinate and promote climate change adaptation (CCA) at systemic, institutional and individual levels and help poor and climate vulnerable communities to adapt to climate change impact; | Supported in a cross-cutting manner through all components |
| Integrating CCA into policies, strategies, legislation, regulations, and programs | Supported in a cross-cutting manner through all components |
| Strengthening of a system to generate and share knowledge, experience, and lessons learned at national and sub-national levels to advance CCA; | Awareness Raising and Knowledge Management |
| Development of a strategy to implement, monitor, and communicate adaptation benefits at different levels, scale up government efforts in adaptation efforts, and process of regularly updating NAP. | Awareness Raising and Knowledge Management |

**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.**

**Environmental Compliance and Regulation Adherence**

Developing community ponds and constructed wetlands for wastewater treatment meticulously aligns with Pakistan's relevant legal provisions. Adherence to environmental regulations governing water quality and pollution control is a paramount priority. The project impeccably adheres to the guidelines set forth by the federal and sub-national environmental protection agencies (EPAs) and other pertinent authorities governing the construction and operation of wastewater treatment facilities. The design and execution of community ponds and constructed wetlands incorporate a comprehensive understanding of the prevailing laws and regulations about water resource management and conservation. Furthermore, the project's implementation ensures full compliance with all requisite permits and licenses, which is crucial for construction. By upholding the applicable legal provisions in Pakistan, the construction of community ponds and constructed wetlands will significantly contribute to sustainable wastewater management, pollution mitigation, and overall environmental enhancement in strict accordance with the country's legal framework.

**Adherence to Specific ESP Principles and Regulations**

Throughout the project's distinct components, meticulous attention has been paid to align with both national technical standards and the guiding principles of the Adaptation Fund's ESP.

**Component 1** complies with the ESP principles and Gender Policy of the Adaptation Fund in the following ways:

- It has been designed after a screening of potential environmental and social impacts in accordance with the Fund's 15 ESP principles. Particular attention has been paid to Principles 2, 3 and 5 through the application of learning from ICIMOD's work on applying the Sendai framework.[25]
- Special attention has been given to principles 7 and 14, concerning the Kailash Valley and its indigenous population, drawing learning from a previous World Bank Project in that area. The World Bank has developed an Indigenous Peoples Planning Framework to address the project's potential impacts on the Kailash people.

Specific Pakistani policies and legislation that are relevant to and, have been considered in the design of component 1, in line with Principle 1 of the Fund, include:

- National Water Policy 2018, for building community-based capacity to mitigate floods and minimize their damages.
- National Water Conservation Strategy for Pakistan 2023-27
- Disaster Management Act, 2010: provides the institutional and functional guidelines for all DRR-related interventions.
- National Environmental Policy 2005
- National Climate Change Policy 2021

**Component 2**

- Output 1 conforms to Pakistan EPA (PEPA) guidance on water resources management, with data collection informing springshed management plans.
- Output 2 adheres to PEPA guidance on groundwater recharge, enhancing access to clean drinking water through improved springshed measures.
- Output 3 strengthens water governance, regulatory frameworks and institutional capacity for springshed management.

**Component 3**

- Tailored designs for ditches and trenches adhere to PEPA Groundwater Recharge Structures Guidelines.
- Water quality meter installations ensure groundwater purity, aligning with PEPA's Water Quality Standards for Drinking Water.
- Technical training courses align with Water and Sanitation Authority's (WASA) Operator Training Manual for sewage and drinking water treatment plants.

Specific Pakistani regulations and legislation that are relevant to Components 2 and 3 include:

- National Water Policy of 2018, to improve freshwater resources' availability, reliability and quality to meet municipal needs.
- Khyber Pakhtunkhwa Integrated Water Resources Management Board Ordinance of 2002 to support the Board in acquiring and updating information on local water use and quality patterns.

**Components 4 and 5**

- The design and execution of community ponds and constructed wetlands meticulously consider relevant water resource management and conservation laws and regulations.
- Full compliance with essential permits and licenses enhances wastewater management and environmental well-being within Pakistan's legal parameters.
- UNICEF has commissioned 6 separate technical analyses of the constructed wetlands outflow quality by two separate third parties and found it to be well within the range of National Environmental Quality Standards (NEQS) values.

As the project formulation progresses, this comprehensive approach will be further augmented with province-specific regulations and more granular activity-based information.

**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. Specifically, by rooting the project in the wider context of the Living Indus Initiative, the project is positioned in a collaborative multi-agency intersectoral development response to the challenges facing the population in Pakistan's Indus Basin. On the contrary, the project concept design team has worked to ensure that the Proposed Project is complementary to governmental initiatives (as noted in previous sections) and to strengthen the outcomes of complementary projects. Consultations are ongoing to ensure that all relevant projects are contacted and that geographic targeting and thematic intervention logic are closely coordinated. The table below will be elaborated on and detailed in the full proposal after consultations have concluded:

[25] ICIMOD. (2022). State of gender equality in South Asia and the Hindu Kush Himalayas. ICIMOD Library. Link

| No | Relevant Project | 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;<br>Ensure the voice of participation of the people as an integral part of Clean Green Pakistan;<br>Empower the local councils to monitor and review their cities on set performance indicators; | The Proposed Project will support the generation of knowledge relevant to communal DRR, water management, and adaptive measures.<br>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. | Mobilize 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. | 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. The UNWomen contribution to this project under Component 6 will be key in this regard. | 2022 – 2029 (approximately) |
| 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 CBFEWS, 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. | 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 | GCF-funded FAO-implemented project will develop the country's capacity to use information it needs to adapt to climate change impacts on agriculture and water management with state-of-the-art technology; build farmers' climate resilience through skills, knowledge and technology. | 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. | 2019 - 2026 |
| 6 | Enhancing community, local and national level urban climate change resilience | 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 | 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 | Scaling of solutions on water conservation and managing climate change risks piloted at Nowshehra and Rawalpindi in the larger areas through collaboration with national | 2020-2023 |

| No | Relevant Project | Description | Goals | Complementary potential | Project Timeline |
|---|---|---|---|---|---|
| | to water scarcity, caused by floods and droughts | water scarcity to plan for and manage climate change risks. | Nowshera cities." | and provincial agencies. | |
| 7 | Recharge Pakistan: Building Pakistan's resilience to climate change through Ecosystem-based Adaptation (EbA) and Green Infrastructure for integrated flood risk management | By This GCF funded project seeks to reduce flood risk and enhance water recharge at six sites in the Indus Basin, building resilience of 10 million people and vulnerable ecosystems. It does so across 3 Components:<br>1. Ecosystem-based adaptation for integrated flood risk management<br>2. Enhancing the resilience of vulnerable communities to climate change<br>3. Enabling a paradigm shift towards ecosystem-based adaptation in Pakistan | The primary objective of this GCF initiative is to transform the country's approach to flood and water resource management in local watershed sites in the Indus Basin river system. This will be accomplished by implementing ecosystems-based adaptation (EbA) and green infrastructure interventions, as well as enhancing community-based natural resource management. These activities will address long-term drought and flood resilience, while establishing a paradigm shift for future EbA initiatives in Pakistan. | There are significant opportunities to leverage mutual learning across component 3 of SAFER and Component 3 of Recharge Pakistan. Furthermore, Component 6 of SAFER will enable Recharge Pakistan to integrate its outcomes into the Living Indus Initiative. | 2023-tbd |

**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 on the creation, cataloging and effective dissemination of sectoral learning. Accordingly, Component 6 - Awareness Creation and KM reflects this importance. The proposed concept will be able to avoid duplication and maximize 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 organizational 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. UNICEF draws on a wealth of global thematic WASH knowledge that can be brought to bear on local contextually specific sites.

Organized demonstration of proven solutions in pilot communities will encourage peer-to-peer learning and increase the potential for adoption and scaling of climate-resilient and adaptive solutions by local communities and governments. Crucially, the project will work to fully integrate its work into the Living Indus Knowledge Platform: Crowdsourcing knowledge menu item. Component 6 of this project will serve as the nascent core of the Initiative to build upon. To this end, NRSP as the local implementing partner will progressively take ownership of the overall KM processes, with initial support from UNICEF.

**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.**

Consultations have been shaped in the following manner:

1. MoCC&EC: Review the proposed project design and community-level targeting
2. UNCT members have provided input on the project design and targeting, specifically based on the Living Indus Initiative.
3. This resulted in a refined list of intervention sites.
4. Finally, community consultations in target sites were held; these tested the contextual appropriateness of the individual adaption solutions proposed, and their potential GESI-related gains.

Below is a list of all consultations held with governmental and development sector actors:

| Date | Stakeholder, incl. Role/Function | Consultation Objectives | Outcome | Conclusion |
|---|---|---|---|---|
| 03.06.2023 | Pakistan Agricultural Research Council (PARC) | ICIMOD and UNICEF Pakistan undertook a consultation to:<br>1. Discuss the Springshed revival site selection criteria<br>2. Solicit input on the project design and partnership in implementation.<br>3. Identify any potential concerns regarding legal compliance of the proposed approach. | 1. Selection of the sites should be focused on those springs that are linked to rural and municipal water supplies.<br>2. CEWRI provisionally expressed their interest to be the governmental partner under Component 2.<br>3. No concerns on compliance or risks with national legislation were identified. | 1. ICIMOD will select sites in GB municipalities where springs are an important source of the municipal water supply.<br>2. ICIMOD will move to formalize its partnership with CEWRI under SAFER Pakistan during the full proposal drafting phase. |
| 01.06.2023 | Pakistan Council of Research in Water Resources (PCRWR) | ICIMOD and UNICEF undertook a consultation to:<br>1. Better understand the current hotspots and priorities related to ground water recharge.<br>2. Identify any potential concerns regarding legal compliance of the proposed approach. | 1. PCRWR collaborated with UNICEF and ICIMOD to develop ground water recharge solutions.<br>2. There are no environmental risks or legislative obstacles to the scaling of the groundwater recharge methodology that were flagged<br>3. PCRWR successfully developed "National Water Conservation Strategy for Pakistan (2023-2027)" and suggested SAFER Pakistan to complement it. | 1. UNICEF and ICIMOD will continue to apply the developed methodology.<br>2. No risks need be included in the national screening process related to Components 2 and 3. |
| 02.06.2023 | Pakistan Meteorological Department (PMD) | ICIMOD undertook a consultation to:<br>1. Select pilot site (Components 1 and 2)<br>2. Seek suggestions for improvements, and discuss potential partnership in implementation.<br>3. Identify any potential concerns regarding legal compliance of the proposed approach. | ICIMOD received an update that:<br>1. The GLOF-II project is working at 24 priority areas vulnerable to GLOF hazard.<br>2. Good progress has been made on Installing Automated Weather Stations (AWS) and associated Early Warning Systems in the target site.<br>3. Community-Based DRM Committees in 24 valleys were formed and Community Hazard Watch Groups got strengthened. | A need to further strengthen local communities' capacity in dealing with ever increasing climate vulnerabilities. |
| 30.05.2023 | National Rural Support Programme (NRSP) | ICIMOD and UNICEF team visited NRSP headquarters to discuss the potential role of the NRSP beyond KM. | NRSP presented the updates regarding:<br>1. Their on-going initiative on "Climate Resourcing Coordination Centre (CRCC)" which aims to mainstream climate action into the national economic and development strategy.<br>2. Their interest in synergizing the initiative through SAFER project. | Taking part in the implementation of other components was considered after the award pf the project along with other local organizations engaged by the ICIMOD and UNICEF. |
| 30.05.2023 | Climate Energy & Water Research Institute (CEWRI) | ICIMOD and UNICEF Pakistan undertook a consultation with CEWRI with a view to:<br>1. Consult for pilot site selection (Springs with Climate, Energy and Water Resources Institute)<br>2. Solicit suggestions for improvements, and discussed potential areas of engagement at the project execution stage. | ICIMOD successfully received:<br>1. A significant milestone through the execution of a spring rehabilitation pilot which enhanced water supply to the community in Kotli-Sattian.<br>2. A recommendation for four pilot sites in the Malakand and Hazara Division including Nathia Gali, Abbottabad district; Shinkiari, Mansehra district; Chakdara, Lower Dir district and Dagar, Buner district. | Based on further analysis Malakand and Hazara were selected as the project sites |
| 30.05.2023 | Director Ministry of Climate Change | UNICEF and ICIMOD undertook the consultation with the Director of MoCC in order to:<br>1. Ensure that the project design of SAFER aligned with the Ministries emerging priorities. | MoCC recommended NRSP to manage the Km of the SAFER project under Component 6 to integrate the project fully in the living Indus initiative. | NRSP is formally invited to take a leading role in Component 6: KM and Awareness Raising |

| Date | Stakeholder, incl. Role/Function | Consultation Objectives | Outcome | Conclusion |
|---|---|---|---|---|
| | | 2. Integrate the project further in the Living Indus Initiative | | |
| 31.05.2023 | National Project Director (NPD) of the Ten Billion Trees Tsunami Programme of the MoCC, Pakistan | ICIMOD and UNICEF Pakistan met with National Project Director (NPD) of the Ten Billion Trees Tsunami Programme of the MoCC, Pakistan. | NPD acknowledged the importance of the monitoring system initiated during 2022 by the SERVIR initiative of ICIMOD. | NPD team was ensured to reengage with ICIMOD team from next fiscal year (July 2023). |
| 31.05.2023 | Ministry of Foreign Affairs | ICIMOD and UNICEF conducted a meeting with the focal person to:<br>1. Brief the salient featured of the SAFER Adaptation Fund Proposal. | Ministry of Foreign Affairs, Pakistan expressed its appreciation for the work being done in the region, and sustained interest in the development of SAFER Pakistan. | The initiative like SAFER project which aligned with national priorities of Pakistan was welcomed. |
| 01.06.2023 | United Nations Development Programme (UNDP) | ICIMOD and UNICEF Pakistan consulted with UNDP for pilot site selection (Springs with High-altitude Cryosphere hazards) | ICIMOD committed to complementing the GLOF 2 sites, and work to support the operationalization of completed Community based Disaster Management Centers constructed by that project | Based on the discussions and additional subsequent technical input from ICIMOD scientists the following sites were selected: Ishkoman Valley, Manjawa Valley, Sher Qilla valley, Hasaan Abad valley, Shimshal valley, Bagrot Valley, Reshun Valley, Susoom Valley, and Kalash Valley |
| 31.07.2023 | Deputy Director Gilgit-Baltistan Disaster Management Agency | ICIMOD conducted a key informant interview with a view to:<br>1. Understand existing Cryosphere related knowledge and gaps of the GBDMA;<br>2. Identify priority areas of cooperation;<br>3. Identify capacity building needs of the GBDMA, and other relevant partners and communities in regard to cryosphere hazards. | 1. ICIMOD received an update on the progress of the GLOF 2 project<br>2. GBDMA engagement with communities in the target sites is ongoing<br>3. The SAFER activities would seem to complement the present course if implementation of GLOF 2 and community engagement.<br>4. Verify the proposed methodology aligns with the Disaster Management Act of 2010. | 1. Formal partnership negotiations will be opened with ICIMOD upon the AF Board decision<br>2. ICIMOD will integrate the GBDMA's input into the project design |
| 31.07.2023 | Provincial Coordinator Disaster Risk Management Khyber Pakhtunkhwa Disaster Management Agency | ICIMOD conducted a key informant interview with a view to:<br>1. Understand existing Cryosphere related knowledge and gaps of the KPDMA;<br>2. Identify priority areas of cooperation and validate the identified target sites;<br>3. Identify capacity building needs of the KPDMA, and other relevant partners and communities in regard to cryosphere hazards. | 1. ICIMOD received an update on the progress of the GLOF 2 project<br>2. KPDMA engagement with communities in the target sites is ongoing<br>3. The SAFER activities would seem to complement the present course if implementation of GLOF 2 and community engagement<br>4. KPDMA has a need for increased access to scientific data and capacity building on undertaking data analytics to identify community vulnerability | Formal partnership negotiations will be opened with ICIMOD upon the AF Board decision<br>ICIMOD will integrate the KPDMA's input into the project design<br>The sites selected proposed by ICIMOD were validated by KPDMA and Kalash Valley ahs been added based on their input |

The community consultations were held with the following objective: “To learn about their views on climate adaptation and proposed intervention in their locality in SAFER Pakistan Programme and learn from them about potential benefits as well as possible risks or challenges of proposed intervention. Communities were also asked about their views on feasibility of proposed budget and beneficiaries envisaged through the proposed intervention. Community suggestions were welcomed which have been documented separately.”

The following is a summary of the community consultations that were subsequently undertaken:

| Community | Proposed intervention | Outcome | Conclusion |
|---|---|---|---|
| Khariwah, from Mithi, Tharparkar (Province: Sindh) *M:8 W:24 B:5 G:4 | Construction/Rehabilitation of Communal ponds (Chalo Ponds), Tarai or Water Tanka | 1. Intervention benefits community, especially women/girls coping with climate-induced water scarcity<br>2. Community shared concerns about defecation by villagers close to pond and recommended integrating awareness and community management in intervention.<br>3. Intervention benefits 250 Bheel households, 80 Thakar households, and communities in nearby hamlets.. | Ponds development and rehabilitation intervention is well received by community and will help climate adaptation of community and feasible for implementation with community support. |
| Aaho from Mithi, Tharparkar (Province: Sindh) M:12 W:2 B:5 G:3 | Solar water system with climate resilient wells | 1. 14 dug wells rehabilitation, community-managed solar pump installation and groundwater recharge benefit climate adaptation and safe water access, especially for women and girls.<br>2. Address community division risk from intervention outset. No rain could lead to migration and labor shortage, posing challenge.<br>3. Intervention benefits 215 Meghwar, 25 Suther, and 40 Thakur households, plus nearby hamlets. | Community embraces solar wells and rainwater recharge for climate adaptation; feasible as similar well managed nearby. |
| Bheel colony from Shuja Abad, Mirpur Khas (Province:Sindh) M:7 W:7 B:4 G:0<br>Mehboob Khakheli from Shuja Abad, Mirpur Khas (Province:Sindh) M:5 W:10 B:2 G:1<br>Shagan Bhogat from Shuja Abad, Mirpur Khas (Province:Sindh) M:6 W:6 B:1 G:2 | Groundwater recharge and Solar water system with climate resilient wells | 1.Communities of these three villages were well aware of the climate change and how it was causing health, food and water problems which required them to migrate or displace more and more recently.<br>2. Communities foresaw that interventions of wells development along with solar system and recharging of groundwater with rainwater will benefit them in general and women and girls in particular in terms of reducing their daily time spent of collection of water.<br>3. Communities expressed their concerns and requested to address the problems related to drainage of spilled water, security and maintenance of solar panels and design of groundwater recharge wells/ponds as part of the project with their participation. | Three villages of Shuja Abad district well received the proposed interventions as part of SAFER Pakistan programmes and expressed their benefits for adapting climate change and improving their living conditions and showed support during project implementation. |
| Bachal Shah from New Sukkur, Sukkur (Province:Sindh) M:22 W:17 B:12 G:14 | Sewage Treatment Plant | 1. Bachal Shah community near Sukkur barrage is climate-aware, links changed precipitation and flooding to climate change, and is eager for proactive adaptation.<br>2. Both women and men recognized sewage treatment plant advantages, like reduced disease burden and cleanliness. However, they couldn't assess downstream benefits or river water quality. They identified insufficient funds as the primary hurdle for timely project completion, along with government apathy and inadequate O&M allocation as additional concerns."<br>3. Community proposed other interventions in area e.g., a flood protection bund/wall and drinking water filtration plant for improving their village | Bachal Shah community sees some project benefits, is keen on government sewage plant with O&M budget. Suggests using other flood protection and water filtration measures for drinking water and waterborne disease prevention. |
| Morad Gopang from Kot Diji, Khairpur (Province:Sindh) M:44 W:26 B:14 G:16 | Surface water intake and Solar Drinking Water Supply Scheme | 1. Community acknowledges climate change impact: changing precipitation, water scarcity, and groundwater depletion awareness and its adaptation.<br>2. Positive response to water supply scheme for area; foresees benefits for 4400+ households.<br>3. Concerns about future operation by government and construction quality; emphasizes increased community involvement during implementation. | Proposed intervention is feasible |
| Malar Shaikh from Gambat, Khairpur (Province:Sindh) M:32 W:14 B:18 G:7 | Constructed Wetland | 1. Positive community response to intervention, especially men who support recycled wastewater for farming. Women unsure about constructed wetland. Project seen to benefit over 470 households.<br>2. Concerns about potential worsened drainage and funding delays if not well-implemented. | Proposed intervention is feasible |

| Community | Proposed intervention | Outcome | Conclusion |
|---|---|---|---|
| | | 3. Community suggests climate-resilient handpumps due to yearly water contamination from prolonged monsoon. | |
| Hafiz Dungar Jat from Jati, Sajwal<br>(Province: Sindh)<br>M:12 W:6 B:2 G:2 | Development of communal Pond | 1. Communities of these three villages use a common rainwater fed pond for daily water needs and were well aware of climate adaptation needs due to their dependency on rain pattern.<br>2. Communities well received the proposed intervention to develop the pond for multipurpose used and shared many ideas and their willingness to contribute and participate in implementation of intervention.<br>3. communities foresaw that project will be beneficial for more than estimated number of beneficiaries, especially for women and girls, and did not link major risks linked to its implementation | Proposed intervention is feasible |
| Sarvas Nagar from Sajwal, Sajwal<br>(Province:Sindh)<br>M:5 W:8 B:2 G:3 | | | |
| Haji Ali Muhammad Muchar from Sajwal, Sajwal<br>(Province:Sindh)<br>M:6 W:10 B:5 G:3 | | | |
| Tharo Khan Mangio from Sanghar, Sanghar<br>(Province:Sindh)<br>M:8 W:0 B:0 G:0 | | 1. Community is well aware of changing climate and proactively willing in adaptation actions.<br>2. consultation was done only with men who saw proposed intervention very beneficial for community, especially women<br>3. Only major challenge can be division in community due to political or religious reasons during implementation | Proposed intervention is feasible |
| Ali Akbar Shah from Chotario, Sanghar<br>(Province:Sindh)<br>M:8 W:0 B:0 G:0 | Restoration of Waterways (Dhoras) | 1. Climate-savvy community cites blocked waterways (Dhoras) impacting their lives.<br>2. Consultation involved only with men who saw proposed intervention very beneficial for community<br>3. Community suggested many options to restore the historical waterway which also fed a water channel which was very important for community | Proposed intervention is feasible |
| Taj Muhammad Khoso M:6 W:11 B:8 G:10,<br>Haji Sher Khan Mangrio M:6 W:10 B:4 G:4 and Pathan Mohallah M:2 W:6 B:4 G:2 from Umerkot, Umerkot<br>(Province: Sindh) | | 1. community of three villages, mostly women, along the dhora from dornaro towards chorr in Umerkot were constructed about the potential intervention of improving this waterway. It was very well received by the community who were able to link it with climate change.<br>2. Members of communities along this dhora gave many suggestions which will need more detailed technical study. The community proposed interventions included construction of ditches and ponds, strengthening of banks at places, removal of vegetation from the path of dhora etc.<br>3. Community guessed few possible challenges in implementation but no major one was brought up by the community | Proposed intervention is feasible |
| Ram Nagar from Pithoro, Umerkot<br>(Province: Sindh)<br>M:8 W:13 B:5 G:7 | Solar water system | 1. Ram nagar village near Bachaband stop, has a large surface water fed water supply systen which is non-functional duer to fluctuating voltage or electricity shortage.<br>2. Positive response to solarizing scheme for wider reach (15,000 households). Further technical study and stakeholder consultations needed for intervention design. | Proposed intervention is feasible |
| Bulchi from Bugrout, Gilgit<br>(Province:Gilgit Baltistan)<br>M:40 W:0 B:0 G:0 | Cryosphere rehabilitation | 1. Participants were well informed about climate change and the need for adaptation as they were affected by GLOF climate event<br>2. Community members identified and prioritized possible interventions in a facilitated session for Bugrout valley, especially to adapt GLOF and its after effects.<br>3. proposed interventions were well received, and community members made strong recommendations for implementation through participatory approaches. | Proposed intervention is feasible |
| Chirai from Bugrout, Gilgit<br>(Province:Gilgit Baltistan)<br>M:0 W:20 B:0 G:0 | | | |

| Community | Proposed intervention | Outcome | Conclusion |
|---|---|---|---|
| Nawshera Kalan (Naway kalay) from Nowshehra, Nowshehra (Province:Khyber Pakhtunkhwa) M:11 W:11 B:0 G:0 | Solar Powered water facilities under build back better approach for flood affected areas | 1. "Communities affected by climate events needing adaptation include:<br>• Water scarcity and contamination<br>• Reduced agriculture productivity affecting livelihoods<br>• Spread of waterborne diseases<br>• Damaging heavy rains leading to infrastructure, livestock, and human losses<br>• Rising temperatures<br><br>2. Benefits perceived by different gender groups from proposed interventions:<br>MEN:<br>• 100% noted access to clean drinking water<br>• 100% highlighted improved agricultural water availability and livelihoods<br>WOMEN:<br>• 35 % saw control in disease prevalence<br>• Noted reduced water-fetching burden<br>CHILDREN:<br>• 85% expected reduced waterborne child diseases<br><br>3. Risks identified by community groups for proposed interventions:<br>MEN:<br>75% concerned about low awareness in operating and potential solar system damage<br>• Heavy rains may also damage the panels<br>• In clouds it will not work, so we won't have water<br>WOMEN<br>25% noted potential community conflicts post-project completion regarding solar systems<br>CHILDREN<br>50% highlighted safety concerns, particularly electric shocks to children<br><br>4. Proposed interventions expected to benefit about 6,770 households in KP communities.<br><br>5. Community recommendations for climate adaptation:<br>• Raise awareness and mobilize communities for climate resilience<br>• Plantation to avoid land erosion<br>• Advanced agriculture practices and compatible seeds<br>• No construction at river side | Proposed intervention is feasible |
| Shala Khel from Nowshehra, Nowshehra (Province:Khyber Pakhtunkhwa) M:11 W:11 B:0 G:0 | Stabilization of Riverbank sites through vegetation | | |
| Misal Abad from Nowshera, Nowshera (Province: Khyber Pakhtunkhwa) M:11 W:11 B:0 G:0 | Constructed Wetlands | | |
| Agra Payan from Charsadda, Charsadda (Province:Khyber Pakhtunkhwa) M:11 W:11 B:0 G:0 | Solar Powered water facilities under build back better approach for flood affected areas | | |
| Baro khel kanday from Shabqadar (Province:Khyber Pakhtunkhwa) M:11 W:11 B:0 G:0 | Stabilization of Riverbank sites through vegetation | | |
| LalmaDheri from Charsadda, Charsadda (Province:Khyber Pakhtunkhwa) M:11 W:11 B:0 G:0 | Constructed Wetlands | | |
| Barthana from Matta, Swat (Province:Khyber Pakhtunkhwa) M:11 W:11 B:0 G:0 | Solar Powered water facilities under build back better approach for flood affected areas | | |
| Ghari Lagan from Bahrain, Swat (Province:Khyber Pakhtunkhwa) M:11 W:11 B:0 G:0 | Stabilization of Riverbank sites through vegetation | | |
| Dhunkarai from Madain, Swat (Province:Khyber Pakhtunkhwa) M:11 W:11 B:0 G:0 | Constructed Wetlands | | |

**M=Men, W=Women, B=Boys, G=Girls*

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

The table below outlines the cost of adaptation reasoning at a component level, as consultations are concluded an

| Component/ Output | Baseline (without project) | Adaptation impact (with project) | Evidence base related to the adaptation solution |
|---|---|---|---|
| 1. Cryosphere | The population in the Upper Basin are vulnerable to loss of life and property due to limited early warning of impending climate-related cryosphere hazards.<br><br>Policymakers are not able to accurately amortize infrastructure investment, leading to ineffective investment decisions.<br><br>Infrastructure Development in the Upper Basin does not benefit from climate-resilient land use planning, leading to increased destruction of property during disasters. | The population in the target communities has access to the means to participate in cryosphere hazard monitoring and is better able to anticipate hazards and move to safety.<br><br>Policymakers have better information on cryosphere-related risks to infrastructure, improving infrastructure investment decisions.<br><br>Construction will be undertaken in more climate-resilient sites, reducing the destruction of property due to climate induced cryosphere disasters. | The proposed project builds on a large existing body of geospatial, field survey and remote sensing data that ICIMOD has gathered over the past 40 years. This data has also informed UNDP's GLOF 1 and II project design that the critical gap that remains to be closed is wider adoption of the CB-MEWS model, which complements past efforts and increases impact at the community level.<br><br>For the local coordination context, the fact that the project is integrated deeply into national policy through the Living Indus Initiative will drive uptake and dissemination. |
| 2. Springs | Springs linked to municipal water supplies in the Middle Basin are increasingly strained and drying up, causing urban water scarcity, driving negative health outcomes and may leading to outmigration.<br><br>Policymakers are not able to rely on springs as a source of municipal water, driving more unsustainable groundwater drilling. | Springs are revived through community-based measures that increase the availability of municipal water for urban populations, partially mitigating the negative effects of water scarcity.<br><br>Policymakers can make climate-resilient municipal water supply plans in the middle Basin and are equipped to scale up the approach in other communities | Springshed revival is a proven methodology that has been developed by ICIMOD in cooperation with communities in Pakistan and Nepal.<br><br>For the local governance context, the fact that the project is integrated deeply into national policy through the Living Indus Initiative will drive uptake and dissemination. |
| 3.1 Groundwater mapping and groundwater recharge facilities | Current groundwater extraction rates are not sustainable and risk exhausting it entirely and causing irreparable damage to communities, livelihoods, and the national economy, which relies heavily on it for water-reliant exports. | Groundwater levels will gradually be replenished, and extraction rates will be better managed, leading to a sustainable level of extraction and reducing overall water scarcity. | UNICEF and the 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. |
| 3.2 Green climate-resilient community, water supply Infrastructure, | Currently most of the community water supply facilities in targeted locations are not designed and built by considering climate change which resulted in damages sue to recurrent flood which severely affected water supply services in the area. In addition, most of existing facilities are using electric grid which is not in constant supply and higher cost of operation | The water supply infrastructure targeted by this project will be designed and constructed to be climate resilient for major hazards affecting the area (flood and drought). In addition, use of solar and hand pumping systems will ensure sustainable supply and very low cost of operation and maintenance. These will increase the adaptation capacity for both the communities as well as the infrastructure. | The return of investment analysis conducted by UNICEF in different countries confirmed that the return of investment for solar pumping systems against electric and diesel energy sources indicated that the return of investment for solar pumping systems is very high with an average 10-year lifetime of the project with an average 3 years payoff period for solar systems |
| 4.1 Climate change and | Limited or no data available in targeted locations on the nature | The feasibility study and data analysis will help to plan and | Experience indicated that projects supported with |

| Component/ Output | Baseline (without project) | Adaptation impact (with project) | Evidence base related to the adaptation solution |
|---|---|---|---|
| WASH data analysis | based and cost-effective wastewater treatment alternatives and their feasibility. This with intensive capital requirement for other conventional solution restricted communities and local authorities to plan investments to improve the adaptive capacity of the communities | mobilize resource for nature based and cost-effective local level solutions for wastewater treatment. | comprehensive feasibility study and data have a very high chance of successes and increase opportunities for resource mobilization as decision makers need concrete data and evidence to approve investments |
| 4.2 Constructed wetlands as an NBS for sewage treatment | In targeted areas wastewater is released to the natural water ways and communal areas through open drains which led to water contamination and multiple environment and health hazard for the communities | The project will increase adaptive capacity of the targeted communities by reducing water contamination using the wetlands for community recreational or livelihood activities and transferring knowledge and skills to the neighboring communities to adopt the approach | The economic and environmental benefit analysis conducted for constructed wetlands in different countries confirmed that wetlands are environment friendly and low-cost alternatives for smaller communities or suburban areas not covered by main sewage systems |
| 5.1 Comprehensive study on natural waterways, in targeted districts of Sindh, | Lack of apocopate studies and comprehensive basin management plan in targeted locations in Sindh flooding is recurrent which resulted in stagnant water across the settlements and community institutions | The comprehensive study in the targeted locations will help to have basin management plan for flood prone locations and locations affected by stagnant water for extended period after the rainy season which help communities and local authorities to implement adaptive actions to improve the water ways, identify storge locations and reduce water logging in the settlement areas | Experience in multiple locations and communities indicated that communities and local governments can mobilize to implement local level solutions to reduce water logging and improve water storge. However, limited/lack of all required knowledge and skills either restrict their participation or reduce the impact of their interventions to implement the contextualized adaptation measures |
| 5.2 Restoration/ rehabilitation of 15 selected waterways and community ponds | Currently in targeted areas ground water salinity is very high and not many freshwater alternatives for the communities. Which resulted in local authorities and CSO to relied on expensive reverse osmosis treatment facilities which increase in water cost. In addition, due to limited investment on improving natural water ways flood and rainwater in target locations create water logging in settlements, schools, health centers and other community facilities. | With this intervention the community adaptive capacity will increase by reducing water logging in the settlement areas and identifying and improving appropriate locations for water storage through community ponds. The ponds will also improve the water quality in the area through ground water recharge and also provide alternative water source with low treatment costs than saline ground water. | Experience in multiple countries including Pakistan shows that community ponds are viable solutions for water storage in arid areas and in areas where there is high water salinity. The communities are familiar and conversant with the approach and have the capacity for operation and maintenance without much external support which increase the sustainability of the adaptive solution. |
| 6.1 Strengthened regulatory framework and institutional capacity | Currently groundwater extraction in Pakistan in general and in targeted locations in particular is completely unregulated and free of charge which resulted in an even use of water where the big industries and commercial agriculture consuming the majority of water at the cost of the vulnerable groups. In addition, where there are regulations implementation and enforcing capacity is very limited at all levels<br><br>There are multiple government led initiatives like Clean Green Pakistan programme and Living Indus which substantially contribute for improving adaptive capacity of the | With the support of this project the institutional and human resource capacity for the government will be improved to develop, implement and enforce policies and regulatory framework which will improve equitable water use, revenue generation, reduce water pollution and increase investment to reach more vulnerable people mainly women and children<br><br>With this project support enhance coordination, M&E and IM capacity of the MoCC&EC, MOWR and other government departments which will | Without the right policies, regulatory framework and institutional capacity by the government improving equitable resource use and increased adaptive capacity of the vulnerable communities will be a big challenge as the privileged and the powerful continue to take advantage of lack of regulation at the cost of the poor and vulnerable. This will increase exposure of vulnerable groups for climate change disasters.<br><br>The capacity of the government is key on coordination of |

| Component/ Output | Baseline (without project) | Adaptation impact (with project) | Evidence base related to the adaptation solution |
|---|---|---|---|
| | communities in the disaster-prone areas however the capacity of the government to expand the outreach of the initiative across the country, coordinate partners support and mobilize additional resource is very limited | contribute for improved adaptive capacity of the government at different levels and improve and enhance support and participation of the communities in the climate change adaptation initiatives. | partner's support, identification of priorities and implementation and oversight of the climate change adaption programmes |
| 6.2 Knowledge Management | There is no a centralized KM platform that document, disseminate innovations, new approaches and experiences for different adaptation interventions and studies being done by government, development partners, CSOs and communities | The project will support establishing KM platform for living Indus initiative and other adaptation measures at the national level together with production, documentation and dissemination of the knowledge and experience of the communities targeted by this project | Data and KM platforms will facilitate learning, scaling up of interventions in different areas adoption of tested knowledge and practices and for evidence-based advocacy for increased investment |
| 6.3 Community behaviour change and awareness creation | Communities not implementing adaptive practices, limited community participation (especially women and girls) in adaption programmes | Foster constructive and innovative resilience practices that allow (re)learning of adaptation mechanisms from the perspectives of gender transformative and climate risks | Application of gender transformative and social innovation tools will enhance ownership on adaptation and climate risk reduction processes |

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

Centering 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 scale the solutions in a contextually appropriate manner. Sustainability will be ensured as i) institutional processes for climate change adaptation mainstreaming will be put into place through component 6 and its linkages to the local level; (ii) capacities of local governments will be strengthened through Outputs 1.3, 2.3, and 3.3 and Component 6; iii) better management of climate risks will stabilize livelihoods across Components 1-5; 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, through Component 6. 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 project components, 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 instill a sense of ownership in the project and a continued engagement with the technical aspects of climate change adaptation beyond the project's life. Critically the proposed action will be integrated fully into the nationally-owned Living Indus Initiative and the 4RF, directing further governmental and developmental partner support over time. Through this linkage and specifically through the transfer of ownership of the KM Platform under Component 6 and the associated PPPs, the project's impact will be closely aligned with national policies and community needs and inform further development actor investment. Finally, by working under the guidance of the Ministry for Climate Change on policy-related matters and in cooperation with the Ministry throughout implementation, the learning gained throughout the project will serve to support the implementation of the recently passed National Adaptation Strategy under the guidance of the MoCC&EC under Component 6. This will ensure that project-level recommendations support long-term climate adaptation policymaking.

For the Component, ICIMOD draws on its experience in integrating the long-term sustainability of the CB-MEWS through the creation of DRR basket funds to support the minimal costs of operating the systems. For Components 2, 3, and 4 sustainability, the project will support the construction/upgrading of green, sustainable, safe and climate-resilient community WASH infrastructure and services. To ensure the facilities are climate resilient, a range of options are planned for this project to make the targeted infrastructure sustainable and resilient to climate change. The types of options that will be employed vary and must consider site-specific characteristics that consider current systems' state, supply and demand changes, operation and maintenance requirements, climate risk, energy requirements, health and safety and associated costs. Climate risk assessment will be conducted in the target locations to determine whether adapting existing or new infrastructure is required. Under this project, and for the range of systems planned, this may include nature-based water recharge and conservation solutions, use of alternate water sources, retrofitting of structures, embedding or raising exposed pipes above flood levels, relocating pipe

network or water points to less vulnerable areas, consideration of alternate energy use, ensuring designs are accessible by children, women, disabled, vulnerable groups, reduction in wastewater and use of resilient materials.
In addition to adaptive infrastructure (e.g., groundwater, community ponds, raised handpumps, flood-resistant and protected water supply systems, installation of solar pumps), the project will ensure the sustainability of the infrastructure through support for capacity development of public service providers and communities as appropriate through trainings, provision of equipment, establishing sustainable systems by linking the water points with existing community level service providers and promoting adaptive practices like water conservation practices through social and behavior change campaigns.
To ensure sustainability and ownership of the project and ensure the participation of women and girls, the project will implement social and gender transformative tools and approaches, including the use of the UNWomen Gender Equality and Women Empowerment (GEWE) concept, innovative resilience practices, social innovation technologies/tools for consultations, trainings, and capacity building workshops. This includes

- Facilitate application of new social technologies and gender-responsive approaches in consultation, co-developing processes and capacity-strengthening activities, including establishing community watch groups, trainings and developing of policies and strategies.
- Facilitate application of innovative tools (methodologies) for community-level risk assessment and of potential climate adaptation interventions, ensuring its gender-responsiveness and climate security considerations.
- Conduct a participatory review of adaptation measures of communities, along with an analysis of gender sensitivity of the current adaptation measures and policies and regulations of climate adaptation that will guide infrastructure investments.
- Conducting a series of dialogue sessions to reflect the current adaptation practices and tools in the communities and in the institutions using innovative methods (such as design thinking) that allow learning and (re)learning, mobilize core groups in the target localities to participate in self-assessment exercise and conduct series of self-assessment initiatives that allow individuals to re-imagine their vision for climate resilient community (building of scenarios of water management and community resilience) and create a shared vision for their communities
- Facilitate the development of participatory and gender-responsive water management adaptation plans with target communities that foster constructive resilience of communities and individuals and address climate security stressors.

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

The environmental and social impact analysis (ESIA) is ongoing and will be completed with the next submission, however, the screening at the national level and that based on the ESP of the Fund is outlined below, with implications per activity noted:

| Checklist of ESP principles | No further assessment is required for compliance | Potential impacts and risks – further assessment and management required for compliance |
|---|---|---|
| Compliance with the Law | As per national and subnational environmental protection laws, the activities planned under components 1, 2 and 6, having no environmental and social impacts, hence; categorized as C and do not require any environmental and social assessments (ESAs). | Some activities under components 3, 4 and 5 are expected to have environmental and social impacts; hence, categorized as B and would require ESAs as per scope of the activity and the ES legislation of the relevant geography within Pakistan as following<br>• Activities under outputs 3.2, 4.2, 4.3 and 5.2 (solar-powered water facilities, constructed wetlands, sewage treatment plants, community ponds) in Sindh will require development and submission of Checklists to the Sindh EPA.<br>• Activities under outputs 3.2, 4.2, 4.3 and 5.2 (solar-powered water facilities, constructed wetlands, sewage treatment plants, community ponds) in KP will require development and submission of Initial Environmental Examination (IEE) to the KP EPA.<br>During the full proposal stage, a feasibility study and an environmental and social management plan (ESMP) will be developed accordingly. |
| Access and Equity | No adverse impacts in terms of access and equity are expected from the project interventions. The project implementation will build upon community mobilization, and inclusive and sustainable development principles; hence, ensuring an equitable and inclusive benefit sharing through the project interventions without any discrimination or favoritism. | |
| Marginalized and Vulnerable Groups | | In some parts of the project areas, there are some marginalized groups such as Kailash in Chitral district and Kolhi in Tharparkar district who have already been included in the consultations and would be paid special attention to during the project implementation. The |

| Checklist of ESP principles | No further assessment is required for compliance | Potential impacts and risks – further assessment and management required for compliance |
|---|---|---|
| | | vulnerable groups including elderly, women and children have already been identified during the community consultations and their voices and needs have been incorporated into the project design. The disaggregated data collection and reporting during the project implementation will ensure that neither marginalized nor vulnerable groups face any disproportionate risk. |
| Human Rights | Pakistan is a signatory to the Universal Declaration of Human Rights (UDHR) and does not fall under special procedures of the Human Rights Council. Being highly participatory in nature, the project does not pose any risk of human rights violation. | Nevertheless, the project would remain cognizant of this ESP principal and keep reporting on it regularly. |
| Gender Equality and Women's Empowerment | | Although most of the project interventions are gender-neutral, the project will ensure that none of its activities have any gender-specific negative impacts on the target beneficiaries. Pakistan's Climate Change Gender Action Plan (2022) is a good starting point for gender-sensitive climate adaptation action.<br>The IE and EE are cognizant of the GESI issues in Pakistan; hence, are already undertaking a Preliminary Gender Analysis for the full proposal. The consultations have also informed the project design on GESI issues and these will be taken care of by meaningful representation of women at all decision-making forums and participation in the implementation and monitoring of project activities. |
| Core Labour Rights | | Pakistan has ratified 36 ILO Conventions, including all eight Fundamental Conventions; so, every project in Pakistan is bound to respect these conventions. The project itself will comply with the 1998 ILO Declaration of Fundamental Principles and Rights at Work, and its convention on fundamental principles and rights (ILO 29, ILO 87, ILO 98, ILO 100, ILO 105, ILO 111, ILO 138 and ILO 182). The project will also ensure that the applicable labor laws, especially about minimum wage, fixed working hours, and occupational health and safety, are followed in letter and spirit for implementation of activities under outputs 3.2, 4.2, 4.3 and 5.2. Also, child labor is prohibited under the Pakistan Penal Code; hence the project will ensure that no child under the age of 18 is hired for any type of labor. |
| Indigenous Peoples | Except in parts of Chitral district, the project areas do not have any reported indigenous peoples. | The Constitution of Pakistan does not recognize any group of people in Pakistan as indigenous. However, based on WB ES practices for earlier projects, the Kailash people in parts of Chitral district are considered as indigenous for whom the project will develop Indigenous Peoples Plan during the project implementation. The project is cognizant of the provisions under the 2007 UN Declaration on the Rights of Indigenous Peoples (UNDRIP) and has obtained Free, Prior, Informed Consent (FPIC) of the Kailash people during the consultations. |
| Involuntary Resettlement | | The preliminary assessment of the project activities and sites informs that there is no involuntary resettlement (either physical or economic displacement) required as the sites are either under the same use or belong to the communities who have consented to allocate the land, if needed, on voluntary basis. The project, in fact, will protect and create more livelihood opportunities for the communities through its structural and non-structural measures. Nevertheless, as some of the project activities under components 3, 4 and 5 are expected to have environmental and social impacts (categorized as B), the project will undertake initial screening for environmental and social risks at the full proposal stage, and ESAs during the implementation, to find any cases of involuntary resettlement. If so, the site will either be replaced with voluntarily available site or acquired through negotiated resettlement under the Land Acquisition Act, 1894. |
| Protection of Natural Habitats | None of the project sites fall under protected areas regime under any international convention, or the federal, provincial and sub-national laws. The | |

| Checklist of ESP principles | No further assessment is required for compliance | Potential impacts and risks – further assessment and management required for compliance |
|---|---|---|
| | project will not implement any activities in habitats for plants/animals of ecological importance. | |
| Conservation of Biological Diversity | The project is not expected to have any significant or unjustified reduction or loss of biological diversity in the project area. Rather, it is designed to have a positive impact on the biodiversity in the project areas through increased availability of water, protection of water bodies, and managing the surface and ground water contamination through its activities under components 3, 4 and 5. The project is also not introducing any invasive species in the project area. | |
| Climate Change | None of the project activities are expected to result in increased emission of GHGs or other drivers of climate change; rather the constructed wetlands (output 4.2) and community ponds (output 5.2) will serve as Carbon sinks. Hence, the project will not exacerbate climate change in any way. | |
| Pollution Prevention and Resource Efficiency | | The proposed project is a mix of knowledge and physical activities. To be executed by environmentally and socially responsible organization like UNICEF and NRSP, there will be minimal and most optimal resource utilization for its activities. The project will also be cognizant of any possible land, air or water pollution caused because of activities under outputs 3.2, 4.2, 4.3 and 5.2 (solar-powered water facilities, constructed wetlands, sewage treatment plants, community ponds) and will implement all preventive and mitigation measure proposed by the ESMP developed for the full proposal. |
| Public Health | The preliminary assessment of the project concept indicates no public health impacts accruing of the proposed activities. | However, during development of the full proposal, a health impact-screening checklist will be used in synch with the ESA tools to identify any possible public health risks and propose appropriate mitigation measures for the same. |
| Physical and Cultural Heritage | Pakistan has ratified the Convention Concerning the Protection of the World Cultural and Natural Heritage; hence, all projects in Pakistan are bound to comply with its provision. None of the project sites under outputs 3.2, 4.2, 4.3 and 5.2 is in or near a site that has historic, or cultural importance. The project will remain cognizant of the fact that none of its activities should offend the local population, damage the local social fabric, and generate conflict with the local community. | |
| Lands and Soil Conservation | | Cognizant of the fact that fragile soils may be present in some of the project areas (mountainous areas of Gilgit-Baltistan and coastal areas of Badin and Sajawal districts), the project will propose mitigation measures in the ESMP for the full proposal. However, the project will not implement any activity on productive and valuable lands in the project areas. |

**Environmental and Social Risk Categorisation**

| Component | Output | Activity[26] | ES Cat.[27] |
|---|---|---|---|
| 1. Cryosphere CB-MEWS | 1.1. Scientific and Community based risk mapping prepared | 1.1.1. Map hazards based on Earth Observation and GIS (Geographic Information Systems) to confirm the present level of hazard upstream affecting communities in Ishkoman Valley, Manjawa Valley, Sher Qilla valley, Hasan Abad valley, Shimshal valley, Bagrot Valley, Reshun Valley, Susoom Valley, Kalash Valley.<br>1.1.2. Assess vulnerability and exposure of communities in the selected sites.<br>1.1.3. Conduct participatory community-level risk assessments of the targeted vulnerable communities using an existing method that has been tested in other river basins to identify potentially dangerous glacier lakes based on previous collaborative work with AKAH Pakistan and National Disaster Management Authority's guidelines, in the selected sites to strengthen their resilience to climate change-induced disasters.<br>1.1.4. Conduct environmental and social assessments as required under national legislation and/or AF ESP. | C |
| | 1.2. Community Risk Preparedness and Resilience strengthened through Capacity Building and Community Based Early Warning Systems | 1.2.1. Establish Community Watch Groups to undertake necessary preparedness actions and measures.<br>1.2.2. Prepare participatory community monitoring plan, including the need for contextually appropriate technological measure that supplement monitoring by community members.<br>1.2.3. Co-design and establish CB-EWS monitoring system based on Output 1 for different hazards such as permafrost triggered GLOF, landslide, flood, and avalanche etc.<br>1.2.4. Deploy the identified technology to enhance monitoring and increase warning time.<br>1.2.5. Prepare evacuation plans in response to the identified potential cryosphere-related hazards and establish evacuation route and shelter zones, in cooperation with the respective Disaster Management Agencies. The plan will address communication and information dissemination, evacuation, search and rescue, first aid and health, transportation, shelter management, safe drinking water and sanitation, provision of relief and collection of data in a systematic manner.<br>1.2.6. Establish networking and communication channels to disseminate early warning information in a larger network to provide lead time for preparedness.<br>1.2.7. Combine CB-MEWS with real-time satellite data for timely risk identification and communication.<br>1.2.8. Build community capacity to understand and respond to potential hazards (using existing CBDRMs) and community-based hazard monitoring and risk resilience, in cooperation with the respective Disaster Management Agencies.<br>1.2.9. Integrate long-term sustainability of the CB-MEWS through the creation of DRR basket funds, and inclusion of CB-MEWS approach in the DRR plan of local government, and respective Disaster Management Agencies. | C |
| | 1.3. Procedural Linkage Between Local and Provincial Disaster Management Strengthened | 1.3.1. Engage local leaders and policymakers to incorporate cryosphere-related risk in flood zonation, and infrastructure planning.<br>1.3.2. Leverage the evidence on emerging hazards to formulate recommendations on disaster response standard operating procedures and advocate for their implementation with local authorities.<br>1.3.3. Coordinate with provincial Disaster Management Agencies, and local authorities to integrate CB-MEWS solutions in their annual plans for long-term sustainability and, encourage up scaling at the provincial level. | C |
| 2. Springshed Management | 1.4. Comprehensive web-based mapping of springshed in Malakand and Hazara generated | 1.4.1. Compile Springs Inventory and a web-based information system (GPS location, Biophysical characters, gender-social and economic information)<br>1.4.2. Identify critical springs and climate impacts:<br>o Assessing water discharge and contribution to rural and municipal water for life and livelihoods.<br>o Climate change impact assessment on the identified vital/crucial springs.<br>1.4.3. Prepare participatory hydrogeological maps:<br>o Study of rocks, rock structures, and streams.<br>o Geological cross-sections. | C |

[26] As per the Concept Note ver. 8 Aug 2023.
[27] Projects/ programmes likely to have significant adverse environmental or social impacts that are for example diverse, widespread, and irreversible should be categorized as Category A. Projects/programmes with potential adverse impacts that are less adverse than Category A projects/programmes, because for example they are fewer in number, smaller in scale, less widespread, reversible or easily mitigated should be categorized as Category B. Those projects/programmes with no adverse environmental or social impacts should be categorized as Category C.

| Component | Output | Activity[26] | ES Cat.[27] |
|---|---|---|---|
| | 1.5. Recharge measures co-developed and implemented such as improved springshed practices, land use planning, bioengineering methods supporting NBS in Malakand, and Hazara, in a gender inclusive manner. | 1.5.1. Co-design recharge solutions based on the participatory approach supported by science and evidence collected through Output 1.<br>1.5.2. Support the local monitoring 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.<br>1.5.3. Install Data Monitoring Systems in select pilot communities to collect long-term spring discharge data, groundwater levels, water quality information, and rainfall data in a participative manner.<br>1.5.4. Promote community led springs management (e.g., Springs User Groups) and deliver the existing springshed management and monitoring training to community members in the selected communities.<br>1.5.5. Strengthen local community institutions for operations, maintenance and equitable benefit sharing in a gender inclusive manner. | C |
| | 1.6. Strengthened local institutional capacity on springshed governance linked to water resource management, considering adaptation measures anticipating future climate change impacts, and linking to Component 6 on the national level. | 1.6.1. Document cost benefit analysis and impact assessment<br>1.6.2. Co-develop guidelines and protocols for local level management, and operations to support responsible and sustainable use of spring water resources. The issues related to Resource Protection, Allocation and Permits, Monitoring and Enforcement, Conservation and Efficiency and Adaptive Management will be addressed in this component of adaptation actions.<br>1.6.3. Strengthen policy, regulation, and governance. In this component issues related to Legal Framework, Regulations, Institutional Structures, Allocation and Prioritization, and Compliance will be addressed at the local level and linked to Component 6 at the national and provincial level, integrating springs water governance mechanisms into national water policies and regulations. | C |
| 3. Groundwater Management and Resilient Community Water Supply | 1.7. Groundwater mapping and groundwater recharge facilities completed in selected water-scarce locations in the Middle and Lower Indus Basin including establishing/ strengthening operation, maintenance, and management structures. | 1.7.1. Conduct comprehensive ground water study and mapping in Sukkur district of Sind province<br>1.7.2. Conduct feasibility study and identify 6 sites for construction of ground water recharge facilities<br>1.7.3. Construct ditches and trenches designed to suit the topographic and geological conditions of selected sites to increase the volume of runoff recharging the groundwater.<br>1.7.4. Install water quality meters will ensure avoiding maladaptation of contaminating the groundwater.<br>1.7.5. Establish and train community-based structures for operation and maintenance of the facilities<br>1.7.6. Develop technical training courses for technicians and operators of in Sindh and KP Local Government Academies (LGAs), along with technical backstopping with the collaboration of academia. | C |
| | 1.8. Green climate-resilient community, water supply Infrastructure, constructed in selected sites with 100 solar-powered water points and 60 lead line hand pumps including establishing/ strengthening operation, maintenance, and management structures. | 1.8.1. Conduct assessment of flood affected community water supply systems in six flood affected districts of Sindh province and identify vulnerable locations not covered by other interventions<br>1.8.2. Construct/upgrade 100 solar-powered water facilities in Mirpur Khas, Sanghar, Sajawal, Badin, Khairpur and Sukkur districts of Sindh and Charsadda, Swat and Nowshera districts of KP province<br>1.8.3. Construct climate-resilient handpumps together with lead pipelines in Mirpur Khas, Sanghar, Sajawal, Badin, Khairpur and Sukkur districts of Sindh to build back better approach in flood affected areas.<br>1.8.4. Establish and strengthen community water management structures including training of the WASH committees and local technicians | B |

| Component | Output | Activity[26] | ES Cat.[27] |
|---|---|---|---|
| 4. Ecosystem-Based Adaptation | 1.9. Climate change and WASH data analysis completed in select urban areas in the Middle Indus Basin. | 1.9.1. Conduct secondary WASH, environment and climate change data analysis for target locations<br>1.9.2. Undertake site-specific environmental and feasibility assessments while ensuring the contextual appropriateness of the intervention at eight selected sites in Charsadda, Swat and Nowshera districts of KP province and Sukkur and Khairpur districts of Sindh province including vegetation selection | C |
| | 1.10. Eight (8) Constructed wetlands as an NBS for sewage treatment installed in a decentralized manner including establishing and strengthening operation, maintenance and management structures. | 1.10.1. Install constructed wetlands in eight selected sites in Charsadda, Swat and Nowshera districts of KP province and Sukkur and Khairpur districts of Sindh province based on proven UNICEF methodology, reducing urban effluent and increasing water availability.<br>1.10.2. Strengthen existing government and community structures for operation and maintenance of the wetlands.<br>1.10.3. Provide technical support, innovative and lateral learning platform, and equipment to service providers unable to operate Sewage Treatment Plants (STPs). | B |
| 5. Surface Water Conservation | 1.11. Comprehensive study on natural waterways, and community ponds co-developed with the government in Sindh, resulting in the selection of 15 intervention sites. | 1.11.1. Undertake local ground-truthing of catchment feasibility studies and designing, construction/upgrading of ponds, including lining, silt traps, water filtration units and water collection points with hand/and solar pumps<br>1.11.2. Detailed designs and BOQs for 15 community pond sites including site plans | C |
| | 1.12. Restoration /rehabilitation of 15 selected waterways and ponds in Sindh Province, including Installation of automatic water quality monitoring systems and establishing and strengthening operation, maintenance and management structures | 1.12.1. Restore/rehabilitate selected natural waterways in the Sajawal, Umerkot, and Tharparkar districts of Sindh sites,<br>1.12.2. Install automatic water quality monitoring systems to ensure real-time monitoring quality of water in the target catchment location.<br>1.12.3. Construct/upgrade communal ponds in the Umerkot and Thar districts of Sindh province.<br>1.12.4. Establish communal pond management committees will be implemented as a pilot project to promote climate adaptation by communities to ensure water supply during drought which is becoming more and more unpredictable due to ongoing climate change. | B |
| 6. Adaptive capacities and empowered communities for strengthened resilience to climate change | 1.13. Strengthened provincial and national capacities to apply innovative social and technological tools for establishing and enforcing human cantered and gender transformative systems of climate change adaptation and accelerate the progress towards managing the Indus water resources. | 1.13.1. Conduct gap analysis of groundwater legislation at the provincial and federal levels and recommend and support implementing tangible actions for drafting new groundwater acts in KP and Sindh provinces<br>1.13.2. Co-develop and advocate for improved groundwater policies and regulations in Sindh and KP to maintain a sustainable level of groundwater extraction and resilient use patterns.<br>1.13.3. Develop and deploy capacity-building support to regulatory authorities in KP and Sindh to effectively enforce groundwater regulations.<br>1.13.4. Advocate for establishing National Water Regulatory Authority as per findings of ongoing UNICEF study on 'legislative gap analysis in climate resilient WASH sector.<br>1.13.5. Expand the 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.<br>1.13.6. Support the government of Pakistan in improving coordination among water sector stakeholders in Sindh and KP provinces, especially the government departments from different provincial/area governments, through KM products. | C |
| | 1.14. Climate change and WASH data analysis, catchment | 1.14.1. Integrate the CGPCP data into the Living Indus Knowledge Platform: Crowdsourcing Knowledge Platform.<br>1.14.2. Organize a workshop to validate the indicators for contextual appropriateness, with a focus on Sindh, KP and GB. | C |

| Component | Output | Activity[26] | ES Cat.[27] |
|---|---|---|---|
| | delineation for Indus River basin and development and dissemination of KM products including catalogues, technical papers, case studies and human-interest stories. | 1.14.3. Undertake district-level training sessions in 15 districts of the proposed programme in Sindh, KP and GB provinces to train the district government staff in data collection and data entry in CGPI web portals.<br>1.14.4. Expand the national database of the CGPI, housed in the Ministry of Climate Change, on which regular data is reported by district governments from two provinces for 55 predefined indicators of five major components of this programme, i.e., Water, Sanitation, Hygiene, Liquid and Solid Waste Management and Plantation.<br>1.14.5. Provide technical support to the Ministry of Climate Change to review the climate adaptation data against indicators being reported by districts.<br>1.14.6. Support the initial production of three six-month analyses of the database and dissemination to decision-makers and stakeholders at the national and provincial levels as part of the Living Indus Initiative monitoring mechanism.<br>1.14.7. Create a comprehensive database of all climate-adaptive NBS and EBAs technologies being used in the Indus Basin, their cost, efficacy, and contextual prerequisites.<br>1.14.8. Development of National Indus Water Atlas web portal with GIS modelling and geotagging.<br>1.14.9. 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.<br>1.14.10. Support production and dissemination of KM products including One Catalogue of appropriate technologies and NBS for different Indus River basin geographical zones, four technical papers on specific activities of the programme for replication elsewhere, One 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 and six success stories/case studies. | |
| | 1.15. Communities take lead in actions of awareness raising and behavioural change activities in their communities that increase uptake of new adaptation solutions and resilience creation. | 1.15.1. Build PPPs across the basin with private sector actors in the sanitation, construction and finance sector.<br>1.15.2. Expand the 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<br>1.15.3. Establish District Youth Forums for Climate Adaptation and Action in Hunza, Gilgit, Swat, Nowshera, Peshawar, Sukkur, Khairpur, Sanghar and Karachi districts for developing institutional linkages and using the digital platform to disseminate public messages on climate change adaptation issues.<br>1.15.4. Develop an advocacy campaign for replication of the project adaptation solutions and use of its knowledge products in cooperation with the PPP elsewhere in settlements around the Indus River.<br>1.15.5. Co-develop of success stories/case studies that can be transformed into short social and traditional media promotional material to raise public awareness.<br>1.15.6. Undertake public awareness campaigns, in Hunza, Gilgit, Swat, Nowshera, Peshawar, Sukkur, Khairpur, Sanghar and Karachi districts, focusing on adaptation practices for resilience and context-specific hazards and risks at individual, household and community levels. | C |

# 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 reduce the vulnerability and increase the adaptive capacity of the population residing in Pakistan's Indus Basin to respond to the impacts of climate change through improved warning systems, resilient land use planning, | Rates of loss of life and property in the target communities are reduced in instances of climate induced shocks, scarcity and hazards.<br><br>Knowledge products produced by the project are integrated into national policy | 1: Reduced exposure to climate-related hazards and threats<br>7: Improved policies and regulations that promote and enforce resilience measures<br>8: Support the development and diffusion of innovative adaptation practices, tools and technologies | 1.1. No. of projects/programmes that conduct and update risk and vulnerability assessments (by sector and scale)<br>1.2 No. of early warning systems (by scale) and no. of beneficiaries covered<br>7.1. No. of policies introduced or adjusted to address climate change risks (by sector)<br>8.1. No. of innovative adaptation practices, tools and technologies accelerated, scaled up and/or replicated | |

| Project Objectives[1] | Project Objective Indicator(s) | Fund Outcome | Fund Outcome Indicator | Grant Amount (USD) |
|---|---|---|---|---|
| increased water access, and reduced pollution levels. | Knowledge products produced by the project are scaled by the private sector | | | |
| Component 1: Cryosphere DRR | Increased linkages between national and local DRR actors, with both having access to more advanced warning | 1: Reduced exposure to climate-related hazards and threats.<br>2: Strengthened institutional capacity to reduce risks associated with climate-induced socioeconomic and environmental losses. | 1.1. No. of projects/programmes that conduct and update risk and vulnerability assessments (by sector and scale)<br>1.2 No. of early warning systems (by scale) and no. of beneficiaries covered<br>2.1.1. No. of staff trained to respond to, and mitigate impacts of, climate-related events (by gender)<br>2.1.2 No. of targeted institutions with increased capacity to minimize exposure to climate variability risks (by type, sector and scale) | $1,711,000 |
| Component 2: Springshed Management | Increase in water availability in target site due to springs being linked to rural and municipal water supplies are durably revived, and sustainably managed | 1: Reduced exposure to climate-related hazards and threats.<br>2: Strengthened institutional capacity to reduce risks associated with climate-induced socioeconomic and environmental losses.<br>3: Strengthened awareness and ownership of adaptation and climate risk reduction processes at the local level.<br>5: Increased ecosystem resilience in response to climate change and variability-induced stress | 1. Relevant threat and hazard information generated and disseminated to stakeholders on a timely basis<br>2.1. Capacity of staff to respond to, and mitigate impacts of, climate-related events from targeted institutions increased<br>3.1. Percentage of targeted population aware of predicted adverse impacts of climate change, and of appropriate responses<br>5. Ecosystem services and natural resource assets maintained or improved under climate change and variability-induced stress | $933,000 |
| Component 3: Groundwater Management and Resilience of Community Water Supply Services | Community and institutional capacity to mitigate and reverse groundwater depletion due to climate-induced trends, is increased as is corresponding local resilience and climate adaptive capacity | 1: Reduced exposure to climate-related hazards and threats.<br>2: Strengthened institutional capacity to reduce risks associated with climate-induced socioeconomic and environmental losses.<br>3: Strengthened awareness and ownership of adaptation and climate risk reduction processes at the local level.<br>4: Increased adaptive capacity within relevant development sector services and infrastructure assets | 1. Relevant threat and hazard information generated and disseminated to stakeholders on a timely basis<br>2.1. Capacity of staff to respond to, and mitigate impacts of, climate-related events from targeted institutions increased<br>3.1. Percentage of targeted population aware of predicted adverse impacts of climate change, and of appropriate responses<br>4.1.2. No. of physical assets strengthened or constructed to withstand conditions resulting from climate variability and change (by sector and scale) | $2,308,000 |
| Component 4: Ecosystem-based Solutions | Community and institutional capacity to transform an ecological liability into a climate adaptive asset is increased, by cleaning and using wastewater, reducing reliance on pumped water, and rendering communities more adaptive | 1: Reduced exposure to climate-related hazards and threats.<br>3: Strengthened awareness and ownership of adaptation and climate risk reduction processes at the local level.<br>4: Increased adaptive capacity within relevant development sector services and infrastructure assets<br>5: Increased ecosystem resilience in response to climate change and variability-induced stress | 1. Relevant threat and hazard information generated and disseminated to stakeholders on a timely basis<br>3.1. Percentage of targeted population aware of predicted adverse impacts of climate change, and of appropriate responses<br>4.2. Physical infrastructure improved to withstand climate change and variability-induced stress<br>5. Ecosystem services and natural resource assets maintained or improved under climate change and variability-induced stress | $700,000 |

| Project Objectives[1] | Project Objective Indicator(s) | Fund Outcome | Fund Outcome Indicator | Grant Amount (USD) |
|---|---|---|---|---|
| Component 5: Surface Water Conservation | Community and institutional capacity to reduce surface water waste and increase its storage for productive use is increased, allowing communities to adapt to climate-induced shocks. | 1: Reduced exposure to climate-related hazards and threats.<br>2: Strengthened institutional capacity to reduce risks associated with climate-induced socioeconomic and environmental losses.<br>3: Strengthened awareness and ownership of adaptation and climate risk reduction processes at the local level.<br>4: Increased adaptive capacity within relevant development sector services and infrastructure assets | 1. Relevant threat and hazard information generated and disseminated to stakeholders on a timely basis<br>2.1. Capacity of staff to respond to, and mitigate impacts of, climate-related events from targeted institutions increased<br>3.1. Percentage of targeted population aware of predicted adverse impacts of climate change, and of appropriate responses<br>4.1.2. No. of physical assets strengthened or constructed to withstand conditions resulting from climate variability and change (by sector and scale) | $1,080,000 |
| Component 6: Adaptive capacities and empowered communities | Adaption solutions and strategies that are applied through the project and the risks they address are communicated to the population of the Indus Basin in Pakistan, and the knowledge generated on their contextual appropriateness and up-scaling potential are documented, increasing the sectoral know base and driving uptake beyond the project. | 2: Strengthened institutional capacity to reduce risks associated with climate-induced socioeconomic and environmental losses.<br>3: Strengthened awareness and ownership of adaptation and climate risk reduction processes at local level.<br>7: Improved policies and regulations that promote and enforce resilience measures<br>8: Support the development and diffusion of innovative adaptation practices, tools and technologies | 2.1. Capacity of staff to respond to, and mitigate impacts of, climate-related events from targeted institutions increased<br>3.1. Percentage of targeted population aware of predicted adverse impacts of climate change, and of appropriate responses<br>7. Climate change priorities are integrated into national development strategy<br>8. Innovative adaptation practices are rolled out, scaled up, encouraged and/or accelerated at regional, national and/or subnational level. | $1,681,000 |

| Project Outcome(s) | Project Outcome Indicator(s) | Fund Output | Fund Output Indicator | Grant Amount (USD) |
|---|---|---|---|---|
| 1. Loss of life and property due to climate-induced cryosphere multi-hazards is reduced, and community resilience in the target sites in Khyber Pakhtunkhwa and Gilgit Baltistan is strengthened. | Increased linkages between national and local DRR actors, with both having access to more advanced warning | Output 1.1: Risk and vulnerability assessments conducted and updated<br>Output 2.1: Strengthened capacity of national and sub-national centres and networks to respond rapidly to extreme weather events | 1.1. No. of projects/programmes that conduct and update risk and vulnerability assessments (by sector and scale)<br>1.2 No. of early warning systems (by scale) and no. of beneficiaries covered<br>2.1.1. No. of staff trained to respond to, and mitigate impacts of, climate-related events (by gender)<br>2.1.2 No. of targeted institutions with increased capacity to minimize exposure to climate variability risks (by type, sector and scale) | $1,711,000 |
| 2. Communities in Khyber Pakhtunkhwa, and Hazara have increased access to spring water leading to more climate adaptive water use in the targeted communities in a gender inclusive manner. | Increase in water availability in target site due to springs being linked to rural and municipal water supplies are durably revived, and sustainably managed | Output 1.1: Risk and vulnerability assessments conducted and updated<br>Output 2.1: Strengthened capacity of national and sub-national centres and networks to respond rapidly to extreme weather events<br>Output 3.2: Strengthened capacity of national and subnational stakeholders and entities to capture and disseminate knowledge and | 1.1. No. of projects/programmes that conduct and update risk and vulnerability assessments (by sector and scale)<br>2.1.1. No. of staff trained to respond to, and mitigate impacts of, climate-related events (by gender)<br>2.1.2 No. of targeted institutions with increased capacity to minimize exposure to climate variability risks (by type, sector and scale)<br>3.2.2 No. of tools and guidelines developed (thematic, sectoral, | $933,000 |

| Project Outcome(s) | Project Outcome Indicator(s) | Fund Output | Fund Output Indicator | Grant Amount (USD) |
|---|---|---|---|---|
| | | learning<br>Output 5: Vulnerable ecosystem services and natural resource assets strengthened in response to climate change impacts, including variability | institutional) and shared with relevant stakeholders<br>5.1. No. of natural resource assets created, maintained or improved to withstand conditions resulting from climate variability and change (by type and scale) | |
| 3.1 Groundwater use is more adapted to mitigating climate change related shocks, mitigating loss of income and health impacts<br>3.2 Communities in flood prone areas provided with sustainable and climate resilient water supply services | Community and institutional capacity to mitigate and reverse groundwater depletion due to climate-induced trends, is increased as is corresponding local resilience and climate adaptive capacity | Output 1.1: Risk and vulnerability assessments conducted and updated<br>Output 2.1: Strengthened capacity of national and sub-national centres and networks to respond rapidly to extreme weather events<br>Output 3.2: Strengthened capacity of national and subnational stakeholders and entities to capture and disseminate knowledge and learning<br>Output 4: Vulnerable development sector services and infrastructure assets strengthened in response to climate change impacts, including variability<br>Output 7: Improved integration of climate-resilience strategies into country development plans | 1.1. No. of projects/programmes that conduct and update risk and vulnerability assessments (by sector and scale)<br>2.1.1. No. of staff trained to respond to, and mitigate impacts of, climate-related events (by gender)<br>3.2.2 No. of tools and guidelines developed (thematic, sectoral, institutional) and shared with relevant stakeholders<br>4.1. Responsiveness of development sector services to evolving needs from changing and variable climate<br>4.2. Physical infrastructure improved to withstand climate change and variability-induced stress<br>7.1. No. of policies introduced or adjusted to address climate change risks (by sector) | $2,308,000 |
| 4. WASH infrastructure in communities is more adaptive to climate change induced shocks in the targeted communities in the Middle Indus Basin, with up-scaling of the NBS solutions across the basin as contextually appropriate. | Community and institutional capacity to transform an ecological liability into a climate adaptive asset is increased, by cleaning and using wastewater, reducing reliance on pumped water, and rendering communities more adaptive | Output 1.1: Risk and vulnerability assessments conducted and updated<br>Output 3.2: Strengthened capacity of national and subnational stakeholders and entities to capture and disseminate knowledge and learning<br>Output 4: Vulnerable development sector services and infrastructure assets strengthened in response to climate change impacts, including variability<br>Output 5: Vulnerable ecosystem services and natural resource assets strengthened in response to climate change impacts, including variability | 1.1. No. of projects/programmes that conduct and update risk and vulnerability assessments (by sector and scale)<br>3.2.2 No. of tools and guidelines developed (thematic, sectoral, institutional) and shared with relevant stakeholders<br>4.2. Physical infrastructure improved to withstand climate change and variability-induced stress<br>5.1. No. of natural resource assets created, maintained or improved to withstand conditions resulting from climate variability and change (by type and scale) | $700,000 |
| 5. Loss of life, property and livelihood due to climate induced shocks is reduced in the targeted communities, and communities are able to recover from said shocks more rapidly and effectively. | Community and institutional capacity to reduce surface water waste and increase its storage for productive use is increased, allowing communities to adapt to climate-induced shocks. | Output 1.1: Risk and vulnerability assessments conducted and updated<br>Output 2.1: Strengthened capacity of national and sub-national centers and networks to respond rapidly to extreme weather events<br>Output 4: Vulnerable development sector services and infrastructure assets strengthened in response to climate change impacts, including variability | 1.1. No. of projects/programmes that conduct and update risk and vulnerability assessments (by sector and scale)<br>2.1.1. No. of staff trained to respond to, and mitigate impacts of, climate-related events (by gender)<br>2.1.2 No. of targeted institutions with increased capacity to minimize exposure to climate variability risks (by type, sector and scale)<br>4.2. Physical infrastructure improved to withstand climate change and variability-induced stress | $1,080,000 |

| Project Outcome(s) | Project Outcome Indicator(s) | Fund Output | Fund Output Indicator | Grant Amount (USD) |
|---|---|---|---|---|
| 6. Improved knowledge and practices of communities and policymakers on climate change adaptation and climate risk reduction lead to the mitigation of climate change induced loss of life and property. | Adaption solutions and strategies that are applied through the project and the risks they address are communicated to the population of the Indus Basin in Pakistan, and the knowledge generated on their contextual appropriateness and up-scaling potential are documented, increasing the sectoral know base and driving uptake beyond the project. | Output 2.1: Strengthened capacity of national and sub-national centers and networks to respond rapidly to extreme weather events<br>Output 3.1: Targeted population groups participating in adaptation and risk reduction awareness activities<br>Output 3.2: Strengthened capacity of national and subnational stakeholders and entities to capture and disseminate knowledge and learning<br>Output 7: Improved integration of climate-resilience strategies into country development plans<br>Output 8: Viable innovations are rolled out, scaled up, encouraged and/or accelerated | 2.1.1. No. of staff trained to respond to, and mitigate impacts of, climate-related events (by gender)<br>2.1.2 No. of targeted institutions with increased capacity to minimize exposure to climate variability risks (by type, sector and scale)<br>3.1.1 No. of news outlets in the local press and media that have covered the topic<br>3.2.1 No. of technical committees/associations formed to ensure transfer of knowledge<br>3.2.2 No. of tools and guidelines developed (thematic, sectoral, institutional) and shared with relevant stakeholders<br>7.1. No. of policies introduced or adjusted to address climate change risks (by sector)<br>7.2. No. of targeted development strategies with incorporated climate change priorities enforced<br>8.1. No. of innovative adaptation practices, tools and technologies accelerated, scaled up and/or replicated<br>8.2. No. of key findings on effective, efficient adaptation practices, products and technologies generated | $1,681,000 |

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

## *A.* Record of endorsement on behalf of the government

| | |
|---|---|
| *Mr. Muhammad Farooq*<br>*Senior Joint Secretary*<br>*Ministry of Climate Change Government of Pakistan* | 28 February, 2023 |

**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.

**(Muhammad Farooq)**
Sr. Joint Secretary (Dev)

**Adaptation Fund Board**
Secretariat

**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* | Tel. and email: +977 1 5275222 ext 44; michelle.guertin@icimod.org |

Project Contact Person: Faisal Mueen Qamer

Tel. And Email: +977 1 5275222 ext 120; faisal.qamer@icimod.org