Global Water Partnership South Asia

India Water Partnership

A Report on Review of Draft Gujarat State Water Policy in line with National Water Policy - 2012 with regard to Climate Change

December - 2014

Study Team:

Dr. Veena Khanduri
Executive Secretary-cum-Country Coordinator, India Water Partnership & Adviser

Professor Kamta Prasad
Chairman, Institute for Resource Management and Economic Development & Project Director

Mr. D Routray
Director, Institute for Resource Management and Economic Development & Project Officer

A Report
on Review of Draft Gujarat State Water Policy in line with National Water Policy - 2012 with regard to Climate Change

Review by

India Water Partnership (IWP)
www.cwp-india.org

With support of
Institute For Resource Management and Economic Development (IRMED)

Contents

EXECUTIVE SUMMARY

I. Context

The National Water Policy (NWP), 2012 approved by the National Water Resources Council was adopted by the Government of India during India Water Week-2013. With regard to climate change, the NWP (2012) had laid special emphasis on preparedness at the micro level. According to it "special emphasis should be given towards mitigation at micro level by enhancing the capabilities of community to adopt climate resilient technological options" (Para 4.1).

Measures dealing with adverse effects of climate change will have better chance of success if people and functionaries at the grassroots level are also aware of them and are associated with the preparatory measures to mitigate them especially in rural areas, which are dependent on agriculture and allied activities. While there is a growing literature on dimensions of climate change, and it's probable effects in different parts of the world including India, there is virtually no literature on perceptions of grassroots level functionaries as well as the public, with respect to adverse effects of climate change on their livelihood as well as the preparatory measures that can be taken at the local level for mitigation of these effects.

As per the NWP (2012), the State Water Policies are required to be aligned with it. Keeping this in view, India Water Partnership, as part of its Work Plan 2014, reviewed the State Water Policy of two States namely; Bihar & Gujarat in line with NWP-2012 with regard to climate change with the support of Institute for Resource Management and Economic Development (IRMED).

II. Criteria for selection of states

As a first step, the IRMED reviewed water policies of all the States/Union Territories (UTs), which are in either draft or final stage. The review revealed that there are only 14 States/UTs which have announced their water policies starting from 1994, while 2 UTs namely; Daman & Diu and Dadra & Nagar Haveli have adopted National Water Policy-2012. The remaining States/UTs are in the process of formulating their water policies, while some of the States/UTs are in the process of revising their earlier policies.

For selection of two states, the IRMED and IWP study team had detailed discussions with senior officials of Government of India, as well as the State Government officials and officials of other departments/agencies. These officials included: Shri A.B. Pandya, Chairman, Central Water Commission (CWC), Shri R. K. Jain, Chief Engineer (CWC), Shri Ashish Banerjee, Director (NWP), Shri Atul Jain, Director (CWC), Shri A. K. Srivastava, Secretary (CWC), Shri Avinash C Tyagi, Secretary General, International Commission on Irrigation and Drainage (ICID), Shri V. U. Koundanya, Executive Director, WAPCOS Ltd., Dr. Suresh A Kulkarni, Secretary, Maharashtra, State Water Resources Regulatory Authority, Shri. Mendi Giri, Director General, Water and Land Management Institute, Aurangabad, Shri Arvind Kumar and Shri Jai Kishore, Superintending Engineers, Monitoring Division of the Water Resources Department of the Government of Bihar, Shri I. C. Thakur of Water and Land Management Institute, Patna, and others.

Discussions with these officials revealed that various states are at different stages with respect to formulation or revision of their state water policy. Hence, it was decided to select only those states where formulation of state water policy is presently under consideration but may take a few more months before being finalized so that there was a scope of

- Only 14 States have announced their State Water Policy starting from 1994.
- 2 Union Territories namely; Daman & Diu and Dadra & Nagar Haveli have adopted National Water Policy-2012.
- Remaining States are in the process of revising their State Water Policy.
- Himachal Pradesh is the only State to bring out a revised water policy in 2013 by including climate change aspects in line with National Water Policy-2012.

incorporating the study team's suggestions in the state water policy. Two other considerations were also taken into account. First, the states selected were major states and not minor ones like Goa, Manipur, Nagaland etc. Second, in the context of climate change, one of the selected states was drought prone while another was flood prone for a representative picture of the country to emerge. After examining the criteria and need, it was decided to select Gujarat and Bihar as the two states for the current study.

III. Methodology

The methodology adopted three types of approaches to collect the requisite information for the review. At the outset, considerable discussion took place between the study team and state level senior officers of water resources and allied departments, who are the main stakeholders. This was done in groups as well as individually. The purpose at this stage was not only to get feedback of state level officers on issues related to state water policy, but also to motivate them to assume a proactive role in preparing a draft of the state policy. This was followed by enquiries at the district level and down below in a purposively selected districts of the state. The stakeholders included district and block level functionaries and other actors like villagers, people's representatives, NGOs, Panchayats, Municipalities, etc. The objective was to have a realistic picture of the micro level perceptions of the effects of climate change. Thereafter the next step was to hold a state level workshop of stakeholders such as senior officers of the state government, leading state level water resources professionals, NGOs, women and others. A questionnaire was also filled-in by the workshop participants giving their perception, views and suggestions on issues related to state water policy. The study team processed these suggestions and thereafter sent it to the respective state government for possible incorporation in its respective state water policy.

The detailed report on the review of Draft State Water Policy of Gujarat undertaken by India Water Partnership is given below:

IV. Review of Draft State Water Policy of Gujarat

a. Interaction at state level

Firstly, the team conducted a desk review related to the Draft Gujarat Water Policy. Thereafter, in consultation with the Department of Water Resources, Government of Gujarat, the Project Director, IWP made the first visit to the state from 6-8 August 2014. An interactive session was held with senior officers (mostly of the rank of Chief Engineer or above) of the Water Resources and allied Departments at Gandhi Nagar, Gujarat on 6 August 2014. After giving a brief introduction about GWP and IWP, the Project Director, IWP study discussed about the study to review state water policy of Gujarat in line with the National Water Policy-2012. The presentation by the state government began with an analysis of the water resource scenario in Gujarat, which showed the need for inter-basin transfer of water to take care of the highly uneven regional distribution within the state. During the discussion, the Project Director indicated several implications for water policy. It was mentioned by state officers that a draft of Gujarat State Water Policy was prepared in 2011 by the department. However, it remained as a draft within the department as it could not make any headway.

Salient features of the above draft were presented in the meeting and considerable discussion took place. The Project Director, IWP study pointed that the draft of the water policy was not in line with the National Water Policy-2012. Its structure was entirely different due to which comparison was not easy. Moreover, there was no reference to issues related to climate change. The Project Director made several suggestions for improvement. Thereafter it was agreed that as per the National Water Policy-2012, a separate section on climate change would be added. Other aspects pointed out by representatives of other departments included the need for review of the norms for water requirement for cattle, analysis of local experiments on water augmentation, diverse impact of climate change in various regions, use of solar energy to deal with impact of climate change, etc.

It was further agreed that the State Water Resources Department would prepare a fresh draft of Gujarat State Water Policy in the light of points made during the interactive session. The timeline for this was to be decided by the Secretary, Water Resources Department, Government of Gujarat.

Thereafter, the Project Director, IWP had a meeting with the Secretary, Water Resources Department, Government of Gujarat and it was decided to set the deadline of 31August 2014 for finalizing the new draft of

the state water policy by the Water Resources Department. The Project Director also pursued the matter at higher levels during his subsequent meetings with the Hon'ble State Governor, the Hon'ble Chief Minister and Shri B.N. Navalawala, Adviser to Union Water Resources Minister and Former Secretary, Ministry of Water Resources, Government of India. Thereafter, the Project Director also interacted with Senior Coordinator, Water and Natural Resource Management Campaign of Self Employed Women's Association, a NGO and a life member of IWP. Finally, he had an interaction with two senior faculty members of the Indian Institute of Management, Ahmedabad.

b. Interaction at district level

To understand the problems at the grassroot level in the most drought prone area of the state, the Project Director visited the Kutch district of Gujarat on 7 and 8 August 2014. It started with a meeting of district level officers of all the departments concerned with State Water Policy. It was observed that officers from other departments were not aware of the National Water Policy 2012. Interactions were also held with village and taluka level panchayat representatives of Nakhatrana Tehsil who suggested the need to shift towards horticulture in order to deal with climate change. Interactions were also held with elected members of Village Water and Sanitation Committee (a statutory body as per Panchayat Act of 2002) of Bharasar village in Bhuj taluka of the district.

The next task was to conduct field studies, comprising discussions at district and taluka level and also holding of interactive sessions in two gram panchayats in a district. In consultation with the state level officers, it was decided to undertake the designated survey in Surendranagar district, which is a water stressed district under the Saurashtra region of Gujarat. The district has a Krishi Vigyan Kendra (KVK) about 50 Km, away from the town of Surendranagar located at Kandasar under Chotila Taluka. The field studies were conducted during 12th to 21st September, 2014. In consultation with the district level officer, 2 Gram Panchayats, namely (1) Jasapar under Dhrangadhara Taluka and (2) Gunda under Chotila Taluka were selected for holding interactive sessions.

The interactive session in Jasapar village of Jasapar gram panchayat had 32 participants, mostly farmers, while that in Gunda village of Gunda gram panchayat had 29 participants. Most of the participants were farmers but a few business persons and service persons also attended. On enquiry, it was noticed that no one from either of the two villages was aware of the state water policy. On climate change and its implications also, villagers had very little knowledge. A few among them could only guess by relating such, as untimely rainfall, fall in the level of ground water etc. However, when told about global warming and its effect on increasing water scarcity, most farmers were interested to know about the coping mechanism to be adopted in the event of ensuing climate change. Farmers wanted to know about less water intensive crops and potential of micro irrigation in using less water for crops.

Thereafter, the study team visited various district level offices concerned with water resources such as Agriculture, Animal Husbandry, Horticulture, Fishery, Minor irrigation (Panchayat Irrigation), Major & Medium Irrigation, Krishi Vigyan Kendra (KVK), Cotton Research Centre, etc. Interactions with officers revealed that at the district level, awareness among officers was somewhat better in respect of climate change and its implications.

According to them, the effect of climate change was perceived to be high on surface and groundwater irrigation, rural and urban drinking water supply, agriculture, horticulture and fishery, but not on flood management. However, effect of climate change on animal husbandry was perceived to vary considerably. As regards coping measures, a few of these officers particularly from the departments of Agriculture, Krishi Vigyan Kendra, Cotton Research Centre, Minor Irrigation were found to have some knowledge of the issues. But, none of the officers' who were contacted reported adoption of any climate change resilient technological options to counter the adverse effect of climate change. This might be because they did not see any threat to agriculture due to abundant water which was recently made available through the Narmada projects. Their perception was that it might take a decade to realise the shortage of water. Regarding national and state water policies, a majority of officers of the district were unaware but one officer of the department of Horticulture made a casual mention of some communication that he had come across regarding the matter.

c. State level workshop

In order to get feedback of the stakeholders on the Draft Gujarat State Water Policy, a State level workshop was held on 29th November

2014, at Gandhi Nagar, Gujarat. The workshop was organized by IWP and IRMED in collaboration with Gujarat Water Resources Department. The workshop had a right mix of participation, namely senior state government officers involved in the formulation of Gujarat State Water Policy, NGOs and experts that included Shri V.B. Patel, Former Chairman, Central Water Commission, Government of India and Shri B.N. Navalawala, Adviser to the Union Minister for Water Resources as well as Chief Minister, Government of Gujarat and former Secretary, Ministry of Water Resource, Government of India. Officers from the Central Water Commission as well as Central Ground Water Board of the Government of India also participated. In total there were 31 participants in the workshop.

The programme began with a welcome note by the Project Director, IWP study to the participants. He provided a background about both GWP and IWP. He pointed out that the main objective of the workshop was to examine the draft of the Gujarat State Water Policy and seek suggestions for improvement in line with NWP-2012. The inaugural address was given by Shri B.N. Navalawala. He suggested that water should be regarded as a community asset and that the prevailing differential norms of water for rural and urban areas needed a review. He was concerned about the soft options which the policy makers adopt while policy formulation. Thereafter, Shri R.K. Jain, Chief Engineer, Central Water Commission, Government of India, made a keynote presentation on the major highlights of the National Water Policy, 2012. This was followed by another keynote presentation on Draft Gujarat State Water Policy by Shri M.P. Raval, Chief Engineer and Additional Secretary, Department of Water Resources, Government of Gujarat. During his presentation, Shri Raval acknowledged that the section dealing with climate change in the draft of Gujarat State Water Policy was added after the suggestion of IWP study team during the interaction with Gujarat state officers in August 2014.

The inaugural session ended with presidential remarks by Shri V.B. Patel, renowned water resources professional and former Chairman, Central Water Commission, Government of India. He suggested that there is need for a Citizen's Council to monitor the implementation of the Policy, need for indicating a date from which the Policy would come into effect, encouraging NGOs for Participatory Irrigation Management (PIM), equalization of groundwater rate with the rate for alternative sources of water, induced recharge of groundwater and feasibility of private sector participation in major water resources projects.

The next session was presided over by Shri V. B. Patel. In this session, almost every participant spoke and gave useful comments and suggestions. The participants also gave their suggestions in writing in response to a questionnaire prepared by the IWP study team that was circulated during the workshop. The participants were also encouraged to send their suggestions later to the Project Director, IWP study. As expected, many of the suggestions were repetitive. After screening them, a consolidated list of suggestions was sent to the state government for incorporation in the draft state policy. These suggestions are as follows:

- Adaptation to climate change is more convenient than mitigation measures.
- Mitigation measures needed are; creation of more storages, artificial ground water recharge etc.
- Both structural and non-structural measures are important;
- Serious efforts are required to augment surface and ground water resources. At the same time, control of ground water use is also important;
- Inter-basin transfer of water from relatively water surplus basin to basins with water shortages after careful scientific studies;
- Emphasis to be given on rain water harvesting, more particularly for drinking water in hilly areas;
- Increase in supply by recycling and reuse of water;
- Water storage in hilly area like Dar;
- Special irrigation – provision like Dang, mini lift irrigation;
- 24x7 water supply should be provided for drinking purpose;
- Community level capacity building to deal with climate change specially for agricultural and other allied activities;
- Local water bodies to be owned/ managed by community. Groundwater in villages to be managed by Gram Panchayats;
- Awareness campaign for different stakeholders is required;
- Improvement of catchment areas;
- Green forest cover should be increased;
- Introduce accountability for offenders;

- Provide incentives for green technology (zero waste water discharge and capture methane from waste water treatment plants);
- The water policy should make provisions for minimizing use of electrical energy;
- Economic and efficient use of water, through water pricing, adaptation of sprinkler-drip irrigation, etc;
- Promote water efficient farming techniques and effective irrigation management through PIM;
- Fodder security - recommendations for alternatives to traditional fodder;
- Crop Insurance required;
- Systematic study on effect of climate change on water resources of various basins in line with Ministry of Water Resources, River Development and Ganga Rejuvenation, Govt. of India
- GIS-Remote sensing data should be dynamic in nature;
- Need to collect robust data;
- Studies of different aspects of geology, climate, hydrology and socio-economic aspects to access the impact of climate change to take preventive/mitigation measures;
- Integrated water and land resources management should be the priority;
- Integration of different departments at Central level and implementation level coordination among different departments is needed;
- Integration of State Action Plan on Climate Change with water related provisions of State Disaster Management Plan, National Water Mission, to have inclusive policy for water resources management;
- Constitution of a state-level stakeholders forum or user committee for action, policy and implementation. Similar committees at District and talukas/ block levels are also required to be constituted;
- Set up time bound Action Plan;
- Policies and recommendations made should be followed seriously and implemented.

Replying to the debate, Shri R. G. Bhatt and Shri M. P. Raval, Chief Engineers of the Government of Gujarat, assured that the State Government would modify the draft of the Gujarat State Water Policy in the light of comments made and suggestions offered by the participants. They also stated that this would be done before the end of December 2014. Thereafter, the revised policy would be put on the website of the department for obtaining feedback and suggestions. The Policy would be thereafter finalized by the state government after receiving feedback/suggestions from related departments/agencies, as this is a prerequisite for approval by the state cabinet.

d. Outcome

It is understood that the Gujarat State Water Policy is being restructured and revised in the light of recommendations emanating from this study, which would be in line with the National Water Policy 2012 with a section on climate change.

The detailed report is presented in the following pages.

Chapter 1: Introduction

1.1 Background and rationale

A National Water Policy in India was announced for the first time in 1987. Thereafter, a revised version of the policy came out in 2002. In 2012, yet another version of the National Water Policy was announced. A distinguishing feature of the 2012 National Water Policy is the emphasis laid on the role of climate change in the context of water resources. This was in recognition of the profound impact that climate change is predicted to produce on socio-economic life of people. Water is the principal medium through which this impact would take place. Drawing attention to likely increase in the variability of water resources due to climate change and its effects on human health and livelihood, the Policy suggests measures to deal with them. These include enhancing the capability of community to adopt climate resilient technological options, increasing water storages in its various forms including revival of traditional water harvesting structures and water bodies, better demand management of available water, stakeholders' participation in land-soil-water management among others.

Since water is viewed as a state subject in India, it is the state governments which play a crucial role in the water sector. It will, therefore, be useful if the policy measures related to mitigating the adverse effects of climate change, which are included in the National Water Policy-2012, are also taken into account in the state level water policies. States/UTs, however, have been lagging behind in this respect. There are only 14 States/UTs, which have announced their water policies beginning from 1994, while 2 UTs namely; Daman & Diu and Dadra & Nagar Haveli have adopted the National Water Policy-2012.

The remaining states are in the process of formulating state water polices while some of the states are in the process of revising their earlier policies. The state of Tamil Nadu was the first state to announce the state policy. It did so in 1994 followed by Uttar Pradesh in 1999,

Impact of climate change on water resources in India

The average global surface temperature is expected to increase by 1.4 to 3 degree celsius during the period 1990 to 2100 for low emission scenario while the increase could be as much as 2.5 to 5.8 degree celsius during the period for higher emission scenarios. The rise in sea level is expected to be around 9 to 88 cm during the period. Studies across the globe now indicate that climate change is expected to considerably impact availability of freshwater resources.

"In India, studies by several authors show that there is increasing trend in surface temperatures, no significant trend in rainfall on an all-India basis, but decreasing/increasing trends in rainfall at some locations." Over the years, the water demand in India has increased a great deal owing to the processes of greater agricultural water demand, population pressure, urbanization and higher industrialization. These changes are putting a pressure on water resources. The magnitude and timing of rainfall and thereby runoff is altering considerably. The hydrological cycle is getting modified in many river basins across various climatic regions of India. Change in climate is expected to impact soil moisture. The rise in intensity of rainfall or snowfall events is leading to higher potential for floods. At the same time there are states in India where drought episodes are on the rise. Studies also indicate that increasing temperature and reduction in rainfall could lead to reduced net recharge and affect levels of groundwater. The inter-annual variability of monsoon is also likely to increase in times to come.

To deal with demands for water in future, it will be necessary to rationalize on the various means of capturing and storing water. Therefore, any policy related to water needs to take cognizance of the potential for sustainable development of both surface and ground water resources within the constraints imposed by climate change.

Goa in 2000, Chhattisgarh in 2001, Karnataka in 2002, Madhya Pradesh and Maharashtra in 2003, Himachal Pradesh in 2005, Orissa in 2007, Andhra Pradesh and Kerala in 2008, Sikkim in 2009, Rajasthan in 2010 and Jharkhand in 2011. But, Himachal Pradesh has been the only state to bring out a revised policy in 2013, which included climate change concerns in line with the National Water Policy 2012. A formidable task, therefore, lies ahead. It is for this reason that a study designed to review the state water policies in line with the National Water Policy-2012 was called for.

With regard to climate change, the National Water Policy-2012 had laid special emphasis on preparedness at the micro level. According to it "special emphasis should be given towards mitigation at micro level by enhancing the capabilities of community to adopt climate resilient technological options" (Para 4.1). While there is a growing literature on dimensions of climate change, and it's probable effects in different parts of the world including India, there is virtually no literature on perceptions of grass-root level functionaries as well as the public, with respect to adverse effects of climate change on their livelihood as well as the preparatory measures that can be taken at the local level for mitigation of these effects.

1.2 Objective

The objective of the study was to review the draft of Gujarat State Water Policy as to indicate the manner in which it should be modified in line with the National Water Policy-2012 in the context of the ensuing climate change involving awareness, preparedness, coping mechanism at the state level and down below.

1.3 Methodology

An appropriate methodology was developed in order to achieve the above objective. The first step was to review the different versions of the National Water Policy as well as water policy of several states to prepare a tentative list of state specific issues for deliberation with stakeholders so as to generate a broad based consensus among them.

As a second step, considerable discussion in groups as well as individually took place between the study team and state level senior officers of water resources and allied departments of Government of Gujarat, who are the main stakeholders. The purpose was not only to get feedback of state level officers on issues related to state water policy, but also to motivate them to assume a proactive role in preparing a draft of the state policy. This was followed by enquiries at the district level and down below in a purposively selected district of the state. The stakeholders included district and block level functionaries and other actors like villagers, people's representatives, NGOs, Panchayats, Municipalities, etc. The objective was to have a realistic picture of the micro level perceptions of the effects of climate change. The final step was to hold a State level workshop of stakeholders such as senior officers of the state government, leading state level water resources professionals, NGOs, women etc. A questionnaire was also prepared for filling-in by the participants for giving their perception, views and suggestions on issues related to state water policy. These were processed by the study team on completion of the State level workshop and its suggestions were sent to the state government for possible incorporation in the state water policy.

1.4 Selection of study state

The effect of climate change is expected to be different in diverse types of areas such as drought prone, flood prone, mountainous and coastal. Accordingly, a list of states where state water policies were likely to be reviewed in the nearest future was prepared from available sources. Gujarat State was selected after discussions with the Senior Joint Commissioner (Policy Planning Division), Ministry of Water Resources, River Development and Ganga Rejuvenation, Government of India; Chairman, Central Water Commission (CWC); Chief Engineer and Director, Directorate of National Water Planning (CWC) and Secretary (CWC). Discussion was also held with the Secretary General, International Commission on Irrigation and Drainage (ICID) and Executive Director, WAPCOS Ltd.

Enquiries revealed that states were at different stages with respect to formulation or revision of state water polices. It was considered more useful to select those states where formulation of state policies was under consideration but might take a few more months before being finalized

Measures dealing with adverse effects of climate change will have better chance of success if people and functionaries at the grassroot level are also aware of the effects and are associated with the preparatory measures taken to mitigate them especially in rural areas which are dependent on agriculture and allied activities which, in turn, are most vulnerable because of their greater dependence on climate parameters.

so that the study team could make suggestions to include definite points emerging from the study.

Accordingly, Gujarat State was selected for review, as the process of reviewing the state water policy was already initiated by the state government. Further to know the climate change reality at ground level, two vulnerable districts namely; Kutch and Surendranager were selected for the study. The Kutch district was selected for climate change assessment and Surendranagar was selected for climate change assessment as well as for detailed field study through a structured questionnaire.

1.5 Sources and types of information collected

Information was collected from both secondary and primary sources. The former included three versions of the National Water Policy namely the National Water Policy of 1987, 2002 and 2012. It showed how the national policy had been evolving on account of changes taking place in water resources scenario and the consequent challenges the nation is facing. It showed how the realization of the new challenge of climate change led to incorporation of several new policy measures in the National Water Policy of 2012.

Copies of water policies of several states such as Andhra Pradesh, Himachal Pradesh, Karnataka, Kerala, Maharashtra, Orissa, Rajasthan and Uttar Pradesh were also collected and studied. With respect to the selected state of Gujarat, published material on salient features of the state and water resources scenarios were procured.

The review of the state water policies also indicated that Himachal Pradesh was the only state which had incorporated aspects related to climate change after the National Water Policy-2012 was announced in 2013. Himachal Pradesh policy, while recognizing the importance of climate change, had indicated several provisions designed to enhance the capacity of the community to adopt climate change resilient options. Increasing water harvesting, storage and recycling and its re-use through climate change technological options such as dual plumbing was the other option available to the community. It also lay down that the industrial processes should be made more water efficient. The next option indicated in the policy was integrating agricultural strategies, cropping pattern and improved water application methods with all irrigation schemes to enhance the water use efficiency as also the capability for dealing with variability due to climate change.

Because of the negligible information on micro level situation available from secondary sources, the main reliance was placed on primary sources, mainly through survey by way of structured-cum- open ended schedules. Two types of schedules were developed, one for the state level workshop participants, and the other for the concerned district, block and panchayat level functionaries. In addition, there were Focus Group Discussions (FGDs) at village level for which separate guide points were developed. The structured part of the questionnaires as well as guide points comprised of questions related to awareness, preparedness and suggestions for improvement. The schedules/guide points are provided as Annexures D, E and F at end of the report.

Chapter 2: Review of Draft Gujarat State Water Policy

2.1 Interactions with state level officers

The review study of Gujarat state started with the members of the study team familiarizing themselves with the salient features of Gujarat and its water resources scenario. Thereafter, in consultation with the Department of Water Resources, Government of Gujarat, first visit to the state was made by the Project Director, IWP study from 6th to 8th August, 2014. An interactive session with senior officers (mostly of the rank of Chief Engineer) of the Water Resources and allied Departments was held at Gandhi Nagar on 6th August, 2014. After giving a brief introduction about GWP and IWP, the Project Director mentioned about purpose of the review of state water policies in line with the National Water Policy 2012. The presentation by the state government started with an analysis of water resource scenario in Gujarat showing the need for inter-basin transfer of water to take care of the highly uneven regional distribution within the state. During the discussion, several implications for water policy were indicated by the Project Director. It was mentioned by state officers that a draft of Gujarat State Water Policy was prepared in 2011 by the department. But it remained a draft within the department as it could not make any headway.

Salient features of the draft State water policy were presented in the meeting for discussions. It was pointed out by the Project Director that the draft was not in line with the National Water Policy 2012. Its structure was also entirely different due to which comparison was not easy. Moreover, there was no reference to issues related to climate change. The Project Director also made several suggestions for improvement. After the discussions, it was agreed that in line with National Water Policy-2012, a separate section on climate change would be added in draft Gujarat Water Policy. Other aspects pointed out by representatives of other departments included the need for review of the norms for water requirement for cattle, analysis of local experiments on water augmentation, different impact of climate change in different regions, use of solar energy to deal with impact of climate change, etc.

Meeting with the Hon'ble Chief Minister of Gujarat (6 August, 2014)
(L - R): Ms Anandi Ben Patel, Hon'ble Chief Minister of Gujarat, Professor Kamta Prasad, Director, IWP Study, Shri K Kailashnathan, IAS (Retd.), Chief Principal Secretary to Chief Minister and Shri S J Desai, Secretary, Water Resource Dept., Govt. of Gujarat

It was agreed that the Water Resources Department would prepare a fresh draft of Gujarat State Water Policy in the light of points made during the interactive session and the timeline would be decided by the Secretary of the Department who could not be present in the session due to his prior commitments elsewhere. The list of officers participated in the interactive sessions is provided at Annexure-B.

Thereafter, the Project Director had a meeting with the Secretary, Water Resources Department, Government of Gujarat. In the meeting, it was decided to set a deadline of 31 August, 2014 for finalizing a draft of the state water policy by the Water Resources Department. The Project Director pursued the matter at further higher levels during his subsequent meetings with the Hon'ble State Governor, the Hon'ble Chief Minister and Shri B N Navalawala, Adviser to the Chief Minister on water resources, water supply, climate change and other related departments. Shri Navalawala was the former Secretary to Ministry of Water Resources, Government of India, when the National Water Policy, 2002 was finalized. Interactions were also held with senior coordinator, Water and Natural Resource Management Campaign of Self Employed Women's Association, an NGO and a life member of IWP and with two senior faculty members of the Indian Institute of Management, Ahmedabad.

A view of interaction of Project Director, IWP with a group of senior state level officers of water resources and other related departments on 6 August, 2014

Meeting of Project Director, IWP with Shri. B N Navalawala, Advisor to the Chief Minister, Government of Gujarat on 6 August, 2014

Gujarat: Climate change context

"Scientific assessments show that climate change will have a significant impact on Gujarat's fresh water resources. A basin-wise daily grid rainfall data for a period of 1951-2003 was analysed by IITM using a mathematical model. A falling trend in the annual rainfall of varying magnitude was indicated for Narmada and west coast river basins (MoWR, 2008). Already, the peculiar climate and geography of Gujarat, brings its water sector under critical condition. Although the state occupies 6.39 per cent of country's geographical area, it has a meagre 2.28 per cent of India's water resources. Gujarat is a semi-arid region and there is imbalances in intra-state distribution of water resources, as around 80 per cent of the State's surface water resources are concentrated in central and southern Gujarat, whereas the remaining three-quarters of the State has only 20% of it. The State has an average annual rainfall of 80 cm with a high coefficient of variance over time and space and as a result droughts have been frequent." [1]

According to a study[2] the impacts of climate change on small and marginal farmers of Gujarat have been varied:

Warmer winters have meant reduced moisture for winter crops, maize, wheat, tuar dal, etc, due to the absence of dew, resulting in sharply reduced yields or farmers even having to leave their lands fallow. Those without access to well water in eastern Gujarat are particularly hard-hit by this, and they typically tend to be from the poorest households.

Warmer winters are also resulting in the increased incidence of pest attacks in both regions. Consequently, farmers are being forced to incur a further burden of higher input/ pesticide costs.

Irregular rainfall events are harming agriculture in different ways. For instance, the production of cotton and other crops such as groundnut and potato was devastated in 2010-2011 due to excessively and unprecedented rains until late November. These extensive rains, very likely caused by climate change, extended for hundreds of kilometers beyond Gujarat, to southern Karnataka, Andhra Pradesh, Maharashtra, Rajasthan, etc.

The extraction of groundwater by farmers has accentuated greatly with the increasing cultivation of market-driven cash and water-intensive crops, and by climate change. This has resulted in a sharp fall in the water table, particularly in northern Gujarat. As this intensifies, it has serious implications for the farm economy generally, and in particular for poorer farmers directly and landless labour indirectly through the reduced demand for labour.

Milk production – which is central to household economies, particularly among poor households, both in eastern Gujarat but particularly in Banaskantha and Sabarkantha – is getting hit due to thermal heat stress faced by local and hybrid cow breeds. The availability of fodder, free or at least inexpensively, has diminished, putting more pressure on households who are least able to cope with it. This also affects the fat content in the milk, thereby reducing the price at which milk can be sold.

Food security of the poorest households have begun to get hit as yields of food crops such as maize, wheat and pulses have begun to suffer, wiping out possible short-term gains from Green Revolution strategies.

Reference:

1. Water security, climate change and development, accessed at http://www.gwssb.org/ShowDocument.aspx?WhatsNewID=124

2. Where Have All the Seasons Gone? - Current Impacts of Climate Change in Gujarat, Delhi Platform, Gujarat Agricultural Labour Union, International Union of Foodworkers, 2011

2.2 Status of assessment in two districts of Gujarat

The study team members visited Kutch district of Gujarat on 7th and 8th August, 2014 to know the status of climate change and understand the problems at the grassroot level. It started with a largely attended meeting of district level officers of all the departments concerned with state water policy. It was observed that officers from other departments were not even aware of the National Water Policy 2012. Interactions were also held with village and taluka level panchayat representatives of Nakhatrana tehsil who suggested the need to shift towards horticulture in order to deal with climate change. Finally, interactions were held with elected members of Village Water and Sanitation Committee (VWSC) of Bharasar village in Bhuj taluka of the district. This is a statutory body as per Panchayat Act of 2002. It showed how women were efficiently managing drinking water supply in villages of Gujarat.

Surendranagar is a water stressed district under the Sourashtra region of Gujarat. Surendranagar district was selected for climate change assessment as well as for detailed survey in consultation with the State Government officials. The district also has the advantage of having one Krishi Vigyan Kendra (KVK) about 50 km away from the town of Surendranagar located at Kandasar in Chotila taluka. The field studies were conducted from 12 - 21September, 2014. In consultation with the district level officer, 2 gram panchayats, namely (1) Jasapar under Dhrangadhara taluka and (2) Gunda under Chotila taluka were selected for holding interactive sessions.

The interactive session in Jasapar village of Jasapar gram panchayat had 32 participants, mostly farmers, while that in Gunda village of Gunda gram panchayat had 29 participants (also mostly farmers), but a few businessmen and servicemen also attended. On enquiry, it was realized that none of the villagers were aware of State Water Policy. On climate change and its implications too, villagers had very little knowledge, rather no knowledge; while a few could only relate with untimely rainfall, decline in the level of groundwater etc. But, when told about global warming and its effect on increasing water scarcity, most farmers were interested to know about the coping mechanism to be adopted in the event of ensuing climate change. Farmers wanted to know about less water intensive crops and potential of micro irrigation in using less water for their crops.

In both the villages and in none of the sessions, women came forward to participate even after considerable persuasion because as per local custom, women usually do not participate where senior male members of the community take part. Efforts were also made to persuade them through their male counterparts for a separate sitting with female members alone. But this idea too did not work.

Thereafter, the study team visited various district level offices concerned with water resources such as Agriculture, Animal Husbandry, Horticulture, Fishery, Minor Irrigation (panchayat irrigation), Major & Medium Irrigation, Krishi Vigyan Kendra (KVK), Cotton Research Centre, etc. Interactions with officers revealed that at the district level, awareness among officers was somewhat better in respect of climate change and its implications. According to them, the effect of climate change was perceived to be very much on surface and groundwater irrigation, rural and urban drinking water supply, agriculture, horticulture and fishery, but no effect on flood management. Effect on animal husbandry was perceived to vary from very much to some extent. With regard to coping measures, few of these officers particularly from the departments of Agriculture, Krishi Vigyan Kendra, Cotton Research Centre, Minor Irrigation were found to have some knowledge about the issues. But, none of the officers reported adoption of any climate change resilient technological options to counter the adverse effect of climate change in the area. This might be because they did not see any threat to agriculture due to abundant water recently being made available through the Narmada projects. Their perception was that it might take a decade or so before shortage of water would be felt. Regarding national and state water policies, a majority of officers of the district were unaware of these but one officer from the department of Horticulture made a casual mention of some communication that he had come across regarding the matter.

2.3 State level stakeholders workshop

In order to get feedback of the stakeholders on the Draft Gujarat State Water Policy, a workshop was held on 29 November 2014, at Gandhi Nagar, Gujarat. The workshop had right mix of participation, namely senior state government officers involved in the formulation of Gujarat State Water Policy, NGOs and experts which included Shri V B Patel

Shri. D Routray, IWP Study interacting with villagers of Jasapar (Distt. Surendranagar) on 13 Sep, 2014

Shri. D. Routray, IWP Study interacting with the villagers of Gunda (Distt. Surendranagar) on 14 Sep, 2014

and Shri B N Navalawala. Officers from the Central Water Commission as well as Central Ground Water Board of the Government of India also participated. There were 31 participants in the workshop. List is provided in Annexure A.

The programme started with Professor Kamta Prasad, Project Director, IWP study, welcoming the participants and providing brief details about the GWP, IWP and purpose of the study. He said that the main objective of the workshop was to examine the draft of the Gujarat State Water Policy and give suggestions for improvement in line with National Water Policy - 2012 in context of climate change. The inaugural address was delivered by Shri B N Navalawala, Adviser to the Union Minister for Water Resources as well as Chief Minister, Government of Gujarat and former Secretary, Ministry of Water Resource, Government of India. Shri Navalawala said that water should be regarded as a community asset and that the prevailing differential norms of water for rural and urban areas needed a review. He was concerned about the soft options the policy makers adopt while policy formulation.

Thereafter, Shri R K Jain, Chief Engineer, Central Water Commission, Government of India, made a keynote presentation on the major highlights of the National Water Policy, 2012. This was followed by another keynote presentation on Draft Gujarat State Water Policy by Shri M P Raval, Chief Engineer and Additional Secretary, Department of Water Resources, Government of Gujarat. During his presentation, Shri Raval acknowledged that the section dealing with climate change in the draft of Gujarat State Water Policy was added after the suggestion made by the Project Director, IWP study during his interaction with Gujarat state officials in August, 2014. The inaugural session ended with presidential remarks by Shri V B Patel, renowned water resources professional and former Chairman, Central Water Commission, Government of India. Suggestions made by him included the need for a Citizen's Council to monitor the implementation of the policy, need for indicating a date from which the policy would come into effect, encouraging NGOs for popularizing Participatory Irrigation Management (PIM), equalization of groundwater rate with the rate for alternative sources of water, induced recharge of ground water and participation of private sector organizations in major water resource projects.

The next session started after the tea break, was also presided over by Shri V. B. Patel. Details of the session are provided in the proceedings of the workshop in Annexure-C. Almost every participant spoke and gave useful comments and suggestions in the workshop. The participants also gave their suggestions in writing in response to a questionnaire circulated in the workshop prepared by the study team. It was also decided that the participants might send their suggestions subsequently also to the Project Director, IWP study later on. After screening the suggestions recieved, a consolidated list of suggestions including those of the Project Director was sent to the state government for incorporation in the draft state policy. The suggestions of participants are given below:

- Adaptation to climate change is more convenient than mitigation measures.
- Mitigation measures needed are; creation of more storages, artificial ground water recharge etc;
- Both structural and non-structural measures are important;
- Serious efforts are required to augment surface and ground water resources. At the same time, control of ground water use is also important;
- Inter-basin transfer of water from relatively water surplus basin to basins with water shortages after careful scientific studies;
- Emphasis to be given on rain water harvesting, more particularly for drinking water in hilly areas;
- Increase in supply by recycling and reuse of water;
- Water storage in hilly area like Dar;
- Special irrigation – provision like Dang, mini lift irrigation;
- 24x7 water supply should be provided for drinking purpose;
- Community level capacity building to deal with climate change specially for agricultural and other allied activities;
- Local water bodies to be owned/ managed by community. Groundwater in villages to be managed by Gram Panchayats;
- Awareness campaign for different stakeholders is required;
- Improvement of catchment areas;
- Green forest cover should be increased;
- Introduce accountability for offenders;
- Provide incentives for green technology (zero waste water discharge and capture methane from waste water treatment plants);
- The water policy should make provisions for minimizing use of electrical energy;
- Economic and efficient use of water, through water pricing, adaptation of

Shri. B.N. Navalawala, Chief Guest (center), Prof. Kamta Prasad, Dr. Veena Khanduri, Ms. Bharti Bhavsar, Shri. V.B. Patel, Shri. R.K. Jain

sprinkler-drip irrigation, etc;

- Promote water efficient farming techniques and effective irrigation management through PIM;
- Fodder security - recommendations for alternatives to traditional fodder;
- Crop Insurance required;
- Systematic study on effect of climate change on water resources of various basins in line with Ministry of Water Resources, River Development and Ganga Rejuvenation, Govt. of India
- GIS-Remote sensing data should be dynamic in nature;
- Need to collect robust data;
- Studies of different aspects of geology, climate, hydrology and socio-economic aspects to access the impact of climate change to take preventive/mitigation measures;
- Integrated water and land resources management should be the priority;
- Integration of different departments at Central level, implementation level coordination among different departments is needed;
- Integration of State Action Plan on Climate Change with water related provisions of State Disaster Management Plan, National Water Mission, to have inclusive policy for water resources management;
- Constitute a state-level stakeholders forum or user committee for action, policy and implementation. Similar committees at District and talukas/ block levels are also required to be constituted;
- Set up time bound Action Plan;
- Policies and recommendations made should be followed seriously and implemented.

A view of the workshop deliberations in process

Replying to the debate, Shri R.G. Bhatt and Shri M.P. Raval, Chief Engineers of the Government of Gujarat, assured that the State Government would modify the draft of the Gujarat State Water Policy in the light of comments made and suggestions offered by the participants. They also stated that this would be done before the end of December 2014.

Thereafter, the revised policy would be put on the website of the department. The Policy would be finalized by the state government after getting feedback from related departments. This is an essential condition for approval by the state cabinet.

Thus, with the holding of the workshop, the final task of the GWP-IWP project for Gujarat was successfully completed.

2.4 Perceptions and views of workshop participants

During the workshop on 29 November, 2014, a schedule on Gujarat state water policy in the context of climate change prepared by the study team, was also got filled in by 24 workshop participants in their personal capacity. The schedule is provided in Annexure-D. The responses of the respondents are given in the box.

In response to a question regarding their perception of major impacts of climate change in Gujarat, several participants drew attention to changes expected in rainfall pattern resulting in extreme weather events such as higher intensity of drought and flood, and stress on drinking water and agriculture. Other effects mentioned were depletion in groundwater resources, adverse effects on coastal areas due to intrusion of sea level and rise in demand for water. They also mentioned that different areas and different sectors would be differently affected. Agriculture and allied activities such as animal husbandry, fishery etc., would be affected the most while domestic sector the least. Drought prone areas would be affected more than flood prone areas in Gujarat.

Description	Yes	No
Awareness about National Water Policy 2012	23	1
Provisions related to climate change in National Water Policy	22	2
Need for inclusion of climate change related provisions in Gujarat State Water Policy	23	1

Chapter-3: Conclusion and Recommendations

3.1 Backdrop

The objective of the study was to review the draft of Gujarat Water Policy in line with National Water Policy-2012 with regard to climate change so as to provide the suggestions to modify or include the sections or sub sections in the context of the ensuing climate change, involving awareness, preparedness, coping mechanism at the state level and down below.

Apart from using information from secondary sources, the study team conducted wide ranging interactive sessions with individuals, government departments and other stakeholders at the state, district and panchayat levels followed by a state level workshop to generate consensus on the suggestions for modifying the earlier draft of the State Water Policy. During the course of study, written responses of perceptions and views of the workshop participants were also obtained, analysed and used for the purpose. The suggestions were submitted to the state government at different stages of the study. Further, there was a continuous dialogue between the study team and the state government officials.

3.2 Study recommendations

Based on the recommendations of the study team made during the first interactive session on 8 August, 2014, a section on aspects related to climate change was added to the draft policy formulated in 2011. This was presented in the state level workshop held in Gandhi Nagar on 29 November 2014. In the light of the deliberations made during the workshop, need for substantial modification of the policy was accepted in the workshop by officers representing the state government.

Based on the suggestions made in the workshop as well as analysis of written suggestions obtained from workshop participants, the following consolidated recommendations for modification of the draft of the Gujarat State Water Policy were submitted by the study team to the Government of Gujarat:

i. There is need for restructuring and editing of the content of the present draft policy. As far as possible, the state policy may follow the same sequencing as per the National Water Policy-2012 so that the comparison becomes easier. This will also help in avoiding unnecessary repetitions which crop-up quite frequently. The state may add new features as it deems fit.

ii. Present status of water resources: As per the National Water Policy-2012, this section may also include probable effects of climate change on one hand and socio-economic, institutional, and management aspects on the other. As of now, it deals mainly with technological aspects. socio-economic aspects should also be mentioned in paragraphs dealing with research and data.

iii. In order to facilitate implementation, some time-frame may be indicated. And there should be a citizen's council at state and district levels to monitor implementation of the policy.

iv. Water should be treated as a community asset. Hence, support to community including that for capacity building at different levels should be provided. In this respect, there should be earmarked allocation of water for Participatory Irrigation Management.

v. There is an urgent need to regulate groundwater to prevent its over-exploitation. This should be done by legally empowering panchayats, which are most suited for this purpose. This would be in harmony with the constitutional obligation. For this purpose taluka/ panchayat wise water balance studies should be undertaken on priority basis so as to provide data for self-management.

vi. Special efforts should be made to avoid or reduce leakages of piped water. There is need to review the differential norms of water for rural and urban areas. Quality is a major concern for drinking water. Hence, there should be mandatory water testing before water is supplied in rural and urban areas. Penalty should be imposed on those polluting water in accordance with Polluter Pays principle. Additional policy measures on operational aspects of drinking water may also be specified.

vii. Emphasis should be laid on developing zone wise water strategy. There should be a separate plan for tribal areas similar to the coastal areas.

viii. There is need for integrated salinity control to deal with the problem of increasing salinity and groundwater exploitation.

ix. External evaluation of water resource projects should receive due attention.

x. Emphasis should be put on conjunctive use of water through optimal use of surface and/or ground water from different sources.

xi. Government should reform its governance structure. Focus should shift to persuasive and decentralised approach within the framework of the doctrine of public trust. Steps should also be taken to move towards demand management approach based on volumetric supply of water through water metering which should be linked with water tariffs. Water pricing should receive more prominent and explicit place in the policy. Panchayati Raj Institutions and reputed NGOs should also be increasingly involved in management of water resources, including water related disasters like flood, cyclone and drought.

xii. Flood design of all existing dams should be recalculated in view of recently available data of additional years (in addition to the data available at the time of designing and constructing the dam). Adequate measures should be taken to deal with the problem of siltation in dams.

xiii. Misuse of water as well as its pollution by industries should be penalized. Industries should use more and more of recycled sewage water. Legal framework for water auditing for industries is needed. The practice of industries using groundwater free of cost should stop.

xiv. There is a need to recognize special role of women for water management especially at local levels.

xv. Adequate provisions should be made for maintenance of wells and ponds, which should be owned and managed by the local community.

xvi. Rainwater harvesting should be adopted at household level in both urban and rural areas.

xvii. A policy on sewage is needed to take care of the burning problem of sanitation. Incentives for green technology (zero waste water discharge) should be provided.

xviii. There is need to take up massive programmes of awareness generation on climate change for the general public, students, local level functionaries and other stakeholders at block and panchayat levels in the state so as to enhance their coping capacity.

xix. The adequacy of existing irrigation and flood management projects as well as flood and drought management policies should be reviewed to take care of likely impacts of climate change such as expected increase in sediment load due to higher intensity of floods.

xx. High priority should be assigned to:

- strengthening and creating adequate facilities for studies and research on hydrological, hydrometeorological and geomorphologic aspects related to climate change within the Department of Water Resources, WALMI, Universities and other institutions including creating new institutions;
- modernizing and expanding instrumentation and measurement techniques and networks; and,
- revising existing courses of studies, creating new subjects and instituting programmes as well as post-graduates diplomas and degrees.

xxi. More emphasis should be placed on afforestation and other water conservation methods. Wherever commercially viable, wetlands should be preserved and developed for fishery and aquaculture.

xxii. There is need to discover and introduce new crops, cropping pattern, water efficient farming techniques, but minimizing the use of electrical energy, and crop insurance to deal with impacts of climate change.

xxiii. Different departments of the state government, whose duties and responsibilities are related to climate change, should have a common forum which should meet at frequent intervals to take an integral view of knowledge base and policy options. For this purpose, the Department of Water Resources should have an effective cell headed by a Chief Engineer level officer.

3.3 Outcome

To sum up, it is understood that the Gujarat State Water Policy is being restructured and revised in the light of recommendations emanating from this study in line with the National Water Policy 2012 with a section on climate change.

Annexures

Annexure-A

List of Participants: Gujarat State Level Workshop held on 29 November, 2014

1. Shri. B.N. Navalawala, Adviser to Union Water Resources Minister as well as Chief Minister, Government of Gujarat, and Former Secretary, Ministry of Water Resources, Government of India
2. Shri. V.B. Patel, Former Chairman, Central Water Commission, and currently President, Multi Mantech International Pvt. Ltd. Ahmedabad
3. Prof. Kamta Prasad, Chairman, Institute for Resource Management and Economic Development, Delhi & Project Director, IWP Study
4. Shri. R.K. Jain, Chief Engineer, Basin Planning and Management, Central Water Commission, Government of India, New Delhi
5. Shri. O.T. Gulati, Chairman, Water Management Forum, Institution of Engineers, Ahmedabad
6. Shri. R.K. Suryawanshi, Chief Engineer, Narmada &Tapi Basin Organisation, CWC, Govt. of India, Ahmedabad
7. Shri. Kartikeya Sarabhai, Director, Centre for Environment Education, Nehru Foundation for Development, Ahmedabad
8. Prof. D.T. Shete, Former Director, Water Resources Engineering and Management Deptt, M.S. University of Baroda, Vadodara, Gujarat
9. Shri. U.C. Sarvaiya, Chief Engineer and Additional Secretary, Dept. of Water Resources, Government of Gujarat (GoG), Ahmedabad
10. Shri. K.A. Keshvani, Chief Engineer and Director, Water & Land Management Institute, (WALMI) GoG, Gandhinagar
11. Shri. R.G. Bhatt, Chief Engineer & Addl. Secretary, (WR) GoG, Ahmedabad
12. Shri. M.P. Raval, Chief Engineer & Addl. Secretary, (WR) GoG, Ahmedabad
13. Shri. Shwetal Shah, Technical Adviser - Climate Change Department, GoG, Ahmedabad
14. Dr. Veena Khanduri, Executive Secretary, India Water Partnership, Gurgaon
15. Prof. R Parthasarathy, Professor Centre for Environment Planning and Technology, CEPT University, Ahmedabad
16. Ms. Bharti Bhavsar, Coordinator, Water and Natural Resource Management Campaign, Self Employed Women's Association, Ahmedabad
17. Ms. Rehna Riyawala, Secretary, Self Employed Women's Association, Ahmedabad
18. Shri. M.R. Patel, Superintending Engineer, State Water Data Centre, GoG, Gandhinagar
19. Shri. M.K. Dixit, M.D., GWRDC and S.E. WALMI, Gandhinagar
20. Ms. Sarita Thakore, Programme Coordinator, Center for Environment Education, Nehru Foundation for Development, Ahmedabad
21. Prof. P.L. Patel, Professor and Head of the Department of Civil Engineering, S V National Institute of Technology, Surat
22. Shri. D.M. Thaker, Environment Engineer, Gujarat Pollution Control Board, GoG, Ahmedabad
23. Ms. Ujas D. Pandya, Asst. Professor, Govt. Engineering College, Gandhinagar
24. Shri. B.K. Gupta, Scientist–C, Central Ground Water Board, Ahmedabad
25. Shri. Umesh Desai, Director (Water Resources), Aga Khan Rural Support Programme, Ahmedabad
26. Shri. Hasmukh, D. Patel, Manager Water Resources Programme, Aga Khan Rural Support Programme, Ahmedabad
27. Shri. B.G. Upadhyay, Deputy Executive Engineer, Central Design Organization, GoG, Gandhinagar
28. Shri. M.C Kothari, Asst. Engineer, Central Design Organization, GoG, Gandhinagar
29. Shri. S.B. Prajapati, Executive Engineer, M1 Unit, Dept of Water Resources, GoG, Gandhinagar
30. Shri. J.K. Trivedi, Executive Engineer, SWDC, GoG, Gandhinagar
31. Ms. Rini Dutt, Content Developer, Water and Sanitation Management Organization, Gandhinagar

Annexure-B

Interactions held with the following dignitaries and senior officers of Gujarat during 6 to 8 August, 2014

1. Sh. O. P. Kohli, the Hon'ble Governor, Gujarat
2. Ms. Anandi Ben Patel, Hon'ble Chief Minister, Government of Gujarat
3. Sh. Babubhai Bokhiria, Hon'ble Minister, Water Resources, Government of Gujarat
4. Sh. B. N. Navalawala, Adviser to Chief Minister, Government of Gujarat
5. Sh. K. Kailashnathan, Chief Principal Secretary to Chief Minister, Government of Gujarat
6. Sh. S. J. Desai, Secretary, Water Resources, (WR), Government of Gujarat (GoG)
7. Dr. Rajiv Gupta, IAS, Principal Secretary, Water Supply & Climate Change, GoG
8. Sh. U. K. Sarvaiya, Chief Engineer & Addl. Secretary, WR, GoG
9. Sh. C. V. Nadpara, Chief Engineer & Addl. Secretary, WR, GoG
10. Sh. R. G. Bhatt (IC), Chief Engineer & Addl. Secretary, WR, GoG
11. Sh. M. P. Raval (IC), Chief Engineer & Addl. Secretary, WR, GoG
12. Sh. M. G. Golvala, Superintending Engineer, State Water Data Centre, GoG
13. Sh. M. K. Dixit, Superintending Engineer, Water & Land Management Institute, GoG
14. Sh. M. J. Patel, Superintending Engineer, Central Design Organization (Hydrology), GoG
15. Dr. M. B. Joshi, General Manager (Tech. & Coordination), Sardar Sarovar, Narmada Nigam
16. Ltd., GoG
17. Sh. S. G. Ramchandran, Superintending Engineer, Gujarat Water Supply Board, GoG
18. Sh. Anand Zinzala, Dy. Secretary, Climate Change Dept., GoG
19. Sh. Dhavalkumar K. Patel, Superintending Engineer, Kachchha Irrigation Circle, GoG, Bhuj-Kutch along with 34 other district level officers from different related departments located in Bhuj
20. Smt. Bharti Bhavsar, Senior Coordinator, Water and National Resource Management, SEWA, Ahmedabad
21. Prof. M. R. Dixit, Indian Institute of Management, Ahmedabad
22. Prof. Vasant P. Gandhi, Indian Institute of Management, Ahmedabad
23. Members of Village and Taluka Panchayats of Nakhatrana Tehsil, District Kutch
24. Members of Village Water and Sanitation Committee, Village Varasar, Taluka, Bhuj, District Kutch

Annexure-C

Proceedings of the GWP-IWP sponsored State Level Workshop on "Draft Gujarat State Water Policy" held at State Water Data Centre, Gandhi Nagar on 29 November 2014

A State level workshop was organized by India Water Partnership (IWP) with the support of Institute for Resource Management and Economic Development, Delhi on 29 November, 2014 at Gandhi Nagar, Gujarat. There were 31 participants in the workshop. Before the workshop was held, a copy of Draft Gujarat Water Policy was sent by email by Professor Kamta Prasad, Project Director, IWP study to all the participants. This enabled them to come prepared.

The workshop programme started with Project Director, IWP study, welcoming the participants and providing brief details about the GWP, the IWP and purpose of the study. He said that the main objective of the workshop was to examine the draft of the Gujarat State Water Policy in line with National Water Policy-2012 with regard to climate change and to give suggestions for improvement. The inaugural address was given by Shri B.N. Navalawala, Adviser to the Union Minister for Water Resources as well as the Chief Minister, Government of Gujarat and former Secretary, Ministry of Water Resource, Government of India. He pleaded that water should be regarded as a community asset and that the prevailing differential norms of water for rural and urban areas needed a review. He was concerned that the policy makers tend to adopt soft corner while formulating the policy.

Thereafter, Shri R.K. Jain, Chief Engineer, Central Water Commission, Government of India, made a keynote presentation on the major highlights of the National Water Policy, 2012. This was followed by another keynote presentation on Draft Gujarat State Water Policy by Shri M.P. Raval, Chief Engineer and Additional Secretary, Department of Water Resources, Government of Gujarat. He dwelt on the objectives of the Policy, strategies and priorities to achieve them, key focus areas, governance and institutional arrangements, adaptation to climate change and implementation of the Policy. During his presentation, Shri Raval acknowledged that the section dealing with climate change in the draft of Gujarat State Water Policy was added after suggestion was made by Prof. Kamta Prasad, IWP study during his interaction with the state level officers of Gujarat in August, 2014. The inaugural session ended with presidential remarks by Shri V.B. Patel, renowned water resources professional and former Chairman, Central Water Commission, Government of India. Suggestions made by him included the need for a Citizen's Council to monitor the implementation of the Policy, need for indicating a date from which the Policy would come into effect, encouraging NGOs for working on Participatory Irrigation Management (PIM), equalization of groundwater rate with the rate for alternative sources of water, induced recharge of ground water and infeasibility of private sector participation in major water resource projects.

The next session was also presided over by Shri V.B. Patel. Shri R. K. Jain commented that the draft policy was not well structured. Shri R. K. Suryawanshi, Chief Engineer, Narmada & Tapti Basin Organisation, CWC, Govt. of India, Ahmedabad suggested that industry should be given higher priority over ecological needs since finding out ecological needs in quantitative terms was not practical. He indicated the need for small river basin organizations. He also suggested the need for integrated salinity control to deal with the problem of increasing salinity and ground water exploitation. Shri O. T. Gulati, Chairman, Water Management Forum, Institution of Engineers, Ahmedabad underlined the need for external evaluation of water resources projects and rehabilitation of canals. Shri K. A. Keshvani, Chief Engineer and Director, Water & Land Management Institute, (WALMI), Gandhi Nagar focused on implementation. Prof. D. T. Shete, Former Director, Water Resources Engineering and Management Deptt, M.S. University of Baroda underlined the need for conjunctive use of water and increasing the public accessibility of data compiled by the government. Shri Umesh Desai, Director (Water Resources), Aga Khan Rural Support Programme, Ahmedabad stressed upon the need for disincentives against pollution. Further, Government should reform its governance structure. Professor R. Parthasarathi, Centre for Environment Planning and Technology, CEPT University, Ahmedabad

pleaded for raising water use efficiency, different water policies for different areas in Gujarat, volumetric supply of water, need for coordination between different agencies working in the water sector, and earmarked allocation of water for PIM. Shri Kartikeya Sarabhai, Director, Centre for Environment Education, Nehru Foundation for Development, Ahmedabad suggested that drinking water should not be combined with domestic water. He focused on siltation in dam reducing size of dam as well as on the connection between groundwater, electricity and climate change. He also cautioned against misuse of water by industries. Shri D. M. Thaker, Environment Engineer, Gujarat Pollution Control Board, Ahmedabad commented that there was no control over industries using ground water free of cost. He suggested that industries should use more and more of recycled sewage water and legal framework for water auditing for industries was needed. Prof. P.L. Patel, Professor and Head of the Department of Civil Engineering, S V National Institute of Technology, Surat indicated that the state water policy should be aligned with the National Water Policy-2012. He indicated the need for extensive data for integrated management of water resources. Shri Shwetal Shah, Technical Adviser - Climate Change Department, Government of Gujarat stressed upon the need for water metering and linking it with tariff system, avoidance of leakages and rainwater harvesting. Ms. Bharti Bhavsar, Coordinator, Water and Natural Resource Management Campaign, Self Employed Women's Association, Ahmedabad suggested that rainwater harvesting should be adopted at household level in rural areas, wells and ponds should be properly maintained, an awareness generation programme should be launched, there should be support to community at different levels, focus on capacity building and need to mention women in the policy document. Dr. Veena Khanduri, Executive Secretary-cum-Country Coordinator, IWP underlined the need to include gender perspective and enlarged stakeholder participation.

Speaking as a participant, Prof. Kamta Prasad observed that the State Water Policy was a comprehensive document dealing with most aspects of water resources. These could be regarded as generally acceptable. He, however, indicated the need for restructuring the content of the draft Policy and avoiding unnecessary repetitions which crop up quite frequently. The state policy might follow the same sequencing as the National Water Policy-2012 so that comparison becomes easier. He pleaded for higher emphasis on socio-economic, institutional and management aspects in the policy. Focus should shift to a persuasive and decentralized approach within the framework of the doctrine of public trust. According to Prof. Kamta Prasad, effective regulation of groundwater was possible with the help of PRIs. Block wise water balance studies should be undertaken so as to provide necessary inputs for self-management at the micro level. Panchayats and municipalities should have a special role in management of drinking water also. Issues related to volumetric supply and differential pricing needed to be explained explicitly and emphatically. Sanitation was also linked to it. A policy on sewage therefore, was needed. Demand management aspect along with the associated aspect of role of pricing should be projected quite sharply in the policy. Water related disasters like flood, cyclone and drought too should receive more attention including the role of public for mitigation. In order to facilitate implementation, some time-frame for it may be provided even in an indicative manner.
The workshop concluded with the vote of thanks to all the participants and speakers.

Annexure – D : State Level Schedule

Review of State Water Policy in the Context of Climate Change: State Level Schedule: Gujarat

1. Name and contact details of the respondent

2. Awareness about National Water Policy, 2012?

   Yes No

3. If yes, are you aware of the previous National Water Policy related to climate change?

   Yes No

4. Do you feel the need for inclusion of climate change related provision in your state's water policy?

   Yes No

5. What according to you would be the major impacts of Climate Change in Gujarat?

6. Please indicate how the water related impacts of climate change will be different in different types of areas such as flood prone, drought prone etc. and on activities such as agriculture, cattle rearing, fishery etc., in your state?

7. Please indicate the climate change related mitigation measures covering supply and/or demand management, awareness generation aspects etc., that should be included in Gujarat State water Policy.

8. What is the extent of awareness and preparedness with respect to impacts of climate change related to water resources at local levels (District, Block, Village and Town); please tick:

	Extent of awareness:			**Extent of Preparedness**		
Levels	Nil	Not Much	Adequate	Nil	Not Much	Adequate
District	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
Block	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
Village	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
Town	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]

9. Any other suggestions that you may like to offer.

Annexure – E

Review of Draft Gujarat State Water Policy in the context of Climate Change
Schedule canvassed at the district, block and Panchayat Level

Name and contact details of government department/agency_____

1. Climate change due to global warming is going to pose a serious threat to water resources sector. Are you aware of this?

   Yes No

2. If yes, how much of the following are likely to be affected?

Source	Very much	To some extent	No effect	No idea
Surface irrigation				
Groundwater irrigation				
Drinking water rural				
Drinking water urban				
Flood Management				
Agriculture				
Fishery				
Horticulture				
Others (specify)				

3. Has your state adopted climate change resilient technological options to counter the adverse effects of climate change?

4. If yes, what measures are being taken? Are these adequate?

5. What additional measures should be taken to minimize the effect of climate change in your area?

Name and designation of the official(s) contacted

Annexure – F

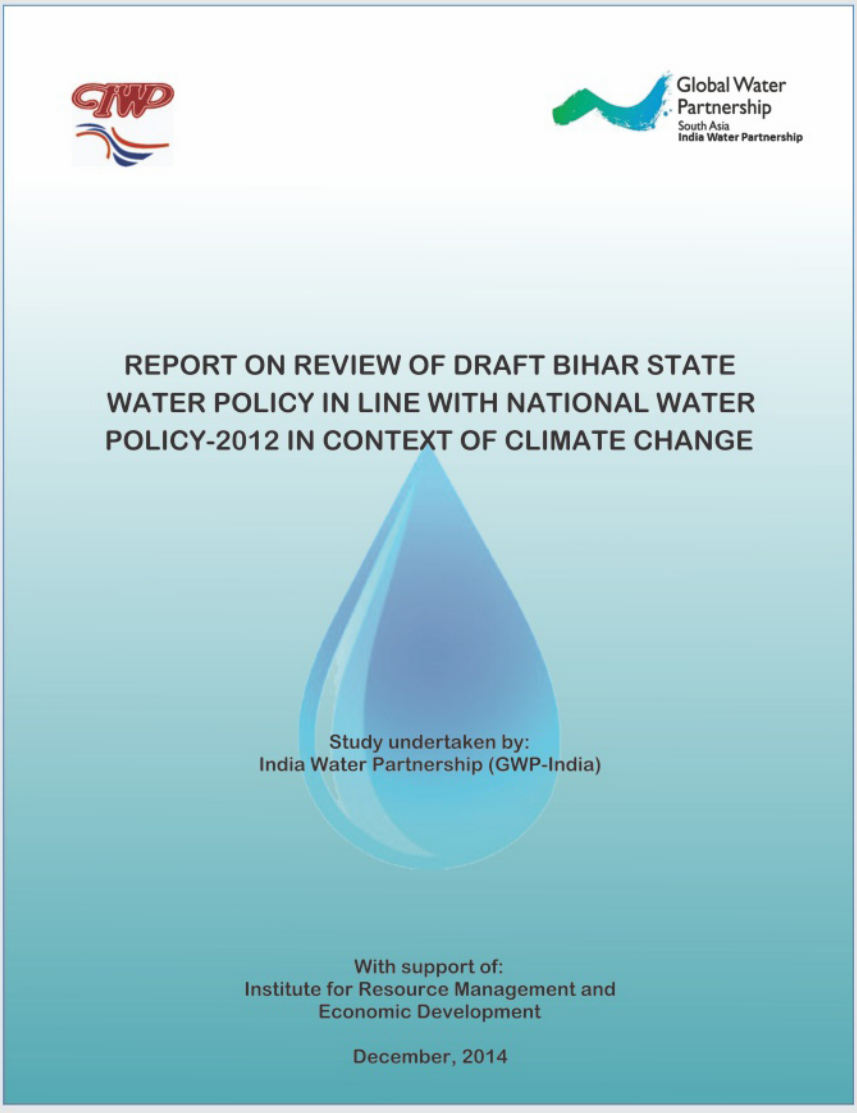
Review of Draft Gujarat State Water Policy in line with National Water Policy-2012 in the context of Climate Change

GUIDE POINTS FOR DISCUSSION WITH THE VILLAGERS

1. Awareness about National Water Policy, 2012
2. Awareness about State Water Policy
3. Awareness about climate change
4. Its effect on
    i. Agriculture and allied activities
    ii. Drinking water
3. Coping strategy
    i. Agriculture and allied activities
    ii. Drinking water

Report on Review of Draft Bihar State Water Policy in line with National Water Policy - 2012 with regard to Climate Change

IWP had also undertaken review study of the Draft State Water Policy of Bihar in 2014 as like Gujarat State. Based on the review the Water Resources Department (WRD), Government of Bihar has included a separate section on climate change which is in line with the National Water Policy-2012 in context of climate change. The new draft has been uploaded on WRD, Government of Bihar (www.wrd.bih.nic.in under Bulletin under Irrigation bulletin dated 27th June, 2014) for final comments/suggestions of the stakeholders. After incorporating suggestions of the stakeholders, the final version would be placed before the State Cabinet for approval.



India Water Partnership (IWP)

India Water Partnership (IWP) is a non-profit organization with a goal of promoting Integrated Water Resources Management (IWRM). IWP is also accredited by the Global Water Partnership (GWP) headquartered at Stockholm, Sweden. Dr. R K Gupta, Chairman-cum-Managing Director, WAPCOS Ltd. is the President of IWP. IWP has been active in promotion of Integrated Water Resource Management (IWRM) principles and practices at national, state and regional levels through its network partners to support national development priorities. Some of the core priority areas are; promoting IWRM approach effectively through workshops and consultations to address adaptation to climate change with the support of zonal water partners across the country; encouraging use of innovative low cost water saving technologies by the farming communities; sustainable natural resource management; integrated domestic water management; promoting Area Water Partnership (AWP) for river basin management; conflict resolution on water sharing; inter-state trans-boundary water sharing issues; gender mainstreaming, etc.

Institute for Resource Management and Economic Development (IRMED)

The Institute for Resource Management and Economic Development (IRMED) is a 30-year-old, non-governmental, non-profit making organization registered under the Societies Registration Act XXI of 1860. The Institute, since its inception in 1983, has completed over 60 evaluation and other studies sponsored primarily by different Ministries of Government of India as also some by State Governments, Union Territories, Public Sector Undertakings and international agencies. Established and managed by a group of eminent multi-disciplinary professionals, it has developed a high level of competence and has also acquired an international reputation for high quality output. Socio-economic and institutional evaluation of resource development projects and policies constitutes one of its core activities. It has also taken lead in organizing policy dialogues, seminars, and conferences on important policy matters sponsored mostly by Government of India, international and other agencies

India Water Partnership

Secretariat- WAPCOS Ltd.

76-C, Sector-18, Institutional Area; Gurgaon - 122015 (Haryana)

Tel. : (+91-124) 2348022 (D); (+91-124) 2399421, Extn : 1404; Fax : (+91-124) 2397392

E-mail : iwpneer@gmail.com, veena@cwp-india.org

Website : www.cwp-india.org