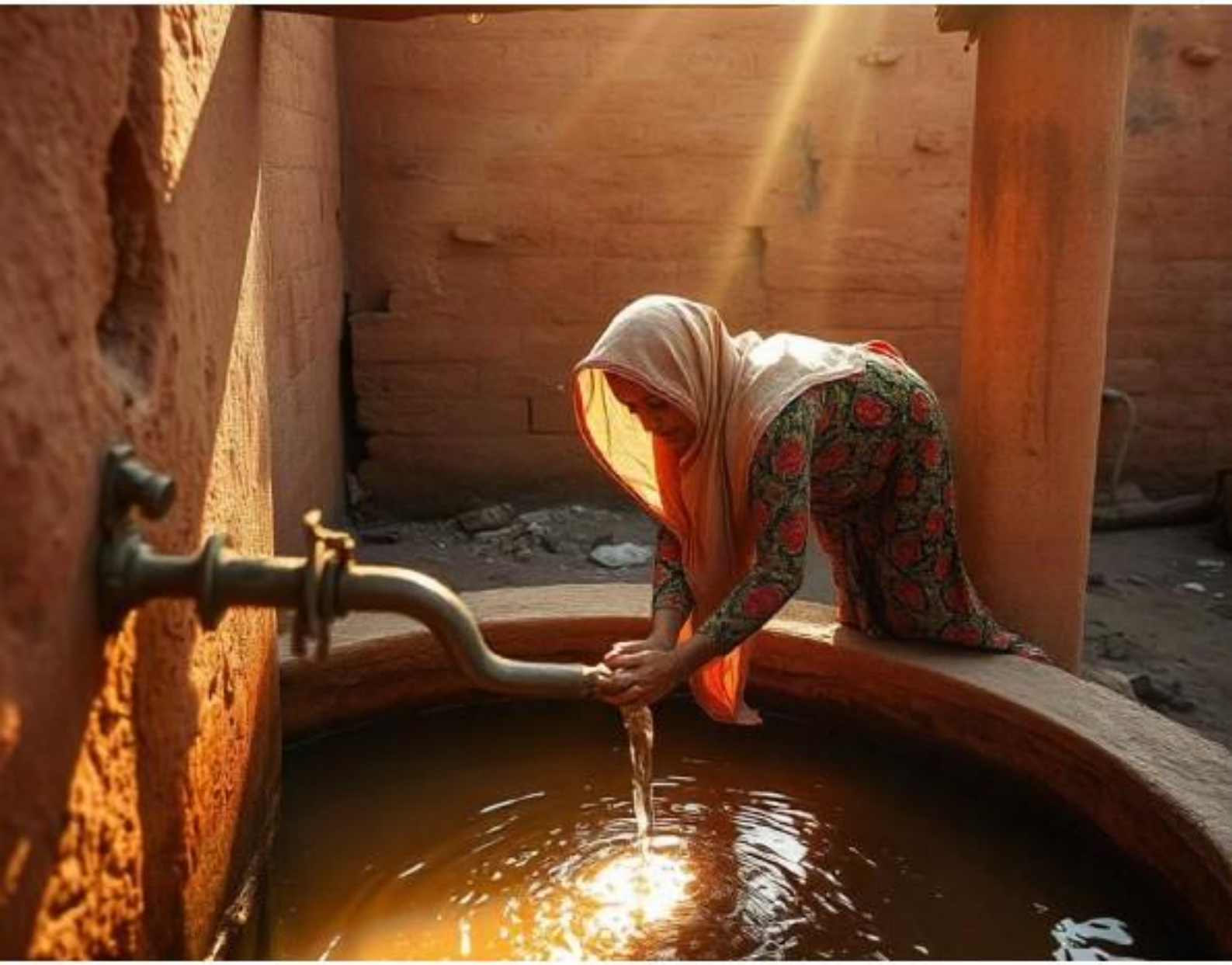

Water Technical Committee Meeting

2nd Meeting Report
May 9, 2024

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List of Abbreviations

ADB	Asian Development Bank
ADP	Annual Development Programs
AJK	Azad Jammu & Kashmir
CTCN	Climate Technology Centre and Network
FAO	Food and Agriculture Organization
GB	Gilgit-Baltistan
GCF	Green Climate Fund
GESI	Gender Equality and Social Inclusion
HDPE	High-Density Polyethylene
HPP	Hydropower Projects
JICA	Japan International Cooperation Agency
KOICA	Korea International Cooperation Agency
KPK	Khyber Pakhtunkhwa
MoCC&EC	Ministry of Climate Change and Environmental Coordination
NDC	Nationally Determined Contribution
PPP	Public-Private Partnerships
PSDP	Public Sector Development Program
RO	Reverse Osmosis
SCADA	Supervisory Control and Data Acquisition
SHPP	Small Hydropower Projects
WB	World Bank

1. Introduction

A technology roadmap for NDC implementation is a strategic planning tool that provides a structured approach to identify, prioritize, and sequence the deployment of technologies to address climate change challenges and promote sustainable development. Pakistan's *Nationally Determined Contributions 2021* prioritizes technology-based interventions as a means towards climate action and calls for technology transfer and interventions for key sectors in Pakistan, including water and waste. Pakistan is dedicated to leveraging technology to enhance its climate action by integrating technology into its NDCs, it aims to create an enabling environment that promotes efficiency, inclusive access and adequate management of its water and waste sectors. To achieve this, the Ministry of Climate Change and Environmental Coordination (MoCC&EC), through the Climate Technology Centre and Network CTCN's technical assistance, has initiated the development of Pakistan's Technology Roadmap for the waste and water sectors for NDC implementation.

Taking the lead from the **kick-off workshop** organized in February to highlight the priority subsectors and technology options in the water sector, the Pakistan is dedicated to leveraging technology to enhance its climate action by integrating technology into its NDCs, it aims to create an enabling environment that promotes efficiency, inclusive access and adequate management of its water and waste sectors. **1st stakeholder feedback water technical committee meeting** which took place in March 2024 to further assess and shortlist the technologies identified through stakeholder sensitization and desk review for the **water** sector, and the **1st technology roadmap committee meeting**, to finalize the scoring criteria for the shortlisted technologies, the **2nd Water Technical Committee Meeting** was focused on feedback from the stakeholders on the shortlisted technologies, financial challenges and opportunities, and GESI (Gender Equality and Social Inclusion) for each technology.

2. Objectives of the Meeting

The main purpose of the meeting was to understand a **Province-level priority for the technological solutions for the water sector, the financial mechanism utilized for the maintenance of existing infrastructure as well as new investments, and finally, understand the inclusiveness of project planning and implementation from Gender, and Social Inclusion perspective**. The meeting was focused on getting technology-specific feedback, to better understand and adequately address each province's needs..

3. Methodology

The meeting was held online through a pre-shared Zoom link and was attended by 10 participants of the technical committee, excluding the GGGI, GGC, and MoCC&EC teams. The technical committee was formulated by GGC with technical assistance from the MoCC&EC, a list of participants was formulated which can be find attached in the (**ANNEX-I**). Following the shortlisting of technologies and the development of scoring criteria, this meeting was

conducted to gather province-specific feedback on the shortlisted technologies, financial challenges and opportunities, and Gender Equality and Social Inclusion aspects for each technology in all provinces.

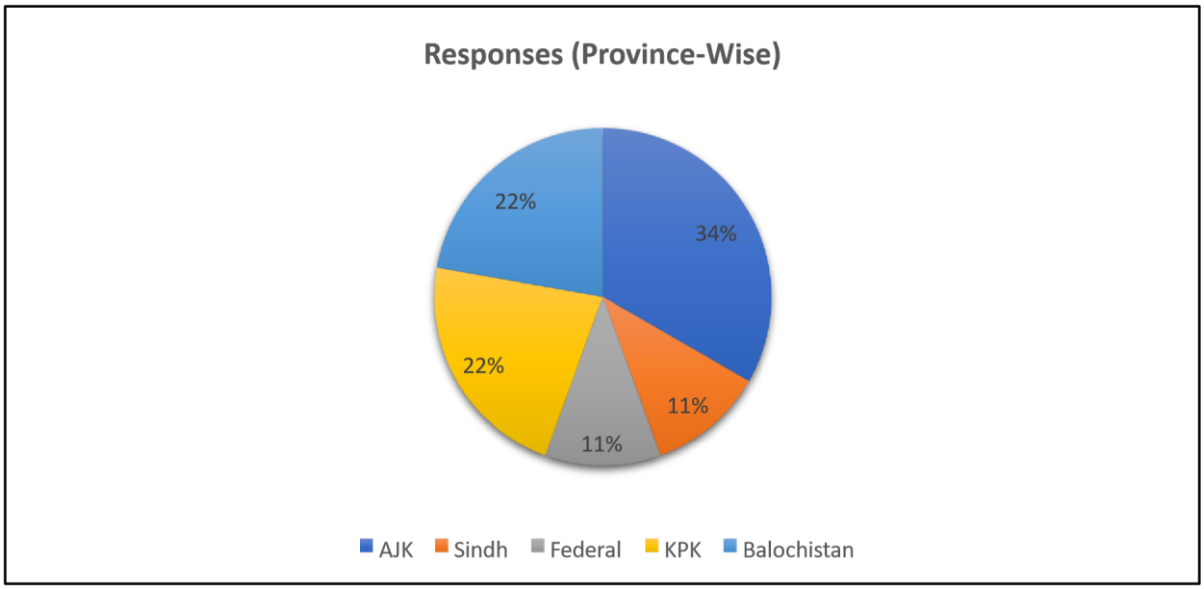

***Figure 1** - Responses Percentage*

This meeting was conducted utilizing three critical platforms: Zoom, Mentimeter, and Google Forms. During the meeting, moderators encouraged the stakeholders to record their voices through verbal inputs as well for the smooth execution of this meeting and to fulfill the objectives. Mentimeter software was utilized to hold an interactive discussion session with participants to identify water sector issues, prioritize technologies, and identify challenges that hinder implementation. Following this, a Google Form was shared with participants to record their response on several questions regarding the three focus areas; Technology, Finance, and GESI. This meeting and recorded responses successfully facilitated the identification of province-wise needs and the current situation.

4. Discussion and Outcomes

The focus was more towards the Domestic and Agriculture sectors as most of the stakeholders that filled out the form and selected that they were answering for these two sub-sectors. The following feedback was noted in the Google Forms.

A. Feedback on Technology

The participants were requested to provide an overview of the existing technology infrastructure in the province or region's water sector. Additionally, they were asked to mention the technology projects their department has initiated over the last five years. The questions were shared with the stakeholders through Google Forms, and their responses are summarized below:

Province	Technologies	Feedback
Azad Jammu & Kashmir (AJK)	Solar pumping, water harvesting structures, drip irrigation, rapid sand, and slow sand filtration systems, small runoff river hydropower projects, DEWATS	Challenges in sustaining development projects need for additional sewage treatment plants and recycling facilities, high cost of projects, difficulty in securing donor support, proposals submitted to ADB and federal government
Sindh	Solar energy and storage for water pumping and filtration, solarization of tube wells	Importance of capacity building for local staff, 13 World Bank-funded projects with 2-3 focused on the water sector, need for better project proposal preparation, lack of understanding between government and donors
Khyber Pakhtunkhwa (KPK)	Construction of dams and canals, tube wells, GI and HDPE pipelines, integration of solar energy for pumping	Challenges due to flood damage and delayed funds, reliance on local ADP funding, need for capacity building among local staff, future improvements suggested in public awareness, data management, and solid waste management
Balochistan	Pumping machinery, ultrafiltration plants, microfiltration plants, reverse osmosis (RO) plants	Need for more sewage treatment plants, existing facility in Quetta often overwhelmed
Gilgit-Baltistan (GB)	Potential in the water sector, various projects funded by local ADP and KfW	Under-utilization due to funding and capacity issues, seasonal variations pose significant challenges
Federal Region	High-efficiency irrigation systems, advisory services	No new significant technological projects initiated by the federal department itself
Punjab	Irrigation projects on barrages and channels, managed by the irrigation department and funded by GCF, WB, and ADB	The irrigation department does not directly handle technology implementations

B. Financial Challenges/Opportunities

A question was included in the Google forms to assess whether provincial and national budgets are a major source of investment or whether grants or loans are more accessible in provinces, but it was seen that most of the provincial representatives voted for the national/provincial budget, which can also be seen in the chart below.

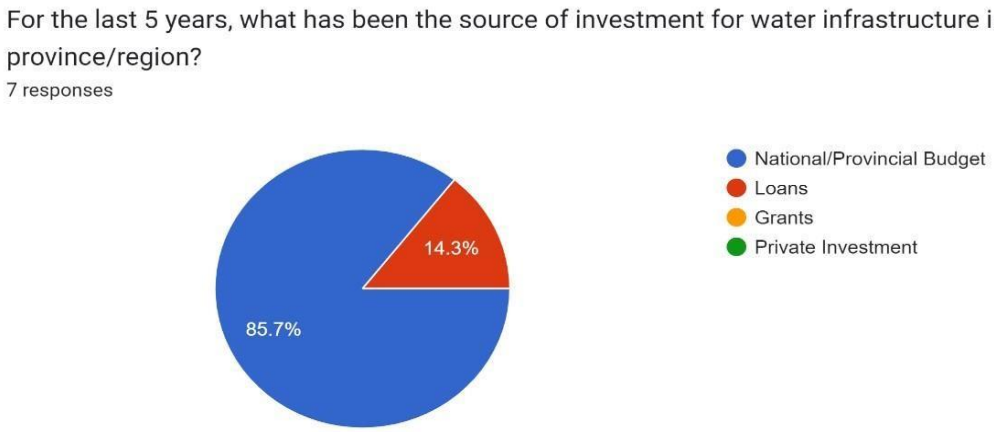

***Figure 2** - Source of Investment*

The primary sources of investment in **Azad Jammu & Kashmir** (**AJK**) are the **national and provincial budgets**, with additional funding from UNICEF. Financial mechanisms include annual development programs (ADP) funded by the government and international finance. Stakeholders suggested leveraging hydropower projects to generate revenue through carbon credits, despite challenges such as the lack of a carbon market framework in Pakistan. Stakeholders from AJK pointed out that the main financial barriers stem from a lack of coordination between national and provincial governments. A stakeholder suggested that developing runoff-the-river hydropower plants and solarizing supply schemes could be significant opportunities for AJK. Another stakeholder emphasized the need for sustained funding and the importance of submitting proposals to international donors like ADB to secure more projects.

In **Sindh**, stakeholders reported a mix of **National/Provincial Budget and international financing** from organizations like ADB, World Bank, and FAO. They highlighted opportunities for improving financial mechanisms through the deployment of technically proficient staff to develop high-quality project feasibilities. In Sindh, stakeholders identified solar energy for water pumping as a key opportunity for mobilizing finance. A stakeholder emphasized the importance of preparing thorough project proposals and concept notes to ensure long-term impacts and attract donor funding. Additionally, there is potential for small hydropower projects (SHPPs) and floating solar projects, which are currently under feasibility studies. However, the lack of capacity building and political instability remain significant barriers.

Stakeholders indicated that **Khyber Pakhtunkhwa (KPK)** relies on a combination of **provincial budget allocations and international funding** from agencies like ADB. Opportunities to

enhance financing include securing international grants and climate resilience funding. However, challenges such as insufficient funding, capacity constraints, and political barriers were noted. Stakeholders in KPK highlighted the Climate Change Fund for water supply and management as a major opportunity. A Stakeholder suggested that the introduction of new technologies, such as solarization and SCADA systems for groundwater management, could improve the financial landscape. The main issues identified were insufficient capacity building and delays in accessing both government and donor funds.

Balochistan's financial mechanism involves **provincial government funding** under PSDP and international finance from the World Bank and European Union. Stakeholders identified a lack of field experts as a significant barrier to financial improvements. Opportunities exist in international grants and partnerships to enhance financing in the water sector. In Balochistan, stakeholders highlighted the need for better access to international grants and partnerships to improve financial mechanisms. The significant barriers noted were lack of expertise in this field and political instability. There is also a need for funds to repair water supply schemes damaged by recent floods.

In **Punjab**, stakeholders noted that although they have initiated some project proposals, the processes are often lengthy and cumbersome. There is a need to streamline administrative procedures to facilitate quicker access to funds and improve project implementation.

Stakeholders from **GB** emphasized the importance of utilizing feasibility studies conducted by various organizations to generate new project ideas. They suggested incorporating software like RET screen for project design and planning. The region faces challenges due to a lack of funds, capacity building, and coordination.

In the **Federal region**, investment sources include the **national and provincial budgets**, with additional support from JICA, ADB, and the World Bank. Stakeholders emphasized the need for community involvement and public-private partnerships (PPP) to optimize financial benefits from government investments.

In conclusion, the stakeholders indicated that most provinces rely primarily on national and provincial budgets, with supplementary international funding for water sector investments. In AJK, financial barriers include poor coordination between governments and the lack of a carbon market framework, despite opportunities in hydropower and solar projects. Sindh highlighted political instability and lack of capacity-building as a challenge but understands the potential solar energy and hydro power holds. KPK faces insufficient funding and capacity constraints, suggesting new technologies to enhance financing. Balochistan identified a lack of field experts and political instability as barriers but noted potential in international grants. Punjab called for streamlined administrative procedures to improve funding access. GilgitBaltistan emphasized better project planning and coordination, while the Federal region stressed public-private partnerships and community involvement to optimize financial resources.

C. Gender Equality and Social Inclusion

To address Gender Equality and Social Inclusion (GESI), questions were added to a Google Forms survey and shared with stakeholders. The questions focused on whether the planning and budgeting for the water sector were gender-sensitive and socially inclusive, and what could be done to prioritize women, youth, and vulnerable communities in financial decisions and decision-making. Feedback indicated that while there were some efforts towards gender sensitivity and social inclusion, these were often limited by inadequate resources and commitment from leadership.

Stakeholders from **Azad Jammu and Kashmir** (**AJK)** indicated that gender sensitivity and social inclusivity are moderately integrated into hydropower sector planning and budgeting. They suggested creating platforms for representation and providing capacity-building programs to prioritize women, youth, and vulnerable communities in decision-making processes. Stakeholders in AJK reported that gender sensitivity and social inclusion are incorporated at a moderate level in planning and budgeting processes. They emphasized that there is no gender bias in social setups and that GESI considerations are included in project planning.

In **Sindh**, stakeholders reported that gender considerations are incorporated at the planning and development stages of water projects. They recommended further integration of these considerations to ensure they become project development objectives alongside technical requirements. In Sindh, stakeholders pointed out that they ensure gender sensitivity in projects, particularly those funded by donors. Another stakeholder mentioned that social and environmental screening checks, required by organizations like the World Bank, include gender aspects. Projects like the 300 MW solar park in Karachi incorporate these checks to ensure inclusivity. International donors should require specific percentages of gender inclusion in projects. Capacity building for government representatives on GESI is necessary, as PC-I lacks focus on gender sensitivity.

Stakeholders in **Khyber Pakhtunkhwa (KPK**) mentioned that planning and budgeting are partially gender-sensitive and socially inclusive. They proposed increasing public awareness, promoting social and gender-inclusive policies, and establishing consultation mechanisms to include women and vulnerable groups in financial decisions.

Stakeholders from **Balochistan** noted that while planning and budgeting are generally inclusive, there is room for improvement. They suggested conducting awareness campaigns to engage women, youth, and vulnerable communities in financial decision-making and project planning. In Balochistan, stakeholders noted that while planning and budgeting are generally inclusive, there is room for improvement. Capacity building and awareness campaigns are needed to better integrate women, youth, and vulnerable communities into financial decision-making processes.

Stakeholders from **Punjab** indicated that donor requirements from organizations like the World Bank (WB) and ADB ensure gender inclusivity in budgeting. They follow the guidelines provided by these donors to incorporate gender aspects in their projects.

The government of **GB** is actively working towards ensuring gender inclusivity in budgeting and planning. Stakeholders highlighted the importance of including women in decisionmaking processes, especially given their role in managing household water supplies. Lack of awareness is a major factor. Women play a crucial role in household water management but should be included in decision-making processes.

Stakeholders in the **Federal region** acknowledged that gender sensitivity is not a primary consideration in current planning and budgeting. They emphasized the need to align project proposals with donor requirements and incorporate gender and social inclusion objectives into project development.

In conclusion, stakeholders from various regions reported moderate integration of gender sensitivity and social inclusivity in water and hydropower sector planning and budgeting. AJK suggested platforms for representation and capacity-building programs for women, youth, and vulnerable communities. Sindh emphasized incorporating gender considerations at all project stages and meeting donor requirements. KPK highlighted the need for increased public awareness and inclusive consultation mechanisms. Balochistan noted general inclusivity with room for improvement through capacity building. Punjab follows donor guidelines to ensure gender inclusivity. Gilgit-Baltistan is actively working on including women in decision-making. The Federal region needs to align more with donor requirements and incorporate gender and social inclusion in projects. Overall, there is a need for enhanced efforts to integrate gender and social inclusivity in financial decision-making and project planning across all regions.

5. Conclusion

The feedback emphasizes the focus on the Domestic and Agriculture sectors, with stakeholders from different regions highlighting diverse technological implementations such as solar pumping in AJK and Sindh, dam construction in KPK, and filtration technologies in Balochistan. Key challenges include sustaining projects, securing donor support, and regional constraints like flood damage. Financially, regions rely on national, provincial, and international funding, facing issues with government coordination, capacity building, and political instability. Opportunities exist in streamlining administrative processes, thorough project proposals, and innovative mechanisms like carbon credits. Gender and social inclusivity are variably integrated, with AJK, Sindh, and Punjab adhering to donor guidelines, while KPK and Balochistan seek improvement. Enhancing capacity building, public awareness, and consultation mechanisms is recommended to improve inclusivity. Overall, addressing funding, capacity building, and coordination is crucial for advancing technological, financial, and social goals in these sectors.

6. Way Forward

The next steps in the roadmap development process include the assessment of the shortlisted technologies based on the three categories: legal, regulatory, and financial landscape,

Economic and Technical feasibility, and Inclusive development and Social impacts. Further, the shortlisted technologies will be evaluated (scored) and a **total of 5 technologies**, including **4 existing and 1 emerging technology**, will be prioritized. The evaluation will be presented to the stakeholders in a 2-day workshop planned for the 29th and 30th of May and the feedback will be taken on the basis of evaluation and scoring.

ANNEX-I Participants list

Name	Institution/Designation	Sector	Gender	Province
1. Engr Ubaid Ullah	Research Officer, PHED Khyber Pakhtunkhwa	Gov	M	KPK
2. Dr. Ali Asghar Mahessar	DD Water, Irrigation Department	Gov	M	Balochistan
3. Uzair Naqvi	Environmental Geologist, AJK PEDO	Gov	M	AJK
4. Sonia Soomro	Strategic Advisor – Sindh Solar Energy Department	Gov	F	Sindh
5. Waqas Abdullah	Assistant Director Agriculture	Gov	M	Muzaffarabad, AJK
6. Abdul Qadeer Kakar	Additional Secretary, PHED	Gov	M	Balochistan
7. Shahid Habib	Deputy Director (Environmental & Social Safeguard) SPRU (Irrigation)	Gov	M	Punjab
8. Niaz Ahmed	Energy Department	Gov	M	Sindh
9. Mishal Zahra	Scientific Officer, EPA	Gov	F	GB
10. Dr. Asghar Ali	Technical Expert, Irrigation Department, Sindh	Gov	M	Sindh