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

**STATE REPORT
SIKKIM**

SUBMITTED BY

Shilpa Chohan

H-383, Palam Vihar,

Gurgaon

Haryana-122017

Email: shilpa.ielo@gmail.com

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(Shilpa Chohan)

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Executive Summary

The water policy and regulatory framework in Sikkim has been examined by India Water Partnership based on broader thematic areas that form the basis of the National Water Policy, 2012.

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 of available legal mechanisms and especially policy formulation in three states of Sikkim, Tamil Nadu and Uttar Pradesh to deliver on the objectives of NWP-2012. This report in brief describes about the Sikkim State Water Policy (2009) and regulatory framework existing in the State.

The Sikkim Water Policy, 2009 (hereinafter “SWP”) precedes National Water Policy of 2012 and therefore some of the principles and approaches contained therein still remain to be harmonized to be in tune with NWP-2012. However, the Sikkim Water Policy, 2009 acknowledges water as a scarce resource and underlines the need for its planning, development and management to be guided by state perspectives. The water allocation priorities are broadly classified as (a) Drinking Water, (b) Hydro power (c) Irrigation (d) Ecology (e) Industries (f) Recreation and (g) other uses. As is seen from water allocation priorities, development of hydropower is of prime importance even above irrigation in the State. The policy underlines the need for a close integration of water use and land use policies. An interesting aspect of the policy is to undertake water zoning within the state and the economic activities to be guided and regulated in accordance with such zoning. The policy reiterates that the Department of Irrigation and Flood Control as nodal Department for the development of water resources of the State. Water management in the state is carried out on basis of the statutory enactment such as *Sikkim Sewerage and Sewage Disposal Act, 1987*, *Sikkim Sewerage and Sewage disposal rules, 1990*, *Sikkim Water Supply and Water Tax Act, 1986*, *Sikkim Water Supply (Amendment) Rules, 2014*, *Sikkim Water Supply Rules, 1990*, *Sikkim Irrigation Water Tax Act, 2002*, *Sikkim Forests, Water Courses And Road Reserve (Preservation And Protection) Act, 1988*. An analysis of these enactments reveals that the state is not having any regulatory framework for groundwater management and conservation. This is on account of the fact that at present groundwater extraction is very low.

Most of the legal enactments governing management of water in the state were enacted prior to promulgation of SWP, new concepts included in the water policy have no legal or regulatory backing. The SWP outlines need for water zoning within the state and the economic activities be guided and regulated in accordance with such zoning but the way forward to achieve this is not provided in the policy. Similarly, there is emphasis upon regulation of ground water resources so that it does not exceed the recharging possibilities as also to ensure social equity, though regulatory backing for ensuring any measures in this regard is missing.

Thus, there is a need for revisiting SWP in view of the objectives and principles enunciated in NWP, 2012. Considering that impacts of climate change over water

resources in the state is an emerging issue, there is no discussion of the same in the state policy whereas NWP, 2012 lays emphasis over this aspect. Given importance of springs in the state, its non-inclusion in the Sikkim Water Policy requires rectification and revision. Further, SWP outlines the significance of data collection from different water sources in the state for planning and management purposes, but the collection of data on springs is missing from this exercise requiring its inclusion for proper management and conservation of springs.

Introduction and Background

Sikkim comprises of Lesser Himalaya, Central Himalaya, and the Tethys Himalaya and is one of the biodiversity “hotspots” of the country and world. Sikkim’s western borders are the Kanchenjunga and the Singalila Range, a north- south spur of the Great Himalaya. The northern limits reaching out to the Donkia Range straddles the Tibetan Plateau while the Chola Range bound the eastern flank. The major mountain peaks of Sikkim are *Khangchendzonga, Jonsang, Talung, Kabru, Siniolchu, Pandim, Rathong, Koptang and Simvo*.¹ Culturally, Sikkim is multiethnic, comprising of four districts – East, West, North and South. The total population of Sikkim is 0.54 million (as per census 2011), accounting for barely 0.05% of the total population of the country. The livelihoods of the rural population are linked to natural resources such as agriculture, which is the mainstay of 64% of the population.

Water Resources Scenario in Sikkim

The state of Sikkim has abundant water resources available through various rivers and hill streams. Sikkim has two major rivers – the Teesta and the Rangeet. Teesta is a perennial river with substantial flows even in lean season. It originates at the Chho Lhamu lake in the Tibetan Plateau. The river flows generally in North South direction bisecting the State of Sikkim. It is the single major river in the State draining 95 % of the total area of the State.² The river Rangeet has its source at the Rathong Glacier south of the Khangchendzonga massif.

In addition, the upper reaches of Sikkim have 84 glaciers covering an area of about 440 km² (SAC 2001). This unique geomorphology has resulted in more than 315 glacial lakes located at an average altitude of 4,700m (+500) (CISMHE 2005). The hilly Himalayan region has a paucity of water during the non-monsoon months, which together with high rates of surface runoff cause heavy land degradation and erosion. Even though water is available in the valleys the constraints of the terrain forces overwhelmingly large proportions of the agricultural fields to be dependent upon the rains alone.

Drinking water demand of the Sikkim populace living below 5,000 ft is mainly met through rainfall but an overwhelmingly high proportion of this rainfall occurs in the

¹ Sikkim State Action Plan for Climate Change (2014)

² State of Environment-2007-Sikkim-Water resources

monsoon season only. State of Sikkim solely depends upon “springs and streams” to meet its water demand.

Impacts of Climate Change on Water Resources in Sikkim

Intergovernmental Panel on Climate Change (IPCC) defines vulnerability as “*the degree to which a system is susceptible to, or unable to cope with, the adverse effects of climate change, including climate variability and extremes*” (IPCC 2001).

The available evidence with inputs from the local communities suggests that, as in other regions of the Himalayas, Sikkim is also experiencing changes in the climate and as this region is prone to geological disasters such as earthquakes and landslides, climate change is bound to increase these risks.

Climate change will have several major impacts on water supplies. The existing glacial lakes, rivers, streams and springs could be affected in the state due to global warming. It has been analysed that climate change is leading to rapid melting of certain glaciers, the area of high altitude lakes in Sikkim has increased significantly over the last 50 years³ and increase in water volume enhance the risk of glacial lake outburst floods (GLOFs). Such a scenario underlines the need for establishing systems for monitoring of glacial lakes and springs in the state. There is indirect evidence showing decline in spring water during the dry season, and considering that springs are an important source of water in the hills, systematic frameworks are needed to monitor spring water flows⁴ for ensuring water security.

Regulatory Framework on water management

The State Water Policy, 2009 is the primary document outlining the water resource situation in the state and emanates from a need that water is “*prime natural resource and it is necessary for human and all forms of life’s survival. It is scarce compared its usefulness and its planning, development and management need to be governed by state perspectives.*” The water allocation priorities are broadly classified as (a) Drinking Water, (b) Hydro power (c) Irrigation (d) Ecology (e) Industries (f) Recreation and (g) other uses. As is seen from water allocation priorities, development of hydropower is of prime importance even above irrigation. The policy underlines the need for a close integration of water use and land use policies. An interesting aspect of the policy is to undertake water zoning within the state and the economic activities to be guided and regulated in accordance with such zoning.

³ Kumar,B.,Murugesh Prabhu,T.S.,2012. Impacts Of Climate Change: Glacial Lake Outburst Floods (GLOFs). In Arrawatia,M.L., Tambe,S. (Eds), Climate Change in Sikkim Patterns, Impacts and Initiatives. Information and Public Relations Department,Government of Sikkim, Gangtok.

⁴ Tambe,S., Arrawatia,M.L.,2012.Climate Change Initiatives In Sikkim. In Arrawatia,M.L., Tambe,S. (Eds), Climate Change in Sikkim Patterns, Impacts and Initiatives. Information and Public Relations Department,Government of Sikkim, Gangtok.

In Sikkim, water management is undertaken as per the following policy and legal instruments:

1. Sikkim Water Policy, 2009
2. Sikkim Sewerage and Sewage Disposal Act, 1987
3. Sikkim Sewerage and Sewage disposal rules, 1990
4. Sikkim Water Supply and Water Tax Act, 1986
5. Sikkim Water Supply (Amendment) Rules, 2014
6. Sikkim Water Supply Rules, 1990
7. Sikkim Irrigation Water Tax Act, 2002
8. Sikkim Forests, Water Courses And Road Reserve (Preservation And Protection) Act, 1988
9. Sikkim Water Supply Act, 1991,
10. Sewerage, and Sewerage Disposal Act, 1991

Institutional, and organisational set-up on water management

Sl. No	Name of the Organisation/Institution	Functions assigned
State Level Organisation/Institution		
1.	Water Security & Public Health Engineering Department (Swiped)	The mission of the department vis-a- vis water is to provide safe and sufficient water for all the consumers, developing strategies to meet the increasing demand for water and sewerage system. Take into account suitable strategies and adopt suitable means to consider the environmental concerns thereby avoiding environmental degradation and pollution mainly while disposing the treated waste. Activities include construction and maintenance of water supply, sewerage and sanitation facilities in the urban towns, selected (semi-urban towns) bazaars and their rural areas; formulate and implement sewerage services and water supply tariff; and ensure conservation of watersheds, sources of water supply and environment.
2.	Public Health Engineering Department (PHED)	Sewerage and Sanitation
3.	Urban Development And Housing Department	The Dept. currently has responsibility for Solid Waste and Liquid Wastes Disposal, Storm

		Water Drainage,
4.	Irrigation and Flood control Department	Storm Water Drainage
5.	Sikkim State Pollution Control Board (SPCB)	It undertakes Water Quality Monitoring Programme to assess the status of pollution in the natural environment.
6.	Forest Environment and Wildlife Management Department	Preservation and enhancement of the quality of the natural environment, including water, air and soil quality. Implementation of Water (Prevention and Control of Pollution) Act, 1974 and The Water (Prevention and Control of Pollution) Cess Act, Rules, 1977-78.
7.	Irrigation & Flood Control Department	Its mandate includes Development of Water Resources, Construction of Minor Irrigation Channels, Maintenance of Irrigation Schemes, Water management and Water Conservation as a Nodal Department for clearance of schemes relating to river or reservoir works, Assessment of Irrigation and Irrigation Development, and Flood Control and Anti-Erosion Works, including Management and control of drainage and Jhora Training Works.
8.	Water Resources & River Development Department	Undertakes development of rivers
9.	Rural Management & Development Department	The mandate of RMDD is to provide clean safe adequate drinking water to the rural habitation, improve the sanitation facilities, and ensure rural water security. The function of the RMDD includes assessment of actual ground position of water supply to rural communities in terms of numbers of habitations 'not covered, partially covered and fully covered'. It undertakes, on a regular basis the survey of water availability, i.e. survey of all the available water sources and upgrades water maps for the State. Undertakes monitoring and surveillance of water quality and intensification of water testing facilities e.g. establishment of water

		testing facilities in the Districts and Sub-Divisional Level. Completes the incomplete schemes; addresses the coverage of the newly emerged habitations/ reverse coverage habitations. Promotes appropriate alternate technology, viz., roof top collection, rain water harvesting etc. for dry pockets; works towards integrating Integration of rural water supply programme with other rural development activities
10.	Department of Mines, Minerals and Geology	Monitor water resources for public consumption and cater to geological input
11.	Department of Commerce and Industries	It covers the agro based industries, horticulture and floriculture, minor forest based industries, animal husbandry and dairy products, tourism related industries, information technology including knowledge based industries, precision oriented high value low volume products, hydel power, tea industries, education and hospitality. All these industries use water and estimation of water requirement is essential for this department.

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 below:

	Thematic Areas as per NWP	What is to be explored	Status
1.	Public Policy on water resources to be informed of basic common	a. Whether state has a water policy	The State Water Policy, 2009 ⁵ is in operation. The SWP is more inclined towards project planning, maintenance, modernization and safety of structures. The basic principles of water resource management have not been outlined, as is the case with the NWP, 2012.

⁵ www.sikkim-irrigation.gov.in/resource/state-water-policy.doc

	principles		
		b. Whether the state water policy is updated in view of NWP-2012?	The State Water Policy, 2009 is made on the lines of the then National Water Policy. The state policy is not updated in view of NWP-2012. However, in the Policy of 2009, there is an acknowledgement that the state water policy needs to draw its general guidance from the national water policy.
		c. Whether the sentiment articulated in NWP is echoed in state policies?	Some of the sentiments of NWP-2012 are articulated in the state water policy but not all are reflected. Sikkim Water Policy has a strong emphasis on water being regulated by the state as per state development priorities and needs such as; the multi-purpose dams, however, the policy acknowledges that this needs to be done under central guidelines.
		d. Any concrete action is taken?	There is no move to amend the existing state water policy.
2.	Raising Awareness about criticality of water as a natural resource	a. Does water policy of the state say anything about water being a scarce, natural resource?	The State water policy states that Water is a prime natural resource and it is necessary for human and all forms of life's survival. It is scarce compared to its usefulness and planning, development and management need to be governed by state perspectives. ⁶
		b. Does the state have a campaign running or any engagement with its citizens to create and foster this sentiment?	The state has initiated campaigns on raising awareness on water conservation under various government schemes. The Village Water Security Plans and Dhara Vikas program run by the Rural Management and Development Department of Sikkim (RMDD) to revitalise natural springs across the state are changing local perceptions. ⁷

⁶ Para 1.1 of State water policy

⁷ <https://www.giz.de/en/downloads/giz2014-en-scarcity-amidst-plenty-water-india.pdf>

3.	Water quality and quantity	a. Does the state water policy include a provision on right to access to minimum quantity of potable water for health and hygiene?	<p>The State Policy states that planning of projects in hilly areas should take into account the need to provide assured drinking water and should take into account the water needs of poorer sections of society. However, this is in reference to a water resources project planned in the hilly areas.</p> <p>As such the State Water Policy is not having a specific provision on right to access to minimum quantity of potable water for health and hygiene, though it highlights priority use for this purpose over all other water uses.</p>
		b. Is there any law to guarantee this?	<p>The Sikkim Water Supply and Water Tax Act, 1986 provides that the government “may” on the request of a consumer, in a prescribed format, provide for water supply for domestic or other purposes and the government has the power to limit the water supply if it deems reasonable⁸. Therefore, the state government does not have any legal obligation to supply minimum quality or quantity of water.</p>
		c. Does the State Water Policy contain an article or a position, which places responsibility on citizens about protection and conservation of water sources in their immediate vicinity?	<p>The Water Policy States that the efficiency of utilization in all the diverse uses of water should be improved and an awareness of water as a scarce resource should be fostered. Conservation consciousness should be promoted through education, regulation, incentives and disincentives. Role of NGOs in educating farmers for efficient water use management is noteworthy in the state water policy.</p>

⁸ Section 8

		<p>d. Is the institutional mechanism geared up to deliver this?</p>	<p>The State Policy talks briefly about qualitative improvement in water resource management through user's participation and decentralization of authority. Further the water resource planning for various uses is being done by the respective departments. It talks about enlisting NGOs for education of farmers and further training the responsible personnel in needed skills. The Urban Development and Housing Dept. with the Water Security & PHE Dept. are setup along with the State Water Resource and Development Dept. to carry out the same.</p>
		<p>e. Does the state provide the rights or powers to the Panchayati Raj Institutions, or citizens to independently initiate actions for protection and conservation of water sources in their immediate vicinity (article 48(a)(g) and 58 (a) of the Indian constitution specifically referred to these responsibilities related to water, and other natural resources)?</p>	<p>The Sikkim Panchayat Act, 1982 endows upon the Gram Panchayats the power and function of <i>sanitation, conservancy and drainage. Further more supply of drinking water and cleaning and disinfecting sources of supply and storage of water</i> in the area within its jurisdiction is given in Chapter III of the Act i.e. Duties of Gram Panchayat.⁹</p>

⁹ Sikkim Panchayat Act, 1982

4.	Maintaining and sustaining Ecological needs and flows in a river	a. Is there any law or policy in the state which makes it mandatory to undertake a scientific study to determine the ecological requirement of water for a river?	There is an adequate emphasis on scientific training and use of modern technologies for water resource development, maintenance and modernization, including for the collection and maintenance of data. Thus the state water policy underlines the importance of scientific study and the use of IT as part of the state water policy.
		b. If yes what is the implementation and monitoring of the same?	The task of monitoring is entrusted Department of Science & Technology and Climate Change, Government of Sikkim. ¹⁰
5.	Adaptation to climate change	a. Has the state formulated State Action Plan for Climate Change and has the concerns regarding effect of climate change on water resources been integrated in to these plans. Are there District level Climate Change Action plans being formulated within the	The State has formulated Sikkim State Action Plan on Climate Change (SAPCC). The SAPCC has a dedicated section on water security in the context of climate change wherein the state level concerns and the available institutional infrastructure is captured. The SAPCC also outlines a few strategies to address climate change concerns to ensure water security (Chapter 6.0 of the SAPCC, Sikkim). The District level Climate Change Action Plans have not been prepared yet. ¹¹

¹⁰ <http://dstsikkim.gov.in/>

¹¹ <http://www.moef.nic.in/sites/default/files/sapcc/Sikkim.pdf>

		regulatory framework	
		b. Has the state begun to integrate the concerns of climate variability in to water resource management and planning based on NWP-2012?	The state has begun to incorporate climate concerns in water resource management. The SAPCC provides for the strategies and the institutional framework on water resources has been outlined in the State Climate Change Action Plan.
		c. Is there any special impetus to increasing water storage capacity?	The SAPCC has various centrally and state sponsored schemes such as: <ul style="list-style-type: none"> • Creation of household water storage tanks in the drought prone areas. Irrigation & Flood Control Department is also undertaking construction of Minor Irrigation Channels (MICs) from Centrally Sponsored Schemes as well as State Funding Resources amongst others.
		d. Whether there is an increase water use efficiency across all water users groups, like; agriculture, domestic, commercial and industrial?	There is added focus on increasing sectoral water use efficiency and the same is reflected in the measures stated in the SAPCC.

	<p>e. Are sustainable agricultural practices being adopted and reshaped as per the water availability in Sikkim or in its region?</p>	<p>Water for Irrigation and farming are top priorities. Flood Control & River Training, Irrigation & Flood Control Department is also undertaking construction of Minor Irrigation Channels (MICs) from Centrally Sponsor Schemes as well as State Funding Resources. Thus, the periodical survey for MICs is being carried out at the interval of every five (5) years. However, as per the records available, the number of Minor Irrigation Channels (MICs) constructed before 1982-83 are 327 and up to 1986-87, the total is 510 numbers. This was the first ever Census of MICs taken up with the reference year up to 1986-87. The total gross potential created up to the financial year ending December 2010 -2011 stands at 29,233.84 hectares. Further proposal of 225 numbers of MICs which has now been submitted to the Ministry of Water Resources, River Development and Ganga Rejuvenation, Government of India under Additional Central Assistance would create an additional potential of 8,244 hectares.</p>
	<p>f. Is climate change variability included as criteria for water development projects?</p>	<p>Yes, climate change will be included as an essential factor.</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 with regard to climate change</p>	<p>The Ministers lead the sectoral departments for policy development, implementation, monitoring, etc. of Five-Year Plans in the State. The Secretaries head the sectoral development departments and the Chief Secretary heads the Secretaries. The issues related to policy development and implementation of the respective sectors are brought to the notice of the Legislative Assembly, discussed, passed and published in State Gazette Notification for enforcement. The sectoral planning and development of State Five-Year Plans are brought to the main actor of the State –the Planning and Development Department - for onward submission to the National Planning Commission for consideration. The State Planning and Development Department closely monitors the sectoral policies and processes and the results are submitted to the National Planning Commission for monitoring at the national level. At the district level, the Zila Panchayat Institutions coordinate and implement the State policy programmes while at the grassroots Gram Panchayats function as policy and programme implementation</p>

6.	Augmenting water Supply and sanitation	<p>a. Is Sikkim State doing any of the following to augmenting water supply and provide access to sanitation.</p> <p>Made recycling and reuse mandatory</p>	<p>According to the Sikkim Water Supply Act, 1991, Sewerage, and Sewerage Disposal Act, 1991 the concerned department for the purpose is the Public Health Engineering Dept. of the Government for creation, extension or prohibition of sewer lines and water supply.</p>
		<p>b. Whether there is mention of Rain water harvesting potential in the State Water Policy?</p>	<p>The state water policy mentions the importance of rainwater harvesting. Many government initiatives have helped the same such as Dhara Vikas, which has been in collaboration with the MNREGA.</p>
		<p>c. Desalination techniques</p>	<p>Not applicable for the state.</p>
		<p>d. Whether the Sikkim State has made water use efficiency mandatory</p>	<p>The idea of efficiency of use of water is imbedded in the Water Policy of the state under the sub-heading under Maximum Utilisation.</p>

		e. Are there subsidies and incentives for recovery of industrial pollutants and recycling / reuse	There is no incentive or subsidies but the Industrial Policy, 2003 of the State mentions as a policy objective to maintain the Green State Image of Sikkim.
		f. Are sewerage charges being put/recovered in urban areas	Sikkim Sewerage And Sewage Disposal Rules 1990 assigns this responsibility to the Public Health Engineering Department to recover the charges.
		g. What steps are undertaken to augment rural water supply?	The Rural Management and Development Department has taken measures such as the umbrella programmes of National Rural Drinking Water Programme Or Jalmani (Centrally Sponsored) under which various steps are being taken for this purpose. ¹²
7.	Ground water use and management	a. Have the Sikkim State done Aquifer mapping to know the quality and quantity of ground water	The Central Ground Water Board has undertaken groundwater mapping for the state and Net Annual Ground Water Availability is assessed as 0.044 BCM and Annual Ground Water Draft as 0.011 BCM. There are no Over Exploited, Critical or Semi- critical blocks in the state and as such no areas are notified for regulation of ground water development. The State government constituted the State Ground Water Coordination Committee to implement “National Aquifer Mapping Programme” on 03.06.2014 to suggest suitable modifications in the Aquifer Maps and Aquifer Management Plans for its implementation through Participatory Ground Water Management (PGWM)/Water User Association and to prepare protocols for Participatory Ground Water Management (PGWM).

¹² <http://www.rdsikkim.org/RuralWaterSecurity.html>

		<p>b. Does the state have a ground water law</p>	<p>In view of very low ground water development, State Govt feels it is not necessary to enact any law at present.¹³ However, the State Water Policy states that there should be a periodical reassessment on a scientific basis of the ground water potential taking into consideration the quality of the water available and economic viability.</p> <p>Exploitation of ground water resources should be so regulated as not to exceed the recharging possibilities as also to ensure social equity. Ground water recharge projects should be developed and implemented for augmenting the available supplies.</p>
		<p>c. Is there a authority mandated to manage and conserve groundwater</p>	<p>There is no authority mandated to manage and conserve groundwater.</p>
		<p>d. Does the law protect over exploited aquifers, how?</p>	<p>Yes, the state water policy states scientific assessment of ground water should be undertaken. However, there is no law mandating this aspect.</p>
		<p>e. Is extraction of ground water linked with recharge of the same?</p>	<p>According to the state water policy “Exploitation of ground water resources should be so regulated as not to exceed the recharging possibilities as also to ensure social equity. Ground water recharge projects should be developed and implemented for augmenting the available supplies.”</p>
8.	Integrated Watershed development	<p>a. Whether specific steps the Sikkim State is taking to ensure integrated watershed development.</p>	<p>Forests, Environment & Wildlife Management Department, Government of Sikkim have initiated the Watershed management programme. During the last decade, 25 projects have been sanctioned and are being implemented and are in different stages of its progress covering four districts of the state with the sanctioned out lay of Rs 7795.75 lakhs out of which Rs 3203.99 has been received so far.¹⁴</p>

¹³ http://cgwb.gov.in/gw_profiles/st_sikkim.htm

¹⁴ http://sikkimforest.gov.in/Reports%20and%20Publications/15years/14_Watersheshed%20Mgt%20p%2040-41.pdf

		<p>b. Have statutory / administrative / departmental steps been taken in order to integrate / align the objective functions which may differ</p>	<p>1) Dhara Vikas by the Rural Management and Development Dept. 2) Ministry of Rural Development and Land Resource, Govt. of India has released Rs. 6.30 crore (Rupees Six crore and Thirty lakh only) as 1st instalment of Central share for 2015-16 for implementation of IWMP projects under Watershed Component of <i>Pradhan Mantri Krishi Sinchayee Yoiana (PMKSY)</i> in Sikkim State.¹⁵</p>
		<p>c. Are water sources and their catchment areas being looked at in totality?</p>	<p>Yes. It is a part of the duty of the State Forest, Environment and Wildlife Department and being looked after.</p>
		<p>d. Have steps been taken to avoid duplication of overhead costs in order to create synergies</p>	<p>No. There might be duplication on overhead cost as per the framed laws and a diverse range of institutions established under them.</p>
		<p>e. Are developmental laws harmonised with the need of integrated watershed development.</p>	<p>No. The research has not revealed any dedicated initiative by the state government on the harmonizing developmental laws with the state level water law framework.</p>

¹⁵http://dolr.nic.in/dolr/downloads/pdfs/IWMPSanctionOrder2015_16/Sikkim/Sikkim%20Sanction%20Order.pdf <http://sikenvis.nic.in/SiteSearch.aspx?text=watershed>

		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)	As above
9.	Demand Management and Water use efficiency	a. Is there any specific law mandating quantum of water for a particular use i.e. benchmarking of water usage for different uses in industrial water usage	The Public Health Engineering Department of Sikkim is In- Charge of supplying water, according to the state water policy, water resource development projects should be planned and developed for multipurpose projects. Provision for drinking water should be a primary consideration. The projects should include; irrigation, hydro electric power generation, flood mitigation, industrial purpose, pisciculture and recreation wherever possible for tourism purposes etc. The rates are fixed by the state. The SAPCC mentions the use of water in different sectors.
		b. Any penalty for wastage of water and incentive for water use efficiency	Yes the Sikkim Water Supply and Water Tax Act imposes penalty for wastage of water. The “Competent Authority” has the power to cut off water supply in certain cases. The provision for offences by a company and further defined penalties exist in the above act.
		c. Any there any water efficiency benchmark at which irrigation projects have to perform and function	The water policy of the state mentions the Principles to be followed with regard to water use and allocation during Irrigation but no specific benchmark.

		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.	Sikkim is part of the Centrally sponsored scheme of Accelerated Irrigation Benefits Programme under which micro irrigation is an essential step and the same find a mention in the State Action Plan for Climate Change. ¹⁶
		f. Any scheme being used in the state which encourages people to use water use efficient gadgets	Not as of now
		g. Is there a mechanism to conduct water audits – voluntary or mandatory	Under the Atal Mission for Rejuvenation and Urban Transformation (AMRUT) scheme being implemented for urban areas one of the focus areas is conducting of water audits which are to be implemented in the state. ¹⁷
10.	Water pricing	a. Is there a mechanism for water pricing?	There is a mention of water rates in the state policy. It is mentioned in the Water Supply and Water Tax act, 1986 that the Chief Engineer-cum-Secretary of the Housing, Public Health Engineering and Housing department is the “Competent Authority” for the same.

¹⁶ <http://www.sikkim-irrigation.gov.in>
<http://wrmin.nic.in/writereaddata/Guidelines/File620.pdf>

¹⁷ Sikkim: State Annual Action Plan (SAAP) for FY 2015-16 accessed at <http://amrut.gov.in/writereaddata/SikkimSAAP.pdf>

b. Has Water Regulatory Authority been established	Water Regulatory Authority for the state has not been established as of now.
c. What is the water pricing methods being followed?	According to the Sikkim Water Supply Act, 1991” For each dwelling unit where meter is not provided, charges of water consumed shall be twenty one rupees per month up to first five taps, thereafter fifty paise per additional tap up to twenty taps. Beyond twenty taps the charges shall be at the rate of one rupee fifty paise per tap per month irrespective of number of users and taps.”
d. Has water pricing been rationalised? If yes how? If no why?	Yes, the water pricing has been rationalised under the above act that states,” The Competent authority, if deems necessary, may also evaluate water charges considering various technical factors which the consumer shall be bound to accept, provided that reasons for such valuation of water charges by analysis shall have to be recorded.”
e. Are water charges being recovered from the consumers?	Yes
f. Are Water Users Associations (WUAs) involved in the process of fixing rates of water	Formation of Water Users’ Association (WUA) in the commands of all completed Minor Irrigation Schemes under Participatory Irrigation Management (PIM) is under process. According to the future action plan, the role of WUA’s will be participatory in fixating of water rates. ¹⁸
g. Are Water Users Associations (WUAs) given statutory powers to collect and retain a portion of water charges, manage the volumetric quantum of	Formation of Water Users’ Association (WUA) in the commands of all completed Minor Irrigation Schemes under Participatory Irrigation Management (PIM) is under process. According to the future action plan the role of WUA’s will be participatory but rules under Sikkim Water Tax Act are still to be enacted.

¹⁸ <http://www.sikkim-irrigation.gov.in/Aibp.aspx>

		water allotted to them and to maintain the distribution system in their jurisdiction?	
11.	Scientific assessment of water resources and Database, information system	a. Institutions involved in the scientific assessment of the water resources	The Sikkim Department of Science & Technology and Climate Change works for overall development of the state and with a view to provide sufficient autonomy for implementation of various scientific programmes. The Council takes up various programmes funded by the State Government as well as projects funded by the Government of India agencies like the Department of Science & Technology, Ministry of Environment & Forests and Climate Change, Department of Biotechnology and Department of Space as well. The Sikkim State Remote Sensing Application Centre under Department of Science & Technology and Climate Change is involved in collecting data associated with water resources in the state.
		b. How is the state organising its hydrological database and using it for decision making.	The Sikkim State Remote Sensing Application Centre is undertaking ground water prospect and quality mapping using Remote Sensing and geographic information system techniques. It has also undertaken mapping of glacial lakes and development of GIS based Glacier Lake Management Information Center.
		c. Which institutions and regulatory bodies are involved in the collection of Data	<ul style="list-style-type: none"> • Department of Science & Technology and Climate Change • The Sikkim State Remote Sensing Application Centre
		d. What are the different types of Data being collected at the state level	<ul style="list-style-type: none"> • Data on ground water prospect and quality mapping • Data on glacial lakes
12	Allocation and uses of water	a. Is there a mechanism for water allocation amongst different competing uses	<p>Yes, the state policy provides allocation of water under the following headings:</p> <ol style="list-style-type: none"> 1. Drinking 2. Hydro Power 3. Irrigation 4. Ecology 5. Industries 6. Recreation 7. Other Uses

	<p>b. If yes, what is the criteria and principles followed for allocation</p>	<p>The state water policy does not mention any Criteria per se but policy mentions the priority use of water.</p>
	<p>c. Are principles of equity and social justice being followed for water allocation</p>	<p>There is no mention of principles of equity and social justice for allocation of water in the state.</p>
	<p>d. What is the existing mechanism for dispute resolution in allocation of water</p>	<p>To resolve any dispute , the consumer may appeal to the Principal Chief Engineer-cum-Secretary of the Department . The Secretary will refer the matter to a Water Adalat. The Members of the Adalats will comprise of the Secretary, the PHE official of the area concerned and the local representative of the area wherever the dispute arises. This Citizens’ Charter is NOT a legal document that can be enforced against either the Customer or the Water Security and Public Health Engineering Department.</p>
	<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>Yes, the state policy provides allocation of water under the following headings:</p> <ol style="list-style-type: none"> 1. Drinking 2. Hydro Power 3. Irrigation 4. Ecology 5. Industries 6. Recreation 7. Other Uses

		<p>f. Has the state policy defines the procedure of allocation of scare water between sectors? e.g. Drinking and domestic, agriculture, industry, Hydro-power etc, in order to achieve optimal use</p>	<p>The state policy under Maximum Utilisation of water provides that transfer into areas where water is scarce and the allocation of water can be modified if needed, however, it should reduce imbalances of water.</p>
		<p>g. Between the principle of satisfying basic needs and the principle of ability to pay (pricing), which one will be given preference and / or priority?</p>	<p>There is no specific mention in the formal water related instruments at the state level.</p>

13	Management Of Flood & Drought	a. What is the regulatory mechanism to prevent loss of land eroded by the river, which causes permanent loss, revetments, spurs, embankments, etc.,	“Flood Management Programme” would be implemented generally by Flood Control/ Water Resources / Irrigation Departments of the State Governments. In exceptional and emergent cases, the works could be entrusted to the central government organizations / undertakings, with the approval of Union Minister for Water Resources. ¹⁹
		b. Is there an institutional setup for flood forecasting using real time data acquisition system and linked to forecasting models?	The Irrigation and flood control dept. ²⁰
14	Integrated Water Resources Management	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 has not yet incorporated it as a main principle as river basin planning is not reflected in the State Water Policy.
		b. Are there river basin management authorities established by the state government	There are no river basin management authorities established by the state government. Though, Sikkim is represented on the Brahmaputra Board, an autonomous statutory body was set up under the Brahmaputra Board Act, (Act 46 of 1980) under the Ministry of Water Resources, River Development and Ganga rejuvenation, Government of India for management of the Brahmaputra river.

¹⁹ <http://www.sikkim-irrigation.gov.in/Fmp.aspx>

²⁰ <http://www.sikkim-irrigation.gov.in/Flood-Control.aspx>

		c. What are the functions and powers of the river basin management authorities	Not applicable in view of (b) above.
15	Planning and Implementation of water resource projects	a. What is the level of participation of local governing bodies like Panchayats, Municipalities, Corporations, etc., and Water Users Associations, in planning of Water resource projects.	The Panchayati Raj Act 1982 of the state gives the power to Gram Panchayats for the same. Water User Associations are still under consideration post adopting the AIBP scheme via the center. There is involvement of non-state actors in the schemes of the state such as BADP or NABRAD. Initiatives by Rural Management and Development Department have decentralised involvement.
		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	Yes. The state policy mentions Special efforts should be made to investigate and formulate projects either for the benefit of area inhabited by tribal or other specially disadvantaged groups such as Scheduled Castes and Scheduled Tribes and to provide special attention to their needs.
		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	No. The SWP has no mention of the same.

		economic losses	
16	Conservation of river corridors, water bodies and wetlands	a. What is the prevalent institutional structure for conservation and management of river corridors, water bodies, wetlands within the state?	There is no unified authority, department, body or agency looking after water bodies and wetlands in the state. Under the Sikkim Panchayati Raj Act, Gram Panchayat has the power of protection and conservation of water bodies within its jurisdiction. The water bodies and wetlands within Urban limits are managed by the Water Security and Public Health Engineering Dept. The Conservation of wetlands Programme in Sikkim is also under a state level steered committee. ²¹
		b. Is there community participation in the conservation of river corridors, water bodies, wetlands?	Yes Community participation is there. The state policy also tells us the importance of taking everyone along in the process. The initiative of Sikkim springs, further the Dhara Vikas Programme of Department of Rural Management and Development that brings together institutions such as WWF, the Wetland Conservation Programme of the State and academia and NGOs as their Members. Further, the role of Panchayat is accounted for too. Joint Forest Management is also an initiative by the Government to decentralise participation by various state players.
		c. What are the institutional and regulatory measures to deal with encroachments and diversion of water bodies, wetlands in rural and urban areas?	The state of Sikkim has a number of legislative enactments which have direct and indirect bearing on water and water bodies for rural, urban and forest areas. These laws together provide collective prohibitions on the diversion and encroachment on water bodies.

²¹ <http://www.sikkimforest.gov.in/docs/Notifications/Wetland%20Conservation.pdf>

d. Besides participation, has the community or an individual being given the right (duty and responsibility) to protect and conserve water sources?

A notification²² has been issued by the state government under Sikkim Forests, Water Courses And Road Reserve (Preservation And Protection) Act, 1988 to work in partnerships with Gram Panchayats and *Pokhri Sanrakshan Samitis* for the purpose of protection and conservation of the lakes in the state. It provides for formulation of Lake Conservation plan, appointment of Lake guardian amongst others.

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

- **Need for revisiting the Sikkim Water Policy, 2009:** The Sikkim Water Policy, 2009, (hereinafter referred as “SWP”) needs to be revisited in terms of the NWP, 2012 as the basic principles require reflection at the state level. Considering that impacts of climate change over water resources in the state is an emerging issue, there is no discussion of the same in the state policy whereas NWP, 2012 lays emphasis over this aspect.
- **Setting up an independent statutory Water Regulatory Authority:** The Sikkim Water Policy, 2009 is silent over the regulatory framework to manage water resources, its allocation, entitlements and tariff fixation among users. The Sikkim Water Policy, 2009 discusses the need for recovering cost of supplying and fixes priority in allocation, but there is no system in place to implement the measures required for the same. One of the measures in NWP, 2012 to achieve pricing of water and its equitable access is setting up of independent statutory Water Regulatory Authority by state. The key function of Water Regulatory Authority is to fix and regulate the water tariff system based on principles of cost recovery and reducing subsidies and also determination of entitlements which involves the allotment of certain shares of water to various water users or group of users.
- **Policy initiates for Spring shed development to ensure water security:** In Sikkim, 80% of the rural households depend on spring water for their rural water security²³. The mountain springs locally known as *Dharas* are the natural discharges of groundwater from various aquifers. Some of the springs are

²² <http://sikkimforest.gov.in/docs/Pokhri%20Sanrakshan%20Samiti.pdf>

²³ Tambe S, Arrawatia ML, Kumar R, Bharti H, Shrestha P. 2009: Conceptualizing strategies to enhance rural water security in Sikkim, Eastern Himalaya, India. Selected technical papers from the proceedings of the workshop on integrated water resource management held on 27th Nov, 2009.

considered sacred and revered as *Devithans* and protected from biotic and anthropogenic impacts. The rural households access water from these springs, mostly through gravity based piped systems and sometimes manually. Given importance of springs in the state, its non-inclusion in the Sikkim Water Policy requires rectification and revision. Further, SWP outlines the significance of data collection from different water sources in the state for planning and management purposes, but the collection of data on springs is missing from this exercise requiring its inclusion for proper management and conservation of springs.

- **Enhancing Water Use Efficiency through River Basin and Project Planning:** River Basin planning to incorporate water use efficiency is the need of the hour though it is not addressed in the Sikkim Water Policy, 2009. It neither discusses measures to evolve benchmarks for water uses for different purposes, i.e., water footprints, and water auditing a way of promoting efficient use of water. There is also no discussion in Sikkim Water Policy on ways and means of bringing in water use efficiencies, which are possible by undertaking continuous water balance and water accounting studies. An institutional arrangement for evolving mechanisms for efficient water use at basin/sub-basin level needs to be established for achieving the objectives of the NWP, 2012.
- **Development of Navigational uses of Rivers and water bodies:** The NWP, 2012 lays emphasis on development of rivers and water bodies for navigational uses and its inclusion in the planning process from inception phase. Neither the SWP discusses navigation potential of the rivers nor finds mention in the water allocation priorities of the state. In this aspect SWP, 2009 requires to be updated to include aspects on navigation.
- **Inclusion of Climate Change Adaptation strategies in water planning processes:** There is absence of discussion of climate change impacts or adaptation in SWP, 2009 regarding water resources, whereas climate change adaptation is one of the major issues dealt in NWP, 2012. The climate change impacts on water resources of the state are well documented and various studies are underway to assess adaptation strategies, given this focus it is important for the state water policy to address this aspect.