

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

## **FINAL REPORT**

**(KERALA, NEGALAND, UTTARAKHAND)**

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## 0.0 Executive Summary:

The water policy and regulatory framework in the three states of Kerala, Nagaland and Uttarakhand has been examined based on broader thematic areas that form the basis of the National Water Policy, 2012. The analysis has revealed that there are various policy and regulatory gaps in the water governance frameworks in the studied states which need to be filled by initiating appropriate policy and regulatory reforms. The three study states are geographically very different and thus have a different water and water governance context. They are also differently placed in terms of their evolution of legal and institutional framework for the management of natural resources and decentralized governance. For example, Kerala is a coastal state with Panchayati Raj system wherein Gram Sabha's and Panchayat's at the appropriate level are empowered to take decisions for the local management of water resources. The state of Kerala through a series of legal enactments has also created a state level regulatory and institutional framework for the protection and management of water resources. Nagaland is a north-eastern state with a special Constitutional status and a very different system of decentralized self-governance wherein Village Councils exercise control over water resources. In Uttarakhand, the perspective for integrated management of land and water resources had existed for long, however the state is lacking an appropriate policy vision. The Water Management and Regulatory Act, 2013 requires an administrative and implementation foresight as it lacks implementation<sup>1</sup>.

The summary of regulatory framework and specific policy issues that emerges with regards to water governance regime in the studied states are as follows:

**Kerala** is considered to have a progressive water law framework consisting of a number of legal instruments concerning water and water based ecosystems, including the Kerala Water Supply and Sewerage Act, 1986, Kerala Command Area Act, 1986, the Kerala Protection of River Banks and Regulation of Removal of Sand 2001, Kerala Ground Water (Control and Regulation) Act, 2002, Kerala Irrigation and Water Conservation Act, 2003, recent Kerala Conservation of Paddy Land and Wetlands Act, 2008. The state has also adopted a Water Policy in 2008 (hereinafter KWP) which is in succession to the earlier water policies of 1992 and 2002. Despite a number of legal instruments on water and regulation of water ecosystems, the state continues to face water related challenges due to weak enforcement and gaps in the existing regulatory regime. The Plachimada (Coca cola) Case is just one example. The legal and institutional framework in Kerala on water resource management offers useful lessons on several aspects including protection of water ecosystems and institutional entrepreneurship on water resources. However, the water policy of 2008 is the most recent instrument adopted by the state which deserves attention due to the fact that the Policy brings forth the most recent thinking and vision of the state government to manage its water resources. **This Policy precedes National Water Policy of 2012 and therefore some of the principles and approaches contained therein still remain to be harmonized in tune with the NWP. However, the KWP, 2008 acknowledges water as a public resource and asserts the right of citizens to access it.** The KWP acknowledges likely future scarcity of water due to global warming and climatic changes. Thus the climate change and its impact of water resources as has been acknowledged in the NWP is being addressed in the KWP as well. The KWP assigns high value to available water resources and provides that the water resources of the state cannot be taken for granted any longer. Conserving all water resources in the best possible way, coordinating the efforts of various government

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<sup>1</sup> [http://articles.economictimes.indiatimes.com/2013-07-28/news/40848700\\_1\\_ground-water-water-resources-water-policy](http://articles.economictimes.indiatimes.com/2013-07-28/news/40848700_1_ground-water-water-resources-water-policy)

agencies and involving the people themselves in the task is a crucial necessity according to the KWP. The policy conceives the necessity of conservation, development and management of water resources based on the concept of watershed as inevitable for maintaining the ecosystem integrity of rivers and river basins of Kerala. The policy stipulates treating each river basin as an integral unit of various watersheds for planning water conservation measures and deciding how the resources on hand shall be apportioned among various consumer groups. Domestic consumers are the first priority, followed by farmers, power generation, the agro-processing sector and industrial or commercial customers, in that order. The commercial use of water is to be subjected to stringent regulations as per the KWP. The draft KWP had a very innovative feature wherein the river basins were given the flexibility to have their own order of water use prioritization. This provision has however been removed and does not exist in the final draft.

As the KWP came out in 2008 and the state water laws were enacted before the adoption of the Policy, the KWP provides enough room for undertaking a legal and regulatory review of the existing laws and rules in the light of its objectives and vision. The KWP itself calls for enacting new laws for setting up a River and Wetland Authority and regulating groundwater exploitation. The policy takes cognizance of the delays in execution of drinking water supply schemes and irrigation projects in Kerala. It says that more large irrigation projects are not advisable for the state. The focus henceforth shall be on small projects, especially lift irrigation schemes that can reduce water wastage. Rainwater harvesting, protection of forest cover, preventing water pollution with stringent penal provisions against the polluters, checking saline water intrusion into inland water sources, and strengthening research are some of the other focus areas mentioned in the water policy.

**Nagaland** is a very unique state governed under Article 371-A of the Constitution of India, 1950 wherein no law made by the Parliament with respect to land and its resources would apply to Nagaland unless it is approved by the Legislative Assembly of the State. The decentralized governance system over natural resources, including water resources in Nagaland is established by way of a state level enactment known as the Nagaland Village and Tribal Council Act, 1978 which recognizes the tribal and customary self rule and provides legal support to it. **The state has recently announced the launch of a comprehensive water policy** which arguably confirms to the principles and approaches contained in the NWP and are yet suited to the unique water context and governance system of Nagaland<sup>2</sup>. **However, a robust water legislation covering all aspects is required to provide legal support to the Policy and help in the fulfilment of policy objectives.**

**Uttarakhand** has a long history of water related legal enactments dating back to the pre-independence era. The Nayabad and Wasteland Grant Rules which attempted regulating water by way of regulating land, the Kumaon Water Rules 1917, and the modified Kumaon Water Rules of 1930 which provided for the construction of new irrigation channels by provide landholders but laying down the condition that the existing water of the rightholders should not be disturbed are some of the examples. Later, the enactment of Kumaon and Uttarakhand Zamindari Abolition Act 1950, the Uttaranchal Bhoomi Evam Jal Sanrakshan Adhinyam, 1963 and the Kumaon and Garhwal Water (Collection Retention and Distribution) Act 1975 that collectively sought to redefine the water law framework for the State. The institutional framework constituted under the Bhoomi Adhinyam of 1963 consisted of a Bhoomi Evam Jal Sanrakshan Board, the Zila Samiti and also the Bhoomi Sanrakshan

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<sup>2</sup> [http://www.business-standard.com/article/news-ani/nagaland-drafts-water-policy-116012700691\\_1.html](http://www.business-standard.com/article/news-ani/nagaland-drafts-water-policy-116012700691_1.html);  
<http://morungexpress.com/nagaland-water-policy-document-formally-handed-over-to-state-govt/>

Adhikari. On a resolution passed by the Zila Samiti, the Bhoomi Sanrakshan Adhikari is required to prepare a detailed soil and water conservation plan<sup>3</sup>. Recently, the state has enacted the Water Management and Regulatory Act, 2013 which remains unimplemented so far. The draft state water policy is not available in the public domain.

**1.0 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.

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. 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.

Thus the 'paradigm shift' as advanced during the formulation of the 12<sup>th</sup> Five Year Plan is reflected 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 confirms to the principle and approaches adopted in the NWP therein. It is in this background that a comprehensive assessment of state level policy and regulatory

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<sup>3</sup> As per section 9 of the Act

framework on water resources in the three differently positioned states of Kerala, Nagaland and Uttarakhand is being carried out to understand their preparedness and response to the growing challenges to water resources acknowledged in the National Water Policy from the national and state perspective.

## 2.0 Objective of the Project:

The primary objective of the present analysis is to assess the preparedness of the states in terms of regulatory and institutional framework to respond to the directives of the national water policy- 2012 (NWP). This study is part of a larger examination and in continuation to the Phase-I wherein the water policy and legal framework in other states including Maharashtra, Chhattisgarh, Meghalaya and Himachal Pradesh was analysed with the objective to understand their preparedness to deliver up to the directives of the National Water Policy, 2012. This very timely project aims at finding out the preparedness of the study states to implement the vision articulated in NWP 2012<sup>4</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.

## 3.0 Rationale for the selection of three study states

- **Nagaland:** This state was selected keeping in mind its unique governance on account of Article 371 A of the Constitution of India. Article 371 A is a peculiar “*special provision with respect to the State of Nagaland*” only stipulating that no act of Parliament relating to (i) religious or social practices of the Nagas (ii) Naga customary law and procedure, (iii) administration of civil and criminal justice involving decision according to Naga customary law (iv) ownership and transfer of land and its resources is applicable to the State unless approved by State Legislative Assembly. This assumes significance qua management of water resources in the state. Further, the state has formulated a draft Nagaland Water Policy- 2016. Another significant enactment is the *Nagaland Communitisation of Public Institutions and Services Act, 2001* that delegates the powers and functions of the State Government to the local traditional institutions in matters connected with the management of local public utilities, public services and the activities of the State Government connected with water supply, education, roads etc. The interplay of such enactments to vision articulated in National Water Policy-2012 requires analysis.
- **Kerala:** This state was selected to bring in the southern and coastal state perspective in dealing with various facets of water management and conservation. The State has a *Water Policy, 2008* with objectives to: adopt integrated and multi-sectoral approach for planning, development and management of water resources; consider micro watersheds as the basic unit for the conservation and optimal utilization of water resources for achieving resources sustainability; integrate the problems and prospects of water resource systems by considering river basin as the basic unit; emphasize the importance of comprehensive watershed conservation and management plan etc. The state has Kerala Water Authority established by *Kerala*

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<sup>4</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

*Water Supply and Sewerage Act 1986* to perform function of planning of the state's water supply and sewerage requirements, preparation of state plans for water supply and disposal of waste water. Additionally, state enacted the *Kerala Ground Water (Control and Regulation), Act, 2002* to regulate abstraction of groundwater, *Kerala Paddy and wetland Act, 2008* to conserve paddy land and wetland, *Kerala Protection of River Banks and Regulation of Removal of Sand Act, 2001* to protect river banks and river beds from large scale dredging of river sand.

- **Uttarakhand:** This state was selected to analyse the water management framework in a hill context keeping in mind impact of climate change on water resources in the Himalayan state. The state enacted *The Uttarakhand Water Management and Regulatory Act, 2013* that provides for establishment of a Water Management Regulatory Authority to ensure judicious and equitable management of water resources in the state as well as its proper allocation and optimal utilisation. The state is also in the process of enacting a new water policy.

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

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

	Thematic Areas as per NWP	What is to be explored	Kerala	Nagaland	Uttarakhand
1.	<b>Public Policy on water resources to be informed of basic common principles</b>	a. Whether state has a water policy	State has a water policy (2008)	State has a draft Nagaland Water Policy-2016 <sup>5</sup> (hereinafter referred to as 'NWP-2016')	The State is not having a water policy.

<sup>5</sup>[http://www.nagaland.gov.in/Nagaland/NotificationsAndAlerts/IELO\\_Nagaland%20water%20policy\\_final%20version\\_jan%202016.pdf](http://www.nagaland.gov.in/Nagaland/NotificationsAndAlerts/IELO_Nagaland%20water%20policy_final%20version_jan%202016.pdf)

		<p>b. Whether the state water policy is updated in view of NWP-2012?</p>	<p>The State policy was prepared in 2008 before NWP-2012 came into force. No, the KWP has not been updated in view of NWP-2012. There is no credible information on state government's initiatives to revise and update the KWP on the lines of NWP.</p>	<p>The draft NWP-2016 is updated in view of NWP-2012</p>	<p>-do-</p>
		<p>c. Whether the sentiment articulated in NWP is echoed in state policies?</p>	<p>Some of the sentiments of NWP finds reflection in the State Water Policy-2008. The objectives of the KWP are to - Adopt integrated and multi-sectoral approach for planning, development and management of water resources.</p> <p>Consider micro watersheds as the basic unit for the conservation and optimal utilization of water resources for achieving resource sustainability.</p> <p>Integrate the problems and prospects of water resource systems by considering river basin as the basic</p>	<p>The draft NWP-2016 takes into account the sentiment voiced in NWP-2012</p>	<p>-do-</p>



			<p>unit.</p> <p>Emphasize the importance of comprehensive watershed conservation and management plan, water quality management plan, long-term sub-basin and river basin operation and monitoring plan and State water resource plan.</p> <p>Enable appropriate institutional mechanism and legal measures for sustainable water resource development and management.</p> <p>The KWP provides for policy, legal and management initiatives to be adopted by the state government. The objectives under the KWP are broad based.</p> <p>State Water Policy calls for a multidisciplinary and holistic approach that considers water as part of the ecosystem for the benefit of all and not as a commodity for the profit of a few. (KWP: 1.1)</p>		
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			<p>The KWP is based on certain Guiding Principles which will guide the state's initiatives on water resource management. The Principles contained in the KWP include recognition of right to water as a human right and water as a common heritage with economic value. However, the KWP does not provide for water to be held as the public trust by the state government. Instead water is controlled by the state government as a publically owned resource and the government is empowered to provide entitlements to individuals, communities and service providers without any claim to ownership over water resources by these stakeholders. Interestingly, conservation and management of water with micro-watersheds is provided as one of the Guiding Principles under the KWP. Thus the principles</p>		
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			<p>contained in the KWP do not confirm to the principles and approaches in NWP, 2012. Importantly, KWP does not recognize impact of Climate change on water resources and the need for undertaking necessary measures to avert the climate related impacts on water resources. The focus of the KWP appears to be area/zoning based water management with micro-watersheds and river basins as units for water management.</p> <p>Therefore, in view of a comprehensive framework desired by the NWP, the KWP has much scope for improvement. This becomes important in the scenario wherein the state has a number of water legislations already in place and the Policy vision is required to be carried forward through the appropriate</p>		
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			legislations.		
		d. Any concrete action is taken?	The action taken qua implementation of aspects contained in the State Water Policy-2008 is detailed below.	The draft NWP-2016 incorporates the principles articulated in NWP-2012	-do-
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 Policy acknowledges that limited availability of water can impede future progress and its thoughtless exploitation can negate our socio-economic development. (KWP: 1.1 Rationale for a water policy). The Policy also acknowledges the availability of water and water use is undergoing constant changes and therefore calls for optimum utilization and proper conservation of this resource.</p> <p>The KWP acknowledges that there is an imminent need to create greater social awareness about the rights and responsibilities in the use of water and to put in place better management</p>	State is having draft NWP-2016. It talks about water being a scarce and natural resource. The Department of Soil and Water Conservation has its own Water policy. The policy states that the natural water resources in the state are under peril.	-do-

			<p>practices in the utilization of this invaluable resource</p> <p>The KWP clearly provides that "Information, Education and Communication (IEC) programmes on a continuous basis shall be organized to raise the awareness level of the community and other key stakeholders, to participate in developing watershed based action plans as envisaged in the State Water Policy". (KWP: 2.12)</p>		
		b. Does the state have a campaign running or any engagement with its citizens to create and foster this sentiment?	As per available information, presently there is no campaign running to raise awareness to save water. In the past there have been campaigns to raise awareness on scarcity of water resources.	There are state wide awareness campaign on this aspect.	Uttarakhand Jal Sansthan has come out with water conservation guidelines. The Uttarakhand Rural Water Supply & Sanitation Project (Swajal) has launched an awareness programme on water conservation and cleanliness under the national drinking water and sanitation campaign.
<b>3.</b>	<b>Water quality and quantity</b>	a. Does the state water policy include a provision on right to access to	The state Water Policy (2008) acknowledges the need for transparent system of water	The draft NWP-2016 recognises the fundamental right to water for drinking, sanitation and domestic use of all	The state is not having a water policy.

		minimum quantity of potable water for health and hygiene?	use entitlements.	inhabitants of the state irrespective of their tribe, creed, gender and nationality in conformity with prevailing Naga traditions and customs. The state government follows National guidelines of NRDWP, Ministry of Drinking Water and sanitation on the basic quantity of water supply.	
		b. Is there any law to guarantee this?	There is no law to guarantee this aspect. No. A number of legal enactments in Kerala do not touch upon the issue of minimum quantity of water to be guaranteed for basic use. Although the KWP acknowledges right to water as basic human right.	There is no law guaranteeing this aspect.	There is no law that guarantees right to access to minimum quantity of water in the state
		c. Does the State Water Policy contain an article or a position which places responsibility on citizens about protection and conservation of water sources in their immediate vicinity?	Yes. One of the Basic Strategies under the KWP is restructuring of roles and relationships of the State and <i>water users</i> for promoting efficient and productive use of water. It is necessary to redesign the present institutional arrangements in order to guide and regulate water use and achieve better stakeholder participation in	The draft NWP-2016 talks about catchment protection of water sources as the same are under individual and community ownership.	The State is not having a water policy.

			<p>planning, development and management of water resources at the river basin and micro-watershed levels. [KWP:1.3]</p> <p>Secondly, one of the objectives of the KWP is to decentralize the water management in the state to the lowest practicable level on the basis of river basin or micro-watershed level.</p> <p>The KWP has a comprehensive approach to conservation of water resources and includes a section on restoration of wells, tanks and other local water bodies, recharging of groundwater: KWP: 2.4 Water Resource Planning).</p>		
		<p>d. Is the institutional mechanism geared up to deliver this?</p>	<p>The KWP envisages the restructuring of fundamental roles and responsibilities of institutions involved in water sector management in the state. There are no of state level institutions in the state involved in the water resource management.</p>	<p>The Nagaland Communitization of Water Supply and Sanitation in Rural Habitations Rule 2003 enacted under Nagaland Communitization of Public Institution and Services Act, 2002 has established Water and Sanitation Committee (WATSAN) for management of water resources and sanitation in the state as various water</p>	<p>The institutional mechanism in Uttarakhand seems to be inadequate in the absence of a policy and regulatory vision.</p>

			<p>Notably, the Kerala Water Authority and such other institutions created under legislation mentioned above. Kerala seems to have a robust institutional framework on water resources management and regulation.</p>	<p>supply schemes for the rural areas have been transferred to these committee. Water Quality Testing Laboratories are set up in all 11 District HQ of the state. The water supply schemes in the villages are designed keeping in mind 40 LPCD water supply.</p>	
		<p>e. Does the state provide the rights or powers to the Panchayat Raj Institutions, or citizens to independently initiate actions for protection and conservation of water sources in their immediate vicinity (article 48(a)(g) and 58 (a) of the Indian constitution specifically referred to these responsibilities related to water, and</p>	<p>The Kerala Panchayati Raj Act, 1994 provides for very specific provisions on Gram Sabha's and Panchayat's responsibility and powers to manage local water resources and water supply. In Kerala, Gram Sabha is empowered to suggest the location of community water taps, public wells, public sanitation units, irrigation facilities and such other public utility schemes. The Gram Sabha is also empowered to find out the deficiencies in the arrangements for water supply, street lighting etc. within the area of the Grama Sabha and to suggest remedial measures<sup>6</sup>. The</p>	<p>The state has decentralised governance in the form of Village Empowerment Laws such as Nagaland Communitization of Public Institution and Services Act, 2002 and The Nagaland Village and Tribal Council Act, 1978. These laws empowers Water and Sanitation Committee (WATSAN), village council and village development board in matters of water management and conservation.</p>	<p>Under the Uttaranchal Panchayat Act, 1947, Gram Panchayat has the power to construct, repair public wells, tanks and ponds for supply of water for drinking, washing, bathing purposes and regulation of sources of water supply for drinking purposes.<sup>9</sup></p>

<sup>6</sup> Section 3-A, Kerala Panchayat Raj Act, 1994

<sup>9</sup> Section 15



		other natural resources)?	Standing Committees constituted at the village, block and district level are vested with the powers to deal with sanitation and water supply <sup>7</sup> . As per Kerala Panchayat Raj Act 1994 beds and Banks of river streams, irrigation and drainage channels, canals, lakes, back waters and water courses and all standing and flowing water, springs, reservoirs, tanks, cisterns, fountains, wells, <i>kappus</i> , <i>chals</i> , stand pipes and other water works including those used by the public with the village area are vested <sup>8</sup> in the Village Panchayat		
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?	The Water Policy (2008) states that Ecological and environmental flows need to be worked out and maintained in the water courses to ensure self rejuvenation of the rivers against pollution loads and for sustainability of life forms in the related habitats. It provides for developing a	There is no law or policy mandating scientific study to determine the ecological requirement of water for a river.	Presently, there is no law or policy in the state that mandates to undertake scientific study to determine the ecological requirement of the water for a river.

<sup>7</sup> Section 166, Kerala Panchayat Raj Act, 1994

<sup>8</sup> Section 218

			<p>water resource assessment and regulatory mechanism in the Department of Water Resources with mandate as well as capability of assessment and analysis of potential, supply and demand in all the water resources and regulates the resource use regimes accordingly.</p> <p>Kerala has enacted Kerala Protection of River Banks and Regulation of Removal of Sand Act, 2001. The Act acknowledges that the biophysical environmental system of the rivers needs to be protected.</p>		
		<p>b. If yes what is the implementation and monitoring of the same?</p>	<p>The desk based research did not reveal any substantive literature on this aspect. This requires a more interactive and field based research. It is however understood that the state is in the process of preparing river basin management plan for Chaliyar river basin.</p>	<p>Presently, no steps have been taken to assess this aspect.</p>	<p>There is no policy or law mandating scientific assessment of ecological flows of the river</p>

5.	<b>Adaptation to climate change</b>	<p>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 these plans concerning effect of climate change on water resources. Are there district level climate change action</p>	<p>State has developed State Action Plan on Climate Change which is approved<sup>10</sup> by Ministry of Environment, Forest and Climate Change (MoEF&amp;CC). The concerns regarding effect of climate change on water resources has been integrated in these plans including preparation of integrated basin plans for water resources supply augmentation. At present there are no district level plans on climate change.</p> <p>The SAPCC has categorized four districts a climate hotspots and it appears that district level climate planning including with respect to water resources is being evolved in the state<sup>11</sup>.</p>	<p>The State has formulated Nagaland State Action Plan on Climate Change (NSAPCC). The District Level Action Plan on Climate Change is still to be prepared.</p> <p>The impact on water resources because of climate change are addressed in the action plan.</p>	<p>The Uttarakhand Action Plan for Climate Change, 2014 has taken into account climate vulnerability of water resources. The District Level Climate Plans are required to be prepared based upon state Action Plan for Climate Change.</p>
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<sup>10</sup> <http://www.thehindu.com/news/national/andhra-pradesh/climate-change-action-plan-gets-central-nod/article7120732.ece>

<sup>11</sup> <http://www.thehindu.com/news/national/kerala/four-districts-categorised-as-climate-change-hotspots/article5801125.ece>

		plans being formulated within the regulatory framework			
		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)?	The State Action Plan on climate change addresses all aspects related with water resources and they being impacted by climate change. Government shall strive to achieve a paradigm shift in the management of water resources sector, with emphasis on the development and expansion of water resource infrastructure for diverse uses and improvement of the performance of existing water resource facilities.	The state has laid out a roadmap to integrate the concerns of climate variability in to water resource management.	Uttarakhand State Perspective And Strategic Plan, 2009-2027 aims to undertake actions to integrate concerns of climate variability.
		c. Is there any special impetus to increasing water storage capacity?	The KWP does have explicit provisions pertaining to water resource infrastructure and multipurpose projects. However, the Policy states that The summer flow in the rivers shall be enhanced by extensive watershed conservation measures, river	Under the NSAPCC, there is plan for revival of 200 ha of derelict water bodies for fisheries development with 'co-benefits' arresting loss of water as run off. Further, rain water harvesting ponds are being developed Soil and Water Conservation Department.	One of the strategies under the Uttarakhand Action Plan for Climate Change, 2014 is augmentation of storages over the surface as well as under the ground through active participation of all stakeholders. A review of existing storage systems will be carried out and where

			management actions and appropriate reservoir operations.		appropriate, location-specific augmentation of storage will be carried out for lean-season use based on the results of vulnerability assessments, especially from the standpoint of drought risk.
		d. increase water use efficiency across all water using groups, agriculture, domestic, commercial and industrial?	<p>The KWP has an overall emphasis on enhancing efficiency of water production and management systems by undertaking several measures. In particular, the KWP acknowledges the need to enhance the agricultural water use efficiency. The Policy also aims at enhancing the efficiency of water from hydroelectric plants.</p> <p>In addition to this, the State Action Plan for Climate change, lays emphasis upon ensuring water use efficiency by treatment and recycling of water for non potable</p>	<p>There is an effort to increase water use efficiency with the transfer of rural water supply schemes to WATSAN committee formulated under Nagaland Communitization Of Water Supply And Sanitation Supplementary Rules 2008 and Nagaland Communitization of Water Supply and Sanitation in Rural Habitations Rule 2003. The water metering system in urban areas is one-step taken by government to ensure water use efficiency.</p> <p>Other measures in Agriculture sector include drip and sprinkler irrigation system and lining of irrigation channel.</p>	<p>On Farm Water Management scheme under National Mission for Sustainable Agriculture aims at increasing water use efficiency in agriculture by providing assistance for installation of drip and sprinkler system. Another objective is to increase the productivity of crops and farmer's income.<sup>12</sup></p>

<sup>12</sup> <http://shm.uk.gov.in/pages/view/18-objectives>

			<p>use, separating the supply network of recycled water from that for drinking water. There are plans for using these strategies in corporations in all the existing water supply projects and elsewhere in the new projects.</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>In agriculture sector principles of conservation agriculture and organic agriculture will be promoted for long term sustainability of the environmental resource support systems. This will include practices for water use efficiency, integrated nutrient management including VAM (Vesicular Arbuscular Mycorrhizae), modern techniques of System Rice Intensification (SRI), minimum tillage etc.</p>	<p>The state will undertake growing horticulture crops in the lean season using sprinklers, drip irrigation and ridge and furrow irrigation technologies, making use of the stored water available due to heavier precipitation in the future. There is a proposal for promoting use of water efficient technologies for agriculture in lean period</p>	<p>Sustainable agricultural practices are being adopted and it finds reflection in the Uttarakhand State Perspective And Strategic Plan, 2009-2027.</p>
		<p>f. Is climate change variability included as criteria for water development projects?</p>	<p>Under the State Action Plan for Climate change, there is emphasis upon including climate change variability in development of future water projects and to ensure water use efficiency by</p>	<p>It is in the process of being assessed to incorporate it as a criteria in development projects.</p>	<p>As per information available climate change variability is not included as a criteria for water development projects though Uttarakhand Action Plan for Climate Change,</p>

			<p>treatment and recycling of water for non potable use, separating the supply network of recycled water from that for drinking water. There are plans for using these strategies in corporations in all the existing water supply projects and elsewhere in the new projects.</p>		<p>2014 underlines it.</p>
		<p>g. Are stakeholders being involved in land-soil-water management planning for evolving different agricultural strategies, reducing soil erosion and improving soil fertility</p>	<p>The State Action Plan for Climate change, provides for Strengthening and capacity building of the agricultural extension system with intensive trainings on available options in agriculture will be the top priority. This would include crop calendars, agronomic practices keeping with the extant weather pattern, prescriptions for pest and stress management in the agriculture crops and establishment of 'Agri-clinics' as farm health clinics to enable farmers to find solutions to their farm related problems. Another strategy envisaged under the state plan is preparation of Land use/ Landscape plans for all the local bodies including</p>	<p>The implementation of plans, schemes and programmes of the government at the village level are undertaken by the Village Development Board (VDB) under the overall supervision of Village Council (VC) as per the Nagaland Village and Tribal Council Act, 1978.</p>	<p>The Uttarakhand Action Plan for Climate Change, 2014 underlines the importance of investments in infrastructure for water management and soil conservation as a strategy for sustainable agriculture.</p>

			<p>the municipalities and Panchayats, in the line of town plans for the major cities of the state. Town planning to be based on landscape ecology taking into account the state of conservation of natural resources like water sources, green belts, paddy lands and wetlands.</p>		
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 sanitation Made recycling and reuse mandatory</p>	<p>The KWP, 2008 states: The potential for recycling and reusing of water shall be recognized and all water users shall be directed to adopt measures through recycling for incremental reduction in water extraction. The storm water drainages shall be rejuvenated based on urban watershed master plans.</p> <p>The regulatory and policy framework in Kerala is geared towards augmenting the water supply and improve sanitation. Irrigation, minor irrigation systems, traditional water storages are all covered for improving level of water supply under the KWP.</p>	<p>Infrastructure for water resource augmentation and water resource distribution has been created or is under creation in Kohima, Phek, Zunheboto, Wokha, Chumukedima, Mon, and Tuensang towns and it is expected that the percentage of coverage will increase.</p> <p>There is a plan to first assess the process and feasibility of wastewater utilization in towns for sanitation purposes at least. In the rural areas the waste water to be used for agriculture purpose for non-horticultural purposes and in fisheries by applying excreta treatment.</p>	<p>In rural areas 'Naula' structures exist. These are surface-water harvesting method typical in the hilly areas. These are small wells or ponds in which water is collected by making a stone wall across a stream. The traditional water harvesting methods are going to be promoted as a strategy to augment rural water supply in the state as per Uttarakhand Action Plan for Climate Change, 2014. The Govt. of Uttarakhand (Awas evam Shahari Vikas) has made rules for compulsory installation of RWH system and directed to adopt rules in building Bye-laws vide order dated</p>



					15.11.2003. Accordingly, all the Development Authorities had made partial amendments in the prevalent House Building and Development Bye-laws/Regulations.
		b. its Rain water harvesting potential	As per Kerala Municipality Building (Amendment) Rules, 2004 rainwater harvesting is mandatory for the following new buildings: i) Group A1 Residential (with floor area of 100 sq.m or more and plot area of 200 sq.m or more) ii) Group A2 Special Residential iii) Group B Educational; iv) Group C Medical/Hospital v) Group D Assembly vi) Group E Office/Business vii) Group G1 and Group G2 Industrial (only for workshops, assembly plants, laboratories, dry cleaning plants, power plants, Gas plants refineries, diaries food processing units and any other occupancies notified by the Government from time to time) viii) Group1(1) Hazardous	In some rural areas traditional rainwater harvesting systems are adopted such as Zabo (the word means 'impounding run-off') Also known as the ruza system, it combines water conservation with forestry, agriculture and animal care. Villages such as Kikruma, where zabos are found even today, are located on a high ridge. When the rain falls on a patch of protected forest on the hilltop; as the water runs off along the slope, it passes through various terraces. The water is collected in pond-like structures in the middle terraces; below are cattle yards, and towards the foot of the hill are paddy fields, where the run-off ultimately meanders into.	The Govt. of Uttarakhand (Awas evam Shahari Vikas) has made rules for compulsory installation of RWH system and directed to adopt rules in building Bye-laws vide order dated 15.11.2003. Accordingly, all the Development Authorities had made partial amendments in the prevalent House Building and Development Bye-laws/Regulations.

			<p>(Automobile wash stall, automobile Service Stations, Service Garages with repairing facilities and any other occupancies notified by the Government from time to time);</p> <p>As per the KWP: Rainwater harvesting shall be given priority and promoted especially in the coastal and high range regions. Special incentives and support shall be extended to Local Self Governments and institutions for popularizing rainwater-harvesting structures</p>		
		c. Desalination techniques	<p>The State Water Policy 2008 emphasis on adoption of desalination for the state As per the KWP: The desalination of water, through a costly option, shall also be adopted in critical areas after ruling out other alternatives.</p>	It is not applicable for the state	Not applicable to the state
		d. Made water use efficiency mandatory	<p>KWP lays emphasis on WUE. Further, WUE is mandatory in the urban rainwater harvesting sector through Kerala</p>	<p>It is not mandatory. Limited urban areas are being metered to regulate water use efficiency in the state. The Water Tax is being levied from Consumers in accordance with the</p>	<p>The Uttarakhand Jal Sansthan<sup>13</sup> (established under Uttarakhand Water Supply and Sewerage Act, 1975) has</p>

<sup>13</sup> Section 18

			<p>Municipality (Amendment) Rules, 2004. In other water intensive sectors such as industry or agriculture no specific regulation on water use efficiency exists.</p>	<p>Nagaland Water Supply Consumers Rules 1998 and rates are revised from time to time. However, the charges levied are nominal and are no deterrent to wastage of water. A systematic evaluation for options for an efficient pricing of water as a commodity especially by the urban users may be undertaken.</p>	<p>adopted a River Bank Filtration (RBF) technique which is an Alternative Treatment Technique of obtaining naturally filtrated ground water from aquifers that are hydraulically connected to river or lake. During riverbank filtration, surface water is subjected to a combination of physical, chemical and biological process such as filtration, dilution, adsorption, and biodegradation that can significantly improve the raw water quality. RBF is a low cost and efficient alternative water for drinking water application and aids the state's efforts on water use efficiency.</p> <p>The <i>Uttarakhand Water Supply and Sewerage Act, 1975</i> prohibits wastage of water<sup>14</sup> in the area where Uttarakhand Jal Sansthan supplies water. Uttarakhand Jal Sansthan is empowered<sup>15</sup> to cut off water</p>
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<sup>14</sup> Section 71- Prohibition of wastage of water.- (1) No owner or occupier of any premises to which water is supplied by the Jal Sansthan shall cause or suffer any water to be wasted, or cause or suffer the service pipe or any tap or other fitting or work connected therewith to remain out of repair so as to cause wastage of water.

<sup>15</sup> Section 72

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

					supply if wastage is not stopped.
		e. Are there subsidies and incentives for recovery of industrial pollutants and recycling / reuse	Presently, there are no subsidies for recovery. Project specific intervention through special projects such as Jalnidhi are not known if there are any.	Presently, there is no scheme for providing subsidies or rebate for promoting recycling/reuse of water in the state.	As per available information, there are no incentives or subsidies available. Further, directions have been issued under section 33 A of the Water (Prevention and Control of Pollution) Act, 1974 to achieve zero discharge for specified industries such as distillery <sup>16</sup> units, textile <sup>17</sup> units. Uttarakhand Environment Protection and Pollution Control Board has also issued directions have been issued under section 33 A Water (Prevention and Control of Pollution) Act, 1974 on water conservation and water management to sugar industry <sup>18</sup> and pulp and paper industry <sup>19</sup> .
		f. Are sewerage charges	Kerala Water Authority is recovering	The Water Tax is being levied on consumers in urban areas where	Sewerage charges are recovered in urban areas under

<sup>16</sup> Uttarakhand Environment Protection and Pollution Control Board Order No. UEPPCB/HO/Gen-360/2015/8767-2220 Dehradun dated 13.03.2015

<sup>17</sup> Uttarakhand Environment Protection and Pollution Control Board Order No. UEPPCB/HO/Gen-359/2015/8997-2276 Dehradun dated 21.03.2015

<sup>18</sup> Uttarakhand Environment Protection and Pollution Control Board Order No. UEPPCB/HO/Gen-358/2015/8996-2275 Dehradun dated 21.03.2015

<sup>19</sup> Uttarakhand Environment Protection and Pollution Control Board Order No. UEPPCB/HO/Gen-337(II)/2015/8768-2221 Dehradun dated 13.03.2015

		being recovered in urban areas	sewerage charges in urban areas	<p>piped water is supplied in accordance with the Nagaland Water Supply Consumers Rules 1998 and rates are revised from time to time. However, the charges levied are nominal.</p>	<p>the mandate of Uttaranchal Water Supply and Sewerage Act 1975. The Tariff and Sewerage 2013 prescribes the rates of payment.</p>
		g. What steps are undertaken to augment rural water supply?	<p>KWP, 2008 has a specific focus to augment rural water supply by improving and undertaking the works related with traditional structures such as wells, tanks and other small water bodies.</p>	<p>The rural water supply schemes have been transferred to WATSAN under Nagaland Communitization of Public Institution and Services Act, 2002 by enactment of Nagaland Communitization of Water Supply and Sanitation in Rural Habitations Rule 2003 and Nagaland Communitization Of Water Supply And Sanitation Supplementary Rules 2008.</p> <p>Through ground water and surface schemes and roof top rain water harvesting techniques augmentation of rural water supply is being undertaken.</p>	<p>The state Government has prioritized rural water supply and sanitation as a key area of its development agenda. It envisages universal coverage of safe and potable water and sanitation by the end of its Twelfth Plan (2012-17). The State Water &amp; Sanitation Mission</p> <p>Uttarakhand Rural Water Supply &amp; Sanitation Project (URWSSP) is being implemented by Uttarakhand Peyjal Nigam (UJN), Uttarakhand Jal Sansthan (UJS) and Project Management Unit, SWAJAL to improve the effectiveness of rural water supply and sanitation (RWSS) services through decentralization. Under this project the habitation is the focal point for planning, implementation, operation &amp; maintenance of the water supply</p>

					scheme, rather than revenue village or the Gram Panchayat (GP). Further, Users Water Sanitation Sub Committee (UWSSC) have been formed and provided legal sanctity under the Panchayat Raj Act.
7.	<b>Ground water use and management</b>	a. Has the state done Aquifer mapping to know the quality and quantity of ground water	Reversal of groundwater and its replenishment are aimed under the KWP, 2008. Annual Replenishable Ground Water has been assessed by Central Ground Water Board in 2008 to be 6,841 Mm3 of which the quantity available as Annual Net Available Ground Water is estimated as 6,230 Mm3. <sup>20</sup>	Nagaland Science and Technology Council (NASTECC) has prepared a map on 'Ground water prospects of Nagaland' and The Central Ground water Board has mapped the Dynamic Ground Water Resources (2011) to be 0.62 BCM. <sup>21</sup> Other than these measures no aquifer mapping has been done to assess the quality of water.	The Central ground water Board has assessed the annual Replenishable Ground Water Resource of the state to be 2.04 BCM <sup>22</sup> .
		b. Does the state have a ground water law	Yes. Kerala Ground Water (Control and Regulation), Act, 2002	Nagaland has not enacted Groundwater Act. There is Nagaland Ground water policy-2015 (draft)	State is not having ground water law

<sup>20</sup> Response To Climate Change: Strategy And Action- State Action Plan On Climate Change- Department Of Environment And Climate Change Government Of Kerala

<sup>21</sup> [http://cgwb.gov.in/gw\\_profiles/st\\_nagaland.html](http://cgwb.gov.in/gw_profiles/st_nagaland.html)

<sup>22</sup> <http://www.cgwb.gov.in/documents/Dynamic-GW-Resources-2011.pdf>

Assessment based upon study of 4 out of 13 districts of the state

		<p>c. Is there a authority mandated to manage and conserve groundwater</p>	<p>The State Ground Water Authority<sup>23</sup> constituted under Kerala Ground Water (Control and Regulation), Act, 2002 is mandated to manage and conserve groundwater.</p>	<p>The Department of Geology &amp; Mining is in charge of exploring and developing ground water resources.<sup>24</sup></p>	<p>The Guidelines/Criteria for evaluation of proposals for abstraction of groundwater- November 2012 issued by central Groundwater Authority forms the basis for management and conservation of groundwater in areas classified as such by the authority. The Uttarakhand Environment Protection and Pollution Control Board has issued instructions<sup>25</sup> that areas which are identified for management of groundwater would require permission from the Central Groundwater Authority before setting up industry.</p>
		<p>a. Does the law protect over exploited aquifers, how?</p>	<p>Kerala Ground Water (Control and Regulation), Act, 2002 protects over exploited aquifers by first notifying such an area for groundwater regulation and secondly, by making it mandatory to seek prior permission from</p>	<p>There is no law on groundwater in the state. The draft NWP-2016 addresses the problem of groundwater extraction.</p>	<p>There is no law for protection of aquifers</p>

<sup>23</sup> Section 3 Kerala Ground Water (Control and Regulation), Act, 2002

<sup>24</sup> order no.GM-CGW/196/95 dated 28.05.2010

<sup>25</sup> Order dt 15.07.2014

			the		
		b. Is extraction of ground water linked with recharge of the same?	The Kerala Ground Water (Control and Regulation), Act, 2002 does not specifically provide for such a linkage, though the Groundwater authority is empowered to put conditions while granting permission for extraction of groundwater to any user.	In the state the Central Ground Water Board has notified no area for regulation of groundwater because of stress. It is lately that groundwater is being used for supplying drinking water. Stage of development of ground water in the Kohima district is 2.13% and it is mainly restricted to the valley area. <sup>26</sup>	There is no state regulation on groundwater abstraction except for groundwater regulation in 162 blocks as per guidelines issued by Central Groundwater Authority.
8.	<b>Integrated Watershed development</b>	a. Specific steps state are taking to ensure integrated watershed development.	The overall strategy under the KWP is to undertake water management through managing micro-watersheds which is taken as the basic unit of management. Identification of micro-watersheds and their delineation with specific decentralized mechanism can be known from field inputs.	State is implementing Integrated Watershed Management Programme (IWMP) programs of Department of Land Resources, Ministry of Rural Development and Ministry of Agriculture. These programs are being implemented by Department of Land Resources, Department of Agriculture and Department of Spoil and Water Conservation, Govt. of Nagaland.	A separate Directorate-Watershed Management Directorate (WMD) has been established as a nodal agency for coordination, monitoring and implementation of integrated watershed management programs in the state. A State Level Nodal Agency has been formulated according to the Common Guidelines for

<sup>26</sup> [http://cgwb.gov.in/District\\_Profile/Nagaland/Kohima.pdf](http://cgwb.gov.in/District_Profile/Nagaland/Kohima.pdf)



					watershed development project 2008 and has been anchored with the Watershed Management Directorate
		b. Have statutory / administrative / departmental steps been taken in order to integrate / align the objective functions which may differ .	The Department of Soil Survey and Soil Conservation has published a Watershed Atlas for the management and development of watersheds <sup>27</sup> .	The Strategic State Perspective And Strategic Plan (SPSP) of Nagaland for the Integrated watershed management programme of the Department of Land Resources aims at convergence of IWMP with other Schemes in the State.	The state is implementing the integrated watershed Management Programme of Ministry of Rural development and the institutional structure to carry out the scheme is clearly laid out and the state government has established the necessary institutional framework for it.
		c. Are water sources and their catchment areas being looked at in	Yes. The KWP provides that the watershed master plans of reservoir catchments shall be conservation oriented and prepared in a participative manner for preventing deforestation and excessive sediment yield.	Yes, the catchment areas are intrinsically linked to water sources in the state on account of ownership of catchment areas being with the individuals and community.	Water sources and their catchment areas are being looked at in totality and this is highlighted by the Catchment Area Conservation and Management Plan (CACMP) being implemented by the state

<sup>27</sup> <http://www.keralasoils.gov.in/watershed%20atlas.html>

		totality?			government. Guidelines have been issued for water source protection under this program
		d. Have steps been taken to avoid duplication of overhead costs in order to create synergies	The KWP very categorically takes cognizance of cost overruns of medium and large project schemes and provides that where appropriate, in order to introduce new technology and innovative financing, obtain management expertise and improve the quality and cost-effectiveness of water services after ensuring accountability and equity (2.4 Water Resources Planning)	Yes efforts are on to avoid duplication of effort	There is no information available
		e. Are developmental laws harmonised with the need of integrated watershed development.	The state industrial and development laws per se do not provide for integrated watershed development. However, the Kerala SEZ Policy, 2008 provides that the Kerala Panchayat Raj Act, 1994 will be applicable in all SEZ areas. By virtue of this management and control of water resources in the SEZ areas falls within the ambit of Panchayats who can	The management of water resources is with the communities, tribes and individual depending upon ownership of land.	The developmental laws have not been harmonised.

			undertake watershed development.		
		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	With regards to the ownership of water resources, the Kerala Irrigation and Water Conservation Act, 2003 provides that. <b>Water courses and water in water courses to be Government property<sup>28</sup>.</b> — Notwithstanding anything to the contrary contained in any other law for the time being in force, or in any custom or usage or in any contract or other instrument but <u>subject to the provisions of section 218 of the Kerala Panchayat Raj Act, 1994 (13 of 1994) and section 208 of the Kerala Municipality Act, 1994 (20 of 1994)</u> , all water courses and all water in such water courses in the State shall be the property of the Government, and the Government shall be entitled to conserve and	The ownership pattern in Nagaland is unique given the prevalence of customary laws and practices that govern the ownership of land and water sources. There is no uniformity across the state as it differs from tribe to tribe. The water sources and catchment areas are under individual and community ownership and is managed at the village level. Any inter-se arrangement between villages on access to water is undertaken on basis of agreement between the respective village councils.	The developmental laws have not been harmonised.

<sup>28</sup> Section 3, the Kerala Irrigation and Water Conservation Act, 2003

		r)	regulate the use of such watercourses and the water in all those water courses for the purposes of irrigation and the generation of Electricity and for matters connected therewith or for both. Section 218 of the Panchayat Act vests watercourse, springs, reservoirs in the Panchayat		
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	There is no such law in the state	There is no law mandating benchmarking of water usage in the state.	No there is no such law in the state.
		b. Any penalty for wastage of water and incentive for water use efficiency	As per the Kerala Irrigation and Water Conservation Act, 2003 which has the overall objective of conserving water and water sources, the penalty for violating the provisions of the Act could result in imprisonment for a term which may	There is no provision for penalty or incentive for water use efficiency	Not so far

			extend to one year and fine which may extend to five thousand Rupees or both.		
		c. Any efficiency benchmark at which irrigation projects have to perform and function	The KWP generally aims at enhancing efficiency in irrigation use. The benchmarks are not mentioned.	There are no benchmarks established for irrigations projects	No.
		d. What are the existing schemes providing incentives for engaging in cropping pattern using micro irrigation (drip, sprinkler, etc.), automated irrigation operation, evaporation-transpiration reduction, etc.	The KWP provides that irrigation schemes shall be shared with appropriate Local Self Governments and State Government based on specific guidelines. In order to improve the resource use efficiency, all the irrigation projects shall be considered as multi-purpose projects. Further status of schemes could not be known.	The Integrated Watershed Management Programme of different departments provide incentives. With the communisation of water supply and sanitation functions of the state government to WATSAN and committee at the Municipal level, it is there mandate to provide incentives to the users.	No such schemes are known to exist.
		f. Any scheme being used in the state which encourages people to use water use efficient gadgets	No.	There is no scheme in operation in the state	No.

		g. Is there a mechanism to conduct water audits –voluntary or mandatory	The research so far has not revealed any specific measures.	There is no mechanism for undertaking water audits	Water and Sewar Tariff 2013 seems to regulate water consumption
<b>10.</b>	<b>Water pricing</b>	a. Is there a mechanism for water pricing?	The KWP aims to address the issue of water pricing through a legislation. There is water pricing mechanism in place.	<p>For Urban consumers Water Tax is being levied on consumers in urban areas where piped water is supplied in accordance with the Nagaland Water Supply Consumers Rules 1998 and rates are revised from time to time. However, the charges levied are nominal.</p> <p>In rural areas the function of levying and collecting water charges to cover O&amp;M cost has been given to WATSAN committee formed by Village Council as per Nagaland Communitisation of Water Supply and Sanitation in Rural Habitations Rule 2003 under the Nagaland Communitisation of Public Institutions and Services Act 2002</p> <p>The proposal for levying water charges for irrigation is under consideration</p>	

		<p>b. Has Water Regulatory Authority been established</p>	<p>Water Regulatory Authority has not been established. Kerala Water Authority has been established as per mandate of Kerala Water Supply and Sewerage Act 1986. According to Section 14 of the Kerala Water Supply and Sewerage Act, preparation, execution, promotion maintenance and financing of the schemes for the supply of water and for the disposal of waste water are the main functions of the Authority. Under Section 15, powers for sanctioning of schemes costing more than rupees one crore and for entering in to contracts costing more than rupees one crore shall be exercised only with the prior approval of Government. Revision of tariffs and charges for water supply</p>	<p>There is no Water Regulatory Authority in the state</p>	
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			and sewerage services also require prior approval of the Government.		
		c. What is the water pricing methods being followed?	More research is required in this area	<p>The Communitization of these basic services is carried out by way of handing over the Urban Water and Sanitation schemes to the Municipal/Town Councils and the Rural schemes to the Water and Sanitation (WATSAN) Committees. These Councils/Committees are the Beneficiaries' legal agencies. The Municipal/Town Councils are constituted through Election of members, to be conducted, under the supervision of the Govt. Administrative agencies. The WATSAN Committees are formed with the participation of Village Council and other recognized NGOs. A Municipal/Town Council and the WATSAN Committee will be formally recognized and empowered to be the legal agency, of the beneficiary, to participate in planning, design, implementation and subsequent take-over of the scheme for Operation and</p>	



				Maintenance (O & M). The pricing for the supply of water has been left to the WATSAN committee to recover O&M cost. In urban areas there are two methods adopted for drinking water supply: Slab rate per consumers Metered rates, based upon actual consumption	
		d. Has water pricing been rationalised? If yes how? If no why?	It has not been rationalised. The State Water Policy 2008 emphasis upon the need for collection of rationalised water charges	Water pricing has not been rationalised but effort is on for recovering the O&M cost for supply of water.	
		e. Are water charges being recovered from the consumers?	Yes they are recovered but not the entire cost	Nominal water charges are being recovered from the urban consumers.	
		f. Are Water Users Associations (WUAs) are involved in the process of fixing rates of water	WUA are not involved in process of fixing rates of water	The function of collecting water charges to cover O&M cost has been given to WATSAN committee formed by Village Council as per Nagaland Communitisation of Water Supply and Sanitation in Rural Habitations Rule 2003 under the Nagaland Communitisation of Public Institutions and Services Act 2002. They are free to determine the charges to be recovered in the	

				village for supply of water. The water users associations established under Nagaland Farmers Participation in Management of Irrigation Systems Act, 2015	
		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?	Water Users Associations have been given powers to collect water charges which is decided by the state government.	The function of collecting water charges to cover O&M cost has been given to WATSAN committee formed by Village Council as per Nagaland Communitisation of Water Supply and Sanitation in Rural Habitations Rule 2003 under the Nagaland Communitisation of Public Institutions and Services Act 2002. They are free to determine the charges to be recovered in the village for supply of water. One of the function of water users associations established under Nagaland Farmers Participation in Management of Irrigation Systems Act, 2015 is to collect water charges <sup>29</sup> and they have the power to levy and collect fees <sup>30</sup> as maybe prescribed by the state government.	

<sup>29</sup> Section 15 (vii)

<sup>30</sup> Section 17

1 1.	<b>Scientific assessment of water resources and Database, information system.</b>	a. Institutions involved in the scientific assessment of the water resources	The institutions are as follows: <ul style="list-style-type: none"> <li>The Centre for Water Resources Development and Management (CWRDM)<sup>31</sup></li> </ul>	The departments involved in scientific assessment of water resources include Agriculture, Soil and Water Conservation, Public Health engineering, Geology and Mining and Irrigation and Flood Control. Central Ground Water Board is involved in assessing groundwater resources.	
		b. How is the state organising its hydrological database and using it for decision making.	The Kerala soil and soil conservation department has developed an Atlas of micro-watersheds. The Atlas is used make decisions with respect to water related developments	The Irrigation and Flood Control department has established 5 Met and 27 gauge and discharge station for hydrological database and used for estimation in design discharge for water resource project.	
		c. Which institutions and regulatory bodies are involved in the collection of Data	The Centre for Water Resources Development and Management (CWRDM)	The departments involved in collection of data include agriculture, Soil and Water Conservation, Public Health engineering, Geology and Mining and Irrigation and Flood Control	

<sup>31</sup> CWRDM is a R & D institution in the water sector established by the Government of Kerala and was established as an autonomous research organisation under its Science and Technology Policy in February 1978. The Centre was amalgamated with the Kerala State Council for Science, Technology and Environment (KSCSTE)

		d. What are the different types of Data being collected at the state level		The Meteorological, Hydrological, Ground water and water quality data is being collected.	
1 2	<b>Allocation and uses of water</b>	a. Is there a mechanism for water allocation amongst different competing uses	There is no mechanism for water allocation amongst competing uses. The State Water Policy 2008 underlines the need for developing criteria for water allocation.	The draft NWP-2016 has provision on water allocation.	
		b. If yes, the criteria and principles followed for allocation	There is no procedure in place presently for allocation of water resources.	There is no mechanism in place for determining water allocation amongst different competing uses	
		c. Are principles of equity and social justice being followed for water allocation	The underlying principle reiterated in The State Water Policy 2008 is the fundamental right of every citizen to equitable access to water for basic needs.	The traditional customary practices govern water allocation in rural areas.	
		d. The existing mechanism for dispute resolution in allocation of water	There is no existing mechanism for dispute resolution.	It is for the WATSAN at the village level and Integrated WATSAN to resolve disputes between two or more WATSAN. The dispute resolution mechanism is traditional system and local court.	

		<p>e. Have the water uses have been prioritized, and has the basic needs principle been adopted; e.g. Reservation of water for drinking (inclusive of cattle) drinking and domestic purposes</p>	<p>State Water Policy (2008) prioritise water allocation among competing users as follows:</p> <ol style="list-style-type: none"> <li>1. Domestic use</li> <li>2. Agricultural use</li> <li>3. Power generation</li> <li>4. Agro Based industrial use</li> <li>5. Industrial and Commercial use</li> <li>6. All other uses</li> </ol>	<p>The priority of water usage is provided in draft NWP-2016.</p>	
		<p>f. Has the state policy defined the procedure of allocation of water between sectors? e.g. Drinking and domestic, agriculture, industry, Hydro-power etc, in order to achieve optimal use</p>	<p>The State Water Policy 2008 recognises the importance of establishing a procedure for allocation of water between competing users.</p>	<p>The draft NWP-2016 has a specific provision on priority of water usage with drinking water and sanitation occupying the first position in allocation of water resources.</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?	The State Water Policy 2008 recognises the human right of every citizen to equitable access to water for all basic needs.	It is the function of WATSAN at rural level to determine the priority	
<b>13</b>	<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.,	The Kerala Land development Act, 1964 provides for the preparation and execution of land Development Schemes including Schemes for the conservation and development of soil resources, the control and prevention of soil erosion and the reclamation of waste lands. It further establishes Land Development Board, District Land Development, and Padasekharam <sup>32</sup> Committee as institutions to carry out functions under the act. The District Land Development Committee is empowered to	Under the National Disaster Management Act 2005 the Nagaland State Disaster Management Authority (NSDMA) and District Disaster Management Authority were notified in 2008 to bring an institutional mechanism for the management of disaster in the State. The national guidelines developed on flooding are followed in the state.  The state has formulated <i>Nagaland Flood Plain Zoning Bill</i> to statutorily deal with delineation of flood plain area and its regulation for better management of activities in the flood plains. It also envisages setting up of a Flood Zoning Authority for	

<sup>32</sup> Section 2 ( 16) [(ff) "Padasekharam" means a collection of fields or other areas of lands, with or without a common outer bund, which is suitable for the adoption of a common cultivation programme or common agricultural operations including dewatering irrigation;

			prepare a "scheme" <sup>33</sup> for control and prevention of soil erosion, preservation and improvement of soil erosion, reclamation of waste, saline or water-logged areas.	undertaking the functions under the proposed act.	
		b. Is there an institutional setup for flood forecasting using real time data acquisition system and linked to forecasting models?	The Central Water Commission flood forecasting network provides the necessary inputs.	The Flood forecasting followed by CWC is followed.	
<b>14</b>	<b>Integrated Water Resources Management</b>	a. Has the state incorporated river basin / sub-basin as a unit as the main principle for planning, development and management of Water resources.	The State Water Policy 2008 recognises river basin as a unit for planning and development of water resources.	Yes, as per the basin wise Master Plan prepared by Brahmaputra Board	
		b. Are there river basin management authorities established by the state government	The State Water Policy 2008 states that State Level River Authority would be established and under which there would be river basin and sub-basin organisations.  Presently, Pampa	There is no river basin authorities established by the state.	

<sup>33</sup> means my land and development scheme prescribed or to be prepared under this Act

			<p>River Basin Authority has been established under Pampa River Basin Authority Act, 2009 to formulate policies and projects for enabling the sustainable development of water sources, reservoirs and water resources of the Pampa River and the scientific management for protecting the ecosystem.<sup>34</sup></p>		
		<p>c. What are the functions and powers of the river basin management authorities</p>	<p>The Pampa River Basin Authority is empowered to perform following functions:</p> <p>(i) to formulate policies and projects for enabling the sustainable development of water sources of the Pampa River</p> <p>(ii) to co-ordinate the activities of different departments and agencies of the projects under the Pampa River Action plan for implementation</p> <p>(iii) to take decisions relating to the matters in the Pampa Action Plan and implement the projects coming under the plan;</p> <p>(iv) to impose control or</p>	<p>There is no river basin authorities established by the state.</p>	

<sup>34</sup> Section 8



			<p>restriction over exploitation of natural resources or encroachments which may have impact on water resources and reservoirs of the Pampa River;</p> <p>(v) to control the disposal of wastes or discharge of any industrial effluent or domestic effluent to the Pampa River in accordance with the provisions of the Water (Prevention and Control of Pollution) Act, 1974 without proper treatment;</p> <p>(vi) to implement appropriate campaigns and awareness programmes for conserving and making the Holy River Pampa pollution free.</p>		
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>Local bodies under the Kerala Panchayat Act, 1994 are fully empowered to participate and evaluate water related projects. Actually how does it happen on the ground needs to be ascertained through field based research.</p>	<p>The department of PHED has transferred some of the assets associated with rural water supply to WATSAN under Nagaland Communitization of Public Institution and Services Act, 2002. The WATSAN comprises of Chairman who is a person selected by the Village Council. The functions of these committee is to : The management and supervision of the water supply and</p>	

				<p>sanitary systems.</p> <p>(2) The custody and maintenance of the assets and equipment that may be created and procured by the WATSAN Committee or transferred by the State Government to the village subject to such conditions as may be specified by the State Government.</p> <p>(3) Appointment of and control over persons that may be required for the installation and maintenance of water supply and sanitary systems.</p> <p>(4) Co- ordination with the designated officials of the Public Health Engineering Department, for carrying out the major repair and replacement works in case of major break down arising out of natural calamities or abnormal situation.</p> <p>(5) Formulation and implementation of the projects including augmentation schemes subject to the provisions of these rules.</p> <p>(6) Levy and collection of water fees as may be required for the cost of The village council and Water User associations (WUA) are involved in identification and</p>	
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				execution of projects.	
		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	The KWP calls for a equitable access to water for all and recognizes water as a human right of all.	Yes. Refer above	
		c. Is there an institutional mechanism in the form of a single window clearance for all clearances, including environmental and investment clearances, required for implementati	The Government of Kerala has initiated online eco-clearance <sup>35</sup>	There is no single window clearance process established by the state government.	

<sup>35</sup> <http://www.thehindu.com/todays-paper/tp-national/tp-kerala/online-eco-clearance-from-december-1/article7904864.ece>

		on of projects to avoid the economic losses			
16	<b>Conservation of river corridors, water bodies and wetlands</b>	a. What is the prevalent institutional structure for conservation and management of river corridors, water bodies, wetlands within the state?	<p>The State Water Policy 2008 specifically lays emphasis upon preservation and conservation of wetlands through programmatic and legal approaches. It proposes establishment of State Wetland Authority to ensure protection, management, development and conservation of wetlands within the state.</p> <p>The state has enacted Kerala Conservation of Paddy and wetland Act, 2008 to preserve wetlands<sup>36</sup> within the state. The institutional structure under the act comprises:</p> <ul style="list-style-type: none"> <li>Local Level Monitoring Committee</li> </ul>	<p>The Village council established under the Nagaland Village and Tribal Council Act has the overall responsibility to maintain forest and water resources.</p> <p>The state has formulated The <i>Nagaland Rivers and Water Bodies Development Board Bill, 2014</i> to provide for establishment of a Nagaland River and water Bodies development Board for the purposes of protection, conservation, restoration, rejuvenation and integrated development of rivers and water bodies in</p>	

<sup>36</sup> Section 2 (xvii) “wetland” means land lying between terrestrial and aquatic systems, where the water table is usually at or near the surface or which is covered by shallow water or characterized by the presence of sluggishly moving or standing water, saturating the soil with water and includes backwaters, estuary, fens, lagoon, mangroves, marshes, salt marsh and swamp forests but does not include paddy lands and rivers;

			<p>e in the state. every Panchaya t or Municipal ity</p> <ul style="list-style-type: none"> <li>• District Collector</li> <li>• Authorised Officer</li> </ul> <p>The Kerala Protection of River Banks and Regulation of Removal of Sand Act, 2001 was enacted to protect river banks and river beds from large scale dredging of river sand and to protect their biophysical environment system and regulate the removal of river Sand. The institutional structure for protection of river banks comprises of:</p> <ul style="list-style-type: none"> <li>• District Expert committee</li> <li>• Kadavu<sup>37</sup> Committee</li> </ul>	
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<sup>37</sup>Section 2 (e) 'Kadavu' means a river bank, or water body where removal of sand is carried out;

		<p>b. Is there community participation in the conservation of river corridors, water bodies, wetlands?</p>	<p>The Local Level Monitoring Committee formed under Kerala Conservation of Paddy and wetland Act, 2008 ensures participation of the community by including three farmers in it.</p> <p>The District Expert Committee and Kadavu Committee formed under The Kerala Protection of River Banks and Regulation of Removal of Sand Act, 2001 ensures participation of local people in the protection of river banks.</p>	<p>The Village council established under the Nagaland Village and Tribal Council Act has the overall responsibility to maintain forest and water resources within the village. There is community participation in conservation of rivers falling within the jurisdiction of respective villages. There are instances of villages coming together and formulating agreements for protection and conservation of river corridors such as Dikhu Green Zone.</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>Kerala Conservation of Paddy and wetland Act, 2008 prohibits reclamation<sup>38</sup> of wetlands<sup>39</sup> and removal of sand from the wetlands. The act empowers the District Collector<sup>40</sup> to restore a wetland reclaimed in contravention to the act and recover the money for its restoration from the</p>	<p>The Village council established under the Nagaland Village and Tribal Council Act has the overall responsibility to maintain forest and water resources.</p>	

<sup>38</sup> Section 2 (xv) “reclamation” means such act or series of acts whereby a paddy land or a wetland as defined in this Act is converted irreversibly and in such a manner that it cannot be reverted back to the original condition by ordinary means;

<sup>39</sup> Section 11

<sup>40</sup> Section 13

			<p>person who reclaimed the wetland. There is further prohibition on grant of license<sup>41</sup> to carry out any activity over a wetland in rural or urban area reclaimed illegally.</p> <p>The District Expert Committee formed as per The Kerala Protection of River Banks and Regulation of Removal of Sand Act, 2001 undertakes the function of ensuring protection of river banks and keep them free from encroachment and to advise the state government on the measures to protect the biophysical environmental system of the river banks.<sup>42</sup> The Kadavu Committee under the act has the mandate to suggest</p>		
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<sup>41</sup> Section 14

<sup>42</sup> Section 9

			additional measures <sup>43</sup> required for protection of river banks and regulates sand removal from river bed to ensure biophysical environment of the river is not deleteriously affected. If required sand mining can be banned to protect river bed under the act.		
		d. Besides participation, has the community or an individual being given the right (duty and responsibility) to protect and conserve water sources?	There is no specific provision ensuring involvement of community or individual in protection and conservation of water sources.	The Village council established under the Nagaland Village and Tribal Council Act has the overall responsibility to maintain forest and water resources within the village. If there are water sources that are critical for village then Village council can pass a resolution seeking its protection.	

## 5.0 Summary of State Specific Recommendations:

### Kerala

- Need for harmonizing the existing water laws in the state:*** In Kerala, many legal instruments and institutional arrangements seem to have created multiple and complex water governance regime with overlapping functions. These legal enactments precede the State Water Policy, 2008 which itself calls for adoption of a legal instrument on water. Therefore the state government needs to comprehensively review its framework and streamline the legislations and harmonize them to bring consistencies and for the removal of complexities.

<sup>43</sup> Section 11



- **Need for revising the State Water Policy, 2008:** The Kerala Water Policy, 2008, though contains some of the elements that touch upon aspirations of the National Water Policy but does not fully and comprehensively cover all aspects that have been covered under the NWP. For example, the Basic Principles as outlined in the NWP are not reflected in the KWP. Also, the KWP falls short of acknowledgement of concerns and strategies required to meet future challenges, impact of Climate change on water resources being one of the examples. The KWP also does not provide enough thrust on Water Use Efficiency in domestic and industrial use and promoting innovation in the water sector.
- **Need for bringing legislations in conformity with the KWP and create legal spaces to realize the policy objectives:** Importantly, since the water policy of the state succeeds all other legal enactments, the water related laws in the state needs to be revised in order to bring them in conformity with the aspirations and approaches articulated in the Water Policy, 2008.

### Uttarakhand

- **Need for a State Specific water Policy:** At the very outset Uttarakhand has to embark on road to formulate a State specific water policy on the principles enunciated in NWP-2012. The state though endowed with abundant water resources currently faces huge water scarcity mainly due to unsystematic distribution of water as well as poor management of water resources. A state specific policy that addresses various challenges faced by the state in the realm of water governance is the need of the hour.
- **Setting up an independent statutory Water Regulatory Authority:** The enactment of The Uttarakhand Water Management and Regulatory Act, 2013 has not resulted in setting up of the State water Authority that is mandated to carry various function towards sustainable development of water resources.
- **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 the Uttarakhand Water Management and Regulatory Authority required to be established as per mandate of The Uttarakhand Water Management and Regulatory Act, 2013.

### Nagaland:

- **Need for a comprehensive water law to support the Policy vision of the state government.** Integrated land and water use planning and strengthening of village customary regime over natural resources.