

# Institutional Structural Changes in the Water Sector

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## 1. INTRODUCTION: THE NEED FOR A NEW INSTITUTIONAL STRUCTURE

The present policy and institutional structure for water resources management evolved during the first half of the 20th century. It was focussed basically on irrigation and hydropower. Since then it changed gradually to include groundwater development, command area development, drinking water supply and pollution control, etc. The realisation that all aspects of water use have to be simultaneously looked into led to the framing of the National Water Policy in 1987<sup>2</sup>, but necessary changes in the existing institutions for management in the water sector have not been made to ensure the implementation of this policy. In this paper we suggest the nature and direction of changes in the institutions and structures for water resources management in India.

The institutional structure for the administration of water resources was mainly irrigation-oriented during most of the last century. But during the last few decades the demands in the water sector other than irrigation have gained greater importance, and the existing institutional structure needs a qualitative change in order to be able to take care of the requirements and pressures in the revised circumstances.

The existing institutional set up, however has many limitations in meeting the present and future challenges facing the water sector. The obvious objectives are to ensure availability of water for (i) irrigation, (ii) drinking, domestic and ecological needs and (iii) power and industrial development for the increasing population and to meet the increasing aspirations of the people, while the total water resources remain limited<sup>3</sup>. Besides these purposes, water is also required for religious purposes such as ritual bathing, recreation and inland water transport activities. Achieving these objectives requires a paradigm change in the institutional set up from 'administration' (which is rule-oriented and slow to respond to problems on the ground) to 'management' (which is result-oriented, and responds quickly to feedback and to problems in implementation on the ground).

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<sup>2</sup> A revised draft was put up to the National Water Resources Council in July 2000 but was not adopted due to resistance by the states to certain features of the policy.

<sup>3</sup> In 1991, the annual per capita availability of water in India was 2731 cubic metre (m<sup>3</sup>). In 2050, this is expected to be in the range of 1000 m<sup>3</sup>. Thus the need for extremely careful management of water resources in the future is evident.

To meet these objectives it is, inter-alia, necessary to adopt an integrated approach for development and management of water resources using the concept of basin or sub-basin. This is not being done presently. The irrigation systems (and even urban and rural domestic water supply systems) are not being managed with the desired efficiency. This results in the incurring of disproportionate administrative costs and in the deterioration of irrigation systems for lack of maintenance. The extraction, inefficient use, ecological degradation and pollution of water resources too are inadequately controlled. Hence the need for change in the institutional set up to meet present and future challenges.

## 2. KEY OBJECTIVES OF THE NEW INSTITUTIONAL STRUCTURE

In order to meet the present and future challenges of water resources management in India, a new institutional structure is being proposed below. The proposed structure will pay special attention to the following:

i) **Integrated planning**<sup>4</sup> (at the level of the river basin, from watersheds and tanks at one level to large dams at another level) for development of water resources. This kind of planning will take into account both, surface water available at all stages as well as groundwater, and consider all end uses of water in a dynamic way, as the requirement for different uses keeps changing over time.

Integrated planning should also include the conservation, recycling and reuse of water. It should include attention to both quantity and quality of water for different uses, and should pay special attention to environmental aspects.

At present the different alternatives that are possible in a project are examined only from the engineering point of view and not from the economic, social and environmental point of view in a holistic manner. The integrated planning approach in the development of water resource projects should examine the different alternatives from all these points of view so that comprehensive alternatives can be considered by project planners and decision-makers.

ii) Adopting an **integrated management approach** while developing new projects and in the operation and maintenance of the existing system. Due to variation in rainfall in space and time an integrated approach would better take care of the extreme variations in demand than otherwise.

The integrated management approach also implies that there should be adequate facilities for the continuous evaluation of the performance efficiency of water use systems so that the efficiency can be continuously improved at all levels through the adoption of modern technology.

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<sup>4</sup> The concept of integration here also refers to institutional integration at various levels into a partnership between people (gram sabha) NGOs and the government.

iii) Putting in place institutional structures which, besides handling the other objectives, can handle better, the **conflicts arising out of water use and management at all levels**, from the sub-watershed level to the international level. These structures should also help in a more balanced development of water resources between and within different regions.

In order to put into place the new institutional structure and achieve the three broad objectives mentioned above, the following kinds of changes would be required:

a) A reorganisation of the various departments relating to water resources management and of the cadres of engineers and other professionals who deal with water resources in order to provide adequately for the demands of water resources management in the new scenario. This will involve, on the one hand, setting up an **inter-disciplinary team of professionals under one organisation** for preparing an integrated plan, considering all aspects of water use. On the other, it will involve the setting up and running of **five cadres/departments dealing with different aspects of water resources management**. These five cadres will deal with the five functional aspects of: (i) information assessment, analysis, forecasting and integrated planning, (ii) irrigation, (iii) urban water supply, (iv) watershed management and rural water supply, and (v) pollution control and environment as per details given in **Annex 1**. Within the irrigation and urban water supply cadres/departments, there will be separate wings for development and operation and maintenance (O & M). Environmental experts from the environment cadre may be deputed to the other cadres as and when required.

Another step needed along with the reorganisation of various departments is the development of technical and consulting expertise, both at the Centre and the States besides encouraging it in the private sector. This can be done in two ways. One, organisations such as CSMRS, CWPRS, NWDA, NIH and WAPCOS should be given a greater role in technical consultancy tasks in their own speciality so that their expertise and capabilities are further developed and they can provide a second technical opinion whenever needed. Similarly, the capabilities of organisations like WALMI in the States should be developed. Two, for major projects, a board of consultants should be drawn up. These consultants should be from various backgrounds/sectors, such as government, private sector and academia. This system will help in the development of sound technical and professional expertise in the country, both inside and outside government, which can be drawn upon whenever needed.

b) **Decentralisation** of authority in the management and development of water resources. At lower levels, direct involvement of end users in the task of management, through Water Users Associations (WUAs), Watershed Associations, and, in urban areas, through Resident Welfare Associations (RWAs).

c) **Change in the mindset** of the major actors who have hitherto been involved in water resources management in the country. This includes primarily the bureaucracy and

engineers from the irrigation and other departments. For instance over the years one attitude that has become widespread is to lean more and more on the centre and to believe that the officers at the centre are the wisest and know the best. Another common notion is the dependence on the Central government or other external agencies for development projects. The central organisations have also been unduly enlarged to encompass the functional activities of the States resulting in duplication of effort and dual sets of data that are often not consistent. Similarly most water managers used to think that water is abundant and paid little attention to water pollution. The reality regarding all these notions has now changed and this has to be reflected in the institutional structures for water management in place.

Besides these organisational and attitudinal changes that are required, some **policy aspects** need attention. These include:

- *Reduction and eventual removing of subsidies:* In order to discourage the wastage of water, neither water nor electricity should be provided at subsidised rates, except in rare cases in ecologically difficult areas, or, in some special cases, through the use of cross subsidies. The subsidies should be substantially reduced gradually over a period of two decades, during which mechanisms should be designed to make water projects self-sustaining<sup>5</sup>.
- *Prioritisation of new major/medium projects:* A prioritisation of projects basin-wise and state-wise is needed. *Due to the extreme paucity of funds, projects should be prioritised in such a way that those projects where over 20 per cent of the project cost has already been incurred should be completed first.* In basins where most water resources available have already been developed, the emphasis should be on the modernising and up-gradation of existing systems in an integrated manner. However, in basins where much development work remains, the emphasis should be on complete investigation and planning in an integrated manner. Economic criteria should not be ignored in sanctioning projects except in some special cases where development has been poor because of paucity of water potential and there is no other alternate means of economic development.
- *Redefinition of major, medium and minor projects:* The present system of categorisation is based on irrigated area, and the irrigation potential is based on an assumed cropping pattern, which keeps on changing over time. Now, however, the focus can be on

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<sup>5</sup> It is only for drinking water supply that subsidies may continue to take care of the minimum requirement of 40 lpcd. But even here higher consumption should be charged at progressively higher rates. Water for irrigation should be supplied to WUAs that cover a thousand ha or more on volumetric basis and they should be charged accordingly. The volume of water supplied should correspond to the volume of water needed, depending upon the agro-climatic area and the crops suitable for the area. This will encourage greater efficiency in the use of water.

overall water use. In certain projects, it may be power generation, drinking water or flood control, which may be the major component, rather than irrigation. Thus, instead of being based on the area irrigated or height of the dam, projects should now be categorised on the basis of live storage capacity. Projects above 100 MCM would be categorised as major; between 10 and 100 MCM would be medium; and those below 10 MCM would be minor. Projects smaller than 1 MCM would be categorised as micro. For run of the river schemes, the volume of water diverted in a year would determine the categorisation of the project as major, medium, minor or micro.

- *Role of the private sector:* Uptil now the private sector has had little role in the development and management of surface water resources in the country. However, it has increasingly become evident that the government alone cannot carry out this task by itself. *Local communities on the one hand and the private sector on the other have an important role to play in the better development and utilisation of our water resources.* The government should facilitate this by putting in place a suitable legal and administrative environment.
- *Transparency* in collection and maintenance of data, and in design and execution of projects will lead to user friendliness and lighten the burden on the organisational structure. It would also lead to better and quicker conflict resolution.

### **3. THE PROPOSED INSTITUTIONAL STRUCTURE AND FUNCTIONS AT THE CENTRE, STATE AND RIVER BASIN LEVELS**

The suggested institutional structure is designed to divide the various functions of water management and development to be carried out in the country at three levels: centre, state and river basin. It is proposed that River Basin Organisations (RBOs) should be set up for those river basins that cut across state boundaries. But if the river basin concept of water resources management has to be followed then those few basins that fall exclusively within the administrative boundaries of a state should also have RBOs. There are two major kinds of differences between the existing and the proposed institutional structure.

- One, the proposed structure emphasises the functioning of RBOs in order to facilitate the planning and optimum use of water resources in an integrated way within a river basin, and to handle conflicts regarding water use more effectively, as detailed below<sup>6</sup>. The RBO is to be seen as a partnership between states for the better management of and conflict resolution regarding the water resources shared among them. The design of RBOs envisages that for projects within the states they will have an advisory and monitoring role while the actual decision-making regarding those projects will be done by the state authorities. The advice from RBOs will represent

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<sup>6</sup> It is understood that the river basin planning approach is being tried out in the Palar and Tamarpani river basins in Tamil Nadu under the World Bank Water Resources Consolidation Project.

both professional integrated planning for the river basin as well as the views of the people inhabiting the river basin, to the decision-making authorities in the States.

- Two, it decentralises the maximum number of functions from the centre to the states and RBOs, as elaborated below, and emphasises the involvement of people and water users at all levels. It needs to be emphasised that in the proposed set-up for water resources management, the authority for decision-making does not rest only with the government structures. The people, the end-users of water, have to be considered as **equal** partners in the processes of management of water resources. Accordingly, the institutional structures have been designed in such a way as to give direct and indirect representation to the people.

### **3.1 Functions of the Centre, RBOs and States**

The functions to be carried out at the three levels are as follows. At the **Centre**, the functions to be carried out will include:

- Policy making at the national level based on inputs from States and RBOs.
- Information assessment and analysis (both surface and groundwater) at the national level, based on information collected by states and RBOs.
- Laying down standards for information collection by the States and monitoring of the same by RBOs.
- Integrated planning for basins spread over neighbouring nations and dealing with issues of international co-operation and water sharing agreements, with inputs from concerned states and RBOs.
- Investigation, project design and construction monitoring for projects to be carried out in smaller states, which do not have in-house capability, and for international projects taken up by WAPCOS.
- Policy for pollution control, river conservation, navigation and environmental aspects.
- Research and training functions at the national level, and the provision of technical expertise wherever this may be lacking at the level of the states.
- Financial and administrative functions relating to the above.

**RBOs** will carry out the following functions:

- Integrated planning for optimum utilisation of water within the river basin and allocation of shares between the constituent States and between different sectors, with the co-operation of the States concerned<sup>7</sup>.

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<sup>7</sup> The guidelines and procedures for allocation of shares between states will have to be worked out in detail once RBOs are formed. However, it may be mentioned that the allocation should preferably be done by consensus and otherwise by two-thirds majority of the members of the River Basin Assembly.

- Monitoring of water allocations to different States and use of water in different sectors. (The allocations may either be based on existing inter-state agreements and contracts or may be those laid down in future by RBOs.)
- Monitoring of information collection by constituent States as per uniform standards laid down by the Centre.
- Information assessment, analysis and flood and drought forecasting for the river basin based on information collected by the States.
- River management, including special attention to pollution control, river conservation and environmental aspects.
- Preparation of schemes and pre-feasibility project reports for development projects within the river basin, where required for the purpose of integrated planning.
- Monitoring of major development projects within the basin.

**States** will carry out the following functions:

- Integrated planning of water resources within the State and liaison with RBOs and the Centre. Approval of minor irrigation projects. These functions will be performed by the State Water Resources Board.
- Information collection (as per standards laid down by the Centre), data storage and passing on the raw information to the RBOs and the Centre. Ensuring availability of information to all agencies and the public through the national level computerised network. This will require a policy decision to this effect by the Centre and States.
- Preparation of schemes and pre-feasibility project reports and DPRs for development projects within the State.
- Development and construction of major, medium and minor projects.
- Operation and maintenance of projects.
- Facilitating the setting up of WUAs, watershed committees and RWAs to enable the de-centralisation of irrigation management and other uses of water.
- Laying down the tariff for water use in different areas and sectors, in consultation with local authorities and with WUAs from rural and urban areas. This function will be carried out by a Water Tariff Regulatory Commission, which will be a part of the State Board.
- Levying of charges for different uses, billing and collection of revenues from these.

### **3.2 Organisational Structure at Different Levels**

The organisational structure at the Centre, the RBO and the State is indicated by charts 1, 2 and 3 respectively.

### *Central Organisation*

At the central level the highest policy making body will be the National Water Resources Council (NWRC) chaired by the Prime Minister and with all Chief Ministers and ministers of selected ministries as members. The National Water Resources Board will be the secretariat of the NWRC. The Water Resources Ministry will have functional units looking after Information assessment and analysis, policy and planning, research and training, investigation and project design, international cooperation and finance and administration.

### *River Basin Organisation*

**The River Basin Organisation (RBO) will be a two-tier body consisting of a River Basin Assembly (RBA) of people's representatives from watersheds within the basin, and a technical secretariat – the River Basin Board (RBB) - under it.** The RBB will be a body of professionals and experts with a chairperson and 5-7 members, including a representative of the centre, to handle the different functions entrusted to it. The chairperson will be from the constituent states, by rotation.

There are two ways in which the RBA can be constituted. One option is that it will have 100-300 representatives depending upon the size and population of the basin, (with one representative for each unit of population), and an Executive Committee of 7-11 members elected from among these representatives. **Beginning at the sub-watershed level, representatives will be elected for progressively higher levels such as watershed and sub-basin<sup>8</sup>.** Also, representatives from the following sectors will be included in the RBA: major, medium and minor irrigation projects (including representatives from both catchment areas of reservoirs and command areas of canals, and also from the downstream area – including fisherfolk etc. - right upto the outfall into the sea); big and small towns; and industries and thermal power plants.

The size and composition of each RBA will vary according to the size of each river basin and the nature of land use and economic activities carried out within it. *Detailed principles and processes through which the members of RBAs will be elected or nominated need to be worked out and this task may be left to the committee of experts which shall guide and supervise the process of setting up the RBOs (see section on transition below).*

Another option for the constitution of the RBA has been suggested by the National Commission for Integrated Water Resources Development Plan, set up by the Ministry of Water Resources. This commission has suggested that the RBO will have a General Council and a Standing Committee of the Council. The Council will include:

- At least two ministers from each riparian state
- Leaders of the opposition
- Panchayat representatives from each district in the basin

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<sup>8</sup> Approximate sizes of these hydrological units are as follows (in lakh ha): river basin (30-300), catchment (10-50), sub-catchment (2-10), watershed (0.2-3.0), sub-water shed (0.05-0.2).



- Representatives of urban local bodies from each district in the basin
- Representatives of sub-basin organisations

The Standing Committee will be a smaller body drawn from the General Council. It will consist of:

- One state minister by rotation as chairperson
- Leader of opposition
- Representatives of panchayats and urban local bodies
- Representatives of sub-basins

This model envisages a Standing Committee of around 33 members for an RBO with three constituent states.

### *State Level*

At the state level, the various functions of water resources management and development will be carried out through five main departments, namely, the integrated water resources board or department, the irrigation department, the urban water supply department, the rural engineering department and the Pollution Control Board. Since there is no integrated water resources department in the states at present, a State Water Resources Board shall be created (see **chart 3**) to carry out the functions of information collection, assessment and integrated planning and management of all the water resources of the state. The State Board will have separate wings dealing with all the issues relating to each large river basin or sub-basin which falls within the administrative boundaries of the state. In order to pay attention to all the different aspects that relate to water resources management, it will be an inter-disciplinary department where people from different disciplinary backgrounds will be eligible for promotion to higher levels. From this point of view, it can be designed on the model of the Railways or the defence services<sup>9</sup>.

The irrigation and urban water supply departments each will have separate wings for development and construction on the one hand and operation and maintenance on the other. The rural engineering department will have divisions looking after watershed management and water supply.

## **4. LEGAL ASPECTS**

(i) The River Boards Act 1956 provides for the establishment of these boards, to play an advisory role, but even these have not been set up and the Act has remained virtually

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<sup>9</sup> In the railways, officials from different professional backgrounds get selected after 10 years of service to the common cadre and then promotion to Railway Board, the highest professional body responsible for managing the railways. In the defence services, again, personnel from different units, having varied professional expertise, are selected to common cadre and then promoted to the highest ranks. Those not selected to common cadre get promoted in their line of speciality. Training is provided in all cases before promotion to a higher position.

inoperative. There is now a need to allow the concerned states to set up interstate RBOs so that they can be given the responsibility to function to plan in an integrated way for the utilisation of water in the river basin and, based on this, to approve major projects within the river basin and to allocate and monitor water for different uses among different states. Besides this, the RBOs will advise the states on the development of projects within the states. Also, RBOs should monitor the manner of disposal of used water by the states and to prevent pollution of fresh water.

After a few years, when RBOs have been set up and their functioning is stabilised, the powers which now vest with the Central government for environmental clearance of projects under laws such as the Environment Protection Act 1986 and the Forest Conservation Act 1980 should also be delegated to the concerned RBOs.

(ii) A second important legal change that is needed for the new institutional structure is the provision of a greater role for WUAs/ RWAs /Watershed Committees in rural as well as urban areas. These associations should be given legal status to function with sufficient powers in taking on the operation and maintenance of smaller or bigger parts of the irrigation system, depending upon their size. These powers should include leeway in the fixing of tariff for their members and collection of user charges, and in the monitoring of water quality.

(iii) A third change is required with respect to the Official Secrets Act, although this pertains more to the administrative use of the Act rather than a change in the law itself. The administrative use and interpretation of this Act should be modified to unambiguously permit the sharing of raw information collected by various agencies on water resources with the public<sup>10</sup>. On the other hand, **the process of public hearings should be made mandatory for all major and medium projects to be carried out in future, in order to enable substantial and genuine people's involvement in the decision-making regarding the projects.**

## 5. FINANCIAL ASPECTS

The major control over the RBOs, which are visualised as inter-state organisations in which all the constituent states are equal partners, will remain with the States through their representatives and through professional experts drawn from the States. However, for the RBOs to function viably, they will have to be provided with funds by the Centre and by their constituent States. This can be done in three ways.

In the first few years of their existence mechanisms will have to be evolved to pass on part of the share of the States' share of central assistance to the RBOs. This aspect can be looked into by the Finance Commission. Secondly, part of the establishment costs of

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<sup>10</sup> A view which is often expressed in this regard is that water resources data is not 'secret' under the Official Secrets Act. Consequently, an administrative order is enough to clarify this and enable the free sharing of hydrological data.

RBOs will be met by the States since some of the staff in the States will be shifted to the former. Thirdly, a fixed percentage of the revenue generated within the river basin area falling within a State should be given by the concerned State to the RBO.

## **6. TRANSITION TO THE NEW INSTITUTIONAL STRUCTURE**

First of all the new proposed institutional structure should be concretised, the legal aspects relating to it clarified and a national debate should be carried out to create public awareness on the need for change.

The second step will be to get the approval of the Water Resources Council. A National Commission of Experts should be set up by the central government to midwife the process of setting up the first few RBOs (out of a total of about 20 to be set up) and to lay down the rules and regulations for their functioning. This Commission may be initially constituted for a period of 2-3 years during which the first five RBOs may be set up, and may suggest ways in which all the possible RBOs may be set up and made operational within a decade. The first five RBOs to be set up may include two river basins in the North, two in the South and one for a river basin that goes beyond national boundaries.

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