
TO REVIEW AND EXAMINE EXISTING STATE LEVEL REGULATORY AND INSTITUTIONAL FRAMEWORK TO OPERATIONALISE THE NATIONAL WATER POLICY- 2012

STATE REPORT KARNATAKA

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Executive Summary

The water policy and regulatory framework in Karnataka has been examined on 16 broad themes that form the basis for water sector reforms from the national perspective attempted through the National Water Policy, 2012. The state has adopted the Water Policy in 2002 that provides the overall policy guidance for the management of water resources in the state. The policy emerges from a need to systematically develop limited surface and ground water resources of the state employing new approaches. As per the 2002 Policy, the state has experienced a 'serious destabilization of the water sector affecting the hydrology, economy and ecology'. The 2002 Policy has, however, not been updated in the wake of 2012 NWP.

The 2002 KWP needs to be revisited, largely due to the reason that it does not very clearly reflect the principles and approaches considered essential for paving the way for water sector reforms in the wake of growing scarcity and competing demands as has also been outlined in the NWP, 2012. The 2002 KWP also needs to confirm to the regulatory changes brought in by the state government in the form of new enactment namely Karnataka Ground water (Regulation and Control of Development and Management) Act, 2011. It is pertinent to note that despite the acknowledgement of growing water scarcity and resulting destabilization of ecology, economy and hydrology, there is no regulatory mechanism in the state for resolving inter-sectoral water allocation and water resources issues. The KWP also does not include water use efficiency aspects which are the recurring theme in the NWP, 2002. The legislative measures undertaken in the form of Karnataka Command Areas Development Act, 1980 for the regulation of command areas lack provisions for ensuring strong community participation for the water management in command areas.

The NWP, 2012 calls for conservation of rivers, river corridors, water bodies and/or associated wetlands, the flood plains, ecological buffer areas are to be managed in an integrated manner to balance the environmental and social issues. The institutional and regulatory framework on wetlands and water bodies is inadequate in the state and the KWP, 2002 is silent on this issue. There is a Lake Development Authority for Bangalore established under an executive order of the state government. A state level dedicated statutory authority empowered to undertake measures for preservation of wetlands and water bodies through community participation is required in the state.

In Karnataka, the regulatory mechanism on water harvesting needs to be harmonised for bringing in the requisite changes in water use patterns and more emphasis to be placed on recycle and reuse of water and for evolving a system to incentivise water conservation. A significant addition to NWP-2012 is recognition of impact of climate change on available water resources and consequent impacts upon human health and livelihoods. Though the state has formulated a State Climate Action Plan, the KWP falls short to acknowledge this important reality and therefore needs to be revised. The state has formulated an action plan for climate change.

Any informed decision making presupposes availability of good quality data and the same is accentuated by NWP-2012. An integrated database of all water related data like rainfall, geo-morphological, climatic, geological, surface water, ground water, water quality, ecological, water extraction and use, irrigated area, etc., in well defined online formats is required. There are different departments and agencies maintaining data relating to water in

the state, which requires harmonisation and setting up of a dedicated State Water Resources Data and Information Center as envisaged in water policy.

Introduction and Background

The primary objective of the present analysis is to assess the preparedness of the state in terms of regulatory and institutional framework to respond to the directives of the national water policy- 2012 (NWP). This study is part of a larger examination of available legal mechanisms in three states of Meghalaya, Maharashtra and Karnataka to deliver on the objectives of NWP.

Water Resources Scenario in Karnataka

Karnataka comprises of seven river systems, which with their tributaries have drainage area as presented in Table 1. The largest river basin is Krishna river basin and the smallest is Palar river. The average annual yield of the rivers is estimated to be 98406 m.cum. (3475 Tmc)¹. Water is a scarce resource in the state due to continued 'depletion' and 'degradation'.²In view of limited surface and ground water resources, it is imperative for the scientific utilization of available water resource for overall development of the state. The State Water Policy, 2002 reflects this reality.

Table 1: Drainage Area of the River Systems in Karnataka

Sl. No.	River System	Drainage Area	
		1000 Sq. km	Percentage
1.	Godavari	4.41	2.31
2.	Krishna	113.29	59.48
3.	Cauvery	34.27	17.99
4.	North Pennar	6.94	3.64
5.	South Pennar	4.37	2.29
6.	Palar	2.97	1.56
7.	West Flowing Rivers	24.25	12.73
	Total	190.50	

Source: Water Resources Department-Government of Karnataka (GoK)³

Regulatory and Institutional Set-up

The State Water Policy, 2002 is the primary document outlining the water resource situation in the state and mentions the outcomes resulting from 'serious destabilization of the water sector affecting the hydrology, economy and ecology'. The policy emerges from a need to

¹ http://waterresources.kar.nic.in/irri_in_kar.htm

² National Resources in Karnataka-Karnataka State Development Report-Planning commission of India (2005)

³ http://waterresources.kar.nic.in/river_systems.htm

systematically develop limited surface and ground water resources of the state employing new approaches. Key objectives of the policy being provision of drinking water, development of hydropower potential, creation of irrigation potential of 45 lakh hectares, improvement of performance of all water resources projects. The institutional setup in the state is compiled in Table 1 providing an overview of the organisations and authorities involved with water management in the state.

Table 1: Institutional and organisational set-up on water management

Sl. No.	Name of the Organisation/Institution	Functions assigned
State Level Organisation/Institution		
1.	Water Resources Development Organisation	Investigation and Planning of Major & Medium Irrigation Projects, Hydrological analysis and design of Water Resources projects, Establishing, Maintenance, Collection and publication of Hydrological and Hydro-meteorological data and Monitoring and Evaluation of projects
2.	Command Area Development Authorities	Protection and identification of command area of river basins, conjunctive use of surface and ground water and implementation of participatory irrigation management.
3.	Department of minor irrigation	Taking up construction of Minor Irrigation Schemes such as tanks, anicuts, pickups Lift Irrigation Schemes & barrages, restoration of underground water level through percolation tanks.
4.	Department of Mines and Geology (Groundwater wing)	Hydrological surveys and identification of watersheds
5.	Soil Survey Division	Assessment of quality of soils to determine cropping patterns in the command area.
6.	Watershed development department (Department of Agriculture)	Identifying watersheds and improving the productive potentials of selected watersheds. Developing and strengthening community based institutional arrangements for sustainable natural resource management.
7.	Karnataka State Natural Disaster Monitoring Centre ⁴ (erstwhile Drought Monitoring Cell)	Identifying the scientific and technological inputs required to tackle and drought problem and to develop a database on the various drought related factors such as precipitation, evapotranspiration, groundwater levels and resources, surface water bodies, land use, soils, forest cover etc
8.	Karnataka Regional Remote Sensing center. (Department of IT and S&T)	Preparation of Cadastral Referenced thematic Micro-watershed maps covering Landuse/Landcover, Soil, Slope, Drainage and Water bodies and Ground water prospects for

⁴ <http://dmc.kar.nic.in/mem.htm>

		selected 1039 micro-watersheds of the State (2011). ⁵ Under implementation is creation of Cadastral referenced micro watershed maps of 7 districts, namely Bidar, Gulbarga, Yadgir, Gadag, Davanagere, Chamarajanagar and Koppal. ⁶
9.	Karnataka Engineering Research Station	The Research Station is catering to the technical needs of Water Resources Department, Public Works Department and other Central & State Government Departments.
10.	Directorate of Economics and Statistics	Collection and dissemination of information
11.	Department of Environment, Ecology and Forests	Preservation and enhancement of the quality of the natural environment, including water, air and soil quality. Implementation of Water (Prevention and Control of Pollution) Act, 1974 and The Water (Prevention and Control of Pollution) Cess Act, Rules, 1977-78.
12.	Karnataka State Pollution Control Board	Monitoring water pollution from different sectors and implementation of the Water and Cess Act.
13.	Karnataka Neeravari Nigam Limited	It is a wholly owned Government of Karnataka Company to plan, investigate, estimate, build, operate and maintain irrigation projects and also the works of Malaprabha and Ghataprabha-CADA (M & GP CADA) in the Krishna river basin of Karnataka, excluding the Upper Krishna Project.
14.	Krishna Bhagya Jala Nigam Limited.	It is a wholly owned Government of Karnataka Company to plan, investigate, estimate, build, operate and maintain irrigation projects of the Upper Krishna Project.
15.	Command Area Development authorities	For the comprehensive development of command areas of Tungabhadra project, Munirabad, Malaprabha and Ghataprabha Projects, Belgaum, Cauvery Basin Projects, Mysore.
16.	Krishna basin development Authority	Formulation and execution of schemes for the comprehensive development of the Krishna Basin.
17.	Karnataka Groundwater Authority	Established under Karnataka Ground water (Regulation and Control of Development and Management) Act, 2011. It advises the state government to declare an area to be a 'notified area' for the purpose of regulation of extraction of groundwater and steps to be taken to ensure augmentation of ground water resources. It grants permit for extraction of groundwater for personal or community

⁵ <https://www.karnataka.gov.in/ksac/projects-integrated-watershed.html>

⁶ <https://www.karnataka.gov.in/ksac/project-sujala.html>

		purpose in a notified area.
District Level		
1.	Zilla Panchayat	District level programmes on water shed etc.
2.	Urban Local Bodies	Water supply and sanitation facilities
3.	Karnataka Urban Water supply and Drainage Board	The board undertakes the investigation, preparation and execution of schemes for the regulation and development of drinking water and drainage facilities in the 213 urban areas of Karnataka State except Bangalore City.
4.	Bangalore Water Supply And Sewerage Board	The objective of the Board is to operate and maintain the water supply, head works, distribution and sewerage system including treating the sewage before discharging into natural valleys.
Village Level		
1.	Village Panchayats	Implementation of programmes associated with water at village level
2.	Water user Association	The association controls, maintains and monitors of any irrigation work either wholly or in part within its area (irrigation work on less than 2000 ha excluding major or medium irrigation project).
3.	Water user co-operative society	The society controls, maintains and monitors of any irrigation work either wholly or in part within its area. (irrigation work on more than 2000 ha excluding major or medium irrigation project). (2662 Water Users' Cooperative Societies (WUCS)

Source: CMDR (2003), Dharwad with additional inputs from GoK website

Assessment of Institutional and Regulatory Framework qua National Water Policy, 2012

The institutional and regulatory preparedness of the state as per thematic areas presented in National Water Policy-2012 (NWP) is collated in Table 2.

	Thematic Areas as per NWP-2012	What is to be explored	Status of implementation
1.	Public Policy on water resources to be informed of basic common principles	a. Whether state has a water policy	Yes. State Water policy, 2002 (hereinafter referred as 'water policy')
		b. Whether the state water policy is updated in view of NWP-2012?	No, the water policy has not been updated in view of NWP-2012.

		<p>c. Whether the sentiment articulated in NWP is echoed in state policies?</p>	<p>No, since it was made in 2002, all aspects covered under NWP are not covered. The stated objectives of the water policy are-</p> <p>4.1 Provide drinking water at the rate of 55 litres per person per day in the rural areas, 70 litres per person per day in towns and 100 litres per person per day in the city municipal council areas and 135 litres per person per day in city corporation areas.</p> <p>4.2 Create an ultimate irrigation potential of 45 lakh hectares under major, medium and minor irrigation projects. Facilitate creation of an additional irrigation potential of 16 lakh hectares by individual farmers using ground water.</p> <p>4.3 Improve performance of all water resources projects.</p> <p>4.4. Improve productivity of irrigated agriculture by involving users in irrigation management.</p> <p>4.5 Harness the hydropower potential of the State.</p> <p>4.6 Provide a legislative, administrative and infrastructural environment, which will ensure fair, just and equitable distribution and utilization of the water resources of the State to benefit all the people of the State.</p>
		<p>d. Any concrete action is taken?</p>	<p>There is no move to amend the water policy by the State government.</p>
<p>2.</p>	<p>Raising Awareness about criticality of water as a natural resource</p>	<p>a. Does water policy of the state say anything about water being a scarce, natural resource?</p>	<p>The water policy begins with acknowledging that state has very scarce water resources. Following specific section of the policy reiterates the same</p> <p>"6.21 The efficiency of utilization of water will be improved and awareness about water as a scarce resource fostered."</p> <p>For implementing the objectives of the policy, action agenda (which is a part of the policy) also envisages to formulate and implement projects and schemes of rainwater harvesting and recharging of underground water sources, with community participation. There is a thinking to encourage water conservation by providing incentives and disincentives.</p>
		<p>b. Does the state have a campaign running or any engagement with its citizens to create and foster this sentiment?</p>	<ul style="list-style-type: none"> • There are several schemes and programmes run by the state, which promote and encourage water conservation and water use efficiency. • Karnataka State Council for Science and Technology (KSCST) is the first state council in the country to be established to

			<p>address science and technology issues of the state.</p> <ul style="list-style-type: none"> • There is a Rainwater Harvesting Cell at KSCST for technical advice, planning and project implementation, an individual or an institution can approach the same. • The Karnataka Groundwater Authority is mandated to take steps for promotion of mass awareness and training programmes on Rain Water Harvesting and artificial recharge to ground water through government Agencies/Non-Government, Organizations (NGOs)/Educational Institutions/Industries/ Individuals and to take steps to extend incentives/subsidies to the farmers who are following water conservation and rain water harvesting/recharge schemes. • There was an amendment brought in 2009 in The Bangalore Water Supply and Sewerage Act to make rainwater-harvesting mandatory in the city⁷. • In the rural areas under Suvarna Jala Roof Top Rain Water Harvesting structures are being installed on the rural schools.
3.	Water quality and quantity	<p>a. Does the state water policy include a provision on right to access to minimum quantity of potable water for health and hygiene?</p> <p>b. Is there any law to guarantee this?</p>	<p>Yes, the very first stated objective of the state water policy is to- “Provide drinking water at the rate of 55 litres per person per day in the rural areas, 70 litres per person per day in towns and 100 litres per person per day in the city municipal council areas and 135 litres per person per day in city corporation areas.”</p> <p>There is no law specifically guaranteeing this right. However, following enactments can be construed to work towards achieving the same objective</p> <p>To undertake the investigation, preparation and execution of schemes for the regulation and development of drinking water and drainage facilities in the urban areas, there is Karnataka Urban Water supply and Drainage Board Act. Bangalore has its separate Board for this purpose for Bangalore Metropolitan area. Urban Local Body (ULB) supplies water under the board to people in the urban areas.</p>

⁷ “72A. Obligation to provide rain water harvesting structure.-Within nine months from the date of commencement of the Bangalore Water Supply and Sewerage (Amendment) Act, 2009 every owner or occupier of a building having a sital area of 2400 square feet and above or every owner who propose to construct a building on total area of 1200 square feet and above shall provide for rain water harvesting structure in such manner, with such conditions as may be provided in the regulations failing which the Board may cause such rain water harvesting structure and recover the cost from the owner or occupier, as the case may be, arrears of land revenue.” BWSSB has also issued detailed guidelines in this regard.

			<p>The Rural Development and Panchayati Raj Department is responsible for supplying water in rural areas. 90% of rural water supply is dependent upon ground water and there is Karnataka Groundwater (Regulation and Protection of Drinking Water) Sources Act 1999. This Act came in to force in December 2003 and prohibits sinking of bore wells with in 500 mts of sources of public drinking water. For water supply in rural areas, there is Karnataka Rural Water Supply & Sanitation Agency which was established under Rural Development & Panchayat Raj Department, Government of Karnataka with the main mandate to function as State Agency for Rural Water Supply and Sanitation Mission⁸.</p>
		<p>c. Does the State Water Policy contain an article or a position which places responsibility on citizens about protection and conservation of water sources in their immediate vicinity?</p>	<p>None specifically.</p>

⁸ There is state environment report 2003 which discusses the types of drinking water schemes put in rural areas and the basis on which the types of schemes to be put in a particular rural habitation is decided. This report is available at http://parisara.kar.nic.in/PDF/Rural_Urban_WSS.pdf

		<p>d. Is the institutional mechanism geared up to deliver this?</p>	<p>2002 water policy envisages several changes in the institutional framework for water governance in the state.</p>
		<p>e. Does the state provide the rights or powers to the Panchayat Raj Institutions, or citizens to independently initiate actions for protection and conservation of water sources in their immediate vicinity (article 48(a)(g) and 58 (a) of the Indian constitution specifically referred to these responsibilities related to water, and other natural resources)?</p>	<p>There are provisions in the Karnataka Panchayat Raj Act, 1993 providing powers to the Panchayat Raj Institutions to take actions for protection and conservation of water sources but it is circumscribed by the enactment of rules by the state government to that effect. The Act provides for enactment of byelaws by Grama Panchayat for conserving and preventing injury to sources and means of water supply and appliances for the distribution of water.⁹ Schedule 1 (section 58) of the act mentions the function of the Grama Panchayat qua drinking water to include construction, repair and maintenance of drinking water , wells, tanks and ponds, prevention and control of water pollution and maintenance of rural water supply schemes. Further, per section 58(1A)(iii) Gram panchayats are required to maintain water supply works either on its own or by annual contract by generating adequate resources. Subclause (xvii) requires them to protect the biodiversity of the area. Government of Karnataka as per section 59 of the said Act¹⁰ can assign functions of</p>

⁹ Section 78- Power of Grama Panchayat to make bye-laws regarding provision of water supply.- Subject to such rules as the Government may make in this behalf, a Grama Panchayat may make bye-laws for conserving and preventing injury to sources and means of water supply and appliances for the distribution of water whether within or without the limits of the Grama Panchayat, and for regulating all matters connected with the supply and use of water, and turning on ,or turning off, and preventing the waste of water, and construction ,maintenance and control of Grama Panchayat water works and pipes and fittings in connection therewith whether the property is of the Grama Panchayat or not.

¹⁰ 59. Assignment of functions.- (1) The Government may, by notification and subject to such conditions as may be specified therein,-(a) transfer to any Grama Panchayat the management and maintenance of a forest situated in the panchayat area;(b) make over to the Grama Panchayat the Management of waste lands, pasture lands or vacant lands belonging to the Government situated within the panchayat area;(c) entrust the Grama Panchayat with the collection of land revenue on behalf of the Government and the maintenance of such records as are connected therewith;(d) entrust such other functions as may be prescribed:Provided that no entrustment under clause (c) shall be made without the concurrence of the Grama Panchayat concerned:Provided further that when any transfer of the management and maintenance of a forest is made under clause (a) the Government shall direct that any amount required for such management and aintenance or an adequate portion of the

			management and maintenance of forests, waste land, pasture land or vacant land near that panchayat, to any Panchayat. The act endows upon Grama Sabha the duty to conserve and maintain public properties such as Gomala, tanks, tank beds, ground water, grazing grounds of the cattle, mines etc., within the limits of the Gram Panchayats. ¹¹
4.	Maintaining and sustaining Ecological needs and flows in a river	a. Is there any law or policy in the state which makes it mandatory to undertake a scientific study to determine the ecological requirement of water for a river?	Policy does not speak of E-flows
		b. If yes what is the implementation and monitoring of the same?	N.A.
5.	Adaptation to climate change	a. Has the state formulated state action plan for climate change and has the concerns regarding effect of climate change on water resources been integrated in to these plans. Are there district level climate change action plans being formulated within the regulatory framework	Yes the state has an action plan for climate change. As per Ist Assessment (2014) under the Karnataka State Action Plan for Climate change Impact on water resources has been discussed in detail in this report. This report was made in 2012 so the latest AR5, IPCC projections have not been taken in to account. The state action plan was considered by the expert committee on climate change but not yet endorsed by National Steering Committee on Climate Change. ¹² The district level climate change action plans are to be formulated.

income from such forest be placed at the disposal of the Grama Panchayat.(2) The Government may, by notification, withdraw or modify the functions assigned under this section.

¹¹ Section 3A

¹² As per information accessed on 16.01.2015 at <http://envfor.nic.in/ccd-sapcc>

		<p>b. Has the state begun to integrate the concerns of climate variability in to water resource management and planning by doing the following (this is only an illustrative list based on NWP-2012?</p>	<p>The SAPCC 1st assessment does indicate that these concerns are being taken in to account. Section 5.8 of the report¹³ tabulates intervention areas which include all possible concerns relating to climate change.</p> <p>However whether these are actually happening at the ground level is something that needs further study in this regard.</p>
		<p>c. Is there any special impetus to increasing water storage capacity?</p>	<p>There is no specific mention of the same in SPACC in implementation head under water resources section of the report where actions required for internalising the concerns of climate variability on availability of water resources are tabulated¹⁴.</p>
		<p>d. increase water use efficiency across all water using groups, agriculture, domestic, commercial and industrial?</p>	<p>Agriculture- the areas where water use efficiency is being looked at is reservoir efficiency, conveyance efficiency, on farm application, drainage efficiency. For canal based irrigation, canals are being lined for lessening seepage, use of drip/sprinkler system for irrigation are some of the measures being implemented. The State Water Policy 2002 talks about promotion of drip irrigation to improve water use efficiency in agriculture.</p> <p>Industrial-As per draft Karnataka industrial policy 2014-2019, Action has been initiated for supply of tertiary treated water to augment the water scarcity and to adopt water conservation measures. In Bangalore metropolitan area BWSSB is taking measures to ensure water use efficiency across all water users.</p>

¹³ SAPCC for Karnataka is available at <http://parisaramahiti.kar.nic.in/pubs/Karnataka-SAPCC-EMPRI-TERI-2012-03-22.pdf>

¹⁴ Please refer to page 98 of the report under the head, **implementation** at above mentioned location.

		<p>e. Are sustainable agricultural practices being adopted reshaped as per the water availability in a particular state or a region of a state?</p>	<p>There is an increased propagation of drip and sprinkle irrigation in the state.</p> <p>Karnataka Agriculture Policy 2006-aims at sustainable agricultural practices and some highlights are:</p> <ul style="list-style-type: none"> • The policy lays emphasis on promoting cropping patterns based upon water availability and has mapped out cropping Patterns For different zones in the state. Similarly, it is suggested that cultivation of paddy will be encouraged only under limited water conditions by popularising methods such as aerobic cultivation and SRI method of cultivation so that water use efficiency is increased. • Cultivation of high water consuming crops like paddy and sugarcane under tank and lift irrigation projects will be discouraged and these will be replaced by crops of high water use efficiency • Distribution of water by pipe system at distributory level will be done on pilot basis so that volumetric supply of water can be made with increased conveyance efficiency.
		<p>f. Is climate change variability included as criteria for water development projects?</p>	<p>At present it is not a criteria in water development projects.</p>
		<p>g. Are stakeholders being involved in inland-soil-water management planning for evolving different agricultural strategies, reducing soil erosion and improving soil fertility</p>	<p>Karnataka Water Resources Authority¹⁵ under chairmanship of the Minister for Water Resources was established in 2008 to provide a platform for the inclusion of stakeholders in decision processes, though it has not proved to be very effective¹⁶.</p> <p>Karnataka Agriculture Policy 2006</p> <ul style="list-style-type: none"> • Improving soil health is one of the goals under the policy • "Bhumi-Taiya Arogya" programme is a public private Partnership with the help of 20% contribution from the land owner

¹⁵ Government of Karnataka (2008). Government Order WRD 85 MBI 2008 dated September 8, 2008

¹⁶ http://202.138.105.9/empri/sites/default/files/docs/web/EMPRI_KSAPCC_2014-03-27.pdf (accessed on 3.12.2014)

			<p>and 80% from the State. In addition to manual intervention to restore soil health, agronomic conservation (reduced tillage, residue management and crop cover), integrated plant nutrient system, bio inoculums and application of green manure is being encouraged.</p> <ul style="list-style-type: none"> • It is proposed to bring in 'Soil Health Card' as a component of 'Raitha Mitra Pusthaka' with each individual farmer, whoever seeks the card at a nominal price. The 'Soil Health Card' will depict the present soil nutrient content, deficiencies as well as the requirement of various nutrients for the soil in order to bring it back to optimum fertility level. • The developmental strategies include soil moisture conservation and soil fertility improvement program through watershed approach.
6.	Augmenting water Supply and sanitation	<p>a. Are the states doing any of the following to augmenting water supply and provide access to sanitation</p> <p>Made recycling and reuse mandatory</p>	<p>There is mention in the policy for completion of all on-going and committed water resource development projects.</p> <p>Karnataka State Pollution Control Board (KSPCB) was in the process of making it mandatory for all industries and business establishments to reuse the water after recycling it. Karnataka would be the first state to do so. At present, there are more than 40,000 industries and business establishments in the state and the KSPCB has issued fresh consents for establishment to over 7,000 new industries and business establishments¹⁷</p>
		<p>b. its Rain water harvesting potential</p>	<p>There was an amendment brought in 2009 in The Bangalore Water Supply and Sewerage Act to make rain water harvesting mandatory for certain buildings¹⁸ in the metropolitan area of the city. There is a Rainwater Harvesting Cell at KSCST for technical advice, planning and project implementation, the same can be approached by an individual or an institution.</p> <p>Different departments are to spending under different developmental heads on rainwater</p>

¹⁷ <http://www.newindianexpress.com/states/karnataka/article1498297.ece>

¹⁸ New buildings on sites measuring 1,200 ft² and above; existing sites of 2,400 ft² and above

		harvesting structures.....In progress
	c. Desalination techniques	Karnataka Industrial Policy 2009-2014 ¹⁹ States that feasibility of setting up desalination plants and supply of recycled and treated waste water to industries would be explored to enable better cost recovery and as measure to conserve water resources
	d. Made water use efficiency mandatory	There are no mandatory provisions.
	e. Are there subsidies and incentives for recovery of industrial pollutants and recycling / reuse	The Karnataka Industrial Policy 2009-2014 will encourage enterprises ²⁰ for recycling of water and treatment of waste water.
	f. Are sewerage charges being put/removed in urban areas	Yes it is being undertaken in the Bangalore metropolitan area.
	g. What steps are undertaken to augment rural water supply?	Following are the steps undertaken for augmenting and supplying water to rural areas: <u>Bore wells with Hand pumps</u> Bore wells fitted with hand pumps are the major source of potable drinking water in rural areas. Since inception 213725 bore wells have been drilled in the State up to the end of March 2010. <u>Mini Water Supply Scheme</u> In this scheme water is pumped to a small tank (Cistern) fitted with 3 - 4 taps,

¹⁹ <http://www.karnatakaindustry.gov.in/documents/Karnataka%20Industrial%20Policy%202009-14%20English.pdf>

²⁰ Clause 5.10.3 of Karnataka Industrial Policy 2009-2014

			<p>from where water can be collected by households. Since inception of the programme to the end of March 2010, 34,073 Mini water supply schemes have been completed and commissioned.</p> <p><u>Piped Water Supply Scheme</u></p> <p>There are as of March, 2010, 24182 PW schemes have been completed and commissioned.</p> <p><u>Desert Development Programme (DDP)</u> In drought prone districts of Bagalkot, Bellary, Bijapur, Davanagere, Raichur and Koppal additional rural water supply schemes are being implemented under the Centrally Sponsored Desert Development Programme (DDP)</p>
7.	Ground water use and management	<p>a. Have the states done Aquifer mapping to know the quality and quantity of ground water</p>	<p>CGWB has done aquifer mapping for the state²¹. The groundwater quality is monitored by the Department of Mines and Geology through network laboratories in all districts of Karnataka. While surface water is not monitored routinely, its quality is assessed in cases of complaints. A state-of-the-art Hydrological Information System (HIS) has been established for the purpose.</p>
		<p>b. Does the state have a ground water law</p>	<p>There are two laws governing ground water in the state i.e. Karnataka Ground Water (Regulation for Protection of Sources of Drinking Water) Act, 1999 and Karnataka Groundwater (Regulation and Control of Development and Management) Act, 2011, which received the Governor's assent in April 2011.²²</p>

²¹ <http://cgwb.gov.in/AQM/Karnataka.pdf>

²² AS per the 2011 Act, many of the substantive provisions apply only in the notified areas. The Act regulates three main aspects of groundwater abstraction: • Owners of all existing types of wells were required to apply for grant of registration before the end of March, 2013; • Drilling companies were to register themselves and their machinery before June, 2013; • Anyone aiming to dig or drill a new borewell is required to seek prior permission. (The law does not apply to deepening of existing wells, a wide-spread practice.)

		<p>c. Is there a authority mandated to manage and conserve groundwater</p>	<p>There is a Groundwater Authority in the state. It has mandate under section 22 of the Karnataka Groundwater (Regulation and Control of Development and Management) Act, 2011 to take necessary steps for rainwater harvesting and identify rainwater recharge worthy areas in the state, irrespective of an area being notified or not as the spirit of this section is general in nature. The Authority is also mandated to take steps for promotion of Mass Awareness and Training Programmes on Rain Water Harvesting and Artificial Recharge to Ground Water through Government Agencies/Non-Government Organizations (NGOs) Voluntary Organizations (VOs) / Educational Institutions/Industries/ Individuals. The Act also requires the authority to take steps to extend incentives/subsidies to the farmers who are following water conservation and rain water harvesting/recharge schemes.</p>
		<p>d. Does the law protect over exploited aquifers, how?</p>	<p>As per the mandate of the Act, now permissions have to be obtained for drilling bore wells and drawing water for water-intensive crops in notified areas. The Act also has an impact on the existing 1 lakh existing bore wells, some 50% of which are estimated to be operating. In notified areas, well owners will be obliged to obtain registration certificates for continued use of groundwater which can be refused by the Groundwater Authority if certain conditions are not met.</p>
		<p>e. Is extraction of ground water linked with recharge of the same?</p>	<p>Not necessarily.</p> <p>In notified areas, which is the only area here the substantive provisions of the Ground water Act are applicable, a permit can be granted subject to conditions, including installation of rainwater harvesting and recharge structures. Commercial and industrial applicants may be subject to a longer list of additional conditions:</p>
8.	Integrated Watershed development	<p>a. Specific steps states are taking to ensure integrated watershed development.</p>	<p>Future vision for water sector development as articulated in the state water policy states Water resources planning, development and management will be carried out adopting an integrated approach for a hydrological unit such as River basin as a whole or for a sub basin, multi-sectorally, conjunctively for surface and ground water incorporating</p>

			<p>quantity, quality and environmental considerations. Development projects and investment proposal will be formulated and considered within the framework of river or sub-basin plan so that the best possible combination of options can be obtained for poverty alleviation, increasing incomes and productivity, equity, reduced vulnerability to natural and economic risks and costs. Solutions to water allocation and planning issues will be found adopting a demand management approach.</p> <p>There is a water and land management institute in Dharwad and an Advanced Centre for Integrated Water Resources Management(IWRM), a specialized institution being set-up by the Government of Karnataka.</p> <p>In order to effectively coordinate the efforts at integrated watershed development, Watershed Development Department was established in 2000. The department implements all the watershed schemes and projects under State Sector, Central Sector Schemes, Externally aided Projects as well as District Sector Schemes.</p>
		<p>b. Have statutory / administrative / departmental steps been taken in order to integrate / align the objective functions which may differ</p>	<p>It is the function of the watershed Development Department to co-ordinate with other line departments like Agriculture , Horticulture, Rural Development, Sericulture, Forestry, Fisheries, Industries & commerce, Women & child development, UAS, NABARD and international organizations like DANIDA, World Bank etc. to achieve its goals of integrated watershed development.</p>
		<p>c. Are water sources and their catchment areas being looked at in totality?</p>	<p>Yes, there are being looked at one hydrological units</p>
		<p>d. Have steps been taken to avoid duplication of overhead costs in order to create synergies</p>	<p>No information is available</p>

		e. Are developmental laws harmonised with the need of integrated watershed development.	No information available ²³
		f. Have other development related laws been amended or harmonized in order to avoid contradictions (e.g. The Indian Easement Act 1882 and the confusion regarding ownership of groundwater, and / or surface water)	No information available
9.	Demand Management and Water use efficiency	a. Is there any specific law mandating quantum of water for a particular use i.e. benchmarking of water usage for different uses in industrial water usage	There is no law
		b. Any penalty for wastage of water and incentive for water use efficiency	No information available
		c. Any efficiency benchmark at which irrigation projects have to perform and function	There are no efficiency benchmarks for irrigation projects in the state

²³ On basis of desk based research no such information was available.

		<p>d. What are the existing schemes providing incentives for engaging in cropping pattern using micro irrigation (drip, sprinkler, etc.), automated irrigation operation, evaporation-transpiration reduction, etc.</p>	<ul style="list-style-type: none"> • <u>Micro Irrigation Scheme</u> is implemented by the Department of Horticulture with the objective of better utilization of available water. It will be a Centrally Sponsored Scheme under which out of the total cost of the MI System, 40% will be borne by the Central Government, 35% by the State Government and the remaining 25% will be borne by the beneficiary either through his/her own resources or soft loan from financial institutions (the subsidy for Drip Irrigation in Bijapur & Kolar districts is 100%) During 2011-12, an amount of Rs. 124.43 Crores subsidy has been given to the beneficiaries for the installation of Drip Irrigation in area of 43,783 hectares. 75% subsidy is given to encourage installation of drip irrigation in horticulture crops in all the districts of the State. • <u>Micro irrigation Monitoring System</u> has been developed for submitting the online applications. This enables to maintain transparency in seniority list and quick clearance of drip applications. • Subsidy is being directly given to the farmers through the Electronic Clearance System (ECS). • Govt. Is promoting sprinkler irrigation method for crops under centrally sponsored scheme.
		<p>f. Any scheme being used in the state which encourages people to use water use efficient gadgets</p>	<p>No information available²⁴</p>

²⁴ On basis of desk based research no information is available.

		<p>g. Is there a mechanism to conduct water audits –voluntary or mandatory</p>	<p>The State Water Policy 2002 mentions about making water accounting and audit mandatory. Water Auditing is the most important factor in water management. The time gap between excess flows in canals and control over these flows is very high. Therefore, to achieve concurrent water audit, real time measurement and flow of water, telemetry with electronic flow meters was piloted successfully in the Ghataprabha irrigation system (GLBC)</p>
10.	Water pricing	<p>a. Is there a mechanism for water pricing?</p>	<p>The State Water Policy 2002 endeavours to fix water rates for various uses to cover at least the operation and maintenance charges of providing services.</p> <p>The Karnataka Urban Drinking Water And Sanitation Policy, 2003 talks about establishing “appropriate cost recovery mechanism through adequate tariff to ensure that revenues cover operations and maintenance costs, debt service plus a reasonable return on capital.”</p> <p>The policy applies to supply of water in the urban areas and it aims at achieving 100 percent metering and volumetric pricing for the water supplied.</p> <p>There is a mechanism for water pricing for water supplied to the Bangalore Metropolitan Area. The Bangalore Water Supply and Sewerage Board established under the Bangalore water supply and Sewerage Act, 1964 is empowered to levy water charges/rates/fees for the water supplied for domestic and non-domestic purposes within the Bangalore Metropolitan Area.</p> <p>The Karnataka Water Supply and Drainage Board established as per Karnataka Urban Water Supply and Drainage Board Act, 1973 is in-charge of supplying water in urban areas other than city of Bangalore. The Board can levy and collect water rates, fees, rentals and other charges as specified by the State Government.</p>

		b. Has Water Regulatory Authority been established	The state has not established Water Regulatory Authority
		c. What is the water pricing methods being followed?	<p><u>Urban Areas</u> The Bangalore Water Supply and Sewerage Board which is levying and collecting water charges/rates/fees for the water supplied for domestic and non-domestic purposes within the Bangalore Metropolitan Area operates on a 'no profit no loss' principle and all components of O&M cost is taken into account for evolving price for the water supplied.</p> <p>The Karnataka Water Supply and Drainage Board which is levying and collecting water rates, fees, rentals and other charges as specified by the State Government/ Municipal Corporation from the consumers in areas other than Bangalore Metropolitan Area.</p>
		d. Has water pricing been rationalised? If yes how? If no why?	<p><u>Urban Areas</u> The Bangalore Water Supply and Sewerage Board which is levying and collecting water charges/rates/fees for the water supplied for domestic and non-domestic purposes within the Bangalore Metropolitan Area operates on a 'no profit no loss' principle and there is rationalisation of water pricing.</p> <p><u>Rural Areas</u> The Karnataka Panchayat Raj Act, 1993 empowers²⁵ the Grama Panchayat (GP) to maintain drinking water supply structures by raising resources for the same. The Grama Panchayat is responsible for collecting water charges in rural areas and operations and maintenance of water supply schemes such as Mini Water Schemes (MSW) and Piped Water Schemes (PWS). The collections of water charges differ vary from one GP to another. The water taxes are not based on the cost incurred</p>

²⁵ Section 58 1A (iii) (iii) The Karnataka Panchayat Raj Act, 1993 -maintaining water supply works either on its own or by annual contract by generating adequate resources;

			<p>on operations and maintenance; charges are based on the discretion of the GPs. The cost of O&M is much higher than the amount charged by the GP. There is no rationalisation of water charges being recovered by GP.</p>
		<p>e. Are water charges being recovered from the consumers?</p>	<p><u>Urban Water Supply for drinking and sanitation</u></p> <p>The Karnataka Water Supply and Drainage Board is levying and collecting water rates, fees, rentals and other charges as specified by the State Government from the consumers.</p> <p>The Bangalore Water Supply and Sewerage Board is levying and collecting water charges/rates/fees for the water supplied for domestic and non-domestic purposes within the Bangalore Metropolitan Area on 'no profit no loss' principle from the consumers.</p> <p><u>Rural Water Supply for drinking and sanitation</u></p> <p>The Karnataka Panchayat Raj Act, 1993 empowers²⁶ the Grama Panchayat (GP) to maintain water supply structures by raising resources for the same. The collections of water charges differ vary from one GP to another. The water taxes are not based on the cost incurred on operations and maintenance; charges are based on the discretion of the GPs. The cost of O&M is much higher than the amount charged by the GP.</p>

²⁶ Section 58 1A (iii) (iii) The Karnataka Panchayat Raj Act, 1993 -maintaining water supply works either on its own or by annual contract by generating adequate resources;

		<p>f. Are Water Users Associations (WUAs) are involved in the process of fixing rates of water</p>	<p>Under the Karnataka Irrigation Act, 1965, water users society²⁷, water user association²⁸, Water Users Distributary Level Federation²⁹, Water Users Project Level Federation³⁰, Water Users Apex Level Federation have been established. The water users society and water user association can levy³¹ and collect water charges and service charges from the land holders.</p>
		<p>g. Are Water Users Associations (WUAs) given statutory powers to collect and retain a portion of water charges, manage the volumetric quantum of water allotted to them and to maintain the distribution system in their jurisdiction?</p>	<p>The water users society and water user association have been given statutory power under the Karnataka Irrigation Act, 1965 (Amending Act 24 of 2000) to levy and collect water charges and service charges from the land holders both members and non-members alike.</p> <p>The functions of water users society³² and water user association³³ as per Karnataka Irrigation Act, 1965 is to procure water in bulk on volumetric basis from the Irrigation Department or Krishna Jala Bhagya Nigama or</p>

²⁷ Section 2(s) Karnataka Irrigation Act, 1965 "Water Users Society" means a Water Users Co-operative Society registered under the Karnataka Co-operative Societies Act, 1959 (Karnataka Act 11 of 1959),-

(a) members of which consist of not less than sixty percent of the Water Users for cultivation of land; or

(b) majority of members of which consist of Water Users for cultivation of land and holding not less than fifty one percent of land, under an irrigation work within the area of operation of the society 1[but excluding a tank irrigating less than two thousand hectares and not falling within the command area of a major or medium irrigation project.

Explanation.- For the purposes of this clause "area of operation " means an area comprising a contiguous block of land within an irrigation work as may be notified by the Irrigation Officer. from time to time

²⁸ Section 2 (pp) Karnataka Irrigation Act, 1965 "Water Users Association" means "a Water Users Association registered under the Karnataka Societies Registration Act, 1960 (Karnataka Act 17 of 1960),-(a) members of which consist of not less than sixty percent of the Water Users for cultivation of land; or(b) majority of members of which consist of Water Users for cultivation of land and holding not less than fifty one percent of land; under an irrigation work being a tank irrigating less than two thousand hectares but excluding tanks within the command area of a major or medium irrigation project.

²⁹ Section 2 (q) Karnataka Irrigation Act, 1965 "Water Users Distributary Level Federation" means a Federation of Water Users Societies at Distributary Level registered under the Karnataka Co-operative Societies Act, 1959 (Karnataka Act 11 of 1959) the members of which consist of not less than fifty one percent of the Water Users Societies within an area in relation to a distributary of a major or medium irrigation project, as may be notified by the State Government;

³⁰ Section (r) Karnataka Irrigation Act, 1965 "water Users Project Level Federation" means, -(i) in the case of a major irrigation project, a Federation of 1[Water Users Societies or]1 Water Users notified by the State Government;

³⁰ Section (r) Karnataka Irrigation Act, 1965 "water Users Project Level Federation" means, -(i) in the case of a major irrigation project, a Federation of 1[Water Users Societies or]1 Water Users Distributary Level Federations at the project level registered under the Karnataka Co-operative Societies Act, 1959 (Karnataka Act 11 of 1959) the members of which consist of not less than fifty one percent of 1[Water Users Societies or]1 Water Users Distributary Level Federation within an area in relation to the major irrigation project as may be notified by the State Government; (ii) in the case of a medium irrigation project, a federation of Water Users Societies at the project level registered under the Karnataka Co-operative Societies Act, 1959 (Karnataka Act 11 of 1959) the members of which consist of not less than fifty one percent of Water Users Societies within an area in relation to the medium irrigation project as may be notified by the State Government;

(iii) in the case of a minor irrigation or lift irrigation works, a federation of Water Users Societies in relation to such minor irrigation or lift irrigation works registered under the Karnataka Co-operative Societies Act, 1959 (Karnataka Act 11 of 1959) the members of which consist of not less than fifty one percent of Water Users Societies within such area as may be notified by the State Government;

³¹ Section 62A (4) Karnataka Irrigation Act, 1965

³² Section 62A (2) Karnataka Irrigation Act, 1965

³³ Section 62AA (2) Karnataka Irrigation Act, 1965

			Karnataka Neeravari Nigam and distribute it to the land holders amongst its area of operation.
11.	Scientific assessment of water resources and Database, information system	a. Institutions involved in the scientific assessment of the water resources	<ul style="list-style-type: none"> • The Water Resources Development Organisation involved in collection and publication of Hydrological and Hydro-meteorological data for the state, designing of water resources projects. • Karnataka State Council for Science and Technology (KSCST) an autonomous organization under Department of Science & Technology, Government of Karnataka is involved with scientific assessment of water resources and for collating data related to it especially groundwater(quality, depth of water table), preparation of drinking water quality maps. The council set up Karnataka Natural Resources Data Management System (NRDMS) program and also established District NRDMS Centres in the state. Karnataka State level Spatial Data Infrastructure (KSSDI) called Karnataka Geoportal is a centralized single window access mechanism for all the spatial data acquired by various agencies in Government of Karnataka primarily to support planning activities of the Panchayati Raj Institutions (PRIs), district/state line departments, Urban Local Bodies (ULBs) and civil society organizations in the State. KSSDI is an Internet based GIS Directory for the state. • Central Ground water Board is involved with assessment of groundwater resources in the state. • Department of mines (Groundwater wing) is also involved in hydrological survey and identification of watersheds.
		b. How is the state organising its hydrological database and using it for decision making.	Water Resources Development Organisation and Karnataka Natural Resources Data Management System (NRDMS) is involved in this process of using data from these resources for planning.
		c. Which institutions and regulatory bodies are involved in the collection of Data	<ul style="list-style-type: none"> • Water Resources Development Organisation • Central Ground water board • Department of mines and geology (groundwater wing) • Karnataka State Council for Science and Technology (KSCST)

		d. What are the different types of Data being collected at the state level	<ul style="list-style-type: none"> • Groundwater quality is monitored by the Department of Mines and Geology through network laboratories in all districts of Karnataka • Collection of groundwater data by Central Ground water board • Hydrological Information System (HIS) has been established.
12	Allocation and uses of water	a. Is there a mechanism for water allocation amongst different competing uses	The State water Policy 2002 specifies priorities for allocation of water amongst competing uses, though mechanism is not prescribed.
		b. If yes, the criteria and principles followed for allocation	Presently, there is no mechanism for allocation of water
		c. Are principles of equity and social justice being followed for water allocation	Presently, there is no mechanism for allocation of water
		d. The existing mechanism for dispute resolution in allocation of water	Presently, there is no mechanism for allocation of water
		e. Have the water uses have been prioritized, and has the basic needs principle been adopted; e.g. Reservation of water for drinking (inclusive of cattle) drinking and domestic purposes	<p>The State Water Policy 2002 mentions the priority of order in which water is to be utilised. It states In planning and operation of water resources projects, water allocation priorities shall be broadly as follows :</p> <ol style="list-style-type: none"> Drinking water Irrigation Hydropower Aquaculture Agro industries

			<p>f. Non-Agricultural Industries</p> <p>g. Navigation and other uses</p>
		<p>f. Has the state policy defined the procedure of allocation of scarce water between sectors? e.g. Drinking and domestic, agriculture, industry, Hydro-power etc, in order to achieve optimal use</p>	<p>There is no procedure for allocation of water amongst different uses.</p>
		<p>g. Between the principle of satisfying basic needs and the principle of ability to pay (pricing), which one will be given preference and / or priority?</p>	<p>There is no procedure for allocation of water amongst different uses. The Water policy ascribes highest priority to drinking water.</p>
13	Management Of Flood & Drought	<p>a. What is the regulatory mechanism to prevent loss of land eroded by the river, which causes permanent loss, revetments, spurs, embankments, etc.,</p>	<p>There is no regulatory mechanism to prevent loss of land eroded by the river, which causes permanent loss, revetments, spurs, embankments, etc.</p>

		<p>b. Is there an institutional setup for flood forecasting using real time data acquisition system and linked to forecasting models?</p>	<ul style="list-style-type: none"> • The Krishna and Godavari Basin Organisation (KGBO) set up by Central Water Commission has set up Krishna & Co-ordination Circle comprising of eight flood forecasting stations under Krishna basin, out of which four are in Karnataka and four are in Andhra Pradesh. Under the flood forecasting scheme, 30 Wireless stations were established in Krishna Basin for transmitting the gauge, discharge and rainfall data on real-time basis. • The Minor Irrigation Department is implementing river bank protection works to prevent damages to river banks due to floods. • There is Karnataka State Natural Disaster Monitoring Centre (KSNDMC) has been set up for monitoring any occurrence of flood situation.
14	Integrated Water Resources Management	<p>a. Has the state incorporated river basin / sub-basin as a unit as the main principle for planning, development and management of Water resources.</p>	<p>The State Water Policy 2002 incorporates river basin as the basic unit for “water resources planning, development and management will be carried out adopting an integrated approach for a hydrological unit such as River basin as a whole or for a sub basin, multi-sectorally, conjunctively for surface and ground water incorporating quantity, quality and environmental considerations.”</p> <p>There is Karnataka Cauvery Basin Irrigation Protection Act, 1991, but the limited purpose of this enactment is to protect the interest of the general public for the protection and preservation of irrigation in the irrigable areas of the Cauvery basin in Karnataka, dependent on the waters of Cauvery river and its tributaries.</p>
		<p>b. Are there river basin ³⁴management authorities established by the state government</p>	<p>The state has established the Krishna Basin Development Authority under the Karnataka Krishna Basin Development Authority Act, 1992 to develop the Krishna river basin area lying within the state.</p> <p>The state has also established Command Area Development authorities under the Karnataka Command Areas Development Act, 1980 for</p>

			<p>comprehensive development of command areas of Tungabhadra project, Munirabad, Malaprabha and Ghataprabha Projects, Belgaum, Cauvery Basin Projects, Mysore. The Tungabhadra Board was established in 1953 by a notification by the President as per the Andhra State Act, 1953 to implement Tungabhadra project. The construction of the Tungabhadra project was completed with completion of the Right Bank High Level Canal in 1970. Presently, the Board performs the function of regulation of supplies of water to the States of Andhra Pradesh and Karnataka in accordance with the clause IX E(1) to (5) of Final Order of the Krishna Water Disputes Tribunal (K.W.D.T) relating to the Tungabhadra Project. It also regulates generation of power from the two powerhouses on the right side and develops new schemes for hydropower generation on common facilities and its regulation.</p>
		<p>c. What are the functions and powers of the river basin management authorities</p>	<p>The functions³⁵ of the Krishna basin development Authority established under the Karnataka Krishna Basin Development Authority Act, 1992 are as follows:</p> <ul style="list-style-type: none"> (a) to undertake planning, investigation, estimation, execution, operation and maintenance of all irrigation project and works; (b) to promote and operate schemes for irrigation water supply and drainage; (c) to promote and control navigation in the river and its tributaries, canals and channels; (d) to formulate and execute schemes for the comprehensive development of the Krishna Basin; (e) to undertake resettlement and rehabilitation of the people affected by the construction of the projects and works in the Krishna Basin; (f) to construct proper drainage systems and take such other measures as are necessary to prevent water logging and salinity in the Krishna Basin; (g) to undertake measures for protection and improvement of the environment including the treatment of catchment areas of the projects and works <p>The major functions of the Command</p>

³⁵ Section 7 Karnataka Krishna Basin Development Authority Act, 1992

			<p>Area Development Authorities formed under Karnataka Command Areas Development Act, 1980 are as hereunder:</p> <ol style="list-style-type: none"> 1. Reclamation of water logged areas. 2. Construction of field irrigation channels (FIC). 3. Construction of field drains. 4. On-farm development (OFD). 5. Adoption of warabandi system for distribution of water. 6. Adoption and enforcement of suitable cropping pattern. 7. Conjunctive use of surface and ground water. 8. Extension training and demonstration Programmes. 9. All round development of areas pertaining to agriculture. Implementation of Participatory Irrigation Management.
15	Planning and Implementation of water resource projects	a. What is the level of participation of local governing bodies like Panchayats, Municipalities, Corporations, etc., and Water Users Associations, in planning of Water resource projects.	<ul style="list-style-type: none"> • Water Resources Development Organisation is involved in planning of Major & Medium Irrigation Projects, establishing, maintenance, collection and publication of Hydrological and Hydro-meteorological data of the entire State. There is no involvement of local governing bodies in planning of these projects. • Karnataka Neeravari Nigam Limited (a government company) is involved in planning, investigation, building, operating and maintaining irrigation projects and the works of Malaprabha and Ghataprabha-Command Area Development Authority in the Krishna river basin of Karnataka, excluding the Upper Krishna Project. • Krishna Bhagya Jala Nigam Limited (government company) is involved in planning, investigation, building, operating and maintaining irrigation schemes of Upper Krishna Project (UKP)

		<p>b. Are the needs and aspirations of the Scheduled caste and Scheduled Tribes, women and other weaker sections of the society being taken into consideration in the planning process</p>	<p>There is no concrete information available on this aspect</p>
		<p>c. Is there an institutional mechanism in the form of a single window clearance for all clearances, including environmental and investment clearances, required for implementation of projects to avoid the economic losses</p>	<p>No, there is no single window clearance</p>
<p>16</p>	<p>Conservation of river corridors, water bodies and wetlands</p>	<p>a. What is the prevalent institutional structure for conservation and management of river corridors, water bodies, wetlands within the state?</p>	<p>The Lake Development Authority was created vide Government Order No.FEE/12/ENG/02, Bangalore, Dated. 10th July 2002. It is a registered society under the Karnataka Societies Registration Act, 1959 and a non-profit organization working solely for the regeneration and conservation of lakes within BMRDA jurisdiction.</p> <p>However, from 30.04.2003 the Lake Development Authority's jurisdiction has been extended over the lakes in city municipal corporations in the State as well as lakes in the city Municipalities which are the main sources for drinking water. The Lake Development Authority is responsible for:</p> <ul style="list-style-type: none"> • Restoring lakes and facilitating restoration of depleting ground water table. • Diverting/treating sewage to generate alternative; sources of raw water and prevent contamination of underground aquifers from wastewater. • Environment impact Assessment studies. • Environmental Planning and GIS Mapping of lakes and surrounding areas. • Improving and creating habitat for water birds and wild plants. • Reducing sullage and non-point water

			<p>impacts.</p> <ul style="list-style-type: none"> • Improving urban sanitation and health conditions especially for the weaker sections living close to the lakes. • Impounding run-off water to ensure recharge of ground water aquifers and revival of borewells. • Monitoring and management of water quality and lake ecology. • Utilizing the lakes for the purpose of education and tourism. • It also has the governing council which has the powers to among other things: • Frame regulations, byelaws
		<p>b. Is there community participation in the conservation of river corridors, water bodies, wetlands?</p>	<p>The Lake Development Authority is mandated to ensure community participation and raising public awareness programmes for lakes conservation.</p>
		<p>c. What are the institutional and regulatory measures to deal with encroachments and diversion of water bodies, wetlands in rural and urban areas?</p>	<p>Under the Karnataka Municipal Corporation Act, 1976 provision is there in urban areas to deal with unauthorised occupation of land belonging to the corporation and punishment in the form of imprisonment for a term extending to 3 years and imposition of fine of five thousand rupees.³⁶ There is no specific provision to deal with encroachments and diversion of water bodies, wetlands.</p> <p>There are provisions in the Karnataka Land Revenue Act 1964 that provide for assignment of land for special purposes and which cannot be used for any other purpose without the sanction of the Collector. The state government can assign land around water bodies and wetlands for specific purpose of protecting their catchment areas, then their diversion of regulated as per law. These provisions can be creatively used for wetland protection.</p> <p>Though, there are no specific regulatory measures to deal with encroachments around wetlands per se, provisions in</p>

³⁶ Section 436A Karnataka Municipal Corporation Act, 1976

			Karnataka Land Revenue Act, 1964 and Karnataka Municipal Corporation Act, 1976 can be used for their protection
		d. Besides participation, has the community or an individual being given the right (duty and responsibility) to protect and conserve water sources?	No information available

Whether the present institutional and regulatory framework is adequate to implement the National Water Policy-2012?

The State Water Policy-2002 ('water policy') was formulated keeping in mind the mandate of the then prevailing National Water Policy, 2002 and it is evident from the water allocation priorities in the water policy, which is- a. Drinking water b. Irrigation c. Hydropower d. Aquaculture e. Agro industries f. Non-Agricultural Industries and g. Navigation and other uses. NWP-2012 additionally lays emphasis upon setting aside water for ecological needs of the river to be determined scientifically to accommodate developmental needs. Water Policy does not address this aspect and neither is there any reflection of this concept in the regulatory regime of the State. However, there was a move³⁷ (2002) in the state to enact a law for constituting a riverbed authority for conservation of river waters, but the same has not seen the light of the day.

At the first instance, the state is required to amend the state policy to reflect the new reality in the form of NWP-2012 and also incorporate regulatory changes brought in by the state in the form of new enactment such as Karnataka Ground water (Regulation and Control of Development and Management) Act, 2011.

The water policy aimed at establishing a State Water Resources Board providing institutional support for multi-sectoral water planning, inter-sectoral water allocation, planning of water development programmes, management decisions, and resolution of water resources issues. The Water Resources Development Organization was to act, as technical secretariat for the State Water Resources Board. A State Water Resources Data and Information Center was also to be established. The state has not set up a State Water Resources Board or a State

³⁷ <http://www.thehindu.com/2002/01/08/stories/2002010803080300.htm>

Water Resources Data and Information Center. There is no regulatory mechanism in the state for resolving inter-sectoral water allocation and water resources issues. NWP-2012 lays emphasis on setting up an independent statutory Water Regulatory Authority for determining 'equitable access to water for all and its fair pricing, for drinking and other uses such as sanitation, agricultural and industrial'.

The recurring theme in NWP-2012 is efficient use of water and its optimum utilization by different sectors achievable through a system of evolving benchmarks for water uses for different purposes, i.e. water footprints, and water auditing to promote and incentivize efficient use of water. Water use efficiencies are to be incorporated at the 'project' and 'basin' level through a continuous process of undertaking water accounting and water balance studies. This aspect is presently not addressed at the State level, though can be undertaken through existing basin level authorities such as Krishna Basin Development Authority.

NWP-2012 underlines the need for institutionalising community-based participation in water management. The State amended its Karnataka Irrigation Act, 1965 to establish water users society, water user association, Water Users Distributary Level Federation, Water Users Project Level Federation, Water Users Apex Level Federation. Water Users Association and Water Users Society is involved with the function amongst others of developing irrigation infrastructure, procuring water in bulk on volumetric basis for equitable distribution to the land holders for irrigation and collection of water and service charges from the landholders. The Act excludes establishment of water Users Association and Water Users Society falling within command area of major or medium irrigation project. Karnataka Command Areas Development Act, 1980 covers such an area and the Command Area Authority constituted under the act is empowered to levy and collect charges for the maintenance and repairs of irrigation channels or drain channels from the beneficiaries, though there is no community participation in this process. There is a need for incorporating community-based participation in water management in such command areas.

Conservation of rivers, river corridors, water bodies and/or associated wetlands, the flood plains, ecological buffer areas are to be managed in an integrated manner to balance the environmental and social issues as per NWP-2012. The institutional and regulatory framework on wetlands and water bodies is inadequate in the state and water policy is silent on this issue. There is a Lake Development Authority for Bangalore established under an executive order of the state government. A dedicated statutory authority empowered to take action for preservation of wetlands and water bodies through community participation is required for the state.

Pricing of water and collection of water charges/rates covering operation and maintenance charges inadequately addressed within the regulatory regime of the state. In rural areas Grama Panchayat (GP) is empowered as per The Karnataka Panchayat Raj Act, 1993 to maintain drinking water supply structures by raising resources for the same. The Grama Panchayat is responsible for collecting water charges in rural areas and operations and maintenance of water supply schemes such as Mini Water Schemes (MSW) and Piped Water Schemes (PWS). The collections of water charges differ vary from one GP to another. The water taxes are not based on the cost incurred on operations and maintenance; charges are based on the discretion of the GPs. The cost of O&M is much higher than the amount charged by the GP. There is no rationalisation of water charges being recovered by GP. Water supply in urban areas faces similar challenge, with the exclusion of Bangalore Water and Sewerage Board, which operates on 'no profit no loss' model. Water Policy talks about revision of water rates in a phased manner to recover the operation and maintenance

charges of providing services. NWP-2012 underlines the need for adoption of economic principles for water pricing while retaining 'principle of differential pricing' for the pre-emptive uses of water for drinking and sanitation and priority allocation for ensuring food security and supporting livelihood for the poor for more efficient uses of water.

The regulatory mechanism on water harvesting needs to be harmonised for bringing in the requisite changes in water use patterns and more emphasis to be placed on recycle and reuse of water and for evolving a system to incentivise water conservation.

A significant addition to NWP-2012 is recognition of impact of climate change on available water resources and consequent impacts upon human health and livelihoods. There is a need to adopt measures at a micro level to mitigate its effect through enhancement of community's capabilities through technological options. The measures to be adopted are increasing water storage in its various forms, namely soil moisture, ponds, ground water, small and large reservoirs. Further, measures to incentivize water storage capacity, including revival of traditional water harvesting structures and water bodies is the need of the hour. The state has formulated an action plan for climate change. As per 1st Assessment (2014) under the Karnataka State Action Plan for Climate Change impact on water resources are discussed in detail in this report. This report was made in 2012 so the latest AR5, IPCC projections have not been taken in to account and needs to be revised. As per available information, the district level climate change action plans are still to be formulated which needs to include measures for revival of traditional water harvesting structures and water bodies to bring it in consonance with NWP-2012.

Any informed decision making presupposes availability of good quality data and the same is accentuated by NWP-2012. An integrated database of all water related data like rainfall, geo-morphological, climatic, geological, surface water, ground water, water quality, ecological, water extraction and use, irrigated area, etc., in well defined online formats is required. There are different departments and agencies maintaining data relating to water in the state, which requires harmonisation and setting up of a dedicated State Water Resources Data and Information Center as envisaged in water policy.