From Policy to Practice
Principles of Water Governance

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The Mihir Shah Committee report lays a solid foundation for restructuring water governance in India. Yet, a few supplementary provisions could reinforce the report's recommendations, nudging the effort towards improved water resources management.

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Water in India is governed as a public good, with evolving yet disjointed awareness of its environmental, social and economic underpinnings. However, effective management of this limited resource requires a nexus approach to governance, which integrates the cause and effect of water on the environment, society and the economy. This necessitates a shift towards hydrological systems thinking and multi-stakeholder approaches. Furthermore, such approaches should be premised on data, knowledge, and information systems, which prioritise economic decision-making, currently missing in the water governance architecture of the country.

The recently submitted report of the Committee on Restructuring the Central Water Commission (CWC) and Central Ground Water Board (CGWB) proposes many critical reforms to water governance, particularly on the environmental and social axes of the trinity approach. When coupled with economic prioritisation to focus on interventions with the highest benefit-to-cost ratio, particularly in view of fiscal constraints, the newly proposed National Water Commission (NWC) could well deliver on the "paradigm shift" articulated in the Twelfth Five Year Plan (Planning Commission 2012).

Logic of Hydro-logical Thinking

The first step to reform is understanding the challenge, in this case, the hydrological context. The 2030 Water Resources Group (2009) projects a 50% gap between water demand and water supply in India by 2030, amounting to over 755 billion cubic metres (Water Resources Group 2009). With constraints to further supply-side augmentation because of over-abstraction and overuse of water in multiple geographies, demand-side management plays a crucial role in closing this gap.

While accounting for the realities of political and administrative boundaries, there is a need for a greater focus on hydrological and agro-ecological scales to prioritise demand-side management, covering the continuum from sub-watersheds to river basins. The interconnectedness of surface and groundwater systems, on account of the hydrologic cycle, suggests developing integrated, as opposed to fragmented, surface and groundwater

emphases. With detailed hydrological mapping, sufficient granularity may be established to cover the aggregation and disaggregation of scales from village-level micro-watersheds to multistate river basins. In other words, the starting point of water governance is a better understanding of water itself.

From Awareness to Strategy Formulation

The hydrological lens of water governance can develop into an operational system when supplemented with the tools of scientific data and analysis. Equipped with these systems, relevant stakeholders can undertake actions needed to counter water scarcity and pollution.

Nonetheless, data availability in India is currently fragmented, scattered across multiple agencies, and inadequate for sound decision-making. Moreover, data gaps exist, in particular, on the interconnectivity of rainwater, surface water, and groundwater, land use, environmental flows, ecosystems, socio-economic parameters, and demographics at the watershed level. Where available, the data is often not accessible.

To foster coordinated action for better demand-side management, ease of data access by all stakeholders is vital, covering real-time data sets, remote sensing technologies, and geographic information systems (GIS), in addition to historical data and projections on water availability and quality. Over and above raw data availability, data points require analysis to feed into information systems, which in turn foster knowledge systems for action at scale. The linkages between data, information, and knowledge systems, encapsulated in user-friendly interfaces, can form the basis for the development of response strategies.

Transparency of Water Flows: Multi-stakeholder Approaches

Data transparency lends itself to collaborative approaches, as also good governance. Governance structures uphold not only transparent mechanisms, but also inclusiveness, equity and accountability.

In view of multiple stakeholders influencing and affected by water flows, spanning farmers, urban communities, industry and government, any governance framework ought to supplement government structures with inclusive and transparent stakeholder processes for joint decision-making to achieve intended objectives. Thus, hydrological mapping and data sharing should be complemented with the establishment of stakeholder councils, and with balanced participation across stakeholder groups. Such councils offer a mechanism for protection of water resources by resolving conflicts between stakeholder groups, and developing a shared vision for the use of water resources to support economic growth, social development and environmental protection. Participatory approaches may be initiated for each river basin at a minimum, ideally with higher coverage for bigger river basins along key tributaries.

Proposed Restructuring

The Committee on Restructuring CWC and CGWB's report suggests some essential reforms in the water governance framework of the country. Calling for participatory water governance, including aquifer-based approaches, the report rightly centres the restructuring on hydrological lines, proposing that the twin entities be transformed into a new NWC, covering both groundwater and surface water issues.

The NWC's suggested multidisciplinary approach provides much-needed focus on water challenges outside those currently analysed by the CWC and CGWB, but which have important implications for water sustainability, such as water quality, urban and industrial water management, and river basin management, among others. It is only through a unified, cross-sectoral approach that aquifer-based governance can offer successful mechanisms for countering groundwater depletion, and for maintaining surface water flows, and water quality. The proposal to establish a knowledge network to guide the NWC's activities says the necessary apparatus must bring in thought leaders from relevant global and national organisations. This, combined with an ongoing capacity building initiative, promises to mainstream innovation in the DNA of the NWC.

Additionally, the recommendation for data-driven approaches lies at the core of participatory governance, whereby stakeholders are provided the scientific ammunition to assess local water issues for informed decision-making.

While the report lays a solid foundation for restructuring water governance in India, which merit inclusion by the government, a few supplementary pillars can reinforce the recommendations to shift the proverbial needle towards improved water resources management, as outlined below.

Watershed Vision and Planning

A primary step in this direction is the development of watershed vision documents, which highlight key goals for each watershed, prioritising socio-economic development alongside ecological protection, which is often overlooked in water resources planning. For meaningful transformation, watersheds could be defined at the tributary scale for large river basins, such as the Ramganga and Hindon, or at a minimum of 1,00,000 hectares to promote strategic solutions thinking.

In addition to inputs from the NWC, the development of such watershed visions could crowdsource information from stakeholder councils or platforms, supported by NWC. Stakeholder involvement from the start simplifies the alignment of interests and initiation of actions.

Economic and Integrated Decision-making

Another important pillar of water governance relates to ensuring economically sound and cost-effective solutions. Hydro-economic analysis integrates the costs, benefits, and risks of various solutions, aimed at enhancing the economic productivity of water. Such analyses provide a common language for decision-makers to choose between policy choices and competing investments. For example, 80% of the projected water gap in 2030 can be closed by low-cost agricultural measures, including no-till farming, crop protection technologies, and reducing over-irrigation, among others. These measures obviate the need for expensive, supply-side interventions, such as the construction of dams, interlinking of

rivers, and lift irrigation schemes, providing a net surplus both hydrologically and fiscally.

Hydro-economics is most effective in the analysis of opportunity costs. Circular economy solutions, such as recycling and reuse of water, emerge as favoured solutions over freshwater abstraction, when economic feasibility is incorporated into hydrological assessments. In particular, integrated decision-making allows for an analysis of synergies and trade-offs between water, agriculture, energy, environment and livelihoods. Accounting for this nexus ensures the economy adopts a sustainable development pathway—socially, economically, and environmentally.

Technological improvements for water use efficiency and waste water management may serve as vehicles to accelerate economically effective transformation.

Governance reform needs to keep pace with technological advancements in agricultural, urban, and industrial water management. The NWC should institute an research and development (R&D) wing, which promotes technology acceleration across sectors in partnership with universities and research organisations. This wing could also work towards necessary financing solutions to promote technology use, mobilising financial markets funds to supplement government subsidies where a business case for such funding exists. This would be particularly relevant in agriculture, where technology use leads to higher incomes through productivity increase, driving economic growth with water efficiency.

A related aspect links to agricultural market linkages, whereby partnerships with agribusiness companies are established to mitigate growing supply chain risks and reduce the indirect water footprint of agribusiness companies. Public-private-community partnerships are the cornerstone of programmes such as Public Private Partnerships for Integrated Agricultural/Horticultural Development (PPP-IAD/PPP-IHD), promoted by the governments of Maharashtra, Karnataka, and Andhra Pradesh, among others. Such partnership models provide economic benefits to farmers and supply chain actors, and ensure sustainability of interventions, including effective utilisation of the irrigation infrastructure created.

In addition to collaboration across communities and agribusiness companies, partnerships such as these demand cross-departmental government coordination, with the involvement of entities to do with water resources, agriculture, horticulture, rural development, and finance, among others. Early alignment with other departments will integrate the water dimension within agricultural demand-side management, with better upstream linkages to irrigation infrastructure and downstream linkages to markets, providing income enhancement opportunities for farmers. Considering 80% of freshwater is used for agricultural purposes in India, there is a need for systems thinking in the sector for water-efficient growth.

Urban and Industrial Water Business Models

Urban water management suffers from inadequate infrastructure. A staggering 78% of waste water is estimated to be untreated nationally (Center for Science and Environment 2016). Where such infrastructure exists, there is poor operations and maintenance, negating the effect of millions of rupees spent on infrastructure creation.

The proposed NWC Urban and Industrial Water Division could serve as an incubation cell for business models and revenue-generating opportunities, particularly for waste water treatment and reuse, evaluating the financial viability of reuse, proximity of reuse from the point of treatment, as also closed loop models, thereby promoting energy efficiency and nutrient recovery.

With the articulation of policy reform and institutional mechanisms, the crucial next step is supporting the implementation of solutions at scale. Effective implementation requires a combination of, first, behaviour change by millions of individual households and farmers, as also industrial players, through decentralised solutions, and second, catalysts to enable such change.

The differentiating factor of catalysts is their transformative agenda, vision, and neutrality. Such development partners are a category distinct from non-governmental organisations (NGOs), and often support partnerships across multiple community organisations to implement solutions. The NWC's partnerships framework would benefit from including international and national catalysts to facilitate scalable solutions.

Effective implementation equally warrants a dedicated financial institution to support large-scale demand-side management and innovative financing—a "National Bank for Water Management," a National Bank for Agriculture and Rural Development (NABARD)-equivalent entity, exclusively mandated to support solutions for water sector transformation. The NWC proposal could brainstorm the creation of such an institution to prioritise water sector financing.

Adapting to (Climate) Change

The World Economic Forum's Global Risk Report (2016) lists failure of climate change mitigation and adaptation as the most significant risk by impact. The effects of climate change are increasingly recognised through its associated risks of financial, material, and ecological losses. A seminal World Bank report highlights the centrality of water to climate challenge, arguing that, "Achieving nearly every one of the SDGs [sustainable development goals] is dependent on solving the water problem" (World Bank 2016).

Ignoring climate challenge can undermine water sector investments and existing capacities. Addressing the challenge, on the other hand, requires a multi-pronged approach, which goes beyond forecasting climate change events to preparing the agrarian, urban, and industrial economies, as well as ecological functions, to respond to such events. It is estimated that 65% of projected climate change losses may be averted through cost-effective adaptation investments (ECA 2009).

In light of these issues, the NWC's proposed Water Security Division would benefit from an expansion in role to cover Climate Adaptation. Commencing with vulnerability assessments and scenario modelling, the division's responsibilities require surpassing such initial analyses to cover the design of effective

policies and incentives for long-term climate change-oriented actions, channelisation of capital flows to climate-resilient infrastructure, and formulation of appropriate responses to climate events. Although response strategies usually lean towards built or grey infrastructure, there is a growing body of work that highlights the benefits of nature-based solutions, providing ecosystem services along with safeguarding environmental systems.

Impact-based Monitoring

The above arsenal of information and knowledge systems, including climate adaptation tools, together with effective communications instruments, offer the dual advantage of prioritising action, while providing a framework for monitoring and evaluation (M&E) through standardised metrics. Water governance, thus warrants ongoing M&E for assessing the success of interventions and undertaking corrective measures in case of shortfalls. A gradual move from outputs or rupee-based monitoring towards cubic metres- and impacts-based monitoring is indispensable for the effective design of solutions.

The alignment of science, stakeholders, and economics for governing a country's water resources is a continuous process. A successful governance blueprint is one that provides the right foundation, along with the flexibility to adapt to changing priorities. This requires a delicate balance of combining top-down policy with bottom-up practice, institutional structures with stakeholder processes, and robust planning with course correction.

Navigating the arc from vision to action starts with recognising the need for change. And this is where the proposed restructuring of water governance in India provides a welcome opening.

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