Sustain Indus Science Policy Dialogue

Science to support the SDGs and management of water resources in the transboundary river basin

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Initiated in 2019, the SustainIndus project aims to develop pathways that support decision makers and practitioners in developing science-based policy and climate-smart solutions to achieve the SDGs, particularly the goals related to food (SDG 2), water (SDG 6), and energy (SDG 7). Given the climate vulnerability of the Indus basin, and the rapid economic development and population growth, there is a dire need to anticipate and address the exponential increase in the demand for water, energy, and food.

On 1 December 2021, we organized a science-policy dialogue to discuss the project methodologies and their relevance to stakeholders; share key findings of ongoing work; and identify and align project goals with policy needs and the water–energy–food (WEF) nexus in the Indus Basin. The dialogue was co-organized with Utrecht University, Wageningen University and Research, Netherlands Organization for Scientific Research, Pakistan Agricultural Research Council, and Climate Adaptation Services.

Ongoing work on water for food and energy

The dialogue began with SustainIndus project members sharing their current work and latest outputs for the basin. One of the key field-scale works was the evaluation of laser land levelling to improve wheat crop production in the Indus basin, Pakistan. The evaluation found that laser levelling for wheat results in higher irrigation efficiency. The project team also assessed the basin-wide upscaling potential for this technology. The project will explore similar upscaling of promising field technologies and assess synergies between climate-smart innovations at the field scale and building adaption pathways for water and food security at the basin scale. Such basin-scale assessment of the water-food nexus is also being conducted using a dynamic vegetation model.

Other ongoing work includes using the water-energy nexus to assess sustainably-achievable hydropower potential in the basin. This work identifies a series of optimal hydropower plant portfolios under various socio-political choices related to the scale of hydropower development, while also considering the water-energy-food-environment (WEFE) nexus and geohazard risk aversion. These portfolios, available in an interactive storymap under

development, form the first steps in identifying optimal hydropower development pathways to achieve the SDGs.

Key issues and opportunities related to WEF in the Indus Basin

Translation of research into practice and policy

While discussing the key issues related to WEF in the basin, panellists agreed that one of the key challenges was translating research into practice. Simi Kamal, Hissar Foundation, Pakistan, noted that although the WEF nexus is "conceptually sound, it poses challenges during implementation". For successful implementation of the nexus, it is crucial to understand behavioural aspects and functioning. Zaigum Habib, Food and Agriculture Organization, added that action from small farmers should be seen and linked to the works of researchers and planners. As a solution, Ahmad Kamal, Federal Flood Commission, Pakistan, suggested developing a flow diagram depicting work on the research, community, national and regional levels. He noted that different stakeholders, including government and non-government actors, could refer to such visual representations to avoid similar activities and build on existing work. As suggested by the participants, a forum specifically focused on synergizing the various ongoing activities is also important.

In his keynote, Izhar Hunzai, Soni Jawari Center for Public Policy discussed the Government of Pakistan's initiative to 'take governments closer to people' by enabling local leadership and village-centred development in 850 villages of Gilgit-Baltistan. The initiative aims to encourage local communities lead activities related to sustainable agriculture, land, and energy use. Such initiatives help bring grassroot issues to the attention of policymakers and could potentially enable informed decision making on WEF issues.

As one of the suggestions for research to be implemented better in practice, Pervaiz Ameer, a water resource management expert, recommended that researchers should present context-specific interventions based on the specific agro-ecological zones, not just provide broad recommendations.

Accurate water measurement for food and hydropower security

Since water availability is directly linked to food production and hydropower, the panellists also spoke about the importance of accurate water measurement in Pakistan. Ahmad Kamal, Federal Flood Commission, noted that inputs from small rivers, tributaries, and small streams

into the main river are often unaccounted. Similarly, Zaigum Habib shared that water diverted for sectors other than agriculture, and water used for schemes at the local level is not properly accounted for. This could be an opportunity for stakeholders to focus on water accounting as it can serve as a guide for relevant schemes that can better utilize water for food production and hydropower. Izhar Hunzai and Abdur Rehman Cheema, United Nations Development Programme, commended the sustainable hydropower potential exploration efforts under SustainIndus as a useable research output that could inform upcoming hydropower planning in Gilgit Baltistan and the larger Indus region.

Streamlining WEF policies

From a policy lens, Ahmad Kamal suggested that there should be a combined policy for WEF, as opposed to the current sectoral policies on water, food, and energy. This would assist stakeholders to better understand the interlinkages between the three components. Zaigum Habib noted that in addition to streamlined policies, a clear implementation framework is needed for impactful change on WEF-related issues.

Context-specific interventions for food security

Bashir Ahmed, PARC, Pakistan, shed light on energy-alternative practices in Pakistan, such as solar pumps, regenerative and bio saline agriculture, and their uses to ensure food security. He suggested that government should focus on implementing these practices. Pervaiz Ameer added that in Pakistan's context, weed and locust management need special attention.

Recommendations and way forward

Fulco Ludwig, Wageningen University, expressed that the recommendations from the panel and experts helped clarify the scale at which the SustainIndus Project is working to make an impact. Understanding whether the impact could be stronger at the local, provincial, or regional level would allow the project to set its objectives and activities accordingly.

Another key suggestion was being specific with the recommendations provided by the project to help guide the implementation process. Participants also suggested that the project weigh the contexts where one or more of the three components could be prioritized. It was also pointed out that it is crucial to factor in the components within the sectors based on the needs and suitability of the local context.