

## Sustaining the Liquid Mosaic Longer Steps Needed

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This critique assesses if the National Water Framework Bill 2016 and the Mihir Shah Committee report are truly interdisciplinary and based on the principles of integrated water systems governance. The question still remains whether the recommendations are enough to bridge existing gaps and address future challenges in water governance.

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In May 2016, the Ministry of Water Resources, River Development and Ganga Rejuvenation placed the draft National Water Framework Bill (NWFB), 2016 in the public domain for comments. Almost at the same time, the Model Bill for the Conservation, Protection, Regulation and Management of Groundwater 2016 was also made public. These were followed by the publication in July 2016 of a report entitled “A 21st Century Institutional Architecture for India’s Water Reforms” (henceforth referred as the report). The report and the two bills were drafted by committees chaired by Mihir Shah. All these documents have been placed in the public domain at a time when the world has gone ahead towards describing and practising new paradigms of water governance. In India, the need for a new paradigm of water governance has been stressed by independent scholars and practitioners in water governance for quite some time (Iyer 2003; Bandyopadhyay 2009). However, these initiatives did not

have an early effect on governmental policy and practices till the publication of the Mihir Shah committees. All these are much awaited steps in the right direction. The question is whether they are long enough to address the challenges that water governance in India is facing.

The existing policy documents in India related to water allude to terms such as “interdisciplinary approach” and “demand management,” but they have been rather decorative when it comes to the concepts behind, and projects related to, interventions in water systems. Water projects and planning, reliant on a reductionist paradigm of engineering, have looked merely at short-term marginal economic benefits, without considering the long-run implications for ecosystem processes, livelihoods, and other wider economic aspects. This has not only led to prescriptions of socially and ecologically undesirable paths, but also aggravated disputes at various levels (Bandyopadhyay and Ghosh 2016).

Against this backdrop of complexity, the Ministry of Water Resources took the belated but correct step to promote a wider conceptual framework, and prepare a draft NWFB as an umbrella statement of general principles governing the exercise of legislative and/or executive (or devolved) powers by the centre, the

states, and local governing bodies. This should lead the way for essential legislation on more comprehensive and participatory water governance in every state of the union and devolution of the necessary authority to the lower tiers of government to deal with local water situations.

On the other hand, the report on the institutional architecture talks of restructuring the Central Water Commission (CWC) and Central Ground Water Board (CGWB) through the creation of a National Water Commission (NWC), which will subsume the roles of these two bodies. This will be associated with incorporating complementary subject areas such as hydrometeorology, river ecology, ecological economics, agronomy (with a focus on soil and water), and participatory resource planning and management, each headed by a commissioner. This very realisation marks a much-needed departure from reductionist engineering thinking, thereby marking a shift towards creating a multidisciplinary knowledge base to address the challenges surrounding our liquid mosaic. However, in comparison with the significance of the new initiatives of the ministry, not much has been published in the print media in response to the NWFBB and the new institutional architecture, though Ghosh (2016a, 2016b) and Alagh (2016) have addressed some aspects of it.

The main aim of this article is to review the NWFBB and the report on institutional architecture, keeping the Model Groundwater Bill in mind. This critique has been conducted in the light of the ongoing paradigmatic changes in water systems governance, thereby assessing how and whether these documents are truly interdisciplinary in concepts and embedded in the principles of integrated water systems governance (IWSG). The initiative is surely a step forward in a much-needed direction, but the question is whether the step is large enough to bridge existing gaps and address the immense challenges the country faces in water governance.

### IRBG in Practice

The realisation of the need for a holistic mode of water systems governance has been reflected in several new policy formulations globally, such as the

European Union (EU) Water Framework Directive. In some other countries, for example, South Africa, Australia, and Russia, serious attention has been paid to the social and ecological concerns expressed by people and scientists on the traditional reductionist approach to water governance. One needs to appreciate the need for a systems approach to water governance in general, and river basins in particular.

River basins are integrated and all parts are linked to changes in others, over space and time. Such changes may be part of natural processes or be human-induced. Flows in rivers are not only of water with dissolved chemicals, especially in conditions prevailing in India. They also carry sediments, energy, and biodiversity. Tinkering with any of them will affect all others. An activity taking place in one part of a basin (for example, disposal of waste water, deforestation of watersheds) will have effects all the way downstream. An example is the Farakka barrage on the lower Ganga, commissioned in 1975. The barrage was to divert additional water to resuscitate the declining navigability of the Kolkata port. However, over time, sedimentation in the barrage led to obstructions in the flow along the natural course of the Bhagirathi-Hooghly (Rudra 2004; Danda et al 2011). Interestingly, the chief minister of Bihar, which is immediately upstream, blamed the sediment accumulation for floods in his state.

Integration of water systems governance is best achieved by serious stakeholder participation in policymaking and feasibility studies. Generally, the tenets of integrated river basin governance (IRBG) entail:

- (i) Systematically incorporating community and stakeholder participation in planning and management processes.
- (ii) Drafting a long-term river basin vision, through a process of consensual agreement among all stakeholders.
- (iii) Devising an integrated approach towards policymaking, decision-making, and cost-sharing across various sectors, including industry, agriculture, urban development, navigation, and ecosystems, taking into consideration poverty reduction strategies.

(iv) Creating decision-making processes at the river basin scale, taking concerns at the sub-basin or local levels into account.

(v) Governments, the private sector, and civil society organisations adequately investing in capacity for river basin planning and participation processes.

(vi) Creating a solid foundation and repository of knowledge of the river basin and the natural and socio-economic forces that influence it.

(vii) Establishing a monitoring system.

A key issue stifling water governance in India is inadequate capacity to implement the processes of IRBG at various levels. A dedicated capacity-building programme to build a cadre of resource persons who could plan and implement integrated, collaborative actions at the watershed, sub-basin, and basin levels needs to be built urgently. The NWFBB and the report on institutional architecture should ideally lay down its intent to build such a multidisciplinary human resource and offer a platform to facilitate knowledge-sharing across basin communities and organisations, as stressed by Shah (2013) and Bandyopadhyay (2016).

### Is Scarcity the Real Crisis?

Despite its very useful efforts, in both the bill and the report, there remains an influence of neo-Malthusian thinking. As a result, in the description of the nature of the water crisis in India, the report does not mention the unprecedented degradation of the aquatic ecosystem processes and services (both surface and groundwater). This is an important gap that needs to be filled up.

The report conceives of a water security division in the proposed NWC. It states,

The overarching national goal in the water domain is water security. This includes ensuring the right to water for life as per the draft National Water Framework Bill, as also meeting the NWC mandate of insulating the agrarian economy and livelihood system from pernicious impacts of drought, flood and climate change. (p 17)

The idea of addressing “security” is welcome, as “security” is an overarching and cross-cutting vision for which every division in the NWC should be working. The idea of “security” should be embedded in all the policies related to water

emerging from the nwc. Therefore, while water security should be embraced by all means, the question still remains whether the creation of a separate division is better than having personnel addressing “water security” in each division. This is also because despite good intentions, divisions often work in watertight compartments, without much interaction with each other.

On a broader scale, the idea should have been to promote the “environmental security” associated with water relations between stakeholders. There lies the challenge of water governance. In a recent critique by Bandyopadhyay et al (2016: 36) of neo-Malthusian thinking on water, environmental security has been defined as a “state of absence of conflicts in the complex and inter-connected relations in and between the biological, social, economic and cultural processes of human societies and the natural environment.” They add, “In the process, one may state that environmental security depends on the dynamics in the natural environment, population change, degree of access to the environmental resources, among others.” As such, the degradation of aquatic ecosystem processes and services because of unsustainable and unmindful anthropogenic interventions in the hydrological cycle affects environmental security.

### Surface and Groundwater in the Global Water Cycle

Surface and groundwater are integral components of the global water cycle, and need to be seen through an integrated lens of water governance and property rights. The two bills under discussion, apparently comprehensive, show glimpses of the knowledge base accrued from global experiences and water policies. Yet, the reservation at the very beginning emerges from that the bills fail to integrate themselves into one. While it is appreciated that there needs to be a separate statement on property rights related to aquifers, that statement could well have been a part of the nwfB. Separate bills create the impression of a denial of the ecological linkage between surface and groundwater. As such, a water framework bill needs to be implemented at the scale of the river

basin, in which groundwater needs to be seen as an integral component. A compromise on this may be costly for IRBG.

This gap has been corrected quite a bit in the report, where there is an integrated approach towards water governance. The report has stirred a hornets’ nest by proposing of dissolution of the cwc and cgwb—which has always been the need. This has not been liked by many, especially the advocates of traditional water engineering (Sinha 2016).

### Corrections

The draft nwfB says, “Environmental flows adequate to preserve and protect a river basin as a hydrological and ecological system shall be maintained.” Almost on a similar note, the report, while talking of crucial elements of the new approach to water governance, states that “recognising nature as an important stakeholder, emphasising the criticality of maintaining required environmental flows” is one of the elements.

In policymaking in India, as opposed to global water science, a fraction of a river flow (like 10% or 15%) is considered as the flow to be left in situ, so that ecosystem processes and services do not get damaged. The practice of arriving at such a fraction has so dominated the past Indian thinking on rivers, that they are prevalent in the nwfB as well. Such an ad hoc quantitative allocation for natural ecosystems has no empirical basis and has not been supported by the global community of scientists (Arthington et al 2006). The idea that a river can remain at the same state of ecological health and ecosystem services even when 80% to 85% of its flow is diverted has not been seen anywhere in the world. The nwfB needs to correct this misleading conceptualisation that is seen as harmful to river ecosystems. In many instances, such specific numbers are being shown as absolutes, not negotiable and a product of technical research. This goes against the process of arriving at a negotiated path for the regulated water systems (Bandyopadhyay 2011).

It is important to move towards a legally enforceable policy to integrate the flows literature in basin water allocations. Therefore, scenario analyses with

valuation of ecosystem services of various predetermined flow regimes for river systems will have to be undertaken to identify optimal flow regimes. This will provide a better understanding of “ecological reserves” or water allocated for natural ecosystems.

It is indeed welcome to see the recommendation that “there shall be minimum interference in existing natural river flows, in the natural state of water bodies and wetlands and in floodplains and riverbeds, which shall be recognised as integral parts of the rivers themselves.” This is echoed in the report where “minimising adverse ecosystem impacts of water development interventions” is also stated as a key element of the new management paradigm (p 22).

Given the current scenario, it is important that a river conservation zone be determined and earmarked to regulate interventions in floodplains that provide important ecosystem services, including lateral connectivity and habitat to aquatic species, groundwater recharge, and flood control. This is, of course, not the domain of a single division, but will need a multidisciplinary approach. An initial attempt to address this task has been taken up for the Brahmaputra river system by Bandyopadhyay et al (2016).

### Effective River Basin Organisation

The recent interstate blame game between West Bengal and Bihar related to the Farakka barrage, and between Karnataka and Tamil Nadu over sharing of the Cauvery waters, reiterates the need for institutionalising effective river basin organisations (RBOs). This point has been strongly emphasised as a new institutional structure for water security by Ghosh (2016b and 2016c) and Bandyopadhyay (2016). This should not be avoided because of obvious political complexities.

As a recommended institutional set-up, there is a need for a basin-wide authority that is democratic in nature, with greater professional standing than state governments. It can then initiate action to prevent degradation of freshwater ecosystems and against all forms of stakeholders, including state governments. This implies that the authority should be vested with adequate regulatory powers.

Despite the reference to a “River Basin Authority” in the *nwfb*, the role of it seems to be confined to creating “master-plans” for basins. A master plan is an old colonial term and hardly fits in today’s participatory culture and processes. The very statement “All decisions and actions on water resources of the River Basin, including implementation of water resources projects, shall progressively conform to the River Basin Master Plan” is risky and provides an opening for technocratic monopoly. What will happen if the implementations of water-related projects do not conform to the master plan? How will those who disobey be taken to task? Who will take them to task? These remain open-ended questions.

Similarly, it is very difficult to conceive the role of *rbos* in the context of conceptualising a *nwc*. Global experience has adequately revealed the importance of *rbos* (Scheimer 2013), and there is no reason why their potential cannot be utilised in a federal polity like India. The nature of challenges varies across river basins. As such, the challenges in the Himalayan rivers are very different from those of the peninsular rivers. The challenge in the lower Ganga can never be compared with that of the Cauvery. This calls for stronger *rbos*. Conflicts among stakeholders are extremely prevalent, and need to be addressed through different modes of treatments. Therefore, it is important to think about the extent of autonomy and structure of the *rbos* in the light of the proposed *nwc*. This has already been debated in the popular media (Alagh 2016; Ghosh 2016a, 2016c).

### Multi-stakeholder Dialogues

One of the important tenets of *irbg* is promoting multi-stakeholder dialogue. Achieving basin-level agreement on governance will need collective action by diverse stakeholder groups. At a watershed/basin level, different water users co-exist and any decision towards sustainable resource use will need collective action. The *nwfb* needs to ensure promoting multi-stakeholder interaction and collaboration between stakeholders at the watershed, sub-basin, and basin

levels. This is another point to be strengthened in the *nwfb*.

The report talks of participatory management by primary stakeholders. In the process, it sets “participatory resource management, as an approach to water resource development and management as superior to top-down technocratic approach both for the former’s intrinsic and instrumental value.” However, to what extent this will be practised at the river-basin level is in need of further clarity.

### Pricing and Water Regulator

While the *nwfb* makes a very important recommendation on “differential” and “full cost pricing,” there needs to be a mention that the pricing instrument should be designed as not just covering operation and maintenance (O&M) costs. The pricing should reflect the scarcity value of water, not only of its economic use, but also the scarcity value of ecosystem services. This implies that users may cover part of the “environmental costs” that their use of water entails. This needs to be acknowledged clearly in the *nwfb*.

As far as the report is concerned, it is not clear how the pricing mechanism will be arrived at. While the *nwc* is proposed to have sufficient bandwidth in the context of ecological economics, it is not clear whether water pricing will be left to it or to the *rbos* (which should ideally be the case) or to some other agency. The report mentions, “The clear understanding is that empowering *wuas* (Water Users’ Association) is the key to making the process of pricing of water and *isf* (Irrigation Service Fees) collection more transparent and participatory.” This is a good move from the perspective of implementation, but the question remains if the present level of decentralisation will offer the optimal results.

Further, in the draft *nwfb*, the composition and role of the statutory Water Regulatory Authority is not clearly defined. It is not clear how such an authority will operate—is it under the aegis of the river basin authority? Or should it exist as a separate structure? Of course, any such institutional structure should be as democratic as possible,

with participation and representation from water users, local communities, and panchayati raj institutions (*pris*), and other stakeholders.

### Water for Urban Areas

There is a need to promote integrated urban water management to close the water loop. This would encompass catchment and source protection (waterbodies and aquifers), managing water supply, treatment, recycling and reuse of waste water. Such an approach would help cities become self-reliant for water and reduce their dependence on external water supplies. Cities/urban centres should be encouraged through fiscal policies and instruments to progressively reduce their water footprint. There is a greater need to engage urban citizens in planning, designing, and monitoring water and sewage management. They should also be involved in implementation of decentralised options for water and sewage management at a colony or cluster level. Dedicated efforts to reducing the water footprint of cities and industries need to be a part of the demand management strategy.

It is here that the report scores above all other previous documents. The *cwc*’s traditional mandate was to deal with irrigation, and to some extent, hydro-power. Urban and industrial water never came under its purview. In a more comprehensive approach, the report suggests that the mandate of the proposed *nwc* is a clear departure from that of the *cwc*. A separate urban and industrial water division is proposed under the *nwc* that addresses various urban and industrial water challenges.

### River Basin Master Plans

The *nwfb* and the report on institutional architecture allude to river basin master plans though it leaves the plans to be devised by the *rbos*. However, to avoid monopolisation of power, the broad contours of the process should include at least the following two elements.

(i) Management objectives and outcomes to be achieved by the basin plan. This should include ecological restoration and conservation of aquatic biodiversity, in addition to the balancing of

water supply and demands for consumptive human uses.

(ii) Identification and management of key issues and risks to the river basins and the strategies needed to address these in the short and long term.

### Towards an IRBG Agenda

There are certain important knowledge gaps that need to be plugged, and the NWC must carry them out as non-negotiable studies at the basin scale. Assessment of demand and supply, keeping the broader hydrological cycle in view, needs to be conducted.

While forwarding an IRBG agenda, it is important that knowledge gaps are addressed through the creation of a research agenda on understanding the ecology of each river basin in detail, the institutional structure for RBOS, and the ecological economics of water. This will define the principles for managing trade-offs between water for economic growth and water for ecological processes and services. These trade-offs arise out of water allocations across competing sectors, and limits for abstraction can be decided on through negotiated settlements and

not ad hoc allocations. At an institutional level, there needs to be constant evaluation of the effectiveness of various institutions at various levels, including the river basin master plans. This again calls for a separate institutional framework, which has not been recognised by the report (whose mandate was solely to restructure the cwc and the cgwb) or by the NWFb. It is with such recognitions at the institutional levels that a more widely acceptable IRBG framework can be proposed by the policy documents. In India, we urgently need to wake up to a recognition and comprehensive understanding of our water systems. Sometimes politically tough measures are the wisest steps to be taken.

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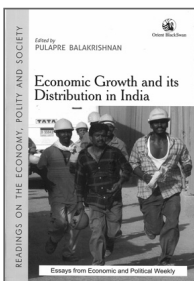
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## Economic Growth and its Distribution in India

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After a boom in the early 21st century, India witnessed a macroeconomic reversal marked by a slowdown in growth that has lasted a little longer than the boom. A fresh criterion of governance, namely inclusion, has emerged and become a priority for the state. Written against the backdrop of these developments, the essays in this volume represent a range of perspectives and methods pertaining to the study of growth and its distribution in India; from a long view of growth in the country, to a macro view of the recent history of the economy, to a study of the economy at the next level down, covering its agriculture, industry and services, and, finally, to an assessment of the extent to which recent growth has been inclusive.

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