

Background Note

for

**CONSULTATION MEETING WITH POLICY MAKERS ON
REVIEW OF NATIONAL WATER POLICY**

Ministry of Water Resources

CONTENTS

Chapter	Description	Page
1.0	WATER RESOURCES OF INDIA – AN OVERVIEW	1
1.1	Water Resources Development Potential and Achievements	1
1.2	Projections for the Future Water Requirements	4
1.3	Challenges in Water Sector	4
2.0	NATIONAL WATER POLICY	5
2.1	Salient features of the National Water Policy – 2002	6
3.0	STATE WATER POLICY	8
3.1	Status of Formulation & Adoption of “State Water Policy” by different States	8
4.0	PROCESS OF REVISION OF NATIONAL WATER POLICY	9
4.1	Committee of Ministry of Water Resources to review National Water Policy-2002	9
4.2	Consultation with State Governments	10
5.0	OTHER IMPORTANT SUGGESTIONS	12
5.1	Recommendations of the Commission on Centre-State Relations	12
5.2	Draft report “Integrated Water Management: Policy and Actions” by Dr Kirit S. Parikh	13
5.3	“Transforming Water Policy and Law” by Shri Ramaswamy R. Iyer	14
5.4	Newspaper article by Shri T.N.Narasimhan	17
5.5	Draft recommendations of the Workgroup of Confederation of Indian Industry on Water Policy	18
6.0	ISSUES FOR CONSIDERATION	19
 ANNEXURE		
I	Copy of National Water Policy -2002	22
II	Relevant extracts from the views expressed and suggestions made in respect of water policy and programmes from time to time	34
A	H.E. President’s Address to the Nation on the eve of 58 th Independence Day -2004	34

B	Hon'ble Prime Minister's Independence Day Address-2004	34
C	Common Minimum Programme 2004	35
D	Article titled "Just use it" in the magazine, Down to Earth published by Center for Science and Environment	35
E	National Environmental Policy -2006	36
F	Report of the Planning Commission titled "Towards Faster and More Inclusive Growth - An Approach to the 11th Five Year Plan"	37
G	"India's Water Economy – Bracing for a turbulent future" by John Briscoe and R.P.S. Malik	38
H	National Policy for Farmers -2007	39
I	Eleventh Five Year Plan 2007-2012	39
J	National Action Plan on Climate Change	40
K	Views of Tarun Bharat Sangh	40
III	Extract from the draft report titled "An Integrated Approach to Management of Water – by Dr Kirit Parikh"	42
IV	Extract from the Draft recommendations of the Workgroup of Confederation of Indian Industry (CII) on Water Policy	49

**BACKGROUND NOTE FOR CONSULTATION MEETING WITH POLICY MAKERS ON REVIEW
OF NATIONAL WATER POLICY**

1.0 WATER RESOURCES OF INDIA – AN OVERVIEW

The average annual rainfall in the country has been estimated to be about 1170 millimeters (mm). The total of average annual rainfall, snowfall and glacier melt in terms of volume works out to about 4000 billion cubic meters (bcm). However, due to losses through evaporation and evapo-transpiration, the water availability has been assessed to be about 1869 bcm. Even this available water cannot be fully utilized due to topographical constraints and hydrological features and utilizable water has been estimated to be about 1123 bcm comprising of 690 bcm of surface water and 433 bcm of replenishable ground water.

Further, very large temporal and spatial variations are observed in rainfall and hence in the water availability. Most of the water is available during monsoon period and that too, through a few spells of intense rainfall, resulting in floods in major rivers. While the average annual rainfall of the country is about 1170 mm, the rainfall varies from 100 milimetre in the western parts of Rajasthan to over 10000 milimetre at Cherrapunji in Meghalaya.

1.1 Water Resources Development Potential and Achievements

There has been significant all round achievements in respect of creation of irrigation potential, in providing safe drinking water to our people, particularly the people in rural and remote areas, in meeting the industrial water demands, and in addressing the environmental issues. Similarly considerable progress has been made in respect of flood management. However, a lot more remains to be achieved.

Irrigation development

Out of 329 million hectare (mha) of geographical area of the country, total cultivable area is about 182 mha out of which net sown area is only about 140 mha. Only about 62 mha, which is slightly over 44% of the cropped area, is reported as irrigated. There is a need to bring more cropped area under assured irrigation to increase agriculture productivity and production.

The ultimate irrigation potential of the country has been estimated to be about 140 mha out of which about 76 mha could be from surface water and about 64 million hectare from ground water sources. More than 107 mha of irrigation potential has since been created against the irrigation potential creation of about 22.6 mha at pre-Plan stage in 1951. There is an urgent need to expedite the harnessing of balance available irrigation potential. As a matter of fact, we have to work towards creation of irrigation potential beyond 140 mha through better water management practices. This is a challenging task. This is more so in view of the fact that easy and best options for the development of water resources projects have since been tapped and new water resources development projects are bound to be more challenging from the view point of hydrological features and topographical constraints. However, there is scope for further increasing the ultimate irrigation potential through utilizing the surplus flood water through interlinking of river project, estimated additional irrigation potential through interlinking project being of the order of about 35 million hectare. Similarly, the artificial recharge to ground water may also help in additional water availability of about 36 bcm which may be utilized for various purposes included irrigation.

Drinking water supply

The access to safe drinking water sources in urban areas of India was about 90% in the year 1990 and 93% in the year 2000 and this has improved to about 96% by the year 2008. In rural India, access to safe drinking water sources has increased from about 58% in 1990 to about 73% in the year 2008. Similarly, as per the reports of the Joint Monitoring

Programme of World Health Organization and UNICEF, the use of improved sanitation coverage in rural areas of India was 7% in the year 1990 and this increased to about 21% in 2008. The urban sanitation coverage was 49% in 1990 and increased to about 54% by the year 2008. The current coverage of sanitation facilities in the rural areas is more than 65%. Thus, a lot more works are required to be completed in respect of supply of safe drinking water and sanitation programmes. The millennium development goal (MDG) of improved sanitation facilities in the rural areas is planned to be achieved by the year 2013.

Hydropower development

India is endowed with estimated hydropower potential of more than 1,50,000 mega watts. However, only about 21% of the potential has been developed so far. About 10% of hydropower potential is being developed. The main reasons for slow development are: reportedly difficult potential sites; rehabilitation, environmental and forest related issues; and inter-state issues. In addition, long gestation period and geological surprises are important issues which need to be addressed. Obviously, dedicated efforts are required to address the related issues and develop hydropower potential to the maximum. This is more so because hydropower is eco-friendly and renewable and the running and maintenance costs are relatively less. But these power projects need to be planned and developed with due care. The new hydro policy has many provisions to encourage the hydropower development including private sector participation.

Flood management

The total flood prone area in the country has been estimated to be about 46 million hectares. However, the area provided with reasonable degree of protection through structural measures is about 19 million hectares. Along with structural measures, efforts have also been made to adopt non-structural measures. A network of 175 flood forecasting station is also maintained which provide reasonably accurate forecast to help

in warning and advance actions to reduce the damages from incoming floods. There is need for adopting the non-structural measures like flood plain zoning etc.

1.2 Projections for the Future Water Requirements

As per an estimate, the overall demand for water resources by the year 2050 would be around 1447 bcm including 1072 bcm for irrigation. The “National Commission for Integrated Water Resources Development (NCIWRD)” has assessed that about 83% of water is used for irrigation and remaining for domestic, industrial and other purposes. The Commission has assessed the projected demand as 1180 bcm for the high demand scenario for the year 2050. While making the assessment, NCIWRD has assumed improvement in the efficiency of both surface water and ground water systems and also in the efficiency of water use in agriculture and other sectors.

Although the requirement for irrigation water would increase over the time, the share of irrigation water in the overall demand has been estimated to reduce from the present level of about 83% to about 69% by the year 2050.

1.3 Challenges in Water Sector

We face challenges in the water sector in the form of reducing per capita availability of water due to increasing population, deterioration in quality, over-exploitation of ground water resources leading to decline in the ground water table in some cases, sub-optimal utilization of the created facilities and relatively lower efficiency of the facilities for water utilization. The per capita availability of water in 1951 was assessed to be 5177 cubic meter. Due to increase in population the per capita water availability has been reduced to about 1650 cubic meter. On the other hand, the demand for water for various purposes is increasing due to population growth, urbanization and industrialization. Due to unplanned development, we face the problem of over-exploitation of ground water resources resulting in considerable decline in ground water

table. About 15% of the Blocks / Talukas / Mandals in the country are presently in the category of over-exploited blocks. Another challenge relates to over-use of surface water which has resulted in irrigation drainage problem causing water logging in some areas. Pollution of river and deterioration in the quality of ground water are well known. A large share of pollution is caused by untreated sewage from the urban areas and effluent from the industry. Excessive use of chemicals and fertilizers and pesticides is also a major cause of pollution. We have to address all these issues and also plan for further development of water resources to meet the growing demand of drinking water, irrigation and industrial uses with due emphasis on sustainability of environment.

Further, like all other countries, particularly the developing countries, two very serious challenges, namely, the food security and impact of climate change, are required to be addressed. Water is central to both these challenges.

Although precise quantitative assessment of the impact of climate change on water resources is yet to be made, various reports indicate that the impact of climate change could result in further intensification of the temporal and spatial variation in the availability of water and particularly the extreme events of flood and drought. Therefore, there is an urgent need for taking up research and studies based on adequate and reliable data and information for assessment of the impact of climate change in quantitative terms and plan adaptation measures.

2.0 NATIONAL WATER POLICY

The National Water Policy (NWP) was adopted by the National Water Resources Council during its 2nd meeting held on 9th September 1987. This policy guided the formulation of policies and programmes for water resources development and its management. Thereafter, new challenges emerged in the water resources sector, which necessitated review of the National Water Policy. Accordingly, the revised National Water

Policy-2002 was adopted by the National Water Resources Council in its 5th meeting held on 1st April 2002. A copy of the National Water Policy-2002 is at Annex-I.

2.1 Salient features of the National Water Policy – 2002

The Salient features of National Water Policy – 2002 are as follows:

- Water is a prime natural resource, a basic human need and a precious national asset. Planning, development and management of water resources need to be governed by national perspectives.
- A well developed information system for water related data at national/state level should be established with a net-work of data banks and data bases integrating and strengthening the existing central and state level agencies.
- Water resources available to the country should be brought within the category of utilizable resources to the maximum possible extent.
- Non-conventional methods for utilization of water such as through inter-basin transfers , artificial recharge of ground water and desalination of brackish or sea water as well as traditional water conservation practices like rainwater harvesting, including roof-top rainwater harvesting , need to be practiced to further increase the utilizable water resources. Promotion of frontier research and development, in a focused manner, for these techniques is necessary.
- Water resources development and management will have to be planned for a hydrological unit. Appropriate river basin organisations should be established for the planned development and management of the river basins.
- Water should be made available to water short areas by transfer from other areas including transfer from one river basin to another, after taking into account the requirements of the areas/basins.
- Planning of water resources development projects should, as far as possible, be for multi- purpose with an integrated and multi-disciplinary approach having regard to human and ecological aspects including those of disadvantaged sections of the society.

- In the allocation of water, first priority should be given for drinking water, followed by irrigation, hydro-power, ecology, agro-industries and non-agricultural industries, navigation and other uses, in that order.
- The exploitation of groundwater should be regulated with reference to recharge possibilities and consideration of social equity. The detrimental environmental consequences of over-exploitation of ground water need to be effectively prevented.
- Careful planning is necessary to ensure that construction and rehabilitation activities proceed simultaneously. A skeletal national policy on resettlement & rehabilitation needs to be formulated such that project affected persons share the benefits through proper rehabilitation.
- Adequate emphasis needs to be given to the physical and financial sustainability of existing water resources facilities. There is need to ensure that the water charges for various uses should be fixed such as to cover at least the operation and maintenance charges initially and a part of the capital costs subsequently.
- Management of the water resources for diverse uses should incorporate a participatory approach by involving users and other stakeholders alongwith various governmental agencies, in an effective and decisive manner.
- Private sector participation should be encouraged in planning, development and management of water resources projects for diverse uses, wherever feasible.
- Both surface water and ground water should be regularly monitored for quality. Effluents should be treated to acceptable levels and standards before discharging them into natural streams. Minimum flow should be ensured in the perennial streams for maintaining ecology.
- Efficiency of utilization should be improved in all the diverse uses of water and conservation consciousness promoted through education, regulation, incentives and disincentives.
- There should be a Master Plan for flood control and management for each flood prone basin. In flood control and management, the strategy should be to reduce the intensity of floods.

- Land erosion by sea or river should be minimized by suitable cost-effective measures. Indiscriminate occupation of, and economic activity in coastal areas and flood plain zones should be regulated.
- Needs of drought-prone areas should be given priority in the planning of project for development of water resources. These areas should be made less vulnerable through various measures.
- The water sharing / distribution amongst the states should be guided by a national perspective with due regard to water resources availability and needs within the river basin.
- Training and research efforts should be intensified as an integral part of water resources development.

3.0 STATE WATER POLICY

In the concluding para of National Water Policy-2002, it is stated that *the success of the National Water Policy will depend entirely on evolving and maintaining a national consensus and commitment to its underlying principles and objectives and to achieve the desired objectives, State Water Policy backed with an operational action plan shall be formulated in a time bound manner say in two years.*"

3.1 Status of Formulation & Adoption of "State Water Policy" by different States:

So far the State Water Policies have been finalized and adopted by 11 States namely Andhra Pradesh, Chhattisgarh, Goa, Himachal Pradesh, Karnataka, Kerala, Madhya Pradesh, Maharashtra, Orissa, Tamil Nadu, and Uttar Pradesh. However, the State of Chhattisgarh and Tamil Nadu are in the process of revising the State Water Policies.

The State / UTs namely Delhi, Daman and Diu and Dadra and Nagar Haveli have adopted the National Water Policy.

The formulation / adoption of State Water Policies is in progress in Arunachal Pradesh, Assam, Bihar, Gujarat, Haryana, Jammu and Kashmir, Jharkhand, Manipur, Meghalaya, Mizoram, Nagaland, Punjab, Rajasthan, Sikkim, Tripura, Uttarakhand, West Bengal and Union Territories of Andaman & Nicobar, Chandigarh, Lakshadweep, and Puducherry.

4.0 PROCESS OF REVISION OF NATIONAL WATER POLICY

The National Water Policy -2002 provides that “National Water Policy may be revised periodically as and when need arises”.

Ministry of Water Resources received suggestions from time to time in respect of various provisions of National Water Policy. Further, there are several policy statements in the form of address of H.E. President of India, Hon’ble Prime Minister and other announcements by the Ministries etc. Similarly water related issues have been highlighted in policies, documents etc. Some of important views that have emerged after the adoption of National Water Policy-2002 are summarized at Annex II.

4.1 Committee of Ministry of Water Resources to review National Water Policy-2002

Ministry of Water Resources constituted a Committee under Additional Secretary (Water Resources) to examine the various views that had been expressed at various fora. The Committee observed that following important issues need to be deliberated for appropriate incorporation in National Water Policy-2002

- Due emphasis should be given to ground water development in the National Water Policy and ground water development and management issues should be highlighted.

- The provisions related to “Rainwater Harvesting and Artificial Recharge” should be appropriately incorporated under the para on “Ground Water Development and Management”.
- The Para related to groundwater should also cover creating water security at local level against the impact of drought.
- To reflect ‘prevention of over-exploitation of water by industry and agriculture, the words ‘industry and agriculture’ may be included appropriately in the existing provisions in the policy.
- ‘De-silting of vulnerable pockets of main rivers and selective tributaries’ may be incorporated appropriately under either ‘Flood Control and Management’ or ‘Erosion Control’ in the Policy.
- To cover the aspects related to “Reviving lakes and ponds”, the existing provisions regarding ‘rehabilitation of existing systems including tanks’ in para 16.2 of the policy, may be further strengthened and appropriately highlighted.
- “Identification of flood-prone areas” may be appropriately included under para “Flood Control and Management” in the Policy.
- Issue related to “Disaster Management” should be incorporated in the Policy and various relief measures related to disasters may be discussed under it.

4.2 Consultation with State Governments

To seek the views and suggestions of the State Governments in respect of review of National Water Policy-2002, the matter was included as an agenda for the meeting of National Water Board which was constituted to review the progress achieved in implementation of the National Water Policy and to report the progress to the National Water Resources Council from time to time. The Chairman of the Board is Secretary, Ministry of Water Resources with the Secretaries of Union

Ministries of Agriculture, Rural Development, Urban Development, Surface Transport, Environment & Forests and Science & Technology, Chairman, Central Water Commission, Chief Secretaries of all States/Union Territories as its Members. The 13th meeting of the National Water Board was held in September 2009, which inter-alia also discussed the agenda for the review of National Water Policy-2002. The Board broadly agreed with the suggestions proposed by the Committee constituted by Ministry of Water Resources under Additional Secretary (Water Resources).

Following views also emerged during the deliberations:

- Due priority be given to ecology in National Water Policy as ecology is quite important and that ecosystem management including salinity control should be a criterion for water allocation priorities
- The proposal for private sector participation should be considered only with the prior consent of the State Government concerned. Also the word "owning" should be removed from para on "private sector participation" in the National Water Policy.
- Water being a State subject; Inter-State water transfer should be with the approval of the State's legislature.
- "Reuse of Treated Water" should be included in the National Water Policy.
- National Water Policy should include some specific provision regarding Inter-State pollution
- "Value" be attributed to water.
- Groundwater development should be renamed as groundwater development and management.
- National Water Policy must be emphatic in protecting the existing beneficial users.

5.0 OTHER IMPORTANT SUGGESTIONS

Meanwhile, several reports have highlighted the issues related to water resources and the need for review of National Water Policy has been emphasized. Salient features of some of the reports / articles are discussed hereunder.

5.1 Recommendations of the Commission on Centre-State Relations

The Government of India had constituted a Commission on Centre-State Relations under the Chairmanship of Justice Madan Mohan Punchhi, former Chief Justice of India, with the mandate to review a comprehensive set of issues concerning Centre-State relations and to make recommendation thereon. The Commission on Centre-State relations, inter-alia, addressed the issues related to inter-State water dispute and specific recommendation in respect of water resources are as under:

- The National Water Resources Council needs to play a greater role in integrating policy and programmes on a continuous basis. This could be done by providing the Council with a core expert body with an Adviser at its helm, so that executive action on the basis of its recommendations is monitored.
- A hierarchical but coordinated set of watershed agencies need to be set up by joint action of the Centre and States and participation of local bodies with inter- State basins as the focus. The overall responsibility for coordination would be that of the Inter-State River Basin Authority set up by the Central Government under River Boards Act, 1956.
- Tribunals constituted under the Inter-State Water Disputes Act, 1956 should be multidisciplinary bodies, presided over by a Judge. It should follow a participatory and conciliatory approach. The statute should prescribe a time limit for clarificatory or supplementary orders. Appeals to the Supreme Court should be prescribed under the Statute.

- Disputes referred to a Tribunal should invariably be linked to constitution of Inter-State River Boards, charged with the responsibility for an integrated watershed approach towards inter-State rivers.

5.2 Draft report titled “Integrated Water Management: Policy and Actions” by Dr Kirit Parikh:

Dr Kirit Parikh, the former Member (WR), Planning Commission, prepared the draft report titled “**Integrated Water Management: Policy and Actions**”. Dr Parikh made a presentation on his report during a meeting taken by Dr Mihir Shah, Member, Planning Commission on 16th July 2009. Various important water resources issues have been discussed in the report. The relevant portion of the report is at Annex – III. Important suggestions made in the report, which have not been envisaged in the National Water Policy -2002 are as under:

- Independent water regulators should be established to allocate water and set water charges on volumetric basis, which is critical for equitable distribution and efficient use.
- Groundwater user associations, to cooperatively manage groundwater use, should be formed.
- To restrain use of groundwater, electricity to farmers should be metered and charged appropriately. Farmers may be given upfront an entitlement and should be able to encash the value of the unused amount of electricity.
- Groundwater use by extractive industry should be limited to sustainable use and should attract a cess to finance ground water recharge to make it sustainable.
- Empowering WUAs to set water tariffs above the prescribed tariff, collect the money and retain all of the collection above the prescribed tariffs and a portion of the prescribed tariff.

- For bridging the gap between irrigation potential created and utilized command area development should be integrated with the project so that command area gets developed pari passu with the project.
- To ensure that irrigation projects are completed in time, they should be monitored through remote sensing.
- Need to increase water storage capacity by developing all economically viable storage projects. However, planning for multipurpose reservoir systems should be done with stakeholder participation and should involve a thorough examination of all alternatives. The benefits and costs, economic, environmental and social, should be assessed and an appropriate transfer mechanism should be developed.
- Project affected people should be properly resettled in a way that makes them better off than before. Their gains should be comparable to the gains of those benefiting from the project.
- Studies of frequencies of floods of different intensities and the area that will be submerged should be carried out and made public so that development and investments in flood prone areas take account of the risks.
- Dams, barrages etc. should be regularly checked for their safety. A dam safety authority should be created and charged with the task.
- To prevent habitations covered with drinking water from slipping back, due to breakdown of equipment, local groups should be trained in maintenance and repair and Panchayats should pay them for the services provided financed through a user charge
- Full liability law should be enacted to make industries responsible for the damage caused by their effluents

5.3 “Transforming Water Policy and Law” by Shri Ramaswamy R. Iyer

Shri Ramaswamy R Iyer, former Secretary Water Resources in the Government of India, and presently honorary Research Professor at the Centre for Policy Research, New Delhi, has submitted a paper titled **“Transforming Water Policy and Law - A Water**

Manifesto for the Government of India". Shri Iyer has discussed various aspect related to water policy. Important suggestions made by him are as under:

“Orientation: Central to the Policy Statement should be the holistic and wise use of water (which is a better, if less catchy, formulation than the currently fashionable term ‘Integrated Water Resource Management’), with due concern for social justice, equity, compassion and ecological sustainability. In other words, the Policy Statement should be governed by the framework of ‘limits, justice, harmony, leading to wisdom’ referred to earlier.

Principal elements: Many of the action points and changes listed in section III above involve major departures from past policies and approaches. These will need to be explicitly stated in the Policy Statement. They will include the following shifts of primacies or approaches among others:

FROM	TO
Promethean approach of conquest of nature	Learning to live in harmony with nature (being guided by the Precautionary Principle in interventions, adopting a Bhagiratha-like prayerful spirit towards nature)
“Pushing rivers around”	Respecting rivers [If legislation is to be attempted for the protection / conservation of rivers, as is often advocated, certain basic propositions about rivers will need to be kept in mind: for instance, a river must flow, if it is to cleanse and purify itself; a river needs space for accommodating floods when they come, as they will, and the floodplain must be recognized as an integral part of the river; a river is part of a larger ecological system, and therefore the protection of a river entails the protection of the ecological system; and so on.]

Dominance of economics / engineering	Subordination of economics and engineering to ecology and equity
Demand projections leading to supply-side responses	Recognition of finite supply leading to restraining the growth of demand
Adversarial adjudication of riverwater disputes; claims and counter-claims	Constructive resolution; equitable sharing
An absence of specific provisions relating to inter-use, inter-area or inter-sectoral conflicts	Principles and institutional arrangements; equitable sharing
Large centralised techno-centric 'water resource development' projects	Extensive local decentralised small scale people-centred water harvesting initiatives
Large projects as first choice	Large projects as last choice
Top-down project planning and implementation, poor EIAs, forced displacement, poor rehabilitation	Fully participatory planning and implementation, minimum environmental impact and least displacement as project-selection criteria, strengthening EIAs, no forced displacement, 'free informed prior consent', effective rehabilitation, statutory right to benefits
Discrete projects, schemes or activities	Holistic, coordinated overview at the basin or sub-basin level (in a participatory, consultative, representative manner)
Private ownership of groundwater and uncontrolled extraction	Groundwater as Common Property Resource (CPR), community management of aquifers, regulated use
Water as economic good, predominance of irrigation	Water as life-support first, livelihoods next, everything else afterwards
"Define property rights in water, make them tradable"	No property rights, only use rights in water, very limited tradability

Generalised advocacy of water rights	Fundamental 'right to water' (including right of access to water sources) to be distinguished from and privileged over economic 'water rights'
Corporatisation, privatisation of water services	Improved public provision (water supply prime responsibility of State, particularly PRIs)
Supremacy of markets; acceptance of outcomes of market forces as having implicit validation	Wariness towards water markets, recognition of inherent flaws and injustices in their outcomes, regulation of markets
Sovereign powers or 'eminent domain' of the State	Public Trust doctrine (State as holding natural resources in trust for the community)
State control	Community management
Women as fetchers and carriers, household drudges	Voice to women in water management at every level
Dominance of Central and State Governments	Effective devolution to local level, 'subsidiarity principle', i.e., decisions at a level no higher than necessary"

5.4 Newspaper article by Shri T.N.Narasimhan:

Shri T.N.Narasimhan is the Professor in the Department of Environmental Science, Policy, and Management, Berkley Institute of the Environment, University of California, USA. Following views have been expressed by him in the newspaper article titled "Climate Council's Water mission for India":

- The goal of having a revised NWP by 2013 is important because the mission's goals must occur within the framework of such a policy.
- One perspective would be to recognize that there are multiple uses for water and an integrated approach based on basin development planning needs to be evolved,

requiring political leadership at the local body level, State level and civil society organizations needed to be involved in activities of the water mission. This perspective would foresee a policy that enables formulation of statutes, rules and regulations that would authorize various strategies to balance supply and demand.

- The Policy should recognize that water is a natural phenomenon, vital for the sustenance of all living things, whose renewable availability is finite and vulnerable to depletion and degradation.
- The ideals of equitable sharing of water, integrated management of surface water, soil water and groundwater, intra-basin water transfer, participation of an enlightened public in decision-making and welfare of politically weak segments of society raise philosophical questions about how management strategies may relate to societal values.
- At a time when India is embarked on revising National Water Policy, it seems reasonable to assume that India may benefit from an open public debate about defining a set of fundamental principles that will guide critical decisions about water sharing, allocation, distribution, and management in a broad sense.
- Water Policy is fundamentally concerned with equitably sharing the resource given the bounds of the natural attributes of the water cycle, in conformity with the rights and responsibilities that are inherent in democratic self-governance.

5.5 Draft recommendations of the Workgroup of Confederation of Indian Industry (CII) on Water Policy (February 2010)

CII has constituted a Workgroup on Water Policy. The Workgroup in its report has identified following underlying policy themes for Water Sector Transformation:

- a. From “ Multiple Acts: Diffused Policy” to “Over-arching Water Legislation”

- b. From “Resources constrained planning” to “Aspirational target-led planning”
- c. From “Centralised; State decides” to “Decentralised; Community decides”
- d. From “Supply led Asset Creation focus” to “Demand led Service Delivery focus”
- e. From “Access targets” to “Access + Quality of access targets”
- f. From “Equal Tariffs / Inequitable Access” to “Differential tariffs / Equitable Access”
- g. From “Weak Public Institutions : Privatization as a coping alternative” to “Strong Public Institutions; PPPs as a strategy for efficiency gains”
- h. From “Ground water is a private source” to “Ground water is a public source”
- i. From “Passive efforts in Conservation” to “Targeted Conservation strategy”
- j. From “Vulnerable sourcing – precipitation Dependent” to “Multiple ‘taps’ – rains, rivers, desalination, wastewater re-use”

Extract from the Draft recommendations on Water Policy is at Annex IV

6.0 ISSUES FOR CONSIDERATION

Some of the important suggestions / views in respect of revision of the National Water Policy, which are otherwise not reflected in the National Water Policy -2002, are as under:

Water Resources Planning

- It must be recognized that there is finite supply of water leading to restraining the growth of demand. Therefore, demand management should be an important strategy in water resource management.

Water Allocation Priorities

- For the purpose of water allocation, water for life-support should get first priority, livelihoods next, followed by environment and ecology, everything else afterwards.

Project Planning and implementation

- Planning for multipurpose reservoir systems should be done with stakeholder participation and should involve a thorough examination of all alternatives. The benefits and costs, economic, environmental and social, should be assessed and an appropriate transfer mechanism should be developed. It must be ensured that local people are the first beneficiaries of all water projects. While assessing the costs and

benefits of a water resources project along with the environmental costs, the cost of not providing water to the people for different uses should also be considered.

- For bridging the gap between irrigation potential created and utilized command area development should be integrated with water resources projects.

Physical and Financial Sustainability

- Physical sustainability of water resources, particularly the groundwater resources should be ensured.
- Water conservation should be incentivized.
- Independent Water Regulatory Authority for addressing water allocation, water use efficiency and physical and financial sustainability of water resources should be established by the State Governments.

Improving Water Use Efficiency

- Improvement in water use efficiency through reduction of losses in water delivery system and adoption of efficient water application practices, particularly in micro irrigation should be encouraged.
- Water budgeting and water auditing should be made mandatory.
- Creation of a Bureau of Water Efficiency should be considered.

Management of Inter-State Water Issues

- A hierarchical but coordinated set of watershed agencies need to be set up by joint action of the Centre and States and participation of local bodies with inter- State basins as the focus. The overall responsibility for coordination would be that of the Inter-State River Basin Authority set up by the Central Government under River Boards Act, 1956.
- Tribunals constituted under the Inter-State Water Disputes Act, 1956 should be multidisciplinary bodies, presided over by a Judge. It should follow a participatory and conciliatory approach. The statute should prescribe a time limit for clarificatory or supplementary orders. Appeals to the Supreme Court should be prescribed under the Statute.

- Disputes referred to a Tribunal should invariably be linked to constitution of Inter-State River Boards, charged with the responsibility for an integrated watershed approach towards inter-State rivers.
- The Inter-State Water Dispute Act and the River Board Act should be reviewed to make them more effective.
- An over-arching Water Act should be enacted to signal water sector as an important policy priority. This will enable (a) greater clarity on water rights, (b) encouraging water efficiency, (c) regulating and conserving water resources – both ground water and surface water, (d) better participation of users and (e) effective dispute resolution.

Overview of the issues related to water resources in India, salient features of the National Water Policy, important viewpoints and policy statements and suggestions reflected in various reports prepared by various experts in respect of policy and programmes related to water resources have been briefly presented in the preceding paras.

All the suggestions have got their own merits and limitations. However, in view of very strong linkages of water management with almost all aspects of social development and also the complexities associated with the water related issues, it is necessary to deliberate on the suggestions to revise the provisions of National Water Policy with the objectives of sustainable development and efficient management of water resources for meeting the aspirations of people.

In this background, the valuable suggestions are invited from the Hon'ble Members, particularly in respect of:

- a. further improvement in the National Water Policy through modification / addition of specific issues; and
- b. mechanism for effective implementation of the National Water Policy with due consideration to the role of various stakeholders namely States, Panchayati Raj Institutions, Local Bodies, Civil Societies, Private Sectors etc.

NATIONAL WATER POLICY

April, 2002

Need for a National Water Policy

1.1 Water is a prime natural resource, a basic human need and a precious national asset. Planning, development and management of water resources need to be governed by national perspectives.

1.2 As per the latest assessment (1993), out of the total precipitation, including snowfall, of around 4000 billion cubic metre in the country, the availability from surface water and replenishable ground water is put at 1869 billion cubic metre. Because of topographical and other constraints, about 60% of this i.e. 690 billion cubic metre from surface water and 432 billion cubic metre from ground water, can be put to beneficial use. Availability of water is highly uneven in both space and time. Precipitation is confined to only about three or four months in a year and varies from 100 mm in the western parts of Rajasthan to over 10000 mm at Cherrapunji in Meghalaya. Rivers and under ground aquifers often cut across state boundaries. Water, as a resource is one and indivisible: rainfall, river waters, surface ponds and lakes and ground water are all part of one system.

1.3 Water is part of a larger ecological system. Realising the importance and scarcity attached to the fresh water, it has to be treated as an essential environment for sustaining all life forms.

1.4 Water is a scarce and precious national resource to be planned, developed, conserved and managed as such, and on an integrated and environmentally sound basis, keeping in view the socio-economic aspects and needs of the States. It is one of the most crucial elements in developmental planning. As the country has entered the 21st century, efforts to develop, conserve, utilise and manage this important resource in a sustainable manner, have to be guided by the national perspective.

1.5 Floods and droughts affect vast areas of the country, transcending state boundaries. One-sixth area of the country is drought-prone. Out of 40 million hectare of the flood prone area in the country, on an average, floods affect an area of around 7.5 million

hectare per year. Approach to management of droughts and floods has to be co-ordinated and guided at the national level.

1.6 Planning and implementation of water resources projects involve a number of socio-economic aspects and issues such as environmental sustainability, appropriate resettlement and rehabilitation of project-affected people and livestock, public health concerns of water impoundment, dam safety etc. Common approaches and guidelines are necessary on these matters. Moreover, certain problems and weaknesses have affected a large number of water resources projects all over the country. There have been substantial time and cost overruns on projects. Problems of water logging and soil salinity have emerged in some irrigation commands, leading to the degradation of agricultural land. Complex issues of equity and social justice in regard to water distribution are required to be addressed. The development, and overexploitation of groundwater resources in certain parts of the country have raised the concern and need for judicious and scientific resource management and conservation. All these concerns need to be addressed on the basis of common policies and strategies.

1.7 Growth process and the expansion of economic activities inevitably lead to increasing demands for water for diverse purposes: domestic, industrial, agricultural, hydro-power, thermal-power, navigation, recreation, etc. So far, the major consumptive use of water has been for irrigation. While the gross irrigation potential is estimated to have increased from 19.5 million hectare at the time of independence to about 95 million hectare by the end of the Year 1999-2000, further development of a substantial order is necessary if the food and fiber needs of our growing population are to be met with. The country's population which is over 1027 million (2001 AD) at present is expected to reach a level of around 1390 million by 2025 AD.

1.8 Production of food grains has increased from around 50 million tonnes in the fifties to about 208 million tonnes in the Year 1999-2000. This will have to be raised to around 350 million tonnes by the year 2025 AD. The drinking water needs of people and livestock have also to be met. Domestic and industrial water needs have largely been concentrated in or near major cities. However, the demand in rural areas is expected to increase sharply as the development programmes improve economic conditions of the rural masses. Demand for water for hydro and thermal power generation and for other industrial uses is also increasing substantially. As a result, water, which is already a scarce resource, will become even scarcer in future. This underscores the need for the utmost efficiency in water utilisation and a public awareness of the importance of its conservation.

1.9 Another important aspect is water quality. Improvements in existing strategies, innovation of new techniques resting on a strong science and technology base are needed to eliminate the pollution of surface and ground water resources, to improve water quality. Science and technology and training have to play important roles in water resources development and management in general.

1.10 National Water Policy was adopted in September, 1987. Since then, a number of issues and challenges have emerged in the development and management of the water resources. Therefore, the National Water Policy (1987) has been reviewed and updated.

Information System

2.1 A well developed information system, for water related data in its entirety, at the national / state level, is a prime requisite for resource planning. A standardised national information system should be established with a network of data banks and data bases, integrating and strengthening the existing Central and State level agencies and improving the quality of data and the processing capabilities.

2.2 Standards for coding, classification, processing of data and methods / procedures for its collection should be adopted. Advances in information technology must be introduced to create a modern information system promoting free exchange of data among various agencies. Special efforts should be made to develop and continuously upgrade technological capability to collect process and disseminate reliable data in the desired time frame.

2.3 Apart from the data regarding water availability and actual water use, the system should also include comprehensive and reliable projections of future demands of water for diverse purposes.

Water Resources Planning

3.1 Water resources available to the country should be brought within the category of utilisable resources to the maximum possible extent.

3.2 Non-conventional methods for utilisation of water such as through inter-basin transfers, artificial recharge of ground water and desalination of brackish or sea water as well as traditional water conservation practices like rainwater harvesting, including rooftop rainwater harvesting, need to be practiced to further increase the utilisable water resources. Promotion of frontier research and development, in a focused manner, for these techniques is necessary.

3.3 Water resources development and management will have to be planned for a hydrological unit such as drainage basin as a whole or for a sub-basin, multi-sectorally, taking into account surface and ground water for sustainable use incorporating quantity and quality aspects as well as environmental considerations. All individual developmental projects and proposals should be formulated and considered within the framework of such an overall plan keeping in view the existing agreements / awards for a basin or a subbasin so that the best possible combination of options can be selected and sustained.

3.4 Watershed management through extensive soil conservation, catchment-area treatment, preservation of forests and increasing the forest cover and the construction of check-dams should be promoted. Efforts shall be to conserve the water in the catchment.

3.5 Water should be made available to water short areas by transfer from other areas including transfers from one river basin to another, based on a national perspective, after taking into account the requirements of the areas / basins.

Institutional Mechanism

4.1 With a view to give effect to the planning, development and management of the water resources on a hydrological unit basis, along with a multi-sectoral, multi-disciplinary and participatory approach as well as integrating quality, quantity and the environmental aspects, the existing institutions at various levels under the water resources sector will have to be appropriately reoriented / reorganised and even created, wherever necessary. As maintenance of water resource schemes is under non-plan budget, it is generally being neglected. The institutional arrangements should be such that this vital aspect is given importance equal or even more than that of new constructions.

4.2 Appropriate river basin organisations should be established for the planned development and management of a river basin as a whole or sub-basins, wherever necessary. Special multi-disciplinary units should be set up to prepare comprehensive plans taking into account not only the needs of irrigation but also harmonising various other water uses, so that the available water resources are determined and put to optimum use having regard to existing agreements or awards of Tribunals under the relevant laws. The scope and powers of the river basin organisations shall be decided by the basin states themselves.

Water Allocation Priorities

5. In the planning and operation of systems, water allocation priorities should be broadly as follows:

- Drinking water
- Irrigation
- Hydro-power
- Ecology
- Agro-industries and non-agricultural industries
- Navigation and other uses.

However, the priorities could be modified or added if warranted by the area / region specific considerations.

Project Planning

6.1 Water resource development projects should as far as possible be planned and developed as multipurpose projects. Provision for drinking water should be a primary consideration.

6.2 The study of the likely impact of a project during construction and later on human lives, settlements, occupations, socio-economic, environment and other aspects shall form an essential component of project planning.

6.3 In the planning, implementation and operation of a project, the preservation of the quality of environment and the ecological balance should be a primary consideration. The adverse impact on the environment, if any, should be minimised and should be offset by adequate compensatory measures. The project should, nevertheless, be sustainable.

6.4 There should be an integrated and multi-disciplinary approach to the planning, formulation, clearance and implementation of projects, including catchment area treatment and management, environmental and ecological aspects, the rehabilitation of affected people and command area development. The planning of projects in hilly areas should take into account the need to provide assured drinking water, possibilities of hydro-power development and the proper approach to irrigation in such areas, in the context of physical features and constraints of the basin such as steep slopes, rapid run-off and the incidence of soil erosion. The economic evaluation of projects in such areas should also take these factors into account.

6.5 Special efforts should be made to investigate and formulate projects either in, or for the benefit of, areas inhabited by tribal or other specially disadvantaged groups such as socially weak, scheduled castes and scheduled tribes. In other areas also, project planning should pay special attention to the needs of scheduled castes and scheduled tribes and other weaker sections of the society. The economic evaluation of projects benefiting such disadvantaged sections should also take these factors into account.

6.6 The drainage system should form an integral part of any irrigation project right from the planning stage.

6.7 Time and cost overruns and deficient realisation of benefits characterising most water related projects should be overcome by upgrading the quality of project preparation and management. The inadequate funding of projects should be obviated by an optimal allocation of resources on the basis of prioritisation, having regard to the early completion of on-going projects as well as the need to reduce regional imbalances.

6.8 The involvement and participation of beneficiaries and other stakeholders should be encouraged right from the project planning stage itself.

Ground Water Development

7.1 There should be a periodical reassessment of the ground water potential on a scientific basis, taking into consideration the quality of the water available and economic viability of its extraction.

7.2 Exploitation of ground water resources should be so regulated as not to exceed the recharging possibilities, as also to ensure social equity. The detrimental environmental consequences of over-exploitation of ground water need to be effectively prevented by the Central and State Governments. Ground water recharge projects should be developed and implemented for improving both the quality and availability of ground water resource.

7.3 Integrated and coordinated development of surface water and ground water resources and their conjunctive use should be envisaged right from the project planning stage and should form an integral part of the project implementation.

7.4 Over exploitation of ground water should be avoided especially near the coast to prevent ingress of seawater into sweet water aquifers.

Drinking Water

8. Adequate safe drinking water facilities should be provided to the entire population both in urban and in rural areas. Irrigation and multipurpose projects should invariably include a drinking water component, wherever there is no alternative source of drinking water. Drinking water needs of human beings and animals should be the first charge on any available water.

Irrigation

9.1 Irrigation planning either in an individual project or in a basin as a whole should take into account the irrigability of land, cost-effective irrigation options possible from all available sources of water and appropriate irrigation techniques for optimising water use efficiency. Irrigation intensity should be such as to extend the benefits of irrigation to as large a number of farm families as possible, keeping in view the need to maximise production.

9.2 There should be a close integration of water-use and land-use policies.

9.3 Water allocation in an irrigation system should be done with due regard to equity and social justice. Disparities in the availability of water between head-reach and tail-end farms and between large and small farms should be obviated by adoption of a rotational water distribution system and supply of water on a volumetric basis subject to certain ceilings and rational pricing.

9.4 Concerted efforts should be made to ensure that the irrigation potential created is fully utilised. For this purpose, the command area development approach should be adopted in all irrigation projects.

9.5 Irrigation being the largest consumer of fresh water, the aim should be to get optimal productivity per unit of water. Scientific water management, farm practices and sprinkler and drip system of irrigation should be adopted wherever feasible.

9.6 Reclamation of water logged / saline affected land by scientific and cost-effective methods should form a part of command area development programme.

Resettlement and Rehabilitation

10. Optimal use of water resources necessitates construction of storages and the consequent resettlement and rehabilitation of population. A skeletal national policy in this regard needs to be formulated so that the project affected persons share the benefits through proper rehabilitation. States should accordingly evolve their own detailed resettlement and rehabilitation policies for the sector, taking into account the local conditions. Careful planning is necessary to ensure that the construction and rehabilitation activities proceed simultaneously and smoothly.

Financial and Physical Sustainability

11. Besides creating additional water resources facilities for various uses, adequate emphasis needs to be given to the physical and financial sustainability of existing facilities. There is, therefore, a need to ensure that the water charges for various uses should be fixed in such a way that they cover at least the operation and maintenance charges of providing the service initially and a part of the capital costs subsequently. These rates should be linked directly to the quality of service provided. The subsidy on water rates to the disadvantaged and poorer sections of the society should be well targeted and transparent.

Participatory Approach to Water Resources Management

12. Management of the water resources for diverse uses should incorporate a participatory approach; by involving not only the various governmental agencies but also the users and other stakeholders, in an effective and decisive manner, in various aspects of planning, design, development and management of the water resources schemes. Necessary legal and institutional changes should be made at various levels for the purpose, duly ensuring appropriate role for women. Water Users' Associations and the local bodies such as municipalities and *gram panchayats* should particularly be involved in the operation, maintenance and management of water infrastructures / facilities at appropriate levels progressively, with a view to eventually transfer the management of such facilities to the user groups / local bodies.

Private Sector Participation

13. Private sector participation should be encouraged in planning, development and management of water resources projects for diverse uses, wherever feasible. Private sector participation may help in introducing innovative ideas, generating financial resources and introducing corporate management and improving service efficiency and accountability to users. Depending upon the specific situations, various combinations of private sector participation, in building, owning, operating, leasing and transferring of water resources facilities, may be considered.

Water Quality

14.1 Both surface water and ground water should be regularly monitored for quality. A phased programme should be undertaken for improvements in water quality.

14.2 Effluents should be treated to acceptable levels and standards before discharging them into natural streams.

14.3 Minimum flow should be ensured in the perennial streams for maintaining ecology and social considerations.

14.4 Principle of 'polluter pays' should be followed in management of polluted water.

14.5 Necessary legislation is to be made for preservation of existing water bodies by preventing encroachment and deterioration of water quality.

Water Zoning

15. Economic development and activities including agricultural, industrial and urban development, should be planned with due regard to the constraints imposed by the configuration of water availability. There should be a water zoning of the country and the economic activities should be guided and regulated in accordance with such zoning.

Conservation of Water

16.1 Efficiency of utilisation in all the diverse uses of water should be optimised and an awareness of water as a scarce resource should be fostered. Conservation consciousness should be promoted through education, regulation, incentives and disincentives.

16.2 The resources should be conserved and the availability augmented by maximising retention, eliminating pollution and minimising losses. For this, measures like selective linings in the conveyance system, modernisation and rehabilitation of existing systems including tanks, recycling and re-use of treated effluents and adoption of traditional techniques like mulching or pitcher irrigation and new techniques like drip and sprinkler may be promoted, wherever feasible.

Flood Control and Management

17.1 There should be a master plan for flood control and management for each flood prone basin.

17.2 Adequate flood-cushion should be provided in water storage projects, wherever feasible, to facilitate better flood management. In highly flood prone areas, flood control should be given overriding consideration in reservoir regulation policy even at the cost of sacrificing some irrigation or power benefits.

17.3 While physical flood protection works like embankments and dykes will continue to be necessary, increased emphasis should be laid on non-structural measures such as flood forecasting and warning, flood plain zoning and flood proofing for the minimisation of losses and to reduce the recurring expenditure on flood relief.

17.4 There should be strict regulation of settlements and economic activity in the flood plain zones along with flood proofing, to minimise the loss of life and property on account of floods.

17.5 The flood forecasting activities should be modernised, value added and extended to other uncovered areas. Inflow forecasting to reservoirs should be instituted for their effective regulation.

Land Erosion by Sea or River

18.1 The erosion of land, whether by the sea in coastal areas or by river waters inland, should be minimised by suitable cost-effective measures. The States and Union Territories should also undertake all requisite steps to ensure that indiscriminate occupation and exploitation of coastal strips of land are discouraged and that the location of economic activities in areas adjacent to the sea is regulated.

18.2 Each coastal State should prepare a comprehensive coastal land management plan, keeping in view the environmental and ecological impacts, and regulate the developmental activities accordingly.

Drought-prone Area Development

19.1 Drought-prone areas should be made less vulnerable to drought-associated problems through soilmoisture conservation measures, water harvesting practices, minimisation of evaporation losses, development of the ground water potential including recharging and the transfer of surface water from surplus areas where feasible and appropriate. Pastures, forestry or other modes of development which are relatively less water demanding should be encouraged. In planning water resource development projects, the needs of drought-prone areas should be given priority.

19.2 Relief works undertaken for providing employment to drought-stricken population should preferably be for drought proofing.

Monitoring of Projects

20.1 A close monitoring of projects to identify bottlenecks and to adopt timely measures to obviate time and cost overrun should form part of project planning and execution.

20.2 There should be a system to monitor and evaluate the performance and socio-economic impact of the project.

Water Sharing / Distribution amongst the States

21.1 The water sharing / distribution amongst the states should be guided by a national perspective with due regard to water resources availability and needs within the river basin. Necessary guidelines, including for water short states even outside the basin, need to be evolved for facilitating future agreements amongst the basin states.

21.2 The Inter-State Water Disputes Act of 1956 may be suitably reviewed and amended for timely adjudication of water disputes referred to the Tribunal.

Performance Improvement

22. There is an urgent need of paradigm shift in the emphasis in the management of water resources sector. From the present emphasis on the creation and expansion of water resources infrastructures for diverse uses, there is now a need to give greater emphasis on the improvement of the performance of the existing water resources facilities. Therefore, allocation of funds under the water resources sector should be re-prioritised to ensure that the needs for development as well as operation and maintenance of the facilities are met.

Maintenance and Modernisation

23.1 Structures and systems created through massive investments should be properly maintained in good health. Appropriate annual provisions should be made for this purpose in the budgets.

23.2 There should be a regular monitoring of structures and systems and necessary rehabilitation and modernisation programmes should be undertaken.

23.3 Formation of Water Users' Association with authority and responsibility should be encouraged to facilitate the management including maintenance of irrigation system in a time bound manner.

Safety of Structures

24. There should be proper organisational arrangements at the national and state levels for ensuring the safety of storage dams and other water-related structures consisting of specialists in investigation, design, construction, hydrology, geology, etc. A dam safety legislation may be enacted to ensure proper inspection, maintenance and surveillance of existing dams and also to ensure proper planning, investigation, design and construction for safety of new dams. The Guidelines on the subject should be periodically updated and reformulated. There should be a system of continuous surveillance and regular visits by experts.

Science and Technology

25. For effective and economical management of our water resources, the frontiers of knowledge need to be pushed forward in several directions by intensifying research efforts in various areas, including the following:

- hydrometeorology;
- snow and lake hydrology;
- surface and ground water hydrology;
- river morphology and hydraulics;
- assessment of water resources;
- water harvesting and ground water recharge;
- water quality;
- water conservation;
- evaporation and seepage losses;
- recycling and re-use;
- better water management practices and improvements in operational technology;
- crops and cropping systems;
- soils and material research;
- new construction materials and technology (with particular reference to roller compacted concrete, fiber reinforced concrete, new methodologies in tunneling technologies, instrumentation, advanced numerical analysis in structures and back analysis);
- seismology and seismic design of structures;
- the safety and longevity of water-related structures;
- economical designs for water resource projects;

- risk analysis and disaster management;
- use of remote sensing techniques in development and management;
- use of static ground water resource as a crisis management measure;
- sedimentation of reservoirs;
- use of sea water resources;
- prevention of salinity ingress;
- prevention of water logging and soil salinity;
- reclamation of water logged and saline lands;
- environmental impact;
- regional equity.

Training

26. A perspective plan for standardised training should be an integral part of water resource development. It should cover training in information systems, sectoral planning, project planning and formulation, project management, operation of projects and their physical structures and systems and the management of the water distribution systems. The training should extend to all the categories of personnel involved in these activities as also the farmers.

Conclusion

27. In view of the vital importance of water for human and animal life, for maintaining ecological balance and for economic and developmental activities of all kinds, and considering its increasing scarcity, the planning and management of this resource and its optimal, economical and equitable use has become a matter of the utmost urgency. Concerns of the community needs to be taken into account for water resources development and management. The success of the National Water Policy will depend entirely on evolving and maintaining a national consensus and commitment to its underlying principles and objectives. To achieve the desired objectives, State Water Policy backed with an operational action plan shall be formulated in a time bound manner say in two years. National Water Policy may be revised periodically as and when need arises.

Relevant Extracts from the views expressed and suggestions made in respect of water policy and programmes from time to time

A. H. E. President's Address to the Nation on the eve of 58th Independence Day -2004

- Certain regions in the country like Bihar and Assam are constantly affected by floods every year, and we are witnessing that even now. There is a need to find a long-term solution to control flood and store and utilize the surplus water for usage during dry season and also the linking of regional river basins.
- In the Gangetic plain and in the North-eastern region, I would recommend construction of layered wells in the entry points of Kosi River flowing from Nepal and Brahmaputra flowing from Tibet. These layered wells will store the flood water at different levels and will control the intensity of damage in low-lying areas by reducing velocity of flow.
- We may consider the possibility of underground water storage systems at river basins sites and also other places. The water thus stored will be useful at the time of need.

B. Hon'ble Prime Minister's Independence Day Address-2004

- Drought and floods are two fundamental problems that continue to bring suffering to our rural population. We need concerted action to deal with these perennial problems.
- We need to insulate our people from the impact of drought by creating local level water security.
- We have to mobilize our people to come forward to take up the challenge of water conservation and management.
- We are committed to increase public investment in irrigation and addressing the specific problems of each river basin, in an environment and people friendly manner.
- Dealing with the problem of water is an important commitment we have made as part of our "New Deal for Rural India".
- The 'New Deal' that rural India needs must encompass investment in irrigation and the modernization of the infrastructure for agriculture.
- Water is a national resource, and we have to take an integrated view of our country's water resources our needs and our policies and water utilization practices.
- We need to ensure the equitable use of scarce water resources.

C. Common Minimum Programme 2004

- **Agriculture:** Watershed and Wasteland development programmes will be taken up on a massive scale. Water management in all its aspects, both for irrigation and drinking, both for irrigation and drinking purposes, will receive urgent attention.
- **Women and Children:** Village women and their associations will be encouraged to assume responsibility for all development schemes relating to drinking water, sanitation, primary education, health and nutrition.
- **Water Resources:** The UPA Government will take all steps to ensure that long pending inter-state disputes on rivers and water-sharing like the Cauvery water disputes are settled amicably at the earliest keeping in mind the interests of all parties to the dispute.
- To put an end to the acute drinking water shortage in Cities, especially in Southern States, desalination plants will be installed all along the Coromandel Coast starting with Chennai.
- Special problems of habitations in hilly terrains will be addressed immediately.
- Providing drinking water to all sections in urban and rural areas and augmenting availability of drinking water sources is an issue of the top-most priority.
- Harvesting rain water, desilting existing ponds and other innovative mechanisms will be adopted.
- A Flood-Prone Area Development Programme will be started and the Central Government will fully support flood control works in inter-State and international rivers.
- All existing schemes for drought-prone area development will be reviewed and a single major national programme launched.
- Intensive dialogue will be initiated with Nepal for developing water resources to mutual advantage.
- The rights of tribal communities over mineral resources, water sources, etc as laid down by law will be fully safeguarded.

D. Article titled “Just use it” in the magazine, Down to Earth published by Center for Science and Environment (CSE)

Several opinions and views in respect of Water Policy have been reflected in various publications etc of Center for Science and Environment. The article titled “Just use it” in the February 2009 issue of Down to Earth magazine, has made suggestions in respect of specific para of National Water Policy regarding water use in industry in India. The comments on the specific paras of National Water Policy -2002 related to water use in Industry, are quoted below:

“Water policy says:

- Effluents should be treated to levels and standards that are acceptable before discharging them into natural streams.

Comment: Does not address the issue of pollution load. The current standards for industrial effluents are concentration- based, which does not provides incentive for reducing water use or pollution loads.

- Principle of 'polluter pays' should be followed in management of polluted water.

Comment: Advocates 'polluter pays' principle' but is silent on extent of payment. Current water cess charged by pollution control boards is a 'polluter pays' regime, but the quantum of payment is so low that there is no incentive or disincentive for the industry for reducing wastewater discharge and hence water use.

- Economic development and activities, including agriculture, industry and urban development, should be planned with due regard to the constraints imposed by the configuration of water availability. There should be a water zoning of the country and the economic activities should be guided and regulated in accordance with such zoning.

Comment: Unless addressed in the industrial policy, it has no significance.

- Efficiency of utilisation in all the diverse uses of water should be optimised and an awareness of water as a scarce resource should be fostered. Conservation consciousness should be promoted through education, regulation, incentives and disincentives.

Comment: Vague and indifferent.

- The resources should be conserved and the availability augmented by maximising retention, eliminating pollution and minimising losses. For this, measures such as selective linings in the conveyance system, modernisation and rehabilitation of existing systems including tanks, recycling and re-use of treated effluents and adoption of traditional techniques like mulching or pitcher irrigation and new techniques like drip and sprinkler may be promoted, wherever feasible.

Comment: Vague and indifferent.”

E. National Environmental Policy -2006

- Revisit the Coastal Regulation Zone (CRZ) notifications to make the approach to coastal environmental regulation more holistic, and thereby ensure protection to coastal ecological systems, coastal waters, and the vulnerability of some coastal areas to extreme natural events and potential sea level rise.

- Promote research in glaciology to evaluate the impacts of climate change on glaciers and river flows.
- Promote integrated approaches to management of river basins by the concerned river authorities, considering upstream and downstream inflows and withdrawals by season, interface between land and water, pollution loads and natural regeneration capacities, to ensure maintenance of adequate flows, in particular for maintenance of in-stream ecological values, and adherence to water quality standards throughout their course in all seasons.
- Integrate conservation and wise use of wetlands into river basin management involving all relevant stakeholders, in particular local communities, to ensure maintenance of hydrological regimes and conservation of biodiversity.
- Incorporate a special component in afforestation programmes for afforestation on the banks and catchments of rivers and reservoirs to prevent soil erosion and improve green cover.
- Improve productivity per unit of water consumed in industrial processes, by making water assessments and water audits mandatory in identified industries and utilities.

F. Report of the Planning Commission titled “Towards Faster and More Inclusive Growth - An Approach to the 11th Five Year Plan” - 2006

- Far too many people still lack access to basic services such as health, education, clean drinking water and sanitation facilities without which they cannot be empowered to claim their share in the benefits of growth.
- Neglect of environmental considerations, as for example, in profligate use of water or deforestation can lead to adverse effects very quickly. The threat of climate change also poses real challenge to the well being of future generations which we can ill afford to ignore.
- Water is a critical input for agriculture and this call for expansion of irrigation, where it is possible and better water management in rainfed areas where assured irrigation is not possible. This is clearly an area where past policies have been inadequate. Performance in expanding irrigation has been disappointing with resources being spread thinly over many projects and a large number of irrigation projects remaining under construction for many years.
- Monitoring the pace of creation of potential assumes special importance. It is proposed to expand usage of remote sensing techniques for this purpose.
- Participatory Irrigation Management (PIM) by democratically organised water user associations empowered to set water charges, collect and retain substantial part of it, would help to maintain field channels, expand irrigated area, distribute water equitably and provide the tail enders their just share of water.

- Water must be recognized as a scarce resource and every drop needs to be used efficiently. In this context, it must be recognized that some existing policies followed by state governments contribute to the problem. Continued provision of free power by some states and highly subsidized power by all states is leading to an increase in semi critical, critical and over exploited areas of groundwater use, which already cover 29% of the blocks in the country.
- Real time monitoring of air and water quality is crucial for devising programmes and policies related to pollution management.

G. “India’s Water Economy – Bracing for a turbulent future” by John Briscoe and R.P.S. Malik (2006)

The observations and suggestions in brief, in the above mentioned document are as follows:

- Confronted with the reality of limited supplies and growing and changing demands, the need is obviously for a management framework which stimulates efficiency and which facilitates voluntary transfer of water as societal needs change.
- A central element of a new approach must be that users have well-defined entitlements to water. The broader messages are that the economic ideas of the 1991 economic reforms must be drilled down from the regulatory and financial sectors into the real sectors (including the water sector) if India is to have sustainable economic growth, and that the role of the Indian water state must change from that of builder and controller to creator of an enabling environment, and facilitator of the actions of water users large and small.
- Where inter-state Tribunal awards have been made, they have not helped much. They have taken years to complete, have not followed global good practice, and have stimulated States to focus their attention on “getting more water next time”, rather than on effective use of what they have.
- There are no effective mechanisms for enforcing awards or preventing unilateral action or even exit by dissatisfied States. The lack of modern, fair and enforceable inter-State water compacts has also stymied sensible inter-State “win-win” water cooperation.
- India needs a re-invigorated set of public water institutions, which are built on the following imperatives:
 - **focusing on developing a set of instruments (including water entitlements, contracts between providers and users, and pricing) and incentives which govern the use of water;**
 - **stimulating competition in and for the market for irrigation and water and sanitation services;**
 - **Empowering users by giving them clear, enforceable water entitlements;**
 - **Ending the culture of secrecy and making transparency the rule;**

- **Introducing incentive-based, participatory regulation of services and water resources;**
 - **Putting the sector on a sound financial footing;**
 - **Investing heavily in development of a new generation of multi-disciplinary water resource professionals;**
 - **making the environment a high priority;**
 - **making local people the first beneficiaries of major water projects.**
- A major push is needed – by government and by users working together – to bring abstractions from groundwater in line with recharge. While traditional technologies such as rainwater harvesting and tanks can play an important local role, they also create new and additional demands which often clash with existing uses
 - Form empowered aquifer user associations; to formalize water entitlements which are consistent with the sustainable yield of the aquifer; to develop transparent information and decision support systems
 - developing an enabling legal and regulatory framework; putting into place entitlement and pricing practices which will provide incentives for efficient, sustainable and flexible use of water; forming partnerships with communities for participatory management of rivers and aquifers; providing transparent information for use in managing and monitoring the resource and services; stimulating competition among providers through benchmarking and the entry of private sector and cooperative providers; regulating both the resource and services; and financing true public goods, such as flood control and wastewater treatment.
 - The idea of a modern, accountable “Indian water system” is a fantasy, given the dismal performance of the Indian State on water matters in recent decades and the broader challenges of governance.”

H. National Policy for Farmers -2007

- assured irrigation is the need of the hour
- Women would be given a significant role as water users, both in access and management.
- Symbiotic interaction and convergence of efforts should be made through various initiatives of the Central / State governments such as the National Rainfed Area Authority, the National Horticulture Mission, the Technology Missions on Oilseeds and Pulses and the National Rural Employment Guarantee Programme to promote water-use efficiency and water conservation measures.

I. Eleventh Five Year Plan 2007-2012

- Sustainable development and efficient management of water is an increasingly complex challenge in India. Increasing population, growing urbanization, and rapid

industrialization combined with the need for raising agricultural production generates competing claims for water. There is a growing perception of a sense of an impending water crisis in the country.

- There is a need for reducing the gestation period for the Irrigation projects. The projects should be implemented on a construction schedule not more than four to five years.
- The land acquisition and R&R works should be taken simultaneously with the project formulation.
- Irrigation efficiency in the systems needs to be upgraded from the present level of 35% to about 60% in case of surface water system and from about 65% to 75% in groundwater system.
- In flood management, the recurrence interval of the floods should be the guiding factor for taking up flood control measures.
- Use of ground water should be limited and linked with the quantum of water being recharged.
- The issue of monitoring ground water levels through scientific methods such as Piezometers, etc. should be left to the group of beneficiaries with proper technical support from the Central Government and the State Governments.”

J. National Action Plan on Climate Change (2008)

- The National Water Policy would be revisited in consultation with states to ensure basin level management strategies to deal with variability in rainfall and river flows due to climate change. This will include enhanced storage both above and below ground, rainwater harvesting, coupled with equitable and efficient management structures.

K. Views of Tarun Bharat Sangh (TBS)

Tarun Bharat Sangh (TBS) chaired by Shri Rajendra Singh, is a voluntary organisation which works with communities around the issue of water, and supports them in reviving and revitalising the traditional systems of water management.

Briefly the views of TBS on water management in India are given as under:

- Water is a basic human right and is the very basis of human existence. It is not a property of the State or any individual. Water is an endowment of nature to mankind and human society can manage water for both human and environmental benefit.
- Water is never a private asset and ever a universal resource. The state is the trustee (not an Owner) of all natural resources, which are by nature meant for public use and enjoyment. The state is thus under a legal duty to protect the natural resources. These

resources meant for public use cannot be converted into private ownership. Privatisation of water resources is thus a crime against mankind and should not be encouraged.

- The current crisis of water is one of management and not that of supply. The solution is to regenerate water resources to such an extent that supply far exceeds demand. This is the only long-term way of fighting current privatisation of water. If Gandhi were alive, he would have launched a massive campaign against privatization. He would fight for right for conservation of water resources as a fundamental non- tradable right.
- Rather than linking rivers, it is more important to link people with rivers today. For this, communities should have the right to plan, conserve, manage and control their water resources at local, river basin, state levels.
- Traditional values of reverence and prudence in use of water need to be revived on an urgent basis. Our national water policy must be based on the philosophical and cultural values of Indian society.
- In urban areas, there is a strong need for a differential water pricing to ensure that five-star hotels, industries, affluent colonies are not subsidised and that poorer sections and people living in slums pay according to their capacity.

Extract from the draft report titled “An Integrated Approach to Management of Water – by Dr Kirit Parikh”

Though the issues are grouped by different sectors and topics, it should be obvious that they overlap. As already pointed out actions of 11 ministries affect water availability and use. The following implications emerge from a coherent holistic look at the problems for an integrated water management and policy framework:

Augmenting Resources

(i) A nationwide rainwater harvesting and artificial recharge programme should have the highest priority as it will help in augmenting groundwater availability, better distribution of water resources, flood control moderation, reducing soil erosion and increasing storage. This would involve accelerated programme of watershed development and rainwater harvesting and also providing incentives for rainwater harvesting in urban areas and making it mandatory for large buildings. Chennai has made it compulsory for all urban buildings. The watershed development programmes of Department of Land Resources (DOLR) of Ministry of Rural Development (MORD) and Ministry of Agriculture has covered some 51 million hectares (MH) by the end of 10th Plan with a target of covering 36.6 MH during the 11th Plan. The potentially treatable land has been estimated to be around 125 million hectares of land consisting of some 85 million hectares of rainfed arable land and some 40 million hectares of wasteland. The watershed development programme needs to be vigorously pursued with a target to cover all watersheds by the end of 12th Plan. Adequate resources should be provided and transferred to PRIs to execute the projects. Ministry of Water Resources (MOWR) should provide the needed technical support using remote sensing data and geographical information system (GIS). This may also be outsourced to private consultancy firm and to non-governmental organizations (NGOs) as has been done by the Government of Madhya Pradesh with required competence. Ministry of Urban Development (MOUD) should start rain water harvesting programme as is done in Chennai as an essential element of JNNURM support for water supply schemes.

Pricing and Regulations

(ii) Water for irrigation, industry, household and civic uses should be properly priced. This can be done in a progressive manner to ensure lifeline water at reasonable cost. Independent water regulators should be established. State governments should set up water regulators with appropriate powers. Centre can facilitate this by providing model acts and incentivise states by providing additional central assistance (ACA). Regulators should set water charges on a volumetric basis. To the extent pricing cannot be relied upon to achieve desired results, regulators may need to allocate water quantitatively.

Managing Irrigation

(iii) Irrigation systems should be planned for conjunctive use and designed to account for the higher productivity of ground water and optimize the use of water and its distribution across people. Ground water provides on-demand irrigation and is the preferred source of water, if it does not have to be pumped from great depth. One can even imagine reservoir water distributed through porous underground pipes that recharge ground water on the way to fill percolation tanks in the command area. Considering the high opportunity cost of land, the difficulties of acquiring it and of rehabilitation and resettlement, such a pipeline system may turn out to be preferable. Such options should be examined while planning irrigation systems. MOWR should invite proposals for the development of methodology for such integrated planning of a basin. A number of such proposals should be funded to develop alternative approaches.

(iv) The Central Water commission (CWC) of MOWR should use such methods of integrated planning and prepare alternative plans for basin wise water development including that for urban and industrial needs and ecological requirement. This would require consultations with MOUD and Ministry of Commerce & Industry (MOCI). New projects should not be sanctioned by Planning Commission till a comprehensive basin level plan is prepared.

(v) States should set up groundwater user associations to cooperatively manage groundwater use.

(vi) The present groundwater monitoring system of CGWB has inadequate network of monitoring wells and should be expanded to provide regular information to associations of groundwater users so that they know how much water is extractable if water use is to be sustainable.

(vii) To restrain use of groundwater, electricity to farmers should be metered and charged appropriately. Farmers may be given upfront an entitlement and should be able to encash the value of the unused amount of electricity. If this is not possible, electricity should be rationed by separation of feeders for agricultural pumps and restricting supply to prescribed hours. This will also limit the use of groundwater. State governments should decide their policy and State Electricity Regulatory Commissions (SERCs) should oversee its implementation.

(viii) To reach water to tailenders for equitable distribution and better maintenance of field channels participatory irrigation management should be facilitated by State Governments through acts that empower WUAs to set water tariffs above the prescribed tariff, collect the money and retain all of the collection above the prescribed tariffs and a portion of the prescribed tariff. Organization of effective WUAs requires substantial NGO efforts which should be funded by State Governments.

(ix) To maintain created facilities, in a sustainable way, State Governments or regulators should fix user charges at levels that atleast meet operation and maintenance costs of the facility, and must collect them.

(x) For bridging the gap between irrigation potential created and utilized command area development should be integrated with the project so that command area gets developed pari passu with the project. All new projects are now required to do so. Alternative methods of distributing water, for example through water suppliers pumping and distributing water through pipes that save land, should also be considered by MOWR and States.

(xi) In order to ensure that irrigation projects are completed in time, Planning Commission, MOWR and States should ensure that construction work starts only after all preparatory work such as land acquisition, R&R and technical and environmental clearances is completed. Projects should be monitored through remote sensing. This will also help identify bottlenecks and missing links in the distribution system to bridge the gap between potential created and utilized, and will provide a more reliable and accurate information on area irrigated.

Expanding Storage: Multipurpose Projects

(xii) We need to increase water storage capacity by developing all economically viable storage projects. The benefits and costs, economic, environmental and social, should be assessed and an appropriate transfer mechanism developed. However, planning for multipurpose reservoir systems should be done with stakeholders participation and should involve a thorough examination of all alternatives. MOWR should develop a process for this which should be a part of basin planning suggested at (iii) and (iv) above.

(xiii) Project affected people (PAP) should be properly resettled in a way that makes them better off than before. Their gains should be comparable to the gains of those benefiting from the project. The National Rehabilitation and Resettlement Policy (NRRP), 2007 provides for this and some states have enacted their own rehabilitation policies which are more generous than the national policy.

(xiv) Resettlement can be facilitated by requiring land consolidation in the command area and imposing a betterment levy of a small percentage of land in kind on the beneficiaries. PAP and those whose land is required for canals, should be compensated and resettled in the command area. MOWR and Planning Commission should make this a pre-condition for providing financial support.

Interlinking of Rivers

(xv) Interlinking can augment utilizable water. A number of links have been identified for transferring excess water from one basin to another. Before any economically viable link is taken up for development, the concerned states have to agree. States should arrive

at mutually satisfactory agreements so that preparation of DPRs that fully examine the economic, environmental and R&R aspects is undertaken. MOWR can play a role in facilitating such agreements.

Inter-State Water Disputes

(xvi) The ISWD Act 2002 provides no effective time limit for dealing with references made to it on its award. The Act should be modified to provide a time limit. Also tribunal awards should be adjudicable by the Supreme Court.

Flood Protection

(xvii) Studies of frequencies of floods of different intensities and the area that will be submerged should be carried out and made public so that development and investments in flood prone areas take account of the risks. MOWR, CWC, various flood control commissions/State Disaster Management Authorities (SDMAs), River Valley Boards and National Disaster Management Authority (NDMA) all have a responsibility for this.

(xviii) Reservoirs should be built and operated with flood cushion to provide protection and to moderate flood intensity. The costs of such flood protection in terms of additional investment needed to provide the cushion as well as opportunity cost of foregone water storage should be borne by the beneficiary states. MOWR should assess these costs and benefits for the preparation of DPRs.

(xix) For very low frequency and high intensity floods that cannot be contained by reservoirs, floodplain and wetlands, construction of raised platform shelters should be undertaken. CWC and NDMA should make the plans and States should implement them.

(xx) Flood forecasting machinery and methods should be strengthened to maximize the advance warning of floods to give adequate time to people to move to shelters. MOWR/CWC, NDMA (National Disaster Management Authority), SDMAs and States should do this.

(xxi) Dams, barrages, embankments etc. should be regularly checked for their safety. An independent central dam safety authority should be created and charged with the task.

Water for Households

(xxii) To prevent habitations covered with drinking water from slipping back, due to breakdown of equipment, local groups, preferably of women, should be trained in maintenance and repair and Panchayats should pay them for the services provided financed through a user charge. Department of Drinking Water Supply (DODWS) should provide the training with the help of States and local bodies.

(xxiii) DODWS and States should provide safe surface water to habitations with arsenic contaminated water. For other contaminants treatment with locally made filters or dilution with rainwater collected through rainwater harvesting should be provided.

(xxiv) A long-term water supply infrastructure plan should be made for all urban areas to meet the requirements of growing populations. Populations should be projected, sources should be identified and pre-feasibility reports should be prepared. Such plans should be integrated ones which considers options such as recycling, rainwater harvesting, storm water capture and also effluent treatment and disposal in a source to sink approach. They should be monitored to make necessary changes when the growth of population differs from the projected one. MOUD should prepare the plans in coordination with MOWR and CWC as a part of basin plans.

(xxv) Urban water users should be charged on a volumetric basis with a low charge for the first 5000 litres/month per family by Urban Local Bodies (ULBs) or Water Supply Boards (WSBs).

(xxvi) Urban water supply may be developed and operated through public private partnership (PPP) mode. MOUD may encourage ULBs to do this for projects funded through JNNURM.

Urban Flooding

(xxvii) Storm water drainage systems should be of adequate capacity to deal with expected rain. The system should be maintained and upgraded as the drainage area of the city changes as it grows. Maintenance of wetlands, ponds and lakes in the city can play an important role in moderating intensity of storm water flooding. Porous pavements through which water can percolate underground can also play a role here. In coastal cities where storm water drains into the sea, the eventuality of storm occurring at high tide should be factored in and if necessary should be provided pumping facility to the extent feasible. MOUD and ULBs should commission studies to assess the adequacy of storm water systems under extreme events and take appropriate measures.

Water Conservation and Use Efficiency

(xxviii) Significant scope exists to improve water use efficiency of irrigation. Micro-irrigation, drip irrigation and sprinklers, need to be encouraged by appropriate pricing of water and provision of credit to farmers for these systems. Ministry of Agriculture (MOA), States and Ministry of Finance (MOF) through financial institutions all have a role here.

(xxix) Ministry of Agriculture should propagate widespread adaptation of water saving cultivation practices such as system of Rice Intensification practiced in parts of Tamil Nadu.

(xxx) States and water regulators should encourage industries to recycle water by appropriate pricing of water and effluents.

(xxxix) Centre, States and ULBs should make use of water efficient toilet flushes mandatory in new buildings and provide incentives to replace existing flushes.

Water Quality

(xxxix) All urban households should have sewerage connections. The capacity of sewage treatment plants (STP) in cities should be adequate to treat all sewage. The growth of cities should be anticipated and STP capacity should be increased in advance so that no untreated sewage is released into water bodies. MOUD should ensure that plans under JNNURM have the required foresight. ULBs should be required to put data on effluent generation and treatment on website so that citizens can monitor and create pressure for timely action.

(xxxix) STPs should have adequate resources for maintenance. A mechanism to provide adequate revenue should be put in place alongwith the construction of STP. This is best done through a water charge but property tax can also be used. MOUD should insist on such a mechanism while sanctioning schemes under JNNURM.

(xxxix) The total sanitation campaign for rural areas with eco-friendly sanitary toilets as promoted by DODWS should be able to deal with water pollution from rural households.

(xxxix) Excessive use of fertilizers and pesticide should be reduced through education, use of drip irrigation and promotion of integrated pest management techniques through cooperative action which needs NGO efforts to facilitate. MOA should step up its programme on IPM providing funding for needed NGO efforts.

Water for industries

(xxxix) Groundwater use by extractive industry should be limited to sustainable use and should attract a cess to finance ground water recharge to make it sustainable. States and local bodies should ensure this.

(xxxix) Industries do not often treat their effluents to standards set by pollution control boards who are unable to enforce them for want of adequate staff and resources. Apart from strengthening central and state PCBs, industry associations should be encouraged for self-regulation.

(xxxix) Industries should be required to put on website their effluent quality data regularly. This will empower citizen groups with knowledge. Ministry of Environment & Forests (MOEF) should enact full liability law to make industries responsible for the damage caused by their effluents. This will further empower citizens.

Research and Development

(xxxix) Research and development activities in respect of water related issues should be undertaken. MOWR, MOUD, MOA, MOEF, DODWS, Department of Science & Technology (DST) and Planning Commission should provide necessary funds. Among the studies that are important for water management are the following:

- Basin-wise studies to assess alternatives of water management identifying the impact of artificial groundwater recharge on distribution of water across sub-regions, users and time.
- Irrigation efficiency realized and methods to improve it in different crops and regions.
- Projection of long term urban water needs and identification of potential sources.
- The impact of climate change on the country's hydrological cycle and distribution of river flows across time and their implications for water management.
- Development and promotion of new technologies for efficient water usages in all sectors i.e. irrigation, industries, domestic, etc.

Data Systems

(xxxx) MOWR has a national hydrology project to provide data on rainfall, run-off and other hydrological parameters. This should be supplemented with a comprehensive data system to fill the data gaps identified and provide timely data for water management.

(xxxxi) Data should be made available freely to researchers by MOWR so that the vast amount of research that needs to be done can be undertaken.

Capacity Building

(xxxxii) Integrated water management calls for significant increase in scientific, technical and managerial capacities at all levels and especially at local levels. It also requires a mindset change from project based thinking to a holistic approach. Planning Commission, MOWR and MOA should develop a capacity building plan.

Policy Coordination

(xxxxiii) Since Integrated Water Management requires action from many ministries, an institutional mechanism for policy coordination is needed. A high level "Water Policy Coordination Committee" should be set up under the Prime Minister for this purpose.

Extract from the Draft recommendations of the Workgroup of Confederation of Indian Industry (CII) on Water Policy

SUMMARY OF RECOMMENDATIONS

A ten – point agenda

- 1. Enact an over-arching Water Act to signal water sector as an important policy priority.** This will enable (a) greater clarity on water rights, (b) encouraging water efficiency, (c) regulating and conserving water resources – both ground water and surface water, (d) better participation of users and (e) effective dispute resolution.
- 2. Implement the recommendations of National Water Policy (2002) and roadmap developed by the National Water Mission on priority.** Define timelines for desired outcomes and accountability for action points outlined, create institutional capacity and ring-fenced financing to drive these actions, and report progress on the work plan and actions bi-annually.
- 3. Clarify legal position and rights over groundwater.** Incentivise all states to implement Model Groundwater Regulation Bill amended in 2005. Enforce provisions of the Act through greater involvement and incentivisation of Local Governments and communities. Regulate groundwater extraction for industrial use through increased charges / cess for groundwater extraction and by providing alternative and reliable supply to dis-incentivise groundwater over-exploitation
- 4. Create guidelines and Toolkits for States to develop / implement specific water policies and set targets for equitable access and water conservation.** There is a need for backing the intent outlined in the National Water Policy 2002 with tangible support to states in preparation of state level policies. This is because different states have varying degrees of institutional capacity to implement the various policies, and left to themselves, there is unequal and generally inadequate progress amongst various states. The tool-kit should enable implementation of objectives of the state policy that promote water security, enable equitable access, encourage conservation and incentivise re-use. As part of the State Policy, states should set, monitor and achieve specific targets relating to access, sustainability and conservation.
- 5. Set time-lines and milestones for implementation of 74th Constitutional Amendment Act so that all states move ahead with actual devolvement of powers to ULBs.** The Government of India should provide greater thrust towards the ongoing efforts to provide for greater financial and operational autonomy for Local Governments, including creation of mechanisms for monitoring, reporting and disseminating state wise performance on implementation of the 74th CAA on an annual basis. While the initial steps in this direction have been taken, it is important to accord greater priority to achieving outcomes in this aspect
- 6. Incentives state governments to migrate water utilities towards greater financial sustainability.** Link funding from Central / State Government schemes to reforms in local

governments. Some examples a) Incorporation of User Charges fixation and revision principles in Model Municipal Law and amendment of State-level legislation, b) Mandating provision of life-line supply at affordable levels (to minimise legitimate opposition from genuinely poor strata), c) Evolving institutional structures/mechanisms to separate service provision and regulation, d) Setting time-bound, universally acceptable and unambiguous targets for improving Access, Service levels and Financial sustainability of water and sanitation services, e) Tracking and disseminating information on Cost of service provision and level of subsidies at the local tier and f) Encouraging adoption of household area-based differential pricing initially and a graduated migration to metered tariffs within a defined timeframe.

7. Set benchmark norms and disclosure standards pertaining to water consumption and discharge covering all consumer segments namely, Agriculture, Industry and Domestic. Evolve and disseminate reporting standards at the national level to aid cross state / city comparison. Set state level benchmarks for a) **Access to pressurised piped water supply** (say - All Class I towns to achieve 90% pressurised piped water supply access by 2020), b) **Treatment and Recycling** – (say, mandating 100% waste water secondary treatment, 50% re-use in apartments and commercial complexes for low-end uses such as flushing/ gardening/ car wash, and 50% re-use by industry with water intensive industries achieving zero discharge by 2020)

8. Implement actions to incentivise Water conservation including a) creation of a Bureau of Water Efficiency to review interventions for reducing water intensity in agriculture, industry and domestic segments, b) Setting time bound targets for waste-water treatment and re-use, c) Establishing a national program to create / restore water bodies in urban areas d) Making rainwater harvesting a mandatory and a part of the building code and town planning legislation countrywide, and e) Instituting a system of water credits.

9. Encourage and implement Public Private Partnerships in urban water supply systems. Aid Water utilities to potentially leapfrog in service delivery by leveraging private sector capacity with greater focus on efficiency gains in service delivery initially, where possible, rather than on bringing in private investment.

10. Initiate steps to enhance knowledge, capability and skills pertaining to the water in industry, academia and government. Some specific examples a) setting up zonal level Water Resources and Management Institutes on the lines of IISc / IITs to create and nurture talent and b) supporting creation of licensed training and skilling programs to address the skill gaps in the sector.