

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

## Final Report

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## Executive Summary

Water, barring interstate rivers and their management is a state subject under the Constitution of India. Accordingly, sustainable management and equitable utilization of water resources is the primary responsibility of state governments who are faced with incremental challenges related with water availability, quality, supply, competing demands among different users and importantly lack of requisite regulatory and institutional framework for the effective governance of water resources at the local level. Different states have adopted different policy approaches to address some of these challenges. However, given the very nature of water as a unified resource, it is desirable that a national perspective on effective water governance and its sustainable management is in place.

During the formulation of the 12<sup>th</sup> Five Year Plan (2012-2017) a fundamental change in the principles, approaches and strategies in water, management in India was sought at the national level. This 'paradigm shift' in water governance in the country is conceived in the wake of growing water crisis that threatens the basic right to drinking water and livelihood of millions of citizens and in recognition of the fact that the demands of a rapidly industrializing economy and urbanizing society are increasing at an exponential rate and come at a time when the potential for augmenting water supply to industries and urban areas is limited. Broadly, the new approaches and strategies involved: *bringing in large irrigation reforms, focus on the groundwater management particularly through participatory aquifer management, enhancing the understanding of ground-water energy nexus, watershed restoration and groundwater recharge, adopting new strategies to rural drinking water and sanitation, conjoint water and urban wastewater management, industrial water management, focus on non-structural mechanisms for flood management, need for comprehensive water database management and the need for legal and institutional reform.* Reflection of this 'paradigm shift' is evident in the National Water Policy, 2012 (NWP). The NWP as an embodiment of principles and approaches that are considered critical from the perspective of national water security, among other things, envisages the need for a 'National Water Framework Law', which shall contain certain basic principles for water governance to be respected and adhered to by the states and implementing agencies. Subsequently, two drafts of a 'water framework law' were floated, one by the sub-group constituted by the Planning Commission and the other by the Ministry of Water Resources and Ganga Rejuvenation. In addition to this the NWP 2012 requires that the state level policy and legal framework on water governance conforms to the principle and approaches adopted in the NWP therein. **Particularly, the policy calls upon review of all state water policies in order to bring them in consonance with NWP.**

It is in this background that a comprehensive assessment of state level policy and regulatory framework on water resources in the three selected states of Maharashtra, Meghalaya and Karnataka has been carried out to assess the preparedness of these states in terms of regulatory and institutional framework to respond to the directives of the NWP. The assessment is based on 16 thematic areas covering key concepts, principles and approaches that are the basis for water sector reforms from a unified national perspective attempted through the NWP. Thus, for example, thematic areas include public policy to be informed of basic principles fundamental to the equitable governance of water resources, maintaining and sustaining ecological needs and flows, adaptation to climate change, water use efficiency, water pricing and integrated water resource management. Not only the water

policy framework has been studied but the role and impact of other allied legislation such as urban laws, Panchayat (decentralized governance) laws and land laws has been analyzed.

The legal analysis revealed different level of evolution and development of state specific policy and regulatory framework in the three study states. This does not necessarily mean that the state level water framework is completely narrow in their approaches to deal with this vital resource. However, not all the principles and paradigms contained in the NWP are clearly articulated in the state water policies. Importantly, recognition of water as a public resource held under Public Trust by the state needs to be reflected more clearly so as to ensure that the management of water resources in the states is carried out based on this important Common Law Principle, among others. The legal framework in states that are considered to have carried out progressive water sector reforms and have enacted progressive legislations or have created dedicated institutional mechanism in the form of water resource regulatory authorities needs considerable strengthening. Thus, for example, in Maharashtra, the Maharashtra Water Resources Regulatory Authority (MWRRA) created under the MWRRA Act, 2005 is a quasi-judicial body that cannot implement its own orders. The implementation experience of the MWRRA also suggests that largely the Authority has been involved in setting bulk water tariff while other areas of effective water resource governance such as use efficiency, access, regulation of groundwater and equitable distribution need considerable attention in the state. Karnataka and Meghalaya have not enacted any specific legislation for creating a dedicated water regulatory body in the state.

The Policy Frameworks in the studied states have also shown mixed trends in terms of containing progressive elements conforming to the NWP or the lack of them. Thus, for example Maharashtra Water Policy, 2003 does not reflect Basic Principles as provided by the NWP, particularly the principle that water resources be held in public trust by the state. The principles prescribed under the Maharashtra Water Policy (MWP) are more towards the management of water resources than towards equitable and social justice aspects. Principle of equity and social justice to inform use and allocation of water does not emerge very clearly under the MWP. The thrust of the MWP, based upon a five-pronged strategy, is on restructuring of roles and relationship of the state and water users. However, the MWP contains very progressive provision on certain aspects such as creation of water awareness right from the school level, creation of a legal and institutional framework pursuant to which it has created the MWRRA and maintaining important ecological values within rivers and adjoining lands. The Karnataka Water Policy, 2002 (KWP) also needs revisiting to carry out amendments conforming to the NWP. The existing KWP does not address the aspect of ecological needs of rivers and flows, for instance. The KWP also does not reflect 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 KWP also needs revision in the light of amendments regime under the Karnataka Irrigation Act, 1965. In Meghalaya, the water policy and legal framework is at a very nascent stage. The state water policy and the water legislation are under preparation. However, the state has created several dedicated institutions to carry out basin level policy reforms. Due to a complex traditional management and governance of water resources in Meghalaya, derived from Schedule VIth of the Constitution, the scope of policy and legal interventions in the state is quite complex. However, this presents the real and timely opportunity for the state to adopt policies and laws on water governance that conform to the vision of the NWP to create sustainable and equitable water resource governance in the country.

## Introduction and Background

India has more than 18 % of the world's population, but has only 4% of world's renewable water resources and 2.4% of world's land area. In view of the problems faced in the water sector in terms of availability, quality, access, competing demands among different users, lack of requisite use efficiency, lack of good governance, rampant extraction and in some areas mining of ground water, lack of requisite regulatory and institutional framework etc, it is desirable that there is a national perspective regarding water planning, management and governance in the country. National Water policy 2012 (NWP) made a bold attempt to address these issues, some of them comprehensively and some not so comprehensively. This task however becomes extremely complicated in a quasi-federation like India, given the constitutional framework of our country where water, barring interstate rivers and their management, is a state subject. The National Water Resources Council (NWRC) at its Sixth meeting held on 28th December adopted NWP 2012. The policy among other issues recommends that we should have a national framework law to ensure uniformity in some basic principles for water management across the country. The policy calls upon review of all state water policies in order to bring them in consonance with NWP.

## Objective of the project

The objective of the project is to assess the preparedness of the identified study states of Maharashtra, Meghalaya and Karnataka<sup>1</sup> in terms of regulatory and institutional framework to deliver on the mandate of the National Water Policy, 2012 (NWP). This very timely project aims at finding out the preparedness of the study states to implement the vision articulated in NWP 2012<sup>2</sup>.

The selection of study states was undertaken in consultation with IWP to display divergent states in terms of existence and evolution of institutional and regulatory framework in water sector.

- Maharashtra: This state was selected as it is in the forefront of initiating water sector reforms including enacting *Water Resources Regulatory Authority Act, 2005* to establish the Maharashtra Water Regulatory Authority (MWRA).
- Meghalaya: state was selected because of its unique constitutional classification as a 'Sixth Schedule'<sup>3</sup> state. To govern the districts, which are sixth schedule (In Meghalaya all districts are within the ambit of sixth schedule except some areas within Shillong city), an Autonomous District Council is constituted having powers to frame laws relating to use of any canal or watercourse for the purpose of agriculture etc. So additionally, there are Autonomous District Councils in the regulatory and institutional framework on water. Further, the state government has formulated a

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<sup>1</sup> States were identified in consultation with IWP.

<sup>2</sup> Order F. No. 9/4/2013-PP dated 5th June, 2013-Ministry of Water Resources constituted a committee for suggesting a road map for implementation of National Water Policy, 2012

<sup>3</sup> Sixth schedule are predominately-tribal areas within the states of Assam, Meghalaya, Tripura and Mizoram in the North East.

draft Meghalaya Water Policy 2014 and draft Meghalaya Water Act, 2011 to deal with myriad issues relating to water in the state.

- Karnataka: The selection of this state was to bring in the southern state perspective in dealing with various facets of water management and conservation, Further; the state has in place policies such as Water Policy 2002, Karnataka Urban Drinking Water and Sanitation Policy, 2003 and is one of few states to enact a law dealing with ground water.

## Methodology

The approach and methodology adopted in undertaking this study had two fundamental components:

1. NWP 2012 was carefully studied and important thematic areas that the policy talks about were identified and tabulated.
2. A template was created, constituting all-important thematic areas covered by NWP 2012 so that all study states' preparedness could be studied and analysed under all these identified thematic areas.

## Need for a common template

A need for Common Template was conceptualised, developed and finalised after having studied the NWP and after receiving and taking in to account inputs from IWP in this regard.

The purpose to have a template was multi-fold:

1. To have uniformity of themes being studied across the study states for undertaking desk based review of existing legal and institutional framework;
2. To comprehensively cover all the themes in NWP;
3. To enable a comparative analysis of the preparedness of these states to implement NWP 2012 with reference to identified thematic area.

The following table is the finalised template for comparative assessment of state's preparedness as per NWP-2012. All three states' desk based detailed analysis was carried out as per the broad themes tabulated herein below.

	Thematic Areas as per NWP	What is to be explored
1.	Public Policy on water resources to be informed of basic common principles	<ol style="list-style-type: none"> <li>a. Whether state has a water policy</li> <li>b. Whether the state water policy is updated in view of NWP-2012?</li> <li>c. Whether this sentiment is echoed in state policies?</li> <li>d. Any concrete action is taken?</li> </ol>
2.	Raising Awareness about criticality of water as a natural resource	<ol style="list-style-type: none"> <li>a. Does water policy of the state say anything about water being a scarce, natural resource?</li> <li>b. Does the state have a campaign running or any engagement with its citizens to create and foster this sentiment?</li> </ol>
3.	Water quality and quantity Reference	<ol style="list-style-type: none"> <li>a. Does the state water policy include a provision on right to access to minimum quantity of potable water for health and hygiene?</li> <li>b. Is there any law to guarantee this?</li> <li>c. Is the institutional mechanism geared up to deliver</li> </ol>

		<p>this?</p> <p>d. 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>e. Does the state provide the rights or powers to the <i>Panchayat Raj</i> 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>f. Are the access to water and right to water for satisfying basic needs being treated as 'pre-emptive' rights? i.e. is there a provision for an inviolate "reservation" of water in critical water bodies, which cannot be diverted for other uses?</p>
4.	Maintaining and sustaining Ecological needs and flows in a river	<p>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?</p> <p>b. If yes what is the implementation and monitoring of the same?</p>
5.	Adaptation to climate change	<p>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</p> <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>I. Is there any special impetus to increasing water storage capacity?</p> <p>II. To increase water use efficiency across all water using groups, agriculture, domestic, commercial and industrial?</p> <p>III. Are sustainable agricultural practices being adopted reshaped as per the water availability in a particular state or a region of a state?</p> <p>IV. Is climate change variability included as criteria for water development projects?</p> <p>V. Are stakeholders being involved inland-soil-water management planning for evolving different agricultural strategies, reducing soil erosion and improving soil fertility</p>
6.	Augmenting water Supply and sanitation	<p>Are the states doing any of the following to augmenting water supply and provide access to sanitation</p> <p>a. Made recycling and reuse mandatory</p> <p>b. Utilising its Rain water harvesting potential</p> <p>c. Desalination techniques</p> <p>d. Made water use efficiency mandatory</p>

		<ul style="list-style-type: none"> <li>e. Are there subsidies and incentives for recovery of industrial pollutants and recycling / reuse</li> <li>f. Are sewerage charges being put/removed in urban areas</li> <li>g. What steps are undertaken to augment rural water supply?</li> </ul>
7.	Ground water use and management	<p>Have the states done</p> <ul style="list-style-type: none"> <li>a. Aquifer mapping to know the quality and quantity of ground water</li> <li>b. Does the state have a ground water law</li> <li>c. Is there a authority mandated to manage and conserve groundwater</li> <li>d. Does the law protect over exploited aquifers, how?</li> <li>e. Is extraction of ground water linked with recharge of the same?</li> <li>f. Is there a separate Law dealing with Groundwater in the state</li> </ul>
8.	Integrated Watershed development	<ul style="list-style-type: none"> <li>a. Specific steps states are taking to ensure integrated watershed development.</li> <li>b. Have statutory / administrative / departmental steps been taken in order to integrate / align the objective functions which may differ</li> <li>c. Are water sources and their catchment areas being looked at in totality?</li> <li>d. Have steps been taken to avoid duplication of overhead costs in order to create synergies</li> <li>e. Are developmental laws harmonised with the need of integrated watershed development.</li> <li>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)</li> </ul>
9.	Demand Management and Water use efficiency	<ul style="list-style-type: none"> <li>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</li> <li>b. Any penalty for wastage of water and incentive for water use efficiency</li> <li>c. Any efficiency benchmark at which irrigation projects have to perform and function</li> <li>d. What the existing schemes providing incentives for engaging in cropping pattern using micro irrigation (drip, sprinkler, etc.), automated irrigation operation, evaporation-transpiration reduction, etc.</li> <li>e. Any norms for using water saving plumbing devices in government and commercial buildings and or others</li> <li>f. Any scheme being used in the state which encourages people to use water use efficient gadgets</li> <li>g. Is there a mechanism to conduct water audits – voluntary or mandatory</li> </ul>
10.	Water pricing	<ul style="list-style-type: none"> <li>a. Is there a mechanism for water pricing?</li> <li>b. Has Water Regulatory Authority been established</li> </ul>

		<ul style="list-style-type: none"> <li>c. What is the water pricing methods being followed?</li> <li>d. Has water pricing been rationalised? If yes how? If no why?</li> <li>e. Are water charges being recovered from the consumers?</li> <li>f. Are Water Users Associations (WUAs) are involved in the process of fixing rates of water</li> <li>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?</li> </ul>
11.	Scientific assessment of water resources and Database, information system	<ul style="list-style-type: none"> <li>a. Institutions involved in the scientific assessment of the water resources</li> <li>b. How is the state organising its hydrological database and using it for decision making.</li> <li>c. Which institutions and regulatory bodies are involved in the collection of Data</li> <li>d. What are the different types of Data being collected at the state level</li> </ul>
12.	Allocation and uses of water	<ul style="list-style-type: none"> <li>a. Is there a mechanism for water allocation amongst different competing uses</li> <li>b. If yes, the criteria and principles followed for allocation</li> <li>c. Are principles of equity and social justice being followed for water allocation</li> <li>d. The existing mechanism for dispute resolution in allocation of water</li> <li>e. D) 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</li> <li>f. Has the state policy defined the procedure of allocation of scares water between sectors? e.g. Drinking and domestic, agriculture, industry, Hydro-power etc, in order to achieve optimal use</li> <li>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?</li> </ul>
13.	Management Of Flood & Drought	<ul style="list-style-type: none"> <li>a. What is the regulatory mechanism to prevent loss of land eroded by the river, which causes permanent loss, revetments, spurs, embankments, etc.,</li> <li>b. Is there an institutional setup for flood forecasting using real time data acquisition system and linked to forecasting models?</li> </ul>
14.	Integrated Water Resources Management	<ul style="list-style-type: none"> <li>a. Has the state incorporated river basin / sub-basin as a unit as the main principle for planning, development and management of Water resources.</li> <li>b. Are there river basin management authorities established by the state government</li> <li>c. What are the functions and powers of the river basin management authorities</li> </ul>

15.	Planning and Implementation of water resource projects	<ul style="list-style-type: none"> <li>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.</li> <li>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</li> <li>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</li> </ul>
16.	Conservation of river corridors, water bodies and wetlands	<ul style="list-style-type: none"> <li>a. What is the prevalent institutional structure for conservation and management of river corridors, water bodies, wetlands within the state?</li> <li>b. Is there community participation in the conservation of river corridors, water bodies, wetlands?</li> <li>c. What are the institutional and regulatory measures to deal with encroachments and diversion of water bodies, wetlands in rural and urban areas?</li> <li>d. Besides participation, has the community or an individual being given the right (duty and responsibility) to protect and conserve water sources?</li> </ul>

Formulation of the template was followed by an extensive and intensive desk based review of all relevant existing laws, policies in the three selected states of Maharashtra, Meghalaya and Karnataka in view of the mandate of the national water policy 2012 (NWP) under identified thematic areas tabulated in our reference table for the study. These reports are based on a desk-based study and have attempted to take in to account all information that is available in public domain and is accessible. All possible care is taken to provide all the information, there is a possibility of gaps in information as it is a purely desk based study. A comparative assessment of the selected study states preparedness to implement various facets of National Water Policy-2012 was undertaken as per the approved template. *(Annex A)*

### **Current scenario regarding preparedness of the states to implement the vision articulated in NWP 2012**

It is evident from the analysis of the study states on the thematic issues identified from NWP 2012, the details of which are mentioned in the state reports submitted separately, that all state water policies are high on rhetoric and make all right noises but there is little done on the ground in commensuration with the lofty ideals professed in these water policies. However, there is surely a lot of progress that these states have made in improving their processes and systems for better water management.

## Meghalaya

In **Meghalaya** water, ownership is different from the rest of the country as has been discussed in the state report despite the peculiarity in water and land ownership in the state, there is an acute awareness among the state government departments and policy circles to take some meaningful and effective steps to ensure equitable, sustainable and transparent water management. This however can only be done with the help of community participation. The state is making commendable efforts in implementing integrated basin development and livelihood programme, which in spirit aims to achieve what NWP 2012 espouses. However, the state does not have a water policy as of today as it is in the process of being formulated and is at the draft stage. The state's preparedness is analysed in view of the seventh draft of integrated state water policy, which is in public domain for comments and discussions. The proposed draft policy document as has been pointed in the state report is a very comprehensive and infact a laborious document that largely covers all aspects covered under the NWP except ones that are not required in the existing context of the state like having a water regulatory authority. The main objectives of this draft policy are clearly articulated in section 2 which are:

- Ensure that utilisation and management of water resources is equitable.
- Prevent overexploitation of water resources
- Achieve environmentally sustainable management of water resources and protect ecosystems
- Ensure efficient and optimal utilisation of available water resources to the maximum possible extent
- Ensure efficient integrated basin-wide water management plans are developed and implemented
- Safeguard Meghalaya's interests in the governance of water resources of shared river basins.

There are no laws as of now which obligates the state to provide drinking water to all in the state though all programmes and schemes of both central and state government aims to achieve that objective. It is pertinent to mention here that the state is also in the midst of making an effort for formulating a comprehensive water law which is attempting to look at water in an integrated manner and will look at all aspects of water management holistically. Water conflict in the state is a very critical issue as most of the surface and ground water in the state is owned by the community or clans or individuals as per customary laws and the new proposed law aims to put in place a water dispute redressal system where people themselves and their traditional institutions of local self-governance like dorbars would be entrusted with the task of dispute settlement.

A great deal of sensitisation among the people in the state is required for the state to be able to do anything meaningful with water management in the state. No law regarding water can succeed in the state if the tribal people and their age-old traditional governing systems are not co-opted in the new scheme of things. However while doing so the rights of women and non-tribals (though very small numbers) will have to be guarded as they do not have any role to play in the traditional decision making process.

In terms of state's preparedness to implement the objectives of NWP 2012 the state has a long way to go but it is amply evident that the state is acutely aware and keen to have a system in place in near future. The state however will face many challenges due its sixth schedule status, which protects the customary belief system and traditional governance systems of tribal communities in the state. Unfortunately, water has also been a part of this system and it would need a lot of persuasion on the part of the state to convince these communities that it would be in their best interest to ensure that water is being used sustainably equitably and its sources protected not polluted, conserved and preserved.

## Karnataka

**Revision of the State Water Policy:** The State Water Policy, 2002 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 move<sup>4</sup> (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*.

**Setting up an independent statutory Water Regulatory Authority:** 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 Water Resources Data and Information Centre*. 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*'.

**Emphasis on water use efficiency:** 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.

**Institutionalising community-based participation in water management:** NWP-2012 underlines the need for institutionalising community-based participation in water management. The State amended its *Karnataka Irrigation Act, 1965* to establish water user's 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*

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<sup>4</sup><http://www.thehindu.com/2002/01/08/stories/2002010803080300.htm>

*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, Gram 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 Gram 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.

**Adaptation to Climate Change:** 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.

**Data Collection and Dissemination for decision-making:** 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.

## Maharashtra

**Revision of the State Policy:** Maharashtra State Water Policy (MWP) was formulated in the year 2003. The MWP itself provides that the state policy shall be revised every five years or as per the 'actual requirement'. The Policy has not been revised yet, however, the efforts to revise MWP on the lines of NWP are underway<sup>5</sup>.

**Conformity to basic principles:** As per the MWP, water is a prime and natural resource vital for survival of humans and other living beings which is becoming increasingly scarce. The MWP has adopted a five pronged strategy to manage state's water resources which appears to be broad based approach to managing state's water resources<sup>6</sup>. Accordingly, as a first strategy the state shall adopt an enabling policy framework for the equitable and productive water management in a sustainable manner. Second strategy is to restructure the roles and relationships of state and water users by creating incentives for productive and efficient use of water and by empowering Water User Organizations with stable and predictable water entitlements to enable them to take decisions without bureaucratic interference. Third strategy as per MWP is to create new institutional regime at the state and river basin level and decentralize water planning and management by restructuring the institutional regime. Fourth is the technological advancement in the water resource sector for enhancing the overall productivity and capacity and finally the fifth strategy under the policy is to enact appropriate legislation in the identified areas of irrigation management, state water authority and basin authorities. MWP does not contain principles of water governance as have been recognized under the NWP. The principles prescribed under the MWP are more on management of water resources wherein the bent is not towards equitable and social justice aspects. Consequently, the MWP is silent on the important principle of water as a common pool resource to be held by the state under the Public Trust Doctrine. Principle of Equity and Social justice to informed use and allocation of water does not emerge very clearly under the MWP.

**River basin approach and decentralized water governance:** The MWP inter alia includes integrated, multi-sectoral and river basin approach to water planning and management taking river basin and sub-basin as a unit, which is in conformity with the basic

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<sup>5</sup><http://www.thehindu.com/news/national/other-states/maharashtra-to-have-new-water-policy/article4820066.ece>

<sup>6</sup>Key Strategies under the MWP are: First, adoption of a Water Policy Framework for equitable and productive water resource management, promoting growth, reducing poverty and minimizing regional imbalance; Second, restructuring of the fundamental roles and relationship between states and the water users and creating incentives for water user organizations; Third, creation of new institutional structure at the state or river basin level; Fourth, improvement in efficiency and productivity of water use by supporting development, adaptation and dissemination of new technologies; Fifth, enactment of appropriate state legislation and Rules including a water resources authority and river basin authorities.

principles advanced under the NWP-012. In fact, the MWP goes a step further and provides for the decentralization of water planning and management to the lowest practicable hydrological or watershed unit. The MWP stipulates the use of incentives and penalties to control water pollution and wastage, which is in conformity with the NWP.

**Regulatory and Institutional Framework:** Pursuant to the MWP, 2003 and as per the fifth strategy mentioned therein the state of Maharashtra has enacted the Maharashtra Water Resources Regulatory Authority Act, 2005 and Maharashtra Management of Irrigation Systems by Farmers Act, 2005. Maharashtra was the first state to create an independent regulatory authority. The scope of this Authority presently is limited to bulk water allocation.

The Maharashtra Water Resources Regulatory Act, 2005 under section 12 provides for the general policies of the Authority. The MWRRA Act, 2005 provides that the Authority shall aid and support the enhancement and preservation of water quality within the state in close coordination with the relevant state agencies and in doing so “the Polluter Pays Principle” to apply<sup>7</sup>. Thus, the statutory provisions under the MWRRA provide that the Authority shall only support the measures undertaken by other relevant authorities for the preservation of water quality. There are no specific measures or initiatives that are prescribed to be undertaken the by the Authority itself. Neither does the Authority prescribe any minimum standards for water quality. In the absence of any statutory provision on water quality, the Uniform Drinking Water Quality Standards set by BIS are applicable in the state.

MWP has a clear provision on advancing water literacy and dedicatedly emphasizes on raising awareness about criticality of water as a precious natural resource. The MPW states that *Program of water literacy should be launched right from primary school level to create awareness about the importance of economizing the use of water among the diverse users.* MWP further states that *conservation of water shall be carried out by promoting conservation consciousness through education, regulation, incentives and disincentives*<sup>8</sup>. NWP makes the provision for providing safe drinking water and sanitation for all to be considered as the pre-emptive need (first priority) but does not acknowledge fundamental right to safe drinking water as has been recognized by the Supreme Court of India<sup>9</sup>. The MWP too does not acknowledge right to a minimum quality and quantity of drinking water and water for other basic needs but makes a broad statement that providing potable water for drinking and sanitation to the people in the state is the first priority under the MWP. The Policy states that adequate domestic water facilities should be provided to the entire population in the state both in urban and rural areas to meet its domestic needs. The Policy also makes a provision of including domestic water planning component in the multipurpose projects where there are no alternative and adequate sources of drinking water available.

On the issue of water quality, the MWP has quite a comprehensive provision and states that the quality of water resources of the state to be protected to preserve their usability in a sustainable manner. The State Government shall establish a program of control of discharge of any pollutants to surface and sub-surface waters of the state including the ocean, bays and saltwater marshes of the state. The Policy provides The Policy provide for the establishment of an effective regulatory mechanism and standards for maintaining the quality of water in the state<sup>10</sup>. The Water (Prevention and Control of Pollution) Act, 1974 is

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<sup>7</sup>Section 12(5) of the Act

<sup>8</sup> Para 2.7.5 of the MWP

<sup>9</sup> Right to safe drinking water has been recognized as part of right to life under Article 21 of the Constitution of India in the case of Subhash Kumar Vs State of Bihar

<sup>10</sup> Para 2.3 of the MWP

also applicable in the state for prevention and abatement of pollution of water resources in the state.

As per Maharashtra Management of Irrigation Systems by Farmers Act, 2005 (MISF) it is the responsibility of the 'Appropriate Authority' to supply water as per the Applicable Water Use Entitlement, to the Water Users' Associations on a bulk basis and it is the responsibility of the Water Users' Association to supply water equitably in its area as per Applicable Water Entitlement of each member for irrigation. However, there is no specific mention of supply of minimum quantity of potable water for health and hygiene. Water User Associations in Maharashtra are empowered under the law not only to manage irrigation infrastructure but also to levy fee and recover operation and maintenance charges from the water users.

The MWP has a general flavour on efficient and productive use as well as management of water resources with community participation. There is no strong emphasis on the role and duty of citizens to take part in the conservation and protection of water resources in their immediate vicinity. Community Management of Drinking Water Supply and Sanitation is mentioned in the policy that may be construed to include protection and conservation. Rather the state has a strong emphasis on water user organization and their empowerment through the policy and legislative measures. Under the MWRRA Act, the Authority has the obligation to promote water use efficiency in all sectors of water use.

**Water Resources Data and Information:** The MWP has a provision on creating a sound database and information base on water resources through a participatory method. 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 objective of the MWP is to *"ensure the sustainable development and optimal use and management of the State's water resources to provide the greatest economic and social benefit to the people of the State of Maharashtra in a manner that maintains important ecological values within rivers and adjoining lands*. Thus, the Policy does address river and rivers corridors in some ways. A more clear articulation of the same is desired.

**Pricing of Water:** Maharashtra has a well-developed water-pricing mechanism. Urban water supply pricing is done as part of property tax or built in any other way where as for the irrigation sector bulk water tariff criteria has been evolved by the MWRRA. WUAs under the MMISF Act are also empowered as legal entities to recover the cost of water and to undertake measures to recover the cost of water supply.

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. **Maharashtra has not formulated its State Climate Action Plan till date.**

## RECOMMENDATIONS

*Revision of water policy:* A comparative assessment of the study states reveals a common thread that the existing water policies need revision in view of the principles enunciated in NWP-2012. Meghalaya has already initiated process of formulating a new water policy and

seventh draft of the water policy, 2014 is under discussion. There is a move in Maharashtra to revise its water policy, though no such action is ascertainable in Karnataka.

*Updation of the regulatory and institutional framework:* A revision in the state water policies calls for revamping the regulatory and institutional framework to meet the new challenges articulated in NWP-2012 such as adaptation to climate change, efficient demand side management of water etc.

## **WAY FORWARD**

*Need for comprehensive assessment of regulatory framework in the states:* Additionally, a field-based assessment of the findings of desk-based research presently undertaken is necessary to understand the latest developments qua mandate of NWP-2012. It also aids in collating the implementation status of the initiatives already underway in the states especially the new enactments on groundwater, participatory irrigation management etc.

**ANNEX: COMPARATIVE ASSESSMENT OF PREPAREDNESS OF THE STATES TO IMPLEMENT NATIONAL WATER POLICY 2012**

	Thematic Areas as per NWP	What is to be explored	Maharashtra	Karnataka	Meghalaya
1.	<b>Public Policy on water resources to be informed of basic common principles</b>	a. Whether state has a water policy	Yes. Maharashtra Water policy, 2003 (hereinafter referred as the MWP)	Yes. State Water policy, 2002 (hereinafter referred as 'water policy')	State has a water policy called "Integrated state water policy Meghalaya" which is still in a draft state and has not been finalised. Latest version being draft of 2014, which is 7 <sup>th</sup> draft and is still under discussion. GIZ is helping the state in formulating this draft.

		<p>b. Whether the state water policy is updated in view of NWP-2012?</p>	<p>No, the MWP has not been updated in view of NWP-2012. Though the state government has initiated the efforts to revise MWP on the lines of NWP<sup>11</sup>.</p>	<p>No, the water policy has not been updated in view of NWP-2012.</p>	<p>The state water policy 2014 draft has been prepared keeping in mind the NWP 2012 and is an unduly lengthy document. This draft policy follows an unusual format for a policy and is unlike any other policy made by other states.</p> <p>Key Elements of draft state water policy 2014 (7<sup>th</sup> draft)<sup>12</sup> are</p> <ul style="list-style-type: none"> <li>• There are some guiding social, environmental and good governance principles on which the draft policy is based upon.</li> <li>• Meghalaya State Water Policy move towards an integrated and more sustainable management of the State's water resources applying an integrated water resources management (IWRM) approach.</li> <li>• Water allocation prioritisation is recommended by the draft policy and mandates that drinking water for humans and cattle is the first charge on available water.</li> <li>• It recognises that access to safe and adequate water to meet basic human needs is a fundamental right of all people</li> </ul>
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<sup>11</sup> <http://www.thehindu.com/news/national/other-states/maharashtra-to-have-new-water-policy/article4820066.ece>

<sup>12</sup> The above mentioned draft can be had on request from IELO office.

					<p>without discrimination. The supply of drinking water must be given the highest priority, over any other use<sup>13</sup>.</p> <ul style="list-style-type: none"> <li>• Recognises that fresh water is a finite and vulnerable resource. Minimum ecological water needs must be given higher priority than other uses, except drinking water</li> <li>• Serious and irreversible damage to integrity of water resources must be prevented.</li> <li>• Recognises that water has both social and economic value but meeting social needs is a priority.</li> <li>• Equitable allocation of water resources is recommended</li> <li>• Integration of water supply and sanitation is recommended in both rural and urban areas, which need to be managed professionally, equitably and transparently in an economically viable manner. Interests of vulnerable groups however are required to be taken care of.</li> <li>• More crop per drop principle is to be pursued to enhance productivity in agriculture. Supplementary irrigation and</li> </ul>
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<sup>13</sup> Section 1.2 of draft MWP 2014

					<p>micro irrigation to be promoted.</p> <ul style="list-style-type: none"> <li>• Recognises the likely impact of climate change on water availability and proposes coordinated approach to flood and dry spell management.</li> <li>• Fisheries has been identified as one of the most important water use, both wild fish stock in natural water bodies and fish reared in aquaculture ponds are to be supported.</li> <li>• Recommends that when water uses are in conflict, the greatest common good to society will be given priority.</li> <li>• Recognises polluter pays principle</li> <li>• Stresses the need to assess and improve the collection of hydrological and meteorological data and establish water stations across the state.</li> <li>• Calls for peaceful resolution of water related disputes</li> <li>• Decentralised decision making regarding water management is being recommended</li> <li>• Policy calls for an inclusive and gender sensitive water management</li> <li>• Policy recognises The basic unit for water</li> </ul>
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					<p>resource management is the river basin or sub-basin, using an integrated water resource management approach</p> <ul style="list-style-type: none"> <li>Equitable water sharing with neighbours both domestic and international is recommended by the policy</li> </ul>
		<p>c. Whether the sentiment articulated in NWP is echoed in state policies?</p>	<p>The objective of the MWP is to <i>"ensure the sustainable development and optimal use and management of the State's water resources to provide the greatest economic and social benefit to the people of the State of Maharashtra in a manner that maintains important ecological values within rivers and adjoining lands"</i></p> <p>By and large MWP aims to address key issues concerning water resources management in the state in a broad based manner. Thus for example, the MWP <i>does not contain 'Basic Principles'</i> to inform water governance in the state. There are however principles of water resource planning and augmentation provided in the MWP which have a different approach altogether in that these principles are about optimizing the resource use without referring to the principles of</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><i>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.</i></p> <p><i>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.</i></p> <p><i>4.3 Improve performance of all water resources projects.</i></p> <p><i>4.4. Improve productivity of irrigated agriculture by involving users in irrigation management.</i></p>	<p>Yes the proposed draft state policy is by and large in consonance with the NWP. The policy document is very lengthy and thus verbose. The intent of the government is at places lost in the details.</p>

			<p>equity or social justice<sup>14</sup>. Similarly, <i>the concept of public trusteeship over water resources of the state is not mentioned therein</i>. Impact of Climate Change on state's water resources has also not been accounted for under the MWP. Instead the focus of the MWP is more on the water management strategies with the involvement of 'users' so as to do away with the bureaucratic interference in water management in the long run. Therefore, in view of a comprehensive framework desired by the NWP, the MWP has much scope for improvement. This is more so as the MWRRA is required to work within the framework of MWP<sup>15</sup>.</p>	<p><i>4.5 Harness the hydropower potential of the State.</i>  <i>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.</i></p>	
		<p>d. Any concrete action is taken?</p>	<p>The state government aims to revise the MWP in line with the requirement of the NWP<sup>16</sup>.</p>	<p>There is no move to amend the water policy by the State government.</p>	<p>So far since the policy is at a draft stage no concrete action as per the mandate is taken. However there are a lot of activities being undertaken which are in spirit in furtherance of the mandate of the proposed draft policy( being mentioned at appropriate places below in the table)</p>

<sup>14</sup> Section 3.0, MWP, 2003

<sup>15</sup> Section 12 (1), MWRRA Act, 2005

<sup>16</sup> Ibid

2.	<b>Raising Awareness about criticality of water as a natural resource</b>	a. Does water policy of the state say anything about water being a scarce, natural resource?	<p>Yes. The MWP begins by recognizing that water is a prime resource and acknowledges that it is becoming increasing scarce due to various competing demands<sup>17</sup>. This acknowledgement runs explicitly and impliedly through various provisions under the MWP. The MWP has a dedicated and comprehensive provision on addressing water scarcity. Section 2.7 of the MPW states thus:</p> <p><b>Conservation of Water</b></p> <p>The efficiency of utilization in all divers uses of water shall be improved <i>an awareness of waters a scarce resource shall be fostered. Conservation consciousness shall be promoted through education, regulation, incentives and disincentives.</i></p> <p>Water harvesting shall be given consideration in planning water resources. Viable project especially in scarce groundwater areas shall be investigated and implemented to increase the surface water availability, which would also help in recharging the groundwater.</p> <p>Recycling and reuse of water have to attempt for augmentation of water resources. This will include reclaiming usable water from sewage after necessary effluent treatment. This should be made mandatory for industries use.</p> <p>Measures to control the evaporation</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><i>“6.21 The efficiency of utilization of water will be improved and awareness about water as a scarce resource fostered.”</i></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>Yes, there is an acknowledgement of water being a finite and scarce resource at multiple places in multiple contexts in the draft policy. One of the principles under environmental principles is conservation consciousness principle. The sustainability principle also recognises water as a finite and vulnerable resource.</p>
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<sup>17</sup> Para 1.1 Need for the Maharashtra Water Policy

			<p>from the water bodies is taken up and affords made to make the process more cost-effective.</p> <p>Program of water literacy should be launched right from primary school level so as to create awareness about the importance of economizing the use of water among the diverse users.</p> <p>The water conservation works shall be taken on top priority where groundwater table has considerably gone down and the Central Government has declared the area as dark zone.</p> <p>he water conservation works (village tanks, percolation tanks and K.T. weirs) in the command area of the completed major and medium project shall be taken up as per the requirement where water supply is inadequate and irregular for irrigation purpose.</p>		
	<p>b. Does the state have a campaign running or any engagement with its citizens to create and foster this</p>		<p>The State has a number of sensitization campaigns on safe drinking water storage and sanitation. The case studies from various villages demonstrate that sensitization campaigns on safe water storage and sanitation are being carried out and these case studies are well documented<sup>18</sup>. Maharashtra has</p>	<ul style="list-style-type: none"> <li>• There are several schemes and programmes run by the state, which promote and encourage water conservation and water use efficiency.</li> <li>• Karnataka State Council for Science and Technology (KSCST) is the first state council in the country to be established to address science and technology issues of the state.</li> <li>• There is a Rainwater Harvesting Cell at KSCST for technical advice, planning and project implementation, an individual or an</li> </ul>	<p>The State has taken up an initiative to implement “Mission Green Meghalaya” through the Integrated Basin Development and Livelihood Promotion Programme. One of the objectives of Mission Green Meghalaya is Environment protection which includes mass afforestation of streams and water catchments which will also protect water sources. To collectively implement the objectives of</p>

<sup>18</sup> [http://indiasanitationportal.org/sites/default/files/BEST\\_PRACTICES\\_UNDER\\_SANITATION.pdf](http://indiasanitationportal.org/sites/default/files/BEST_PRACTICES_UNDER_SANITATION.pdf)

		sentiment?	<p>launched a Water Reform Initiative (Sodal's Reform Initiative)<sup>19</sup> that aims to promote water conservation and efficiency measures in the wake of growing scarcity. The dedicated Water Regulatory Authority in the state has the obligation to also promote water efficiency as stipulated in section 11 (q) of the Act, which says: "the authority shall act to promote efficient use of water and to minimize the wastage of water and to fix reasonable use criteria for each Category of Use." The research so far does not reveal any state level robust campaign on sensitizing people on water scarcity and adoption of conservation and efficient use techniques.</p>	<p>institution can approach the same.</p> <ul style="list-style-type: none"> <li>• 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.</li> <li>• There was an amendment brought in 2009 in The Bangalore Water Supply and Sewerage Act to make rainwater-harvesting mandatory in the city<sup>20</sup>.</li> <li>• In the rural areas under <i>SuvarnaJala</i> Roof Top Rain Water Harvesting structures are being installed on the rural schools.</li> </ul>	<p>"Mission Green Meghalaya", a Green campaign has been launched.</p> <p>Meghalaya Water Mission which runs on the line of national water mission does talk of mass awareness. Moreover, various trainings provided to the farmers/villagers by different water sector related departments which includes Participatory Irrigation Management (PIM) training and water quality monitoring training amongst others, do provide mass awareness on water highlighting water scarcity problem. Once the water mission is launched, water campaign to be taken up will address the issue.</p>
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<sup>19</sup> <http://www.mwrra.org/Document%2014.pdf>

<sup>20</sup> "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.

3.	<b>Water quality and quantity</b>	a. Does the state water policy include a provision on right to access to minimum quantity of potable water for health and hygiene?	No. The MWP does not specify minimum quantity of water that the citizens are entitled to for basic needs but makes a broad statement that adequate water facilities shall be provided to the entire population in urban and rural areas to meet its domestic needs <sup>21</sup> . The minimum quantity of water supplied for basic needs is dependent on the population of a town and varies from 70 lpcd to 135 lpcd for (class A) towns having population of more than 50,000 <sup>22</sup> .	Yes, the very first stated objective of the state water policy is to- <i>"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."</i>	Yes the draft policy does recognise this as a primary and foremost principle for water management in the state (Section 1.2 social principle, section 1.4 <sup>23</sup> ) this is also been mentioned as one of the objective of the water policy.
		b. Is there any law to guarantee this?	No. The MWRRA Act, 2005 too does not specify the minimum quantum of water for health and hygiene to be provided to the citizens. The Act provides for the equitable distribution of water entitlements within each category and for the determination of priority of use in the event of scarcity <sup>24</sup> .	There is no law specifically guaranteeing this right. However, following enactments can be construed to work towards achieving the same objective  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 <b>Karnataka Urban Water supply and Drainage Board Act</b> . Bangalore has its separate Board for this purpose for Bangalore Metropolitan area. Urban Local Body (ULB)	None, however the main Thrust of the Department in the Rural Water Supply Sector during the 12th Plan period would be to cover all the remaining Partially Covered Habitations as well as Quality Affected Habitations with 40 Lpcd of potable safe water. Under Rural Drinking Water Supply, as of April 2011, 5041 nos. of habitations have been fully covered (54 %) while 4285 nos. of habitations have been partially covered (45 %) both in terms of coverage and per capita availability, out of a total of 9326 nos. Habitations in the state. Provision of safe drinking water supply to the

<sup>21</sup> Section 2.2.3 of the MWP, 2003

<sup>22</sup> India Improving Urban Water Supply and Sanitation, Lessons from Business Plans for Maharashtra.. Ministry of Urban Development – the World Bank, July 2012

<sup>23</sup> All the sections referred to in this document are to the sections of 7<sup>th</sup> draft of "Integrated State Water Policy Meghalaya".

<sup>24</sup> Section 11 (a), (c); MWRRA Act, 2005

			<p>supplies water under the board to people in the urban areas.</p> <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 <b>Karnataka Groundwater (Regulation and Protection of Drinking Water) Sources Act 1999</b>. 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 &amp; Sanitation Agency which was established under Rural Development &amp; Panchayat Raj Department, Government of Karnataka with the main mandate to function as State Agency for Rural Water Supply and Sanitation Mission<sup>25</sup>.</p>	<p>remaining Partially Covered Habitations, including other Newly Identified Partially Covered Habitations (slipped back from fully covered category due to various reasons including drying up of sources etc.) will be taken up as per the guidelines of Govt. of India during the 12th Plan period.</p>
	<p>c. Does the State Water Policy contain an article or a position which places responsibility</p>	<p>Yes. One of the strategies under the MWP is to restructure the fundamental roles and relationship of the state and water users so as to enable them to manage water resources and decide best use in their own interest<sup>26</sup>.</p> <p>Secondly, one of the objectives of the</p>	<p>None specifically.</p>	<p>All citizens are obliged to contribute to the solution of common water related problems as per the mandate of solidarity principle enumerated under section 1.2 in the 7<sup>th</sup> draft integrated water policy 2014. Water users and public authorities have the shared responsibility of maintaining the integrity of</p>

<sup>25</sup> 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](http://parisara.kar.nic.in/PDF/Rural_Urban_WSS.pdf)

<sup>26</sup> Section 1.3 of the MWP, 2003

		<p>on citizens about protection and conservation of water sources in their immediate vicinity?</p>	<p>MWP is to decentralize the water management in the state to the lowest practicable level on the basis of hydrologic or watershed units. The river basin and sub-basin agencies envisaged under the MWP are required to prepare a integrated river basin plan that will include an efficiency improvement and conservation plan and a waste minimization and water quality management plan<sup>27</sup>.</p> <p>The MWP has a comprehensive provision on conservation of water resources and includes a section on restoration of tanks and other local water bodies, recharging of groundwater in the vicinity<sup>28</sup>. This sentiment however is not echoed as the responsibility of the citizens alone. It is rather a statement with a joint obligation of the state as a facilitator while the implementation may be taken up by the participatory institutions envisaged under the MWP.</p>		<p>water resources. Hence, the "polluter pays" concept is to be adopted to curb uncontrolled discharge of pollutants as per the responsibility principle enumerated in the draft policy. As per section 1.4, one of the objectives of the water policy is that water resources are protected, maintained, improved and utilised sustainably, so that future generations can enjoy them. The overall objective of the policy among other things is to ensure that water is used efficiently.</p> <p>The catchment area protection act 1990 is under revision which also addresses this issue.</p>
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<sup>27</sup> Section 1.2.1 of the MWP, 2003

<sup>28</sup> Section 2, MWP, 2003

		<p>d. Is the institutional mechanism geared up to deliver this?</p>	<p>The MWP envisaged the creation of dedicated institutional mechanisms at the state, basin and sub-basin level with the objective to achieve decentralized water governance at the lowest practicable level. Following this a dedicated Authority has been created by the name of MWRRA. The MWRRA has a statutory support to achieve the objectives under the Act under which it has been established. The local level institutions such as watershed committees need capacity enhancement for the protection and conservation of water resources in their vicinity</p>	<p>2002 water policy envisages several changes in the institutional framework for water governance in the state.</p>	<p>Institutional capacity at the state level of the Public health engineering Department (PHE) which is primarily responsible for water supply in the state and of Department of Water Resources is severely restricted by the fact that almost all land in the state is owned by the people. There are no land records. There is no codified custodian of water resources in Meghalaya. Since the state has no land records and since customary laws are not codified, there are no reliable and comprehensive records on water resources.</p> <p>The Meghalaya State Water Resources Agency is for proper and efficient implementation of Integrated Basin Development and Livelihood promotion Program to ensure the protection and conservation of the water sources and the recharge of ground water. The agency would look into aspects of providing clean safe drinking water, irrigation, hydro power generation, protection of forest, issues related with industries and their effect on water bodies and similar other matters.</p> <p>The District Water Resources Councils</p>
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					coordinate the management measures within each river basin district. They include representatives of public authorities, municipalities, traditional bodies and nongovernmental organizations. Their functions include coordinating stakeholders; reviewing management plans and programmes; evaluating application for ground water exploitation/ drilling; carrying out economic analyses of water resources use; ensuring public participation in management planning processes; coordinating program implementation; developing budget proposals for programs.
	e. Does the state provide the rights or powers to the Panchayat Raj Institutions, or citizens to independently initiate actions for	The Maharashtra Zilla Parishads and Panchayat Samitis Act, 1961 provides for the appointment of Standing subject committees. One of the committees to be appointed is the water conservation and drinking water supply social forestry committee <sup>29</sup> . The Act provides for the powers and duties of the Panchayat Samitis and committees as the 'District List' which is a schedule of subject matters over which the zillaparishad of any of the	There are provisions in the <b>Karnataka Panchayat Raj Act, 1993 providing powers to the</b> 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. <sup>30</sup> Schedule 1 (section 58) of the act mentions	Due to unique constitutional position of the state, PRIs as understood in the rest of the country are not present in the state. The state below the state government has autonomous district councils with executive, legislative and judicial powers. Below the district councils are the secondary administrative levels called the Syiems/Dolloi's/Nokmas who govern, control and administer the Syiemship/Ilaka/Aking lands respectively being discussed in detail herein below, and at the primary level are the village durbars and dongs which are the	

<sup>29</sup> Section 1 (h), the Maharashtra Zilla Parishads and Panchayat Samiti Act, 1961

<sup>30</sup> 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.

		<p>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>committees constituted for the specific purpose empowered to make provisions. These include provision to initiate action concerning water resources by the said water conservation committee.</p>	<p>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 Act<sup>31</sup> can assign functions of 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 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.<sup>32</sup></p>	<p>administrative units at the village level.</p> <p>In <b>Khasi Hills</b> the traditional governance structure consists of the Syiemship at the top and the DorbarShnong/Dorbad Raid at the grassroots. At the village level, we have the DorbarShnong or village council headed by RangbahShnong (village headman) who is elected by adult male residents of the village and heads the village administration. Every adult male member of each household in the village is a member of the village council and is required to actively participate in the deliberations of the council and facilitate in decision making. In some areas, we also have another tier above the village council which is known as the Dorbar Raid which is the council of cluster of villages presided over by Basans or Lyngdohs. At the top of this structure is the Hima (comprising of villages/Raid) which is governed and ruled by DorbarHima (council of adult male members from every constituent village and Raid). The Syiem (chieftain) is the head of the Hima and is generally elected by a</p>
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<sup>31</sup> 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 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.

<sup>32</sup> Section 3A

					<p>small electoral college from a particular clan (syiem clan). Similarly , his assistants (myntri) are elected from a particular clan.</p> <p>In the <b>Jaintia Hills</b>, the traditional governance structure is similar to that existing in Khasi Hills, except that in place of the Syiemship we have the Dalloiship (Nongkynrih, 2002; Gassah, 2002).</p> <p>The <b>Garos</b> have a much simpler institutional set up which is clan based village community. The system of governance consists of Akhing land which is equivalent to village or a group of villages. All the land within the Akhing belongs to a particular clan or lineage and the Akhing functions under the supervision of the Nokma who is the head of the clan. The Nokma regulates the political, social and economic life of the people under an Akhing with the common consent of the Akhing elders who function as his council of advisers. There is no political unit above the Akhing and no authority higher than the Nokma (Bose, 1936).</p> <p>The Syiems, Daloi and Nokmas perform both executive and judicial functions. They manage markets and forests under their jurisdiction and also administer justice. They also perform functions associated with the indigenous religious practices of the tribals of the state. At</p>
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					<p>the village level, the village headman and the village council play an important role in local dispute resolution and for the welfare of the village (Prasad, 1998; Gassah, 2002).</p> <p>Under the Schedule, the councils are empowered to appoint and remove Syiems and headmen of the traditional institutions in the state. In 2006, an important order was passed by the Supreme Court whereby the Dalloi was recognised not only as an administrative head of an area but also as religious functionary who must be conversant with indigenous religious practices and perform the accompanying rituals and practices according to customs.</p> <p>An important development which will increase the accountability in the functioning of the traditional institutions in the state is the applicability of the Right to Information Act of 2005 to Syiemships. The Guwahati High Court in 2010 upheld the decision of the State Information Commissioner who had earlier ruled that the Syiem (chieftain) was an administrative officer of the KHADC as enshrined in the Sixth Schedule and by the Supreme Court in a case between T Cajee and JormanikSyiem.</p> <p>An important and sensitive issue with regard to the existing structure and functioning of the traditional institutions is the exclusion of</p>
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					women in decision making process, hereditary nature of chieftaincy and exclusion of non-tribal members from the governance system even in a place like Shillong where they account for a sizeable proportion of the population.
4.	<b>Maintaining and sustaining Ecological needs and flows in a river</b>	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?	MWP recognizes the need to sustain environmental values. The objective of the MWP is to “ensure the sustainable development and optimal use and management of the State’s water resources to provide the greatest economic and social benefit to the people of the State of Maharashtra <i>in a manner that maintains important ecological values within rivers and adjoining lands</i> The MWRRA Act has a provision whereby environmental viability of a water resources project is to be ascertained before the final approval. The provision states that ... to review and clear water resources projects proposed at the sub-basin and river basin level to ensure that a proposal is in conformity with Integrated State Water Plan and also with regard to the economic, hydrologic and environmental viability and where relevant, on the State’s obligations under Tribunals, Agreements, or	Policy does not speak of E-flows	The draft water policy does mention ecological needs and states that minimum ecological water needs must be given higher priority than other uses, except drinking water (section 2.1.Principles). The policy however is silent on scientific study to be undertaken for determination of ecological needs.

			Decrees involving interstate entitlements <sup>33</sup> .		
		b. If yes what is the implementation and monitoring of the same?	The desk based research did not reveal any substantive literature on this aspect. This requires a more interactive research.	N.A.	Draft water policy is silent on these aspects. None was discovered while undertaking the desk based research.
5.	<b>Adaptation to climate change</b>	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	Not yet.	Yes the state has an action plan for climate change. As per 1st 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. <sup>34</sup>  The district level climate change action plans are to be formulated.	State has an action plan on climate change.  <i>To ensure judicious use of water in the State in a way that safeguards the natural environment, establishment of a State water use policy has been accorded prime importance. Studies on water budgeting, water scarcity and assessment and maintenance of water quality, etc. would be taken up to enable formulation of an integrated water resource management policy. This policy would ensure efficiency of water use and incorporate polluters pays principle to ensure prevention of water pollution. Integrated river basin management would be taken up under the proposed State River Basin Authority. Traditional water conservation methods would</i>

<sup>33</sup> Section 11 (q), MWRRRA Act, 2005

<sup>34</sup> As per information accessed on 16.01.2015 at <http://envfor.nic.in/ccd-sapcc>

	<p>action plans being formulated within the regulatory framework</p>				<p><i>be revisited and propagated, alongside restoration of existing water bodies and monitoring of surface and ground water quality.</i></p>
	<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 State Action Plan on climate change is not yet prepared. Certain pilot studies on climate risks and vulnerabilities are however being carried out<sup>35</sup>.</p>	<p>The SAPCC 1<sup>st</sup> assessment does indicate that these concerns are being taken in to account. Section 5.8 of the report<sup>36</sup> 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>Factual information reflecting ground reality in this regard was very difficult to source. The state climate action plan envisaged setting up of nine sectoral working groups and one of them was on Water Resources. These working groups were supposed to formulate key priority action points for adaptation and mitigation. The state climate action plans for each financial year was required to incorporate actions needed to be taken for adaptation and mitigation in each of these identified sectors. Meghalaya has also established a Climate Cell led by the Planning Department to address issues and activities for combating the effects of climate change. In order to have policy convergence, the State has set up a State Council on Climate Change and Sustainable Development (MSCC&amp;SD) under the Chairmanship of the Chief Minister, as well as</p>

<sup>35</sup> <http://www.ccmaharashtra.org/>

<sup>36</sup> SAPCC for Karnataka is available at <http://parisaramahiti.kar.nic.in/pubs/Karnataka-SAPCC-EMPRI-TERI-2012-03-22.pdf>

					<p>a Steering Committee on Climate Change chaired by the Chief Secretary that would coordinate the State Action Plan for assessment, adaptation and mitigation of climate change.</p> <p>The Department of Planning being the Nodal Department to handle all inter-sectoral issues relating to climate change and sustainable development including liaison with other States, Central Government and its Agencies, and International Bodies/Organisation, has established a Cell on Climate Change under the Charge of the Principal Secretary. This Cell acts as a Coordinating Unit for formulation and implementation, collection and dissemination of information relating to the Climate Change Management. Further, a Project Implementation Unit (PIU) would be set up for implementing and monitoring specific programs identified under the Meghalaya Climate Change Action Plan on a mission mode. The PIU would be led by a senior officer from the State Government and supported by a team of experts including government officials on deputation and external thematic experts<sup>37</sup>.</p> <p>What has actually been achieved could not be ascertained due to constraints of resources as no actual travel to the state could be</p>
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<sup>37</sup> Info taken from <http://www.megplanning.gov.in/plan/aplan/2013-14/sector/10.pdf>

				undertaken due to the project being a desk based study.
	c. Is there any special impetus to increasing water storage capacity?	The MWP does have provisions pertaining to water resource infrastructure and multipurpose projects. However, in the absence of climate action plans their co-relation with climate impacts and need to increase the storage capacity cannot be established	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 tabulated <sup>38</sup> .	Yes the state has taken up implementation of Jalkunds and multi-purpose reservoirs which addresses this issue. This also includes schemes being undertaken under Repair, Renovation and Restoration (RRR) of water bodies.
	d. Increase water use efficiency across all water using groups, agriculture, domestic, commercial and industrial?	MWP proposes efficiency in use in all sectors and in the overall water resource management in the state. The MWRRA has a dedicated provision on water use efficiency and states that "the authority shall act to promote efficient use of water and to minimize the wastage of water and to fix reasonable use criteria for each Category of Use." <sup>39</sup>	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.  Industrial-As per draft <b>Karnataka industrial policy 2014-2019</b> , Action has been initiated for supply of tertiary treated water to augment the water scarcity and to adopt water conservation measures.	Participatory Irrigation Management (PIM) being implemented through WUAs' invariably looks after this aspect in the Agriculture/Irrigation sector.

<sup>38</sup> Please refer to page 98 of the report under the head, **implementation** at above mentioned location.

<sup>39</sup> Section 11 (q), MWRRA Act, 2005

				<p>In Bangalore metropolitan area BWSSB is taking measures to ensure water use efficiency across all water users.</p>	
	<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>Maharashtra is perhaps the pioneering state to have provided for farmer's management of irrigation systems under its state water policy. The MWP states: the farmer's participation in the irrigation system to be made mandatory. And water shall be supplied to Water User Associations (to be formed as legal entities) on a volumetric basis only. Pursuant to this the state government has adopted a dedicated Act to achieve the objective of the MWP – The Maharashtra Management of Irrigation Systems by Farmers Act, 2005.</p>	<p>There is an increased propagation of drip and sprinkle irrigation in the state.</p> <p><b>Karnataka Agriculture Policy 2006</b>-aims at sustainable agricultural practices and some highlights are:</p> <ul style="list-style-type: none"> <li>• 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.</li> <li>• 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</li> <li>• 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</li> </ul>		<p>This information was repeatedly sought from the state government agencies but could not be obtained from Agriculture Department/Horticulture/Soil &amp; Water Conservation Department)</p>

			efficiency.	
	f. Is climate change variability included as criteria for water development projects?	This could be explored through interactive research. The literature review did not reveal this to be a consideration during project planning or approval.	At present it is not a criteria in water development projects.	Water body mapping exercise is being undertaken to assess in the first leg which subsequently is proposed to be a periodical phenomenon after every 5 (five) years for adoption of the climate change variability as per information received from the state.
	g. Are stakeholders being involved inland-soil-water management planning for	Yes. The MMISF Act makes the participation of farmers mandatory and provides for the involvement of stakeholders through their Water Users Associations. The objects of a Water Users' Association shall be to <sup>40</sup> , - (i) promote and secure equitable distribution of water amongst its members; (ii) maintain adequately the irrigation systems; and ensure efficient,	Karnataka Water Resources Authority <sup>41</sup> 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 effective <sup>42</sup> .  Karnataka Agriculture Policy 2006 <ul style="list-style-type: none"> <li>Improving soil health is one of the goals under the policy</li> </ul>	Yes to a great extent through PIM is being taken care of as also through engagement of MGNREGA manpower in creation of water bodies and canal embankments.

<sup>40</sup> Section 4 (1), (2)

<sup>41</sup> Government of Karnataka (2008). Government Order WRD 85 MBI 2008 dated September 8, 2008

<sup>42</sup> [http://202.138.105.9/empri/sites/default/files/docs/web/EMPRI\\_KSAPCC\\_2014-03-27.pdf](http://202.138.105.9/empri/sites/default/files/docs/web/EMPRI_KSAPCC_2014-03-27.pdf) (accessed on 3.12.2014)

		<p>evolving different agricultural strategies, reducing soil erosion and improving soil fertility</p>	<p>economical and equitable distribution and utilisation of water to optimise agricultural production;  (iii) protect the environment;  (iv) ensure ecological balance  (v) Actively involve the members inculcating amongst them a sense of ownership of the irrigation system; and  (vi) Safeguard and promote the common interests of its members pertaining to irrigation and agriculture in the area of operation.  (2) The Association may also engage into any activity of common interest of the members in the Command Area related to irrigation and agriculture, such as introduction of Drip and Sprinkler system for optimising the use of water; developing farm ponds and community projects for exploiting groundwater; procurement and distribution of seeds, fertilisers and pesticides;  procurement and renting of agricultural implements; marketing</p>	<ul style="list-style-type: none"> <li>• "Bhumi-TaiyyaArogya" programme is a public private Partnership with the help of 20% contribution from the land owner 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.</li> <li>• It is proposed to bring in 'Soil Health Card' as a component of 'RaithaMitraPusthaka' 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.</li> <li>• The developmental strategies include soil moisture conservation and soil fertility improvement program through watershed approach.</li> </ul>	
6.	<b>Augmenting water Supply and sanitation</b>	<p>a. Are the states doing any of the following to augmenting water supply and provide access to</p>	<p>Maharashtra Water Sector Reforms include augmenting water supply and sanitation. MWP provides a direction to undertake measures for providing water supply infrastructure to achieve sanitation. MWP has clear directions on water conservation that includes all possible measures to be undertaken to augment water supply. Improvement</p>	<p>There is mention in the policy for completion of all on-going and committed water resource development projects.</p>	<p>State is running a water mission under IWRMP which is part of Integrated Basin Development &amp; Livelihood Promotion (IBDLP) programme. The stated vision of the water mission is to promote Integrated Water Resources Management in the State of Meghalaya and to conserve and use water judiciously</p>

		<p>sanitation</p> <p>Made recycling and reuse mandatory</p>	<p>in water efficiency by way of recycling and re-use is also provided by the MWRRA Act. It is mandatory for the Authority to act to promote water efficiency under the Act. MWP provides for water recycling and re-reuse and proposes it to be achieved through incentives and disincentives.</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 establishments<sup>43</sup></p>	
		<p>b. its Rain water harvesting potential</p>	<p>MWP provides for water conservation measures. Rainwater harvesting is being implemented in the state<sup>44</sup>.</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 buildings<sup>45</sup> 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</p>	<p>The aquifer systems of Meghalaya done by CGWB have identified priority areas where water conservation and rain water harvesting should be immediately implemented.</p> <p>Under the IWRMP, Jalkund/water harvesting structures are being built and the various schemes under this programme are being</p>

<sup>43</sup><http://www.newindianexpress.com/states/karnataka/article1498297.ece>

<sup>44</sup> India Improving Urban Water Supply and Sanitation, Lessons from Business Plans for Maharashtra.. Ministry of Urban Development – the World Bank, July 2012

<sup>45</sup> New buildings on sites measuring 1,200 ft<sup>2</sup> and above; existing sites of 2,400 ft<sup>2</sup> and above

			<p>approached by an individual or an institution.</p> <p>Different departments are to spending under different developmental heads on rainwater harvesting structures.</p>	<p>implemented by Water Resources Department, by Soil &amp; Water Conservation Department. The schemes are being implemented through the District Water Resources Councils (DWRCs).</p> <p>State is also proposing to implement Roof Top Rain Water Harvesting projects in Government and School buildings, PHCs and CHCs and accordingly the District Water Resources Councils have been instructed to identify and submit proposals<sup>46</sup>.</p>
	c. Desalination techniques		<p><b>Karnataka Industrial Policy 2009-2014</b><sup>47</sup></p> <p>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</p>	Not required

<sup>46</sup>[http://mbda.gov.in/Water\\_Mission.html](http://mbda.gov.in/Water_Mission.html)

<sup>47</sup><http://www.karnatakaindustry.gov.in/documents/Karnataka%20Industrial%20Policy%202009-14%20English.pdf>

		<p>d. Made water use efficiency mandatory</p>	<p>The MWRRA has the mandate to promote Water Use Efficiency. The following Water efficiency measures are implemented in the state<sup>48</sup></p> <ul style="list-style-type: none"> <li>- Reducing NRW to 15% by 2017, bulk metering</li> <li>- Detailed information on water supply network using SCADA system, hydraulic modeling and GIS</li> <li>- Energy &amp; water audits implemented</li> <li>- Collection ratio increases to 100% by 2017</li> </ul> <p>100% collection &amp; transportation of solid waste implemented</p>	<p>There are no mandatory provisions.</p>	<p>There is no mandate in the law for water use efficiency but is one of the objectives of the water mission in the state.</p> <p>Objectives of the water mission under IWRMP being run under IBDLP are</p> <ul style="list-style-type: none"> <li>• To <b><i>promote judicious utilization of water resources</i></b> in the state in all the three sectors surface water, ground water and rain water.</li> <li>• To integrate water resource planning so as to pool the resources as well as to develop water grid.</li> <li>• To promote water bodies for irrigation, drinking water, fisheries, etc.</li> <li>• To <b><i>promote water use efficiency in all water sectors</i></b>.</li> <li>• To ensure adequate capacity building and training to all sections of stakeholders, technical officers and users.</li> <li>• To develop and improve water bodies including rejuvenation of springs for enhancement of water storage so as to preserve water for adaptation and mitigation of climate change effect.</li> </ul>
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<sup>48</sup>MoUD –World Bank Report, Business Plan for Maharashtra 2012

				<ul style="list-style-type: none"> <li>To develop small multiple reservoirs and micro-hydels.</li> <li>To set up institutional structures for integrated water resource management.</li> </ul>
	e. Are there subsidies and incentives for recovery of industrial pollutants and recycling / reuse	MWP envisages the conservation of water and its efficient utilization by way of incentives and disincentives.	The Karnataka Industrial Policy 2009-2014 will encourage enterprises <sup>49</sup> for recycling of water and treatment of waste water.	No information from Industry Department/Meghalaya State Pollution Control Board (MSPCB) could be accessed.
	f. Are sewerage charges being put/removed in urban areas	Key features of the policy in WSS sector are (i) enabling equitable and productive management of water supply, (ii) moving to full cost recovery of O&M costs, (ii) promoting decentralized planning, development, management, and O&M of WSS facilities, (iv) encouraging recycling and re-use, and (v) encouraging PPPs for providing WSS services. Owing to this Policy it is desired that  Water tariffs indexed to recover 100%	Yes it is being undertaken in the Bangalore metropolitan area.	No information could be obtained from Urban Affairs Department from sources which could be accessed for desk based research.

<sup>49</sup> Clause 5.10.3 of Karnataka Industrial Policy 2009-2014

		<p>O&amp;M costs through user charges 100% Metering is done Tariff for sewerage and sanitation services finalized, billed and recovered</p>		
	<p>g. What steps are undertaken to augment rural water supply?</p>	<p><b>("Jalswarajya"):</b> Government of Maharashtra launched (in September 2003) community demand driven Maharashtra Rural Water Supply and Sanitation Project. The project was implemented by Government of Maharashtra in 3391 Gram Panchayats in 26 ZillaParishads to provide 40 litres per capita per day potable water to projected village population. For successful implementation and community participation, process of capacity building, women empowerment etc. were also envisaged in the scheme. The implementation review of this project revealed that the project has not been able to meet its objectives in the manner it was planned<sup>50</sup></p>	<p>Following are the steps undertaken for augmenting and supplying water to rural areas:</p> <p><u>Bore wells with Hand pumps</u></p> <p>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.</p> <p><u>Mini Water Supply Scheme</u></p> <p>In this scheme water is pumped to a small tank (Cistern) fitted with 3 - 4 taps, 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</p>	<p>Under water mission whose objectives are stated above, various steps are proposed to be taken to augment water supply. To achieve these objectives following interventions have been identified<sup>51</sup></p> <ul style="list-style-type: none"> <li>• Awareness and Sensitisation Programme for efficient water use.</li> <li>• Development of Small and Multipurpose Reservoirs.</li> <li>• Value chain development linked to water resource.</li> <li>• Legislation and policy farming.</li> <li>• Water quality control.</li> </ul>

<sup>50</sup>[http://www.saiindia.gov.in/english/home/Our\\_Products/Audit\\_Report/Government\\_Wise/local\\_bodies/Tabled\\_Legislature/Maharastra/2009\\_10/Chap\\_2.pdf](http://www.saiindia.gov.in/english/home/Our_Products/Audit_Report/Government_Wise/local_bodies/Tabled_Legislature/Maharastra/2009_10/Chap_2.pdf)

<sup>51</sup>[http://mbda.gov.in/Mission\\_Overview.html](http://mbda.gov.in/Mission_Overview.html)

				<p>commissioned.</p> <p><u>Desert Development Programme (DDP)</u></p> <p>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.	<b>Ground water use and management</b>	a. Have the states done Aquifer mapping to know the quality and quantity of ground water	Maharashtra has initiated 'user centred aquifer level groundwater management. The Groundwater Act, 2009 provides for the formulation of 'watershed or aquifer based groundwater use plan' <sup>52</sup> .	<p>CGWB has done aquifer mapping for the state<sup>53</sup>.</p> <p>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 <i>Hydrological Information System (HIS)</i> has been established for the purpose.</p>	Under the National Aquifer Mapping Program, Central Ground water Board has generated data on aquifers <sup>54</sup> in the state and has recently published an atlas on aquifer systems of Meghalaya. Groundwater is the largest accessible and yet underdeveloped resource in Meghalaya. The information provided in this document defines the extent of principal and major aquifer systems of the State with their characterization on regional scale. The information helps depict aquifer wise ground water scenario along with major issues and challenges in terms of quality and quantity which need immediate attention for sustainable management of ground water resources.

<sup>52</sup> Section 2(xxxv), Groundwater (regulation and management) Act, 2009

<sup>53</sup> <http://cgwb.gov.in/AQM/Karnataka.pdf>

<sup>54</sup> The aquifer maps presented in the atlas are on the 1:250,000 scale and will form the base of the detailed aquifer mapping to be taken up on 1:50,000 scale.

	b. Does the state have a ground water law	Yes. The Maharashtra Groundwater (Regulation for Drinking Water Purposes) Act, 1993 Maharashtra Groundwater (Development and Management) Act, 2009	There are two laws governing ground water in the state i.e. <b>Karnataka Ground Water (Regulation for Protection of Sources of Drinking Water) Act, 1999</b> and <b>Karnataka Groundwater (Regulation and Control of Development and Management) Act, 2011</b> , which received the Governor's assent in April 2011. <sup>55</sup>	No. Draft Ground Water Act is in the process of obtaining approval and the state is also in the process of drafting a comprehensive integrated water law. There is no clarity as to what will the state finally adopt.

<sup>55</sup> 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>Yes, the State Ground Water Authority constituted under the Groundwater Act of 2009<sup>56</sup>. The MWRRA also has the mandate to conserve groundwater</p>	<p>There is a Groundwater Authority in the state. It has mandate under section 22 of the <b>Karnataka Groundwater (Regulation and Control of Development and Management) Act, 2011</b>, 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.</p> <p>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>The proposed Ground Water Cell in Water Resources Department will be the authority for the purpose. At present, District Level Committees on Ground Water Resources, with the Deputy Commissioners of the concerned Districts as the Chairman, have been constituted for all Districts and one of the functions of the committee is to take up measures for the sustainable development of ground water.</p>
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<sup>56</sup> Section 3, Maharashtra Groundwater (regulation and management) Act, 2009

		<p>d. Does the law protect over exploited aquifers, how?</p>	<p>The State Groundwater Authority created under the 2009 Act can undertake a number of measures to protect the aquifers. The Act empowers the State Groundwater Authority to notify areas for the purpose of regulating the groundwater extraction and use or both<sup>57</sup>. Once an area has been notified under the Act, the State Authority can constitute watershed water resource committee for the monitoring of groundwater use and extraction from the notified area. No user of groundwater is allowed to contaminate groundwater either temporarily or permanently<sup>58</sup>. The State Authority is empowered to undertake all such measures that it deems necessary to protect groundwater quality, including the drinking water sources and recharge worthy areas<sup>59</sup>.</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>No law as of now.</p>
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<sup>57</sup> Section 4 (1), the Maharashtra Groundwater (Regulation and Management) Act, 2009

<sup>58</sup> Section 6 (1), *ibid*

<sup>59</sup> Section 6(2), *ibid*

		e. Is extraction of ground water linked with recharge of the same?	Yes.	<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>	<p>Meghalaya is endowed with plenty of ground water. The annual gross dynamic ground water recharge of Meghalaya has been estimated as 1.234 billion cubic meter (BCM). Annual allocation for domestic &amp; industrial water requirement upto year 2025 is estimated as 0.096 BCM as per census 2001. 1.014 BCM of ground water potential may be utilized for irrigation. The level of ground water development in the state is 0.15%.</p> <p>This will be guided by Ground Water Act as and when there is one enacted by the state.</p>
8.	<b>Integrated Watershed development</b>	a. Specific steps states are taking to ensure integrated watershed development.	The MWP provides for the preparation of State Water Plan to promote balanced development among diverse users, the Plan shall include integrated watershed management measures.	<p>Future vision for water sector development as articulated in the state water policy states <i>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. 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</i></p>	<p>The <i>Meghalaya Catchment Area Protection Act 1990</i> has set up a catchment area advisory board to advice government on protection of catchment areas<sup>60</sup>. The Act has defined critical catchment areas which are envisaged to be protected under this act and the advisory board advises the government on all matters connected with their management and protection<sup>61</sup>.</p> <p>This Act is under revision due to poor implementation.</p>

<sup>60</sup> Section 3 ad 4 of the Catchment Area protection Act 1990

<sup>61</sup> Section 5 ibid

				<p><i>natural and economic risks and costs. Solutions to water allocation and planning issues will be found adopting a demand management approach.</i></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</p>	<p>The MWP envisages decentralization of water management to the lowest practicable hydrologic unit, watershed or a sub-basin.</p> <p>The River Basin Agencies recognized under the MWRRA and the WUAs constituted under the MMISF Act, 2005 and also recognized under the MWWRA as legal entities for the bulk water supply on a volumetric basis are also entrusted with the task of looking</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 &amp; commerce, Women &amp; child development, UAS, NABARD and international organizations like DANIDA, World Bank etc. to achieve its goals of integrated watershed development.</p>	<p>No such steps could be ascertained on the basis of desk based research.</p>

		differ	at water resources at a watershed level comprehensively.		
		c. Are water sources and their catchment areas being looked at in totality?	Yes, they are being looked at as hydrological units.	Yes, there are being looked at as one hydrological unit.	<p>As per the mandate of section 6 of Meghalaya Catchment Area Protection Act 1990, once an area is declared as catchment area, by notification, after having had a written agreement with land owners in that area in this regard, government shall take such activities or measures as it deems necessary including the following.</p> <ul style="list-style-type: none"> <li>• Planting or advising planting of trees and taking others steps to regenerate forests.</li> <li>• Testing of soil samples</li> <li>• In case of critical catchment areas prohibiting activities within 200 mts from the periphery thereof <ul style="list-style-type: none"> <li>✓ Felling of trees, destruction or clearance of grove or any vegetative cover</li> <li>✓ Jhumming or cultivation or any use of pesticide or insecticide</li> <li>✓ Quarrying of sand or stone</li> <li>✓ Excavation of earth</li> </ul> </li> </ul>

				<ul style="list-style-type: none"> <li>✓ Construction of roads or</li> <li>✓ Of carrying of any activity which in the opinion is likely to damage springs, streams rivulets, or water sources in the area.</li> <li>• In case of non-critical catchment areas the above named activities can be regulated or prohibited with a distance of 100 mts from the periphery thereof.</li> </ul> <p>It was discovered that such areas were notified in the past few years and no steps could be taken to protect these catchment areas due to non-participation and lack of cooperation from the people of the state who own most of the land in any case in the state.</p>
	d. Have steps been taken to avoid duplication of overhead costs in order to create synergies	The Policy and Regulatory framework on water resources in MH provides for an integrated vision and attempts to create synergies between systems and institutions. For example the WUAs constituted as legal entities under the MMISF Act are recognized as agencies for the bulk water entitlement under the MWRRA Act, 2005.	No information is available	Natural Resource Management Plan and Integrated Water Resources Management Plan envisages this aspect.

		<p>e. Are developmental laws harmonised with the need of integrated watershed development.</p>	<p>Maharashtra Industrial laws are not informed of the integrated watershed development concepts, however more in-depth research is required to finally conclude the argument.</p>	<p>No information available<sup>62</sup></p>	<p>No such information was discovered while desk based research which indicated this.</p>
		<p>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</p>	<p>No information available</p>	<p>No information available</p>	<p>Meghalaya comprehensive Water Act or Meghalaya Ground Water Act once in place shall be followed with an appropriate law. Moreover, there are certain provisions in the GHADC and KHADC administering this aspect to some extent.</p>

<sup>62</sup> On basis of desk based research no such information was available.

		surface water)			
9.	<b>Demand Management and Water use efficiency</b>	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	MWRAA Act 2005 empowers the Authority to decide priority of use among various uses. Quantum of water or benchmarking is not provided.	There is no law	None
		b. Any penalty for wastage of water and incentive for water use efficiency	MWP envisages a scheme of incentives and disincentives to manage water resources in the state. MWRRRA Act provides for the penalties <sup>63</sup> for the contravention of any of its orders or directions including the direction to promote water use efficiency and minimize wastage as per section 11(q).	No information available	No.

<sup>63</sup>Section 26: punishable with imprisonment for a term which may extend to six months or with fine, which may extend to ten times of the annual water charges or, with both in respect of each offence

	<p>c. Any efficiency benchmark at which irrigation projects have to perform and function</p>	<p>Water Efficiency in the agriculture sector is being achieved through systematic programs and also towards the objectives of the MMISF Act. Benchmarks are not known</p>	<p>There are no efficiency benchmarks for irrigation projects in the state</p>	<p>No. At present, Department is working on it.</p>
	<p>d. What the existing schemes providing incentives for engaging in cropping pattern using micro irrigation (drip, sprinkler, etc.), automated irrigation operation, evaporation-transpiration reduction, etc.</p>	<p>MPW, MWRRA Act and MMISF Act together contain provisions on promoting water efficient techniques such as drip or sprinklers</p>	<ul style="list-style-type: none"> <li>• <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 &amp; 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.</li> <li>• <u>Micro irrigation Monitoring System</u> has been developed for submitting</li> </ul>	<p>Pertinent to mention here that merely 25 per cent of the cropped areas in the state are covered under irrigation, while remaining 75 per cent are still under rain fed cultivation<sup>64</sup>.</p> <p>Increasing use of drip and sprinkler Irrigation done by Horticulture Department for cultivation of fruits and flowers under High Value Low Volume crops.</p>

<sup>64</sup> Info sourced from state water mission

			<p>the online applications. This enables to maintain transparency in seniority list and quick clearance of drip applications.</p> <ul style="list-style-type: none"> <li>• Subsidy is being directly given to the farmers through the Electronic Clearance System (ECS).</li> <li>• Govt. Is promoting sprinkler irrigation method for crops under centrally sponsored scheme.</li> </ul>	
	f. Any scheme being used in the state which encourages people to use water use efficient gadgets	Same as above	No information available <sup>65</sup>	No Information could be found on this aspect while undertaking desk based research.
	g. Is there a mechanism to conduct water audits –voluntary or mandatory	The MWP, the MWRRA provides for conducting water audits.	<p>The State Water Policy 2002 mentions about making water accounting and audit mandatory.</p> <p>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</p>	No.

<sup>65</sup> On basis of desk-based research, no information is available.

				system (GLBC)	
10	<b>Water pricing</b>	a. Is there a mechanism for water pricing?	A system of Bulk Water Tariff to be charged from WUAs is being followed in the state as per the MWRRA. Urban water pricing is being controlled by the WSSD and O/M cost is being recovered by the Urban Local Bodies	<p>The <b>State Water Policy 2002</b> endeavours to fix water rates for various uses to cover at least the operation and maintenance charges of providing services.</p> <p>The <b>Karnataka Urban Drinking Water And Sanitation Policy, 2003</b> talks about establishing "<i>appropriate cost recovery mechanism through adequate tariff to ensure that revenues cover operations and maintenance costs, debt service plus a reasonable return on capital.</i>"</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</p>	<p>The mechanism for water pricing in municipal areas is by levy of water tax<sup>66</sup> under <i>Meghalaya Municipal Act, 1973</i>. The water tax forms part of the annual value of holding/house for supply of water by the Municipality. The taxes that are levied are assessed as per the Act and the Meghalaya Assessment of Annual Rental Value of Holding Rules 2004 on the basis of unit area value of the property and rates recommended by Valuation Committee of the Municipal Board and approved by the state government. Presently, there is no metered connection in the state, though as part of Phase III of Greater Shillong Water Supply scheme for Shillong under JNNURM the new connections are going to be metered.</p> <p>The draft Meghalaya state Water Policy, 2014</p>

<sup>66</sup>Section 68. Taxes - (1) Subject to the provisions of this Act and the rules made thereunder the Board may, from time to time, at a meeting convened expressly for the purpose, of which due notice shall have been given, impose within the limits of the municipality the following taxes, fees and tolls, or any of them

(a) a tax on holding situated within the municipality assessed on their annual value, payable by the owner

(b) a water-tax payable by owner or occupier, on the annual value of holdings.

Section 2(38) "Rates" as used in Section 14 means: (a) the tax upon the annual value of holdings, (b) license fees, (c) the water-tax on the annual value of holdings,

			<p>under the <b>Bangalore water supply and Sewerage Act, 1964</b> 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 <b>Karnataka Urban Water Supply and Drainage Board Act, 1973</b> 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>	<p>(7<sup>th</sup>darft) aims at</p> <p>Developing a tariff and fee system which will ensure recovery of full operation and maintenance cost for providing water and sanitation services.</p>
	b. Has Water Regulatory Authority been established	Yes.	The state has not established Water Regulatory Authority	There is no water regulatory authority in the state.
	c. What is the water pricing methods being followed?	Flexibility given to the ULBs (service fee included in Property tax, Flat fee, Volumetric tariff)Average O&M cost (Rs./m3) 9.8	<p><u>Urban Areas</u></p> <p>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</p>	The method presently being followed is by levy of water tax which is assessed on the annual value of the holding/house for supply of water by the Municipality as per <i>Meghalaya Municipal Act, 1973. Other than this, there is water tariff</i>

				<p>Metropolitan Area operates on a 'no profit no loss' principle and all components of O&amp;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>	<p><i>being implemented by PHE Department.</i></p>
	<p>d. Has water pricing been rationalised? If yes how? If no why?</p>	<p>Urban: Flexibility given to the ULBs (service fee included in Property tax, Flat fee, Volumetric tariff) Average O&amp;M cost (Rs./m<sup>3</sup>) 9.8</p> <p>Rural: bulk water tariff mechanism</p>		<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> <b>The Karnataka Panchayat Raj Act, 1993</b> empowers<sup>67</sup> the Grama Panchayat (GP) to maintain drinking water supply</p>	<p>There is no rationalisation of water pricing there is no metered connection in the state, though as part of Phase III of Greater Shillong Water Supply scheme for the city of Shillong under JNNURM the new connections are going to be metered.</p>

<sup>67</sup> 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>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).</p> <p>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&amp;M is much higher than the amount charged by the GP.</p> <p>There is no rationalisation of water charges being recovered by GP.</p>	
	e. Are water charges being recovered from the consumers?	Yes as per above.	<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</p>	<p>There is levy of water tax which forms part of the annual value of house for domestic supply of water by the Municipality.</p> <p>Yes by PHED also.</p>

				<p>Metropolitan Area on 'no profit no loss' principle from the consumers.</p> <p><u>Rural Water Supply for drinking and sanitation</u></p> <p><b>The Karnataka Panchayat Raj Act, 1993</b> empowers<sup>68</sup> 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</p>	
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<sup>68</sup> 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;

				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.	
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		<p>f. Are Water Users Associations (WUAs) are involved in the process of fixing rates of water</p>	<p>Yes. Water User Associations have the power under the MMISF Act to levy and recover water charges<sup>69</sup>.</p>	<p>Under the <b>Karnataka Irrigation Act, 1965</b>, water users society<sup>70</sup>, water user association<sup>71</sup>, Water Users Distributary Level Federation<sup>72</sup>, Water Users Project Level Federation<sup>73</sup>, Water Users Apex Level Federation have been established. The water users society and water user association can levy<sup>74</sup> and collect water charges and service charges from the land holders.</p>	<p>The Water Users' Association (WUA) are not directly involved in the process of fixation of water rates/charges, but are encouraged to have the system in place according to section 3 (c) of Cabinet Memorandum on Participatory Irrigation Management (Nov' 2008)</p>
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<sup>69</sup> Section 52, MMISF Act, 2005

<sup>70</sup> 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

<sup>71</sup> 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.**

<sup>72</sup> 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;

<sup>73</sup> 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;

<sup>73</sup> 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;

<sup>74</sup> Section 62A (4) Karnataka Irrigation Act, 1965

		<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>Yes. The MMISF Act provides for the following<sup>75</sup>:</p> <p>(1) The Water Users' Association shall have powers and responsibility to charge to its members, water rates as may be approved by the General Body of the Water Users' Association.</p> <p>(2) Water Users' Association shall have the power to levy the minimum charges for the land for which water is not demanded or used for irrigation by members</p>	<p>The water users society and water user association have been given statutory power under <b>the Karnataka Irrigation Act, 1965 (Amending Act 24 of 2000)</b> 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 society<sup>76</sup> and water user association<sup>77</sup> 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 Karnataka Neeravari Nigam and distribute it to the land holders amongst its area of operation.</p>	<p>The maintenance of completed Minor Irrigation (MI) schemes is being looked after by the Water Resources Department. The implementation of Participatory Irrigation Management (PIM) is still in the initial stage. The achievement so far made in this respect is formation and registration of WUAs in the completed project areas. Presently, Water Users' Association (WUA) has been registered in 254 Minor Irrigation Projects.</p> <p>At present, the Draft Memorandum of Understanding (MOU) between the WUAs and the Department for handing over the <i>operation, maintenance and management</i> of MIPs to the WUAs has been submitted to the Government and the Cabinet's Approval in this regard is awaited. Regarding the realization of water rates, Government's approval is needed as it is a policy matter.</p>

<sup>75</sup> Section 27, MMISF Act, 2005

<sup>76</sup> Section 62A (2) Karnataka Irrigation Act, 1965

<sup>77</sup> Section 62AA (2) Karnataka Irrigation Act, 1965

11	<b>Scientific assessment of water resources and Database, information systema.</b>	a. Institutions involved in the scientific assessment of the water resources	<ul style="list-style-type: none"> <li>• The MWP provides that a modern integrated network of hydro-meteorological and related water sources and water use data and shared data and information management system shall be established and sustained to support planning, project formulation, implementation and decision making.</li> <li>•The State <b>Water Resources Department in coordination with other designated agencies such as the Central Ground Water Board.</b></li> <li>•Hydrology Project was established with assistance of World Bank in Nov.1995 with <b>Hydrological Information System (HIS)</b> in place. The hydro-meteorological data viz. rainfall, river discharge, maximum and minimum temperature, relative humidity, sunshine hours, wind velocity and direction, evaporation, water quality of designated points is regularly observed, recorded with the help of quality instruments spread over the entire state</li> </ul>	<ul style="list-style-type: none"> <li>•The <b>Water Resources Development Organisation</b> involved in collection and publication of Hydrological and Hydro-meteorological data for the state, designing of water resources projects.</li> <li>•Karnataka State Council for Science and Technology (KSCST) an autonomous organization under Department of Science &amp; 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 <b>Karnataka Natural Resources Data Management System (NRDMS)</b> program and also established District NRDMS Centres in the state. <b>Karnataka State level Spatial Data Infrastructure (KSSDI)</b> called <b>Karnataka Geoportal</b> 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.</li> <li>•Central Ground water Board is involved with assessment of groundwater resources in the state.</li> <li>•Department of mines (Groundwater wing) is also involved in hydrological survey and identification of watersheds.</li> </ul>	<p>An initiative has been taken by the MBDA under natural resources management plan to carry out the assessment and creation of database information. Meghalaya Water Resources Department is in the process to have a system to monitor and assess through the Water Resources Information System (WRIS). Besides, the North Eastern Space Application Centre (NESAC) for water resource mapping in Meghalaya, Central Water Commission &amp; Central Ground Water Board for Surface Water and Ground Water Monitoring and Assessment respectively.</p> <p>The in house data is used by the respective Department to decide the project according to the potential availability of water resources. Adding to it, external data generated by the Departments other than Meghalaya state is also being used for the purpose.</p> <p>As mentioned against 'a' above</p>
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	<p>b. How is the state organising its hydrological database and using it for decision making.</p>	<p>Under the Hydrology Project Maharashtra<sup>78</sup> the recorded data is fed to the computer with the help of SWDES and validated with HYMOS softwares</p>	<p><b>Water Resources Development Organisation and Karnataka Natural Resources Data Management System (NRDMS)</b> is involved in this process of using data from these resources for planning.</p>	
	<p>c. Which institutions and regulatory bodies are involved in the collection of Data</p>	<ul style="list-style-type: none"> <li>• The State Water Resources Department</li> <li>• Ministry of Water Resources, Gol, New Delhi Central Water &amp; Power Research Station, Pune.</li> <li>• India Meteorology Department, New Delhi</li> <li>• Central Ground Water Board, New Delhi</li> <li>• Central Pollution Control Board, New Delhi</li> <li>• National Institute of Hydrology, Roorkee</li> <li>• Bhakra Beas Management Board, New Delhi</li> </ul> <p>Central Water Commission New Delhi</p>	<ul style="list-style-type: none"> <li>• Water Resources Development Organisation</li> <li>• Central Ground water board</li> <li>• Department of mines and geology (groundwater wing)</li> <li>• Karnataka State Council for Science and Technology (KSCST)</li> </ul>	<p>1. CGWB- i) Monitors the ground water regime of Meghalaya through selected hydrograph stations. Ground water data is collected 4 (four) times a year through these selected stations for recording the behaviour of the ground water level and the annual fluctuation. These valuable data is also utilized for estimation of ground water resource block-wise by using the norm of Ground Water Estimation Committee (GWEC). These resource is estimated every 5 (five) years.</p> <p>ii) Ground water exploration has been carried out in all the districts of Meghalaya to assess the ground water potential. While doing it the valuable hydraulic parameters of the various geological units are also calculated. The valuable parameters computed are Transmissivity, Permeability, Storativity, Porosity etc. These valuable parameters decide the potential zone suitable for ground water development in a particular area.</p>
	<p>d. What are the different types of Data being collected at the</p>	<p>a) Rainfall  b) Temperature: -  i) Maximum ii) Minimum c) Evaporation; d) Humidity; e) Wind Velocity and direction; f) Sunshine</p>	<ul style="list-style-type: none"> <li>• Groundwater quality is monitored by the Department of Mines and Geology through network laboratories in all districts of Karnataka</li> <li>• Collection of groundwater data by Central</li> </ul>	<p>2. Central Water Commission – i) Central Water Commission has gauging stations at the major rivers of Meghalaya like Umngot, Myntdu, Kupli, Umiam, Rilang, Kynshi, Simsang, Ganol, Bhugi, Jinjiram etc. CWC records the water level of the river throughout the year for flood</p>

<sup>78</sup> [http://www.mahahp.org/old\\_mahahp.org/resource/apl2hdu.pdf](http://www.mahahp.org/old_mahahp.org/resource/apl2hdu.pdf)

		state level	duration (hourly); g) Water Level of rivers. Collected from River Gauge Site; h) Discharge of river	<p>Ground water board</p> <ul style="list-style-type: none"> <li>Hydrological Information System (HIS) has been established.</li> </ul>	<p>forecasting.</p> <p>3. Water Resources Department- i) Discharge of rivers and streams for preparation of DPRs of projects.</p> <p>ii) Command Area for irrigation purpose both for agriculture and horticulture crops.</p> <p>iii) Identification of agricultural areas being affected by flood for the purpose of providing Flood Control works.</p>
12	<b>Allocation and uses of water</b>	a. Is there a mechanism for water allocation amongst different competing uses	The MWP provides for the judicious allocation of water among various competing uses. The MWRRA Act also envisages the mechanism to ensure judicious allocation and utilization of water resources.	The State water Policy 2002 specifies priorities for allocation of water amongst competing uses, though mechanism is not prescribed.	There is no mechanism for water allocation amongst different competing uses.
		b. If yes, the criteria and principles followed for allocation	The Entitlements shall be issued by River Basin Agency based on the Category of Use and subject to the priority assigned to such use under State Water Policy <sup>79</sup>	Presently, there is no mechanism for allocation of water	-NA-

<sup>79</sup> Section 11(i), MWRRA Act, 2005

	<p>c. Are principles of equity and social justice being followed for water allocation</p>	<p>The MWP has the objective to provide greatest economic and social benefit to the people of Maharashtra by the sustainable development and optimal use of water resources. The MWRRA established under the statute has the objective to regulate water resources within the State of Maharashtra, facilitate and ensure judicious, equitable and sustainable management, allocation and utilisation of water resources</p>	<p>Presently, there is no mechanism for allocation of water</p>	<p>The draft Meghalaya state Water Policy, 2013 states that water allocation in irrigation systems would be equitable and socially just and distributed on a rotational and volumetric basis. There is</p>
	<p>d. The existing mechanism for dispute resolution in allocation of water</p>	<p>The Authority and the Dispute Resolution Officer shall for the purposes of making any inquiry or initiating any proceedings under this Act, have the powers as are vested in a civil court, under the Code of Civil Procedure, 1908 in respect of the following matters, namely:- (a) the summoning and enforcing the attendance of any witness and examining him on oath; (b) the discovery and production of any document or other material object producible as evidence; (c) the reception of evidence on affidavits; (d) the requisition of any public record; (e) the issue of commission for examination of witnesses; (f) review its decisions, directions and</p>	<p>Presently, there is no mechanism for allocation of water</p>	<p>There is presently no mechanism for dispute resolution in allocation of water</p>

		orders; (g) any other matter which may be prescribed <sup>80</sup> .		
	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	Yes. The MWP prioritises water use as per the following: a) Domestic use for drinking, cooling, hygiene and sanitation needs including livestock. b) Industrial, commercial use and agro based industrial use c) Agriculture and Hydropower d) Environment and recreational uses All other uses	The State Water Policy 2002 mentions the priority of order in which water is to be utilised. It states <i>In planning and operation of water resources projects, water allocation priorities shall be broadly as follows :</i> <i>a. Drinking water</i> <i>b. Irrigation</i> <i>c. Hydropower</i> <i>d. Aquaculture</i> <i>e. Agro industries</i> <i>f. Non-Agricultural Industries</i> <i>g. Navigation and other uses</i>	The draft Meghalaya state Water Policy, 2014 (7 <sup>th</sup> draft) lays the Water allocation priorities are broadly as follows:  - Drinking water minimum ecological needs  - Irrigation  - Hydropower  - Agro-industries and non-agricultural industries  - Transport and other uses  However, the priorities may be modified or added if warranted by the area/region on the basis of specific relevant considerations.

<sup>80</sup> Section 13, MWRRRA Act, 2005

	<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>No the procedure for allocation is not defined under the MWP. Priority as a matter of policy is however provided.</p>	<p>There is no procedure for allocation of water amongst different uses.</p>	<p>There is no procedure prescribed in the draft Meghalaya state Water Policy, 2013 for allocation of water between sectors.</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>Drinking water assumes the highest priority under the MWP</p>	<p>There is no procedure for allocation of water amongst different uses. The Water policy ascribes highest priority to drinking water.</p>	<p>The draft Meghalaya state Water Policy, 2014 lays the Water allocation priorities are broadly as follows:</p> <ul style="list-style-type: none"> <li>- Drinking water minimum ecological needs</li> <li>- Irrigation</li> <li>- Hydropower</li> <li>- Agro-industries and non-agricultural industries</li> <li>- Transport and other uses</li> </ul> <p>However, the priorities may be modified</p>

					or added if warranted by the area/region on the basis of specific relevant considerations.
13	<b>Management Of Flood &amp; Drought</b>	a. What is the regulatory mechanism to prevent loss of land eroded by the river, which causes permanent loss, revetments, spurs, embankments, etc.,	Under the MMISF Act the Water use agency and the User's Association has the general obligation to undertake construction and maintenance measures of water resources structures, embankments etc.	There is no regulatory mechanism to prevent loss of land eroded by the river, which causes permanent loss, revetments, spurs, embankments, etc.	The draft Integrated State Water Policy 2014 emphasises the need to establish flood control/management plans for flood prone water basins. It also provides for strict regulation of settlements and economic activities in flood plain zones to minimise the effects of floods.

		<p>b. Is there an institutional setup for flood forecasting using real time data acquisition system and linked to forecasting models?</p>	<p>The Water Resources Department and the River Basin Development Corporations coordinate for the forecasting of floods and droughts. MWRRA also has a proactive role in collaborating with the state agencies.</p>	<ul style="list-style-type: none"> <li>• The <b>Krishna and Godavari Basin Organisation (KGBO)</b> set up by <b>Central Water Commission</b> has set up Krishna &amp; 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.</li> <li>• The <b>Minor Irrigation Department</b> is implementing river bank protection works to prevent damages to river banks due to floods.</li> <li>• There is <b>Karnataka State Natural Disaster Monitoring Centre (KSNDMC)</b> has been set up for monitoring any occurrence of flood situation.</li> </ul>	<p>There is no institutional setup for flood forecasting using real time data acquisition. Though, draft integrated state water policy, 2013 talks about the need for establishment of modernised flood and drought forecasting models.</p>
14	<p><b>Integrated Water Resources Management</b></p>	<p>a. Has the state incorporated river basin / sub-basin as a unit as the main principle for planning, development and management of</p>	<p>Yes. The MWP and MWRRA Act have clear provisions on taking river- basin and sub-basins as the planning units. MWP provides that the decentralization of water governance be done to the lowest possible practicable hydrologic unit.</p>	<p>The <b>State Water Policy 2002</b> incorporates river basin as the basic unit for <i>"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</i></p>	<p>The Water Resources Department is implementing one new initiative which is the Integrated Water Resources Management Programme (IWRMP) which covers the activities under the Water Mission under the aegis of the Integrated Basin Development &amp; Livelihood Promotion (IBDLP)<sup>81</sup> through the Meghalaya Water Resources Development</p>

<sup>81</sup> Info sourced from <http://www.megplanning.gov.in/plan/aplan/2013-14/sector/10.pdf>

		Water resources.		<p><i>considerations.”</i></p> <p>There is <b>Karnataka Cauvery Basin Irrigation Protection Act, 1991</b>, 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>Agency (MeWDA).</p> <p>It is also pertinent point out here that the autonomous district councils are not involved in implementation of any of the development schemes of the state government or the centrally sponsored schemes. For example, the employment programme (MGNREGS) is being implemented in the villages in the state through the Village Employment Council, a parallel structure to the traditional village council, constituted under the Meghalaya Rural Employment Guarantee Scheme 2006.</p> <p>IBDLP was launched as a State Flagship Programme during 2010-11 with the aim of ‘promoting optimal and effective development and utilization of basin resources for ensuring livelihood security and inclusive growth within a sustainable framework’<sup>82</sup>. The implementation period of the programme is co-terminus with the XII plan period, 2012-17.</p> <p>Under IWRMP, activities for management and maximum utilization of the available water resources through the implementation of water</p>
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<sup>82</sup>The IBDLP is designed around four pillars- Knowledge Management, Natural Resource Management, Entrepreneurship Development and Good Governance and will be implemented in a Mission mode through nine missions- Aquaculture Mission, Horticulture Mission, Livestock Mission, Sericulture Mission, Tourism Mission, Forestry & Plantation Crops Mission, Apiculture Mission, Energy Mission and Water Mission. Each mission is designed to leverage the natural advantages that the state has in the sector and to generate livelihood opportunities for every household and to accelerate growth. The District Basin Development Units (DBDU) has been set up in all 11 districts in the office of the Deputy Commissioner. The DBDUs are the implementation agencies for the various interventions under the programme. Convergence of the activities of the department is achieved under the aegis of the DBDUs. Enterprise Facilitation Centres (EFC) are set up at the block level as first points of contacts and grass root interface with citizens. 26 EFCs are currently functioning.

				harvesting structures, Jalkunds and Multipurpose Reservoirs are being taken up. Further, other Programmes relating to water quality, capacity building and awareness, monitoring and evaluation of projects, policy and regulation have also been initiated.
	b. Are there river basin <sup>83</sup> management authorities established by the state government	Yes and these have also been recognized under the MWRRA Act and MMISF Act. (1) the Maharashtra Krishna Valley Development Corporation established under the Maharashtra Krishna Valley Development Corporation Act, 1996; (2) the Vidarbha Irrigation Development Corporation established under the Vidarbha Irrigation Development Corporation Act, 1997; (3) the Konkan Irrigation Development Corporation established under the Konkan Irrigation Development Corporation Act, 1997; (4) the Tapi Irrigation Development Corporation, established under the Maharashtra Tapi Irrigation	The state has established the <i>Krishna Basin Development Authority</i> under the <b>Karnataka Krishna Basin Development Authority Act, 1992</b> to develop the Krishna river basin area lying within the state.  The state has also established Command Area Development authorities under the <b>Karnataka Command Areas Development Act, 1980</b> for 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 <b>Andhra State Act, 1953</b> to implement	MBDA is set up The MBDA (Meghalaya Basin Development Authority) had been set up in March, 2013 to implement IBDLP <sup>84</sup> .

<sup>83</sup>Hydrologically the State comprises of two basins, viz., the Left Bank of Brahmaputra Basin (11220.11km<sup>2</sup>) and the Brahmaputra Tributaries Basin (11208.89km<sup>2</sup>), three catchments viz., Kalang to Dhansiri Confluence (about 4499.61km<sup>2</sup>), Bangladesh Border to Kalang Confluence (About 6720.50km<sup>2</sup>) and South Flowin Drainage of Meghalaya (11208.89km<sup>2</sup>), eight sub catchments with a size range of 2.08 to 2.46 lakh hectare 35 watersheds with a size range of 0.05 to 2.67 lakh hectare and 179 watersheds with a size range of 0.03 to 0.22 lakh hectare.( [http://mbda.gov.in/about\\_IBDLP.html](http://mbda.gov.in/about_IBDLP.html))

<sup>84</sup>The IBDLP programme is implemented through the following Institutional Frameworks,The Meghalaya Basin Development Council (MBDC) is headed by the Chief Minister and is responsible for policy planning and coordination, innovation, resource mobilisation and for synergising the efforts of the various stakeholders. The members of MBDC are Ministers and Chief Executive Members of Autonomous District Councils and other distinguished experts. The Meghalaya Basin Development Authority (MBDA) is headed by the Chief Secretary, government of Meghalaya and is responsible for the strategy ad steering the overall implementation of programmes

			<p>Development Corporation Act, 1997; (5) the Godavari Marathwada Irrigation Development Corporation established under the Maharashtra Godavari Marathwada Development Corporation Act, 1998;</p>	<p>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 functions of the Corporation<sup>85</sup> shall be—  (a) to promote and operate,—  (i) irrigation projects and command area development including flood control; and  (ii) schemes for the generation of hydro-electrical energy ;  (b) to plan, investigate, design, construct and manage the irrigation projects and command area development '[and to help drip irrigation schemes through the Agriculture Department of Government] ;  (c) to plan, investigate, design, construct and manage the schemes of the generation</p>	<p>The functions<sup>86</sup> of the Krishna basin development Authority established under the <b>Karnataka Krishna Basin Development Authority Act, 1992</b> are as follows:  (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;</p>	<p>The aims and objectives for which the Authority (MBDA) is established are as under:</p> <ul style="list-style-type: none"> <li>• To sustainably develop the river basin resources, which shall ultimately lead to promoting the sustainable livelihood and gainful employment opportunities for the residents of river basins, independent or through the convergence of initiatives.</li> <li>• To, without any motives to earn profit, enhance and improve the livelihood for the poor in the state of Meghalaya.</li> <li>• To increase sustainable income generating cultivation systems and establishment of micro/small scale/ medium scale bio-</li> </ul>

<sup>85</sup> Section 18, Krishna Valley Development Corporation Act, 1996; the River Basin Development Authorities have almost similar functions and powers.

<sup>86</sup> Section 7 Karnataka Krishna Basin Development Authority Act, 1992

			<p>of hydro-electrical energy ;</p> <p>(d) to enter into contracts in respect of the works and any other matters transferred to the Corporation along with assets and liabilities under this Act ;</p> <p>(e) to invite tenders, bids, offers and enter into contracts for the purposes of all the activities of the Corporation ;</p> <p>(f) to promote participation of any person or body or association of individuals whether incorporated or not, in planning, investigation, designing, construction and management of irrigation projects, and command area development and Hydro-Electric Power Projects including flood control ;</p> <p>(g) to undertake schemes or works, either jointly with other corporate bodies, or institutions, or with Government or local authorities, or on agency basis in furtherance of the purposes for which the Corporation is established and all matters connected therewith ;</p> <p>(h) to promote irrigation related activities such as fisheries,</p>	<p>(e) to undertake resettlement and rehabilitation of the people affected by the construction of the projects and works in the Krishna Basin;</p> <p>(f) to construct proper drainage systems and take such other measures as are necessary to prevent water logging and salinity in the Krishna Basin;</p> <p>(g) to undertake measures for protection and improvement of the environment including the treatment of catchment areas of the projects and works</p> <p>The major functions of the Command Area Development Authorities formed under <b>Karnataka Command Areas Development Act, 1980</b> are as hereunder:</p> <ol style="list-style-type: none"> <li>1. Reclamation of water logged areas.</li> <li>2. Construction of field irrigation channels (FIC).</li> <li>3. Construction of field drains.</li> <li>4. On-farm development (OFD).</li> <li>5. Adoption of warabandi system for distribution of water.</li> <li>6. Adoption and enforcement of suitable cropping pattern.</li> <li>7. Conjunctive use of surface and ground water.</li> <li>8. Extension training and demonstration</li> </ol>	<p>industrial units.</p> <ul style="list-style-type: none"> <li>• To enable people's participation to select livelihood activities most suited to their resources, skills and interest.</li> <li>• To address the felt needs and priorities of women and increase their participation in local institutions and decision making process.</li> <li>• To promote micro finance including saving and thrift and micro insurance projects.</li> <li>• To provide business development service including demonstration, training, consultancy and advisory service on all matters relating to technical, organisational, management commencement and expansion of the enterprise, purchasing techniques, production, purchases, sales, material and cost, quality control, marketing, advertising, publicity, personnel' information technology services, development and transfer, backward and forward business linkage promotion and horizontal linkage among enterprises, export and import to and for institutions/concerns/bodies/associations/corporations/public and local authorities/trusts/cooperative societies.</li> </ul>
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			purposes of carrying out its functions under this Act.....		
15	<b>Planning and Implementation of water resource projects</b>	<p>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.</p>	<p>The MWP has a clear vision in terms of promoting participatory water resource governance and the regulatory and institutional framework in MH is geared up towards that.</p> <p>MWP talks about restructuring the relationship in such a way that the bureaucratic interference in water governance is minimal and the water resources are completely managed by the stakeholders/users.</p> <p>MMISF makes is mandatory for the farmers to participate in the management of irrigation systems. Water User Associations are empowered under the statute to manage water resources as per the law.</p>	<ul style="list-style-type: none"> <li>Water Resources Development Organisation is involved in planning of Major &amp; 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.</li> <li>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.</li> <li>Krishna BhagyaJala Nigam Limited (government company) is involved in planning, investigation, building, operating and maintaining irrigation schemes of Upper Krishna Project (UKP)</li> </ul>	<p>Each district of the state has constituted a District Planning &amp; Development Council (DPDC). The DPDC is headed by the Chairman who is a Cabinet rank minister from the district. The Deputy Commissioner of the district is the Vice Chairman with MLAs of the district and Chief Executive Member of ADC of the district as the members. The district plan formulated by the council is based on departmental proposal submitted by the district offices with no framework for developing of plans from villages upward (Umdor, 2009).</p> <p>WUA's at the planning and implementation; Autonomous District Councils prepares the district level plans; urban local bodies manages domestic water distributors system but does not engage themselves in planning water projects with an exception of Shillong Municipal Board which is involved in planning level also.</p>

		<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>No such provision exists. Provisions of MWP and other regulations are being enforced for the benefit of all.</p>	<p>There is no concrete information available on this aspect</p>	<p>The entire water sector projects are meant for meeting the needs and aspirations of ST/SC, women and weaker sections.</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>No, there is no single window clearance</p>	<p>The State level Empowered Committee set up for this.</p>

16	<p><b>Conservation of river corridors, water bodies and wetlands</b></p>	<p>a. What is the prevalent institutional structure for conservation and management of river corridors, water bodies, wetlands within the state?</p>	<p>There are instances of creation of dedicated river development and protection authorities such as the Mithi River Development and Protection Authority created by the Mumbai Metropolitan Region Development Authority. The Mithi River Authority has the following functions:</p> <p>Functions of MRDPA -</p> <ul style="list-style-type: none"> <li>• To approve the Mithi River Development Plan</li> <li>• To approve various projects for implementation of the Mithi River Development Plan</li> <li>• To rehabilitate the PAP's affected by implementation of the project</li> <li>• To identify implementing agencies for implementation of tasks decided in the Mithi River Development Plan</li> <li>• To co-ordinate between roles of Govt. / Semi Govt. / Other agencies for implementation of the Development Plan</li> <li>• To review the implementation by the concerned agencies and direct the respective agencies for effective implementation of Mithi River Development Plan</li> </ul> <p>Other similar examples exist, however there is no state level lake conservation authority</p>	<p>The <b>Lake Development Authority</b> 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"> <li>• Restoring lakes and facilitating restoration of depleting ground water table.</li> <li>• Diverting/treating sewage to generate alternative; sources of raw water and prevent contamination of underground aquifers from wastewater.</li> <li>• Environment impact Assessment studies.</li> <li>• Environmental Planning and GIS Mapping of lakes and surrounding areas.</li> <li>• Improving and creating habitat for water birds and wild plants.</li> <li>• Reducing sillage and non-point water impacts.</li> <li>• Improving urban sanitation and health conditions especially for the weaker sections</li> </ul>	<p>Meghalaya water mission states as one of its objectives to Conserve wet-lands/ rivers/ lakes and rejuvenate &amp; restore different water bodies, and promote need-base, ecological and economic development. Institutional mechanism to implement water mission is MBDA which is responsible for carrying out IBDLP.</p>
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				<p>living close to the lakes.</p> <ul style="list-style-type: none"> <li>• Impounding run-off water to ensure recharge of ground water aquifers and revival of borewells.</li> <li>• Monitoring and management of water quality and lake ecology.</li> <li>• Utilizing the lakes for the purpose of education and tourism.</li> <li>• It also has the governing council which has the powers to among other things:</li> <li>• Frame regulations, byelaws</li> </ul>	
		<p>b. Is there community participation in the conservation of river corridors, water bodies, wetlands?</p>	<p>Depends upon case to case basis.</p>	<p>The Lake Development Authority is mandated to ensure community participation and raising public awareness programmes for lakes conservation.</p>	<p>Stakeholders participation is emphasised in every water related project. However information on the details of their participation and engagement could not be found.</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>No specific provisions could be found.</p>	<p>Under the <b>Karnataka Municipal Corporation Act, 1976</b> 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.<sup>87</sup> There is no specific provision to deal with encroachments and diversion of water bodies, wetlands.</p> <p>There are provisions in the <b>Karnataka Land Revenue Act 1964</b> 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 Karnataka Land Revenue Act, 1964 and Karnataka Municipal Corporation Act, 1976</p>	<p>None were found as per our desk based research.</p>
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<sup>87</sup> Section 436A 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	No information available	The draft integrated State Water Policy 2013 provides for active participation of the communities in the management and protection of the water resources and a duty has also been cast upon them to protect and conserve the water sources.