ADAPTATION FUND

CONCEPT NOTE PROPOSAL FOR SINGLE COUNTRY

PART I: PROJECT/PROGRAMME INFORMATION

Title of Project/Programme:	Strengthening Adaptive Capacities (SAC) of the communities and public sector institutions for rainwater harvesting and climate risk reduction in urban areas of Pakistan (short name of the project: "Pakistan SAC Project")
Country:	Pakistan
Thematic Focal Area:	Water Management and Climate Risk Reduction
Type of Implementing Entity:	Multilateral Implementing Entity
Implementing Entity:	UN-Habitat
Executing Entities:	Water and Sanitation Agency (WASA), Pakistan Council of Research in Water Resources (PCRWR), National Disaster Management Authority (NDMA) Capital Development Authority (CDA), and identified Community-Based Organizations (CBOs) in Pakistan
Amount of Financing Requested:	10,000,000 (in U.S. Dollars Equivalent)

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

Amount of Requested financing for PFG: 120,000 (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: Click or tap to enter a date.

Project Background and Context

Climate Risk Index 2025 ranked Pakistan as the most affected country in 2022[1]. Pakistan is experiencing multifaceted consequences of climate change. To name a few, rates of warming significantly above the global average with a potential rise of 1.3°C–4.9°C by the 2090s over the 1986–2005 baseline; changes to rainfall and runoff regimes, and hence its water resources, are highly uncertain, but an increase in the incidence of drought conditions; the number of heavy rainfall events has increased since 1960[2].

Climate-induced incidents are becoming recurring systemic threats in Pakistan. Urban infrastructure, particularly water systems are continuously affected and must be redesigned with resilience at the center focusing urgent adaptation actions to address escalating economic losses, public health crises, and social instability in urban Pakistan.

This project specifically targets the climate-induced impacts that are now overwhelming existing systems. Rising temperatures, increasing heavy rainfall, and an intensification of flash-floods (as seen in the 2022 floods that affected 33 million people) are driving new patterns of hydrological extremes that existing drainage, water-supply, and groundwater systems were never designed to handle.

The climate of Pakistan exacerbates varying parameters across the country, which is characterized by diverse topography, ecology, and seasonal variations. The average rainfall in the country is approximately 410 mm, with a range of 48 mm to over 1,700 mm.[3] Similarly, the highest and lowest temperatures in the country range between sub-zero and 48 °C[4]. The rainfall variations across ecological zones are shown in Figure 1[5].

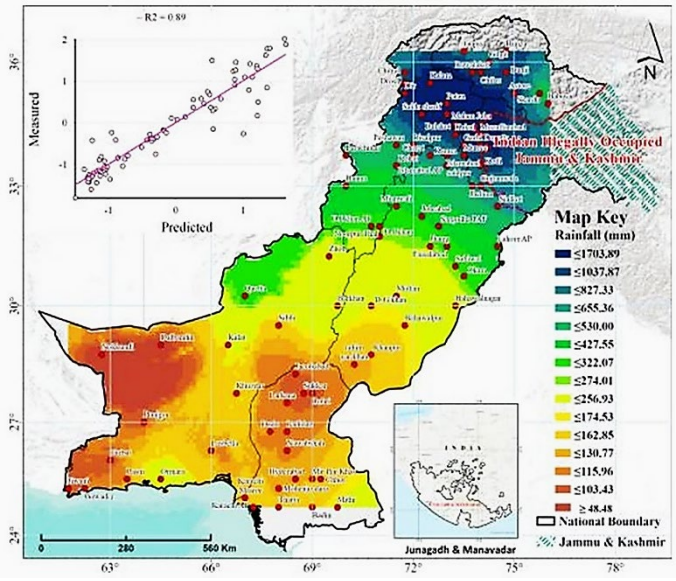


Figure 1: Rain fall map of Pakistan

Climate change is shifting Pakistan's predictable monsoon seasonality to higher rainfall variability and extremes. Pakistan experiences monsoon rain patterns during July and August, with the highest rainfall and temperatures during this season, leading to flooding of major rivers and streams. The temperature and rainfall patterns across the 12 months are shown in Figure 2. On the other hand, historical data trends from 1951 to 2020 indicate a gradual increase in mean surface temperature across all months of the year, resulting in extreme heatwaves in central and southern regions, as well as droughts in arid regions.

Floods: Pre-monsoon triggered in 2022, affecting around 33 million people, that is, one in seven people have been affected by the floods, including nearly 8 million displaced[6]. Based on 2010, assuming protection for up to a 1 in 25-year event, the population annually affected by flooding in Pakistan is estimated at 714,000 people, and the expected annual impact on GDP is US$1.7 billion[7]. Flood hazards are projected to increase within primary cities.[8]

Drought: Pakistan is on the edge of a water crisis that has intensified over the last decade. More than 80% of the nation suffered due to the mild drought in 2023[9]. Reports indicate that wheat yields in Punjab

[1] Climate Risk Index 2025, Germanwatch,
[2] Climate Risk Country Profile Pakistan, 2021, The World Bank Group and Asian Development Bank.
[3] Pakistan Meteorology Department, 2024.
[4] Pakistan Meteorology Department, 2024.
[5] www.esri.com
[6] Post-Disaster Needs Assessment, 2022, Ministry of Planning Development & Special Initiatives
[7] Climate Risk Country Profile Pakistan, 2021, The World Bank Group and Asian Development Bank.
[8] National Adaptation Plan Pakistan 2023, Ministry of Climate Change and Environmental Coordination.
[9] Pakistan looks beyond drought with innovation turning crisis into hope, 2025, International Water Management Institute (IWMI)

and Sindh provinces declined by 30–35%, forcing the government to import over 3.14 million tons of wheat from its foreign exchange reserves. The declining availability of water and fodder led to 20% more livestock mortality during dry seasons. A reduction in crop and dairy production led to an increase in inflation and a decrease in food security.[10]

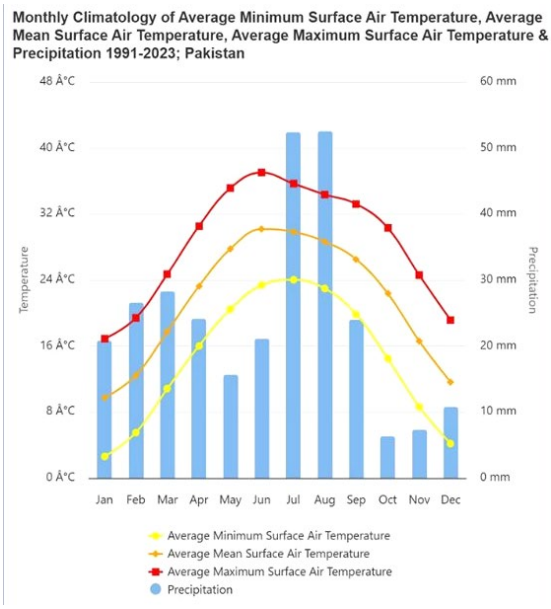


Figure 2 : Source : https://climateknowledgeportal.worldbank.org/country/pakistan

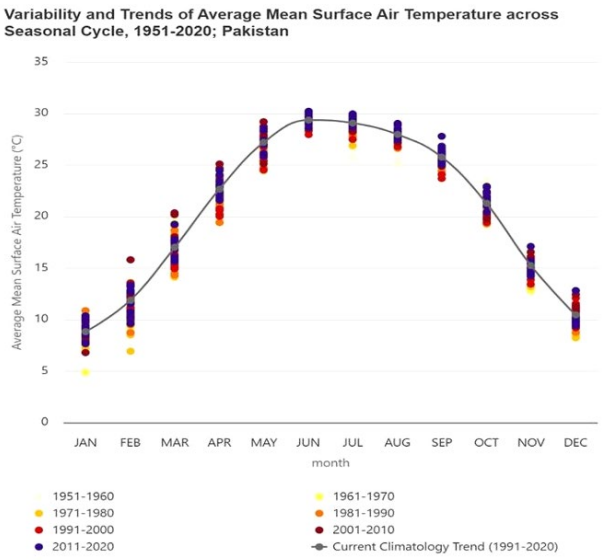


Figure 3: Source: Climate Knowledge Portal, World Bank (https://climateknowledgeportal.worldbank.org/country/pakistan

The drought in Pakistan could lead to severe water scarcity and food shortages, increased reliance on imports, and long-term economic instability. Studies emphasize the importance of building climate-adaptive assets to mitigate the growing climate vulnerabilities.[11]

Water availability is the most valuable and expensive commodity worldwide in current climate change trends. The same challenge is becoming more evident in Pakistan. According to the 2017 Population Census, 36.4% of the population resides in urban areas, with an urban population growth rate of 2.7%.[12] The per capita availability of surface water has declined from 5,260 cubic meters annually in 1951 to approximately 1,000 cubic meters in 2016. Projections indicated that by 2025, this figure may fall further to around 860 cubic meters, signifying Pakistan's shift from a "water-stressed" to a "water-scarce" nation[13].

Urban and peri-urban communities are facing an acute shortage of drinking water and other domestic water supplies due to prolonged drought conditions—an increasingly frequent consequences of climate change. This water scarcity not only threatens public health and sanitation but also highlights the urgent need for climate-resilient infrastructure and adaptive water management solutions. Addressing this challenge requires integrated approaches that enhance water security, promote sustainable resource use, and build long-term resilience against climate-induced stressors.

Project area and target groups

The metropolitan areas in Pakistan with high population density are particularly susceptible to increased flood risk, as floods can result in substantial damage and loss of life. Climate change and rapid urbanization have a significant impact on precipitation rates in Pakistan. In this proposed project, two geographical

[10] Multisectoral impacts of continued drought on Pakistan's economy, Mian Ahmad Naeem Salik, 2025.
[11] Water Scarcity in Pakistan: Analyzing Its Political, Social, And Economic Impacts, 2025. Indus Journal of Social Sciences
[12] Urban Population Pakistan, 2025, Population data, World Bank.
[13] National Economic Transformation Plan. 2025, Ministry of Planning Development & Special Initiatives.

locations, namely Islamabad and Rawalpindi, have been identified based on their vulnerabilities, the affected population, and the prioritization of national and provincial stakeholders. Consultations were held at the national level and provincial level with key stakeholders, including the Ministry of Climate Change and Environmental Coordination (MoCC&EC), which is the Designated Authority for the Adaptation Fund, Water and Sanitation Agency (WASA), Pakistan Council of Research in Water Resources (PCRWR), National Disaster Management Authority (NDMA), Capital Development Authority (CDA), academia, research organizations and community organizations.

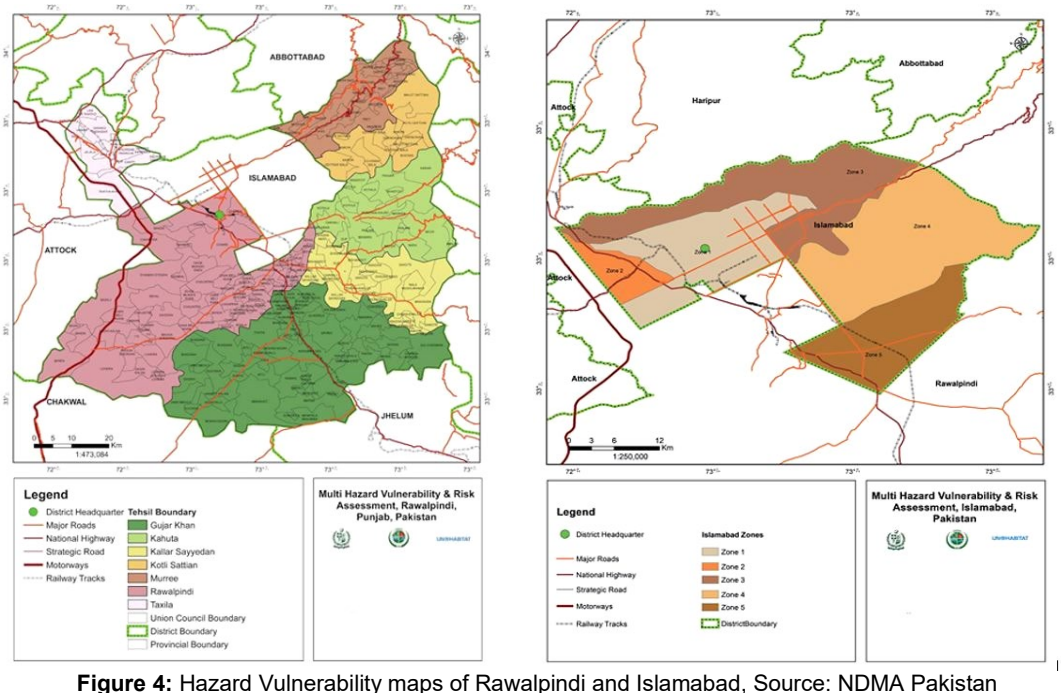


Figure 4: Hazard Vulnerability maps of Rawalpindi and Islamabad, Source: NDMA Pakistan

The proposed project aims to implement Nature-based Solutions (NbS) for climate change adaptation in these twin cities, reducing climate impacts and threats to human lives. It also seeks to demonstrate replicable NbS actions that can be scaled up in both these cities and other provinces in Pakistan.

Socio-economic context: Islamabad has approximately 2 million residents, growing at an annual rate of 4.9%. Rawalpindi's population is approximately 11.4 million, with an annual growth rate of 4.9%. The population density in Islamabad is 2,211.22 per square kilometer, while in Rawalpindi it is 1,157.79 per square kilometer. **Land use, environment and climate change impacts:** Land use patterns in the region are characterized by a mix of land uses and unplanned growth, resulting in issues such as haphazard development and insufficient public spaces.[14]

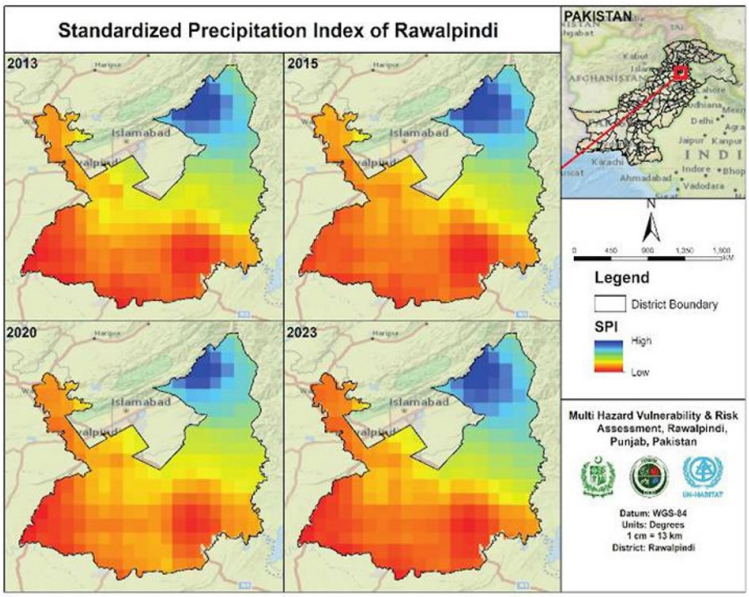


Figure 5. Rawalpindi map with rainfall. Source: NDMA Pakistan

[14] Regional Development Plan RAWALPINDI Environment, 2023, The Urban Unit, Government of Punjab

Rawalpindi has a humid subtropical climate, characterized by hot, wet summers and cooler, drier winters, which pose immense challenges for climate adaptation among its citizens, particularly for urban poor families.

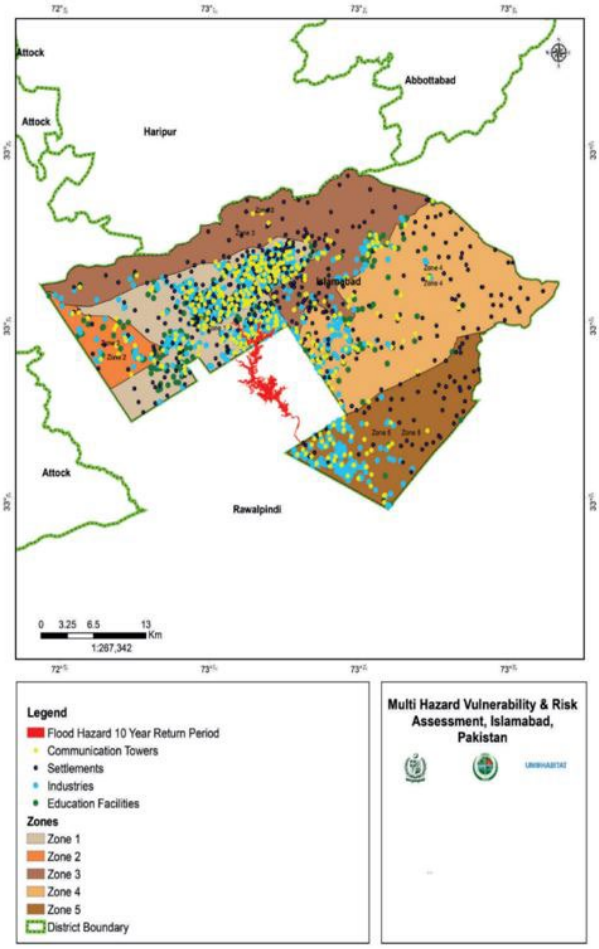


Figure 6: Communication towers, industries, education facilities, and settlements exposed to floods with 10 10-year return period in Islamabad. Source: NDMA Pak.

In 2023, Islamabad experienced an average of 91 thunderstorms, the highest frequency of any city at a plain elevation in the country. Strong windstorms are frequent in the summer, during which the Pakistan Meteorological Department has reported wind gusts to have reached 176 km/h. Such thunder/windstorms, resulting in some damage to infrastructure [15] .The weather is highly variable due to the city's proximity to the foothills of the Himalayas. The average annual rainfall is 1,254.8 mm, with the majority of it occurring during the summer monsoon season. However, westerly disturbances also bring quite significant rain in the winter.

During the monsoon season, the risk of urban flooding is typically higher in cities, causing significant disruption to livelihood activities and damage to infrastructure. Now, Pakistan's capital, Islamabad, once a dynamic, futuristic, and resilient city, faces recurring floods during the monsoon and chronic water scarcity during the summer.

Poverty and climate vulnerability: Poverty has been on the rise over the last years. In 2022, it was recorded that 37 percent of the country's population is below the poverty line, with estimates of multidimensional poverty at 51.7 percent.[16] Many of the climate change impacts are likely to disproportionately affect the poorest groups in society, especially in the informal sector. Manual labour jobs are commonly among the lowest-paid, while also being most at risk of productivity losses due to extreme climate events, such as floods and droughts (including heat). Those working in the informal sector and in non-standard employment, including daily wage earners, street vendors, and custodians, do not have access to any mechanisms catering to income losses due to flooding or drought.

Table 1 Islamabad Flood 2020: House damage by building type and damage extent[17]

Area	Kacha	Pacca	Partially damaged	Completely damaged	Urban	Rural	Total
G-6	100	250	200	150	280	320	**600**
I-9	80	80	170	140	220	250	**470**
G-7	90	90	190	160	240	270	**510**

Table 2 Agriculture Losses by 2010 floods, Islamabad[18]

[15] Land Use and Environmental Planning in Rawalpindi, Pakistan, 2023, Journal of Mechanical, Civil and Industrial Engineering
[16] Addressing Poverty and Vulnerability, 2023, UNDP, Pakistan
[17] Multi-Hazard Vulnerability & Risk Assessment, Islamabad. National Disaster Management Authority, 2024
[18] Multi-Hazard Vulnerability & Risk Assessment, Islamabad. National Disaster Management Authority, 2024

Union Council	Crop damages (Acres)
Tarlai	3000
Sihala	4,200
Kurri	2,800
Total	**10,500**

Photo 1: Islamabad Floods 2025 (Source: www.unewstv.com)

An integrated approach to sustainable water management is desirable in the above-case scenario. It is, therefore, crucial to address water shortages by utilizing available resources and enhancing the adaptive capacities of the communities and service providers in the public sector to cope with these challenges. The available surface and groundwater are being utilized and managed to tackle the country's water issues. However, this is insufficient to resolve the problem due to the lack of water. One alternative is to harvest and collect rainwater by improving existing water bodies and creating more wetlands, filtration plants, and groundwater recharge interventions.

Prioritizing nature protection for climate change through the promotion of Nature-Based Solutions (NbS) is one of the guiding principles of the National Adaptation Plan of Pakistan[19]. NbS are of paramount importance in effectively addressing heat and food risks. In this project, NbS has been identified as the primary approach for identifying sub-projects in both cities. In this regard, the existing adaptive capacities of key government stakeholders and vulnerable communities are inadequate to address these challenges.

Therefore, a comprehensive and sustainable project is required to build the adaptive capacities of stakeholders and address climate-related water sector issues. The project requires addressing policy and community-level challenges in Pakistan's water sector. This will be achieved by strengthening the adaptive capacities of water sector stakeholders in Pakistan through improved policies and plans, water sector hazard mapping, and the harvesting of surface water received during rainfall in the country.

The proposed project actions will provide and enhance multiple economic, social, developmental, and environmental benefits to vulnerable urban communities and the country. For instance, economic benefits will arise from saving extra effort, such as time saved from fetching water from distant sources, purchasing water from tanker services where water quality is not guaranteed, and reducing travel costs to obtain water for drinking, domestic use, and urban farming. Furthermore, sustainable water sector management in responding to climate change will contribute to the health sector improvement by reducing the incidence of waterborne diseases and illnesses related to poor sanitation.

Communities in the target area will experience meaningful social development gains through this initiative.

[19] National Adaptation Plan of Pakistan 2023, Ministry of Climate Change and Environmental Coordination.

By organizing into local groups and committees, residents will strengthen their collective voice and capacity to address shared challenges. The project will also expand access to education and healthcare services at the household level, directly improving quality of life. These efforts will contribute to sustained improvements in living standards, fostering empowered, resilient communities that can shape their own development pathways.

In addition to its wide-ranging benefits, the project will deliver significant environmental gains that directly support the well-being of local communities and other stakeholders in the area. By harnessing the potential of wetlands, the project will enable the collection, filtration, and storage of water, one of the region's most vital natural resources. This sustainably managed water supply will serve multiple community needs, including domestic use, kitchen gardening, urban farming, and the creation of urban forests and green public spaces. These nature-based solutions will not only enhance environmental quality but also improve food security, public health, and community cohesion. Ultimately, the project will generate tangible, lasting benefits for urban populations, reinforcing their resilience and quality of life.

Focus of the proposal: This project primarily aims to implement NBS solutions to boost resilience and lessen human and ecosystem vulnerability to climate change effects and extreme weather events (mainly to decrease surface temperatures and storm water runoff). It also aims to improve social resilience and enhance the adaptive capacity of national and city institutions. Special emphasis will be placed on tackling water sector challenges in the two selected cities and increasing institutional capacity at both the national and subnational levels. The International Monetary Fund (IMF) identified water sector improvement as a priority area, as Pakistan is among the 30 most water "at-risk" countries in the world.[20] Stakeholders' exceptional collaboration was observed at local, provincial, and national levels, including government agencies, academia, research institutions, and civil society. They recognize that the project supports policy initiatives to mainstream NBS actions and emphasizes a community-based approach. This approach involves engaging with the most vulnerable groups, such as women, persons with disabilities, and low-income communities, to assess their main vulnerabilities through collaborative efforts and to create climate-adaptive assets that enhance resilience.

Table 3 Summary of target locations and vulnerabilities

Location	Critical infrastructures	Community	Climate hazards	Underlying vulnerability
Rawalpindi	▪ Wetlands and canals ▪ Water networks ▪ Roads ▪ Public parks and buildings ▪ Houses	▪ Urban poor ▪ Low-income groups ▪ Farmer communities ▪ Informal settlements ▪ Ethnically diverse ▪ Culturally rich and diverse	▪ Monsoon floods ▪ Droughts and water scarcity ▪ Smog and poor air quality ▪ Heatwaves and temperature increases ▪ Storms	▪ Over 70% of the population is below 16 years old ▪ 54.6% of the female population ▪ 4.6% of the older persons population ▪ Farmers ▪ Urban poor living in underserved settlements
Islamabad	▪ Wetlands and canals ▪ Water networks ▪ Roads ▪ Public parks	▪ Urban poor ▪ Low-income groups ▪ Informal settlements	▪ Intense monsoon rains ▪ Heat waves ▪ Droughts ▪ Urban flooding	▪ Over 43.6 % of the population is below 19 years old ▪ 47.4% of the female population

[20] First Review Under the Extended Arrangement Under the Extended Facility: Press Release: Staff Report May 2025, International Monetary Fund.

	and buildings ▪ Houses	▪ Ethnically diverse	▪ Landslides ▪ Storms	▪ 3.7% of the older population ▪ Farmers ▪ Urban poor living in underserved settlements

Scaling from Previous Adaptation Fund Project: This concept scales the Adaptation Fund-financed project '"Enhance community, local and national-level urban climate change resilience to water scarcity, caused by floods and droughts in Rawalpindi and Nowshera, Pakistan" (from successful pilots to system-scale implementation. The prior phase delivered 5,000 flood-resilient households and public rainwater harvesting, 15 community resilience plans , and city-level spatial strategies (Rawalpindi & Nowshera), demonstrating technical feasibility, cost-effectiveness, and strong public acceptance of Nature-based Solutions (NbS). By accepting a broader scope of NBS, the proposed initiative focuses on building resilient water infrastructure, enhancing biodiversity, and fostering sustainable urban ecosystems.

The proposed initiative is the next logical step: system-scale nature-based solutions (100 recharge wells, 10 underground tanks, 3 wetlands, 20 impoundment reservoirs), aquifer-level modelling, and twin-city DSS. The previous project validated community acceptance, technical feasibility, and institutional readiness; this proposal mainstreams these practices into Islamabad–Rawalpindi's metropolitan water management and hazard-reduction systems.

Project Objectives

The project's overall objective is to strengthen the adaptive capacities (SAC) of communities in Rawalpindi and Islamabad to address climate change through innovative, nature-based solutions, thereby improving the resilience of both the natural and built environments, as well as the society of Pakistan.

The sub-objectives of the project are:

- To improve the climate-responsive capabilities of communities, key stakeholders, and government organizations through the creation of climate-responsive assets.
- To promote sustainable use of natural resources and water, supporting food and water security through wetland restoration, construction, and groundwater recharge to bolster ecosystems.
- To improve informed decision-making systems and processes through evidence-based vulnerability assessments, supporting targeted adaptation planning and resource allocation to strengthen adaptive capacity and resilience.

Together, these objectives contribute to Sustainable Development Goals 11 and 13 by fostering inclusive, climate-resilient communities, promoting sustainable urban ecosystems, and strengthening local capacity for evidence-based adaptation to climate change.

Table 4 Project Components and Financing

Project Components	Expected Concrete Outcomes	Expected Outputs	Amount (US$)
1. Increasing ecosystem resilience by enhancing urban climate resilience through the creation of adaptive infrastructure	1.1 Rainwater run-off storage and usage for ecosystem restoration and green infrastructure increased 1.2 Depleting water aquifers rejuvenated 1.3 Sustainable recycling and	1.1 Underground water tanks (10) constructed with at least 0.4 million gallons of groundwater recharge facility 1.2 100 groundwater recharge wells constructed in selected sites with a	5,400,000

(Adaptation Fund Outcomes; Outcome 4 Increased adaptive capacity within relevant development sector services and infrastructure assets)	bioremediation system established 1.4 Recharging of groundwater volume increased enabling to gain access to water for household through innovative rainwater capturing 1.5 Resilience of the urban ecosystem enhanced 1.6 Environmentally friendly solid waste management system improved 1.7 Integrated Rainwater Harvesting and management system in Rawalpindi enhanced	recharge of at least 160-million-gallon water 1.3 Constructed wetlands (3) established to recycle grey water for reuse 1.4 Ground water recharge systems (100) established with rainwater harvesting benefitting over 700 individuals (380 males, 320 females) 1.5 At least twenty (20) impoundment reservoirs constructed to store rainwater for ecosystem support 1.6 Improved solid waste management system introduced, benefiting more than 1,200 individuals (50% of whom are women) 1.7 Rainwater storage and recharge system with four (4) underground water storage and recharge tanks introduced along the metro line expanding citywide rainwater harvesting system	
2. Strengthening adaptive response capacity to enhance the ability of institutions and systems to cope with evolving climate conditions and unforeseen events *(Adaptation Fund Outcomes; Outcome 2 Strengthened institutional capacity to reduce risks associated with climate-induced socioeconomic and environmental losses) and Outcome 3: Strengthened awareness and ownership of adaptation and climate risk reduction processes at local level)*	2.1 Management capacity of groundwater resources in the face of changing climate conditions enhanced 2.2 Institutional capacity in the water sector for informed decision-making in responding to climate impact enhanced 2.3 Integrated modelling approach within a DSS framework, preventing urban flooding and initiating strategies for adaptation developed 2.4 Capacities of the government departments and other stakeholders strengthened in understanding, conducting and using the results of the Multi-Hazard Risk and Vulnerability Assessment	2.1 Groundwater Modeling Study for Rawalpindi City conducted 2.2 Capacity of the physiochemical and biological sections of the WASA water quality laboratory (WWQL) enhanced 2.3 Decision Support System (DSS) for capturing real-time data for adaptive action planning at the city level developed 2.4 Institutional capacities strengthened in conducting Multi-Hazard Vulnerability & Risk Assessments (MHVRA) in 6 districts	2,450,000

3. Strengthening social resilience and knowledge management platform *(Adaptation Fund Outcome 3: Strengthened awareness and ownership of adaptation and climate risk reduction processes at local level)*	3.1 Knowledge and awareness of key stakeholders on water management and climate risk improved 3.2 Knowledge products developed and disseminated to all stakeholders at provincial, national and global levels 3.3 Replicability and adaptability of project outcomes into development plans and other platforms are promoted 3.4 Project outcomes are incorporated into the city administration and sustained 3.5 Capacity building of institutions and communities in sustainable water and sanitation systems strengthened	3.1 Awareness-raising campaigns (five) for sensitization of communities and key stakeholders on resilience building to climate events conducted 3.2 At least five knowledge products on the issues related to water management, climate risks and adaptation developed 3.3 National-level workshops (six) conducted to disseminate knowledge, lessons learned, and to create pathways for developing future partnerships 3.4 A climate-action committee within each local authority is established 3.5 Capacity of community members (1200) and staff of CDA (20) are increased in conservation and sustainably using available water resources	491,014
Project Execution Cost (9.5%)			875,576
Total Project Cost			9,216,590
Project Cycle Management Fee charged by the Implementing Entity (if applicable) (8.5%)			783,410
Amount of Financing Requested (US$)			**10,000,000**

Projected Calendar

Milestones	Expected Dates
Start of Project/Programme Implementation	1st July 2027
Mid-term Review (if planned)	1st December 2029
Project/Programme Closing	30 June 2032
Terminal Evaluation	30 September 2032

PART II: PROJECT/PROGRAMME JUSTIFICATION

A. Project Components

Climate change impacts in the urban areas of Pakistan have accelerated over recent decades, significantly affecting the lives of people, particularly the urban poor and vulnerable groups such as older persons and children, as well as the economic and social landscape, and the sustainability of biodiversity resources. Rising temperatures, increased rainfall, and a higher frequency of extreme weather events leading to flooding and droughts in cities like Rawalpindi and Islamabad are threatening public safety, health, economic development, and overall well-being. Immediate implementation of targeted adaptation measures is thus essential to enable these cities to address and overcome these escalating challenges effectively.

Nature-based Solutions (NbS) are defined as actions to protect, sustainably manage and restore natural or modified ecosystems, which address societal challenges such as climate change, food and water security, and natural disasters, effectively and adaptively, while simultaneously providing human well-being and biodiversity benefits.[21] Pakistan's National Adaptation Plan recognizes "Promote Nature-Based Solutions" as one of its guiding principles and encourages prioritizing nature protection for the climate change.[22]

This project aims to focus its activities on the application of NbS in Rawalpindi and Islamabad, expecting a win-win situation that addresses biodiversity loss and climate change, while also supporting the country's sustainable development. In line with the project thematic area, i.e., Water Management and Climate Risk Reduction, the following project components are identified through intense stakeholder consultations, including communities, desk reviews of research studies and other published documents, including project completion reports of a similar nature in Pakistan, and the national commitments.

Component 1	**Increasing ecosystem resilience by enhancing urban climate resilience through the creation of adaptive infrastructure**

Outcome: Climate resilience of urban communities in Islamabad and Rawalpindi strengthened through adaptive infrastructure assets to withstand climate variability and change.

This component focuses on reducing the impact of increasing flooding in urban areas, growing water scarcity due to drought conditions, increasing temperature by enhancing the capacities of water absorption in wetlands, recycling grey water, enhancing infiltration, increasing the groundwater volume, and better management of solid waste.

Whereas the climate adaptation project implemented in these two cities focused on household and public RWH pilots, the lessons from those interventions now inform a city-scale expansion toward managed aquifer recharge, wetlands, and corridor-based RWH systems.

Adapting cities for climate resilience is crucial in Pakistan as climate change increases the frequency and severity of extreme weather events. Studies have shown that community gardens and rainwater harvesting systems are a highly scalable and sustainable approach to address the climate impact at the city level.[23] Rawalpindi has been experiencing heavy flooding during the monsoon season and high temperatures, leading to droughts during the dry season. Drought has resulted in heavy water scarcity in the city, which

[21] Nature-based Solutions to address global societal challenges, 2016, E Cohen-Shacham, G Walters, C Janzen, S Maginnis, IUCN.
[22] National Adaptation Plan of Pakistan 2023, Ministry of Climate Change and Environmental Coordination.
[23] Enhancing Urban Climate Resistance Through the Application of Selected Strategies and Technologies, 2024, Caroline Hachem-Vermette, Online Journal of Discover Cities

has aggravated increasing water demand due to the increasing urban growth rate i.e. 5.80 percent per year.[24]

During the monsoon season, rainfall occurs in short, intense spells (most of the rain falls within just 100 hours out of 8,760 hours in a year). In Rawalpindi City, being situated on a lower elevation, low-lying areas along Lai Nullah and its tributaries suffer from even minor floods.[25]

Rawalpindi, commonly referred to as Pindi, is a city located in the Punjab province of Pakistan. Rawalpindi is adjacent to Pakistan's capital, Islamabad, and the two are collectively known as the "twin cities" due to the strong social and economic ties between them. Rawalpindi is the fourth-largest city in Pakistan in terms of population. The Lai River divides the city from the cantonment (a permanent military station). Rawalpindi serves as a significant administrative, commercial, and industrial hub. Its industries include locomotive works, gasworks, an oil refinery, sawmills, an iron foundry, a brewery, as well as cotton, hosiery, and textile mills. Additionally, it produces shoes, leather goods, pottery, newsprint, and tents. More than 55% of houses are built on plots smaller than five *marlas (a land area of 25.29 sq meters)*, while about 37 percent of the plots range in size from six to ten *marlas*. Therefore, around 91 percent of plots are 10 *marlas* or more.

In Rawalpindi, on the one hand, there is acute water scarcity, and on the other, the streets are often flooded during the monsoons. This has led to serious problems with the quality and quantity of groundwater. Rainfall arrives in short, intense bursts, overwhelming natural absorption and causing most of the water to run off rapidly. This fleeting downpour leaves minimal opportunity for groundwater recharge, exacerbating water scarcity. A practical and sustainable response to this urban water crisis is rainwater harvesting, which captures and stores run off before it escapes, transforming a lost resource into a vital supply for domestic use, irrigation, and urban greening efforts.

Urban flooding in Rawalpindi is exacerbated, furthermore, by aging and overburdened drainage systems, as well as a lack of rainwater storage and management systems.[26] Leveraging Nature-based Solutions (NbS), the Pakistan National Climate Adaptation Plan envisages rainwater harvesting as an effective method of addressing, firstly, the flooding issues and secondly, addressing drought through using retained water. The National Water Policy of Pakistan promotes the adoption of rainwater harvesting technology nationwide and aims to incorporate it into water conservation efforts.[27]

The situation of water scarcity in Rawalpindi is alarming. The current demand for water in the city is 270 million gallons per day (MGD), whereas the available supply is only 79.5 MGD, showing a deficit of 190 MGD. The water deficit is projected to be 222 MGD by 2030 and 382 MGD by 2050, mainly because of the rapidly growing urban population.

[24] 7th Population and Housing Census,2023, Pakistan Bureau of Statistics, Pakistan
[25] Pakistan: Lai Nullah Basin Flood Problem: Islamabad and Rawalpindi Cities, 2004, WMO/GWP Associated Programme on Flood Management
[26] Pakistan National Urban Assessment, 2024, Asian Development Bank.
[27] National Water Policy, 2018, Ministry of Water Resources, Pakistan.

Table 5: Water demand and supply in Rawalpindi City[28]

WATER DEMAND PROJECTION OF RAWALPINDI							
Sr. No.	**Description**	**2025**	**2030**	**2035**	**2040**	**2045**	**2050**
1	Population (M)	4.5	4.94	5.44	5.99	6.6	7.28
2	Demand (MGD)	270	296	326	360	360	437
3	Availability (MGD)	79.5	74	70	66	61	55
4	Surplus/Deficit (MGD)	-190	-222	-256	-294	-299	-382
	Projects in-Hand						
5	Chahan Dam (MGD)	-	12	12	12	12	12
6	Dadocha Dam (MGD)	-		35	35	35	35
7	Cherah Dam (MGD)	-	14	14	14	14	14
8	Indus River (MGD)	-	-	-	100	100	200
9	**Net Available (MGD)** After completing the above projects	**79.5**	**100**	**131**	**227**	**222**	**316**

The motivation for rainwater harvesting in Rawalpindi stemmed from the fact that the groundwater table in the Potohar region (encompassing Rawalpindi district and its surroundings) has declined by 116 meters (380 feet) over the last 30 years. The per capita availability of water is depleting at a rapid pace, having dropped to less than 500 cubic meters compared to 5,300 cubic meters in 1951.

Lai Nullah flood flows contribute to the River Soan, the tributary river of the River Indus, the largest river among major rivers in Pakistan. The available record indicates that floods in Lai Nullah Basin occur in the Monsoon Season (July-September every year) when the overall country receives downpours from three weather systems:

- Monsoon depressions from the Bay of Bengal, India (the most dominant system)
- Westerly waves from the Mediterranean Sea
- Seasonal Low from the Arabian Sea. This is superimposed by snow melting for the Indus River

The extreme flood years were 1981, 1988, 1997, and 2001, with the latter being the most severe among the recorded events (considered a national disaster). The intensity and volume of rainfall caused the water level of Lai Nullah and its tributaries to rise significantly, resulting in flooding in Rawalpindi, where the damage was several times greater than in Islamabad. A total of 628 mm of rainfall was recorded in less than 10 hours, compared to an annual total of approximately 630 mm. Tragically, 74 lives were lost, about 400,000 people were affected, 742 heads of cattle perished, 1,087 houses were destroyed, and 2,448 were partially damaged. Estimates indicate that damage and losses to infrastructure, government, and private property exceed US$0.25 billion.

Serious flood events mainly occur in the main area between Gunjj Mandi Bridge and the Railway Bridge, as well as in the tributaries of Arya Muhalla, Dhoke Rata, and Nullah Dhoke Charaghdin. Flooding begins in these areas once the water level of Lai Nullah reaches 18 feet (491.5 meters) at Gawal Mandi Bridge. Additionally, Murree Road is the only major road running through Rawalpindi City that becomes flooded during the monsoon season.

To address these issues, this component includes the following activities:

[28] Water & Sanitation Agency (WASA), Government of the Punjab, Rawalpindi

1.1 Construction of Underground water tanks: Underground water tanks can store, retain and conserve runoff water during heavy rainfall seasons and make it available in the dry season for normal use. The increasing rainfall intensity in the federal capital during monsoon, winter, and pre/post-winter seasons has increased the incidents of localized flooding in various areas due to very high runoff generation. Well-constructed underground water tanks are among the most exemplary nature-based solutions for mitigating water scarcity risks. They play a vital dual role: ensuring water availability during dry seasons and facilitating groundwater recharge through natural infiltration processes. By harnessing and storing rainwater or surface runoff, these systems emulate natural hydrological cycles, reduce surface water loss, and enhance aquifer sustainability. Their integration into water management strategies not only strengthens climate resilience but also supports long-term ecological balance.

The proposed underground water tanks, located below ground, will be constructed on preselected sites near natural streams, within recreational parks, or near public places where the stored water can be used to fulfill water needs for green belts, gardens, plantations, or non-potable human use. It is proposed that 10 water tanks be constructed, along with a groundwater recharge system, to achieve a storage capacity of 400,000 gallons. Efforts will be made to make these structures environmentally friendly by using natural materials and employing advanced technology to protect natural vegetation, heritage sites, and other public infrastructure.

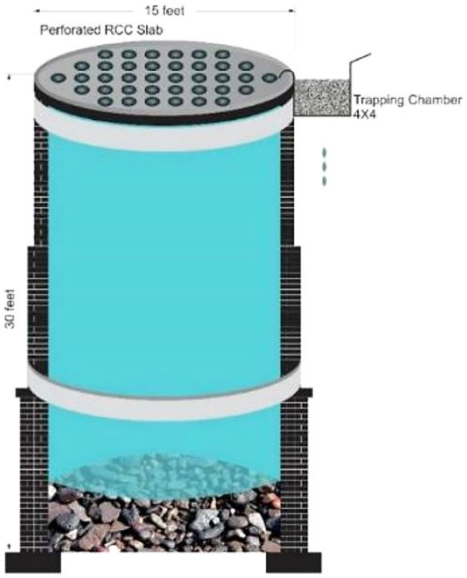


Figure 7: Conceptual design of groundwater recharge well

1.2 Construction of Groundwater recharge wells: The area of the Federal Capital is experiencing groundwater scarcity in residential neighborhoods, which is worsening over time. The groundwater table in Islamabad was approximately 10 m in 1960, before the construction of the Capital City, and has since declined to 60-120 m presently. Many streams originate from the mountains, pass through the city, and finally drain into the Soan River. Due to rapid urbanization, a substantial amount of runoff is generated during rainfall, leading to urban flooding almost every year. In this context, it is proposed that rainwater be harvested and used to recharge the depleting groundwater aquifer through nature-based solutions. Recharge wells will be constructed in 100 identified localities, which are known to be hotspots for depleting water tables. For this purpose, the CDA will collaborate with PCRWR for their technical support and will target the recharging of groundwater with 160 million gallons of water. After the successful demonstration of the activity, the CDA will consider including this in the building code for the capital area.

Groundwater recharge projects will go through a significant amount of scientific attention and formulate effective and efficient operation and maintenance protocols, linking communities to be part of those to ensure the sustainability of the investment. During the technical consultations and field visits, two NbS approaches were considered for further assessment. One is Managed Aquifer Recharge (MAR), which leverages and enhances natural processes to manage water resources by storing water underground within natural aquifers. The other method is Ancillary Recharge Methods (ARM), which uses techniques for artificially adding water to underground aquifers to replenish groundwater supplies. [29]

[29] Enhancing Groundwater Recharge Through Nature-Based Solutions: Benefits and Barriers, 2024, Mahlet M. Kebede, Mukesh Kumar, Mesfin M. Mekonnen and T. Prabhakar Clement, Hydrology, https://doi.org/10.3390/hydrology11110195

1.3 Construction of Wetlands: Wetlands are some of the most biologically diverse and productive natural ecosystems in the world. While not all constructed wetlands replicate natural ones, constructed wetlands can undoubtedly help to absorb /retain water from runoff flows and grey water sources, improve water quality, and support habitat. Constructed wetlands can also be a cost-effective and technically feasible approach, have low operating and maintenance expenses, and can handle fluctuating water levels. Additionally, they are aesthetically pleasing and can reduce or eliminate odors associated with blackish water.

Figure 8: Conceptual design of the proposed constructed wetland

Natural wetland systems have often been defined as the “earth’s kidneys” because they filter pollutants from water that flows through on its way to receiving lakes, streams, and oceans. Because these systems can improve water quality, engineers and scientists construct systems that replicate the functions of natural wetlands. Constructed wetlands are treatment systems that use natural processes involving wetland vegetation, soils, and their associated microbial assemblages to improve water quality.

The proposed wetlands (improved and constructed) primarily filter water in two ways: firstly, by slowing the flow of water, sediment in the water can settle to the bottom of the wetland; and secondly, vegetation absorbs excess nutrients, reducing the amount of contaminants from runoff water that reach downstream aquatic ecosystems.

1.4 Establishing Rooftop water harvesting facilities: Rooftop rainwater harvesting is a proven tool for conserving and sustainable management of water in areas where groundwater is scarce and rainfall is considerably high. Water tanks made of concrete or other durable material, designed based on the calculation of rainfall amount, needs of the household, and surface area of the rooftop, connected to the rooftop through a well-connected network of water pipes, can store water for extended periods to be used for household uses (non-potable). If water filters are installed, the same water can be used for both potable and non-potable purposes. Surplus water from the water tanks can be directed to groundwater recharge wells. Under this project, the CDA will construct 100 rooftop water harvesting systems supported by recharge wells.

1.5. Construction of Impoundment reservoirs: The rainwater stored in areas based on impoundment reservoirs along natural water streams can impound water for extended periods after rain. While this impounded water can be used for rehabilitating the natural ecosystem in the area, the water tanks with filtration plants near the impoundment sites can provide potable water for the nearby habitations. This system is proposed in the foothills of the Margallahs, where natural streams usually face flash floods during the monsoon and cause occasional damage to the nearby settlements. Diverting water to the impoundment reservoirs will reduce the intensity of the stream flow and risks from flash floods. The CDA has identified 20 potential sites for this activity after consultation with experts and local inhabitants.

Figure 9: Impoundment Reservoir in the capital area

According to the CDA office, the average annual rainfall in Islamabad (1,300 mm) has become uncertain and variable due to the overall impact of climate change. The glaring example exists during recent flooding in Saidpur, Chatta Bakhtawar, and adjacent areas of Nallah Lai, as most of the water generated by the rains is drained down towards Rawalpindi and the southern parts of Islamabad due to the geological topography of Islamabad. The vast quantity of rainwater that is presently run off through various streams/nallahs can be preserved through the construction of proposed impoundment reservoirs, along with storage tanks. The harvested rainwater will not only be used for normal utilization during the dry season but also help recharge the groundwater table, which has been drastically depleted.

1.6. Introducing improved solid waste management system: Non-scientific, irregular, and improper management of solid waste in settlements has been identified as one of the primary reasons leading to localized flooding during rainy seasons. Various settlements near the Margallah Hills (Saidpur, E-11, etc.) have experienced this issue due to the blockage of natural waterways by the dumping of solid waste. CDA has consulted experts and residents of the Rumli area to design and implement a proper, sustainable solid waste management system on a pilot basis. The residents of Rumli expressed in meetings that the area had no system for disposing of solid waste. This activity will involve the entire community through their Community-Based Organization (for both males and females) to promote participatory systems and foster a sense of ownership among residents. The successful design will be replicated by the CDA office in other areas. It may be considered for inclusion in the urban rules and regulations after further consultation with stakeholders in the future.

1.7 Integrated rainwater harvesting, storage, and groundwater recharge system along the Rawalpindi-Islamabad Metro Transit Bus System (Rawalpindi City Portion 8.6 Km): Serious flood events frequently occur along key sections of the Lai Nullah system, particularly between Gunj Mandi Bridge and the Railway Bridge, as well as in tributary areas such as Arya Mohalla, Dhoke Ratta, and Nullah Dhoke Charaghdin. Flooding in these zones typically begins once the water level at Gawal Mandi Bridge reaches 18 feet (5.5 meters). Additionally, Murree Road—the primary arterial route through Rawalpindi City—is regularly inundated during the monsoon season, severely disrupting mobility and access.

To address the potential severe water shortage and increased water demand in Rawalpindi City, and to reduce flooding, WASA-Rawalpindi has planned to promote rainwater harvesting as one of the best possible alternatives/supplementary solutions, which is being practiced in many parts of the region, as well as at the global level.

During technical consultations held with Federal Agencies such as the Ministry of Climate Change and Environmental Coordination (MoCC&EC), and district/city authorities such as WASA, Punjab Mass Transit Authority (PMA), it was identified that RWH capturing water runoff from the Rawalpindi Islamabad Metro Bus Transit System is suitable for a rainwater harvesting system as a project component. This was further confirmed through field assessments conducted by UN-Habitat and WASA technical teams. The Rawalpindi-Islamabad Metro Bus Transit System begins at Saddar and extends along Murree Road to Faizabad in Rawalpindi City. During heavy rains, all rainwater from the elevated track is discharged onto Murree Road, resulting in inundation at various points. Therefore, the Rawalpindi-Islamabad Metro Bus Transit System is suitable for a rainwater harvesting system.

Figure 10: Proposed sites for the RWH system along the Metro-Bus track

The system aims at collecting the rainwater runoff from the Metro-Bus track surface along 8.6-kilometer-long and harvests 0.78 million gallons of water (of which 50% is recharged back to the groundwater), benefitting 0.6 million individuals (including 50% women) and directing it to sub-surface storage facilities constructed in public spaces (mostly public parks) connected with the Ground Water Recharge System. The proposed system will harvest and store 1.6 million

gallons of rainwater, benefitting at least 0.6 million individuals (50 percent of whom are women). The stored water will be used to feed green belts, plantations, and horticulture activities, and to be used in public buildings. In addition, 50 percent of the stored water will be recharged to the groundwater aquifer through a scientific recharge system to be designed in consultation with PCRWR. The groundwater recharge will benefit residents by rejuvenating water wells and WASA water facilities and support the local ecosystem by enhancing the water table. Additionally, the system will increase the resilience of urban infrastructure by preventing flooding on roads.

Component 2 — Strengthening adaptive response capacity to enhance the ability of institutions and systems to cope with evolving climate conditions and unforeseen events

Outcome: Institutional and systemic adaptive capacity in Islamabad and Rawalpindi is significantly strengthened through enhanced groundwater management, integrated decision-support systems, and multi-hazard risk assessment capabilities—enabling proactive, informed, and climate-resilient responses to evolving and unforeseen climate challenges.

The National Adaptation Plan of Pakistan clearly identified that capacity-building initiatives should be prioritized to empower stakeholders with the skills and knowledge required to drive adaptation efforts.[30] The institutional and capacity challenges limit policy formulation and implementation, particularly at the local level, and undermine Pakistan's ability to respond to the climatic hazards at all three tiers of governance, i.e., local, provincial, and national.[31] This component is intended to reduce the vulnerability of communities to climate-induced hazards through improved response systems.

2.1 Conducting Groundwater Modeling Study for Rawalpindi City: Excessive withdrawals have depleted the aquifer underneath Rawalpindi and have also suppressed the yield of tube wells (see the table below).

Table 6 Historical rise in the number of tube wells and changes in the groundwater table in Rawalpindi[32]

Year	No of Tube Wells	Average Depth of Water Table (m)	Av. Depth of Pump Setting (m)
1980	33	12	23
1985	80	27	41
1990	140	37	52
1995	170	41	60
2002	197	52	70
2003	209	52	72
2012	290	65	83
2019	440	85	100
2025	480	110	120

[30] National Adaptation Plan of Pakistan 2023, Ministry of Climate Change and Environmental Coordination.
[31] Pakistan's Institutional Capacity for Climate Action: An Analysis, 2023, Muhammad Awais Umar, Salman Danish, Ali Rehmat, Ahmed Khaver, Ramsha Mehboob Khan, and Dr Shafqat Munir Ahmad, Sustainable Development Policy Institute, Pakistan.
[32] Water & Sanitation Agency, Rawalpindi.

The excessive groundwater abstraction has altered the water balance of the aquifer, wherein recharge is no longer sufficient to sustain the levels. Further, water production from these tube wells has become expensive owing to rising power tariffs. WASA is spending about Rs. 1,200M per annum for the production of 35 MGD groundwater as compared to only Rs. 400M for the production of 29 MGD water from surface water sources of Rawal and Khanpur dams. The production cost is also increased by machinery stress and frequent breakdowns. It is estimated to consume more than 70 percent of the total annual budget of WASA, thus leaving no space for development work aimed at improving infrastructure.

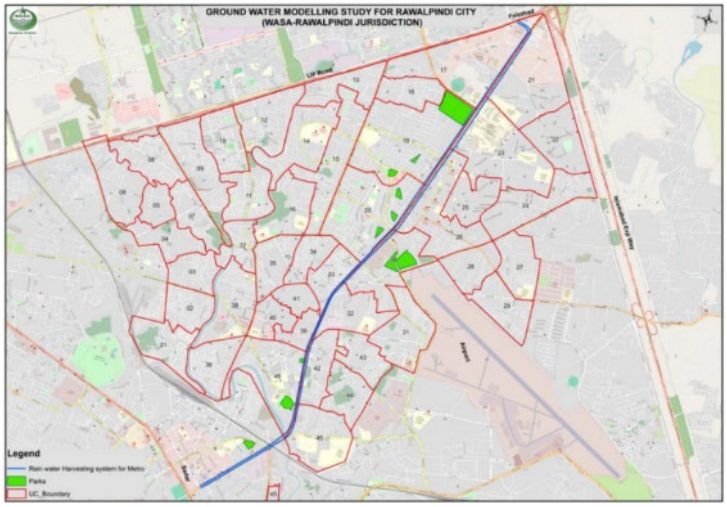


Figure 11: Ground water modeling for Rawalpindi City

The study aims at evaluating one of the hydrological conditions across the geographic space of the ICT/Rawalpindi based on available supporting data, its incorporation into a groundwater numerical model, and the evaluation of the spectrum of withdrawals leading to the sustainability of the aquifer. The model would be calibrated across using the consistent data on water withdrawals and would generate maps of water level elevations/contours as the primary visualization of simulations conceived for predictions. The study objectives include developing a calibrated groundwater model to assess the impact of withdrawals on the aquifer under the combined usage of the CDA/RDA/MES/RCB precincts and other areas under private development; determining the limits of sustainable withdrawals for the entire geographic area of ICT and Rawalpindi; recommending both short- and long-term measures to reduce aquifer mining based on judicious use of available water resources; and developing guidelines for structured data analysis based on the collection of real-time data against aquifer levels.

2.2 Enhancing Capacity of the physiochemical and biological sections of the WASA water quality laboratory (WWQL): Water quality analysis laboratory has been established at Rawal water filtration plant to regularly monitor and analyze the quality of water supplied through Rawal Lake water Filtration plant, overhead reservoirs of Khanpur dam, hypo chlorinators installed on contaminated tube wells, mini water filtration plants installed in the Jurisdiction of WASA, tube wells located in different areas of Rawalpindi city, and to analyze the quality of water in the distribution system as it reaches the consumer's tap.

Presently, the WASA laboratory is analyzing the necessary water quality parameters, most of which are physical and chemical. There is a dire need to upgrade and augment this laboratory, not only to increase the water sample analysis capacity but also to increase the physical, chemical, and biological parameters. To achieve this objective, it is proposed to establish or upgrade the Rawal Lake Water Testing Laboratory by procuring advanced water testing equipment and facilities. A key component of this initiative is the segregation of physico-chemical and biological sections, which will ensure compliance with EPA standards while significantly enhancing the laboratory's analytical capacity and the reliability of its results.

The enhanced laboratory facilities will significantly strengthen the monitoring and assessment of existing ground and surface water quality, encompassing overhead and underground reservoirs, as well as water distributed through the WASA system and community tanks or taps. In addition to providing accurate diagnostics, the upgraded lab will play a pivotal role in recommending effective remedial measures to improve overall water quality.

2.3 Establishing Decision Support System (DSS) for adaptive action planning at the city level developed through the estimation of the rainfall threshold for urban flooding: Pakistan's national and sub-national level climate-related data and information for decision support systems are lacking. Improving information on climate-related risks has been one of the key priorities under Pakistan's economic

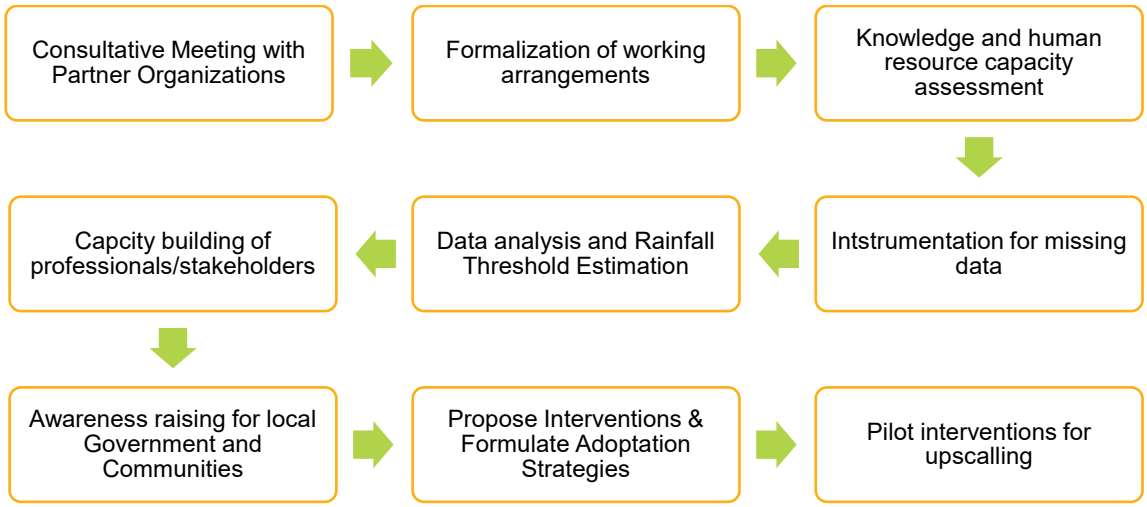
recovery pathway, guided and supported by the International Monetary Fund (IMF).[33] Urban areas are becoming increasingly vulnerable to the impacts of extreme rainfall events, leading to severe socio-economic and environmental consequences. Current methodologies focus on a reactive approach and using historical data models that fail to capture the complex interactions between rainfall, topography, land use, and infrastructure. All these estimations are undertaken for flood forecasting to assist disaster response agencies for emergency rescue purposes. There is a need to enhance the resilience of urban cities by determining the urban flooding threshold under different climate and development scenarios. This data and scientific observation will be used for a more effective Decision Support System (DSS) at the city level.

Accurately assessing the rainfall threshold that triggers urban flood disasters is crucial for effective urban planning and disaster management. This component aims to calculate rainfall thresholds using a multi-method approach to collect data and analyze information on the impacts of rain-related disasters at the city level. By integrating diverse data sources and analytical techniques, this plan aims to provide comprehensive insights into the effects of rainfall, enabling the implementation of proactive measures to reduce disaster risks.

This will include the following sub-components:

- Estimation of rainfall thresholds that lead to urban flooding in Islamabad and Rawalpindi using hydrological modeling.
- Development of human resource capacity in applying rainfall threshold findings, enabling more effective urban planning and water management.
- Undertaking the scenario planning for runoff or no runoff situations in urban areas of the twin cities based on different rainfall intensities.
- Recommendations and pilot adaptation strategies for urban planners in the twin cities, grounded in scientific findings, to support evidence-based planning and resilient urban development

The process will be completed through a multi-stakeholder participatory approach, ensuring transparency and inclusivity across all levels of government and society. This is explained in the following diagram:



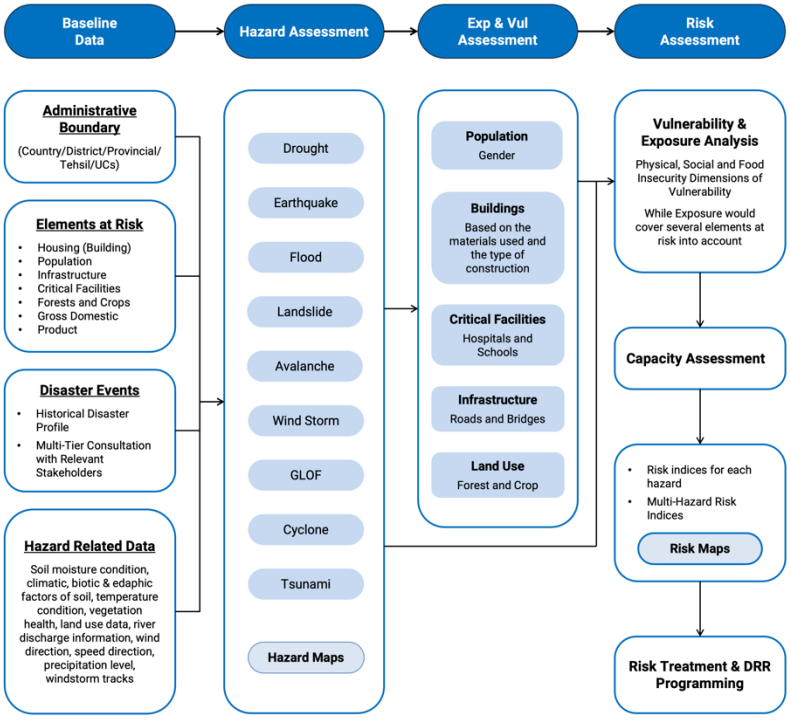
2.4 Strengthening Institutional capacities in conducting Multi-Hazard Vulnerability & Risk Assessments (MHVRA): The Multi-Hazard Vulnerability and Risk Assessment (MHVRA) is a study that analyzes various types of hazards and organizes them into a comprehensive system for evaluation, considering the probability of occurrence of multiple hazardous events and their interrelations. The assessment aims to view the effects and identify/map expected damage and losses due to various natural

[33] First Review Under the Extended Arrangement Under the Extended Facility: Press Release: Staff Report May 2025International Monetary Fund.

hazards. The activity can be considered a first step towards integrated Disaster Risk Reduction (DRR) planning and mainstreaming risk-informed development at local, provincial, and national levels. It guides the relevant agencies/line departments in requisite land-use planning and the implementation of national-scale programs aligned with vulnerabilities, exposure to risks, and other relevant factors, as well as response and knowledge management. It is a key component of the National Disaster Management Plan (NDMP) and its Implementation Roadmap 2016-2030. It also aligns with many national & provincial commitments to meet the priority needs defined in the Sendai Framework for Disaster Risk Reduction (SFDRR).

Effective disaster risk management hinges on a robust understanding of vulnerabilities and risks. Conducting MHVRAs in selected vulnerable districts of Pakistan is crucial for identifying and prioritizing critical areas of concern, such as earthquake, flood, and heatwave risks exacerbated by climate change. However, the actual value of this assessment lies in its utilization. Training programs are paramount for institutional strengthening, equipping relevant government agencies, local authorities, and communities with the knowledge and skills to interpret MHVRA findings, develop and implement effective risk reduction strategies, take anticipatory action, and build urban and climate resilience.

The proposed activity will implement an Integrated Risk Assessment Methodology (IRAM), as outlined in NDMA's Policy Guidelines for the conduct of MHVRA, with a specific emphasis on leveraging digital databases, satellite imagery, and remote sensing technologies. This methodology is founded on the recognition that various factors collectively contribute to overall risks. These factors include Hazard, Vulnerability, Exposure, and Capacity. The synthesis of these factor components determines the cumulative risk posed by multiple impending hazards in the study area. The flowchart below illustrates the Detailed Methodology to be employed in the study:



The institutional program is scheduled to be carried out in three phases over three years, involving six districts to demonstrate and share the knowledge for replication. The training program under this project will include two training courses in each district, as well as one training course at the provincial headquarters of the MHVRA-targeted districts, totaling five trainings each year. Respective PDMA's shall be taken on board for conducting training in their respective provinces/regions.

Table 7 Proposed targets for MHVRA and training activity

Activity	Year 1	Year 2	Year 3
MHVRA (districts)	Nasirabad and Jhalmagsi	Swat and D.I Khan	Muzaffarabad and Hattian
Trainings	5	5	5

Component 3 Strengthening social resilience and knowledge management platform

Outcome: Social resilience and institutional knowledge and awareness in Islamabad and Rawalpindi are reinforced through inclusive capacity building, strategic dissemination of climate and water management knowledge, and integration of project results into local governance—ensuring ownership of adaptation and climate risk reduction efforts.

The country's rising climate challenges and emerging water management issues are key focus areas for policy and decision-makers. On the other hand, the lack of awareness and access to information about vulnerable communities and key stakeholders enhances the gap in sustainable issues management. Therefore, it is crucial to address the knowledge gap in this sector. To promote broader awareness, share knowledge, and transfer skills in water management and climate risk reduction, the project will organize mass awareness campaigns, knowledge dissemination workshops, and skill transfer interventions to enhance the capacities of community members and relevant stakeholders.

The knowledge management platform will enable the capturing and dissemination of results from this project not only to Islamabad and Rawalpindi but also to other cities/provinces in Pakistan, with a greater replication potential. Furthermore, it guarantees full transparency in the implementation process of the project, with all stakeholders being informed of strategies, processes, actions, and results. A dedicated website will be created for information sharing and monitoring, and monthly reports will be disseminated to all stakeholders. The most common human resource capacity gaps identified in Pakistan's Third National Communication on Climate Change are knowledge gaps in the decision-making processes, and the proposed action is to develop knowledge-sharing platforms.[34]

This component comprises four different groups of activities:

3.1 Conducting awareness-raising campaigns (five) for sensitization of communities and key stakeholders on resilience building to climate events: Under this, communication, education, and public awareness (CEPA) programs will be strengthened to engage all segments of society and raise awareness about the environment, climate change adaptation, natural resource conservation, and water demand and supply management during droughts. Public awareness of climate change remains relatively low in Pakistan. Lack of awareness affects efforts to build resilience, preventing ownership and limiting the community's willingness to take proactive measures. Awareness raising and building a community of practice among professionals and decision makers in the government sector will ensure that investments in climate adaptation will be sustained and produce high results.

3.2 Developing at least five knowledge products on the issues related to water management, climate risks and adaptation: Knowledge products can strengthen institutional memory, improve stakeholders', including communities, understanding of what works well in climate change adaptation, and increase effective projects and programmes in the future. During the project, all Executing Entities (EEs) are expected to coordinate and document their climate adaptation knowledge and experiences. These efforts aim to reach a broader audience across Pakistan utilizing local languages for accessibility and to facilitate international dissemination through climate forums and global platforms such as the World Urban Forum. The knowledge products will be aligned with UN-Habitat's Global Knowledge and Advocacy Division (GKAD), with participatory consultations to ensure locally relevant content.

[34] Pakistan's Third National Communication on Climate Change, 2025, Ministry of Climate Change and Environmental Coordination

3.3 Conducting national-level workshops (six) to disseminate knowledge, lessons learned, and to create pathways for developing future partnerships: Building on the development of knowledge products, national-level workshops are essential for engaging organizational leaders and policymakers. These workshops will serve as platforms to share lessons learned from the project, promote the mainstreaming of best practices, and support the revision or introduction of national policies focused on climate resilience. They will also help stakeholders understand the importance of, and prioritize, investment in adaptive actions within institutional annual budgets—particularly by involving key bodies such as the Pakistan Planning Commission. Equally important is the engagement of the private corporate sector, encouraging them to integrate climate considerations into their investment programs.

3.4 Establishing Climate-Action Committee (CAC) within each local authority: Climate action committees (CACs) at the community level are effective in engaging community members in climate action, not only empowering them to take charge of their environment but also to promote a collective sense of responsibility. CAC will promote partnerships among residents (among youth, women, and older persons), connect with local organizations, businesses, and government entities to create a united structure for addressing climate challenges and enhancing community resilience. This enhances bargaining ability with local bodies to invest in climate resilience and to ensure that such investments are adequately targeted at prioritized climate actions. CACs will be an effective mechanism for tracking progress and measuring the effectiveness of community initiatives, using feedback to refine and enhance future efforts.

3.5 Capacity building of institutions and communities: The resilience activities in the target areas will be sustainable and more impactful if the benefiting communities take ownership of the interventions, and they can take care of the operations, maintenance, and conceptualizing new solutions for their problems. For this purpose, the proposed project will include a capacity-building component based on a proper Capacity Need Assessment. This will consist of awareness-raising sessions, hands-on practice sessions, formal training events, and participation in workshops and events for both male and female members of the communities. In the same lines, Capacity Needs Assessment of the relevant staff of the Capital Development Authority will be conducted, and training events will be organized to enhance their skills to identify better issues, design solutions, and execute in the field. The activity will benefit at least 1,200 community members and 20 staff officers.

B. Project provides economic, social and environmental benefits

The project is expected to generate and amplify a wide range of economic, social, and environmental benefits upon implementation.

Table 7 Economic, social and environmental benefits

Type of benefit	Baseline	With/after the project
Economic Benefits	Dependence on water tankers and healthcare costs to communities	Reducing dependency on water tankers and healthcare costs provides significant economic relief to communities (**Cost savings**)
	Funds spent on disaster relief provisions by city authorities and the national government	Reduction of affected communities and duration resulting in a reduction of the cost of relief provisions (**Cost savings**)
	Loss of livelihoods in the agriculture sector due to floods and droughts	Creates job opportunities in the construction and agriculture sectors through constructing and maintaining wetlands (**Job creation**)
	Less efficient and less resilient to drought conditions, leading to water scarcity, resulted in low crop yield and a threat to food security	Reused treated water can enhance irrigation, boosting crop yields and food security (**Agricultural Productivity**)
	Loss of livestock due to flooding and drought (water scarcity) results in	Livestock surviving during heavy rain and drought, maintaining sustainable income (**Economic**

	loss of income	**sustainability**)
	Damaged houses (mainly in informal and poor settlements) and community infrastructure during floods	Reduce the rehabilitation and reconstruction costs of houses and community infrastructure. (**Cost savings**)
Social Benefits	Increase prevalence of waterborne diseases, resulting in high health costs for low-income families.	Significantly reduce the prevalence of waterborne diseases, saving healthcare costs for low-income families (**Improved Public Health**)
	Lack of or no commitment to build, maintain, and operate natural assets	Foster a sense of ownership and build the capacity of communities and institutions to ensure the sustainability of climate investments (**Community Empowerment**)
	Poor living standards, negative effects on women and children due to water scarcity	Significantly enhance living standards, especially for women and children, who are more affected by water scarcity (**Enhance Quality of life**)
Environmental Benefits	Loss of habitat, native flora and fauna in ecosystems.	Increased habitats of native flora and fauna in ecosystems through constructed wetlands (**Biodiversity Conservation**)
	Depleted ecosystems are reducing the capacity of carbon sinks and increasing water scarcity	Served ecosystems as carbon sinks, mitigating the impacts of climate change while improving water security (**Climate Resilience**)
	Depleted groundwater aquifer	Managed aquifer recharge to replenish aquifers with surface runoff water **(Climate Resilience**)

The project will also yield an additional benefit though not the primary focus of this proposal by contributing to climate change mitigation through Nature-based Solutions (NbS). By reducing the frequency and severity of floods and droughts, the project is expected to lower the reliance on air conditioning, decrease energy consumption in public and residential buildings during drought periods, and reduce the financial burden of road repairs caused by flood damage.

Mitigation of negative impacts, in compliance with the Environmental and Social Policy and Gender Policy of the Adaptation Fund

The implementation of the project will be guided by robust social and environmental safeguard measures aligned with the environmental, social, and gender policies of the Adaptation Fund. Every effort will be made to avoid the use of environmentally harmful materials in construction activities. Equal participation of both men and women will be ensured across all planning, decision-making, and capacity-building initiatives. Furthermore, the project will actively promote the inclusion and meaningful participation of persons with disabilities, marginalized populations, and other vulnerable community groups. These groups will be guaranteed equitable access to the benefits and opportunities generated by the project.

C. Cost-effectiveness of the proposed project

The proposed project establishes a high degree of cost-effectiveness, driven by the integration of field-tested technologies, active community engagement, a high level of commitment by local government entities in two cities, and efficient resource management. This cost-effectiveness is evaluated based on the expected outcomes of the interventions of the project, as outlined below:

Sustainability through local ownership: The project fosters long-term sustainability by extensive engagement with a) city level agencies particularly decision makers and technical staff during project development cycle which ensures the climate assets created under the project are incorporated into city inventory for maintenance, and b) strong and inclusive engagement of communities to feel not as

beneficiaries but as part of the ownership of the project interventions. These two aspects reduce dependence on external support, encourage self-reliance, and ensure that the benefits of NbS extend beyond the project's lifespan.

Cost effectiveness of proposed interventions: Nature-based solutions (NbS), widely endorsed by national policies and international frameworks, have consistently demonstrated cost-effectiveness through numerous cost-benefit analyses. Accordingly, the main project components (concrete actions) are built on NbS, not only offering direct economic benefits against conventional engineering solutions and by protecting communities from environmental hazards, but these interventions also provide substantial co-benefits, such as biodiversity restoration, improved water quality, and carbon sequestration, all of which contribute to long-term socio-economic resilience.

Value for Money (VFM): With an estimated total investment of US$10,000,000 targeting 43,000 people (of whom 50% are women) directly and more than 60,000 people indirectly, the cost per beneficiary is approximately US$97. In terms of cost efficiency and sustainability, the project is well positioned to reduce climate risks, while providing a range of other benefits such as improved biodiversity, increasing the safety of people, contributing to sustainable livelihoods, reducing the cost of disaster relief each year, and improving the quality of life.

D. Consistency with national or sub-national development programmes

The project is aligned with Pakistan's national and subnational frameworks on climate change, development, and poverty reduction, contributing to the implementation of climate-resilient development pathways as prioritized in key national policies and strategies.

The project is fully aligned with and contributes to the achievement of the Pakistan National Adaptation Plan (NAP). NAP provides a framework for implementing adaptation, promoting inclusivity, and facilitating collaboration among different stakeholders. The NAP document also calls for longer, mid-term, and short-term measures to improve water resource management and drought mitigation strategies in rural and urban areas. The NAP lists "Building systematic resilience against climate change and natural hazards" as one of its core principles. The document calls for integrating adaptation measures into urban planning and disaster preparedness. [35]

Pakistan's Third National Communication on Climate Change (TNC) emphasizes NbS as a primary strategy to combat climate impacts and support sustainable biodiversity and ecosystem restoration efforts.

The updated National Climate Change Policy (2021) emphasizes enhancing water resource management and mainstreaming climate adaptation as key objectives.

Pakistan Climate Change Act 2017 promotes the establishment of institutional frameworks for climate governance; this project's actions will contribute to achieving the objectives of the act.

Punjab Climate Change Policy

The Punjab Provincial Climate Change Policy (Draft) aims to raise awareness of climate-related risks and promote sustainable resource management in urban and rural areas of the province. One of its goals is to ensure water, food, and energy security for Punjab in the face of a changing climate and to address climate change risks, especially those caused by climate-induced disasters. The policy acknowledges Rawalpindi as a flood-prone area, particularly its urban sections near Nallah Lai[36].

National Water Management Policy

The National Water Policy of Pakistan (2018) emphasizes conserving and sustainably using available water resources, ensuring the availability and quality of freshwater to meet municipal and agricultural

[35] National Adaptation Plan Pakistan, 2023, Ministry of Climate Change & Environmental Coordination
[36] Punjab Climate Change Policy (Draft), 2017, Government of the Punjab

needs. Objective 2.4 calls for improved urban water resource management for addressing drinking water demand, sewage disposal, handling of wastewater and industrial effluents. Objective 2.12 targets flood management and mitigating flood damage. Similarly, Objective 2.15 points out the need for promoting appropriate technologies for rainwater harvesting in urban and rural areas.[37]

Pakistan Flood Response Plan 2022

It recognizes access to sufficient and quality drinking water as a primary issue, with 63 percent of the population lacking access to safe drinking water, coupled with sanitation and hygiene problems in rural and urban areas. The plan calls for supporting access to water, water treatment, and water quality monitoring and surveillance, restoration of damaged water systems (both public and community-operated). As well as household point of use (PoU) water treatment [38].

Five-Year National Disaster Mitigation Plan (2023)

The National Disaster Mitigation Plan for Pakistan recognizes rapid urbanization and rural-urban migration as one of the core problems generating risks in urban areas. The NDMP calls for preparing Multi-Hazard Vulnerability and Risk Assessment (MHVRA) at the national, provincial, and district levels to better prepare for climate hazards. The NDMP also calls for capacity building of institutions and communities and their awareness raising regarding climate-related risks.[39]

E. Compliance with relevant technical standards and policies

The project, Strengthening Adaptive Capacities (SAC) of the communities in Pakistan to climate change through innovative NbS, is cognizant of complying with relevant technical standards. It will take due consideration in the full project cycle management. Compliance will be ensured with all national technical standards, as well as UN-Habitat and Adaptation Fund Environmental and Social, and Gender Policy requirements.

The project is in accordance with national regulation plans, the National Environmental Protection Act, the Climate Change Gender Action Plan, the Rawalpindi Master Plan, the Islamabad Master Plan, the Rawalpindi Multi-Hazard Vulnerability & Risk Assessment (MHVRA), the Punjab Water Act 2019, the Islamabad MHVRA, and the Urban Laws, which provide guidelines and technical standards.

The project activities will be executed adhering to all environmental standards and safeguards as per the directives of the Pakistan Environmental Protection Agency. Green building codes, which are already in place, and the initial mapping of the project have been done. Administrative and statutory approvals for project implementation, including a No Objection Certificate, will be obtained throughout the proposal development stage as per procedures laid by respective authorities.

F. Duplication with other funding sources

There is no duplication of this project with other initiatives financed by multilateral, bilateral, or national sources. While other projects related to climate change adaptation have been implemented in urban or subnational contexts in Pakistan, this proposal is complementary and strategically aligned with ongoing efforts under the National Adaptation Plan (NAP) and the Nationally Determined Contributions (NDCs) for adaptation.

In Islamabad, the Capital Development Authority is expanding and managing green belts, parks, and blue spaces to improve the climate and environmental quality of the capital city. The CDA also oversees the management of Margallah National Park under the Islamabad Wildlife Management Board. The proposed project initiatives complement the CDA's efforts to meet the growing demand for water by harvesting

[37] National Water Policy, 2018, Ministry of Water Resources, Government of Pakistan
[38] Pakistan Flood Response Plan 2022, United Nations.
[39] National Disaster Mitigation Plan (Remodeled), 2023, National Disaster Management Authority, Government of Pakistan

rainwater that can be used to provide water for green belts, parks, and wildlife on selected sites.

The Green Pakistan Programme is active in Islamabad, providing support for afforestation, wildlife management, and biodiversity conservation. The proposed project will supplement GPP's initiatives by providing access to harvested rainwater.

The Water Resource Accountability in Pakistan (WRAP) project, funded by the FCDO for the period 2021-2028, aims to strengthen water management capacities at the federal, provincial, and district levels. The project has three main components: Climate Resilience Solutions for Improving Water Governance, Nature-Based Solutions, and the Catalytic Fund. Whereas the proposed project aligns with many components of the WRAP project, the WRAP does not have any interventions in Rawalpindi or Islamabad.

The Water & Sanitation Agency (WASA) Rawalpindi is currently implementing underground water tanks and water supply pipelines in UC 1, 4, 33, 34, 35, 39, and 40. It will be ensured that the proposed project interventions are implemented in areas outside these UCs to avoid duplication.

G. Learning and knowledge management component

From 2020 – 2026, the UN-Habitat Adaptation Fund project in Pakistan established a strong foundation for climate resilience through multi-level engagement. It raised climate awareness among communities, advanced policy and institutional advocacy and strengthened knowledge across diverse stakeholders. Crucially, it bridged global climate priorities with local realities, ensuring that adaptation strategies were not only understood but also owned by the people most vulnerable to climate change.

Building on this foundation, the new proposal moves beyond localized interventions to adopt a system-wide approach. It recognizes that resilience is not only about protecting communities, but also about transforming urban systems and investment pipelines to be climate-resilient. By linking knowledge enhancement with resilient infrastructure and effective, inclusive governance, the project will foster a climate-informed society and support Pakistan's cities to become adaptive, inclusive, and sustainable.

At the local level, a participatory approach involving communities and Tehsil councils (respective Tehsils in Rawalpindi) in planning and implementation will lead to increased local awareness and knowledge of climate change risks and adaptation.

At the city level, the transfer of outcomes and lessons learnt to other communities across other cities and provinces will be promoted. All information will be consolidated in reports and fully accessible online via the knowledge management platform (a dedicated web portal), which will, naturally, also be available nationally and internationally. Beyond reports, specific tools and guidelines will also be available to all levels, including in local languages.

At the national level, knowledge transfer will benefit other vulnerable city authorities and provincial bodies by mainstreaming adaptation initiatives and assessing the effectiveness of the different strategies and actions. During stakeholder discussions, it is confirmed that partnering ministries, government agencies, CSOs, and research institutions will help spread knowledge products across the country.

In addition to the online knowledge transfer platform, the Ministry of Climate Change and Environmental Coordination (MoCC&EC) will help mainstream climate adaptation initiatives and methodologies through inter-ministerial coordination mechanisms.

At the international level, knowledge-exchange partnerships are currently under discussion. UN-Habitat can play a key role in sharing insights and experiences from the project through established global dissemination platforms such as the World Urban Forum, COP, and the Asian Cities Conference. To support this effort, a project-specific communications plan will be developed to ensure active and strategic dissemination of knowledge across local, national, and international levels.

H. Stakeholder Consultations

The project concept note was developed through comprehensive mapping and a multipronged community and stakeholder consultation methodology. This process included a series of expert group discussions involving 42 specialists from the water sector, urban planning, and research institutions; thematic group discussions with 26 professionals from various government departments; and community meetings attended by 60 male and 51 female members from local communities in Rawalpindi and Islamabad. Detailed agendas, discussion points, and attendance records for these meetings are provided in Annex 2.

Table 8 Stakeholders and communities engaged in consultations

Communities	Rumli Village (Islamabad) Community (two groups, 35 male and 27 female members of the village community), held on August 30, 2025 Urban community in Liaqat Bagh area, Rawalpindi (2 groups; 25 male, 24 female residents) held on August 28, 2025.
National Government Agencies	Ministry of Climate Change and Environmental Coordination: Meeting held with MoCC&EC officials on December 28, 2024, attended by 26 members of the Water Group. Pakistan Council of Research in Water Resources (PCRWR), Islamabad: Meetings were held with the PCRWR team on August 2, 2025 (online) and August 28, 2025 (in-person). Ten staff members attended both meetings. National Disaster Management Authority (NDMA): Meeting held with NDMA officials on August 21, 2025, attended by five members.
Provincial Government Agencies	Punjab Provincial Environmental Protection Agency
City Authorities	Rawalpindi Water and Sanitation Authority: Meetings with the WASA team on August 19, 2025 (online) and August 29, 2025. Both meetings were attended by 13 people. Capital Development Authority: Meetings held with CDA officials on July 31, 2025; August 19, 2025; and August 28, 2025. A total of 21 people participated. A site visit organized by CDA Islamabad to proposed activity sites was also conducted to assess the technical and social feasibility of the activities. During the visit, six sites were visited, namely: Rumli Village, Trail 5, Ayub Park, F-9 Park, National Library, and F-8.

I. Justification for funding requested

Pakistan is among the top ten countries most affected by climate change, despite contributing less than 1 percent to global greenhouse gas emissions.[40] The country faces increasing climate-related risks and urgently needs support to implement its National Adaptation Plan. The National Adaptation Plan costs approximately US$348 billion to support the prioritized vulnerable sectors in adapting to the impacts of climate change. With the current economic crisis and recovery (supported by the IMF), allocations from national and provincial budgets are extremely restricted. This underinvestment scenario will further worsen the climate impact unless financial support is forthcoming to address the increasing demand for climate resilience building among cities and communities.

The project aims to enhance resilience and build the adaptive capacity of local communities by implementing concrete, adaptive actions specifically tailored to local needs. Furthermore, the NbS approach will serve as the foundation for all project components, adopting a holistic approach to support vulnerable communities in Rawalpindi and Islamabad, thereby increasing their resilience to droughts, rainfall variability, and other extreme events. This contributes to increasing their adaptation capacity to the risks and improving their livelihood strategies, addressing water scarcity. Active community engagement will enhance the sustainability of natural resources management actions, ensuring climate investment

[40] Climate change / Pakistan | Interactive Country Fiches

through this project, which is expected to yield results, including biodiversity conservation.

Rationale for Full Cost Funding

Inclusive Intervention: The project integrates institutional and community capacity building, wetland restoration and creation, climate-smart water safety management, and knowledge management with a focus on replicability. Each component was identified through an extensive consultation process and is interdependent, requiring full funding to deliver sustainable, systemic adaptation outcomes. Partial funding could undermine the effectiveness and sustainability of the interventions.

Targeting Vulnerable and Marginalized Groups: The project prioritizes the most vulnerable populations overly affected by climate impacts, including women, youth, urban poor, and other marginalized groups, requiring well-targeted resource-intensive measures to ensure resilience benefits are equally gained.

Confirming Long-Term Sustainability: Strong community participation, which requires other stakeholders to act effectively, fosters a sense of ownership among all stakeholders, committing them to mainstream activities and strategies developed through the project, making the Investments durable and guaranteeing sustained benefits beyond the project's lifetime.

J. Sustainability of the project outcomes

The design of the project has been carefully crafted to ensure the long-term sustainability of its outcomes beyond the project lifecycle.

Institutional Sustainability: The project is aligned with Pakistan's national goals, policies and plans in terms of adaptation initiatives. It is expected that the project outcomes will contribute to the adaptation initiatives of other cities and provinces through knowledge transfer platforms and replication of strategies. The project interventions are designed to be implemented and maintained by existing organizations with firm procedures and policies. Most identified EEs are government departments that are primarily responsible for managing water and climate-related challenges within their jurisdiction and must maintain the facilities established by the project. Consequently, the project ensures maintenance and sustainability after activities are completed.

Social Sustainability: Community consultations in Rawalpindi and Islamabad had a significant impact on the design of the project. Once the sub-projects are implemented, communities can gain a greater understanding of climate change impacts and the necessity for adaptation through training and awareness programs, as well as learning by doing.

Equitable gaining of benefits from the project activities during project implementation and beyond, through engaging with vulnerable communities (women and girls, youth, and older persons).

Economic Sustainability: Adaptation actions are essential for mitigating economic losses due to flooding and droughts. The project actions address the economic losses at multiple levels i.e. at the community (livelihood losses and repair cost of houses), at the city level (cost of repair of damaged infrastructure, cost of relief measures etc.), and at the national level (restoration of large infrastructure such as roads)

Financial Sustainability: The project will contribute to the implementation of the National Adaptation Plan and will be included in the government's annual work plan. Furthermore, the identified Executing Entities (EEs) are government entities with specific mandates to serve the people. Therefore, accountability of the investment is guaranteed, and continuity of activities beyond the project's lifetime is assured.

Environmental Sustainability: It is of utmost importance that no component of the project (particularly built components 1 and 2) has any negative impact on the ecosystem. It is expected that consultations with experts on ecosystems and biodiversity will continue and be given high priority during the full proposal development stage to ensure that adequate tools and processes are incorporated, thereby providing environmental sustainability, particularly in components 1 and 2. Beyond the experts consulting for the project, the Environmental Protection Agency of Pakistan (EPA), the Ministry of Climate Change & Environmental Coordination (MoCC&EC), and the Punjab Provincial Environmental Protection Agency

(Punjab EPA) will be invited to participate as supporting Executing Entities (EEs). All elements, including plant species used in the restoration of wetlands, will be reviewed by these expert entities to confirm that they have no negative impact on local ecosystems.

K. Environmental and social impacts and risks

The proposed project is designed to fully comply with the Adaptation Fund's Environmental and Social Policy (ESP). As detailed in Table 9, it demonstrates complete alignment with the ESP and has been screened in accordance with UN-Habitat's Environmental and Social Safeguards policy. The Project has undergone an initial screening through stakeholder consultations and considered the lessons learned from the ongoing project "Enhance community, local and national-level urban climate change resilience to water scarcity, caused by floods and droughts in Rawalpindi and Nowshera, Pakistan" funded by the Adaptation Fund and implemented by UN-Habitat to assess possible risks under the Adaptation Fund's environmental and social principles.

Table 9 Alignment with AF's Environmental & Social Policy

Checklist of environmental and social principles	No further assessment is required for compliance	Potential impacts and risks – further assessment and management required for compliance
Compliance with the Law	X	**No Risk Identified**: Activities will be carried out in alignment with the current national and local legal frameworks on climate change, human rights, environmental protection and protection of land rights
Access and Equity		**Low Risk:** An inclusive approach will be applied to all activities during the entire project life cycle to ensure territorial and social equity in access to the project's benefits. Further assessment will be continued during full proposal development. As the project interventions are settlement wide, families in vulnerable communities will be included.
Marginalized and Vulnerable Groups		**Low Risk:** A practical and adequate participation approach will be considered to ensure that the voices of vulnerable groups such as women, youth, Indigenous peoples, and older persons are expressively included. Further assessment will be continued during full proposal development.
Human Rights	X	**No Risk Identified:** The project is aligned with national and international frameworks, including the United Nations human rights. It also aims to promote voluntary participation and access to dignified livelihoods.
Gender Equality and Women's Empowerment		**Medium risk:** A potential for women to benefit inequitably or face discrimination exists (as evidenced by secondary information). To minimize the risk, participation of women will be encouraged through a structured representation mechanism embedded in the reporting of every event sponsored by the project. Every meeting, training, or workshop will have an attendance registers and dedicated reporting tool for women engagement that enables the project to ensure adequate (at least 50%) women's participation. Cultural practices, such as gender-specific requirements, will be applied in all events.
Core Labor Rights		**No Risk Identified:** No violations of labor rights are anticipated in all project activities including construction work. National and international labor standards will be upheld throughout the entire project cycle. As the majority of EEs are government entities, the labour rights are obligatory by the constitution itself.

Indigenous Peoples		**Low Risk:** An inclusive approach will be applied in areas with the presence of Indigenous peoples to ensure their effective participation. Further assessment will be continued during full proposal development.
Involuntary Resettlement	**X**	**No Risk Identified:** The project does not anticipate any physical or economic displacement.
Protection of Natural Habitats		**Low Risk:** The project interventions are not expected to have negative impacts on sensitive ecosystems. Coordination with the responsible entities will be undertaken to ensure alignment with protection laws, regulations, and mechanisms. Therefore, further assessment will be continued during full proposal development including the areas such as nutrient overloads and possible remedial actions such as source control, Nutrient Interception mechanisms etc
Conservation of Biological Diversity		**Low Risk:** It is expected that project activities will not generate negative impacts on sensitive ecosystems. Coordination with the entities responsible will be undertaken to ensure alignment with existing plans, laws and regulations. Therefore, further assessment will be continued during full proposal development.
Climate Change	**X**	**No Risk Identified:** The project positively contributes to climate change adaptation and increased resilience. No activities that would exacerbate the drivers of climate change are included.
Pollution Prevention and Resource Efficiency		**Low Risk:** The implementation of the project interventions will include measures to reduce the generation of pollutants and emissions during construction. Therefore, further assessment will be continued during full proposal development with detailed technical design of sub-projects. Under the improvement of solid waste management systems the pollution prevention will be further addressed.
Public Health	**X**	**No Risk Identified:** No negative health impacts are anticipated in any of the project activities. In contrast, the project is to contribute to improved health outcomes through climate-resilient actions, particularly addressing water scarcity.
Physical and Cultural Heritage	**X**	**No Risk Identified:** No negative impacts are anticipated on sites of cultural or archaeological value. Further consultation will be continued during the full proposal development stage, and coordination will be established with the entities responsible for archaeological sites during project implementation.
Lands and Soil Conservation	**X**	**No Risk Identified:** The design and implementation of the NbS interventions will include soil management measures. The project positively contributes to conservation of eco-systems and increase adaptation and resilience. Soil management methods will be determined during full proposal development stage which may include earth bund formation.

PART III: IMPLEMENTATION ARRANGEMENTS

Demonstrate how the project aligns with the Results Framework of the Adaptation Fund

Project Objective(s)[1]	Project Objective Indicator(s)	Fund Outcome	Fund Outcome Indicator	Grant Amount (USD)
Overall Objective: To strengthen the adaptive capacities (SAC) of communities in Rawalpindi and Islamabad to address climate change through innovative, nature-based solutions, thereby improving the resilience of both the natural and built environments, as well as the society of Pakistan.	▪ At least 103,000 community members are benefited from nature-based solutions (43,000 direct and 60,000 indirect beneficiaries, including 50% women) ▪ Institutional capacities of public sector departments enhanced ▪ The capacity of natural assets in ecosystems increased	Outcome 3, 4, 5	Details are provided against each outcome listed below	Details of cost are provided against each outcome listed below
Project Outcome(s)	**Project Outcome Indicator(s)**	**Fund Output**	**Fund Output Indicator**	**Grant Amount (USD)**
Component 1: Increasing ecosystem resilience by enhancing urban climate resilience through the creation of adaptive infrastructure				
Outcome 1 Climate resilience of urban communities in Islamabad and Rawalpindi strengthened through adaptive infrastructure assets to withstand climate variability and change.	Underground water tanks (10) constructed with at least 0.4 million gallons of groundwater recharge facility	Outcome 4	Number of physical assets (# of point infrastructure) strengthened or constructed to withstand conditions caused by climate variability and change.	2,900,000
	Groundwater recharge wells (100) constructed in selected sites with a recharge capacity of at least 160-million-gallon water	Outcome 4	Number of physical assets (# of point infrastructure) strengthened or constructed to withstand conditions caused by climate variability and change.	730,000
	Constructed wetlands (3) established to recycle grey water for reuse	Outcome 4	Number of physical assets (# of point infrastructure) strengthened or constructed to withstand conditions caused by climate variability and change	840,000
	Rooftop water harvesting and recharge systems (100) established	Outcome 4	Number of physical assets strengthened or constructed to withstand conditions	175,000

	at the household level, benefiting at least 700 individuals (380 males, 320 females)		caused by climate variability and change.	
	At least twenty (20) impoundment reservoirs constructed to store rainwater for ecosystem support	Outcome 4	Number of physical assets strengthened or constructed to withstand conditions caused by climate variability and change	690,000
	Improved solid waste management system introduced benefitting more than 1,200 individuals (50% of whom are women)	Outcome 4	Number of physical assets strengthened or constructed to withstand conditions caused by climate variability and change.	30,000
	Established integrated rainwater harvesting, storage and recharge system with four (4) underground water storage and recharge tanks introduced	Outcome 4	Number of physical assets strengthened or constructed to withstand conditions caused by climate variability and change.	35,000
Component 2: Strengthening adaptive response capacity to enhance the ability of institutions and systems to cope with evolving climate conditions and unforeseen events				
Outcome 2 Institutional and systemic adaptive capacity in Islamabad and Rawalpindi is significantly strengthened through enhanced groundwater management, integrated decision-support systems, and multi-hazard risk assessment capabilities—enabling proactive, informed, and climate-resilient responses to evolving and unforeseen climate challenges.	Groundwater Modeling Study for Rawalpindi City conducted	Outcome 2	Number of Institutions with strengthened capacity to understand and better address climate risks and resilience	810,000
	Capacity of the physiochemical and biological sections of the WASA water quality laboratory (WWQL) enhanced	Outcome 2	Number of Institutions with strengthened capacity to understand and better address climate risks and resilience	1,150,000
	Decision Support System (DSS) for capturing real-time data for adaptive action planning at the city level developed	Outcome 3	Number of local institutions and/or communities responsible for decision-making over how adaptation solutions are defined, prioritized, designed, and/or implemented	490,000
Component 3: Strengthening social resilience and knowledge management platform				
Outcome 3 Social resilience and institutional knowledge and awareness in Islamabad	Awareness-raising campaigns (five) for sensitization of communities and key stakeholders on resilience building to climate	Outcome 3	Number of people (with disaggregated data) with strengthened awareness of climate change risks and how to better	70,000

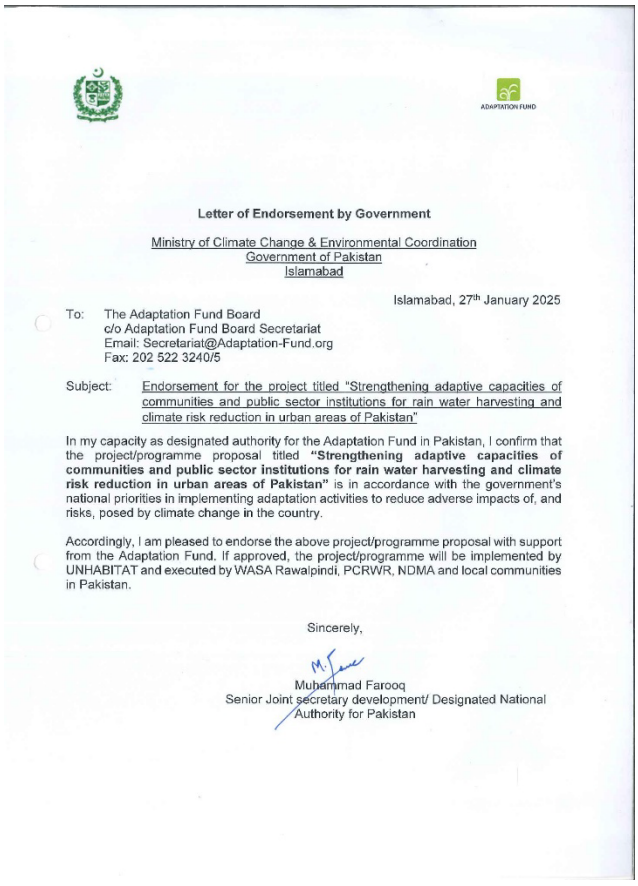
and Rawalpindi are reinforced through inclusive capacity building, strategic dissemination of climate and water management knowledge, and integration of project results into local governance—ensuring ownership of adaptation and climate risk reduction efforts.	events conducted		address them	
	At least five knowledge products on the issues related to water management, climate risks and adaptation developed	Outcome 3	Number of climate resilience knowledge products and/or tools developed and shared with stakeholders (3.2.1)	100,000
	National-level workshops (six) are conducted to disseminate knowledge, lessons learned, and to create pathways for developing future partnerships	Outcome 3	Number of people participating in activities to improve awareness of climate risks and how to address the climate change impact	130,000
	A climate-action committee within each local authority is established	Outcome 3	Number of people (disaggregated data) participating in activities to improve awareness of climate risks and how to address the climate change impact	71,014
	Capacity of community members (1,200) and staff of CDA (20) are increased in conservation and sustainably use of available water resources	Outcome 3	Number of people participating in activities to improve awareness of climate risks and how to address the climate change impact	120,000

[1] The AF utilized OECD/DAC terminology for its results framework. Project proponents may use different terminology, but the overall principle should still apply

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

A. **Record of endorsement on behalf of the government**[2] *Provide the name and position of the government official and indicate date of endorsement. If this is a regional project/programme, list the endorsing officials all the participating countries. The endorsement letter(s) should be attached as an annex to the project/programme proposal. Please attach the endorsement letter(s) with this template; add as many participating governments if a regional project/programme:*

1. Mr. Muhammad Farooq Senior Joint Secretary Climate Change & Environment Ministry of Climate Change and Environmental Coordination, Government of Pakistan LG&RD Complex, Sector G-5/2, Islamabad, Pakistan. Pakistan Tel: +92-51-9245531 **2. Mr. Mazhar Hayat** Joint Secretary (a.i) Climate Change & Environment Ministry of Climate Change and Environmental Coordination, Government of Pakistan, Islamabad	Date*: 27/01/2025* *Date 18/12/2025*



Letter of Endorsement by Government

Ministry of Climate Change & Environmental Coordination
Government of Pakistan
Islamabad

Islamabad, 27th January 2025

To: The Adaptation Fund Board
c/o Adaptation Fund Board Secretariat
Email: Secretariat@Adaptation-Fund.org
Fax: 202 522 3240/5

Subject: Endorsement for the project titled "Strengthening adaptive capacities of communities and public sector institutions for rain water harvesting and climate risk reduction in urban areas of Pakistan"

In my capacity as designated authority for the Adaptation Fund in Pakistan, I confirm that the project/programme proposal titled **"Strengthening adaptive capacities of communities and public sector institutions for rain water harvesting and climate risk reduction in urban areas of Pakistan"** 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 the country.

Accordingly, I am pleased to endorse the above project/programme proposal with support from the Adaptation Fund. If approved, the project/programme will be implemented by UNHABITAT and executed by WASA Rawalpindi, PCRWR, NDMA and local communities in Pakistan.

Sincerely,

Muhammad Farooq
Senior Joint secretary development/ Designated National Authority for Pakistan

Priority

GOVERNMENT OF PAKISTAN
MINISTRY OF CLIMATE CHANGE AND ENVIRONMENTAL COORDINATION
******

No.1(22)/2025/CC **Islamabad, the 18th December , 2025**

From
Mazhar Hayat
(O/B) Joint Secretary (CC&Env)

To
1- , The Adaptation Fund Board,

SUBJECT: ENDORSEMENT FOR THE PROJECT TITLED STRENGTHENING ADAPTIVE CAPACITIES OF COMMUNITIES AND PUBLIC SECTOR INSTITUTIONS FOR RAIN WATER HARVESTING AND CLIMATE RISK REDUCTION IN URBAN AREAS OF PAKISTAN

I am directed to refer to UN-Habitat Pakistan's letter dated 24-11-2025 (copy attached) on the subject cited above and to convey that this Ministry's endorsement letter dated 27 January 2025 (copy attached) is endorsed afresh.

Fayaz Ahmed Memon
Dy. Director (Architecture)
18 December , 2025, 03:50:59 PM

Mazhar Hayat
(O/B) Joint Secretary (CC&Env)
Ph:051-9245529

Copy for information to:-

1- Additional Secretary, MOCC, Islamabad
2- Country Program Manager, UN HABITAT,

Mazhar Hayat
(O/B) Joint Secretary (CC&Env)
Ph:051-9245529

B. **Implementing Entity Certification: Provide** *the name and signature of the Implementing Entity Coordinator and the date of signature. Provide also the project/programme contact person's name, telephone number and email address.*

<table>
<tr><td colspan="2">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 (Pakistan's National Climate Change Strategy, National Adaptation Plan, SDG11) 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.</td></tr>
<tr><td>Name & Signature
 
Rafael Tuts
Director of the Global Solutions Division, UN-Habitat
Tel. and email: +254207623726; raf.tuts@un.org</td><td>Date: 03/23/2026</td></tr>
<tr><td>Project Contact Person: Odicea Angelo Barrios,
Human Settlements Officer, ROAP UN-Habitat</td><td>Tel. and Email: +81927247121
odicea.angelobarrios1@un.org</td></tr>
</table>

SENIOR JOINT SECRETARY (CC)

D.O No.1(22)/2025/CC (Pakistan SAC Project)
Government of Pakistan
Ministry of Climate Change
& Environmental Coordination
Islamabad
****

Islamabad, the 2nd April 2026

Adaptation Fund Board Secretariat
A1818 H Street NW
MNS N7-700
Washington, D.C., 20433
United States of America
Email:
secretariat@adapttion-fund.org

Subject: **ENDORSEMENT FOR THE PROJECT TITLED STRENGTHENING ADAPTIVE CAPACITIES OF COMMUNITIES AND PUBLIC SECTOR INSTITUTIONS FOR RAIN WATER HARVESTING AND CLIMATE RISK REDUCTION IN URBAN AREAS OF PAKISTAN**

Reference this Ministry's letters dated 27th January 2025 and 18th December, 2025, in my capacity as designated authority for the Adaptation Fund in Pakistan, I confirm that the project/programme proposal titled *"Strengthening adaptive capacities of communities and public sector institutions for rain water harvesting and climate risk reduction in urban areas of Pakistan"* 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 the country.

Accordingly, I am pleased to endorse the above project/programme proposal with support from the Adaptation Fund. If approved, the project/programme will be implemented by UNHABITAT and executed by Water and Sanitation Agency (WASA) Rawalpindi, Pakistan Council of Research in Water Resources (PCRWR), National Disaster Management Authority (NDMA) and local communities in Pakistan.

(Muhammad Ijaz Ghani)
Primary Contact Point AF

Copy for information to:

1) PS to Secretary, Ministry of Climate Change & Environmental Coordination, Islamabad.
2) APS to Additional Secretary-I, Ministry of Climate Change & Environmental Coordination, Islamabad
3) PS to Joint Secretary (CF), Ministry of Climate Change & Environmental Coordination, Islamabad.
4) Mr. Jawed Ali Khan, Country Programme Manager, UN Habitat, Pakistan.

ANNEX 1

ADAPTATION FUND

Revised PFG Submission Form[41] (additions in red)

Project Formulation Grant (PFG)

Submission Date: 23 March 2026

Adaptation Fund Project ID:
Country/ies: Pakistan
Title of Project/Programme: Strengthening Adaptive Capacities (SAC) of the communities and public sector institutions for rainwater harvesting and climate risk reduction in urban areas of Pakistan.
Type of IE (NIE/RIE/MIE): MIE
Implementing Entity: United Nations Human Settlement Programme, UN Habitat
Executing Entity/ies: Water and Sanitation Agency (WASA), Pakistan Council of Research in Water Resources (PCRWR), National Disaster Management Authority (NDMA), Capital Development Authority (CDA) and the Community Based Organizations (CBOs) in Pakistan

A. Project Preparation Timeframe

Start date of PFG	1st November 2026
Completion date of PFG	31st March 2027

B. Proposed Project Preparation Activities ($)

The US$ 150,000 Project Formulation Grant (PFG) will fund the development of a comprehensive, single-country proposal. This process will include robust stakeholder engagement, feasibility studies, environmental and social safeguards (ESS), gender assessments, and technical analyses. The grant will cover key preparatory activities, including community consultations with local stakeholders, translation of essential documents, travel and logistical support, and the engagement of professional services to assist in proposal development. Additionally, the PFG will support a project consolidation workshop—organized in collaboration with the Ministry of Climate Change and Environmental Conservation, as well as the Islamabad and Rawalpindi authorities—to finalize the proposal.

List of Proposed Project Preparation Activities	Output of the PFG Activities	US$ Amount	Budget note[42]

[41] As presented in AFB/PPRC.33/40 Annex 1.
[42] The proposal should include a detailed budget with budget notes indicating the break- down of costs at the activity level. It should also include a budget on the Implementing Entity management fee use.

1. Stakeholder consultations (community, city, and national level meetings, working sessions, and workshops)	Project outcomes and outputs are validated and finalized through consultations with a wider range of stakeholders, including community members.	10,500	**1.1** 6 Consultation meeting in two cities with communities with 120 participants **1.2** 5 Consultation workshops in two cities with 5 city/provincial authorities with total 100 participants **1.3** 2 Expert group meetings with total 50 participants **1.4** Meeting Refreshments (US$25*120 participants*1 days = US$3,000) **1.5** Documentation and reporting (US$2,000) **1.6** Meeting rooms and facilities (US$500* 11 days = US$ 5,500)
2. Identified sub-project interventions feasibility assessment (final estimates based on field survey, design and drawings)	Identified sub-projects finalized (design, scale, location and approach)	25,020	**2.1** Field Consultation Meetings (6 in two cities = US$ 12,000) **2.2** DSA for field surveys and studies (US$804* 5 technical officers = US$ 4,020) **2.3** Survey maps and documentation (US$ 6,000) **2.4** Expert group meetings (US$60*50 participants = US$ 3,000)
3. Gender, Environmental and Social risk analyses in two cities and Formulation of Environmental and Social Management Plan and Gender Action	Gender, environmental and social risk analyses finalized, comprehensive reports produced and ESMP and GAP formulated	8,100	**3.1** Field consultations in two cities (US$ 60 *60 participants = US$3,600) **3.2** Gender specialist inputs (US$150*x 30 days = US$4,500)

Plan through consultations			
4. Detailed analyses including policy, strategies and regulations in support of the proposed sub-projects and cost effectiveness	Report generated to ensure project activities are in line with policies, strategies, and regulations of the country, and a cost-effective analysis is conducted with possible alternative solutions against proposed sub-projects.	11,200	**4.1** Workshops (2xUS $ 120* 60 participants = US$7,200) **4.2** Documentation US$4,000
5. Translations – project-related documents and interpreters for meetings	Effective communication is ensured, particularly with local communities	2,320	**5.1** Interpreters (US$120 *11 days = US$1,320) **5.2** Translation cost of documents (US$100x10 =US$1,000)
6. Development of the full proposal	Full proposal formulated	28,600	**6.1** Hiring professional services (US$ 280*70 days = US$19,600) **6.2** Hiring National Consultant (US$ 150 *60 days = US$9,000)
7. Travel costs for experts for specific consultations and discussions with stakeholders and other interested groups, and local participation as needed in project design.	Adequate expert inputs are acquired in the project formulation process through well-structured information, expert insights, and identifying potential solutions	13,060	**7.1** Local travel cost US$13,060
8. Project consolidation and validation workshop among city-wide and national stakeholders and project beneficiaries	Full proposal finalized and validated	11,000	**8.1** Workshop costs (US$ 60*100 participants = US$6,000) **8.2** Cost of Venue and facilities (US$ 5,000)
Total Project/Programme Cost US$		109,800	

Project/Programme Cycle Management Fee charged by the Implementing Entity (Maximum of 8.5%) US$		10,200	
Total Project Formulation Grant US$		**120,000**	

Please describe below each of the PFG activities and provide justifications for their need and for the amount of funding required:

1. **Stakeholder consultations**
   To support the formulation of the full proposal, the concept note will be reviewed and refined through a series of stakeholder workshops. These workshops are essential for validating the project design and ensuring alignment with local needs and conditions. A diverse group of participants, including community members, local authorities, NGOs, technical experts, and other relevant stakeholders, will be engaged. Activities will include presenting the initial project concept, discussing objectives, methodologies, expected outcomes, and implementation strategies, as well as gathering feedback. This participatory process leverages local knowledge, addresses real vulnerabilities, and fosters community ownership. Insights from these consultations will be used to strengthen and tailor the proposal, enhancing its relevance, feasibility, and potential for successful adaptation outcomes.

2. **Identified sub-project interventions feasibility assessment**
   Through comprehensive review and focus group consultations with implementing partners, sub-level and field interventions will be further developed and clarified during the preparation of the detailed project proposal. A feasibility assessment, including detailed cost analysis for each activity, will be conducted and finalized in alignment with prevailing market conditions.

3. **Gender and ESS Risk Analysis and Planning**
   During the preparation of the project proposal, comprehensive assessments of gender, environmental, and social risks will be undertaken. These risks will be identified through active engagement and thorough consultations with beneficiaries and potential partners. Based on the findings, a detailed risk mitigation plan will be developed to address and manage the identified concerns.

4. **Policy and Regulatory Analysis for Sub-Project Viability**
   Relevant policies and regulatory frameworks will be reviewed to ensure alignment with the proposed project interventions. Consultations and knowledge-sharing sessions will be organized to facilitate stakeholder engagement. Any gaps identified during this process will be documented, and appropriate preventive measures will be formulated to mitigate potential policy-related risks and challenges.

5. **Translations**
   Since most stakeholder consultations will be conducted in Urdu, and existing government and project-related documents require translation into English, a portion of the budget will be allocated to interpretation and translation services.

6. **Development of the full proposal**
   Upon approval of the Concept Note, one international and one national professional experts will be engaged to lead the development of the full project proposal. This process will include extensive

consultations involving key stakeholders, government partners, and beneficiary communities. Based on these inputs, the detailed project proposal will be drafted and finalized by the technical experts. Once completed, the draft will be submitted to the Adaptation Fund Board for review, feedback, and final approval.

7. **Travel costs**
   Travel of the consultants and field staff will be required for consultation with the key stakeholders, partners and communities in the fields located within the project sites. For this purpose, estimated travel costs are allocated in the budget table above.

8. **Project consolidation and validation workshop**
   Once the Concept Note is approved by the Adaptation Fund Board, an orientation and project validation workshop will be conducted with all stakeholders involved in the project. This includes those expected to participate in project implementation, facilitation, and the provision of technical assistance. The workshop will serve to align understanding, confirm roles, confirm roles, and ensure shared commitment to the project's objectives.

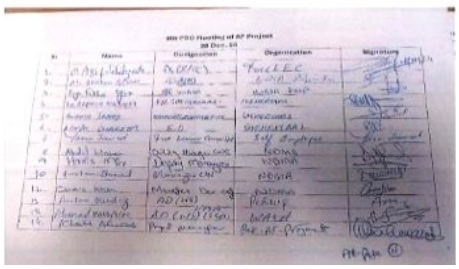
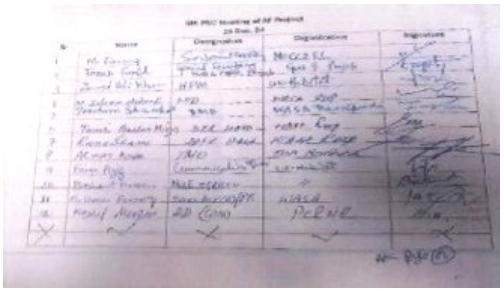
Implementing Entity

This request has been prepared in accordance with the Adaptation Fund Board's procedures and meets the Adaptation Fund's criteria for project identification and formulation.

Implementing Entity Coordinator, IE Name	Signature	Date (Month, day, year)	Project Contact Person	Telephone	Email Address
Raft Tuts		03/23/2026	**Odicea Angelo Barrios**	(81-92) 724-7121	odicea.angelobarrios1@un.org

ANNEX 2

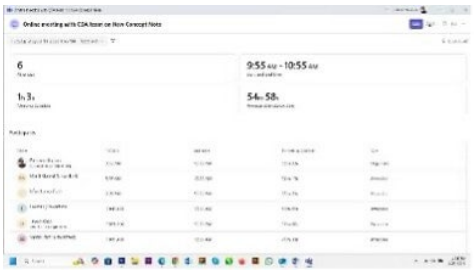
Technical consultation process and institutional engagement

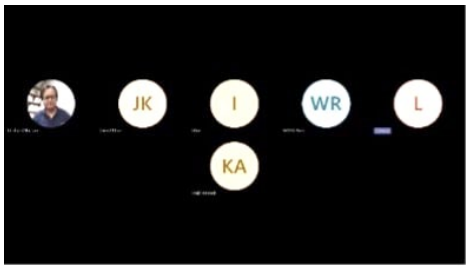
Institution	Ministry of Climate Change and Environmental Coordination (MoCC&EC)
Date	28 December 2024
Participants	Meeting chair: Farooq Ahmed, Senior Joint Secretary, (MoCC&EC), and the other participants' list is given below.
	Annex-2: Attendance of the meeting participants:  
Key points	**Decisions of 6th PSC Meeting:** After detailed discussion on the project matters, following decisions were taken: 1. UNHABITAT Pakistan team will consolidate all 3 concept papers received from the Implementing Partners (NDMA, WASA and the PCRWR) and also include a component for Karachi from the previous proposal submitted to ROAP. The consolidated concept paper will be submitted to MoCC&EC by 15th January 2025 for endorsement by the DNA. 2. WASA Rawalpindi will complete remaining Rain Water Harvesting Units before June 2025. 3. NDMA will expedite the pace of on-going activities by next 3 months. The PSC considering the request of NDMA team, approved 3 months no-cost extension of the LOU from February to 30th April 2025. 4. MoCC&EC will re-submit the PC-1 to Planning and Development Department (P&DD) during first week of 2025. Soon after approval of PC-1 the team will open the project bank account. The MoCC&EC through Designated National Authority (DNA) of the Adaptation Fund in Pakistan will also endorse the new project proposal to be submitted to AFB for approval. 5. TMA Nowshera will follow up and coordinate with P&D department KP to obtain approval of the draft revised LOU. As soon approval is obtained, the LOU documents will be submitted to UNHABITAT Islamabad office for onward submission to ROAP. 6. Shehersaaz will expedite progress under current AOC and complete all the activities within given timeframe. 7. All Implementing Partners will share the real data established through AF project with UNHABITAT. The IT cum M&E officer of the country office will consolidate all data and information under a single date portal link to harmonize the data validity and to avoid future duplications. On completion of every LOU and AOC of I.P, the data and its relevant links will be submitted to UNHABITAT by all AF project partners. 8. It was decided that NDMA will lead to finalize the draft guidelines on GIS standards for Pakistan being reviewed by UNHABITAT in consultation with all relevant stakeholders. Project Manager AF from UNHABITAT will share the draft of GIS guidelines through email addressed to NDMA with CC to all implementing partners for their input and feedback. 9. It was decided that next PSC meeting will be conducted during last week of February 2025. ***Meeting ended with vote of thanks and appreciation by the participants to each other. *** Minutes approved by the PSC Chair: Page 2 of 4
Evidence	 

Institution	Capital Development Authority (CDA)
Date	31 July 2025
Participants	Mr. Sardar Khan Zimri (Director General Water Management, CDA), Director Mr. Javed Zahri and two other staff members participated. Ms Almas Shakoor and Mr. Sharafat Uddin (Shehersaaz). Mr. Ehtisham (Assistant Director), PCRWR. Mr. Faiz ul Sibtain (PEC). Mr. Irfan Virk (Deputy Director) PMD. Mr. Khalil Ahmed and Mr. Basharat Hussain, UN-Habitat.

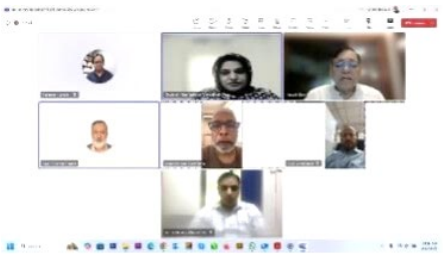
Key points	**SITE-01, Rumli Village and Surroundings:** Field consultations in the Rumli Village by UN-Habitat and CDA with local people. ▪ Sufficient amounts of clean rainwater flow through the nallahs. The villagers reported that Nullah has water for nearly six months. During the peak monsoon season, water levels are at their highest, then gradually decrease until the end of the year. ▪ GPS location of the village: N 33.77371 E 073.13409 ▪ Point 02: At Bari Imam Bridge Viewpoint, water coming from Rumli Village was observed to be at the same level as in point-01. ▪ GPS location of the village: N 33.74435 E 073.11626 ▪ Potential: A water reservoir could be constructed in Rumli Village to store rainwater during the peak monsoon, providing water throughout the six months for various uses. **SITE-02: Trail-5 Area Visit:** ▪ Point 01, Nullah visit: Sufficient water was flowing in Nullah. The community reported that almost five months' worth of rainwater has accumulated in the Nullah. The volume remains high during the monsoon season but gradually decreases in the following months. ▪ GPS location of the area: N 33.74649 E 073.08586 ▪ A water reservoir could be built, and stored water can be transferred to the existing nearby 7MGR water reservoir of CDA to conserve more water. ▪ Point 02: The existing 7MGR project of the CDA, which is half a kilometer from Point 01 above. ▪ GPS location of Point 02: N 33.74261 E 073.08592 **SITE -03: Visit of Ayub park green area opposite Atta Turk Road:** ▪ Location for rain garden and construction of a small underground reservoir to store runoff rainwater for public use, excluding drinking. ▪ GPS coordinates of the point: N 33.73455 E 073.08430 **SITE-04: Visit of National Library of Pakistan:** ▪ Harvest runoff during monsoon and other rains when they occur. The nearby road area faces flooding every year during rain due to runoff water that drains directly onto the road. The area has great potential for establishing a Rain Garden. It is an NbS (Nature-based Solution) to reduce urban flooding and store water in the pond built nearby, next to the National Library of Pakistan. GPS coordinates of the site: N 33.71334, E 073.06371. **SITE-05: Visit of F-9 Park Area:** ▪ Point-01: Improve the natural wetland: A natural wetland has already been established, but its outlet needs enhancement. ▪ GPS location: N 33.71334 E 073.06371 ▪ Point-02: Improve surface runoff: Four dug wells measuring 15x30 are needed to harvest more rainwater and facilitate ground recharge. ▪ GPS location: N 33.71334 E 073.06371 **SITE-05: Establishment of Ground Recharge Wells on F-8 Green belt site:** The entire green belt along the double road and 9th Avenue has strong potential for establishing Ground Recharge Wells and dug wells. At the end of the green area, there is also potential to create a Rain Garden.
Evidence	 

Institution	**Capital Development Authority (CDA)**
Date	19 August 2025
Participants	Mr. Jawed Ali Khan (Habitat Programme Manager), UN-Habitat Pakistan Mr. Khalil Ahmed, (Project Manager), UN-Habitat Pakistan Mr. Basharat Hussain (M&E Officer), UN-Habitat Pakistan Mr. Sardar Khan Zimri, (Director General Water Management, CDA, Islamabad Mr. Javed Zahri, Director, Sanitation and Drainage Mr. Laxman Perera, (Senior Advisor), UN-Habitat, Sri Lanka Mr. Sahibzada Irfanullah (National Consultant), Islamabad
Key points	▪ Verification of locations for storage tanks and treatment plants.

	▪ Sites for NbS for the construction of rain gardens are further detailed. ▪ Identification of green belts for groundwater recharge and wetlands construction. ▪ Criteria for community consultation at Rumli village to identify community needs, ensuring male and female inclusion. ▪ Data on beneficiaries' households and key stakeholders of the project to be incorporated into the concept note.	
Evidence		

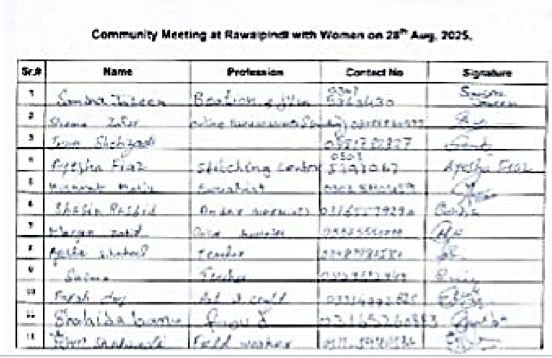
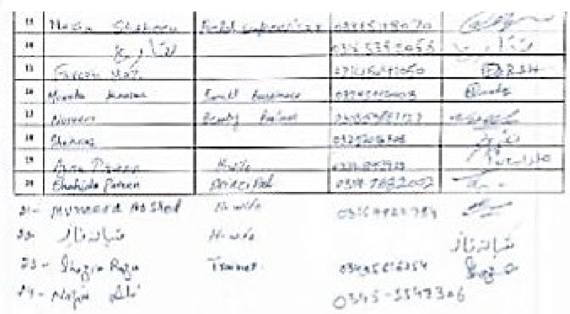
Institution	**Water and Sanitation Agency (WASA), Rawalpindi**	
Date	19 August 2025	
Participants	Mr. Jawed Ali Khan (Habitat Programme Manager), UN-Habitat Pakistan Mr. Khalil Ahmed, (Project Manager), UN-Habitat Pakistan Mr. Basharat Hussain (M&E Officer), UN-Habitat Pakistan Mr. Laxman Perera, (Senior Advisor), UN-Habitat, Sri Lanka Mr. Sahibzada Irfanullah (National Consultant), Islamabad Mr. Saleem Ashraf, (Managing Director), Water and Sanitation Agency (WASA), Rawalpindi Mr. Saadoon Basra, Director, WASA, Rawalpindi	
Key points	▪ Details of studies, methodology, and process ▪ Calculation of the storage water volume for designs ▪ Maps showing the area's location accuracy ▪ Cost-benefit analysis considering all alternative actions	
Evidence		

Institution	**Pakistan Council of Research in Water Resources (PCRWR), Islamabad**
Date	21 August 2025
Participants	Mr. Jawed Ali Khan (Habitat Programme Manager), UN-Habitat Pakistan Mr. Khalil Ahmed, (Project Manager), UN-Habitat Pakistan Mr. Basharat Hussain (M&E Officer), UN-Habitat Pakistan Mr. Laxman Perera, (Senior Advisor), UN-Habitat, Sri Lanka Mr. Sahibzada Irfanullah (National Consultant), Islamabad Dr. Hifza Rasheed, DG, PCRWR Mr. Arslan Mumtaz, Deputy Director, Water Management
Key points	▪ Design process for groundwater recharge systems in selected locations ▪ Creation of green ponds and their impact, sustainability, and integration into urban plans ▪ Developing SOPs for operations and maintenance, training stakeholders, especially the community and proposed Climate Action Committees ▪ Discussing how to shift public perception on climate-adaptive actions and community-level climate/disaster preparedness. In this regard, it is proposed to include a perception study in the proposal.

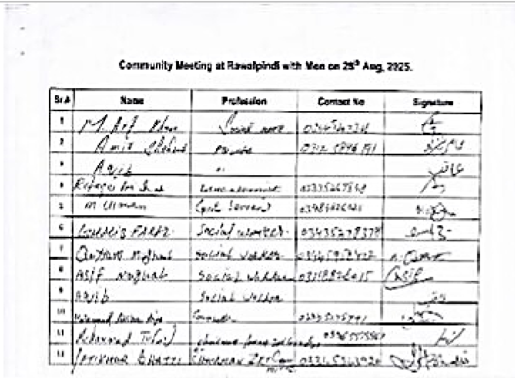
Evidence		

Institution	**National Disaster Management Authority (NDMA)**
Date	21 August 2025
Participants	Mr. Basharat Hussain (M&E Officer), UN-Habitat Pakistan Mr. Laxman Perera, (Senior Advisor), UN-Habitat, Sri Lanka Mr. Sahibzada Irfanullah (National Consultant), Islamabad Mr. Sheikh Rafay, DD NDMA Mr. Haris Mir, DD NDMA
Key points	▪ Focused on multi-hazard vulnerability assessments based on NDMA expertise and experience linking the National Disaster Management Plan (NDMP) and its Implementation Roadmap 2016-2030 ▪ Process of formulating Risk Atlas, identifying vulnerability and exposure matrix at the micro level, and data validation process, including community participation. ▪ Vulnerability Assessment to cover both natural & climate change-related impacts on physical and social dimensions of the study area ▪ Establishment of an impact-based National Common Operating Picture (NCOP) of Pakistan through the development of a repository for synchronization of trans-provincial studies and analysis. ▪ Knowledge sharing and coordination with other actors working on climate resilience ▪ Sustainability of interventions, mainly NbS implementation and mainstreaming.
Evidence	 

Institution	**Community Consultation Meeting (Female group) Rawalpindi**
Date	28 August 2025
Participants	The meeting was chaired by Basharat Hussain, M&E Officer, (UN-Habitat) and the list of other community participants is given below. Ms. Shahida Parveen, Principal, 0314-7882002 Ms. Musarat Malik, Socialist, 03028110459

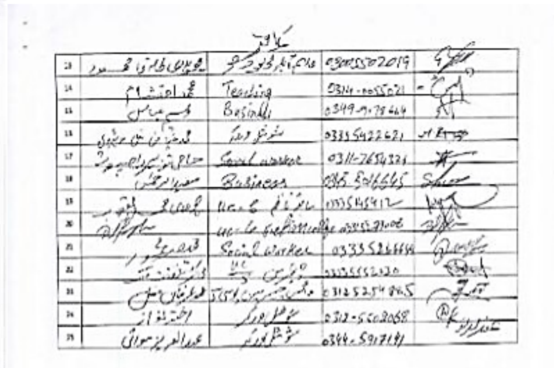
	 Community Meeting at Rawalpindi with Women on 28th Aug, 2025. Sr.# | Name | Profession | Contact No | Signature	
Key points	▪ Promote affordable solutions for needy families. ▪ Community preferred large-scale rainwater storage tanks to maximize ▪ benefits against the installation of HH level RWHU and not to leave out tenants ▪ Contamination of water due to floods is a major issue. Filtration system to use rainwater for drinking purposes. ▪ Proper solid waste management systems need to be established to keep a clean environment and reduce the risk of health issues. ▪ Attending schools during floods was raised. Increased access is needed. ▪ Poor families are unable to buy water tanks for domestic use. ▪ Educating households on simple maintenance to ensure sustainability ▪ Provide rainwater tanks to needy households in the targeted area to ensure equitable access to safe water. ▪ For families unable to own tanks, shared or rented rainwater tanks should be installed on community facilities (schools, mosques, halls). ▪ Initiate tree corridors in the community to combat climate change, enhance greenery, and improve air quality. ▪ Develop joint programs with communities for rainwater harvesting. ▪ Provide technical support and monitoring for safety and efficiency. ▪ Enforce minimum but supportive rules for mandatory harvesting units in new constructions while keeping flexibility for low-income areas. ▪ Encourage water recycling and reuse at household and commercial levels. ▪ Establish harvesting reservoirs in neighborhoods for irrigation and washing ▪ Train community water committees to manage tanks and promote equitable access.	
Evidence		

Institution	**Community Consultation Meeting (Male group) Rawalpindi**
Date	28 August 2025
Participants	The meeting was chaired by Basharat Hussain, M&E Officer, (UN-Habitat) and the other community participants list is given below. Mr. Shahfqat Mahmood, Ex Nazim UC-5, 3335108095 Mr. Muhammad Yaqoob, Ex Nazim UC-6, 03335145412 Mr.Irfan Azeem, Ex Vice Chairman, 03455254885 Mr.Akhtar Sab, Ex Councilor, 3335275791



Community Meeting at Rawalpindi with Men on 28th Aug, 2025.

Sr.#	Name	Profession	Contact No	Signature
1	M. Asif Khan	Social worker	[illegible]	[illegible]
2	[illegible]	Private	[illegible]	[illegible]
3	[illegible]	"		[illegible]
4	[illegible]	[illegible]	[illegible]	[illegible]
5	M Usman	Govt Servant	[illegible]	[illegible]
6	[illegible]	Social worker	[illegible]	[illegible]
7	[illegible]	Social worker	[illegible]	[illegible]
8	Asif Mughal	Social worker	[illegible]	Asif
9	[illegible]	Social worker		[illegible]
10	[illegible]	[illegible]	[illegible]	[illegible]
11	[illegible]	[illegible]	[illegible]	[illegible]
12	[illegible]	[illegible]	[illegible]	[illegible]



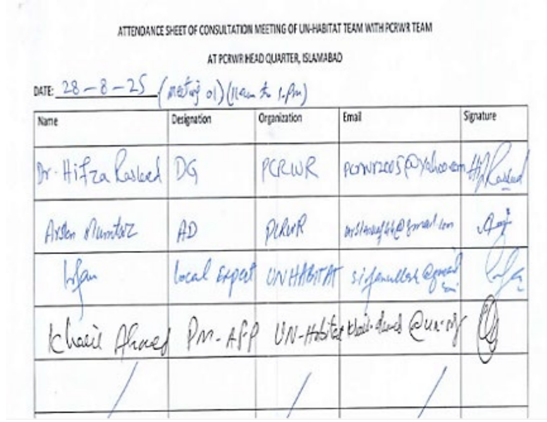
Key points

- Water issues are key. Rainwater storage tanks to benefit maximum families.
- Major issue is clean drinking water.
- There is only one tube well in the UC area, which is not enough to fulfill the community's needs.
- Health, hygiene, and sanitation-related interventions are also lacking in the UC. Therefore, interventions in this sector are also desired.
- Blockage of drainage systems leading to flooding and other health-related issues. Required efficient Solid waste management.
- Emphasize cleaning of Nullah Lai, and other drainage lines, which are causing blockage and overflowing the drainage system. Bund construction on both sides of Nullah Lai was expressed
- Runoff water to be collected through rainwater tanks.
- Reduce the risk of flooding. Muhallah Kashmirian is most valuable for providing safe water and supporting the community.
- Enhancing greenery and improving air quality.
- Develop joint programs with communities for rainwater harvesting.
- Cleaning of Nullah Lai and the attached drainage system
- Proper solid waste management system
- Provide technical support and monitoring for safety and efficiency.
- Regulatory mechanism for mandatory harvesting units in new constructions while keeping flexibility for low-income areas.
- Encourage water recycling and reuse at household and commercial levels.
- Establish collective harvesting reservoirs in neighborhoods for irrigation and washing purposes.
- Training to manage tanks and promote equitable access.
- Promote cultural and religious values of conserving water to strengthen community ownership.

Evidence

Institution	**Meeting with PCRWR Team, Islamabad**
Date	28 August 2025 - 10:30 am to 1:00 pm

Participants



ATTENDANCE SHEET OF CONSULTATION MEETING OF UN-HABITAT TEAM WITH PCRWR TEAM

AT PCRWR HEAD QUARTER, ISLAMABAD

DATE: 28-8-25 (meeting 01) (11am to 1 Pm)

Name	Designation	Organization	Email	Signature
Dr. Hifza Rasheed	DG	PCRWR	pcrwr2005@yahoo.com	[illegible]
Arslan Mumtaz	AD	PCRWR	[illegible]@gmail.com	[illegible]
Irfan	local expert	UN HABITAT	sifanullah@gmail.com	[illegible]
Khalil Ahmed	Pm-AFP	UN-Habitat	khalil.ahmed@un.org	[illegible]
/		/	/	

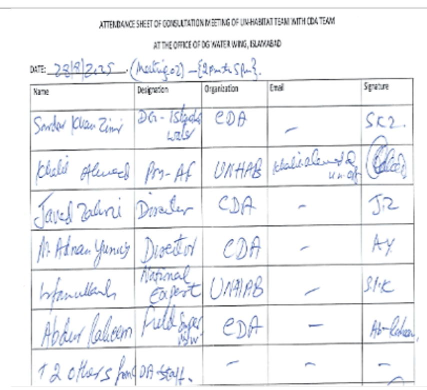
Key points

- Climate-resilient resilient responsive capacity improvement is needed
- How real-time rainfall threshold forecasting in urban areas to be done.
- Design and cost estimates of the proposed interventions and comparison with the designs and costs of previous projects undertaken so far.
- Improving decision-making capabilities for urban planners and disaster management authorities.
- Model interventions to enhance the urban threshold towards urban flooding

Evidence

Institution	**Meeting with CDA team at the office of DG-Water**
Date	28 August 2025 - 2-Pm to 4-Pm

Participants



ATTENDANCE SHEET OF CONSULTATION MEETING OF UN-HABITAT TEAM WITH CDA TEAM

AT THE OFFICE OF DG WATER WING, ISLAMABAD

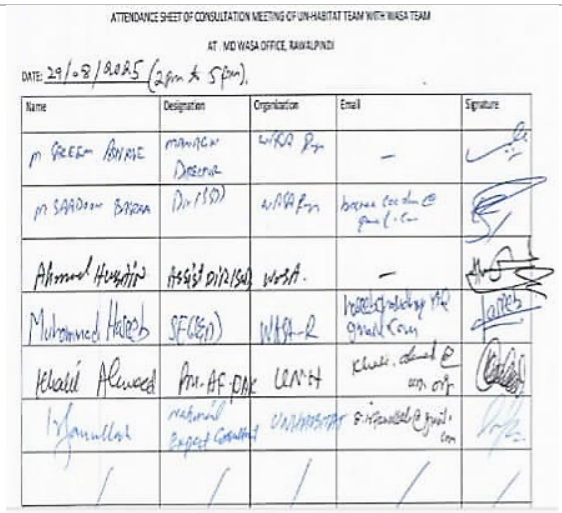
DATE: 28/8/2025 (meeting 02) – {2pm to 5pm}.

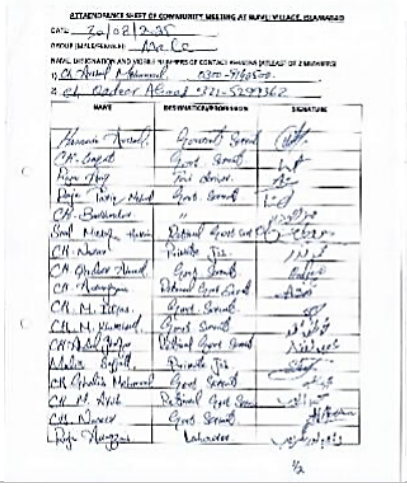
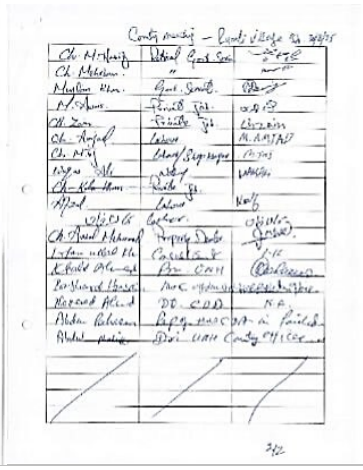
Name	Designation	Organization	Email	Signature
Sardar Khan Zimri	DG - Islamabad Water	CDA	–	SKZ.
Khalil Ahmed	Pm-AF	UNHAB	khalil.ahmed@un.org	[illegible]
Javed Zahri	Director	CDA	–	JZ
M. Adnan Younis	Director	CDA	–	AY
Irfanullah	National Expert	UNHAB	–	SIK
Abdur Raheem	Field Super. WW	CDA	–	Ab-Raheem
12 others from CDA staff.		–	–	–

Key points

- Contamination of drinking water sources with heavy metals and fecal coliform bacteria is a major concern, linked to sewage leakage, industrial effluents, contaminated runoff, and improper waste disposal.
- Groundwater Depletion: Over-extraction of groundwater for domestic and farming use, coupled with insufficient recharge, is causing a decline in groundwater levels, impacting the sustainability of water resources.
- Inadequate Water Storage: The city relies on Simly and Khanpur dams as major water sources, but inadequate storage capacity and declining water levels in these reservoirs exacerbate shortages during the dry periods.
- Climate Change Impacts: Changes in rainfall patterns, including decreased rainfall and increased frequency of droughts, are reducing water availability, while also improving the water demand.

	▪ Inefficient Infrastructure: Leaking pipes, outdated water treatment plants, and an inefficient irrigation system contribute to water loss and wastage, further straining the city's water resources.
Evidence	 

Institution	**Meeting with WASA-Rawalpindi held in the office of MD-WASA**
Date	29 August 2025 - 2-Pm to 5-Pm
Participants	 ATTENDANCE SHEET OF CONSULTATION MEETING OF UN-HABITAT TEAM WITH WASA TEAM AT MD WASA OFFICE, RAWALPINDI DATE: 29/08/2025 (2pm & 5pm). Name / Designation / Organization / Email / Signature
Key points	▪ Short duration of heavy rain, most of the rain falling on the surface tends to flow away rapidly leaving very little for recharge of groundwater. ▪ Obtaining more rainfall data ▪ Solutions to the city water crisis are rainwater harvesting - capturing the runoff. Motivation for rainwater harvesting ▪ Serious flood events occur in particular: the mainstream between GunjMandi Bridge and Railway bridge, and the tributaries of Arya Muhalla, Dhoke Rata, Nullah Dhoke Charaghdin. ▪ Potential solution- Metro Bus Transit System for rainwater harvesting system ▪ WASA Team will also share the location map of the planned activities proposed in the concept note.
Evidence	 

Institution	Community meeting (Male group) Rumli Village, Islamabad
Date	30 August 2025 – 5:00 Pm to 7:00 Pm
Participants	 
Key points	▪ Drinking water issues during droughts and floods are emerging as the community still faces the shortage of safe drinking water in the area. Constriction of Safe Drinking Water facilities in all 5 villages of Rumli is required. ▪ Road crossing is difficult during heavy rains in the area. School girl students and women and older persons especially suffer during monsoon season. Construction of the cause ways and piping with an elevated road is planned and desired. Construction of a foot bridge is also required for crossing the stream by school students, women, and older persons of the village. ▪ In the only primary school in Rumli, there is no water facility available. ▪ Female Education is also a big challenge for the villagers. And most of the students, especially females, discontinue their education after primary education. Continuing further education away from the village is too costly and difficult for most of the students. A Dispensary and First AID Post is to be established. ▪ Names of 5 small villages of Rumi is as: (1) Rumli Centre (2) Kamalari (3) Dhok Meetha (4) Dhok Phulwar (5) Dhok Barakhand. ▪ Villages Kamalari and Dhok Barakhand are across the river and rain stream. Therefore, construction of 2 bridges is required to connect Kamalari with Dhok Meetha, and Villages Barakhand to be associated with Phulwar through construction of small foot bridges. ▪ Waste Management facilities from the relevant authorities are not yet in place. The community is maintaining cleanliness on its own arrangements. But with the increasing flow of local visitors and tourists from the city center, there is a dire need for the establishment of proper waste management mechanisms through conducting a feasibility survey and developing a detailed business plan for immediate implementation. ▪ Health, hygiene and sanitation-related interventions are also lacking in the village. Therefore, the initiation of related interventions in this sector is also desired. ▪ Local transportation facilities, especially for women, are 3 km away from the village. And it also involves high costs to avail transport services for education and especially during emergencies. ▪ Community is organized under the only Union Council set of the local administration headed by the Chairmen of the Union Council. A dire need for the establishment of a community-based social welfare organization exists for local-level planning, implementation, and maintenance of the community-related infrastructures. ▪ Participatory community planning is lacking at the village level. To address the emerging and accelerated climate-induced challenges; the development of a Local Level Adaptation and Capacity Building Plan and its implementation is vital to maintain and sustain the ecosystem and biodiversity of the village. ▪ To maintain and future progress of the village communities of Rumli, linkages and partnerships of the local communities with social sector institutions such as the education and health department, the women development and culture department, and the tourism department are needed on a priority basis. ▪ The community members present in the meeting showed their interest in cooperating with the development sector organizations and government departments working in the city center to address the above-listed challenges faced by the Rumli Village community.

Evidence		

Institution	**Community meeting (Female group) Rumli Village, Islamabad**
Date	30 August 2025 – 5:00-Pm to 7:00-Pm
Participants	
Key points	After discussion of the female team of the UNHABITAT with village women group following areas were identified to address women specific challenges in the village: ▪ Provision of safe drinking water facilities is highly desired. ▪ Transport mechanism from the village to the nearby town of Bari Imam and back to the village, especially for women, girls, and students, is desired. ▪ Provision of a girls' middle school with qualified teachers is demanded. ▪ Availability of health facilities with technical and qualified staff is required. ▪ Promotion of digital skills for youth and girls, and skill development programmes for adult women of the village on vocational products, is highly desirable and demanded.
Evidence