

## **Basin Approach for Decentralized Resource Governance A Theoretical Construction**

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### **Summary**

The conventional top-down approach to development, wherein the decision-making is limited to the top of the organization, is inferred to lack information, suggestions and ideas coming from the bottom. As the western world has yet to figure out how to develop in an environmentally and socially sound manner, the only way third world communities can create intelligent development in their own community will be through grassroots initiatives and decentralized resource governance.

As a corollary to the above, the bottom up planning with basin as a planning unit i.e. the development of a basin plan shall serve to a) strengthen the institutional organization and coordination b) enhance public interest through an 'open planning process' c) improve the financial and operational management and the planning capacity of the development administration and help address (1) faulty premises and development strategies. Basin provides an opportunity for a systematic analysis of Basin economic potential and sets a pattern for development. The Basin plan will provide for proper distribution of population, labor, entrepreneurs and capital. Deepening democracy starting from basin at the top level to a village at the bottom level allows for long-term sustainable change in human capacities, capabilities to plan, better governance and envisioning the regionalization and institutionalization of sensitive and accountable systems of decentralized resource governance at various levels

While balanced Basin development is a must for both political and economic reasons, the emphasis should be more on balanced plan efforts and development tasks. The new basin approach would result in the equal distribution of the efforts and fruits of development. Basin development is constrained by differences in human and material resources, opportunity and technology. The resultant development model will be scientific, interdependent, inter-Basin and inter – sectoral.

The basin analysis will map basin's growth differentials, causes and consequences thereof and prepare an integrated plan for initiating action for optimum utilization of resources to accelerate output, employment and basin's income. Scientific approach to basin development would usher in a national priority pattern based on Basin level consensus. Essential pre-requisite for successful basin planning and implementation is the need to allocate adequate human and financial resources for capacity building activities in each river basin as part of overall basin implementation. The Key activities in basin planning process include among others the a) Development of river basin management plans and b) Evaluation of the first and second period of basin plan implementation. Irrigation & Drainage Development b) Fisheries Development c) Hydropower Development & Pooling d) Watershed Management e) Pollution Control & Water Quality Management Key features of a basin plan are Integration of all water resources, combining fresh surface water and groundwater bodies, wetlands, coastal water resources at the river basin scale; However, what is critical for successfully initiating and concluding the basin planning process and basin plan preparation is good scientific information system, good data management and sharing.

Basin as a unit of planning helps intra-rural and urban-rural integration through various linkages physical, political, economic, social and technological and further the conventional top-down driven plan based on sectoral approach must be changed to introduce spatial dimension. Hence, micro level basin plan should evolve its own system of development facilitating the integration aimed at a) optimizing utilization of resources and infrastructure b) narrowing the gaps between inter-regional and inter-sectoral differences in the growth rate

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c) bringing about a balance between production and consumption d) maximizing social benefits e) minimizing urbanization; The objective of integration, at the basin level should aim at spatial integration hence, the theories of industrial location, agricultural location, geographical diffusion of innovation, central place and growth poles need to be reviewed while deciding on the outputs of a basin plan for effective decentralized resource governance.

## **I. INTRODUCTION**

The conventional top-down approach to development, wherein the decision-making is limited to the top of the organization, is inferred to lack information, suggestions and ideas coming from the bottom. People at the top are not willing to listen to people belonging to lower strata of population and their ideas, suggestions or feedback, thus resulting in social-cultural-technical and information divide. Keeping the change process to the upper strata of population breeds scepticism from amongst the lower level people. Misunderstandings arise due to communication problems and inadequate information of both parties. Many differing assessments of a given situation exist in lower levels and different functions.

These, so called neglected segment of the population have little chance to participate, do not know for sure the exact circumstances revolving around the change and thus resist it in favour of decentralized resource governance which allows for deepening democracy at lower levels.

Further, there has been a fundamental problem in government organized development packages to the most vulnerable population. In many instances, development agencies have been ineffective in reducing poverty in local communities. The development packages are structured by relations of power that are inherent to the very framework of these agencies. These development agencies try to supply aid in a top-down approach that tends to apply western high-technology solutions instead of listening to local knowledge. They also tend to try to develop areas by promoting the concept of privatisation, commercialisation and rapid industrialization, which has been shown in many cases to leave many people in poverty.

Appropriate developments cannot take place with a top-down approach. The development agency has to be non-hierarchical in both its internal organization and in its approach to instituting change or the inherent hierarchical framework of the organization will be imposed on the form that the development takes. If the development package imposes a western style hierarchical system upon the community appropriate development cannot take place. As the western world has yet to figure out how to develop in an environmentally and socially sound manner, the only way it for third world communities to create intelligent development in their own community will be through grassroots initiatives and decentralized resource governance.

Decentralized resource governance entails a) adopting productivity, livelihood assurance, sustainability, equity, and democracy as basic values or goals b) integration across resources and related sectors (forest, livestock, drinking water and sanitation, minor irrigation, etc) & across scales (micro to milli to sub-basin to basin) and c) moving towards greater downward accountability. Deepening democracy starting from basin at the top end to the village level at the bottom end allows for long-term sustainable change in human capacities and capabilities to plan and govern better and further it envisions the regionalization and institutionalization of sensitive and accountable systems of decentralized resource governance at various levels in general and sensitive hydrological regimes called basins

As a corollary to the above, the bottom up planning with basin as a planning unit i.e. the development of a basin plan shall serve to a) strengthen the institutional organization and coordination b) enhance public interest through an 'open planning process' c) improve the financial and operational management and the planning capacity of the development administration.

The basin plan will thus help address (1) faulty premises and development strategies (2) Problematic and counterproductive implementation mechanisms (3) the emergence of powerful interest groups that appropriate public resources and needed policy reforms, and (4) the slowness to learn from experience and consequent lack of flexibility and adaptation.

In recent decades there have also been increasing demands for hydrological regimes that support healthy and diverse ecosystems, provide for water-based recreational activities, reduce if not prevent floods and droughts, and in some cases, provide for the production of hydropower and ensure water levels adequate for ship navigation. Water managers are challenged to meet these multiple and often conflicting demands. At the same time, public stakeholder interest groups have shown an increasing desire to take part in the water resources development and management decision making process. Added to all these management challenges are the uncertainties of natural water supplies and demands due to changes in our climate, changes in people's standards of living, changes in watershed land uses and changes in technology. How can managers develop, or redevelop and restore, and then manage water resources systems - systems ranging from small watersheds to those encompassing large river basins and coastal zones - in a way that meets society's changing objectives and

goals?-In other words, how can water resources systems become more integrated and sustainable?<sup>2</sup>-Is the basin approach to planning and development an answer to decentralized natural resource governance?

**Basin Planning: The concept and its relevance-A regional perspective**

Basin planning, particularly, refers to the physical planning and exploitation of resources in a given geo-economic region. The basin planning, in a way, is parallel to the movement for decentralization of power and authority of local administration and devolution of administrative and legislative functions.

The organization of a Basin should be based on certain common criteria such as homogenous condition, scientific or natural unit. The basin should be a natural unit with specific geographical, cultural and social homogeneity. This should, among others, include a study of land, population, natural and agricultural opportunities, potential for commerce and transport development. The essential factor is the maximum co-ordination of geographical factors such as topography, climate, soil and its resources. The planning unit should be big enough to yield to a large-scale systematic planning and small enough to avoid excessive concentration. Such an approach to regionalization would help creating a scientific Basin.

The scientific delineation of the basin based on a proper understanding of the diversity in space would provide for creating a natural unit. Additionally, adopting the criteria of internal homogeneity and external contrast will help in creating the natural Basin where there would be very little over-lap of interests and activities.

The homogeneity, which would help building optimum functional linkages, would in turn serve as a fulcrum on which Basin development could be based. However, homogeneous economic regionalization ought to be strongly built on the basis of maximum common factors and interests. Thus, the basin so derived would be geo-economic area which is socially interrelated possessing common economic interest, political organization and cultural integration.

Another feature is the adoption of the concept of comparative cost and division of labor at the basin level. The adoption of this concept will probably best serve the purpose of optimum utilization of available resources and low comparative cost of production, ultimately resulting in Basin specialization based on proper choice of crop pattern or specialization of industry based on relatively superior claims

A warning at this stage may be appropriate. There is always the danger of neglecting a Basin on the plea that it is unsuitable for industrial or agricultural development. While in initial stages that may become necessary, this should not be drawn too far, and efforts must in all Basin either by transfer of resources or subsidization of development in backward Basins. Basin provides an opportunity for a systematic analysis of Basin economic potential and sets a pattern for development. Since spatial organization is a function of activity and inter-action patterns, Basin development is simply an expression of these patterns and Basin Planning consequently endeavors to improve the organization of economic space in accordance with integrated criteria or goals.

Thus, Basin Planning is not a political slogan, but an economic reality; it is not a movement but a concept for scientific plan and it is a socialist order whose claim rests on decentralization of power and authority and equi-distribution of income and employment. It also encourages people's dependence on their own initiative and efforts and reduces the need for guidance from above. Uniform central administration would yield place to diversified and decentralized Basin complexities. The creation of bottom up planning and flow of authority top-down helps operational units and increases co-operation among people and functions. Thus, what is required of the planning machinery is proper demarcation of functions and responsibilities and devolution of authority. The most relevant aspect of the Basin Planning concept is actual devolution of responsibilities and duties upon the functional units with certain degree of autonomy for decisions and actions.

Therefore the objectives of Basin planning should be a) the devolution of power and authority, b) close contact between planning body and operational units, c) close scrutiny of available resources and their proper assessment, scientific and d) methodic formulation of plan at the Basin level and close co-ordination, supervision and implementation of the projects. The Basin plan will provide for proper distribution of population, labour, entrepreneurs and capital.

While balanced Basin development is a must for both political and economic reasons, the emphasis should be more on balanced plan efforts and development tasks. There is a need for synchronizing both of them and provide for optimum development measures. This cannot be done merely by changing plan approach or by mere redistribution of plan outlays. The need is for proper fixation of objectives and targets and plan efforts and investment on the basis of Basin's resource needs and preparedness on the basis of population, area and level of backwardness.

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<sup>2</sup> Water Resources Systems Planning and Management: An Introduction to Methods, Models and Applications Authors: Loucks, Daniel P. van Beek, Eelco Stedinger, Jery R. Dijkman, Jozef P.M. Villars, Monique T.

With a view to facilitating optimum exploitation of existing resources, exploring new resources, establishment of new industries, improving and expanding socio-economic infrastructure and, in fine, ushering in self-sustained growth, the attempt should be to bring about multi-sectoral development with an emphasis on agriculture. The new Basin approach will result in efforts and fruits of development being distributed equally. In addition, it creates opportunities for increased income, employment and Basin's self-sufficiency in food, otherwise the stresses on transport and storage would be colossal and a large agriculture production, if not scientifically managed, may cause social and economic upheavals. In a scarce resource Basin, in addition to optimum utilization of factors of production, available infrastructure facilities should also be put to efficient and optimum use. While there is the need for deliberate planning of economic activity, capital distribution and communication links are important.

Further, Basin planning and its implementation are built on socio-economic linkages and on functional (systematic) uniqueness. While the space has continuity, the economic activities and their spread is not; population and opportunities are not distributed equally, and more or less concentrated in clusters. Basin development is constrained by differences in human and material resources, opportunity and technology. Thus, origin and sustenance of economic activities, unless, and otherwise interfered with, is a function of resources. This non-interference with the growth mechanism has historically accentuated basin disparity and made the task of correction arduous.

While a socio-economic explanation for Basin approach to eliminate basin, imbalances is basic to the appreciation of need for equi-developmental efforts, the idea of Basin planning and development has been finding favor mainly in the demand for decentralization of authority and decision making.

### **The Rationale for basin Planning**

The macro planning since 1950, in India has not led to integration of functions, economic organization, and transport and communication system. Thus, the Integrated Development Programme executed so far has failed to promote autonomous and self-sustained growth, which is reflected in many studies<sup>3</sup>. Additionally, it has not reduced the income differentials and inequalities<sup>4</sup>. This is probably due to the absence of area dimension in the growth process and also due to fast developing ecological imbalances. The solution lies in proper management of resources and their utilization and conservation. Another constraint is the absence of proper organization to design, co-ordinate and implement a programme, which requires an integrated approach to development, and it should be financially sound, operationally flexible and effective in control and authority over sector and departments implementing the plan

The conventional top down approach to planning as practiced in India has in many respects failed to achieve national development objectives over the long term. Four different sets of factors can be identified as probably having contributed to this failure: (1) faulty premises and development strategies. (2) problematic and counterproductive implementation mechanisms, (3) the emergence of powerful interest groups that appropriate public resources and blocked needed policy reforms, and (4) the slowness to learn from experience and consequent lack of flexibility and adaptation.

The rationale for basin planning depends a great deal on its positive contributions through lower cost and large benefits-less of social costs and more of social benefits. The chances of benefits determining the optimum location is greater than either pressure or political lobbying. As a result of this approach, based on right choice of location, the rate of growth of different basin economies would be closer. To begin with, basin approach assumes concentration of economic activity in areas with higher development potential and in the areas with better socio-economic infrastructures- the most important input is the presence of positive attitude towards development. This approach initially results in concentration of economic activity in a resource endowed basin with relatively higher rate of growth. Also, this avoids resorting to spreading of investment efforts too thinly over a large expanse of area in different basins in the country. While this approach may be prima-facie alright (skipping, low potential and unfavorable locations in the short run) in the long run, the emphasis on agriculture, a ubiquitous function, permits of spreading of efforts subsequently to low potential areas. The concentration would be only at the ultimate state of industrial projects location. The cumulative development would be pushed up to certain minimal level and then the resource to the balanced development is desirable, i.e., certain level of development efforts and results must help a basin take off. For example,

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<sup>3</sup> Bardhan, Pranab, K: "On the Maximum Level of Living and the Rural Poor", Indian Economic Review, April 1975, p.p.129-136. Hegde, Ramakrishna, Planning Policies in India, Government of Karnataka, Bangalore, 1986, p.5. Dandekar, V M and Rath, N, "Poverty in India: Dimensions and Trends", Economic and Political Weekly, January 1971. Shetty, S L: "Structural Retrogradation in the Indian Economy since the Mid 60", Economic and Political Weekly, 1978.

<sup>4</sup> Institute for Command Studies and Irrigation Management: "Income, Savings and Investment Benchmark Survey in Upper Krishna Project, (A Base Line Survey) 1989.

resource-based industries like iron and steel and heavy chemical will have to be located at the points of raw materials while a few markets oriented foot loose industries could be shifted to low potential Basins. However, all centers of economic significance plus balanced basin development should ultimately determine the action unless, of course, some attempt at some stage is made to shift economic activity to the low potential basin, it is likely to remain for ever a backward basin: worse, depression may set in encouraging migration of men, talent, capital and technology from backward basin to fast growing potential basin. The obvious, in this situation, would be a decline in investment, lower productivity and output, even of primary sector. This would have a cumulative and circular effect on other sectors. Ultimately, even social services may be affected, and socio-economic conditions may deteriorate.

The advantage of basin approach is that it is in a better position to look at the needs at the micro level and provide for minimum care of infrastructure including road systems, power and social services. This would also support a rational disaggregation of national targets for various basins; mopping of resources would help identifying high and low potential basin and transfer of resources from rich to the poor basin and even preparing a programme for subsidized development of low potential basin. The resultant development model would be scientific, interdependent, inter-Basin and inter – sectoral.

In addition, the scope for making mutual adjustments in location decisions avoiding either excessive concentration or neglect of any basin is greater; may be this would call for a compromise on best locations to avoid excessive concentration of development. The basin analysis would map basin's growth differentials, causes and consequences thereof and prepare an integrated plan for initiating action for optimum utilization of resources to accelerate output, employment and basin's income.

The Basin approach to development has certain peculiar advantages as also handicaps. While in a backward basin, low levels of employment, income and output do not help optimizing economic activity through resource mobilization. The backward basin may suffer from inadequate infrastructure, technical and commercial support and even social services, while in the forward progressing basins these services are not put to optimum use. Thus, in the Basin approach the first charge is on proper utilization of existing infrastructure rather than on creating new ones.

### **The need for a change**

What is needed is a change in the present pattern of development and evolution of a new pattern, which would aid in accelerating the pace of economic growth of the backward basin. The change may mean remapping of the present state boundaries into more viable plan units.

Formulation of such a scientific basin, however, desirable, cannot be accomplished in the immediate future due to the enormity of the task involved and the difficulties of selecting homogeneous criteria. Additionally, the task of remapping the basin on scientific lines involving recasting of present political and administrative boundaries will not be approved by parties with vested interests. However, in the long run, the efficiency of the basin planning depends a great deal on the scientific and natural designation of the basin. To start with, the command area development though basically agriculture oriented, would have in its orbit simultaneous development of irrigation, agriculture, industry, power and other infrastructural support programme. However, all this would be initially confined to a smaller basin falling within a command area of a reservoir. The project conceived would help with the proper utilization of available resources in given area, resources which may overlap two or more districts or even two or more states. The overlaps necessitate the creation of an administrative and financial organization whose authority would go beyond the administrative district or state boundary. In such a setup the role of the Union Government cannot be minimized.

The development complex that emerges in the interim period would be a cobweb of a number of agricultural, industrial, power and other projects interwoven into a basin development strategy. Therefore, while the scientific delineation of basin and its planning will remain a long-term objective, the intra and inter-basin projects will emerge to serve the immediate needs.

There is an immediate need for evolving rational and meaningful basin priority pattern as this would have an advantage of developing basin on its own merit and on suitability and comparative cost advantages. This would also help reducing the decline in the accelerating the growth rate through elimination of wastages resulting from aggregated national priorities derived without respect to local variations and functional efficiency differentials. Scientific approach to basin development would usher in a national priority pattern based on Basin level consensus

The river basin has long been acknowledged as the appropriate unit of analysis for water resources management and has also been named by the United Nations Conference on Environment and Development (UNCED 1992) as the logical unit for integrated water resources management in Agenda 21, chapter 18. The comprehensive methodology framework for analysis structures the decision-making process, starting with the

problem identification, through the weighing of various options to the final selection of the most appropriate policy<sup>5</sup>.

### Essential pre-requisite for successful basin planning and implementation

Capacity is generally defined as the availability of instruments to take actions. Given the complex and challenging nature of the water bodies and its political sensitivities, it is vitally important that capacity for actual implementation is maximized among all relevant actors. General elements of a capacity-building programme might include raising public awareness (e.g. to help secure broad support for the river basin management objectives), informal transfer of "know how" (e.g. through the exchange of experience between river basin managers), and formal training (e.g. in specialized monitoring techniques), both internal and external. However, the exact needs will vary from state to state and from basin to basin, inter alia according to different socio-economic conditions, or the concrete water management issues identified. The relevant aspects are:

- The need to build capacity (starting with awareness raising among economic sectors and NGOs, as well as among officials, planners and administrators.
- The need to enhance sharing of information and experience between states and regions sharing river basins, with the internet providing valuable new opportunities.
- The need to allocate adequate human and financial resources for capacity building activities in each river basins as part of overall basin implementation.

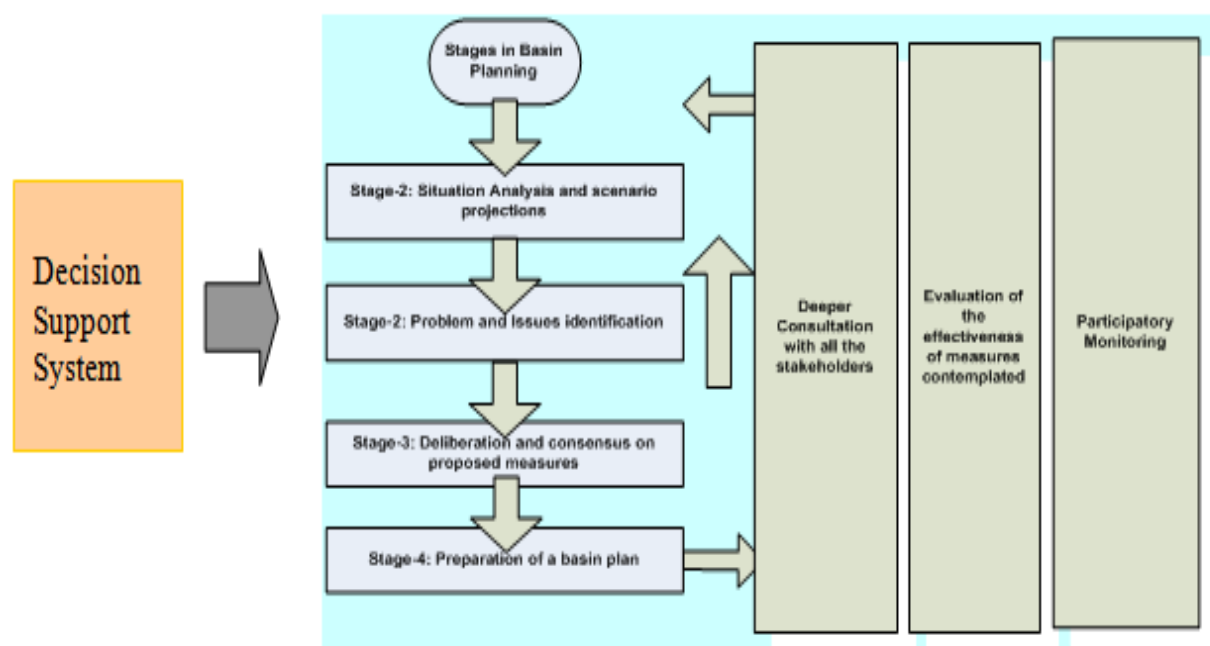
### The stages in Basin Planning

#### Stage 1: Situation Analysis and scenario projections

Stage-2: Problems and issues identification

Stage-3: Deliberation and consensus on proposed measures

Stage-4: Preparation of basin plans



### Key activities in basin planning process

#### Stage 1: Situation Analysis and scenario projections-Key activities

- Setting the scene
- Assessment of the current status of the sectoral problems and livelihood issues from a climate change perspective and identify gaps in information, knowledge, skills and technologies
- Analysis of preliminary gaps and discuss possible measures

<sup>5</sup> An integrated river basin planning approach – Nyando case study in Kenya Authors: Njogu, A.K. ASFA Terms: Resource management River basins -2002

**Stage-2: Problems and issues identification**

**Key activities**

- Identification of critical issues (managerial, institutional, technical, and social from the gap analysis)
- Setting up of the environmental objectives

**Stage-3: Deliberation and consensus on proposed measures**

**Key activities**

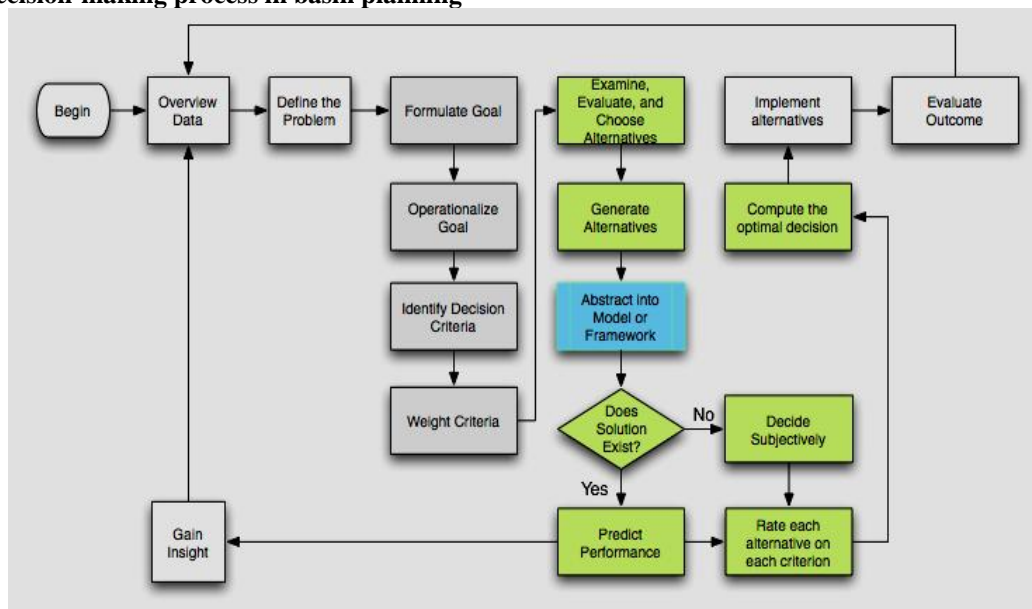
- Setting up of the programme of measures
- Development of river basin management plans
- Implementation of the programme of measures and preparation of the interim rep
- Establishment of monitoring programmes
- Evaluation of the first and second period of basin plan implementation
- Information and consultation of the public, active involvement of interested parties

These stages are part of a cyclical and iterative process in which it is possible to define three additional elements (public participation, monitoring and evaluation of the process) that will be developed in a continuous way in parallel, serving as a link between the others.

**Key Factors in the basin planning process:**

1. In the river basins concerned, not only the planning process is ongoing, but also other initiatives taken by various sectors
2. The planning process has to be flexible, dynamic, cyclic and prospective, so it can anticipate and take into account events occurring during all-weather codes: normal, flood and drought
3. The different 'sector-departments' have their own planning traditions, which means that they all have their own long-established manners of adjusting developments in society, with corresponding division of roles and allocation of tasks between public and private actors. In order to implement the basin plan in a socially acceptable manner, every sector department's functionaries should be in a position to inform, capacitate and promote the active involvement of stakeholders and the public in order to facilitate an iterative and consultative planning process towards improving and revising the documented plan

**The Decision-making process in basin planning**



Source: Flowchart of Rational Planning and Decision-Making Process by David Levinson

**The Output of the above process is the basin plan**

**Key focus areas for basin planning**

Some of the types of Generic Water Resources Management Project Possibilities<sup>6</sup> which could be bundled into the basin action programmes are as follows

- Physical description of the basin

<sup>6</sup> Source: CWC restructuring report- chapter 5-River Basin Management - Global Models

- Land use inventories
- Current water availability and demands
- Pollution source inventories
- Aquatic and terrestrial ecosystem needs
- Vulnerability to floods or extreme meteorological events
- Identification of stakeholders
- Implications of changing land use
- Identification of priority issues (impact issues or user requirement issues)
- Short- and long-term goals for the river basin
- Water related development scenarios, future water demands
- Water allocation and water quality objectives
- Strategy, measures and action plan for achievement of goals
- Financing of water use and management
- Responsibility and schedule for implementation
- Mechanisms for monitoring and updating
- Pollution Control & Water Quality Management<sup>7</sup>
- Water Supply & Distribution
- Irrigation & Drainage Development
- Fisheries Development
- Hydropower Development & Pooling
- Watershed Management with added emphasis on livestock in addition to agriculture, horticulture and forestry
- Options for agricultural intensification and diversification through better water and land management practices
- Exploring the feasibility of agro-industrial production systems
- Sustainable Management of Wetlands & Biodiversity Conservation
- Sustainable Management of Lakes & linked Wetland Systems
- River Regulation & Flood Management
- Desertification Control & Water Use Efficiency Improvements

**Key features of a basin plan** <sup>8</sup>

1. General description of the characteristics of the river basin district, including a map showing the location and boundaries of surface water bodies and groundwater bodies and a map showing the different surface water body types within the river basin.
2. Summary of significant pressures and impact of human activity on the status of surface water and groundwater, including estimations of point source pollution, diffuse source pollution (including a summary of land-use) and pressures on the quantitative status of water including abstractions, and an analysis of other impacts of human activity on the status of water.
3. Map identifying protected areas
4. Map of the monitoring network
5. Presentation in map of the results of the monitoring programmes showing the ecological and chemical status of surface water, the chemical and quantitative status of groundwater and the status of protected areas.
6. List of the environmental objectives established for surface waters, ground waters and protected areas, including where use has been made of the derogations
7. Summary of the economic analysis of water use
8. Summary of the programme or programmes of measures.
9. Register of any more detailed programmes and management plans and a summary of their contents
10. Summary of the public information and consultation measures taken, their results and the changes to the plan as a consequence
11. Contact points and procedures for obtaining background documentation and information, including actual monitoring data.

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<sup>7</sup> C2.02 basin water management plans /Global Water Partnership toolbox on IWRM

<sup>8</sup> Source: [http://www.uicnmed.org/web2007/cdf/flow/content/5/pdf/5\\_1\\_2/PlanningProcess/WG2-9-Planniguide.pdf](http://www.uicnmed.org/web2007/cdf/flow/content/5/pdf/5_1_2/PlanningProcess/WG2-9-Planniguide.pdf)



**Key challenges<sup>9</sup> to be addressed in the planning process**

1. Integration of environmental objectives, combining quality, ecological and quantity objectives for protecting highly valuable aquatic ecosystems and ensuring a general good status of other waters
2. Integration of all water resources, combining fresh surface water and groundwater bodies, wetlands, coastal water resources at the river basin scale
3. Integration of all water uses, functions and values into a common policy framework, i.e. investigating water for the environment, water for health and human consumption, water for economic sectors, transport, leisure, water as a social good;
4. Integration of disciplines, analyses and expertise, combining hydrology, hydraulics, ecology, chemistry, soil sciences, technology engineering and economics to assess current pressures and impacts on water resources and identify measures for achieving the environmental objectives of the Directive in the most cost-effective manner;
5. Integration of water legislation into a common and coherent framework. The requirements of some old water legislation (e.g. Ground & surface water laws and environmental policy guidelines/laws) Other pieces of legislation (Urban Wastewater Treatment guidelines must be co-ordinated in river basin management plans where they form the basis of the programmes of measures
6. Integration of all significant management and ecological aspects relevant to sustainable river basin planning including those which are beyond the scope of the Water Framework Directive such as flood protection and prevention;
7. Integration of a wide range of measures, including pricing and economic and financial instruments, in a common management approach for achieving the environmental objectives of the Directive. Programmes of measures are defined in River Basin Management Plans developed for each river basin district;
8. Integration of stakeholders and the civil society in decision making, by promoting transparency and information to the public, and by offering a unique opportunity for involving stakeholders in the development of river basin management plans;
9. Integration of different decision-making levels that influence water resources and water status, be local, regional or national, for an effective management of all waters;
10. Integration of water management from different sectors for river basins shared by several districts

A clear focus on the ecological component based on a freshwater eco-regional assessment to establish a scientifically based, shared vision in the basin planning process stands to qualify as a "Good practice" in addition to the need for a meaningful socio-economic analyses to understand the drivers behind water uses and the bottom line is periodic update of reliable Information base. This does not mean measuring everything all the time, but rather carrying out a strategic, targeted and integrated programme, the results of which can be used to inform and adjust management decisions.

However, what is critical for successfully initiating and concluding basin planning process and basin plan preparation is good scientific information system, good data management and sharing. In particular, an understanding of freshwater ecosystems and key hydrological and ecological processes is essential and should be used to decide on all aspects of integrated basin management. The general concept of Decision Support System emphasizes a) solving unstructured problems, which require combining the judgment of manager-level decision-makers with quantitative information b) capabilities to answer "what if" questions quickly and conveniently by making multiple runs of one or more models and d) use of enhanced user-machine interfaces, and graphical displays<sup>10</sup>.

A decision support system (DSS) when developed should provide information on the effectiveness of various measures. These measures include a) reduction of point and non-point pollution, to protect and improve the current water quality b) flood protection c)reduction of water shortages and the improvement of irrigation management and infrastructure d)erosion prevention e)reduction of health impacts from pesticides, hazardous waste and bacteriological pollution f)institutional strengthening and awareness raising, leading to an integrated approach for the management of the lakes.

It could be inferred based on the consultation and experience in data management and data sharing that:

- The quality and the level of training provided to technical personnel involved in the "data chain" – that is, from the field to the user - has not been sufficient. While the staff without doubt know the fundamentals of the technical processes involved, they lack the depth of knowledge and skills to produce the quality of data required, in addition to an insufficient understanding of what the data requirements for water planning and management are, and therefore what their outputs should be.

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<sup>9</sup> Source: [http://www.uicnmed.org/web2007/cdflow/content/5/pdf/5\\_I\\_2/PlanningProcess/WG2-9-Planniguide.pdf](http://www.uicnmed.org/web2007/cdflow/content/5/pdf/5_I_2/PlanningProcess/WG2-9-Planniguide.pdf)

<sup>10</sup> Guidelines for preparation of River basin master plans by CWC-Government of India-June 2007

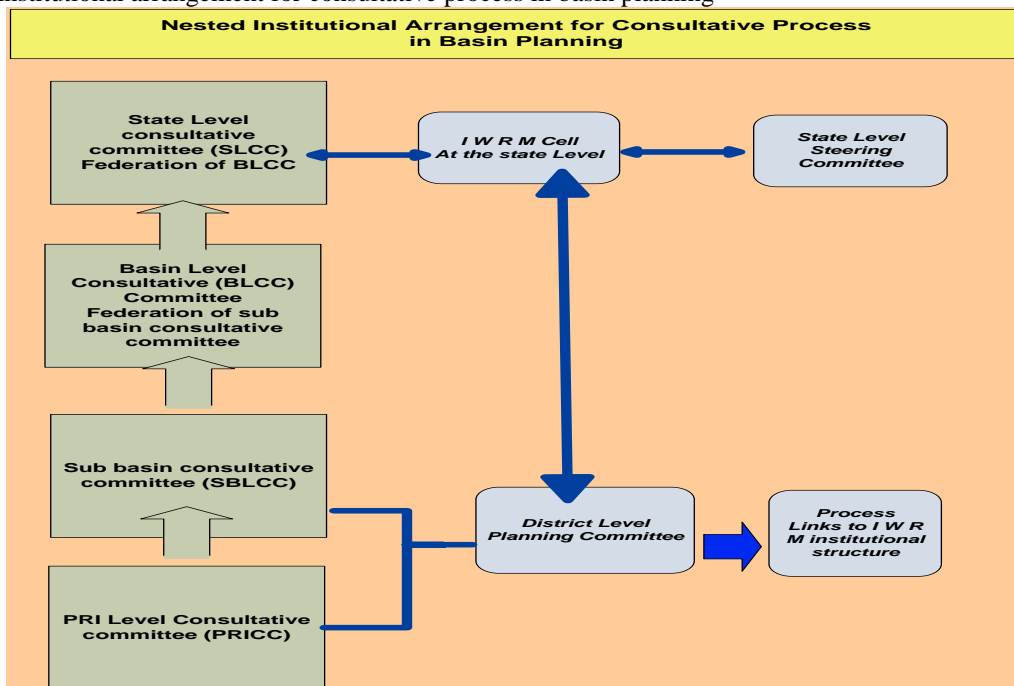
- There is a lack of real demand for the data, and hence there is no motivation to meet “customer” expectations. If more users wanted this data for water resource planning and management investigations, and demanded the appropriate level of timeliness and quality, then there would be more reason to produce output to meet those expectations.
- Since within the government system neither incentives nor sanctions are used to encourage performance, the “anything is good enough” attitude prevails among data-related staff. Whether the data quality is good or not does not affect the prospects for advancement of the staff.
- From the state level presentations during the interim workshop, one could conclude that, there have been several efforts in three sub-basin states to rationalise data collection and management, systems have been established like HIS in MP, such as the establishment of GIS and data systems for disaster management, for natural resource management, and for water resources. However, the process of accessing and utilising such data is met with observations such as the overlaps, duplication, competition and confusion. The existing information on water is still scattered, not uniform, incomplete and rife with errors. Dissemination is limited and there appears to be a lack of analytical approaches to assess data for decision-making processes.

Since a well-designed and implementable GIS is extremely important as a tool for river basin planning. GIS, modelling and decision support systems (DSS) are interrelated tools used that can be used for effective development and management of water resources generally, and specifically in a river basin context.

### **Institutional arrangement**

However, an institutional arrangement is essential to translate the concept into action. As institutions in India have a common agenda of socio-economic upliftment of the poor, a nested institutional arrangement is deemed necessary to bring in convergence and synergies in both programs and in resource usage. The nested arrangement minimizes the functional overlaps and enhances the scope for people participation.

Nested Institutional arrangement for consultative process in basin planning



In a nested institutional arrangement, the consultation process begins at the Panchayat level (preferably at Gram Sabha meetings and **moves up** to a) the sub-basin level consultation process b) basin level (a federation of sub-basin consultative committee c) state level consultative committee and interaction with I W R M cell /centre at the state level to fine tune and gets approval from the State level steering committee.

The composition of the consultative committee is through representation of key stakeholders elected/nominated at different levels (Sub basin level consultative committee is represented by members of the PRI level consultative committee and likewise, basin level consultative committee is represented by select members of the sub-basin level consultative committee and similar representation is made at different levels of the consultative committees up to the state level. At any level, the size of the consultative committee is limited to a manageable proportion

## II. CONCLUSION

The conventional top down approach to planning as practiced in India has in many respects failed to achieve the national development objectives over the long term. Four different sets of factors can be identified as probably having contributed to this failure: (1) faulty premises and development strategies. (2) problematic and counterproductive implementation mechanisms, (3) the emergence of powerful interest groups that appropriate public resources and block necessary policy reforms, and (4) the slowness to learn from experience and consequent lack of flexibility and adaptation.

A mediocre performance in terms of economic growth over the long run, poor performance in maintaining or enhancing international competitiveness, and seriously deficient performance in alleviating poverty and providing basic social services to the poor added up to a failure of planning processes including the nature of planning units to achieve the goals of development.

Top down based development plans for local governments have not worked, nor is it working for us. These plans are often less helpful than anticipated, and can easily infringe on local governments' autonomy, becoming a liability in the struggle for local economic growth. This process of top down planning should involve generating and discussing lists of problems facing the local governments, prioritizing the problems, formulating specific goals in response to the problems, and establishing plans supportive of local efforts.

Top down based development or economic plan requires the involvement of local authorities. Local authorities can play a major role in this effort by ensuring more effective and accountable local infrastructure and social service delivery for the poor, and improving the dialogue among the national government, citizens, their communities, civil society and the private sector. However, the local authorities are not given the mandate or institutional and financial capacity to plan and deliver local development interventions such as social services, local infrastructure, local economic development initiatives and natural resource management.

Appropriate developments cannot take place with a top-down approach. The development agency has to be non-hierarchical in both its internal organization and in its approach in instituting change or the inherent hierarchical framework of the organization will be imposed on the form that the development takes. If the development package imposes a western style hierarchical system upon the community appropriate development cannot take place. Because the western world has yet to figure out how to develop in an environmentally and socially sound manner the only way it will be possible for third world communities to create intelligent development in their own community will be through grassroots initiatives and decentralized resource governance.

As corollary to the above, the bottom up planning i.e. the development of a basin plan shall serve first, strengthen the institutional organization and coordination; second, enhance public interest through an 'open planning process'; and third, improve the financial and operational management and the planning capacity of the development administration and help address (1) faulty premises and development strategies. (2) Problematic and counterproductive implementation mechanisms, (3) the emergence of powerful interest groups that appropriate public resources and needed policy reforms, and (4) the slowness to learn from experience and consequent lack of flexibility and adaptation.

Basin as a unit of planning help intra-rural and urban-rural integration through various linkages physical, political, economic, social and technological and further the conventional top-down driven plan based on sectoral approach must be changed to introduce spatial dimension Hence, micro level basin plan should evolve its own system of development facilitating the integration aimed at a) optimizing utilization of resources and infrastructure b) narrowing the gaps between inter-regional and inter-sectoral differences in the growth rate c) bringing about a balance between production and consumption d) maximizing social benefits e) minimizing urbanization; and f) adopting an area approach to development along with spatial integration. The process of such integration shall become more obvious in the agro-industrial structure if it is pursued in the following fields viz a) Economic b) Technological and c) Human Resources, and Social. The key areas covered among others include

### **Economics:**

- Supply of jobs (creation of employment)
- increase of the rural household income
- flattening of the seasonal labour curve owing to the increased number of works
- days per annum
- slowing down the exodus to the cities
- increase of the demand and supply of goods and facilities;
- a better capitalization of local raw materials and on secondary resources

**Technological:**

- Adoption of the behavior, methods and organization types peculiar to industry;
- An increased receptiveness of economic agents to technical progress and to the innovative spirit
- Better technological labors division;
- Continuous improvement of the level of production, technology and its better utilization
- Development of the propensity for deepening and diversifying the and processing and mass production

**Human Resources:**

- Opportunities for attracting, holding and developing in the rural environment certain technical and professional qualifications;
- Development of technological discipline of a propensity to technology and research and to technical conception;
- Formation of more marked aptitudes for administration and economic calculations;
- Increased capacity for mobility, adaptation and integration into the urban and industrial environment resulting in a considerable reduction of the costs of these process

**Social**

- Better balancing of development and its benefits;
- An accelerated modernization of the socio-economic structure of rural communities and rapid improvement in the living standard of the civilization;
- An option, rational from the economic and social viewpoint for accelerating the urbanization process and reducing the negative effects of the “pressure” of the rural endues towards over populated centers
- A better compatibility of the goals of economic growth with their finality and a balancing of the economic criteria with the social one

The objective of integration, at the basin level should aim at spatial integration hence, the theories of industrial location, agricultural location, geographical diffusion of innovation, central place and growth poles need to be reviewed while deciding on the outputs of a basin plan for effective decentralized resource governance.

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