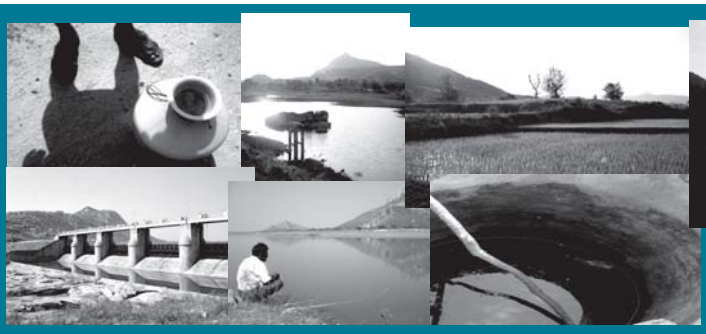

Water MOVES

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CONTENTS

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Institutional Development Needs of Water User Associations

Chitra Khanna, *Towards Action and Learning, Bhopal*

The PIM Movement

Irrigation agencies in different parts of the world faced with a widening gap between irrigation potential and irrigation utilization initiated multiple strategies that included introducing improvements in agronomic practices, promotion of better irrigation technologies, better maintenance and irrigation management practices, developing incentive-based schemes to promote self-financing of irrigation schemes, and institutional reforms to transfer irrigation management to water users. Amongst these the movement for Irrigation Management Transfer gained momentum when the initial successes indicated that it had decreased the burden of cost of provision of irrigation by governments and at the same time it had increased the productivity and profitability of irrigated agriculture for the farmer. The role of irrigation bureaucracies was seriously questioned and alternative models and concepts of Participatory Irrigation Management (PIM) started emerging in different countries including India.

The discourse on PIM largely focused on what to transfer and how much to transfer. Questions like whether recovery of irrigation revenue should be transferred to WUAs; or whether WUAs should play a role in decision-making on irrigation-related criminal offences in addition to conflict resolution related to water distribution have formed a major part of the debate and discussions. The capacities of WUAs were assessed and attempts at capacity enhancement through training and exposure visits were planned and executed. In this scenario a major aspect of WUAs that has not gained enough prominence has been the institutional development of WUAs.

Irrigation in Madhya Pradesh

Agriculture in the central region of the country, presently identified as the state of Madhya Pradesh, has been largely dependent on tanks and wells for irrigation. Chandela kings used this technology by constructing a series of tanks in the Bundelkhand region that transformed the state of agriculture in that region. Similarly, Raja Bhoj gained popularity with the construction of a large lake around present-day Bhopal. Construction of such storage tanks signified the state of development of the science of impounding water, the development and spread of irrigation, and mechanisms of water distribution in the region.

Irrigation development in the pre-independence period in Madhya Pradesh led to development of irrigation potential of 1.70 lakh hectares. Since then the irrigation potential in the state has increased to 21.98 lakh

hectares with 23 major, 115 medium and 4306 minor irrigation projects by the end of the IXth Five Year Plan in the state.

The focus of the government on development of irrigation potential has been at the cost of decreased irrigation utilization in the state. The irrigation utilization was 75% in the pre-plan period that decreased to 50% by the end of the IXth plan. Moreover, irrigation of net sown area at the national level was 40.11% where as it was 37.5% in Madhya Pradesh further highlighting the low level of efficiency of irrigation utilization in the state.

PIM in MP

Irrigation management in Madhya Pradesh is governed by the Madhya Pradesh Irrigation Act, 1931 and the Madhya Pradesh Sinchai Prabandhan Mein Krishakon Ki Bhagidari Adhiniyam, 1999 (PIM Act). The larger framework for irrigation governance has been laid in the Irrigation Act, 1931 that provides for the appointment of Canal Officers, their powers and responsibilities; rights to water; construction and maintenance of canals, water courses and field channels; supply of water from canals and levying and collection of revenues and other charges including irrigation cess; and provisions for irrigation agreements. The Act of 1999 has the objective of creating legal spaces for participation of farmers in irrigation management.

The preamble of the PIM Act states that it is an Act to provide for farmers' participation in the management of irrigation systems and for matters connected therewith or incidental thereto. The Act provides for the formation of Farmer's Organization that includes a Water User's Association (WUA) at the primary level and defines the powers, roles and responsibilities of these organizations in irrigation management. The salient features of the Act include:

· The command area under the irrigation system has been divided into an administratively viable unit as water users' Operational Area.

· The Operational Area is divided into Territorial Constituencies (not less than 4 and not more than 10) in an equitable manner in terms of command area from and within the Operational Area.

· A Water Users' Association (WUA) is formed under the Act at the primary level, a Distributory Committee (DC) at the distributary level and Project Committee (PC) at the project level.

· All the water users in the operational area are members of the WUA.

· Each WUA has a Managing Committee, elected directly by members of the Association, to address day-to-day affairs of the Association.

The roles and responsibilities of the WUA as specified under the Act are summarized in the following table:

Role	Responsibility
Water Distribution	• Water Budgeting • Prepare and implement *warabandi* • Regulate use of water among various outlets • Monitor flow of water in the operational area
Repair and Maintenance	• Plan for maintenance of the irrigation system • Carry out maintenance works
Dispute Resolution	• Resolve disputes between members and the WUA
Water Rates	• Determine water rates for LI and Tube well of Water Resources department in the command area
Records and Inventory	• Maintain accounts, register of land holders, register of co-opted members, and inventory of the irrigation system
Resource mobilization	• Raise resources by way of fees, income from property and assets and contributions from water users/farmers

The resources available to the WUA to fulfil these roles and responsibilities defined under the Act are:

(a) Grants from Government: WUAs receive Rs 60 and Rs 80 per hectare in major irrigation and medium and minor irrigation schemes from the Water Resources Department to carry out repairs and maintenance of the irrigation system under their jurisdiction.

(b) Secretarial and other Assistance: The Sub Engineer of the irrigation scheme is designated as ex officio Secretary of the WUA. In addition, one Ameen is also nominated for the WUA and one person from the Agriculture or the Ayacut department is nominated as the advisor to the WUA.

(c) Appointment of Chowkidar: WUA can appoint one person for every 200 hectares on a daily wage basis.

The adequacy of these resources for the WUA to carry out its responsibilities under the Act and emerge as an effective institution to influence water distribution and management in the state is examined through a case study below.

Sontalai WUA

Sontalai WUA is located on the Left Bank Canal in Suparly sub division of the Itarsi division of Tawa multipurpose project located in the two districts of Hoshangabad and Harda of Madhya Pradesh. Sontalai WUA manages 54 outlets in the three distributaries of Pahanvarry, Ghogri and Belwara that are designed to carry out a total discharge of 31.94 cusec. The area irrigated by these 3 distributaries is 1641 hectares spread in 8 villages with a total length of 13.5 km.

(i) Adequacy of Staff: According to the norms of the Water Resources Department there should be one Sub Engineer for 2000 hectares irrigated area, one Ameen for 1000 hectares, one Time Keeper for every 3 km and one Chowkidaar at each gate of the canal. These were the norms when the irrigation system was fully managed by the Department. With transfer of irrigation management to the WUA, the Sub Engineer at Sontalai is responsible for two WUAs looking after 6 distributaries and the Ameen is responsible for two WUAs. Daily wagers are employed during peak irrigation to act as Chowkidars and Time Keepers. The issue here is that when the management system was under the government there were norms defined and staff placed accordingly, but as the management is transferred adequate staff is neither provided by the government nor provisions made whereby they can hire their staff as per their requirement.

(ii) Capacity of Staff: The Sub Engineer at Sontalai has undergone two trainings on PIM whereas the Ameen has not undergone any training ever since he joined the Department. The Sub Engineer felt that the training he received did not focus on the practical aspects of water distribution and functioning of WUA. It was largely related to the provisions of the PIM Act and has not provided any inputs to him on his routine functioning. The President of the WUA has attended the training though the same was not true for all Territorial Committee (TC) members. Incidentally, the President of the WUA is a politically powerful person and the leadership of the WUA has been in his family since its formation in 2000. The trainings provided are one-off events with no post-training follow up either by the trainer or the training agency. As a result the WUA does not have the facility of handholding support from experts to fulfill its roles and responsibilities effectively.

(iii) Roles and Responsibilities: The role of the Secretary has been defined to include preparation of maintenance plan and seeking of administrative approval from the managing committee, preparation of water budget for the managing committee, assistance in assessment of the areas irrigated, maintenance of various registers, documents and accounts, and provision of technical details of the system to the members of the managing committee. The objective of appointing a person from the Water Resource Department was to provide the critical institutional linkage between the line department and the Farmer's Organization.

However, the Secretary being the repository of all information related to water distribution and the technical details of the system makes him assume a powerful position in the managing committee. In the situation prior to WUAs he was responsible and accountable to the Department and his superiors in the Department, in the current scenario his responsibilities to the Farmer's Organization depends on his willingness to share information and his accountability is diluted as the administrative approval is provided by the Farmer's Organization. Nevertheless, the funds for maintenance have to be secured from the Department as grants; which imparts substantial power to the Secretary within the Farmer's Organization. The institutional arrangement does not leave any scope for the Farmer's Organizations to undertake initiatives on their own; they function within the decision-making space provided by the Secretary cum Sub Engineer.

The Ameen is a departmental functionary for all practical purposes. He receives his salary from the Department and reports to the Department on a regular basis. For the WUA to undertake its planning and monitoring function, it should have all the land, crop and other necessary data under its custody and control. At Sontalai at present, this data is with the Ameen and physically kept in the office of the Department. As a result there is total reliance of the WUA on the Ameen and the Sub Engineer in undertaking planning and monitoring functions. The President and the members are more or less directed by these functionaries in carrying out these activities.

(iv) Repair and Maintenance: The Water Resources Department has mentioned that the WUAs are not expected to undertake structural works, which will be undertaken by the Departmental funds. As a result the WUAs end up undertaking only cleaning and deepening works. In this the WUA focuses only on 'problem' areas. That is, if a particular section of the distributary has problem of flow and the beneficiary farmers have access and influence over the President, the cleaning/deepening work of the section will be undertaken. The quality of works observed in the distributaries had been such that it has affected the original design of canal and the field channels. Again the issue lies with inadequate transfer of functions that has diluted the responsibilities both of the Department and the Water Users' Association.

(v) Coordination: The coordination function requires regular meetings of the WUA and focused interactions between the Department and the PIM institutions. However, the meetings of the WUA do not take place regularly. The only meeting that is regularly undertaken is the one before the starting of the irrigation season. It is observed that this meeting is more to inform the farmers of the water release schedules and other similar information. The representative from Agriculture or Ayacut department does not attend and there are no discussions either on the agronomic practices or on developing of water budgets or frequency of monitoring. Neither has WUA emerged as the primary institution of farmers in the region which is recognized and used by other stakeholders for bringing convergent action, e.g. Agriculture, Horticulture department or the department of Animal Husbandry or other livelihood related agencies.

From the Sub Engineer's perspective coordination largely implies willingness and initiative of the WUA to assist him in accomplishing revenue collection. For example at Sontalai, the revenue collection is about 22% and is the responsibility of the Ameen and the Sub Engineer. They expect the WUA to complete 'revenue collection targets'.

(vi) Monitoring: The monitoring function of the WUA can be completed only when there is a system and that system is in place. That is, violations/deviations/ gaps can then be identified and treated appropriately to dissuade such actions in future. The common example is farmers putting in their own water outlets. The Department takes the view that it is the responsibility of the WUA whereas the WUA takes the position that it is the Department that has the power and it should be initiating action against the violators. The excessive number of outlets and pumping of water at Sontalai creates head up and pushes the *warabandi* schedule by a couple of hours. The net result during the irrigation season is that the tail-end farmers receive less water than the head farmers which is also reflected in the variety of wheat that the farmers take in different regions: W 373 or 322 in the head and W 173 in the tail region.

The monitoring function is also affected by the water release schedule of the Department. The release schedule is not strictly adhered to resulting in uncertainty which leads to farmers putting in all-out efforts to water their own fields and all sequencing is lost in the process. This fact has also resulted in the number of dugwells going up in Sontalai village itself. Water security is of utmost importance which the system is unable to respond to.

Conclusion

At the very outset it should be recognized that the movement for PIM from the government and the Water Resources Department is not guided by any notion of instituting improved water governance system or democratizing farmer's participation in irrigation management or even a notion of farmer's empowerment. The purpose of PIM for the Department is primarily to bring down the cost of maintenance of irrigation schemes in the budgetary scenario of decreased allotments. The entire exercise has been guided by this basic principle and hence what the department has willingly transferred to (or given up to) WUAs are notional functions retaining substantive functions (revenue collection, structural repairs) with the Department. Even the functions that have been transferred have not been backed by support to the WUAs to develop an organizational base of their institution by establishing a permanent office and its own bureaucracy that is critical for any institutional

strengthening. Further, nominating Department functionaries to undertake functions of office (Secretary and record keeping) with no control of WUA over them has ensured stunted functioning of the WUAs. This paper makes a strong plea for allocating resources, human and financial, that are within the control and custody of the WUAs, to develop their own office as an organizational base and nominate/ appoint their own bureaucracy to enable them to emerge as basic units within the institutional space for water governance.

Book Update

Water, Ecosystems and Society – A Confluence of Disciplines; by Jayanta Bandyopadhyay, Sage, 2009

The fresh water required for meeting critical human needs comes from lakes, rivers and dynamic groundwater aquifers and amounts to a tiny part of the total water reserve. These are flows that perform numerous ecosystem services and serve a great variety of ecosystem productivities. The present established approach towards fresh water in India continues to be one of treating it as a mere stock to be extracted from nature and transported for human use through making engineering structural interventions. This has led to absence of flows for satisfying the basic needs of the ecosystems affecting in particular the fishing economies downstream of major water projects. This book is an attempt to promote interdisciplinary water systems knowledge, drawing upon the advances made in the field of ecology, economics and social sciences. In view of the unique characteristic features of India's water systems and the threats to their sustainability, and also the social conflicts between and among various economic demands, the author depicts the traditional approach of structural intervention, which he terms as "reductionist", as an inadequate one for addressing the emerging challenges.

There are four chapters in the book. The first chapter addresses the issue of interdisciplinary knowledge on water systems. In the case of India, rainfall accounts for most of the fresh water. Though its availability per unit geographical area is more than the world average, in terms of per capita availability, the situation is not that good. Moreover, there are wide spatial and temporal variations in precipitation that makes water systems management a challenging task. There is increasing conflict between the demand from agriculture and industrial sectors and which in turn is competing with domestic needs. In the context of wide-ranging socio-economic transitions in India characterized by rapid economic growth, industrialization and urbanization, the author emphasizes an urgent need to take up ecologically sustainable and socially equitable measures. This necessitates an interdisciplinary approach that is being worked out by forging close links with theoretical and applied research in many disciplines. The author suggests that the "recent developments in water systems science and the changes in the conceptual framework for its management are so fundamental that the transformation has received the status of an emerging 'paradigm shift'". The new paradigm is informed by, among others, the growing awareness of water as a human right, changes in the property rights on water, the importance of ecosystem services provided by water, the emergence of tools for their valuation and the recognition of environment flow requirements in surface and groundwater.

The author asks why the government approach to water development in India, as in most erstwhile colonies, has not transcended to a more holistic paradigm of engineering. His answer to the question is located in the continued existence of the colonial culture of obedience to authority. Any criticism based on non-government scientific research is disliked and construed as a challenge to hierarchy. This obstructs the growth of knowledge resulting in a gap in knowledge that is particularly large in the areas of social dimensions of water projects and their impact on ecosystem services. This has led to opposition to water projects by adversely affected people. The author stresses on the need for the government structure to engage independent professionals in a project approval process and for that, and also in the interest of advancement of scientific knowledge, underlines the importance of openness of and access to data on water systems. In this regard the author specifically points out the official restrictions imposed on the availability of detailed hydrological data on international rivers like the Brahmaputra, Ganga and Indus. The unwillingness of the government structure to engage with its critics and share the available data impedes the integration of knowledge from various disciplines of the natural sciences and engineering and also obstructs the process of induction of interdisciplinary knowledge into the development and management of water systems.

Before articulating the areas for research to move towards interdisciplinary knowledge, the author provides a brief review of current interpretations and the discourse of Integrated Water Resources Management (IWRM), which he considers as an early name for the emerging new framework for water systems management. Though the term stands for integrating many aspects of water systems and their uses other than the traditional one of water engineering, no one is clear on what IWRM exactly means in operational terms. On this the author is of the opinion that the fundamental transformation in the concepts do not come as a package but evolve over time in a non-linear manner. Based on a review of the available literature the author spells out and gives a brief description of nine interdisciplinary themes for research in order to address the emerging challenges of sustainability and equity in the field of water systems management. The research on these themes is to complement ongoing disciplinary research. The themes include eco-hydrological knowledge on surface and groundwater systems; ecological understanding of flood and drought events; economic valuation of water systems; institutions for water systems management at various spatial and administrative units; assessment of environment flows requirements; and relation of climate change and water management.

Following the first chapter, the next three chapters present indicative examples of research that can fill the gaps in water systems knowledge. Chapter two provides eco-hydrological perspectives on floods. The author contends that in spite of various disciplinary hydrological studies on floods, floods are seen as unmixed hazards that need to be controlled and, not as an essential element of the hydrological cycle that act as a mechanism, which delivers important ecosystem services. Floods are caused by different mechanisms in the different hydrologic regimes in diverse geographical locations. The ecology of floods is intimately connected with the rainfall-runoff and surface-subsurface hydrological linkages. The changes in land use because of economic activities in areas that are traditionally prone to inundation have contributed to increased flood, leading to increased damage. Large-scale changes alter the spatial and temporal patterns of water levels and volume and rate of flow and quality rendering water management and the flood control devices less effective. The chapter transcends disciplinary limits, unfolding flow-related links between the riparian ecosystems and the hydrological cycle. In the rest of the chapter the author explains causes and conditions of flooding by describing hydro-meteorological, drainage basin and anthropogenic factors and also presents the typology of floods in India. In the end the chapter critiques the reductionist view of floods that favors only dams and embankments for overall water development and as a solution to floods, and presents the eco-hydrological viewpoint of floods, which identifies solutions at the specific spatial and temporal scales understanding diverse causative interactive factors.

Chapter three describes the role of economics, both traditional and ecological for the management of water systems. The introductory part of the chapter takes up a major issue of allocation of water with which water systems management practice is concerned in the new paradigm, and points to the limitation of institutional economics theories. Being qualitative in nature, these theories only provide some guidelines on broad policy decisions but do not provide objective economic instruments for the same. Thereafter the chapter details the necessity and importance of valuation with the help of emerging yet not fully developed tools. The rest of the chapter, divided into four sections, provides a detailed review of diverse approaches to the valuation of economic and ecological services provided by water. Out of the four, two sections are devoted to valuation of economic services of water, one section is on valuation of ecosystem services of water and the remaining one relates to the notion of scarcity value.

Valuation of economic services of water has been divided into two broad categories viz. value of water as an input to the agricultural and industrial production process, and as a good in the consumer's utility bundle. Under the head 'Pricing of Agricultural Waters', pricing in practice; pricing criteria; and valuation of agricultural water have been discussed. Pricing in practice includes discussions on volumetric, non-volumetric and market-based methods. Under pricing criteria, two broad approaches, one having equity as the basis and another efficiency, have been described. The efficiency approach "incorporates the equalization of marginal benefits from the use of the resource across sectors to maximize social welfare" whereas "equity is concerned with 'fairness' of allocation across economically disparate groups in society, and often they turn out to be incompatible with efficiency objectives." Here the maximization of social welfare means the maximization of total net benefit at a given level of available volumes and the existing technology. Next the valuation of water in agriculture is discussed. Before discussing valuation, it is important to note how value is defined. "The value of the resource simply reflects the level of its usefulness to the user, whether an individual or a community, a corporate body or even a nation-state.

This value varies with the user." It also seems that the level of usefulness means usefulness at a particular price. The various methods stated for valuation such as production function approach, sectoral shadow values of water emerging from the value of the multiplier associated with the optimization exercise, residual valuation method etc., seem either to determine value on the basis of cost of making water available or study the effect of changes in price in terms of the net benefit in monetary terms either in a particular sector or across sectors. As for value of water in the industrial sector, a majority of studies are based on estimating water demand models where the ratios of total expenditure to total quantity purchased are used as proxies for prices. It seems that the idea is to find out the price at which the resource is used optimally. All the constraints (other than water as input) to maintain the production process or increase production seem to have been internalized under the term optimal. The term value has been used both as in usefulness of water and as one on which its price depends.

For valuation of water as a good in the utility bundle of consumers, the author describes three approaches under two broad heads viz. the stated preference approaches and revealed preference approaches. Stated preference approach, popularly known as contingent valuation method, involves creation of a hypothetical market, and asking respondents their willingness to pay for a change in their ambient environment, qualitative or quantitative. Revealed preference approaches include travel cost methods (amount spent by a consumer in visiting environment resource) and hedonic pricing methods (value of resource through differentials in property prices resulting from variation in ambient environments). The same approaches are used for valuing ecosystem services of water whether environment flows or maintenance of aquatic ecosystems and mangroves. The author provides a table giving a summary of different studies by various authors along with the methodology used. The last section in the chapter deals with the notion of 'scarcity value' of services. The author distinguishes scarcity of exhaustible resources for which well-functioning markets exist and environmental resources, which are non-market goods, and for that reason there are no readily available price or non-price signals indicating scarcity. Following Gleick (The Changing Water Paradigm: A Look at Twenty-first Century Water Resources Development) the author suggests "that the changing water paradigm, with its shift away from sole or even primary reliance on finding new sources of supply to address perceived new demands, emphasizes incorporation of ecological values into water policy, re-emphasizes meeting basic human needs for water services, and consciously breaks off ties between economic growth and water use."

In the last chapter the author shows an application of new interdisciplinary knowledge for decision-making on the largest civil engineering river-link project. Applying an interdisciplinary viewpoint, he questions the economic viability, social acceptability and ecological sustainability of the project. One may disagree with many points made by the author, but the book must be read by all those who want to have an update on the new approaches being followed for the study of water systems, as it provides an exhaustive review of these studies.

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Blue Covenant: The Global Water Crisis And The Coming Battle For The Right To Water, Maude Barlow, Books For Change, 2008

Blue Covenant by Maude Barlow comes after her much acclaimed Blue Gold of 2002 (co-authored with Tony Clarke). According to Maude Barlow in Blue Covenant: The global water crisis and the coming battle for the right to water, the contest over the worlds dwindling freshwater supplies has blown wide open. "On one side are the powerful private interests, transnational water and food corporations, most first world governments and most of the major international institutions which consider water as a commodity to be sold and traded and have established an elaborate infrastructure to promote the private control of water… On the other side is a large global water justice movement… which considers water as the common heritage of all humans and other species, as well as a public trust that must not be appropriated for personal profit or denied to anyone because of inability to pay."

The book describes how the global water justice movement in the absence of financial clout as of the water cartel, has used innovative networking to become a formidable political force globally. With a series of successes the movement has now come with a new demand for having water declared a human right at all levels of government and the enshrinement of this in local ordinances to nation-state constitutions to United Nations (UN) covenants. For in the absence of its recognition as a human right, decision making over water policy has got relocated from the UN and governments towards private

interests in the water sector. The book claims that right to water would provide a "legal and moral foundation" on which the people can base their claim on access to clean water for life. Barlow says "the fight for the right to water is an idea whose time has come. It has become the rallying cry of the water justice movement".

The book has been chapterised into five parts. In Chapter 1 "Where Has All The Water Gone" the author describes the water crisis. Three scenarios have been discussed – (1) The world is running out of freshwater (both surface and groundwater) due to pollution, climate change etc., (2) Lack of access to clean water is resulting in a human crisis and huge disparities in water usage patterns (3) A powerful corporate water cartel has emerged to seize control of every aspect of water for its own profit. According to Barlow, scenario (3) deepens the crisis now unfolding in scenarios (1) and (2). Also virtual water trading through food imports from poor countries which have no choice but to exploit what is left of their water is leading to a transfer of water from the poor to the rich.

Urbanisation, deforestation, desertification and climate change are displacing water from the hydrological cycle. High technology solutions to alleviate the water crisis like dams, diversions and desalination are damaging the ecosystems, further worsening them. The political leadership is relinquishing its role in arresting and reversing the crisis. They are instead favoring a group of private interests and transnational corporations that view the crisis as an opportunity to make money and gain power.

In Chapter 2 "Setting The Stage For Corporate Control Of Water" the author describes the financial clout of the big water companies with World Bank, United Nations and the respective governments. The author begins by saying that water was viewed as a public resource till recently and the cost of building and extending water and sanitation networks was met through public financing. "Increasingly however freshwater supplies are being privatised in a whole range of ways… Private, for profit water companies now provide municipal water services in many parts of the world; put massive amounts of freshwater in bottles for sale; control vast quantities of water used in industrial farming, mining, energy production, computers, cars and other water intensive industries; own and operate many of the dams, pipelines, nanotechnology, water purification systems and desalination plants that governments are looking to for the technological panacea to water shortages; provide infrastructure technologies to replace old municipal water systems; control the virtual trade; buy up groundwater rights and whole watersheds in order to own large quantities of water stock; and trade in shares in an industry set to increase its profits dramatically in the coming years." The shift from public to private model of water services can be traced to neo-liberal, market-based ideology and is being forced on the Global South through global institutions like World Bank, International Monetary Found (IMF) and even the UN.Unable to meet debt repayment schedules, the Global South was forced to undergo Structural Adjustment Programs that required them to sell off public enterprises and utilities and privatize essential public services such as healthcare, education, electricity, transportation and water and sanitation services. Countries were encouraged through various mechanisms to adopt leases or management contracts through private sector partnerships or public-private partnerships. The author goes on to describe how the World Bank manufactures a global consensus on privatization by cultivating "elite transnational water policy networks" and by enlisting the support of the UN to create the appearance of a worldwide consensus on a private future for water. The World Trade Organisation (WTO) through the General Agreement on Tariffs and Trade (GATT), includes water as a good and prohibits the use of export controls and eliminates restrictions on imports by countries, that have launched commercial water exports, preventing them from changing their mind based on environmental concerns. Apart from this, there is the General Agreement on Trade in Services (GATS) which includes dozens of types of water services, and allows private competition in sectors once controlled exclusively by governments. Barlow mentions a recent proposal of the WTO to add drinking water to the GATS, which would mean that any municipality in the world that decided to try a private system for water delivery would not be allowed to change its mind (as many have done) and revert to a public system without the unanimous consent of all the other 150 countries of the organisation. The author then describes how the World Bank got the support of some powerful business allies (besides the water companies) of the international development agencies of rich countries, new global water institutions (like Global Water Partnership) and World Water Council to shape the water policy consensus at giant global forums. Water privatization has failed in the area of water conservation, source protection and in supplying water to the poor. Documented cases reveal a "legacy of corruption, sky high water rates, cut-offs of water to millions, reduced water quality, nepotism, pollution, worker layoffs and broken promises". Barlow says "the only way that the private sector can stay competitive in such a situation is to have access to public subsidies, the very thing they were supposedly brought in to relieve. In fact, in most cases, the promise that the private sector would bring needed efficiencies, expertise and new investments never materialized." Notwithstanding the resistance in communities around the world the big water source companies have continued to make large profits of more than twenty percent on an average.

In Chapter 3 "The Water Hunters Move In", Barlow describes how new water companies are entering the market and big water utility companies such as Suez and Veolia, are faced

with heavy competition. The industry's technology section is growing at twice the rate of its utility section. "Desalination and industrial water outsourcing are the global water industry's most dynamic sector", as per Masons Water Yearbook. Industrial clients prefer to pay water and wastewater services companies to help them comply with environmental legislation rather than establishing in-house treatment capabilities. At the same time the water industry is creating 'centers of excellence' in certain universities and regions. The global desalination industry is set to take off and in fact because of the high cost of conventional desalination technology the notion of using nuclear reactors to provide the needed energy is taking root in many important circles including the International Atomic Energy Agency and is supported by many governments. Nanotechnology, which deals with engineering at the molecular scale is being explored by big global water purification and treatment companies. The sub-microscopic world of nanoparticles is being looked at through various forms of water nanotechnology such as nanomembranes and nanoporous zeolites (microporous crystalline solids). Some of the governments are funding extensive research on this. Barlow points out that "as in so many other cases of government funded university research, it is the private water companies that are taking control of this technology as well as advantage of the funded research, sensing the enormous potential for profit". Other emerging technologies that have treated investment interest include Atmospheric Water Generators (AWGS) – machines that literally suck water from the air, and cloud seeding – the practice of seeding clouds with silver iodide and dry ice from airplanes in order to enhance the possibility of rain.

The author also details how the practice of buying, trading and selling bulk water property rights sprang up with the delinking of water and land rights. A slew of private water brokerage companies emerged in anticipation of an emerging water market. Bulk water rights have been bought up and are being held for future profit. The author also deals with the bottled water industry in this chapter. "What started as an upscale consumer product became one of the fastest growing industries of the world." Water has now become a hot property on the stock market with at least a dozen major water indexes like the Palisades Water Index (American Stock Exchange) and World Water Index –WOWAX (of the French bank Societe Generale) as well as new exchange traded funds dealing exclusively in water. Its demand is not affected by inflation, recession, interest rates or changing tastes. Barlow quotes Global Water Intelligence – "… the demand for water stocks has risen faster than the supply of investment opportunities". The author assesses the global water market conservatively as a trillion-dollar-plus-per-year industry. In this scenario of corporate takeover of water, Barlow insists that "there is a desperate need for public oversight and control of the world's declining water supply and for elected governments, not corporations, to make the decisions about this shared heritage before it is too late. She says that the answer rests on the principle of conservation, water justice and democracy and that no global corporation that must be competitive to survive can operate on these three principles … With governments, industries and universities investing so heavily in the burgeoning water cleanup technology industry there is less and less incentive at every level to emphasize source protection and conservation. Once a massive and expensive cleanup industry is in place, economic and political pressure will come to bear on governments and global institutions to protect it. Technology, controlled by corporations, will drive policy." Also water and water infrastructure – will flow where the money is, not where it is needed and people who cannot pay will not be served. In the absence of regulatory oversight or government control, there will be no protection for the natural world and the need to safeguard integrated ecosystems from water plundering.

In Chapter 4 "The Water Warriors Fight Back" Barlow gives an accounts of the international water justice movement which is "fighting both the power of the private water companies and the abandonment by their governments of the responsibility to care for their national water resources and provide clean water to their people… From thousands of local struggles for the basic right to water, galvanized through international meetings, a highly organized and mature international water justice movement has been forged and is shaping the future of the world's water. This movement has already had a profound effect on global water policies, forcing global institutions such as the World Bank and United Nations to admit the failure of their model, and it has helped formulate water policy inside dozens of countries." She hails the growth of a democratic global water justice movement as a critical and positive development that will bring needed accountability, transparency and public oversight to the water crisis as conflicts over water looms on the horizon.

In Chapter 5 she argues for the need for an international covenant (Blue Covenent) or UN treaty to guarantee constitutional recognition of the right to water. Such a covenant would recognize water as a basic human right internationally. The author is aware of the fact that this would entail rejecting the basic tenets of market-based globalisation. "While this call builds awareness for water access, such a covenant, if achieved, would not be easily implemented within a market dominated system. The current collapse of the capitalist economic system, at the expense of the needs of the working population reinforces the fact that the market is not compatible with global water security.'

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Policy Update

Government Nod to Private Players to Run Reverse Osmosis Plants in Andhra Pradesh Villages

The packaged water industry in India is a Rs. 3,000-crore industry and is growing at 40% a year. "Karnataka, Tamil Nadu and Andhra Pradesh account for half the industry" [Business Line, July 2, 2009]. With state support the industry is no longer limited to high-end consumers and the retail consumer segment. Larger packages of 12, 20 and 25-litre comprising the bulk water segment and targeted at the "household and institutional market" has shown better growth than the retail water segment (upto 2 litre cans) in smaller towns and peri-urban areas largely because of the inability of the municipal/ rural local body services to provide potable water to the people. Private suppliers have developed a monopoly in many villages and are selling water at Rs. 10 for 20-litre cans. "Bottled water, one of India's fastest-growing industries, is a business built on the foundation of bad governance, inequity and blatant exploitation" (Laxmi Murthy, Infochange, October 2005) as it literally gets the groundwater for free. At the same time manufacturers are not complying with BIS standards (to keep production costs in check) indicating a lack of monitoring and quality control in the sector as evident from the expose by Centre for Science and Environment in 2003. In several States Reverse Osmosis (RO) plants have been installed through their Water Supply & Sanitation (WSS) Departments [Punjab] or through NGOs like Byrraju Foundation/ Balavikasa [Andhra Pradesh] with some community contribution and backed by an MoU between panchayat and the company that operates the system, or collectively by communities [Gujarat] to mitigate high degree of salinity, fluoride or some other impurities in groundwater. The efficiency and quality [of treated water] of decentralised systems based on sources like canal, tubewell or hand pumps is being improved through desilting and repair of storage tanks, inlet channels and washing of the filter media in the existing filter beds under programmes like NREGA [as in Punjab]. In a few States fabricated mobile water testing laboratories are being tried to aid the Department in effective surveillance of drinking water quality. Many of these projects are World Bank supported and insist on having a beneficiary share. At times the respective State Governments, given the ground realities, relax the share for certain categories of beneficiaries [like SCs] or certain problem areas [like waterlogged villages].

The AP State government has given up the responsibility of pro viding access to clean drinking water to its citizens through a recent move that allowed private players to set up RO plants in rural areas to supply water. The course being taken by the Government of Andhra Pradesh for improving efficiency and water quality, though supposedly based on some of the non-profit models (like Naandi Foundation), has distorted them beyond recognition and amount to nothing less than the leasing of State owned water to private companies for profit. The 1100 mandals in the State have been divided into five zones and parceled out to five private players shortlisted by the State Government. The players who competed to capture the large market share were sizably big with branded products. It is planned to set up a plant in each mandal. These plants will be legally guaranteed through Build Operate Own and Transfer [BOOT] agreement. The private player would invest in the RO plant and would operate and charge for the treated water. The government would provide bulk raw water to the company free of cost from public rural water supply schemes apart from leasing out the land at no cost for setting up the plant. The private player will have no accountability towards the gram panchayat. The packaged water will cost 10-paise/ litre [5 paise per litre for ST families] and will be available in 20-litre cans.

A Technical Committee set up by the Government and headed by the Chief Engineer, Rural Water Supply had recommended RO technology for areas, which have brackish or impure water sources. Reverse Osmosis is known to generate effluents even upto 50 % of the raw water and its proper disposal is a cause of concern. The Government's decision to uniformly extend the RO technology option to the whole State was considered erroneous by one of the shortlisted companies itself. Though the Committee had not made suggestions on the management options for setting up of these plants the government chose to extend centralised corporate control over water and water distribution even where the publicly owned Rural Water Systems were functioning well, with the logic that this would remove the monopoly of small-scale private suppliers who sell water at high costs [upto five times of what is being proposed now]. It is not clear how this would prevent creation of monopoly of big players in future in the absence of panchayats' control over the company and without a formal MoU as is the practice in decentralised non-profit models. Panchayats have been involved only to the extent of handing over the land to the company and do not have powers to refuse the company a license to operate. Will the entry of a private player not affect the public water supply system and have an adverse consequence on water provisioning to those who cannot pay? The low cost of water supply indicated at present obscures the fact that prices can increase any time especially when there is no clause to prevent tariff increase during the contract period. Once the company is able to break-even in four-five years it will be making substantial profits.

The National Alliance of People's Movements (NAPM) has opposed the decision on the grounds that the "government was working against the spirit of Article 243 and the 73rd and 74th Constitu-

tional amendments in ignoring the "first right" of the gram sabhas in taking decisions pertaining to the respective villages".

Amita Bhaduri, *SPWD New Delhi*

Government Approval for Establishment of Andhra Pradesh Water Resource Regulatory Commission, August 2009

The act for establishment of the Andhra Pradesh Water Resource Regulatory Commission (APWRRC) was passed on August 26, 2009 by the AP State Assembly. As per the act the Regulatory Commission intends to regulate the water resources within the State of AP to facilitate effective utilization of water resources within the State to ensure its sustainable and scientific management and for drinking, agriculture, industrial and other purposes. The regulator's role as of now appears to be limited and the thrust of the act is on aspects like need for determination of - water requirement category-wise, O & M costs and of improving water use efficiency. While the act does suggest insulation of the regulatory body from the Government it has neither suggested private sector involvement nor has it tinkered with the present tariff setting mechanism.

The APWRRC act will be followed by its notification in the official gazette, drafting of the rules and establishment of the APWRRC. While the structure of the Commission, the qualification for appointment as Chairperson of the Commission, the manner of selection of members, the constitution and functions of the Selection Committee, the terms of office of the members and the proceedings of the Commission are more or less the same as that of the Maharashtra Water Resource Regulatory Authority (MWRRA) the powers and functions are markedly different.

Theact in its current form does not provide for setting up of a State Water Regulatory Council (chaired by the Chief Minister with a few ministers as members) to lay down the broad management policy and a State Water Regulatory Committee (chaired by the Chief Secretary, with a few other Secretaries) to assist the Council in the discharge of its functions. The act does not provide for formulation of an Integrated State Water Master Plan and powers to review and clear water resources projects proposed at the sub-basin and river basin level. Nor does it allow the Commission to set investment priorities to remove regional imbalances. The Act has not suggested setting up of Basin Authorities as autonomous bodies to allocate and monitor water use for different purposes. There is no specific clause in the act, to bring in more clarity to the roles of various government bodies involved in water distribution. Unlike the MWRRA, the APWRRC extends the eligibility criteria of Chairperson to those outside the Governmental Services and eminent people in the field of Water Resource Management with a proven track record can qualify for appointment. Unlike in Maharashtra, the Special invitees to the APWRRC could include members from farmers organizations within the State.

Some of the powers and functions of the Commission include -

Determination of Water Requirement Category-wise: The APWRRC is empowered to determine the water requirement for (a) various categories of users (such as irrigation, municipal/ rural drinking and domestic water, industrial and commercial use etc) and (b) irrigation water requirement for various levels of Farmers Organisations (namely, Project Committee, Distributary Committee and Water User Association) based on the cropping pattern approved by the project authorities on a yearly/ season basis. This is unlike the MWRRA which has the authority to (1) lay down the criteria and monitor the issuance of entitlements across/ within categories of use; (2) to determine the priority of distribution of water available at the water resource project, sub-basin and river basin levels during periods of scarcity; (3) establish a water tariff system, and to (4) fix the criteria for water charges at sub-basin, river basin and State level to reflect the full recovery of the cost of irrigation management, administration, operation and maintenance of water resources projects. The APWRRC does not talk of issuance of entitlements unlike the MWRRA, which states that "Bulk Water Entitlements shall be issued by the River Basin Agency for irrigation water supply, rural water supply, municipal water supply or industrial water supply to the relevant Water User Entities….". So, water entitlement system is not being introduced in AP as of now though exercises related to quantification and improvements in measurability like benchmarking of irrigation projects, water audit reports, irrigation sector status reports etc can prepare the grounds for its introduction at a later stage.

Determination of Operation and Maintenance (O & M) cost of irrigation/ multipurpose water projects: The act says that the State shall ensure provisions

for full O & M requirements of irrigation projects as determined by the Commission, through an appropriate budgetary support, to ensure that quality of service delivery is not allowed to suffer for want of systems' O & M needs. The act in its current form does not talk of cost recovery reforms and suggests that system running costs should be covered through direct/ cross subsidy. Unlike the Uttar Pradesh Water Resource Regulatory Commission (UPWRRC) and MWRRA, the APWRRC does not talk of cost recovery [partial or full] from the direct users. A major function of the authority would be to promote efficient management of irrigation water. This would be done through –

- Providing guidelines/ procedures/ modalities for plough back of O&M amount to the farmers' organisations for the operation and maintenance of the irrigation systems as well as standards of services,

- Monitoring the technical standards for operation and maintenance, cyclical repairs and minimum rehabilitation of irrigation systems,

- Ensuring that the principle of "tail to head" irrigation is implemented by the project authorities.

Promotion of Water Use Efficiency: As per the bill wastage of water will be minimized through fixing and monitoring implementation of stipulated quality standards and recommended actions against violations for -

§ Management of water resources by various water users/ departments

§ Services to be provided by various water resource service providers

§ Disposal of waste water by various water users

§ Protection of all water resources in the State from pollution

§ Preservation of water quality in close coordination with the relevant State Agencies and in doing so following the principle that the "person who pollutes shall pay".

Dispute Resolution Mechanism: The act empowers the Commission to authorize any competent officer or officers for each project as Primary Dispute Resolution Officer to resolve the disputes with regards to the issuance or delivery of determined water under the act.

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Constitution of Ganga River Basin Authority, February, 2009

By the 1970s, pollution in the River Ganga had reached alarming proportions due to sewage and solid waste release, industrial effluent and non-point sources of pollution like fertilizers & pesticides used in agriculture. The problem was worsened by the fast shrinking glaciers, dams, barrages, canals that create a hazard to the river's health. The Central Pollution Control Board (CPCB) initiated a comprehensive survey on the pollution status of the Ganga in 1979 and published two reports in Oct 1984. The Central Ganga Authority (CGA) was set up in Feb 1985 with a budget of 350 crores to finalise the policy framework and to oversee the implementation of the Ganga Action Plan (GAP) which was launched with a lot of fanfare in 1985. The CGA had the Prime Minister (PM) as Chairman and Chief Ministers (CMs) of the concerned States, Union Ministers and Secretaries of the concerned Central Ministries and Experts were its members. The Ganga Project Directorate (GPD) was established as a wing of the Ministry of Environment and Forest (MoEF) in June 1985.

The GAP I was later extended to GAP II in 1993 and was provided a broad-based form of National River Conservation Programme in 1995 with a National River Conservation Directorate (NRCD) headed by a Project Director assisted by technical personnel. CGA was provided with a larger mandate to cover all programmes supported by NRCD and was given the name - National River Conservation Authority (NRCA). The functions of the NRCA were to lay down the policy framework, examine and approve the priorities of the NRCP, mobilize necessary financial resources and review the progress of implementation of programs. A Steering Committee too had been constituted with the Secretary, MOE&F as Chairman and Chief Secretaries of concerned states, Secretaries of concerned central ministries, Chairman CPCB, DG Health services, DG ICMR and some experts as the other members of the Committee. The NRCD reports to the Steering Committee on progress of projects and the Steering Committee in turn reports to the NRCA. The financing mechanism has changed several times during the course of implementation: NRCP was a 100 % centrally funded scheme during 1986-1993; a 50:50 shared scheme between the centre and states between 1993 and 1997; a 100 % centrally funded scheme during 1997-2001; a 70:30 shared scheme between Centre and state from 2001 onwards. Operation and maintenance of assets created

is the full responsibility of the state government or local body.

States share a major responsibility in the preparation and execution of the projects and have identified one of their agencies as the Nodal Department. Various State Government agencies are assigned the work of individual scheme preparation and execution and there is an inter-departmental committee with the Secretary of the Nodal Department as the Convener. The monitoring mechanism at the State and Central levels comprises of a multi-tier monitoring mechanism.

The GAP now covers thirty-four major tributaries of Ganga and more than two thousand crore rupees have been spent under the programme. Direct causes of pollution in the Ganga were addressed through core sector schemes, like interception and diversion of domestic wastewater including the construction and rehabilitation of sewers and pump houses apart from implementation of non-core sector schemes such as river front development etc. Still the implementation of the GAP has been a piecemeal effort centered on municipal sewage. Even then only a third of the sewage treatment capacity (3000 mld) has been developed so far. There is a genuine concern on the river water being diverted for hydropower projects between Gangotri, the glacier that feeds the Ganga and Uttarkashi, and its flow being checked at various places as a result. Maintaining a minimum river flow itself has become a challenge as a certain degree of dilution and some discharge is necessary to abate pollution in the river.

The net result as put by Awasthi, 2008 is "Ganga today is more polluted than when the Ganga Action Plan was first initiated" [Ganga Action Plan: A Critical Analysis, http://www.ecofriends.org]. This necessitates a complete overhaul of the plan and the institutional mechanism. Seventy five percent of the pollution is contributed by municipal sewage and solid wastes and another twenty-five percent comes from industrial effluents. The failure of GAP can be attributed to various reasons like lack of coordination between multiple agencies involved, lack of accountability and lack of funds to meet the O and M costs of the assets created.

In November 2008 Ganga became the first river in India to get the status of a national river in a politically symbolic move months before the general election. The decision was to facilitate the creation of a Ganga River Basin Authority that, unlike the Ganga Action Plan, will be empowered to plan and implement decisions and monitor them. The MoEF on 20th February, 2009 issued a notification regarding constitution of a National Ganga River Basin Authority under sub-sections (1) and (3) of section 3 of the Environment (Protection) Act, 1986 (29 of 1986) to plan, finance, monitor and coordinate the collective efforts of the Central and the State Governments for effective abatement of pollution, sustainable use of water and flood management and conservation of the river Ganga and to integrate these aspects. The authority is not an additional environmental clearance mechanism and the focus this time is on treatment of the catchment on a basin wide scale.

The structure and functions of the authority are as given below:

The Authority with its headquarters at New Delhi shall consist of –

- Prime Minister (ex-officio Chairperson);

- Union Ministers from Ministries of Environment & Forests, Finance, Urban Development, Water Resources, Power and Science and Technology (ex-officio members);

- Deputy Chairman, Planning Commission (ex-officio members);

- Chief Ministers (Uttarakhand, Uttar Pradesh, Bihar, Jharkhand, West Bengal) (ex-officio members);

- Minister of State, Environment and Forests- *ex officio* Member

- Secretary, Union Ministry of - *ex officio* Member-Secretary: Environment and Forests

The Authority may co-opt one or more Chief Ministers from any of the States having major tributaries of the river Ganga, which are likely to affect the water quality in the river Ganga, as *ex officio* Member. It may also co-opt one or more Union Ministers as may be required, as *ex officio* Member. Other co-opted members include experts in the fields of river conservation, hydrology, environmental engineering, social mobilization etc.

The Authority shall combine regulatory and developmental functions keeping in view the powers vested with the State Governments and their institutions -

(a) development of river basin management plan and regulation of activities aimed at the prevention, control and abatement of pollution in the river Ganga to maintain its water quality, and to take such other measures relevant to river ecology and management in the Ganga Basin States;

(b) maintenance of minimum ecological flows in the river Ganga with the aim of ensuring water quality and environmentally sustainable development;

(c) measures necessary for planning, financing and execution of programmes for abatement of pollution in the river Ganga including augmentation of sewerage infrastructure, catchment area treatment, protection of flood plains, creating public awareness and such other measures for promoting environmentally sustainable river conservation;

(d) collection, analysis and dissemination of information relating to environmental pollution in the river Ganga;

(e) investigations and research regarding problems of environmental pollution and conservation of the river Ganga;

(f) creation of special purpose vehicles, as appropriate, for implementation of works vested with the Authority;

(g) promotion of water conservation practices including recycling and reuse, rain water harvesting, and decentralised sewage treatment systems;

(h) monitoring and review of the implementation of various programmes or activities taken up for prevention, control and abatement of pollution in the river Ganga; and

(i) issuance of directions under section 5 of the said Act for the purpose of exercising and performing all or any of the above functions and to take such other measures as the Authority deems necessary or expedient for achievement of its objectives.

The powers and functions of the Authority shall be without prejudice to any of the powers conferred upon the States under any Central or State Act, being not inconsistent with the provisions of the Environment (Protection) Act, 1986 (29 of 1986). The jurisdiction of the Authority shall extend to the States through which the river Ganga flows, namely, Uttarakhand, Uttar Pradesh, Bihar, Jharkhand and West Bengal and such other States, having major tributaries of the river Ganga, as the Authority may decide for the purpose of effective abatement of pollution and conservation of the river Ganga. The Authority may evolve its own mechanism for monitoring of effective abatement of pollution and conservation of the river Ganga and issue directions thereof under section 5 of the EPA, 1986.

There shall be a corpus of funds provided by the Central Government for implementing such projects, programmes and other activities as may be decided by the Authority. In the 2009-10 budget an amount of 500 crore rupees has been allocated for the Authority. The Authority may regulate its own procedures for transacting its business including its meetings. The Authority shall be provided administrative and technical support by the Ministry of Environment and Forests, which shall be the nodal Ministry. The Authority may evolve an appropriate mechanism for implementation of its decisions. The State Governments concerned may constitute a State Ganga River Conservation Authority under the chairmanship of the Chief Minister with such composition and such powers as deemed fit for coordinating and implementing the river conservation activities at the State level. Based on the integrated basin management plan drawn by the National Ganga River Basin Authority, the State Governments shall take steps for comprehensive management of the river in the State through their respective Authorities.

It is not clear whether the creation of the Authority has taken note of the fact that Ganga basin is a trans-boundary basin between India, Nepal and Bangladesh and is a part of the larger Ganga-Brahmaputra-Meghna basin.

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Towards Effective Environmental Governance: Proposal for a National Environment Protection Authority

This discussion paper was brought out by the Ministry of Environment and Forests in September 2009 in order to raise the issue of an effective model for environmental governance in India while proposing the constitution of a National Environmental Protection Authority (NEPA). Its objective was to propose and put forth for discussion amongst stakeholders (state, civil society, and others), the working and design of an environmental authority to best address current and upcoming environmental issues. The salient points of the discussion paper are summarized in this article.

Rationale for a more Effective Model of Environmental Governance

Environmental legislations such as the Environment (Protection) Act 1986 and National Environment Policy 2006 have helped immensely in addressing issues of environmental importance through policy and legislations. The concerned mechanisms and implementation however have not kept up with the evolution of policy and legislation thus creating the need for a newer, more specialized regularity authority in the form of NEPA.

Over time inadequacies in the executive have been highlighted

on issues like clean-up of polluted rivers, waste management, including hazardous waste and plastic, tackling chemical contamination and monitoring compliance with environmental regulations. But there has been little focus on implementation to redress these lacunae in implementation of the Environment Protection Act 1986.

In 2009, Centre for Science and Environment, New Delhi conducted a study on India's Environmental Regulators and has identified shortfalls in SPCB's implementation activities and has further recommended guidelines and standards of operation within such bodies. Kalpavriksh Environmental Action Group has also reiterated current weaknesses in the functioning of state environmental regulatory authorities in their report titled 'Revealing the State of Monitoring and Compliance of Environmental Clearance Conditions'.

A particular case in which the need for an appropriate regulatory authority was brought to light was the Tamil Nadu Pollution Control Board vs the State Human Rights Commission case decided on 4/11/2004 in which it was observed by the Madras High Court:

> *"…there is an urgent need for enactment of a general resolution on environmental pollution which inter alia should enable coordination of activities of various regulatory agencies, creation of authority or authorities with adequate powers for environmental protection, regulation of discharge of environmental pollutants and handling of hazardous substances, speedy response in the event of accidents threatening environment and deterrent punishment to those who endanger human environment safety and health."*

The need for institutional redesign has come about given the rise in number of environmental clearance projects received by MoEF and similarly by the Central Pollution Control Board (CPCB) and State Pollution Control Boards (SPCB), far exceeding the capacities of each of these regulatory bodies.

Additional environmental authorities and upgradation of current capacities has been proposed in the past such as establishment of a National Environment Clearance Authority in the 11th Five Year Plan (2007), and strengthening of the CPCB mentioned in the 192nd Departmental Parliamentary Standing Committee on Science and Technology and Environment and Forests in 2008.

Basic Structure of an effective Environmental Governance Model

The new environmental governance structure is being proposed as revolving around the following activities in order to best address the complexities that arise from the ever- challenging environmental governance arena. They are:

~ Legislation and policy-making - MoEF

~ Regulation, monitoring and enforcement - National Environment Protection Authority

~ Adjudication - National Green Tribunal

SPCBs will continue to carry out their designated functions while the CPCB may be required to incorporate some functional adjustments after the setting up of NEPA.

Key Principles for the Establishment of NEPA

~ Statutory Body created through parliamentary process

~ Autonomous of MoEF with substantial budget and powers to make its own procedures.

~ Should be professionally managed, and board members and CEO should have a fixed tenure.

~ Original powers conferred upon it under the Environment Protection Act 1986

~ Subscribe to Polluter-pays and precautionary principles.

Role of NEPA

NEPA shall be given the authority to be an independent statutory body for effective enforcement of environmental laws comprising of professionals from physical and life sciences, engineering, law, environmental planning and management as well as economics and public health. The NEPA is expected to assume national stewardship of enforcement and compliance with regulation EPAs for decentralized functioning.

Functions of the body would include:

~ Environment Impact Assessment

~ Enforcement and Compliance

~ Environmental Planning and Sustainability Studies

~ Environmental Health and Ecosystem Protection

~ Sustainable Production and Waste Management

~ Chemical and Bio safety.

Role of the MoEF and Pollution Control Boards

The ministry's role of policy making, framing legislation, acts and rules, coordination with state and environmental authorities as well as inter-sectoral and inter-ministerial coordination and parliamentary matters will continue with added responsibilities of overseeing international negotiations, executing centrally sponsored schemes for activities such as river cleaning, establishment of common effluent treatment plants, treatment storage and disposal facility along with R&D in clean technology. However, MoEF's role may need to be constantly changing due to the establishment of NEPA.

Development of national environmental standards, monitoring ambient air and water quality, conducting R&D in pollution control technology and coordinating the functioning of the SPCBs include the responsibilities of CPCB. NEPA on the other hand, will provide technical support to the SPCBs and may also guide state boards in matters of the environment.

Design Options Related to NEPA

I. Create a National Environment Monitoring Authority (NEMA) looking at compliance and enforcement.

This structure would essentially involve the creation of NEMA with a focused mandate of environmental enforcement and ensuring compliance which is essentially taken over from MoEF. CPCB's pollution standards compliance shall also come under NEPA's jurisdiction in this model. NEPA would be required to be given adequate authority in order to act as a monitoring, enforcement and inspection body.

II. Create a full-fledged NEPA that subsumes the CPCB

Under this structure, CPCB and its entire staff shall become a part of NEPA with NEPA undertaking three primary functions, namely, R&D and Technical studies (from MoEF), regulation and granting of environmental clearances (from CPCB) and oversight of compliance and enforcement of environmental clearances and pollution standards as outlined in Option I. CPCB's regional offices shall be upgraded to meet the needs of NEPA and while the need for a paradigm shift in environment management is much needed, it is recognized that transforming CPCB into NEPA may be the biggest challenge yet.

III. Create NEPA with a separate CPCB continuing to report to MoEF

NEPA being created without taking over CPCB is suggested in a manner such that CPCB and NEPA are independent bodies that can collaborate when necessary and NEPA will perform two primary functions- R&D and technical studies (from MoEF), and compliance and enforcement of environmental clearances and pollution standards as outlined in Option I.

IV. Create a NEPA, with CPCB reporting to it.

Stemming from option 3, CPCB shall report to NEPA instead of MoEF and this suggestion recognises the synergies that lie in both the bodies working together.

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