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National Water Policy and the Need for a National Water Framework Law in India: A Discussion

Abstract

Water is a state subject in India and a key national natural resource—one of the most scarce, requiring comprehensive and integrated planning and management. The Ministry of Water Resources, Government of India, had formulated national water policies in 1987 and 2002; and the draft National Water Policy 2012 was recently approved. The latter has highlighted the need for a National Water Framework Law in India to develop a national perspective on water resources. The paper presents a discussion on the national water policies and the need for a national framework law in India. It highlights the need for formulating the national water framework law and its adoption by all the states in view of the fragmented and multiple legislations on water resources at the state level and the need to manage water resources in a holistic manner. This calls for evolving a consensus among the states through dialogues and discussion. The paper also highlights the need for formulating action plans at the Centre and the states to ensure the efficacy of the national water policies and legislation and to achieve the desired outcomes.

Introduction

The sources of water supply in India comprise the major river basins that spread across various states, making water a national resource. However, water is defined as a state subject as per the Constitution of India, empowering the states to undertake the functions of policy, planning and implementation. The Centre has a limited role, mainly relating to the adjudication of water disputes. This calls for a national-level perspective and planning for the management of the country's water resources. These resources constitute a key component of the natural resources that are critical for the survival, well-being and development of the people. Water resources cater to multiple requirements of society: as critical inputs in the production of food and non-food crops

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for drinking and other domestic purposes, including sanitation; for electricity generation, industrial and non-agricultural activities; sustenance of various ecosystems; and navigation.

While the demand for water for different uses is increasing, the supply of water to meet these demands is declining. Hence, there is an urgent need to develop policies and strategies to manage and allocate water for various purposes in an integrated and holistic manner with a national perspective. It is in this context that the Ministry of Water Resources, Government of India, has formulated national water policies from time to time. The state governments were expected to formulate state-level policies, based on the national policy, and adopt and implement them by incorporating them into legislations, plans, programmes and schemes. However, these policies have not resulted in improving and augmenting the country's water resources. The Indian water sector continues to experience several problems, which can be summarized as follows (Briscoe and Malik, 2007: 1–10):

1. Compared to the developed countries, India has a lower potential for water infrastructure, defined in terms of storage in dams, reservoirs and river basins.
2. There has been a decline in the quality of public irrigation and water supply services.
3. Emergence of tube well technology as an alternative, particularly to canal irrigation—20 million tube wells have been installed, accounting for 50 per cent of India's irrigated area—has become unsustainable.
4. Poor management—inadequate user charges, low revenues, weak accountability and under-capacity—has resulted in poor maintenance.
5. Instead of creating new water infrastructure, more investments have been made in the old infrastructure to overcome poor maintenance.
6. Rivers have become sewers due to the lack of treatment of waste water.
7. Urban households have resorted to a range of coping strategies—investments in private borewells and storage, purchase of bottled water from vendors, and installation of water purification systems. A huge 80 per cent of the domestic water supply in India in 2007 came from groundwater.
8. While the sources of water supply are steadily declining and water is becoming scarce, the demand for water is galloping due to

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industrialization and urbanization. This has resulted in a huge demand-supply gap.

The problem needs to be addressed as follows:

- Investments in new infrastructure for the provision and distribution of water supplies.
- Augmentation and improved management of surface water—better allocation to different users, financial sustainability, accountability, competition, regulation, public-private partnership, citizen participation.
- Better management and regulation of groundwater use.
- Augmentation of groundwater through rainwater harvesting.
- Treatment and recycling of waste water.
- Better water demand management.

Review of National Water Policies

The national water policies of 1997, 2002 and 2012 have attempted to address the above issues. The key provisions of the policies are given in Table 1.

The details of the national water policies are discussed in the sections below.

Need for the Policy

The 1987 NWP stated that water is a prime natural resource that meets basic human needs, and is a national asset that needs to be governed by a national perspective. The policy emphasized that water is a precious national resource, which should be planned, developed and conserved on an integrated and environmentally sound basis, keeping in view the needs of the states concerned. The 1987 policy highlighted the concerns of the Indian water sector and underlined the need for an integrated approach. The 2002 NWP retained most of these aspects.

The draft 2012 NWP has identified the key concerns of the Indian water sector: the impact of climate change in terms of deepening of the water crisis and water-related disasters; inadequate access to water for drinking and domestic purposes; overexploitation of groundwater; planning and implementation of water resource projects in a fragmented manner without due consideration to optimum utilization, environment sustainability and holistic benefit to the people; grossly inadequate maintenance of irrigation infrastructure, resulting

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Table 1: Key Provisions of National Water Policies

NWP 1987	NWP 2002	Draft NWP 2012
1. Need for a national water policy	1. Need for a national water policy	1. Need for NWP present scenario and concerns
2. Information system	2. Information system	2. Water framework law
3. Maximizing availability	3. Water resources planning	3. Uses of water
4. Project planning	4. Institutional mechanism	4. Adaptation to climate change
5. Maintenance and modernization	5. Water allocation priorities	5. Enhancing the water available for use
6. Safety of structures	6. Project planning	6. Demand management and water use efficiency
7. Groundwater development	7. Groundwater development	7. Water pricing
8. Water allocation priorities	8. Drinking water	8. Conservation of river corridors
9. Drinking water	9. Irrigation	9. Water bodies and infrastructure
10. Irrigation	10. Resettlement and rehabilitation	10. Protection and restoration
11. Water rates	11. Financial and physical sustainability	10. Management of flood and drought
12. Participation of farmers and voluntary agencies	12. Participatory approach to water resource management	11. Water supply and sanitation
13. Water quality	13. Private sector participation	12. Institutional arrangements
14. Water zoning	14. Water quality	13. Trans-boundary rivers
15. Conservation of water	15. Water zoning	14. Database and information system
16. Land erosion by sea or river	16. Conservation of water	15. Research and training needs
17. Land erosion by sea or river	17. Flood control and management	16. Implementation of national water policy
18. Drought management	18. Land erosion by sea or river	
19. Science and technology	19. Drought-prone area development	
20. Training	20. Monitoring of projects	
21. Conclusion	21. Water sharing/distribution among states	
	22. Performance improvement	
	23. Maintenance and modernization	
	24. Safety of structures	
	25. Science and technology	
	26. Training	
	27. Conclusion	

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in wastage and underutilization; encroachment of natural water bodies and drainage channels, preventing groundwater recharge; and growing pollution of water bodies due to the discharge of untreated industrial effluents.

The draft 2012 NWP has presented the objectives and principles of the national water policy in a more structured fashion. The key objective of is to take cognizance of the existing scenario, propose a framework for the creation of a system of laws and institutions, and formulate a plan of action with a unified national perspective. The key principles of the policy include evolving a common and integrated perspective for planning, development and management of water resources; managing water as a common pool community resource held by the state under the doctrine of public trust to achieve food security, support livelihoods, and ensure equitable and sustainable development of all; considering river basins as the basic hydrological unit for planning; giving priority to water demand management by evolving an agricultural system that economizes water use and maximizes its value; bringing in maximum efficiency in water use and avoiding wastages; managing water quality and quantity in an interlinked and integrated manner; using economic incentives and penalties to reduce pollution and wastage; and factoring the impact of climate change on water resource availability into water management-related decisions.

Water Resource Planning and Maximizing Availability

The 1987 NWP stated that all the available water should be brought within the category of utilizable resources to the maximum possible extent through augmentation of water conservation and availability by measures for maximizing retention and minimizing losses. The policy suggested that resource planning be based on a hydrological unit, such as the drainage basin or sub-basin, and all individual projects and proposals should be formulated within this framework. It further recommended establishing appropriate organizations for the planned development and management of river basins in their entirety; multi-disciplinary teams to prepare comprehensive plans, taking into account the needs of all the users; transferring of water from one river basin to another; and recycling and reuse of waste water. The 2002 NWP also stressed inter-basin transfers, artificial recharge of groundwater, and desalination of brackish or sea water; as well as traditional water conservation practices, such as rainwater harvesting and watershed management, for improving water resources.

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The 1987 and 2002 policies have highlighted the need for periodical reassessment on a scientific basis of the groundwater potential, taking into consideration the quality of water available and the economic viability of extracting it, regulating the exploitation of groundwater, developing and implementing groundwater recharging projects, and the integrated and co-ordinated development of surface water and groundwater. These policies have assigned top priority to drinking water, followed by irrigation, electricity generation, and non-domestic and industrial uses.

The draft 2012 NWP has suggested a scientific review and assessment, once in every five years, of the availability of water resources and their use by different sectors in various basins and states of the country. The policy emphasizes the need to augment water availability through strategies such as direct use of rainfall and avoidance of evapo-transpiration. It has recommended mapping of aquifers to know the quantity and quality of the groundwater available in the country. Other suggestions include arresting the decline in groundwater levels by introducing improved technologies of water use, incentivizing efficient water use and encouraging community-based management; and undertaking artificial recharging projects, inter-basin transfers of water, and integrated watershed development activities.

The draft 2012 policy has recommended the optimum utilization of water for diverse uses by creating awareness; ensuring access to minimum quantity of potable water to all within the easy reach of households; keeping aside a portion of river flows to meet the ecological needs of minimum flows; special impetus to adopt community-based, climate-resilient technology options, including increasing water storage in various forms, such as soil moisture, ponds, groundwater, small and large reservoirs; and better demand management, stakeholder participation, and adoption of water-saving technologies for agriculture and industry.

The draft 2012 policy has also recommended removing the large disparities in water supply and sanitation between the rural and urban areas; incentivizing low water-intensive sanitation, sewerage systems and decentralized sewage treatment plants; supply of water for drinking purposes from surface sources in urban areas; treatment of waste water from kitchens and bathrooms and reuse for flushing of toilets; publishing accounts and audited reports, including on leakages; promoting rainwater harvesting and desalination in the urban and industrial areas; integrated execution of water supply and sewerage projects; combined bills for water supply and sewerage; incentivizing the use of water-efficient technology and recycled waste water in industries.

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Water Use Efficiency, Conservation, Demand Management and Pricing

All the three policies have assigned high priority to these aspects. The 1987 NWP recommended charging water rates that reflect the scarcity value and are adequate to cover the annual maintenance and operation charges and part of the fixed cost over a period, while ensuring adequate and timely supply of irrigated water. The policy further suggested that surface water and groundwater rates should be rationalized with due regard to the interests of small and marginal farmers. It recommended that measures be put in place to improve the efficiency of water utilization and a campaign be undertaken to create awareness on water as a scarce resource, and promote conservation consciousness through education, regulation, incentives and disincentives. The 2002 NWP made additional recommendations in this regard, which include maximizing retention, eliminating pollution and minimizing losses through selective linings in the conveyance system; modernization and rehabilitation of existing systems, including tanks; recycling and reuse of treated effluents; and adoption of traditional techniques like mulching or pitcher irrigation and new techniques like drip and sprinkler. The policy suggested that adequate emphasis be placed on the physical and financial sustainability of existing facilities and that water charges for various uses be fixed in such a way that they cover at least the initial operation and maintenance costs and a part of the subsequent capital costs. It further recommended that water rates should be directly linked to the quality of services provided and that subsidies to the poor should be transparent and well-targeted.

With regard to pricing, the draft 2012 policy suggested the adoption of differential rates for pre-emptive and high priority uses of water; setting up a water regulatory authority to fix and regulate water tariffs and charges in an autonomous manner; charging for water on a volumetric basis; incentivizing recycling and reuse of waste; giving water users associations the autonomy to fix the rates and the statutory powers to collect and retain a portion of the water charges, manage the volumetric quantum of water allotted to them, and maintain the distribution system in their jurisdiction; reversing the heavy under-pricing of electricity; and providing separate electric feeders for subsidized groundwater. The 2012 NWP recommendations for promoting demand management and water use efficiency include benchmarking for different water uses with regard to the water footprint and water audit, undertaking regular water balance and water accounting studies, establishing an institutional arrangement at the national level to promote and regulate the efficient use of water at the basin/sub-basin level, recycling and reusing water, incentivizing the efficient and

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economic use of water, early completion of projects to reduce costs, and water saving in irrigation through methods like micro-irrigation and watershed development. The policy further advocates integrated and scientifically planned conservation through community participation, preventing encroachments and pollution of water bodies, ensuring groundwater quality, proper maintenance of the water resource infrastructure, and legally empowered dam safety services for conservation of river corridors, water bodies and infrastructure.

Institutional Arrangements

The 1987 policy did not have a separate section on institutional arrangements. However, some of these issues were dealt with at different places in the document. The 2002 policy suggested that existing institutions at various levels in the water resources sector would need to be appropriately reoriented/reorganized; and in some instances where required, even new institutions created. The draft 2012 policy also recommended that appropriate river basin organizations be established and special multi-disciplinary units be set up to prepare comprehensive plans. It called for establishing a forum at the national level to deliberate upon issues relating to water and to adopt the approach of consensus, co-operation and reconciliation among the party states in instances of disputes. A similar mechanism was suggested within each state to amicably resolve the competing demands for water amongst different users and parts of the state. A permanent Water Disputes Tribunal at the Centre was suggested to resolve inter-state disputes. Other suggestions include using the good offices of the Centre and the states for arbitration and mediation in resolving the disputes, community and private sector participation in planning and implementation of projects, restructuring the departments and organizations related to water at the Centre and in the states, and making them multi-disciplinary for integrated water resource planning.

Project Planning and Implementation

The 1987 NWP recommended planning and formulation of multi-purpose water resource projects that provide for drinking water, irrigation, flood mitigation, hydro-electric power generation, navigation, pisciculture and recreation. The policy recommended assessing the impact of the projects on the quality of the environment, displacement and re-settlements, and preservation of the ecological balance; paying special attention to the needs of the disadvantaged and weaker sections, such as SCs and STs; sound project preparation and management; optimal allocation of resources; and effective implementation.

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These aspects were retained by the 2002 NWP. The draft 2012 NWP suggested that all water resource projects be planned as multi-purpose projects to the extent feasible, with maximum possible storage to maximize utilization, subject to topography and water resource availability, as per the efficiency benchmarks; with stakeholder participation, time-bound clearances and the involvement of local bodies and institutions.

Modernization, Maintenance, Monitoring and Performance Improvement

The 1987 NWP emphasized proper maintenance of the assets created by making annual provisions in the budget for this purpose and by undertaking regular monitoring and the necessary rehabilitation and modernization. The policy recommended that adequate organizational arrangements be made at the national and state levels for the safety of storage dams and other structures. It further suggested that central guidelines on the subject should be constantly reviewed and a system be put in place for continuous surveillance and regular visits by experts. The 2002 NWP policy stressed the need for suitable personnel for maintenance and monitoring, consisting of specialists in investigation, design, construction, hydrology and geology. The policy recommended the enactment of dam safety legislation to ensure adequate inspection, maintenance and surveillance of existing dams, and thorough planning, investigation, design and construction of new dams. The 2002 policy further recommended the formation of water users' associations with the authority and responsibility to facilitate the management, including maintenance, of irrigation systems in a time-bound manner.

The policy stressed the need for the careful monitoring of projects to identify bottlenecks and adopt timely measures to obviate time and cost overruns; and developing a system to monitor and evaluate the performance and socio-economic impact of projects. The 2002 policy underscored the importance of a paradigm shift from the present emphasis on the creation and expansion of water resources infrastructure for diverse users to improvement in the performance of the existing water resource facilities. The policy recommended re-prioritizing the funds allocated to the water resource sector so as to meet the needs of both development as well as operation and maintenance of facilities. The draft 2012 NWP also suggested that measures be taken to ensure proper maintenance of the water resource infrastructure and provision of legally empowered dam safety services by the states and the Centre.

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Drought and Flood Management

The 1987 NWP recommended reducing the vulnerability of drought-prone areas through soil moisture conservation measures, water harvesting practices, minimization of evaporation losses, development of groundwater potential, transfer of water from surplus areas, employment and relief work. For flood control and management, the policy suggested preparation of a master plan, watershed management, construction of check dams, adequate flood cushion in storage projects, and an extensive network of flood forecasting and flood protection. These aspects were retained by the 2002 NWP. The 1987 policy suggested minimizing land erosion by suitable cost-effective measures and discouraging and regulating economic activities along the coast. The 2002 policy further recommended that each coastal state should prepare a coastal land management plan, keeping in view the environmental and ecological impact, and accordingly regulate developmental activities. For managing drought, the draft 2012 NWP suggested formulation of sound agricultural strategies through scientific planning, integrated farming systems, and non-agriculture based rural projects to promote livelihoods and alleviate poverty. For managing floods, the policy recommended developing forecasting models to ensure flood preparedness, evolving operating procedures for reservoirs to ensure flood cushion, and preparing frequency-based flood inundation maps to formulate coping strategies, including supply of safe drinking water before and after floods. The draft 2012 policy also suggested preparation of disaster management plans with community participation.

Sharing of River Waters

The 1987 NWP did not deal with this aspect. The 2002 NWP recommended developing a national perspective with regard to water availability and needs in a river basin and the necessary guidelines for future agreement among states. The policy stated that the Inter-State Water Disputes Act of 1956 be suitably reviewed and amended for timely adjudication of water disputes referred to the tribunal. The draft 2012 NWP suggested establishing a forum at the national level to deliberate upon issues relating to water, evolving a consensus, co-operation and reconciliation among the party states, and setting up a permanent Water Disputes Tribunal at the Centre to resolve disputes. The draft 2012 policy also emphasized the sharing of international river waters and recommended entering into bilateral agreements with neighbouring countries for the exchange of hydrological data on shared rivers on a near real-time basis; negotiations with riparian states with regard to international rivers; and adequate institutional arrangements at the Centre for implementing international agreements.

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Information System

The 1987 NWP observed that a well-developed information system is a prerequisite for resource planning. Accordingly, it recommended putting in place a standardized national information system with a network of data banks and databases; integrating and strengthening the existing central and state-level agencies; and improving the quality of data and processing capabilities. The policy observed that the information system should generate updates on water availability and actual water use, and give comprehensive and reasonably reliable projections of the future demand for water for diverse purposes. The policy suggested that steps be taken to avoid duplication of data and provide for the free exchange of data among various agencies. While retaining the above observations, the 2002 NWP recommended developing standards for the coding, classification and processing of data, methods/procedures for collection, and efforts to develop and continuously upgrade the technological capability to collect, process and disseminate reliable data within the desired timeframe. The draft 2012 NWP suggested placing in the public domain all the hydrological data other than that classified due to national security considerations, with a periodic review for further declassification; establishing a National Water Informatics Centre to collect, collate and process hydrological data and conduct a preliminary assessment in an open and transparent manner on a GIS platform; developing a programme on data collection related to climate change; and building databases on all water-related aspects with well-defined procedures for online updation and transfer to facilitate informed decision-making.

Research in Science and Technology and Training

The 1987 NWP recommended that intensive research be undertaken in areas such as hydrology, groundwater recharge, harvesting, safety, better management, recycling and re-use. The 2002 NWP added some more areas for taking up intensive research. The 1987 policy suggested a perspective plan be evolved for imparting standardized training—covering information systems, sector planning, project planning and formulation, project management, operation and maintenance—to all personnel and farmers. This was also emphasized by the 2002 NWP policy. Suggestions of the draft 2012 NWP in this regard include promoting continuous research and advancement in technology; incentivizing innovations; providing adequate grants to the states to update technology, design practices, and plan and implement management practices; preparing annual water balances and accounts for the sites and basins; computing hydrologic

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balances for water systems; benchmarking and evaluating performance; conducting re-training and quality improvement programmes for water planners and managers at all levels, with a focus on information technology and analytical capabilities; establishing an autonomous centre for research in water policy to evaluate the impact of policy decisions and to evolve policy directives; imparting regular training and courses in water management; upgrading the infrastructure of training and academic institutions; and launching a national campaign on water literacy with a view to building the capacity of different stakeholders.

Water Framework Law

This aspect was not dealt with by the 1987 and 2002 policies. The draft 2012 NWP identified the felt need to evolve a broad overarching national legal framework of general principles on water to lead the way for essential legislation on water governance in every state of the Indian Union and devolution of the necessary authority to the lower tiers of government to deal with the local water situation. The policy observed that water needs to be managed as a community resource held by the state under the doctrine of public trust to achieve food security, livelihoods, and equitable and sustainable development for all citizens; and that existing legislation, such as the Indian Easements Act, 1882, and various irrigation acts, may have to be modified as they appear to give landowners proprietary rights to the groundwater under their land.

Implementation of Policy

This aspect was not dealt with by the 1987 and 2002 policies. The draft 2012 NWP suggested that the National Water Board should prepare a plan of action based on the National Water Policy, as approved by the National Water Resources Council, and regularly monitor its implementation. The water policies of various states may need to be drafted/revised in accordance with this policy, keeping in mind the basic concerns and principles as also a unified national perspective.

Discussion on National Water Policies

The provisions of the national water policies are quite comprehensive and cover a wide range of aspects for effective water resource management. Around 15 states have formulated state water policies along the lines of these national policies at various points in time. These include Andhra Pradesh, Assam, Himachal Pradesh, Jharkhand, Karnataka, Kerala, Madhya Pradesh, Maharashtra, Meghalaya, Odisha, Puducherry, Punjab, Rajasthan, Uttar Pradesh

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and West Bengal. The state-level policies more or less follow the spirit and content of the national water policies of 1987 and 2002. However, the draft 2012 NWP is relatively new and the states are yet to accordingly revise/formulate their water policies. The Government of India has initiated discussions with the states on the 2012 policy with a focus on the provision related to drafting a water framework law at the national level.

The current status of water resources in the country presents a dismal picture, reflecting the poor implementation of the national and state water policies to achieve the desired outcomes. The *India Infrastructure Report 2011* (IDFC, 2011) has made the following observations on the status of the country's water resources:

1. The total utilizable water in the country from surface water and groundwater is 690 bcm and 432 billion cubic meters (bcm), respectively, which is barely sufficient to meet the present needs. However, if the current pattern of demand continues, about half the demand for water will be unmet by 2030. Climate change will further aggravate the problem by causing erratic weather patterns.
2. The use of water by the agricultural, industrial and energy sectors is highly inefficient.
3. Pollution of rivers and water bodies by industries and sewerage is sharply reducing the availability of clean water.
4. Over the years, there has been a steady reduction in the storage capacity of dams due to the excessive focus on the construction of new dams and the neglect in the maintenance of the older ones.
5. There is an urgent need to restrain water demand and increase conservation.
6. Water availability needs to be improved by augmenting the storage capacity for surface water, and incentivizing groundwater recharging, rainwater harvesting, waste water treatment and reuse, and minimizing losses in the transportation of water.

Though the national water policies have attempted to address the above issues since 1987, the situation on the ground has not improved; on the contrary, water resource management has deteriorated. This can largely be attributed to the failure of the states to operationalize strategies and action plans for implementing the policy. One reason for this appears to be the existence of a

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plethora of water sector legislations at the state level and the lack of a national framework law to enforce the provisions of the policy. Another reason could be the failure of the states to develop and implement action plans based on the national and state water policies. It is in this context that the draft 2012 NWP has recommended the formulation of a national water framework law and of action plans by states, which merit attention.

Need for the National Water Framework Law

The draft 2012 NWP has recommended evolving a broad, overarching national legal framework of general principles on water to lead the way for essential legislation on water governance in every state of the country, and devolution of the necessary authority to the lower tiers of government to deal with the local water situation. The policy highlights the need for managing the country's water resources under the doctrine of public trust. A great deal of the literature on water law in India has lamented the presence of multiple laws at the state level and emphasized the need for a unified legal framework.

The need for an overarching national water framework law arises not only due to the presence of multiple laws but also due to their inefficiencies in ensuring effective water resource planning and management, as articulated in the *Indian Infrastructure Report 2011*. For example, it is said that the existing laws are based on the principle of riparian states, which gives exclusive rights to landowners to use the water within their lands, particularly the groundwater. This has led to excessive consumption of groundwater, which the existing groundwater laws have not been able to regulate. It is suggested that water resources, including both surface and groundwater, should be managed based on the doctrine of public trust and not on the riparian state principle. It is also stated that the existing irrigation acts provide for the participation of water user associations with wide-ranging responsibilities without requiring them to be accountable. The laws relating to the pollution of water bodies are also observed to be ineffective. In addition to the doctrine of public trust, the rights framework is also increasingly propagated by the judiciary, which needs to be incorporated into the existing acts. Moreover, the issues related to the devolution of powers to local bodies by the states for water resource management are not addressed by the existing state laws. Ramaswamy Iyer (2011) has also emphasized the need for a national water framework law more or less on the same grounds. It is in this context that the draft 2012 NWP has recommended a national water framework law and its adoption by the states.

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According to Cullet and Koonan (2011), water laws in Indian states have developed in a sectoral manner over the years, and this seems to have impeded the development of a comprehensive understanding of water resource management. They argue that the laws tend to be problem-specific/issue-specific, such as addressing participatory irrigation management, or water source-specific, such as groundwater, or they deal with a specific part of the regulatory framework, such as institutional reorganization. Cullet and Koonan further observe that no initiative has been taken to introduce water legislation that would provide an integrated, comprehensive framework for the country's water resource management, and that formulating water policies at the national and state levels is not an alternative to such legislation. They strongly advocate the formulation of a national water framework law and its adoption by the states.

The Government of India had been seriously contemplating developing an overarching water framework law even before the approval of the draft national water policy 2012. The Planning Commission's Working Group on Water and Governance for the 12th Five-Year Plan had set up a Sub-Group on a National Water Framework Law, with Ramaswamy Iyer as the Chairperson. The sub-group prepared an explanatory note outlining the contours of a national water framework law (available online at: http://www.planningcommission.nic.in/aboutus/committee/wrkgrp12/wr/wg_wtr_frame.pdf). The key provisions of the draft National Water Framework Act (NWFA), formulated by the sub-group, are as follows:

- The wide-ranging concerns pertaining to water resource management cannot be addressed by the existing laws; hence, the need for an overarching legislation. Notwithstanding the significant divergences in water laws across the states, there is need for a national consensus on the core principles or basics. This is also in line with international practices where many countries have formulated national codes or laws; the European Water Directive is well-known in this regard.
- The nature and scope of the draft NWFA is not intended to centralize water management or change the Centre-state relations in any way. It is not a central water management law; rather, it is an umbrella statement of general principles governing the exercise of legislative and/or executive (or devolved) powers by the Centre, the states and local governance institutions.

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- The national law can be enacted by following the procedure of the Water (Control and Prevention of Pollution) Act, 1974, or the Dam Safety Act, 2010, or by persuading a certain number of state assemblies to pass resolutions. All the states can adopt NWFA once it is enacted.
- The proposed National Water Framework Act will provide the legal basis for the water resource framework as outlined in the draft 2012 national water policy for the holistic, integrated and efficient management of water resources.
- Following its enactment, all the existing water laws at the Centre and in various states shall be reviewed and amended, where necessary, to ensure conformity with the provisions of NWFA.

In July 2012, the Government of India set up a Committee for Drafting of National Water Framework Act, under the Chairpersonship of Dr. Yogendra K. Alagh. Its report was under preparation at the time of writing this paper.

While the Government of India will hopefully come up with the draft NWFA soon, its enactment by Parliament would depend on eliciting support across the political spectrum, and its subsequent adoption by the states will hinge on the willingness of the state governments. Going by the past experience, where certain crucial pieces of central legislation, such as the Water (Control and Prevention of Pollution) Act, 1974 and the River Boards Act, 1956, have not been adopted by the states, there could be difficulties in getting their support for NWFA. At the same time, given the concerns about water resource management and the need for holistic planning, as articulated by the draft national water policy 2012, there are enough grounds for the formulation of NWFA. Hence, the Government of India should make every effort to convince the state governments and evolve a national consensus on the subject. The National Water Framework Act, as enacted by the Centre and the states, could provide an effective basis for sound management of the country's water resources as envisaged by the national water policies over the years. There is consensus among researchers on the core principles that should be enunciated by NWFA, as presented below.

Federalism and National Interest

As per the Constitution of India, water is a state subject. Schedule VII, List II, Entry 17 states: "Water, that is to say, water supplies, irrigation and canals, drainage and embankments, water storage and water power [are] subject to the provisions of Schedule VII, List I, Entry 56." Entry 56 of List I, Schedule VII,

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states: "Regulation and development of inter-State rivers and river valleys to the extent to which such regulation and development under the control of the Union is declared by Parliament by law to be expedient in the public interest." Further, Article 252 of the Constitution allows Parliament to adopt legislation in any field in which the states are competent to legislate, provided that the states have given their assent (Cullet and Koonan, 2011: 20–21). Thus, the Constitution has enabled the states to be responsible for water but conferred on the central government the power to make laws for the regulation and development of inter-state rivers and river valleys. The central government can also frame any water law provided it has the assent of the states. In spite of these provisions, a majority of the water-related activities fall within the domain of the states with a limited role for the central government.

Over the years, experience has shown that water cannot be treated purely as a state subject and should be considered as national resource with a greater role for the central government. The proponents of this view argue for the inclusion of water in the Concurrent List to enable the Constitution to empower the central government equally with the state governments. There are others who hold the view that water should be treated as a national resource and the central government should have a greater role in water management; however, they argue that this can be achieved even under the existing constitutional provisions without resorting to the inclusion of water in the Concurrent List through a constitutional amendment. The proponents of this view argue that this can be achieved by enacting a national water framework law and its adoption by the states. Given how politically sensitive the subject of federalism is in India, this paper believes that the inclusion of water in the Concurrent List could be a time-consuming and difficult proposition. Inter-state water disputes is another area that has not been effectively addressed in the present context and merits serious attention. There is also the question of interlinking of rivers, which requires the central government to play a much greater role. There are different views on the feasibility and ecological sustainability of such projects. Again, this issue cannot be addressed by the central government alone; it needs the co-operation and consent of the states. The principle of considering water as a national resource, effective redressal of inter-state water disputes, as well as addressing concerns about the inter-linking of river projects can be achieved by effective implementation of national and state water policies, as well as by formulating a national water framework law and its adoption by the states.

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Principles of Riparian Law, Eminent Domain and Public Trust

In the past, water laws were governed by the principle of riparian law, which states that "owners of land bordering on a water way have equal rights to use the water passing through or by their property (Puthucherril, 2009: 105)." The riparian rights of water enable the use of water by all the owners who own land bordering rivers and streams. In the Indian context, the principle of riparian rights has limited purpose since the state has the power of eminent domain (the power to take private property for public use) to regulate the allocation and use of water from rivers and streams. Lately, the state's power of eminent domain has been debated on the grounds that it may not be adequate to protect the interests of the common good. Alternatively, the principle of public trust is advocated, which enables the state to act as a trustee of all natural resources on behalf of the present and future generations, which would help in making fair and judicious decisions to protect water and other natural resources and ensure ecological sustainability. The national water framework law needs to advocate the principle of public trust as it is inclusive and covers the principles of both riparian rights and eminent domain.

Water as Human Right

Several international conventions and resolutions have emphasized water as a human right. The UN Committee on Economic, Social and Cultural Rights in 2002 has stated that water is a limited natural resource and a public good fundamental for life and health, and the human right to water is indispensable for leading a life in human dignity (Cullet and Koonan, 2011: 13). The UN General Assembly Resolution in 2010 recognized the right to safe and clean drinking water and sanitation as a human right that is essential for the full enjoyment of life and all human rights (ibid.: 14). Even in India, water has been recognized by the Supreme Court as a fundamental right under Article 21 and as a basic or human right under Articles 15, 32 and 47 of the Constitution of India. The Supreme Court has stated that the right to live with dignity is a fundamental right under Article 21 of the Constitution, and it includes the right to pollution-free water and air for the full enjoyment of life (ibid.: 17–20). The NWFA should advocate the principle of water as a fundamental right or a human right.

Regulation of Groundwater Use

Traditional groundwater laws and practices have given landowners unlimited control over the use of the groundwater located in their premises. The right to

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groundwater emanates from the Indian Easements Act, 1882, which states that it is the exclusive right of every owner of immovable property to enjoy and dispose of the same and all the products thereof and accessions thereto. This includes the right of every owner of land to collect and dispose of, within his/her own limits, all the water under the land that does not pass in a defined channel and all the water on its surface that does not pass in a defined channel (Cullet and Koonan, 2011: 28). This disposition has led to the indiscriminate exploitation of groundwater, leading to a sharp fall in the groundwater table to dangerous levels in many parts of the country. This alarming situation has, in turn, led to the demand to regulate the use of groundwater based on the doctrine of public trust, which recognizes groundwater as common property and not as individual property. The national water framework law needs to incorporate this principle.

Integrated Water Resource Management

According to the Global Water Partnership, an international network that offers practical advice for the sustainable management of water resources, "Integrated Water Resource Management is a process which promotes the coordinated development and management of water, land and related resources, in order to maximize the resultant economic and social welfare in an equitable manner without compromising the sustainability of ecosystems (Mollinga, Dixit and Athukorala, 2006: 21. Available online at: <http://www.un.org/waterforlifedecade/iwrm.shtml>)."

The International Conference on Water and Environment (ICWE), held in Dublin, Ireland, in January 1992, had issued the Dublin Statement on Water and Sustainable Development, articulating the following principles of integrated water resource management (ibid.: 23):

1. Fresh water is a finite and vulnerable resource, essential to sustain life, development and the environment.
2. Water development and management should be based on a participatory approach, involving users, planners and policy-makers at all levels.
3. Women play a central part in the provision, management and safeguarding of water.
4. Water has an economic value and should be recognized as an economic good.

Following the Dublin Statement, Agenda 21 of the Earth Summit, the United Nations Conference on Environment and Development (UNCED), held in Rio

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de Janeiro in June 1992, made several references to integrated water resource management (IWRM), under Chapter 18 titled: "Protection of the Quality and Supply of Fresh Water Resources: Application of Integrated Approaches to the Development, Management and Use of Water Resources." One of the principles of IWRM articulated by Agenda 21 refers to "integrated water resource management, implying an intersectoral approach, representation of all stakeholders, all physical aspects of water resources, and sustainability and environmental considerations (Bandaragoda, 2005: 2)." Drawing upon Agenda 21 and the Dublin Principles, the World Bank Policy Paper of 1993 on *Water Resources Management* (Executive Summary available online at: <http://siteresources.worldbank.org/INTWRD/214573-1111579063201/20424649/WRMExSumof1993WaterPolicy.pdf>.) elaborated the following as the principles of integrated water resource management (Snellen and Schrevel, 2004):

1. *Ecological principle*, which argues that independent management of water by different water using sectors is not appropriate, that the river basin should be the unit of analysis, that land and water need to be managed together, and that much greater attention needs to be paid to the environment.
2. *Institutional principle*, which argues that water resources management is best done when all the stakeholders participate, including the state, the private sector and civil society; that women need to be included; and that resource management should respect the principle of subsidiarity, with actions taken at the lowest appropriate level.
3. *Instrument principle*, which argues that water is a scarce resource and that greater use needs to be made of incentives and economic principles in improving allocation and enhancing quality.

The Global Water Partnership definition of IWRM is widely accepted and considered as comprehensive. The key principle of IWRM is the integration of water resources at various levels (GWP, undated. Available online at: <http://www.gwp.org/Global/The%20Challenge/Resource%20material/IWRM%20at%20a%20glance.pdf>). These levels are delineated below:

1. *Integration in the Natural System*
 - a. Between land and water use
 - b. Between surface water and groundwater
 - c. Between water quantity and quality

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- d. Between upstream and downstream
 - e. Between the fresh water system and coastal waters
2. *Integration in the Human System, which is Management of the Natural System*
- a. Mainstreaming water in the national economy
 - b. Ensuring co-ordination between various sectors
 - c. Ensuring partnership between public and private sector management
 - d. Involving all the stakeholders
3. *From Sub-Sectoral to Cross-Sectoral Management of Water Use Sectors*
- a. People
 - b. Food
 - c. Eco-systems
 - d. Industry and others
4. *Enabling Environment, Institutional Roles and Instruments*
- a. Policies and legislations
 - b. Central, local, public, private and river basin levels
 - c. Assessment, information and allocation tools

The integrated approach to water resource management requires a holistic approach towards conservation, augmentation and protection of fresh water resources, on the one hand, and effective management of the demand for water for domestic, irrigation and industrial purposes, on the other. The approved draft 2012 national water policy has articulated the approaches towards and principles of integrated water resource management, and the same should be incorporated in the national water framework law.

Integrated Approach to Urban Water Management

The demand for water in urban areas is experiencing several challenges in the form of declining water sources, deterioration of the existing infrastructure assets, poor distribution management, widening gap between demand and supply, over-exploitation of groundwater, contamination of water bodies due to untreated sewage and industrial effluents, poor cost recovery, lack of metering, high non-revenue water, and lack of access to safe drinking water by the poor and marginalized; hence, it merits special attention. Financing and institutional

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arrangements and the organizational capacity for the management of water in urban areas is inadequate. The conventional approaches to urban water management have been fragmented and focused on supply-side strategies, such as source augmentation and building capital infrastructure, to the neglect of operation and maintenance, conservation and demand management. International experience has pointed to the need for and the importance of adopting an integrated urban management approach for the efficient use and management of urban water.

"Integrated Urban Water Management (IUWM) is an approach that seeks to develop efficient and flexible urban water systems by adopting a diversity of existing technologies, management, and institutional practices to supply and secure water for urban areas. The focus of this approach is the integration of planning, management, and stakeholder participation across institutions at each stage. IUWM's view on the urban water cycle is a holistic one, by which all [the] components of the cycle (water supply, sanitation and storm water management) are integrated within the wider watershed (Closas, Schuring and Rodriguez, 2012: vii)." This calls for the protection of water sources and water bodies, regulation of groundwater use, augmentation of groundwater through rainwater harvesting, treatment and reuse of waste water, particularly for industrial and non-potable purposes, desalination plants for coastal cities, technologies and pricing mechanisms for demand management, mitigating the impact of climate change on water, storm water and flood water management, effective institutional arrangements, targeted subsidies to the poor and stakeholder participation. The national water framework law needs to articulate and highlight the principles and mechanisms of integrated urban water management.

Inter-Basin Water Transfers (IBWT)

According to the National Water Development Agency (NWDA) of the Ministry of Water Resources, Government of India, inter-basin water transfer (IBWT) from surplus rivers to deficit areas is one of the most effective ways to increase the irrigation potential for augmenting food grain production, mitigate floods and droughts, and reduce regional imbalances in the availability of water (Available online at: <http://www.nwda.gov.in/index2.asp?slid=3&sublinkid=3&langid=1>). The rivers Brahmaputra and Ganga, along with their tributaries Mahanadi and Godavari, have surplus water and experience severe floods during the monsoons. Transferring water from these rivers to deficit areas in states such as Rajasthan, Gujarat, Andhra Pradesh and Karnataka could address the

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floods and drought problems effectively and improve water availability in the deficit areas. The Periyar project, the Telugu Ganga project and the Ravi-Beas-Sutlej-Indira Gandhi Nahar project are successful examples of the inter-basin water transfer approach. A National Perspective Plan (NPP) for water resource development through inter-basin water transfers was formulated in 1980 by the then Ministry of Irrigation (presently Ministry of Water Resources) and the Central Water Commission, which identified and proposed several inter-basin water transfer projects (Available online at <http://www.nwda.gov.in/index2.asp?slid=108&sublinkid=14&langid=1>). NWDA was set up as a society in 1982 to undertake water balance studies, identify projects and prepare feasibility reports for the inter-linking of rivers based on the National Perspective Plan. NWDA has identified 30 projects and prepared feasibility reports for them. These projects were criticized on the grounds that they require huge financial resources. However, the Supreme Court of India, in its judgment delivered on 27 February 2012, gave the go-ahead for these projects on the grounds that the benefits far outweigh the financial costs (Seth, 2008). The Supreme Court recommended the formation of a committee for fixing a definite timeframe for the preparation of feasibility reports and ensuring the completion of projects.

However, there are views opposing the very concept of the river linking projects on the grounds that rivers are natural systems, flowing only in one direction and cannot be linked and managed on the lines of the national power grid or highway projects. Each river basin is a unique eco-system, and the inter-linking of rivers could adversely affect their balance. A river basin has many functions; and it is difficult to define terms such as surplus and deficit with regard to water flowing in the basin. The alternative approach to the inter-linking of rivers is to manage the water scarcity in certain river basins through conservation and demand management measures specific to the basin. The alternative approach suggests that the subject of inter-linking of rivers be carefully studied and widely debated before it is taken forward for implementation (Iyer, 2012).

Thus, the national water framework law (NWFL) should develop a uniform and comprehensive legislative framework incorporating the emerging principles of effective, equitable, sustainable and integrated water resource management. The NWFL should also evolve a consensus on debated issues such as inter-basin water transfers. The law is expected to provide a comprehensive legal and legislative framework to address the emerging needs of the water sector by incorporating the international and national principles that have emerged in the light of the experiences of the past few decades. There is a broad consensus

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on these principles among various studies (Iyer, 2003, 2007 and 2009; Cullet, 2009; and Cullet and Koonan, 2011). The national water framework law will incorporate the principles articulated by the approved draft 2012 NWP and provide a legal basis to the policy.

In sum, formulation of the NWFL and its adoption by the states is necessary, as it will:

1. Avoid multiple legislations across the states and provide a common framework.
2. Incorporate the principles of public trust and human right.
3. Balance the interests of water as a national resource and the principle of federalism.
4. Enable the adoption of the integrated water resources management framework.
5. Facilitate proper management of groundwater.

This paper believes that the very process of formulating the national water framework law and initiating dialogue and discussions with the states for its adoption by their governments could lead to awareness among the state leadership about the serious concerns in the management of water resources, the importance of the emerging principles and frameworks, and the need for inter-state co-operation on treating water as a national resource. The Centre should initiate regional policy workshops with the state governments on preparation of the draft national water framework law and seek their views and suggestions. As indicated by several studies, formulation of the NWFL and its adoption by the states is a must to effectively tackle the looming water resources crisis in the coming years.

Formulation of Action Plans by the Centre and States

The draft 2012 national water policy has strongly emphasized the need for a unified national perspective on the basic concerns about and the principles for the effective management of water resources, and suggested that the state water policies should reflect the national perspective. The effective implementation of these policies would be ensured by putting in place a national water framework law at the Centre and its adoption by the states, and by formulating sound strategies and implementable action plans, programmes and schemes.

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A priority area for states should be the conservation and augmentation of surface water and groundwater sources. All surface water bodies should be made free from encroachments and pollutants. All drinking water sources should be free from any kind of pollution or contamination. Sewage from cities and towns should be allowed to be discharged into water bodies only after undergoing secondary treatment. All borewells and open wells should be connected by rain-water harvesting pits to recharge the groundwater. All industries, gardens, horticulture and agricultural activities should, to the extent possible, meet their requirements from treated and recycled waste water. Conservation of water in irrigation should be assigned top priority by encouraging the adoption of water-saving crops and technologies. All domestic water supply connections should be metered, and volumetric tariff should be adopted to discourage high-end consumption. The evaporation losses in the transportation of water, wastages, physical losses and non-revenue water should all be brought down by conducting water audits. Information, education and awareness (IEC) campaigns should be launched to encourage various consumer groups to adopt water conservation measures. Regular operation and maintenance of the water resource infrastructure should be ensured. Water resource projects should be planned and implemented without cost- and time-overruns and with private sector and community participation. Formulation and implementation of a sound action plan along these lines by the states could help in achieving effective water resource management.

Conclusion

Water is a precious natural resource and a basic human need which needs to be governed and managed with a national perspective. The Government of India has formulated national water policies in 1987 and 2002 and the more recent draft 2012 policy national water policy. These policies have provided a comprehensive and holistic framework, within which a number of states have formulated water policies from time to time. In spite of the national and state policies, the performance of the water resource sector has been observed to be poor, which is expected to result in a huge demand-supply gap by 2030. One of the reasons this poor performance is attributed to is the lack of a national water framework law incorporating basic principles and the presence of multiple water laws in various states. Hence, the draft 2012 national water policy has strongly articulated the need to enact the national water framework law, which could be adopted by the states to provide a national consensus and perspective on the basic principles of water resource management.

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The Government of India has set up, under the Chairpersonship of Dr. Yogendra Alagh, a Committee for Drafting of National Water Framework Law. The enactment of the NWFL at the Centre and its adoption by the states will require their willingness and the support of parties of various political hues. Hence, the Government of India should make every effort to convince its allies as well as the opposition parties, at both the Centre and in the states, and evolve a national consensus on the subject. The NWFL can provide an effective basis for the proper management of water resources as envisaged by the national and state water policies over the years. At the same time, the states should be encouraged to formulate and implement sound strategies and action plans within the framework of the national water framework law and the national water policies to achieve the desired outcomes.

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