



Government of Sindh
Sindh Peoples Housing for Flood Affectees
(SPHF)



REQUEST FOR EXPRESSIONS OF INTEREST

SELECTION OF CONSULTANTS

Name of country: Islamic Republic of Pakistan
Project: Sindh Flood Emergency Housing Reconstruction Project (SFEHRP)
Project No.: 57323-001
Assignment Title: Climate Resilient WASH Engineering Design and Supervision Consultant
Activity No: PK- SPHF/WASH/CS-01
Date: 25th April 2024

1. The Government of Sindh intends to apply for financing from the Asian Development Bank (ADB) toward the cost of the **Sindh Flood Emergency Housing Reconstruction Project (SFEHRP)** and intends to apply part of the proceeds for consulting services.
2. The consulting services (“the Services”) include Design and Supervision of Climate resilient community infrastructure such as WASH systems in rural and small settlements. The Consultants will be required to provide a comprehensive feasibility report capturing the various scenarios and technological options, with cost estimates and designs of technological options (including innovative technologies) of climate resilient WASH related interventions for at least 50 villages/settlements with different prototypes. Basic essential social, economic, financial, and environmental assessments will be part of the feasibility study and will also be integrated into the design assessment procedures. The consultant will also be expected to provide support in the implementation of above designs through Top Supervision.
3. The assignment envisions a total of 1,998 person-months including 468 person-months for the National Key Experts and 1,530 person-months for National Non-Key experts. The duration of the assignment will be 36 months, and services will be required in 24 prioritized flood affected districts of Sindh province affect by the 2022 floods. The assignment is expected to start in August 2024.
4. The detailed Terms of Reference (TOR) for the assignment can be found on the website of SPHF at www.sphf.gos.pk
OR can be obtained from the Chief Procurement Officer through email cpo@sphf.gos.pk
5. The SPHF now invites eligible consulting firms (“Consultants”) to indicate their interest in providing the Services. Interested Consultants should provide information demonstrating that they have the required qualifications and relevant experience to perform the Services.
6. The Consultants shall fulfil the eligibility criteria mentioned under ADB’s Procurement Policy 2017, ADB’s Procurement Regulations 2017 and ADB’s Guidance Note on Consulting Services Administered by ADB Borrowers June 2018. The responses of only those firms who shall stand eligible against the ADB eligibility criteria, shall be considered for detailed evaluation, on the following parameters:



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Technical Competence:

- a) Having been in Engineering Design and Supervision business for 10 or more years.
- b) Having experience of 8 or more years in relevant sector i.e., Design and Supervision of Community facilities specifically WASH System.
- c) Having completed 4 or more projects with similar nature or work and size. Projects should be of similar nature and budgeted worth.

Note: Pro-rata marks may be assigned if a project meets the requirements partially or the project is not fully consistent with the requirement of experience stipulated in the TORs. However, for the purpose of evaluation, the project listed by the consultant having 70% of similar scope along with 60% of the budgeted cost may be considered a similar project.

Management Competencies:

- a) Standard policies, procedure, and practices that your entity has to assure quality interaction with clients and outputs.
- b) ISOs that your entity possesses.
- c) Internal Controls and complaint management systems
- d) Social Protection facilities
- e) Environmentally friendly practices

Note: The management competence of only the lead firm will be considered

Geographic Competency

- a) Having completed 2 or more project of similar nature in the province of Sindh

Note: Preference will be given to Projects completed in 24 prioritized flood affected districts of Sindh

Key Experts will not be evaluated at the shortlisting stage

7. The attention of interested Consultants is drawn to paragraphs, 1.19 – 1.21 of the Procurement Regulations for ADB Borrowers (2017, as amended from time to time), setting forth the ADB's policy on conflict of interest.
8. Consultants may associate with other firms to enhance their qualifications, but should indicate clearly whether the association is in the form of a joint venture and/or a sub-consultancy. In the case of a joint venture, all the partners in the joint venture shall be jointly and severally liable for the entire contract, if selected.
9. A Consultant will be selected in accordance with the QCBS method set out in the Procurement Regulations for ADB Borrowers (2017, as amended from time to time).



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10. Further information if required, can be obtained at the address below during office hours i.e. 0900 to 1700 hours.
11. Expressions of interest is required to be submitted using ADB's standard EOI template and must be delivered in a written form to the address below (in person, or by courier service), the EoI can also be submitted through email address cpo@sphf.gos.pk by **28th May 2024** during office hours.

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Sindh Emergency Housing Reconstruction Project (SEHRP)

Climate Resilient WASH Engineering Design and Supervision Consultant

Terms of Reference

1. Project Background

Post 2022 Floods, Government of Pakistan developed the strategic policy and prioritization document “Resilient Recovery, Rehabilitation, and Reconstruction Framework” (4RF) to guide the recovery, rehabilitation and reconstruction of the country. The Government of Sindh has established Sindh Peoples Housing for Flood Affectees (A Section 42, Public Sector Company) to support housing reconstruction of around 2.1 million houses along with interventions related to water, sanitation, hygiene, street pavement, drainage, household solarization, etc. which shall be broadly called as Climate Resilient WASH in these ToRs. As per Strategic Recovery Objective 4 of 4RF “Restore and Improve Basic Services and Physical Infrastructure in a Resilient and Sustainable Manner”, SPHF is seeking services to support effective Climate Resilient WASH initiative for the health and well-being of citizens and for sustainable housing.

Climate Resilient WASH services in Pakistan have multiple challenges, including quality, access, and sustainability. Water supply is mostly intermittent and not potable. Before the flood only 36 percent of households had access to safely managed water supply services and only 68 percent of the population had basic sanitation facilities, with huge regional disparities. The 2022 flood damaged more than 7,060 schemes, including 4,344 water supply and 2,716 sanitation schemes in the public sector, requiring major repair and reconstruction. Under the Climate Resilient WASH component, SPHF is planning to implement a range of Climate Resilient WASH related interventions in selected smaller settlements (below 150 HHs in the flood-affected districts), while ensuring operational sustainability. The implementation under this component shall be guided by a comprehensive SPHF WASH Strategy which will be augmented with climate smart resilient interventions. The implementation strategy of climate resilient WASH and its related interventions will aim to address the critical needs of Sindh's flood-affected population. Furthermore, the strategy encompasses enhancing access to safe drinking water, adequate sanitation, drainage facilities and promoting hygiene practices to improve the overall health and well-being of communities in the affected districts while keeping in view climate smart and multi hazard resilience as central pillar.

2. Purpose of the Assignment

Overall purpose of the assignment is to support SPHF in the selection of appropriate technological solutions while ensuring provision of safe, accessible, and sustainable drinking water, fecal sludge management (including containment, collection, transport, treatment, and disposal and recycling), street pavements and drainage facilities along with climate smart planning and multi-hazard resilience.

- (i) In the first stage, the assignment will provide detailed engineering designs, costing and feasibility of all proposed technological solutions of various types for at least 50 villages/settlements (stage 1) that are typical for different areas and solutions shall be widely applicable and are within the management capacity of the communities

themselves in the affected area. The designs would include a digital base map of respective communities on which the conceptual designs are overlaid. These villages shall be selected from 24 project districts based on the topography and soil classification in addition to other climate factors. This will be followed by training the engineers of the implementing partner NGOs to apply these designs and plans, to the specific settlements, based on varying ground conditions.

- (ii) In addition, an MIS-based Module shall be included in the engineering design and estimation model. The model will also streamline the project planning, design, and estimation process for Water and Sanitation projects, leading to more accurate cost estimates, improved project outcomes, and better resource allocation. This module will also support IPs to develop Water and Sanitation related project(s) while using various technical and social requirements for any village in Sindh.
- (iii) The second stage will include vetting of designs, costs and plans submitting by IPs through MIS- based module, followed by top supervision and bills verifications of 1,000 – 1,500 villages/settlements for total of at least 100,000 HH. This number can increase or decrease, based on average number of HHs in these settlements as the project targeting 100,000 to 150,000 houses initially. The vetting and supervision will be conducted in a manner that classifies provision of water supply, sanitation, street pavement, cross-drains/culverts, drainage as climate smart and resilient services into 'prototype packages' which are rationally defined by a mix of parameters including: demography, safe water sources and their distances from population, water quality, ground water depths, wastewater treatment, recycling and conservation, land availability, soil conditions, and costs.
- (iv) Moreover, based on desktop analysis, each classified package should provide a total cost of works if applied across all selected settlements (below 150 HH) to cover the whole project population that falls in this category in all the districts covered by SPHF in Sindh. The size of settlements varies and this project envisages to cover only settlements with less than 150 housing units. In addition, the project aims for minimum 1,500 settlements that has to serve more than 100,000 housing units. The bidders will offer cost of the consultancy for design, project design digest (PDD) for 50 settlements and vetting of all remaining PDDs, and top supervision of all settlements, based on a unit cost.

3. Duration and Location of the Services

The duration of the assignment will be 36 months, and services will be required in 24 prioritized flood affected districts of Sindh province affect by the 2022 floods.

4. Scope of Services

The Consultants will be required to provide a comprehensive feasibility report capturing the various scenarios and technological options, with cost estimates, suggested materials and designs of technological options (including innovative technologies) of climate resilient WASH related interventions for at least 50 villages/settlements which serve as prototype designs applicable across the board to similar typical settlements. Basic essential social, economic, financial, and environmental assessments will be part of the feasibility study and will also be integrated into the design assessment procedures. Furthermore, design review and vetting of the Climate Resilient WASH PDDs prepared/developed (through MIS based modules) by Implementing Partners for 1,000 to 1,500 settlements/villages initially (which can be increased or decreased depending upon coverage of housing units) along with bill verification and supervision. Research and development shall be undertaken to identify climate resilient products and services that add value to community led infrastructure, where applicable, with

a focus on reducing the use of fossils for water treatment, overcoming methane emissions from sanitation, etc.

It is expected that all schemes will be non-complex, comprising of small infrastructure works that can be undertaken by the communities themselves, and only top supervision would be required. The key design parameter would be solutions that have zero or negligible operations cost and very low maintenance cost for which supply chains are locally available. The IP staff, trained by the consultants, will be responsible for working with communities for resident supervision. This specific project will focus on settlements with maximum 150 housing units. All settlements and villages more than 150 housing units shall be addressed through separate arrangements (which is outside the scope of this assignment) as they may require resident supervision due to complexity of intervention.

To determine the reliability of water as a source, the consultant/firm would also be required to carry out hydrology and water quality assessment to examine the aquifer characteristics (through test bores/trial bores and yield tests) on canal banks and existing groundwater sources (public or private). The consultant will also advise on the optimum rate of abstraction for resource sustainability, conduct a groundwater salinity assessment and do water quality testing including arsenic and other prevalent heavy metals reported in the area. Climate resilience will be integrated for all WASH related and settlement improvement interventions especially from rainwater flooding.

The said assignment would be carried out by high level of technical and scientific rigor and is expected to provide detailed documentation of testing methods, test locations (with GIS) and results along with the final assessment along with an MIS based Project Development Document Module(s).

5. Details of Outputs of the Assignment

(i) Preparation of Project Digests including Design Feasibility, and Cost Estimations

- a. Identification of villages/settlements in consultation with SPHF.
- b. Comprehensive technical surveys, with designs and drawings, layout plans/base maps, bill of quantities and cost estimations, defining technical criteria, and outlining specifications for a range of water, sanitation, street pavement and drainage infrastructures with prototypes structures that are climate smart and resilient.
- c. The proposed designs should be gender-sensitive and accessible to all.
- d. Development of an MIS based Project Development Document Module (s) that has all essential features of different designs, its planning and reviewing process along with cost estimation, standardization and monitoring procedures.
- e. Training/capacity building of technical staff of SPHF and IPs on PDD.
- f. Vetting of PDD's prepared by IPs,
- g. Conducting research and development for innovative technologies and services that significantly improve climate resilience.

6. Implementation of Interventions:

- (i) Top supervision (as per project documents) of works implemented by Community Institutions with technical assistance of Implementing Partners.
- (ii) Check, review and certify different milestones of payments submitted by the CIs through IPs

- (iii) Evaluate the final execution/completed facilities to verify that the implemented infrastructure meets specified standards.
- (iv) Provide recommendations for any necessary post-construction adjustments or improvements.
- (v) Verify the final Bill of Quantities and assess the payment milestones in relation to the completed construction, ensuring accuracy and consistency. Cross-reference the bill with actual construction outcomes to validate cost estimates and project budget adherence.
- (vi) Provide reports to SPHF summarizing site visit findings, inspection outcomes, and advisory recommendations for effective project management and decision-making.

Furthermore, the consultants will extend advisory services to SPHF across the entire construction process, concluding in the successful completion of the Climate Resilient WASH Services and Settlement Plans.

Note: during the course of assignment the consultants will be required to visit villages and meet with community, the relevant offices of SPHF implementing partners. The consultants will be required to organize at least two consultative workshops for design and a quarterly review meeting for supervision from second quarter of the project implementation.

7. Detailed Description of Outputs and Task

Task 1: Preparation of Project Design Digests including Design Feasibility, and Cost Estimations

Design Feasibility

Village Profile: The consultants will conduct a detailed survey of each of the 50 typical villages to collect or update the following types of village data while taking into account accessibility, sustainability and safety of the services:

- i) **Demographics:** Population, number of settlements in the village and types of housing units and population density by settlement and overall context of vulnerability and social inclusion
- ii) **Location and Geography:** Spread and density of housing units, within settlement and overall, distance of specific settlements from neighbouring villages, and average distance from the water source and even nearby drainage systems.
- iii) **Water resource:** Mapping of existing source(s) of water, water use patterns, quality of water, water availability in wet and dry seasons (through test bores/trial bores and yield tests (if needed)), and alternate sources (if any).
- iv) **Sanitation arrangements:** Explore the context of existing sanitation chain that includes type of facilities, containment, transport, emptying, treatment and safe disposal and recycling of both liquid as well as solid waste management in the settlement.
- v) **Drainage:** Study and mapping existing and potential drainage channels and routes in the settlements as per topography and soil conditions, gravity based with zero to very low operation and maintenance costs, mechanism to address overflow and contamination of water sources, stormwater drainage, safe disposal, and recycling.
- vi) **Street Pavements:** Study internal pathways of the village and provide Paved pathways as per standard layering and required loads, pathways should also have appropriate slope and surface permeability in order to promote surface water runoff to drainage system during rainy seasons. Type and scale of tiling and bricks for street pavements as per soil conditions and topography of land, levelling parameters, landscaping, climate resilience, etc.

- vii) **Circulation Network and Nodes:** Study existing circulation pattern of village and its surrounding, and then design circulation pathways and key nodes, access routes, proposing paved pedestrian circulation network within the village and improve existing circulation and efficient accesses within organic planning of the village.

Topographic and Technical Survey/ Assessment: A topographic mapping exercise with GSP coordinates (mainly gradient, level, location of housing units, public facilities i.e. schools, mosques, roads, streets etc.) through as built survey, catchment area maps along with disaster risk assessment, vulnerability analysis, hydrological maps, etc.

The maps generated and assessments conducted from these exercises will be utilized to plot the climate resilient WASH infrastructure that includes but not limited to proposed water, sanitation, drainage, and street pavement networks. A key consideration while designing the solution will be zero or very low operation and maintenance cost which can be arranged by the local communities if required using existing/local supply chains. The technical survey will include parameters that will inform the design of the water supply infrastructure, water treatment/disinfection solutions, water supply transmission and distribution network including the storage and pressure-break tanks/reservoirs. The survey will also map the proposed sanitation system on the topographic maps including key fecal sludge collection catchments (mainly septic tanks and communal anaerobic baffled reactors), delivery network for fecal waste, wastewater and storm water (collection drains, sewers and appurtenances, main drains and sewers, premises connections), community managed treatment solutions, desludging options and water flush arrangements (low cost and energy efficient pumping for desludging points etc.), cross-drains/culverts, and necessary flood protection works, and safe disposal sites (agricultural land, land recharge sites, drains etc.)

Design and Costing of the Technological Solutions with innovations for WASH:

The consultants will be responsible for developing detailed engineering designs of selected priority investments that is climate and multi-hazard resilient. All designs will ensure minimum 15-liter per capita access to drinking water with minimum permissible level of water quality, essential levels of basic sanitation that means construction of environment friendly latrines with appropriate fecal management, etc. For communal water collection points the maximum distance from the house should not be more than 100 meters. Requirements involve, but are not limited to, undertaking the following tasks and responsibilities for each investment: The designs for the technological solutions will adhere to engineering standards while also observing the SPHF's and Government guidelines. The design should include complete drawings for all the proposed mix of technological options including network diagrams, design of the small pumping machinery (that can be operated and maintained by the communities themselves) for water source, hydraulic profiles (both water and drainage systems) and CAD drawings for infrastructure and pipe networks (with cross-sections where needed). The designs should incorporate elements to address environmental and social concerns, to build resilience to climate change and natural hazards and ensure social inclusion. Based on the data from the village survey the firm will develop a low-cost community managed package and prototypes for each village to address the drinking water (abstraction, treatment, delivery, storage and distribution), sanitation (fecal waste and wastewater collection, delivery, treatment and disposal), drainage (circulation, stormwater management, etc.), and street pavement (layering, surface water run-off, sloping, etc.), efficient and community managed energy options and waste management.

The package will include:

- (i) **Technological solutions with innovations:** Selection of innovative technological solution based on the onsite situation and related water supply and fecal sludge treatment demand and other climate resilient WASH related interventions. Ensure that it meets Pakistan's National Environmental Quality Standards (NEQS) of drinking

water and essential compliance to NEQS of municipal and liquid industrial effluents for fecal sludge treatment. The solutions will ensure minimum 15-liter per capita access to drinking water and outflow of sewage from houses. Specific recommendations for alternate sources to be made for selecting drinking water sources where water is neither brackish nor arsenic in order to minimize the costs of treatment.

- (ii) **Design:** Complete design of the proposed technological solutions including drawings, sections, and relevant engineering parameters. The proposed designs should be gender-sensitive and accessible to all and shall include the options to select suitable materials and technologies for climate resilient WASH taking into account durability, maintenance needs, and environmental effects. This involves choosing materials and methods that are long-lasting, easy to maintain and have minimal impact on the environment.
- (iii) **Climate Smart Technologies and Services:** Operational research for product development and scaling up of materials and services to enhance climate resilience. Simultaneously it will be essential that these are affordable, viable and relevant to the needs of the local communities.
- (iv) **Environmental, Green and Social Safeguard:**
 - a. Undertake environmental and social safeguard studies (including but not limited to IEE, land acquisition through voluntary donations only, and resettlement plans, health and safety management plan, gender action plan for the proposed investments,
 - b. Conduct energy requirement analysis for the overall project and the best suitable, community affordable and manageable, solutions must be recommended (inclusive of solarization), that have local support and minimum costs for O&M.
 - c. Consultant's inputs are specifically required on design aspects related to flood management, drainage, forestry, green spaces, reuse of liquid waste, grey water, and other ecosystem-based rural adaptation. Ensure that design and implementation of green infrastructure components are based on international best practices while remaining contextually responsive to the local needs and capacities.
 - d. Prepare and finalize the detailed engineering designs of priority schemes, technical specifications, detailed cost estimates (including costs for addressing environmental concerns based on Environmental, Health and Safety Management Plan (EHSMP). The detailed engineering designs should be prepared using integrated rural planning approach keeping the future needs in mind and new technologies, etc.
- (v) **Costing:** Bills of quantities and cost estimates of the proposed technological solution based on the market rate compared with existing government standards (if needed). The cost estimates should account for both planned new works and the repair/rehabilitation of existing works for water supply, drainage, and waste-treatment infrastructure (if any). The costing should be based on acquired process from real market rates.
- (vi) **Life Cycle Cost Analysis (LCCA) and Economic Analysis:** Aspire to achieve sustainable designs, that leverage indigenous eco-system (specially plant ecology) and local labor skillsets, have low life-cycle costs and are easy to maintain. Calculating the life cycle cost analysis including economic internal rate of return of proposed menu of climate resilient WASH and settlement plans that will include all costs associated with the system over its entire lifespan. This includes initial investment costs, operating and maintenance costs, as well as any future costs such as replacements or upgrades.

- (vii) **Overall Key Considerations:** Develop a range of customized technological solutions and innovative technologies for different types of villages in the selected areas. Options may propose single village versus multi village solutions considering the factors of costs, proximity, availability, and accessibility.
- (viii) **Development of Training Materials and Modules for the IPs:** Develop training curriculum, materials and course that include designing procedures of key WASH related interventions with innovations, and costing methodologies while ensuring climate resilience, social inclusion and low cost and maintenance approaches.

Development of MIS-based Project Development Document Model(s) for Water and Sanitation projects

This shall be comprised of following sub modules/components of a MIS module for PDD:

- (i) **Project Information Management/Robust WASH Dashboard:** Centralized storage and management of project information including site details (including layout plan), design specifications, and cost estimation data based on prevailing market rates.
- (ii) **Data Integration:** Integration of data from various sources including GIS data, topographic surveys, and water quality and soil analysis to inform the engineering design and estimation process.
- (iii) **Engineering Design Tools:** Software tools for creating engineering designs/simulation for water supply and sanitation infrastructure, including pipelines, treatment plants, and various sanitation facilities, and other basic infrastructure needs.
- (iv) **Cost Estimation:** Tools for estimating the costs of materials, labor, equipment, and other resources required for construction, operation, and maintenance of water and sanitation infrastructure. The module should support calculating the life cycle cost analysis (LCCA) of water supply and sanitation systems. The LCCA will include all costs associated with the system over its entire lifespan. This includes initial investment costs, operating and maintenance costs, as well as any future costs such as replacements or upgrades.
- (v) **Risk Assessment:** Modules will include the tools for assessing and mitigating risks associated with the design and construction of water and sanitation projects, including environmental risks, geological hazards, and budget overruns.
- (vi) **Budgeting and Financial Analysis:** Tools for budgeting project costs, tracking expenses, and conducting financial analysis to ensure project feasibility and sustainability.
- (vii) **Collaboration and Communication:** Features for collaboration and communication among project stakeholders, including SPHF, IPs, Community, and relevant public and private sectors.
- (viii) **Monitoring and Evaluation:** Tools for monitoring project progress, tracking performance indicators, and evaluating the effectiveness of engineering designs and cost estimates.
- (ix) **Reporting and Documentation:** Generation of reports, drawings, and documentation necessary for project planning, approval, and implementation. Any other tool as required by SPHF during the course of project implementation.

Task 2: Top Supervision of Construction/Execution Works

The Consultant, in close coordination with SPHF and Implementing Partners will perform the following tasks for **Vetting and Supervision** of climate resilient community infrastructure construction work with a key focus on water supply, sanitation, street pavement, solar kits, etc.

- (i) Review and endorse engineering designs and technical specification, submitted by community institutions (CIs) through the partners organizations, based on agreed approved criterion of resilience and design specifications.
- (ii) Review and approve the cost estimates including bill of quantities of submitted projects in light of technical specification and parameters approved by SPHF in the system.
- (iii) Organize training and capacity development of the IPs in execution of proposed designs of WASH related interventions with their costing, and procedures for ensuring operation and maintenance. Training will include how to conduct community need assessments and using MIS based PDD for submitting the proposals, entering the data for tracking the progress and seeking technical advice where needed.
- (iv) Conduct review and approve the training materials for CIs and communities that are led by the Implementing Partners especially in the areas of monitoring the execution, operation and maintenance (O&M) of the newly constructed infrastructure; and compliance to Environmental, Health and Safety Management Plan (EHSMP) for all stakeholders.
- (v) Assess the progress of the different initiatives undertaken for climate resilient community infrastructure and fulfilling settlement plans; check that the lines, levels, and layout of the construction conform with those specified in the contract; and assess the adequacy of necessary inputs in material, labor, construction methods, and safety measures,
- (vi) Liaise with SPHF and implementing partners to ensure that required sites with all voluntary land acquisition have been addressed at the planning stage; and these are integrated into SPHF MIS to track the progress reporting and dashboard.
- (vii) Monitor the progress of subproject construction against the contractual construction schedules by developing and implementing a quality monitoring plan to ensure the works comply with the specifications in the contract documents regarding materials used, technical requirements, and economic life of assets.
- (viii) Undertake field visits to inspect the quality of work, guidance to the implementing partners and CIs in designing and implementing the projects where required. Maintain the records of all field visits.
- (ix) Check, review and certify applications for milestone payments submitted by the CIs through IPs and assist SPHF in claim management, including review, evaluation, recording claims, and resolving any contractual issues.
- (x) Plan and review the final commissioning tests being conducted upon completion of each community construction package; approve the content of the O&M procedures and mechanisms.
 - a) Evaluating and confirming CIs claims for cost increase or time extension, and contract variation orders.
 - b) Report to SPHF on monthly basis on pre-agreed work plans. Prepare and maintain comprehensive monthly records and reports on formats acceptable to both SPHF. The monthly progress report must cover all the designs approved, reviewed and advised in addition to meetings and trainings held for the CIs and implementing partners. All reports shall be submitted in both hard and soft copies i.e. 3 hard copies and 1 CD with editable MS Office and PDF formats.
 - c) Facilitate and participate in reviews meetings of SPHF and Partners to assess operations and financial performance and the forward plan for the upcoming period and provide necessary input where required.

Deliverables and Payment Schedule

Deliverable Stage 1		Timeline	
Inception Report		Month-1	
Topographic and social survey report of ~50 villages/Settlements		Month 2-3	
(i) Preliminary designs of selected Technological Options, (ii) customized bills of quantities, cost estimates and designs of the water and sanitation solutions for all the sample villages for water and sanitation, (iii) Draft Hydrologic assessment (including ERS, trial bores, salinity lens, water abstraction rates and analysis for tube well designs)		Month 3-4	
Draft Project Design Digests (inclusive of cost estimates, sampling results, designs, costs, hydrologic assessment and feasibility) - in form and format acceptable to the SPHF, data set and consultation with key stakeholders included. The draft Project Design Digests with required modules. The Consultant would extend support and facilitation to Service Providers to be procured by SPHF separately for MIS development/ Recourse Planning Software with submission, review and approval process of system based developed Project Documents.		Month 3-7	
Submission of Final Project Design Digests (inclusive of cost estimates, sampling results, designs, costs, climate and hydrologic assessment and feasibility)		Month 4-8	
Payment Schedule – Design Phase			
<p>The contract is full lumpsum, output based. 5% cost of contract will be paid for inception report. The remaining 95% cost is split as follows: (_20_% for design phase, and _75_% for top supervision phase. Based on the targeted 50 settlements serving at least 5,000 houses in total, the design cost of one settlement will be worked out as {<i>total amount for design of 50 settlements</i> DIVIDED BY <i>50 settlements to be designed</i>). Accordingly, the payment milestones for design phase is as follows:</p>			
Deliverable		Amount to be Paid	
Inception Report		5% of contract price	
Report on Topographic and social survey for 50 settlements		50% of the cost for design phase	
Final Project Digests (PD) of 50 settlements and specific Design and O&M training manuals for IPs and community organisations.		50% of cost of design phase	
Deliverables and Payment Schedule for Top Supervision			
<p>Based on the overall cost of Top Supervision phase, i.e. 75% of the contract amount, the supervision cost per settlement will be worked out as follows: (<i>Total Supervision Cost of expected 1,500 Settlements</i> DIVIDED BY <i>1,500</i>) Note. The 1,500 settlements would at least serve 100,000 houses in total.</p> <p>Accordingly, the payment milestones for top supervision phase will be as follows:</p>			
Deliverable		Timeline	Amount to be Paid
(i)	Report stating that X number of PDs of IPs reviewed, vetted and approved that have detailed Bill of Quantities with approved designs. 25% of the settlement cost.	6-36 months	25% of supervision cost of settlements MULTIPLIED BY number of settlements supervised.
(ii)	Payment Verification Report stating Implemented PDs verified for payments for Stage 1 i.e. 30% physical completion achieved.		15% of supervision cost per settlement MULTIPLIED BY number of settlements verified for stage 1
(iii)	Payment Verification Report stating Implemented PDs verified for payments for Stage 2 i.e. 40% physical completion achieved.		15% of supervision cost per settlement MULTIPLIED BY number of settlements verified for stage 2
(iv)	Payment Verification Report stating Implemented PDs verified for payments for Stage 3 i.e. 30% physical completion achieved and O&M training of COs completed.		15% of supervision cost per settlement MULTIPLIED BY number of settlements verified for stage 3

<p>(v) Site visit Report, stating number of sites physically monitored and reported independently on monthly basis</p> <p>(Sites visits are mandatory for at least 10% of projects being executed.)</p>		<p>15% of supervision cost per settlement MULTIPLIED BY number of settlements monitored</p>
<p>(vi) Completion Reports of the Interventions verifying that the completed schemes meet their agreed standards and specifications (desk review of all completed projects with certificates</p>		<p>15% of supervision cost per settlement MULTIPLIED BY number of settlements completed.</p>

Reporting Requirements

S. No	Report
1.	An Inception Report , which covers at least initial findings and the work program including staffing plan and schedule for approval by SPHF and ADB, 2 weeks after commencement of services.
2.	Monthly progress reports (contents include at least briefing details of the works carried out during the previous month, problems encountered or anticipated, together with steps taken or recommendations for their correction, and financial and physical progress to date) within 10 days after each month subsequently.
3.	Quarterly progress reports (at least including detailed description of the achieved progress of works, difficulties and delays encountered or anticipated, contract awards and disbursement status, payments to the consultants and contractors, and remedial actions taken or suggested, the overall progress, and plan for the upcoming quarter) within 14 days after each quarter subsequently:
4.	A project completion report (covering at least detailed description of all the work by items of technical and non-technical matters, As-Built drawings, economic analysis, financial and disbursement data, analyses, difficulties and delays encountered and reasons, and remedial actions taken, the overall progress of the Project, including recommendations to SPHF one month after the contract of consulting services completed

8. Consultant's Qualification

The consultant should be a reputable firm able to demonstrate significant experience in carrying out feasibility and research studies in climate resilient WASH related interventions in South Asia, and particularly in Pakistan. Prior experience in rural setting of Pakistan in a similar role would be ideal. Moreover, the firm should be able to demonstrate significant experience carrying out project feasibility studies in the water and sanitation sector in Sindh. The firm should be credibly positioned to carry out a detailed review at the intersection of engineering, hydrology, social sciences and public policy.

The firm must furnish the following information:

- (i) Corporate Capacity (Core business and years of experience in same business for at least 10 years);
- (ii) At least three (3) similar assignments completed in the last five years indicating the nature and scope of these assignments to be comparable with scale and volume of funds to this assignment.
- (iii) The logistical capacity of firm and;
- (iv) Number of technically qualified staff

Experience of executing the large public sector projects, preferably funded by multilateral development partners would be an added advantage.

9. Team Composition

The Consultant shall provide, for the duration of the entire assignment, a team of national experts who are experienced in, (i) Designing the land use and developing WASH Systems in the rural and small settlements ((iii) construction supervision of civil works related to community infrastructure

A total of **1,872 person-months** including **414 person-months** for the National Key Experts; **1,458 person-months** for National Non-Key experts; The assignment is output based. Below are the required experts with their level of efforts.

S. No	Position	Positions	P.M	Quantity
Key Staff – National		12	234	414
1	Project Leader/Manager for Task 1 and Task 2	1	36	36
2	Deputy Leader/Manager for Task 1 and Task 2	1	36	36
3	WASH Engineers- two for Water and two for Sanitation	4	36	144
4	Design and Costing Engineering Expert	2	36	72
5	Geotechnical Engineer	1	18	18
6	GIS Expert	2	36	72
7	Hydrologist	1	36	36
Non-Key Staff – National		43	576	1458
8	Urban/Land Use Planner	1	36	36
9	Climate Change Expert	2	36	72
10	Capacity Development and Training Expert	1	36	36
11	Social Safeguard and Gender Expert	1	18	18
12	Environmental Expert / Engineer	1	18	18
13	Economist	1	18	18
14	IT Expert for MIS Module Development	2	36	72
15	Solar Engineer	2	36	72
16	Material/ Mechanical Engineer	2	18	36
17	Water Quality and Wastewater Technicians	4	36	144
18	Survey Engineer/Technical Surveyors	4	36	144
19	Research and Data Analysts	4	36	144
20	Surveyors	4	36	144
21	Data Entry Operators	4	36	144
22	CAD Draftsperson and GIS operators	4	36	144
23	IT Officers for MIS and IT support	2	36	72
24	Planning & Scheduling Engineer	2	36	72
25	HSE Engineer	2	36	72
TOTAL		55	810	1872

10. Qualifications, Roles, and Responsibilities

The required qualifications and experience of the key experts and the key tasks they are expected to undertake are provided in **below table**.

National Key Staff			
Sr. No.	Position Title	Expected Qualification	Scope of Work
01	<p align="center"><u>Team Leader/ Project Manager</u></p> <p align="center">1 position</p> <p align="center">(Continuous- 36 months)</p>	Qualification and Experience	<p>Master's degree in engineering (civil, environmental, urban planning, rural development, project management or relevant) with minimum 15 years of proven experience in relevant field and is knowledgeable about climate resilience and sustainability.</p> <p>Extensive experience in project coordination, planning, vetting and execution.</p> <p>Demonstrated ability to align conceptual designs with project goals and requirements.</p> <p>Proven track record of managing timelines, budgets, and resources (technical and financial) effectively.</p> <p>Experience of working with vast clientele and within rural areas</p>
		Responsibilities	<p>The Team Leader/ Project Manager will oversee the organization, conduct, and delivery of consultancy services for this assignment, and ensure satisfactory reporting to the SPHF. As the head of the Consultants' team, they will directly manage the project and maintain liaison. Additionally, they will provide guidance to the teams responsible for both task 1 and 2, ensuring effective management and implementation of their respective tasks along with coordination with the project staff and stakeholders. Expected responsibilities of the Expert will include but are not limited to the following.</p> <p>The details of responsibilities of the Project Manager for Task 1 are as below:</p> <ol style="list-style-type: none"> 1. Lead overall coordination and planning of task 1 activities and ensure that climate resilience considerations are incorporated in the project. 2. Oversee preparation of project digests, ensuring technical feasibility and cost-effectiveness. 3. Supervise project team, providing guidance and support for effective collaboration. 4. Liaise with stakeholders to gather necessary data and ensure alignment of project objectives. 5. Ensure design solutions meet quality standards and are gender-sensitive and accessible. 6. Ensure compliance with national/international regulations, SPHF requirements and cultural norms of the area. 7. Monitor project budgets and expenditures, ensuring efficient resource use.

National Key Staff			
Sr. No.	Position Title	Expected Qualification	Scope of Work
			<p>8. Prepare progress reports highlighting achievements, challenges, and recommendations.</p> <p>The details of responsibilities for Task 2 are provided as below:</p> <ol style="list-style-type: none"> 1. Provide top supervision during implementation of WASH infrastructure rehabilitation project, offering expert advice and solutions. 2. Ensure that the project is implemented based on the findings of the design and pre-feasibility phase so that lesson learned are incorporated and infrastructure is ensured to be climate resilient. 3. Review technical submittals, conduct inspections, and verify completed construction projects for quality assurance and quality control. 4. Verify final Bill of Quantities, endorse interim payments, and ensure adherence to project budget. 5. Provide recommendations for adjustments or improvements, and document findings. 6. Maintain detailed records, prepare reports summarizing project progress and key findings.
02	<p><u>Deputy Team Leader/ Deputy Project Manager</u></p> <p>1 position</p> <p>(Continuous- 36 months)</p>	<p>Qualification and Experience</p>	<p>Master's degree in engineering with minimum 12 years of experience in W&S sector and additional knowledge of climate resilient W&S programs</p> <p>Strong background in project coordination, planning, and execution.</p> <p>Ability to ensure conceptual designs aligned with project goals and requirements.</p> <p>Proficient in managing timelines, budgets, and resources including both technical and financial resources.</p> <p>Experience of working with vast clientele and within rural areas</p>
		<p>Responsibilities</p>	<p>The Deputy Team Leader/ Deputy Project Manager will oversee the organization, conduct, and provide delivery of consultancy services for this assignment, and ensure satisfactory reporting to the SPHF. They will manage the project in accordance with guidance provided by team leader and in the absence of the project manager act in their stead. Additionally, they will co-supervise the teams responsible for both task 1 and 2, ensuring effective management and implementation of their respective tasks along with coordination with the project staff and stakeholders. Expected responsibilities of the</p>

National Key Staff			
Sr. No.	Position Title	Expected Qualification	Scope of Work
			<p>Expert will include but are not limited to the following.</p> <p>The details of responsibilities of the Deputy Project Manager for Task 1 are as below:</p> <ol style="list-style-type: none"> 1. Assist in overall coordination and planning of Task 1 activities and assist the Team Leader/Project Manager in ensuring the climate resilience perspective of the project. 2. Ensure effective day-to-day management of works. 3. Support in preparation of project digests, ensuring alignment with project goals. 4. Collaborate with the project team, provide assistance and support as needed and ensure compliance with national/international regulations, SPHF requirements and cultural norms of the area. 5. Participate in stakeholder meetings, contributing to gathering necessary data and ensuring stakeholder alignment with project activities. 6. Assist in ensuring design solutions meet quality standards and are gender-sensitive and accessible. 7. Support in monitoring project budgets and expenditures to ensure efficient resource utilization. 8. Contribute to preparing progress reports and highlighting key insights and recommendations. <p>The details of responsibilities of the Deputy Project Manager for Task 2 are as below:</p> <ol style="list-style-type: none"> 1. Provide assistance in form of reporting to the Team Leader and supervising the staff during execution of WASH infrastructures, addressing technical queries and concerns. 2. Ensure effective day-to-day management of works. 3. Assist in reviewing technical submittals, conducting inspections, and verifying completed construction projects. 4. Support in verifying final Bill of Quantities, certifying interim payments, and ensuring adherence to project budget. 5. Participate in providing recommendations for adjustments or

National Key Staff			
Sr. No.	Position Title	Expected Qualification	Scope of Work
			<p>improvements, and documenting site visit findings.</p> <p>6. Contribute to maintaining detailed records and preparing reports summarizing project progress and key findings.</p>
03	<p><u>Water and Sanitation Engineers</u></p> <p>4 positions</p> <p>(Continuous- 36 months)</p>	Qualification and Experience	<p>Master's degree in civil engineering or any other relevant field</p> <p>Expert of Water Sanitation and Hygiene with minimum 10 years of proven experience</p> <p>Practical experience of design and implementation of rural water supply projects (preferably groundwater projects)</p> <p>Proven experience of hydrogeological studies and water quality monitoring exercises</p> <p>Well versed with design meet standards and national/international regulations</p>
		Responsibilities	<p>The Water and Sanitation Engineer will perform technical feasibility of the project and will perform tasks including but not limited to following.</p> <p>The details of responsibilities of the Water and Sanitation Engineer for Task 1 are as below:</p> <ol style="list-style-type: none"> 1. Assess technical feasibility and propose innovative solutions for water and sanitation infrastructure ensuring adherence with cultural norms and climate resilience strategies. 2. Work with other engineers and stakeholders to ensure designs meet standards and regulations for water supply, sanitation, and street pavement infrastructure. 3. Utilize experience in designing and implementing rural water supply projects, including groundwater-based systems. 4. Conduct hydrogeological studies and water quality monitoring exercises. 5. Ensure designs address environmental and social concerns and comply with regulations. <p>The details of responsibilities of Water and Sanitation Engineer for Task 2 are as below:</p> <ol style="list-style-type: none"> 1. Ensure proposed designs are gender-sensitive and accessible to all specially marginalized and vulnerable groups. 2. Provide expert advice and solutions to address technical queries during construction phase and conduct additional hydrogeological studies

National Key Staff			
Sr. No.	Position Title	Expected Qualification	Scope of Work
			<p>and water quality monitoring exercises when required.</p> <ol style="list-style-type: none"> Review technical submittals, conduct inspections, and verify completed construction projects meet standards set up by SPHF/national/international. Propose innovative technologies to enhance water and sanitation infrastructure. Maintain detailed records of site visits, inspections, and recommendations. Work with project team to ensure effective project management and decision-making.
04	<p><u>Design Engineer and Costing Expert</u></p> <p>2 positions</p> <p>(Continuous- 36 months)</p>	<p>Qualification and Experience</p>	<p>Bachelor's degree or equivalent in Civil Engineering or relevant discipline</p> <p>Minimum 10 years of experience in designing, costing, and estimation of rural water and sanitation projects, preferably in Sindh</p> <p>Expertise in cost estimation principles in government-led projects</p> <p>Knowledge of national systems and regulations</p> <p>Strong proficiency in design software and tools</p>
		<p>Responsibilities</p>	<p>The Design Engineer and Costing Expert will evaluate the environmental impact of the proposed WASH facilities. The responsibilities of the expert will include but are not limited to following tasks.</p> <p>The details of responsibilities of the Design Engineer and Costing Expert for Task 1 are as below:</p> <ol style="list-style-type: none"> Develop complete designs and cost estimations for rural water and sanitation projects. Apply knowledge of cost estimation principles and national systems to ensure accurate estimates. Incorporate innovative solutions into designs to enhance effectiveness and efficiency. Ensure designs adhere to engineering standards and government guidelines. Integrate sustainable and eco-friendly design solutions into project proposals. Work with stakeholders to ensure designs meet project goals and requirements.

National Key Staff			
Sr. No.	Position Title	Expected Qualification	Scope of Work
			<p>The details of responsibilities of the Design Engineer and Costing Expert for Task 2 are as below:</p> <ol style="list-style-type: none"> 1. Evaluate technical submittals and completed construction projects for accuracy and compliance. 2. Provide oversight to ensure construction work meets specified standards and specifications. 3. Verify Bill of Quantities and certify interim payments to ensure adherence to project budget. 4. Offer suggestions for post-construction adjustments or improvements based on project outcomes. 5. Maintain records of site visits, inspections, and advisory interactions for documentation and reference purposes.
05	<p><u>Geo-technical Engineer</u></p> <p>1 position</p> <p>Intermittent</p>	<p>Qualification and Experience</p>	<p>Master's degree in engineering with a minimum of 10 years of experience in relevant field.</p> <p>Expertise in conducting soil investigations and well versed with foundations and structural stability.</p> <p>In-depth understanding of soil properties and their implications on infrastructure.</p> <p>Proven track record in geotechnical engineering projects.</p>
		<p>Responsibilities</p>	<p>The Geo-technical Engineer will conduct soil investigations to assess the soil properties and their expected responsibilities for the assignment will include but are not limited to the following.</p> <p>The details of responsibilities of Geo-technical Engineer for Task 1 are as below:</p> <ol style="list-style-type: none"> 1. Conduct soil investigations to assess soil properties and provide foundation recommendations and considerations regarding climate resilience. 2. Evaluate soil conditions to ensure structural stability of water and sanitation infrastructure and street pavements. 3. Apply expertise in geotechnical engineering to inform design decisions and solutions for encountered problems. 4. Work with project team to integrate geotechnical considerations into project designs. 5. Utilize extensive experience in

National Key Staff			
Sr. No.	Position Title	Expected Qualification	Scope of Work
			<p>relevant field to address project challenges effectively.</p> <p>6. Ensure designs meet national and international regulations and standards.</p> <p>The details of responsibilities of Geo-technical Engineer for Task 2 are as below:</p> <ol style="list-style-type: none"> 1. Provide expert advice and solutions to address geotechnical challenges during construction phases. 2. Review technical submittals and completed construction projects to ensure adherence to geotechnical specifications. 3. Maintain detailed records of soil investigations, recommendations and their incorporation, and other project-related activities. 4. Prepare reports summarizing geotechnical findings and recommendations for effective project management.
06	<p>GIS Specialist</p> <p>2 positions</p> <p>(Continuous-36 months)</p>	Qualification and Experience	<p>MSc/BS in Computer Science with minimum 10 years of experience in GIS/Geography/Remote Sensing Proficiency in Geographic Information System (GIS) tools</p> <p>Experience in analysing spatial data and its utilization for site selection and planning.</p> <p>Strong knowledge of GIS software and techniques for collecting spatial data</p>
		Responsibilities	<p>The GIS Specialist will use spatial data for assisting in selection of suitable sites for water and sanitation infrastructure as well as street pavements. The expected responsibilities of the GIS Specialist will include but are not limited to the following.</p> <p>The details of responsibilities of GIS Specialist for Task 1 are as below:</p> <ol style="list-style-type: none"> 1. Use GIS tools to analyze spatial data for site selection and planning of WASH facilities. 2. Apply expertise in GIS, geography, and remote sensing to support project activities. 3. Work with project team to integrate GIS considerations into project designs and planning. 4. Utilize extensive experience in GIS and remote sensing to address project challenges effectively. 5. Ensure GIS analyses comply with relevant regulations and standards.

National Key Staff			
Sr. No.	Position Title	Expected Qualification	Scope of Work
			<p>6. Explore innovative GIS techniques to enhance project outcomes and efficiency.</p> <p>The details of responsibilities of GIS Specialist for Task 2 are as below:</p> <ol style="list-style-type: none"> 1. Provide expert advice and solutions to address GIS challenges during construction phases. 2. Review GIS outputs and completed construction projects to ensure accuracy and compliance. 3. Maintain detailed records of GIS analyses, recommendations, and project-related activities. 4. Prepare reports summarizing GIS findings and recommendations for effective project management.
07	<p>Hydrogeologist</p> <p>1 position</p> <p>(Continuous- 36 months)</p>	<p>Qualification and Experience</p>	<p>Master's degree or equivalent in Hydrogeology or related field with minimum 10 years of proven experience</p> <p>Proven working knowledge of hydrogeological conditions in Pakistan, particularly Sindh province.</p> <p>Experience in irrigation, water supply, sanitation, and hygiene sectors.</p> <p>Strong analytical and problem-solving skills</p> <p>Knowledge and work experience in rural areas will be preferred</p>
		<p>Responsibilities</p>	<p>A seasoned hydrogeologist with experience in Pakistan and preferably knowledge of hydrogeological situation of Sindh will have expected responsibilities including but not limited to the following.</p> <p>The details of responsibilities of the Hydrogeologist for Task 1 are as below:</p> <ol style="list-style-type: none"> 1. Conduct hydrogeological studies to understand groundwater conditions and availability. 2. Monitor water quality to ensure compliance with standards and regulations. 3. Apply expertise in hydrogeology to assess water resources and propose solutions considering climate change impacts. 4. Work with project team to integrate hydrogeological considerations into project designs including climate resilience. 5. Ensure designs meet national and international regulations and standards. 6. Utilize extensive experience in hydrogeology to address project

National Key Staff			
Sr. No.	Position Title	Expected Qualification	Scope of Work
			<p>challenges effectively.</p> <p>The details of responsibilities of the Hydrogeologist for Task 2 are as below:</p> <ol style="list-style-type: none"> 1. Provide expert advice and solutions to address hydrogeological challenges during construction phases. 2. Review technical submittals and completed construction projects to ensure adherence to hydrogeological specifications. 3. Maintain detailed records of hydrogeological studies, recommendations, and project-related activities. 4. Prepare reports summarizing hydrogeological findings and recommendations for effective project management.
08	<p><u>Urban/Land-use Planner</u></p> <p>1 position</p> <p>(Continuous- 36 months)</p>	<p>Qualification and Experience</p>	<p>At least a master's degree in urban/land-use planning, urban development or other related discipline from HEC recognized university. Minimum 12 years of experience in regional and urban planning, urban renewal and rehabilitation, policy and management, infrastructure need assessments, institutional analysis, program, and project development. Demonstrated ability to supervise a team of experts, interface with the team. Proven ability of working with multiple stakeholders (including government, private, and development partner agencies) Fluent oral and written communication skills in English</p>
		<p>Responsibilities</p>	<p>The Urban/Land-use Planner will conduct land-use assessments, design circulation pathways, and identify key nodes for efficient access. They will integrate stakeholder needs, assess transportation advancements, and ensure alignment with project objectives. Expected responsibilities of the Expert will include but are not limited to the following.</p> <ul style="list-style-type: none"> • Conduct land-use planning assessments. • Prepare landscape design for climate resilience, integrating sustainable and adaptive strategies such as plantation for resilience, green public spaces, native plantings, pedestrian-friendly pathways, community

National Key Staff			
Sr. No.	Position Title	Expected Qualification	Scope of Work
			<p>gardens, water features and ponds, recreational areas, sustainable infrastructure, agroforestry, food forests, water harvesting and conservation, drought-tolerant/flood-soaking plantation, composting, and soil health.</p> <ul style="list-style-type: none"> Analyse infrastructure needs and develop strategies for urban renewal and rehabilitation. Supervise a team of experts and ensure timely delivery of planning outputs. Assist in development of Develop climate resilience, adaptability and change plan. Interface with stakeholders to incorporate their needs into planning processes. Design circulation pathways and internal pathways within the village. Assess transportation types and technological advancements relevant to land-use planning. Identify key nodes for efficient access within the organic planning of the village
09	<p><u>Climate Change Expert</u></p> <p>2 positions</p> <p>(Continuous- 36)</p>	<p>Qualification and Experience</p>	<p>Advanced university degree in natural resource management, agriculture, rural development, climate change, or related field from an HEC recognized university. minimum 10 years of experience in identifying climate change scenarios, conducting vulnerability assessments, and integrating climate risks into development plans. Fluent in oral and written English language communication skills.</p>
		<p>Responsibilities</p>	<p>The Climate Change Expert will identify climate change impacts, integrate resilience measures, and assess potential hazards. They will provide input on transportation and housing improvements, ensuring alignment with climate goals. Expected responsibilities of the Expert will include but are not limited to the following.</p> <ul style="list-style-type: none"> Identify climate change impacts and adaptation measures relevant to the project area. Conduct stakeholder consultations to understand local climate change concerns. Support the design of adaptation measures and training programs for communities. Integrate climate resilience into the overall project plan.

National Key Staff			
Sr. No.	Position Title	Expected Qualification	Scope of Work
			<ul style="list-style-type: none"> Assess potential disasters, hazards, and mitigation strategies. Assist other team members in developing and suggesting climate resilient technologies. Assist in development of Develop climate resilience, adaptability and change plan. Provide input on transportation types, housing improvements, and energy conservation from a climate change perspective. Support the identification of the underlying problem analysis (root-causes, preferred solution, barriers, and project specific interventions. Support the design of the adaptation measures and prepare pre- feasibility studies and costs-benefits analysis for adaptation measures to be supported by the project. <p>Identify and validate relevant national and regional development plans that need to integrate climate risks and related methods.</p>
10	<p><u>Capacity Development and Training Expert</u></p> <p><u>One position</u></p> <p><u>Continuous 36 months</u></p>	Qualification and Experience	<p>University degree or relevant qualification in social sciences preferably psychology, media, communication, from HEC recognized university. Minimum 10 years of work experience in capacity development and training in development sector. Having experience in WASH training curriculum and trainings will be advantage. Proficient in organizing training and need assessment with curriculum development and IT based learning management approaches. Excellent oral and written communication skills in English and Sindhi</p>
			<p>The Capacity Building and Training Expert will lead on conducting need assessment, developing training curricula and materials followed by delivery of training to the IPs and community institutions at the community levels. Also facilitating on rolling out and capacitating O&M procedures.</p> <p>Expected responsibilities of the Expert will include but are not limited to the following in both stages</p> <ul style="list-style-type: none"> Work with design teams to identify the innovation and skills to be transferred. Develop training manuals and materials for different designs and costing procedures to be imparted to the IPs and CIs. Conduct the need assessments of

National Key Staff			
Sr. No.	Position Title	Expected Qualification	Scope of Work
			<p>the IPs and CIs to determine capacity gaps in terms of skills, knowledge and practices.</p> <ul style="list-style-type: none"> • Refine the training manuals in light of need assessments conducted to have better designing and supervision. • Organize and conduct training of IP staff and CIs in identified areas with a key focus on managing community infrastructure implementation, monitoring and ensuring O&M services. • Strengthen the skills of community and social mobilization of CIs and IPs through training and experience sharing. • Develop KPIs for sustainability in the context of knowledge and skills of IPs and communities and track the progress periodically.
		Qualification and Experience	<p>Graduate degree or relevant qualification in social safeguards, Gender and/or social development studies from HEC recognized university. Minimum 10 years of work experience in social development</p> <p>Adept in collecting baseline socioeconomic data and assessing social impacts of projects and activities.</p> <p>Excellent oral and written communication skills in English and Sindhi</p>
11	<p><u>Social Safeguards and Gender Specialist</u></p> <p>1 position</p> <p>Continuous- 9 months and 9 months intermittent)</p>	Responsibilities	<p>The Social Safeguards Specialist will collect socioeconomic data, assess social impacts, and target vulnerable groups for inclusion. They will prepare due diligence reports, facilitate stakeholder engagement, and ensure compliance throughout the project. Expected responsibilities of the Expert will include but are not limited to the following.</p> <ul style="list-style-type: none"> • Collect baseline socioeconomic data and assess social impacts of the project. • Develop measures to address social impacts and ensure social inclusion in project activities. • Prepare due diligence reports on indigenous peoples/ethnic minorities, if applicable. • Assess potential benefits and impacts to local people and prepare a due diligence report on indigenous peoples/ethnic minorities. • Facilitate community involvement in project planning and implementation. • Develop measures to specifically target women, poor, and vulnerable

National Key Staff			
Sr. No.	Position Title	Expected Qualification	Scope of Work
			<p>groups for project activities.</p> <ul style="list-style-type: none"> Assist in development of Develop climate resilience, adaptability and change plan.
12	<p><u>Economist</u></p> <p>1 position</p> <p>18 months</p> <p>(Intermittent)</p>	Qualification and Experience	<p>Advanced University degree in Economics with minimum 10 years of experience in conducting economic appraisals, analysis and life cycle assessments. Experience in analysing socioeconomic data, financial and economic data. Excellent oral and written communication skills in English and Sindhi are highly desirable.</p>
		Responsibilities	<p>The Economist will lead on conducting Life Cycle Cost Analysis and other key economic analysis of WASH related interventions by using primary and other secondary data from the project areas.</p> <p>Expected responsibilities of the Expert will include but are not limited to the following.</p> <ul style="list-style-type: none"> Collect and collate essential socioeconomic data from the project and communities. Conduct life cycle cost analysis of different WASH innovations proposed. Lead on economic appraisal and cost benefit analysis of different initiatives in the communities. Contribute to due diligence reports for the partnerships and engagement with communities. Develop the tools to track economic benefits and contributions.
13	<p><u>Environmental Engineer</u></p> <p>2 positions</p> <p>Intermittent</p>	Qualification and Experience	<p>Master's degree in engineering with over 20 years of experience in relevant field</p> <p>Minimum 10 years of experience in evaluating environmental impacts and ensuring compliance with regulations and standards of eco-friendly and green infrastructure.</p> <p>Ability to recommend sustainable and eco-friendly design solutions.</p> <p>Proficiency in environmental assessment methodologies</p> <p>Strong communication and interpersonal skills</p>
		Responsibilities	<p>The Environmental Engineer will evaluate the environmental impacts of the proposed WASH facilities, the expecting responsibilities include but are not limited to following.</p>

National Key Staff			
Sr. No.	Position Title	Expected Qualification	Scope of Work
			<p>The details of responsibilities of the Environmental Engineer for Task 1 are as below:</p> <ol style="list-style-type: none"> 1. Evaluate the environmental impacts of proposed WASH facilities. 2. Ensure project compliance with environmental regulations and standards. 3. Recommend eco-friendly design solutions to minimize environmental impact. 4. Ensure proposed designs are gender-sensitive and accessible to all. 5. Work with project team to integrate environmental considerations into project designs. 6. Utilize expertise in environmental engineering to address project challenges. <p>The details of responsibilities of the Environmental Engineer for Task 2 are as below:</p> <ol style="list-style-type: none"> 1. Provide expert advice and solutions to address environmental concerns during construction phases. 2. Review technical submittals and completed construction projects to ensure environmental compliance. 3. Maintain detailed records of environmental assessments and project-related activities. 4. Prepare reports summarizing environmental findings and recommendations for effective project management.
14	<p><u>IT Expert for MIS Module Development</u> 2 positions (Continuous-36 months)</p>	Qualification and Experience	MSc/BS in Computer Science with minimum 10 years of experience in developing databases, online applications for data collection and reporting. Experience in developing MIS modules for project management with integration shall be preferred.
		Responsibilities	<p>IT Expert for MIS development will use spatial data for assisting in selection of suitable sites for water and sanitation infrastructure as well as street pavements. The expected responsibilities of the IT will include but are not limited to the following:</p> <p>Assess the information needs of the different parts of the life cycle of WASH interventions, integration and reporting obligations.</p>

National Key Staff			
Sr. No.	Position Title	Expected Qualification	Scope of Work
			<p>Design a MIS information system model (Database structure and information flow); and MIS hardware network.</p> <p>Select and prepare a user-friendly MIS platform/dashboard including back-end and frontend software</p> <p>Design and prepare the MIS operational manual.</p> <p>Introduce an integrated web-based MIS system for all levels of project cycle of climate resilient WASH from identification of projects, designing, reviewing, vetting, approval, monitoring, verification and final assessment.</p> <p>Develop relationships, provide on-going liaison to ensure information flows are established and maintained, and help reinforce capacity of partners in the collection of data according to standardized practices.</p>
15	Solar Engineer 2 positions (Continuous- 36 months)	Qualification and Experience	<p>Bachelor's or Master's degree in Electrical, Environmental, Renewable Energy Engineering or relevant field</p> <p>Minimum 10 years of experience in solar energy system design, installation, and maintenance</p> <p>Experience with off-grid and grid-tied solar photovoltaic (PV) systems</p> <p>Proficiency in solar energy software tools and simulation programs</p> <p>Knowledge of local regulations and standards related to solar energy installations</p>
		Responsibilities	<p>The Solar Engineer will conduct feasibility studies and implement solar energy solutions for water, sanitation, and street pavement infrastructure. With expertise in solar energy systems, they will ensure the integration of sustainable and efficient solar technologies to meet project goals. The expected responsibilities of the Solar Engineer include but are not limited to following.</p> <p>The details of responsibilities of the Solar Engineer for Task 1 are as below:</p> <ol style="list-style-type: none"> 1. Conduct comprehensive feasibility studies to assess the viability of integrating solar energy into water supply, sanitation, and street pavement infrastructures. 2. Provide innovative engineering solutions for the design and implementation of solar energy systems, optimizing efficiency and

National Key Staff			
Sr. No.	Position Title	Expected Qualification	Scope of Work
			<p>sustainability and ensuring climate resilience.</p> <ol style="list-style-type: none"> 3. Work closely with project stakeholders to integrate solar energy solutions into infrastructure designs while ensuring alignment with project objectives. 4. Ensure solar energy systems comply with relevant regulations, standards, and safety requirements. 5. Assess and address technical, financial and technological challenges and optimize system performance. <p>The details of responsibilities of Solar Engineer for Task 2 are as below:</p> <ol style="list-style-type: none"> 1. Offer expert technical support during the construction phase, resolving any solar energy-related issues and ensuring smooth implementation. 2. Conduct thorough inspections and quality checks to verify the proper installation and functioning of solar energy systems, maintaining high standards of performance and reliability. 3. Maintain detailed documentation of solar system installations, inspections, and recommendations for future reference and project evaluation. 4. Prepare comprehensive reports summarizing solar energy system performance, highlighting achievements and areas for improvement to facilitate informed decision-making.
16	<p><u>Material and/or Mechanical Engineer</u></p> <p>2 positions</p> <p>Intermittent</p>	Qualification and Experience	<p>Bachelor's degree or equivalent in Mechanical/Material Engineering or relevant subject</p> <p>Minimum 10 years of experience in water supply and sanitation systems.</p> <p>Expertise in the use of appropriate design materials</p> <p>Strong knowledge of mechanical engineering principles</p> <p>Ability to contribute to the development of cost-effective and sustainable design solutions</p>
		Responsibilities	<p>Material and Mechanical Engineer will be responsible for water supply, sanitation systems and street pavement infrastructures and use of appropriate design material. The expected responsibilities of the Material</p>

National Key Staff			
Sr. No.	Position Title	Expected Qualification	Scope of Work
			<p>and/or Mechanical Engineer will include but are not limited to following.</p> <p>The details of responsibilities of Material and/or Mechanical Engineer for Task 1 are as below:</p> <ol style="list-style-type: none"> 1. Identify appropriate materials for water supply, sanitation systems and street pavement infrastructure based on design requirements. 2. Design mechanical components of infrastructure such as pumps and treatment systems. 3. Apply knowledge of materials and mechanical engineering to ensure robust and efficient design solutions. 4. Work with project team to integrate material and mechanical considerations into project designs. 5. Utilize experience in water supply and sanitation systems to address project challenges effectively. 6. Ensure materials and mechanical designs comply with relevant regulations and standards. <p>The details of responsibilities of Material and/or Mechanical Engineer for Task 2 are as below:</p> <ol style="list-style-type: none"> 1. Provide expert advice and solutions to address material and mechanical challenges during construction phases. 2. Review material specifications and mechanical designs to ensure adherence to standards set by the SPHF/national/international. 3. Maintain detailed records of material selection, mechanical design, and project-related activities. <p>Prepare reports summarizing material and mechanical findings and recommendations for effective project management.</p>
17	<p><u>Water Quality and Wastewater Engineer</u></p> <p>4 positions</p> <p>(Continuous-36 months)</p>	Qualification and Experience	<p>Bachelor's degree or equivalent in relevant subject.</p> <p>Minimum of 5 years of experience in field testing of water samples using field-testing kits.</p> <p>Proficiency in water quality and wastewater testing methodologies.</p> <p>Ability to work effectively in a team environment.</p>

National Key Staff			
Sr. No.	Position Title	Expected Qualification	Scope of Work
		Responsibilities	<p>A team of junior water quality and wastewater testing experts responsible for conducting field testing of water samples using the field-testing kits. The expected responsibilities of the Water Quality and Wastewater Engineer will include but are not limited to the following.</p> <p>The details of responsibilities of Water Quality and Wastewater Engineer for Task 1 are as below:</p> <ol style="list-style-type: none"> 1. Conduct field testing of water samples using appropriate testing kits. 2. Assess wastewater quality and quantity to inform design solutions. 3. Apply knowledge of water quality and wastewater management to propose solutions and integrate climate resilience into planning. 4. Work with project team to integrate water quality considerations into project designs. 5. Utilize experience in water quality testing and wastewater analysis to address project challenges effectively. 6. Ensure water quality and wastewater management activities comply with relevant regulations and standards. <p>The details of responsibilities of Water Quality and Wastewater Engineer for Task 2 are as below:</p> <ol style="list-style-type: none"> 1. Provide expert advice and solutions to address water quality and wastewater challenges during construction phases. 2. Review water quality and wastewater testing results, ensuring accuracy and compliance. 3. Maintain detailed records of water quality and wastewater analysis, recommendations, and project-related activities. 4. Prepare reports summarizing water quality and wastewater findings and recommendations for effective project management.

National Key Staff			
Sr. No.	Position Title	Expected Qualification	Scope of Work
18	<p align="center"><u>Technical Surveyors</u></p> <p align="center">4 positions</p> <p align="center">(Continuous-36 months)</p>	Qualification and Experience	<p>Bachelor's degree or equivalent in relevant field</p> <p>Minimum 5 years of experience working on technical aspects of water supply systems</p> <p>Proficiency in conducting field testing for water and soil, irrigation water assessments, and topographic surveying</p> <p>Strong understanding of irrigation, canal-based, and groundwater water supply systems</p>
		Responsibilities	<p>A team of technical surveyors with background in carrying out field testing for water and soil, irrigation water assessments and topographic surveying for water and sanitation infrastructure as well as street pavements. The expected responsibilities of the Technical Surveyors will include but are not limited to the following.</p> <p>The details of responsibilities of Technical Surveyors for Task 1 are as below:</p> <ol style="list-style-type: none"> 1. Conduct technical surveys for irrigation, canal-based, and groundwater water supply systems and ensure adherence to cultural norms. 2. Gather data on water and soil conditions, irrigation water assessments, and topographic surveying for water and sanitation infrastructure and street pavement. 3. Apply knowledge of surveying techniques to inform design decisions and solutions. 4. Work with project team to integrate surveying considerations into project designs. 5. Utilize experience in technical surveying to address project challenges effectively. 6. Ensure surveying activities comply with relevant regulations and standards. <p>The details of responsibilities of Technical Surveyors for Task 2 are as below:</p> <ol style="list-style-type: none"> 1. Provide expert advice and solutions to address surveying challenges during construction phases. 2. Review survey data and completed construction projects to ensure accuracy and compliance. 3. Maintain detailed records of survey findings, recommendations, and project-related activities. 4. Record findings and summarize survey results and

National Key Staff			
Sr. No.	Position Title	Expected Qualification	Scope of Work
			recommendations for effective project management.

Facilities/Support

The SPHF will share information it possesses, as appropriate. The consultancy firm will make its own arrangements in terms of offices, work equipment, travel, accommodation and other requirements to complete this assignment.

Procurement

The Consultant will be selected in accordance with the **Quality and Cost Based Selection (QCBS) criterion with 80-20 ratio**, in accordance with ADB's Procurement Guidelines (as amended from time to time).

Expression of Interest (EOI) Consulting Firms

Project Number	57323-001
Project Name	Sindh Emergency Housing Reconstruction Project (SEHRP)
Project Country	PAKISTAN

I. Consulting Firm Information

CMS No. ¹ / date:	Country of Incorporation: ²
Consultant Name:	Acronym:
EOI Submission Authorized by:	Position

Associations (Joint Venture or Sub-consultancy)

CMS No. ¹	Consultant	Acronym	Country of Incorporation ²	Joint Venture (JV) or Sub-consultant	EOI Submission Authorized By	Position

Present the rationale for and benefits of working in association (JV or Sub-consultant) with others rather than undertaking the assignment independently (as appropriate). Describe the proposed management and coordination approach of the association and the role of each firm.

I confirm that:

- Documentation regarding our corporate structure including beneficial ownership has been attached.
- Documentation regarding our Board of Directors has been attached.
- A written agreement to associate for the purpose of this Expression of Interest has

¹ If already registered on ADB's Consultant Management System (CMS). CMS registration is not mandated under EA-administered selection.

² The lead consultant must submit a copy of the Certificate of Incorporation of itself and of each JV member and sub-consultant through VII. EOI Attachments.

been signed between the consortium partners and has been attached.

Once your team is shortlisted and invited for submission of the Proposal, it is not permissible to transfer the invitation to any other firm, such as Consultant's parent companies, subsidiaries and affiliates. The Client will reject a Proposal if the Consultant drops a JV member without the Client's prior consent, which is given only in exceptional circumstances, such as debarment of the JV partner or occurrence of Force Majeure.³

II. Assignment Specific Qualifications and Experience

For online submission: Your EOI shall demonstrate technical competence and geographical experience based on project references entered in full registration under your CMS profile. We encourage you to update Project Information under your CMS prior to filling EOI.
For offline submission: Please provide relevant project information in Section E below.

A. Technical Competence

Cross-referencing from your profile projects in Section E. Project References, highlight the technical qualifications of your entity/consortium in undertaking similar assignments. Provide details of past experiences working with similar project authorities.

B. Geographical Experience

Cross-referencing from your profile projects in Section E. Project References, present experiences in similar geographic areas.

³ Paras. 3 and 7, Section 1 of the Standard Request for Proposal (SRFP), ADB website.

C. Management Competence (Please answer each question in one paragraph of 3-5 sentences)

1. Describe standard policies, procedures, and practices that your entity has to assure quality interaction with clients and outputs. Please state if your company is ISO certified.

2. How will your firm/consortium handle complaints concerning the performance of experts or quality of the reports submitted for this assignment? What internal controls are in place to address and resolve complaints?

3. How will you ensure the quality of your firm's/consortium's performance over the life of this assignment?

4. Describe standard policies, procedures and practices that your firm has put in place to avoid changes/replacements of personnel and to ensure the continuity of professional services once contracted.

5. Describe what social protection practices you have in place to safeguard the well-being of your proposed experts? Specifically describe arrangements you have in place for medical, accident, and life insurance coverage during the assignment.

D. Other Information (maximum of 500 words)

E. Project References

Please select most relevant projects to demonstrate the firm's technical qualifications and geographical experience (maximum 10 projects).

SN	Project	Period	Client	Country	Firm
1					
2					
3					
4					
5					
6					
7					
8					
9					
10					

Project Summary

SN 1	
Project Title	
Country / Region	
Start Date	
Completion Date	
Continuous / Intermittent	
Client	
Funding Source	
Description	(indicate your role and input in person-months)

SN 2	
Project Title	
Country / Region	
Start Date	
Completion Date	
Continuous / Intermittent	
Client	
Funding Source	
Description	(indicate your role and input in person-months)

(Please insert more tables as necessary)

III. Comments on Terms of Reference

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IV. Comments on Budget Adequacy

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V. Key Considerations in approaching this assignment (no more than 9,000 characters summarizing approach and methodology)

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VII. EOI Attachments

SN	Description
1	Certificate of Incorporation of the lead member
2	Certificate of Incorporation of the JV member (for each member)
3	Certificate of Incorporation of the Sub-Consultant (for each sub-consultant)
4	Letter of Association
5	Completion Certificate of Each Project
6	PEC Registration Certificate (National Firms Only)
7	Certificate of National Tax Registration

(Please insert more rows as necessary)

VIII. Eligibility Declaration⁴

We, the undersigned, certify to the best of our knowledge and belief:

- We have read the advertisement, including the terms of reference (TOR), for this assignment.
- Neither the consulting firm nor its JV member or sub-consultant or any of its experts prepared the TOR for this activity.
- We confirm that the project references submitted as part of this EOI accurately reflect the experience of the specified firm/consortium.
- We further confirm that, if any of our experts is engaged to prepare the TOR for any ensuing assignment resulting from our work product under this assignment, our firm, JV member or sub-consultant, and the expert(s) will be disqualified from short-listing and participation in the assignment.
- All consulting entities and experts proposed in this EOI are eligible to participate in ADB-funded, -supported and -administered activities.
- The lead entity and JV member or sub-consultant are NOT currently sanctioned by ADB or other MDBs. Neither the consulting firm nor the JV member or sub-consultant has ever been convicted of an integrity-related offense or crime related to theft, corruption, fraud, collusion or coercion.
- We understand that it is our obligation to notify ADB should any member of the consortium become ineligible to work with ADB or other MDBs or be convicted of an integrity-related offense or crime as described above.
- JV member or sub-consultant, including all proposed experts named in this EOI, confirmed their interest in this activity in writing.
- JV member or sub-consultant, including all proposed experts named in this EOI, authorized us in writing to represent them in expressing interest in this activity.
- None of the proposed consortiums are subsidiaries of and/or dependent on the Executing Agency or the Implementing Agency or individuals related to them.
- We understand that any misrepresentations that knowingly or recklessly mislead, or attempt to mislead may lead to the automatic rejection of the proposal or cancellation of the contract, if awarded, and may result in further remedial action, in accordance with ADB's Anticorruption Policy.

Name and Signature of Authorized Representative

⁴ Eligibility refers to ADB's Guidelines on the Use of Consultants by Asian Development Bank and its Borrowers 2013 or ADB Procurement Policy 2017 and Procurement Regulations for ADB Borrowers 2017, as relevant.