**Water, Sustainability, Equity, and Security**

According to a recent World Resources Institute (WRI) report, Pakistan will be among the most water stressed countries by 2040. The reasons have to do with the unremitting demographic pressure on a finite and possibly shrinking resource base. The average per capita water availability has declined from a generous 5000 cubic metres (m$^3$) per person at the time of independence to a highly constrained 1000 m$^3$ today. There are other worrisome trends as well: for example, a recent international study singled out the Indus Basin for having one of the highest levels of degradation of groundwater resources. This is mainly due to the high rate of population growth, which will continue to increase in the foreseeable future. In addition, the impacts of climate change are already visible in the form of recurrent floods, persistent drought and groundwater depletion in some regions, increased variability and unpredictability of precipitation, and possibly a long-term declining trend in water availability.

The timely and balanced availability of water is a key determinant of peace and security, internationally as well as nationally. This is because water is implicated in the entire suite of factors that form human welfare: food security, health and hygiene, economic growth, energy availability, ecological health, climate adaptation, and social equity. In Pakistan, the Indus Water Treaty (IWT) has provided a basis for peaceful water sharing with India for over half a century; however, the increasing stress on water resources has the potential of reopening some of the earlier faultlines. Similarly, inter-provincial disputes over water have fed the atmosphere of mistrust and led to a stalemate in a number of areas, including the oft-cited question of Kalabagh Dam. Lastly, the bulk of the water-related conflicts are at local levels, where they have often led to incidence of violence and expropriation as well as the perpetuation of social injustice and inequity. These can only worsen if the level of stress is exacerbated further.

This situation calls for urgent and concerted action across a range of fronts: technology, infrastructure, politics, economics, ecology, and institutions. In the past, much of the attention focused on the first two items, specifically the use of better technology and enhanced infrastructure mainly to increase water availability but also to improve water use efficiency. Pakistan has one of the most elaborate systems of irrigated agriculture; maintaining and enhancing its efficiency is not only wanted in its own right, it can provide important lessons for the management of irrigated agriculture to the rest of the world. In this regard, however, while the technological/ infrastructural dimensions will continue to be important, in the future their deployment will have to be guided by an integrated consideration of the full range of factors.

This panel is taking place at a critical moment. In Pakistan, the Minister for Water and Power has announced that a national water management policy is under preparation. Presumably, the national policy will build upon the water chapter in another key policy document, namely Vision 2025. Similarly, it is to be expected that the policy will help in the achievement of the newly adopted Sustainable Development Goals (SDGs) on water and sanitation. The panel discussion can be informed by the elements of these three policy documents, and can help contribute to their reconciliation and realisation.
It is hoped that the discussion will contribute to the ongoing process for the formulation of these policies and plans by: (a) setting the stage, namely describing the current situation and emerging threats; (b) highlighting strategic policy areas of focus, e.g., food security, flood control, drought responses, groundwater conservation and management, water quality and public health, irrigation efficiency, conflict management, and water governance (i.e., institutional and policy measures designed to enhance water efficiency, equity, and sustainability simultaneously); and (c) identifying emerging research needs, especially development of water scenarios; improved flood forecasting; cost-effective provision of safe water and sanitation; best practices in water governance; social and environmental entailments of market-based solutions; and costs and benefits of demand side versus supply side solutions.

The panel discussion will focus on the following questions:

- How is water availability, aggregate, distributional (i.e., between various interest groups), and secular (i.e., seasonal and annual), affected by the ongoing demographic and climate-related trends?
- What is the implication of the emerging trends for peace and security, both between and within countries? What are their implications for social equity and distribution?
- What key policy concerns are incumbent upon these trends?
- One of the main objectives of past practices has been to harness the maximum amount of water for human use. This was pursued mainly through massive infrastructural investment (in dams, barrages, canals, drainage systems, and tubewells). Is this a sufficient focus of policy attention? What additional dimensions will be needed in the future? How can an integrated approach facilitate a more sustainable and equitable future?
- Groundwater has been a neglected area of attention in the past. This is surprising, since it constitutes by far the largest storage reservoir and therefore a potential means of flow-smoothing as well as maximizing water availability. How can an integrated approach lead to better outcomes?
- In the past, the enhancement of irrigation efficiency was achieved mainly through infrastructure investment. How can the use of economic instruments (e.g., water pricing) help in this regard? What are the social and ecological implications of such alternatives? What ancillary policies and measures may be needed to protect social and environmental policy objectives?
- What is needed to ensure the timely and efficient achievement of the water SDGs?
- What research needs emanate from the above considerations?

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