

EASTERN ZONAL WATER PARTNERSHIP

ACTIVITY REPORT 2013

Ground Water legislation in Eastern
Indian States of Odisha, West Bengal,
Bihar and Jharkhand

AND

State of Participatory Irrigation
Management in Eastern States of
Bihar, Odisha, Jharkhand and West
Bengal

**(Activities undertaken as part of the
activities of India Water Partnership)**

Eastern Zonal Water Partnership

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Eastern Zonal Water Partnership

Executive Summary

The level of ground water development in the states of West Bengal, Jharkhand, Bihar and Odisha is much below the national average. But despite this these states are in a sort of groundwater crisis because of the deterioration of ground water quality. Especially fluoride, arsenic and nitrate are the major cause for concern as they pose major public health problem. The diseases inflicted by the contaminants like fluoride and arsenic can't be cured. Actually it is the quality concerns, rather than the quantitative issue of over exploitation that warrants ground water legislation, as it is an established fact that excessive extraction has an impact on deterioration of ground water quality.

Bihar (2005), West Bengal (2006) and Odisha (2012) have ground water legislations. They are based on the Model bill circulated in the year 2005 or before. Jharkhand is yet to have any legislation on ground water. But the process of coming out with a law is on.

These acts mandate control and regulation of groundwater through creation of groundwater authorities and declaration of notified areas where ever the situation is critical.

Barring West Bengal there is no decentralization of ground water governance that is not in conformity with the Panchayatiraj Extension to Scheduled Areas (PESA) Act.

These acts also do not talk of right over ground water, address the issue of ownership over ground water and do not delink it from private land ownership. None of these acts have the Public Trust doctrine as the guiding principle for ground water management.

The concerns of equality and equity are also not addressed in these legislations.

Whether promulgated in 2005 or 2011, these acts are based on the old approach. Now that the Planning commission has developed a conceptual framework for ground water governance and fairly accepted, Model bill 2011 should be the reference for ground water legislation in these states. Amending the existing legislations to incorporate the new thinking will not work as it is now any addition or deletion, it is a completely different approach.

The participants in the multi-stakeholder consultation held in Bhubaneswar in the month of December has recommended that rather than amending the existing laws, a

fresh initiative should be taken to influence the States to come out with a new legislation in line with Model Bill 2011.

To achieve this, Eastern Zonal Water Partnership should inform the public about this need, build the pressure through public and press and influence the state governments to bring in new legislations.

On the participatory irrigation front the States barring Jharkhand other states have legislations for promotion of PIM. West Bengal, though has a form of PIM through the Panchayats it is not strengthened with the legal instruments. But implementation deficits, lack of appropriate support from the government, handing over of the systems without rehabilitation etc. has been the major bottlenecks in PIM. Consistent engagement with the system and working with and handholding the PIMS will help understand the issues on the ground and work towards solution.

During the multistakeholder consultations it has been amply emphasized that the engagement by the water partnership need to be strengthened and there is need for people centered advocacy to bring in policy and practice changes. It is very much essential that the Eastern Zonal Water Partnership as well as the state outfits need to be strengthened.

ACTIVITIES AND THEIR OUTCOMES

Activities Planned During 2013

1. Organizing a Multi-stakeholder Dialogue on Ground Water Regulation and Management at Bhubaneswar
2. Brief Study on the State of Participatory Irrigation Management and Challenges

Context for the Activities of 2013

During the year 2012, Eastern Zonal Water Partnership had conducted a Multi Stake Holder Consultation on Ground Water Regulation and Management in Bhubaneswar. This consultation has resulted in very rich discussion and crystallization of certain ideas with regard to ground water. It has been agreed in the consultation that ensuring water security of the population is of utmost importance in any mode of water resources management. Hence Integrated Water Resources Management can be initiated with the key stone of ensuring water security. With several threats to water security from climatic uncertainties, over exploitation of surface water etc. ground water seems to be the only option to ensure water security in the coming years. It has been decided in the meeting that the policy initiative will be followed up with more rigor during 2013 as the different states are at different stages of ground water legislation. A core group will be formed to follow up the whole initiatives. The core group will steer this process. In the subsequent years too EZWP should follow up this initiative. It intended to prepare a detailed critique to present to the government officials who are responsible for the drafting the Bill. The support of India Water Partnership (GWP-India) also will be sought in this regard as they are in a better position to guide this initiative. Possibilities will be explored to ensure that the team works on a long term basis on ground water. There will be a more detailed consultation on ground water regulation and management during 2013.

As per the perspective plan of EZWP, it also had been decided that the Partnership will initiate Work on Participatory Irrigation Management. To begin with it will start working on doing a brief study on the state of Participatory Irrigation Management and the Challenges. While the government is into it albeit criticisms of process failures, EZWP will take up this initiative and explore the possibilities of demonstrating good

practices at least in one or two cases in a couple of states. EZWP proposed India Water Partnership to explore the possibility of arranging support for this initiative. EZWP intended that through such initiatives it can expand into Mini Watershed level organizations of people who will be at the helm of water management and can be the building blocks for River Basin Organizations.

Multi-stakeholder dialogue on groundwater regulation and management

With each passing year the demand for water is on the rise due to an increase in per capita use as well as increase in population. Industrialization that has got a boost since the 1990s and agriculture for fulfilling the ever increasing food demand has generated substantial pressure on water resources. Deterioration of quality of surface water also is a major challenge that the water managers have to contend with. To make the situation worse climate change has created uncertainties in the quantities of surface water available for use. In this back drop both the Union Government and the State governments as well have been stressing upon increased use of ground water for agriculture and domestic water supply. But increased use of ground water has its own set of problems like over exploitation in certain zones, deterioration of quality and unsustainability of ground water extraction. Hence for both the Union Government and the state governments, unregulated extraction of ground water has been a cause for worry for the governments. Keeping this in view, Government of India has been trying to regulate the ground water usage since last four decades without much success. Ground water being a state subject, the role of the Union Government has been limited to drafting the model ground water bills at different points of time and urging upon the State governments to enact laws in their states. But the actions by the states have been guided by differing urgencies as well as priorities. On one hand the ground water draft has been very low in this part of the country. In none of the states the ground water draft is more than 50%. So that takes off the urgency for the states for regulating ground water extraction. But at the same time quality of ground water has been a real challenge to contend with in these eastern states. In the Eastern Zone the constituent states are at different levels of ground water legislation and the states have their own priorities and short term interests guiding these enactments. This initiative is aimed at documenting the ground water situation in the constituent states of Odisha, Bihar, Jharkhand and West Bengal as well as ground water legislation in these states.

**Ground Water Legislation
in Eastern Indian States of
Odisha, West Bengal,
Bihar and Jharkhand**

Study Supported by

India Water Partnership

New Delhi

Eastern India Zonal Water Partnership

C/O National Institute for Development (NID)

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Year 2013

Desk Study on Ground Water legislation in Eastern Indian States

“Groundwater is a common heritage of the people of India held in trust, subject to reasonable restrictions to protect the environment and ecosystems. It cannot be owned by the state, communities, individuals or legal persons.” - Model Bill for the Protection, Conservation, Management and Regulation of Groundwater, 2011

GROUND WATER CHALLENGES OF INDIA

India is the largest user of ground water in the whole of world. Ground water accounts for 38.5% of the total water availability in India. The annual ground water availability in the country is the tune of 399 BCM. Out of this, as per the estimates of 2007, 18 BCM of ground water was extracted for domestic and industrial use and 213 BCM for irrigation (92.2%). On one hand there is heavy dependence on ground water for drinking and domestic use, though it used only 7.8% of the ground. On the other ground water use for irrigation is increasing in an alarming rate.

Ground water is the major source of drinking water for the rural areas. The latest data available from National Sample Survey Organization mentions that 56% of the rural households in India get drinking water from tube wells or hand pumps, 14% from open wells and 25% on piped water supply systems that extract water from the ground (NSSO 2006). That puts that 95% of the rural household draw water from the ground water sources. According to the Ministry of Drinking Water and Sanitation, the extent of ground water used for supplying water in the rural areas is 90%. While use of water for drinking purposes forms only 7% of the total water use (including surface), most of it comes from the ground water sources.

Of the total water usage agriculture is the real water guzzler accounting for over 80%. During the last few decades, contribution of ground water to irrigation in on the rise. Rapid expansion of ground water irrigation since 1970s has started threatening availability of ground water for drinking water and domestic purposes. The most

dramatic change in the ground water scenario in India is that the share of tube wells in the irrigated areas rose from a mere 1% in 1960-61 to 40% in 2006-07. (India's Ground Water Challenge and the way forward, EPW, Jan 8, 2011). The share of the ground water in the net irrigated area is increasing with every passing year. Between 1970 to 2007, the addition to net irrigated area was 29.75 million hectares. Out of this ground water accounted for 24.02 million hectares (80%). On an average about 61% of irrigation in India was sourced from ground water. The share of irrigation from the surface water has reduced from 60% in the 1950s to 30% in the 2010s.

Ground Water Management and Ownership - 2007, Report of the expert group of Planning Commission puts that 55% of irrigation, 85% of rural water supply and 5% of urban and industrial water supply comes from ground water sources. While the country depends to the extent of 85% on ground water to meet its drinking water needs, the dependence on ground water for the purpose of irrigation is increasing at an alarming pace, as the surface water development has been greatly constrained due to various factors like exhausting the suitable sites for dams and reservoirs, increased concern for environmental and social costs, climatic variability etc. It has put ground water in a conflict zone. Because, over extraction of ground water has resulted in lowering of water table and rendering the tube wells for drinking water defunct. So there is a case for regulating the ground water usage to ensure that the source does not dry up completely. But at the same time the government also wants to utilize the potential of ground water for irrigation as there are many areas where the level of extraction of ground water is very low. The states like Punjab (145%), Rajasthan (125%), have reached the level of unsustainability. Haryana (109%), Tamilnadu (85%), Gujrat (76%), UP (75%) are also not far behind. These states have very high level of ground water extraction as compared to annual recharge warranting not only a moratorium on ground water extraction, but also ways and means for weaning away the existing sourced from ground water. On the other hand, as per the CGWB data of 2006, the states like Jammu and Kashmir (14%), Jharkhand (21%) Odisha (18%), Assam (22%) are far behind in using the potential of ground water for development of drinking water sources as well as irrigation. So this spatial variability in ground water usage warrants proper regulation of ground water that does not allow the vast potential of ground water to go waste on one hand for both water supply and irrigation and at the same time also does not risk the sustainability of ground water sources.

Water quality deterioration provides for another strong reason to regulate ground water usage. Chemical contaminants like arsenic, fluoride, iron, salinity etc pose health risk to the population using this water directly for the purpose of drinking as well as

indirectly through food chain if this water is used to irrigate the crops. At least 169 districts of India, accounting for about 29% of all the districts, mostly spread in the states of Assam, Gujrat, Haryana, Karnataka, Maharashtra, Madhya Pradesh, Odisha, Rajastan, Uttar Pradesh P and Bihar have at least one of the serious quality problem of arsenic or fluoride or salinity. Again depletion of ground water aquifers also has a bearing on the ground water quality. Hence even if a district is in the safe zone of extraction, concerns for ground water quality may warrant regulating ground water in that district.

GROUND WATER LEGISLATION IN INDIA

Model Groundwater Bill for the States

Water as well as ground water comes under the state subject. Hence it is the Federal states those who have a right to formulate laws around ground water. As the Union Government does not have direct legislative jurisdiction over groundwater, rather than coming out with a ground water legislation directly it developed a model bill for the states to either emulate or to use as a template for the state legislation. In 1970, the central government circulated a model groundwater bill: the Model Bill to Regulate and Control the Development and Management of Groundwater (normally referred to as the "Model Bill"). The central government subsequently reissued the Model Bill with some minor changes in 1992.

Setting up of Central Ground Water Authority under EPA

While on one hand there were no states as the taker of the model bill and the states were unwilling to legislate on ground water, on the other the exigencies of regulating, controlling and managing ground water also was on the rise. Cases of ground water depletion and the corresponding inconveniences were making it to the honorable Supreme Court of India. The honorable Supreme Court through its various judgments on 25th May 1996, 21st November 1996 and 5th December 1996 ordered the Union government to set up Ground Water Authority under Environment (Protection) Act, 1986 (as this was a central act and applicable for the whole of the country, while the Union Government did not have any jurisdiction for legislation on ground water) for the purpose of regulation and control of groundwater development. The Court directed that the authority should regulate the indiscriminate boring and withdrawal of groundwater in the country and issue necessary regulatory directions with a view to preserving and protecting the groundwater.

On 14 January 1997, the Ministry of Environment and Forests vide its notification SO 38 (E) constituted Central Groundwater Authority under sub-section (iii) of Section 3 of Environment (Protection) Act, 1986 (GOI, 1997) (ref. 1).

As per this notification, the Union Government constituted the Central Ground Water Board as an authority. The Central Groundwater Authority (CGWA) has its jurisdiction over the entire country. Though created under the Environment Protection Act, 1986, CGWA is under the administrative control of Ministry of Water Resources.

The Central Groundwater Authority (CGWA) is vested with powers under Section 5 and 15 to 21 of Environment (Protection) Act, 1986. This includes the power to give directions to any person, officer or authority that will be binding on them. The order could mean closure, prohibition or regulation of any industry, operation or process and the power to stop water supply and electricity etc. Apart from this the authority also was bestowed with the powers to resort to penal provisions in the EPA 1986. It has the power to regulate and control, management and development of ground water in the country and also to issue necessary regulatory directions for this purpose.

CGWA is issuing notices to persons/agencies engaged in construction of wells to get registered. They should also submit information about the number of drilling machines and ancillary equipments, area of operation, etc. to the Regional Directors at 16 Regional Offices of CGWB before 31 December 1998

Model Bills of 1996, 2005 and 2011

The Ministry of Water Resources prepared a model bill for enactment by all State Governments for regulation and control of the development of groundwater under Groundwater (Control and Regulation) Act 1996. Here, the procedures for constitution of State Groundwater Authority (SGWA), powers to notify areas and grant permission and restrictions for control and regulation of groundwater development. This model bill was further followed by a model bill to Regulate and Control the Development and Management of Ground Water 2005.

The key features of provisions of these model bills were

1. **Establishment of a State Ground Water Authority:** As per the Model Bill, the state shall establish a Ground Water Authority that is empowered to “notify” areas of the state where the Authority deems it necessary to “regulate and control the development and management of groundwater.”The Authority can

“take steps to ensure that exploitation of ground water resources does not exceed the natural replenishment to the aquifers.”The Authority was expected to maintain an up-to-date database containing groundwater information. Apart from this, the Authority also was given power to send representatives to enter any property to gather scientific data, inspect wells, and seize equipment used for unauthorized sinking of a well’

2. **Create a Permit Requirement:** The Model Bill requires that anyone who wants to begin pumping groundwater in a notified depleted area (with the exception of pumping with hand pumps) must acquire a permit from the Authority. Citizens cannot be refused a permit without having the “opportunity of being heard.”The Authority will evaluate various factors in considering whether or not to grant a permit, including:
 - a. The purpose or purposes for which ground water is to be used;
 - b. The existence of other competitive users;
 - c. The availability of ground water;
 - d. Quantity of ground water to be drawn.
 - e. Quality of ground water with reference to use;
 - f. Spacing of ground water structures keeping in consideration the purpose for which ground water is to be used;
 - g. Long-term ground water level behavior;
 - h. Its likelihood of adversely affecting water availability of any drinking water source in its vicinity;

3. **Create a Registration Requirement:** The Model Bill requires every owner of already existing groundwater extraction structures in the notified groundwater-depleted areas to register the structure with the Authority after providing requisite information. The owners of drilling rigs also must register their drilling machinery with the Authority. People adversely affected by implementation of the restrictions of the bill are not entitled to recover any compensation from the government.

Each subsequent revision of the Model Bill maintained the same framework of 1970 version. In 2005 the authors of the bill added a chapter on “Rainwater Harvesting for Ground Water Recharge,” which allowed the CGWA to identify certain areas in need of rainwater harvesting structures and to put out directives for building the structures. Initially no state did show any interest in adopting the Model Bill, but in the 1990s the states started adopting the model bill.

The model bills up to 2005, tried to exercise the control of the State over ground water without addressing some of the fundamental issues pertaining to the ownership of ground water, equity and sustainability, public participation in ground water governance etc. But in between a lot of conflicts around ground water like over extraction of ground water in Plachimada, the issue of pesticides in beverages etc. that initiated a fresh round of thinking on ground water. Planning commission had appointed a group of experts on Ground Water Management and Ownership. As a result of this in 2011 another model bill on ground water - 'Model Bill for the Protection, Conservation, Management and Regulation of Groundwater' was circulated. It deviated substantially from the age old approach of regulation and control to protection, conservation, management and regulation.

Model Bill of 2011

Some of the salient features of this 'Model Bill for the Protection, Conservation, Management and Regulation of Groundwater, 2011' are:

1. The objectives of the ground water legislation has been articulated in the model ground water bill of 2011 as

Objectives

- a) To ensure that groundwater is protected, used, developed, conserved, managed and controlled in ways which take into account amongst other factors:
 - i. Meeting basic human needs;
 - ii. Facilitating social and economic development through equitable distribution of groundwater;
 - iii. Redressing the results of past inequalities and gender discrimination;
 - iv. Promoting the sustainable and beneficial use of water in the public interest;
 - v. Promoting sustainable water use based on a long-term protection of available groundwater resources;
 - vi. Reducing and preventing pollution and degradation of groundwater;
 - vii. Protecting ecosystems and their biological diversity;

- b) To ensure that present and future generations have the necessary access to groundwater of a quality adequate for their various uses;
- c) To prevent and protect against water crisis due to either natural causes or the inappropriate use of natural resources.

2. For the realization of the above objectives Model Bill 2011 has declared a set of principles. Some of the important principles articulated are

Principles for ground water

a. Equality and Equity

- i. Every person shall have access to groundwater without any discrimination, including as to caste, creed, economic status, land ownership, place of birth, race, religion and sex.
- ii. The appropriate authority shall ensure equitable distribution and access to groundwater based on a scheme made for this purpose strictly in compliance with priorities prescribed under Section 17 of this Act.
- iii. The appropriate authority shall ensure the sustainable use of the available groundwater without compromising the needs of future generations.

b. Subsidiarity and Decentralization

- i. Conservation, use, management and regulation of groundwater based on the principle of subsidiarity.
- ii. Following the spirit and letter of constitutional provisions for decentralization of powers and functions in urban and rural areas as its basic organizing principle.
- iii. Declares different use, conservation and management measures as desirable in different parts of the state according to the availability of groundwater in a specific aquifer and the ground situation.

Apart from these principles the model act 2011 also lays down that prevention, precaution and prior assessment has to be taken up to prevent and/or reduce adverse impacts on the environment due to use of ground water. Both surface water and ground water should be considered jointly for protection, management, conservation and regulation.

3. For the first time ground water model bill articulated the right and duties of the citizens so that in real sense they are involved with ground water management.

Rights and Duties

- a. Every person shall have the right to water from groundwater sanctuaries.
 - b. Every person shall have the right to be provided access to basic water.
 - c. Access to sufficient quantity of water required for leading a healthy and dignified life shall be ensured to every person.
 - d. Every natural and legal person shall refrain from actions prejudicial to the availability of sufficient quantity and quality of basic water.
 - e. The quality of basic water shall be maintained according to prescribed standards.
 - f. Every natural and legal person shall take all possible measures to prevent waste of groundwater.
4. The whole issue of ownership of ground water had been quite contentious in the past decade. As ground water is attached to land rights it was a major deterrent in the effective regulation of ground water extraction. For the first time the ground water model bill articulated about the ownership over ground water. It says -
 - a. Groundwater is a common heritage of the people of India held in trust, subject to reasonable restrictions to protect the environment and eco-systems. It cannot be owned by the state, communities, individuals or legal persons.
 - b. The state at all levels is the public trustee of groundwater. The appropriate authority must ensure that water is protected, used, developed, conserved, managed and controlled in a sustainable and equitable manner, for the benefit of all persons and the environment, and in accordance with their respective constitutional mandate.
 - c. The appropriate authority is ultimately responsible for ensuring that water is allocated and used equitably in the public interest, while promoting environmental values.
 5. This model bill also has the provision for declaration of those areas related to particular aquifers that requires specific attention due to their criticality in maintaining basic recharge and discharge functions as 'ground water sanctuaries'. This declaration of the groundwater sanctuaries has to be done after a process of proper consultation with public and informed opinion. No water extraction from

these sanctuaries is to be allowed without proper permit and water yield from these aquifers are to be maintained within the safe limit. Groundwater sanctuaries will be maintained to preserve the sanctity, quantity and quality of the water. The sanctuaries will serve the purpose of the basic need of individuals and the ecology. The participation of the citizens is to be ensured in protection of the groundwater sanctuaries.

6. **Water use priority:** The model bill has come out with a water use prioritization. Meeting the basic water for all as well as water for sustaining aquifers and ecosystems will be the first priority. Only after this the primary water needs like water for livestock, municipal use and water for food security including traditional and community fishing are to be ensured. Secondary water needs like irrigation, power generation, commercial fisheries, industrial uses, recreational uses and other purposes will be provided for in this order of priority. But, this will require a specific permission based on the impact assessment.
7. Model Bill 2011 prescribes an elaborate institutional framework that promotes grassroots participation in ground water governance. Each Gram Panchayat will have Gram Panchayat Groundwater Committee that will be responsible for the preparation of Panchayat Groundwater Security Plan, determination of ground water sanctuaries and adopting norms for their management and regulation, registration of ground water users, maintenance of inventory database of ground water as well as other water bodies.

At the block level there will be Block Panchayat Ground Water Committee having similar functions like the Gram Panchayat level committee with the exception of rather than implementation it will be more into consolidation, monitoring, supervision along with the role of resolving conflict between different GPs.

At the district level District Panchayat Groundwater Council will have the similar functions as that of the block committees, at the district level.

For the Urban areas the institutions to be formed are Ward Ground Water Committee and Municipal Level Groundwater Committee having functions similar to the Gram Panchayat and Block level committees.

State Ground Water Advisory Council will be the apex body at the state level having representation of different ground water committees and councils at the Gram Panchayat, Block, Ward, Municipality, district etc and experts from CGWB,

State Ground Water Board, Pollution control board and independent experts. The primary function of this body will be to advise and support all the ground water bodies.

8. Apart from the above provisions the model ground water bill also has elaborations regarding information and monitoring systems at all levels. It also deals with Groundwater Conservation and augmentation, irrigation from ground water sources, Industrial use of groundwater and industries related to ground water and transparency and accountability of the whole system.

GROUND WATER SITUATION IN THE EASTERN STATES

The four eastern Indian states Bihar, West Bengal, Odisha and Jharkhand do not have high level of ground water development. In all these states, the level of ground water extraction is much less than the national average. Barring only 38 blocks in West Bengal which are semi-critical these states do not have any area which is over-exploited, critical or semi-critical. So apparently it seems that for these eastern Indian states there is no urgency to regulate, control or conserve ground water. While on the quantitative front it seems that everything is fine, ground water quality in all these states is the area of concern and that brings in the sense of urgency for ground water legislation and prudent management of this precious resource. Again the development scenario in these states has been demanding on ground water of late and this is the right time to initiate prudent management of ground water.

BIHAR

Bihar has an annual precipitation of 1205 mm. Annual replenishable ground water resource of the state is 28.63 BCM out of which net annual availability of ground water is 26.21 BCM. Annual groundwater draft for Bihar is only 11.36 BCM that is only 43% of the potential/availability. The extent of ground water development is far below the national average or the safe limit. There is no aquifer in this state that is over exploited, critical or semi-critical. But what is the cause of concern for Bihar is the chemical contamination of ground water. Aurangabad, Banka, Bhagalpur, Buxar, Gaya, Jamui, Kaimur (Bhabua), Munger, Nawada, Rohtas, Sapaul etc districts are partially affected by the problems of excess fluoride in the ground water. Arsenic contamination in the districts of Begusarai, Bhagalpur, Bhojpur, Buxar, Darbhanga, Kathiar, Khagaria, Kishanganj, Lakhisarai, Munger, Patna, Purne, Samastipur, Saran and Vaishali districts is a major health concern for the population here. Parts of Aurangabad, Banka, Bhagalpur, Bhojpur, Darbhanga, Kaimur (Bhabua), Patna, Rohtas, Saran and Siwan districts are affected by Nitrate. Aurangabad, Begusarai, Bhojpur, Buxar, East

Champan, Gopalganj, Katihar, Khagaria, Kishanganj, Lakhiserai, Madhepura, Muzafarpur, Nawada, Rohtas, Saharsa, Samastipur, Siwan, Supaul, West Champaran etc districts having iron problem. The long list of the district having water quality problems is indicative of the scale of quality problem that this state is encountering. As many as 21 districts in Bihar have the problem of Iron contamination. While parts of nine districts are affected by fluoride, as many as 15 districts have the problem of Arsenic in different areas. Parts of 9 districts are affected by Nitrate contamination. Out of all these Arsenic contamination has been the major challenge to address for the water managers of the state.

The state Government's recent findings from the water quality mapping of the whole state (226145 samples were tested during November 2007, February 2008 , covering all the 38 districts) indicates that the drinking water sources in rural areas are not safe in most of the area and the health of the rural population is at risk. Out of the 38 districts, water sources of 1750 habitations of 80 blocks in 13 districts situated along the river Ganges are partially affected by arsenic contamination (As >50 ppb) whereas the drinking water sources of 6373 habitations of 22 districts are affected with excess Fluoride (>1.5 ppm) and the presence of excess iron in groundwater is in majority of the districts. Apart from chemical impurities fecal contamination of water is prevalent in many water sources (Envirotech Report 2008). It was found in Arsenic affected areas that the water of open wells are safer in respect of Arsenic. The Deep tubewells (Depth > 125M) are yielding Arsenic free water whereas in fluoride affected areas the fluoride content is increasing with depth. (**Safe drinking water status in the state of Bihar, India: Challenges ahead** by *D.S. Mishra, India*)

JHARKHAND

Jharkhand, having an annual precipitation of 917 mm has an annual replenishable ground water resource of 5.96 BCM out of which net annual availability of ground water is 5.41 BCM. Annual draft of ground water in Jharkhand is only 1.61 BCM. The net draft of ground water in this hilly state is only 30%. Here too the ground water quality is the major problem. While the districts like Bokaro, Giridih, Godda, Gumla, Palamu, Ramgarh, Ranchi etc. are affected partially by excessive fluoride(>1.5 mg/l) the other major water quality problem in the state is that of Nitrate (>45 mg/l) in the districts of Chatra, Garhwa, Godda, Gumla, Lohardaga, Pakur, Palamu, Paschimi Singhbhum, Purbi Singhbhum, Ranchi and Sahibganj. As per the latest information available from Central Ground Water Board there is no area in the state that is overexploited, critical or semi-critical. There is no notified area in the state. But the

department of Water Resources, Jharkhand in its website has informed that as per Block-wise Dynamic Ground Water Resource Estimation, till 2009 there are eight blocks where the ground water situation is either semi-critical , Critical or over exploited. Kanke block in Ranchi district (112.4%), Godda block in Godda district (117.39%), Janshedpur Sadar under East Singhbhum district (131.39%) and Jharia in district Dhanbad (105.63%) are the over-exploited blocks. Similarly Ratu (Ranchi district), Dhanbad (Dhanbad district), and Ramgarh (Ramgarh district) have become critical with respect to ground water extraction. Chas block in Bokaro is a semi-critical block. Over-Exploitation of Ground Water has rendered several areas devoid of ground water in peak summer, resulting in drying up of dug wells and Tube wells. Excessive withdrawal of ground water by industrial units has created adverse effect on its quantity also.

ODISHA

Odisha has an annual precipitation of 1502 mm. It has an annual replenishable ground water resource of 17.78 BCM out of which net annual availability of ground water is 16.69 BCM. Out of these 4.36 BCM is the annual draft of ground water. The net ground water draft is only 26% in this coastal state. Earlier it used to be only 18% as the net annual availability was estimated at 21.01 BCM, but after re-estimation as per the new guidelines it has gone up to 26% as the available ground water has been re-estimated at 16.69. While the seven coastal districts of Balasore, Bhadrak, Ganjam, Jagatsingpur, Jajpur, Kendrapara and Puri have the problem of salinity, the districts of Angul, Balasore, Bargarh, Bhadrak, Baudh, Cuttack, Deogarh, Dhenkanal, Jajpur, Keonjhar, Khurda, Mayurbhanj, Nayagarh, Nawapara, Sonpur are partially affected by fluoride. Twenty one districts of the state namely Balasore, Bargarh, Bhadrak, Cuttack, Deogarh, Jagatsinghpur, Jajpur, Jharsuguda, Kalahandi, Kandmahal, Keonjhar, Kendrapara, Khurda, Koraput, Mayurbhanj, Nayagarh, Puri, Rayagada, Sambalpur, Sundergarh and Sonepur have the problem of excessive iron in the ground water. Excess of nitrate has been reported from 28 out of 30 districts in Angul, Balasore, Bargarh, Bhadrak, Bolangir, Baudh, Cuttack, Deogarh, Dhenkanal, Gajapati, Ganjam, J.Singhpur, Jajpur, Jharsuguda, Kalahandi, Kendrapara, Keonjhar, Khurda, Koraput, Malkangiri, Mayurbhanj, Nawapada, Nayagarh, Phulbani, Puri, Sambalpur, Sundergarh, and Sonpur. No over-exploited, critical or semi-critical zones are there in the state. And also there is no area in the state that has been notified by the Central Ground Water Authority (CGWA).

WEST BENGAL

West Bengal has an annual rainfall of 2074 mm. Annual Replenishable Groundwater Resource of this state is 30.5 BCM out of which net annual availability of ground water is 27.58. Out of this 10.91 is the annual extraction of ground water. The net ground water draft is only 40% as against the national average of 58%. Though there is no over extraction or critical zones in this state, 38 blocks in the state has been identified as semi-critical. Haldia Industrial Complex in East Midnapur district has been declared as a notified area by Central Ground Water Authority.

Being a coastal state five of the coastal districts have the problem of salinity. These districts are Howrah, North 24 Parganas, Purba Medinipore, and South 24 Praganas. Part of Bankura, Bardhaman, Birbhum, Dakshindinajpur, Malda, Nadia, Purulia, Uttardinajpur, and South 24 Praganas have more than the permissible limit of 1.5 mg/l fluoride in the ground water. Iron contamination is reported from a large no of districts like Bankura, Bardhaman, Birbhum, Dakhindinajpur, East Midnapur, Howrah, Hugli, Jalpaiguri, Kolkatta, Murshidabad, North 24 Praganas, Nadia, South 24 Praganas, Uttardinajpur, and West Midnapur. But the presence of Arsenic (>45 mg/l) in the districts of Bardhaman, Hooghly, Howrah, Malda, Murshidabad, Nadia, North 24 Praganas, and South 24 Praganas has been a big challenge for the state government.

GROUND WATER LEGISLATION IN EASTERN STATES

BIHAR

The State of Bihar enacted Bihar Groundwater (Regulation and Control of Development and Management) Act, 2006. This Act is in line with the 2005 Model bill circulated by the Union government.

The intent of this Act as has been mentioned under the Aims and Objectives is to control the exploitation of ground water as per the availability especially in the regions where exploitation exceeds its availability. Apart from this the act also is meant to improve the ground water status in the critical areas through conservation of rain water and recharging the ground water.

Bihar Ground Water Act primarily relies on a regulation and control regime on the footsteps of 2005 model bill. It creates Bihar State Ground Water Authority that functions directly under the government and headed by a senior officer of the government not below the rank of a Chief Engineer.

This authority after due consultation with different experts including the Central Ground Water Authority (CGWA) will identify the overexploited areas and create 'Notified Areas' to enable monitoring. The authority is mandated to control and regulate the extraction of ground water in the notified area(s). It aims to ensure that the extraction of ground water resources does not exceed the natural replenishment. Those seeking to extract groundwater by motorized devices will have to seek permission from the authority after providing the desired information. However, those sinking hand-operated pumps are exempted from registration and the owners of the existing tube wells are also exempted from the registration. But, once an area is declared as 'notified area' the existing users will have to register with the Authority within 120 days. The drilling agencies are also to be registered with the authority and follow the instruction issued by the Authority.

Bihar ground water bill also lays stress on rainwater harvesting, artificial recharging and rooftop rain water harvesting. Roof Top Rainwater harvesting has been made mandatory for the buildings with plan areas of more than 1000 sq meters.

The Bihar Groundwater (Regulation and Control of Development and Management) Legislation, 2006 was enacted much before the 2011 Model bill on ground water was circulated. So it does not address some of the fundamental areas like ground water to be held as a public trust. It also does not address the issues of equality and equity. It does not have any provisions for the participatory ground water governance, or decentralization of authority for the regulation and management of ground water that has been included in the Ground Water Model Bill 2011.

The state government had promulgated the Bihar State Water Policy 2010. It has two important guiding principles that is of relevance of ground water legislation.

- To develop a sense of ownership on water resources, the community based structures/PRI's will be encouraged to participate in water management. A capacity building program of these community based organizations (SHGs/VWSCs/PRI's) will be undertaken
- Necessary amendments will be enacted to control the constantly declining ground water table and efficient water management.

These statements have been incorporated in the State Water Policy in the year 2010, four years after the enactment of the Bihar Groundwater (Regulation and Control of Development and Management) Legislation, 2006. So it generates the hope that the government intends to decentralize the water governance and amend the Ground

Water Act. However despite these promises, the Bihar Ground Water Act as well as the Water Policy 2010 does not adequately address the water quality issue that is a major health hazard in the state.

JHARKHAND

The state of Jharkhand does not have any ground water legislation as on today. Jharkhand has come out with Jharkhand State Water Policy. It promised the following on ground water

- There shall be a periodical reassessment of the groundwater potential on a scientific basis taking into consideration the quality of water available and economic viability.
- Exploitation of groundwater resources shall be so regulated to ensure social equity and also not to exceed the recharging possibilities. Groundwater recharge projects shall be incorporated in the developmental projects. These projects shall be developed and implemented for augmenting the available supplies from ground water. Ground water legislation shall be enacted by taking into account the model legislation communicated by the Govt. of India for the sustainable management of ground water.

As per the information available from the Water Resources Department website, Ground Water Directorate has already framed Ground Water Legislation for the state of Jharkhand, in the light of existing legislation of other states. The legislation is awaiting its approval and enactment. After enactment of Ground Water Legislation, the use of ground water will be regulated and ground water reserve will be improved through practice of Rain Water Harvesting, to be made mandatory in ground water stressed areas.

ODISHA

Orissa Groundwater (Regulation, Development and Management) Bill, 2011 came into existence in the year 2012. In fact this bill was under the process and yet to be promulgated while the Model bill 2011 was already in circulation. The state officials were a party to the discussions on it initiated by the Planning Commission. But this bill is entirely based on the older versions of the model bills circulated and does not incorporate the elements in the July 2011 model bill.

While the model bill 2011 dwells on the Public Trust doctrine, this Act of Odisha is completely silent on the issue of ownership. It rather proposes to form a ground water regularity authority to exercise control over the ground water and its uses. It does not address the issue of private land ownership and ground water being in conflict with each other. It has created the legal space for notification of 'notified area' for the areas where ground water is either overexploited or critical or semi-critical. And the focus is mostly on the notified areas only. While the model bill emphasizes on protection, conservation, management and regulation of ground water, Odisha Ground Water Bill has only dwelled on controlling and registering. This Act does not emphasize on the conservation of water other than a cursory mention of rainwater harvesting. While the model bill address the equality and equity in management of ground water, Odisha act does not even touch upon this. The state act has not attempted any decentralization of ground water governance or management. All the powers are vested with the State Authority.

There is a big gap between the model bill and the recent Odisha ground water bill. The state act violates some of component of the PESA act and forest right act with reference to the communities as water at the local level also is vested with the Gram Panchayats. The state bill that primarily focused on the notified areas, allows extraction of groundwater for the domestic and agricultural use in the notified areas after taking permission from the Authority. But, agricultural purpose is described in a loose manner that even could include the agribusiness, agro based industries and commercial cultivation. The definition of agriculture in the bill could include industrial agriculture, commercial agriculture and the allied industries. The State Act of Odisha does not talk about the right of the landless on groundwater, role of the Gram Panchayats in the management of groundwater, equity and environmental concerns.

In this Orissa Groundwater (Regulation, Development and Management) Bill, 2011 there is no provision of any proactive measures to ensure that the water quality of a region does not deteriorate. The most glaring example to drive home this point is the progressive salinization of the ground water reported by the villagers in the coastal districts of Odisha. Kendrapara, Puri, etc coastal districts face this problem. Then there are also reports of newer areas reporting excessive fluoride in the ground water. So what is warranted is that the ground water legislation should also incorporate this dimension of the problem and have provisions for addressing these problems proactively.

As there are no notified areas in the state, and the act focuses on the notified areas only, there is no way by which the industries can be refrained from the use of the ground

water and can very well be beyond the purview of the regulation act. Apart from that, till now, no monitoring has been done with respect to industrial exploitation of ground water use. There is no data base on bore well as per users and area and we don't have any proper management approach for the ground water. In this situation the Ground Water authority could be rendered almost dysfunctional.

Odisha Ground Water Bill 2011 does not take into consideration the 73rd amendment and does not decentralize the authorities at appropriate levels. It also does not address the equity concern with respect to land entitlements.

WEST BENGAL

West Bengal Ground Water Resources (Management, Control and Regulation)Act -2005 is the enactment in West Bengal on ground water. This Act like the other acts also creates the mechanism for control and regulation In the first place it creates the West Bengal Ground Water Authority, and also permission and registration regime. But, one positive aspect of this enactment is that though it was enacted way back in 2005, it has created a legal space for decentralized governance of ground water in the state of West Bengal to a great extent. It also provides for a more holistic mandate for the state level authority.

West Bengal Ground Water Resources (Management, Control and Regulation)Act -2005 mandates creation of a State level Authority as West Bengal State Level Ground Water Resources Development Authority. This authority will function under the Water Investigation and Development Department. It has been mandated to

- Look into the management of every aspect of ground water in the state of West Bengal
- Will issue certificate of registration or permit to the users of the ground water
- Will initiate a policy for conservation of ground water resources through recharging, replenishing, recycling or reusing in a coordinated manner.
- Organize peoples' participation and involvement in planning and actual management of ground water management. Monitor ground water levels, quality, extraction etc at local level and come out with practical strategies to address them.
- It will form district level Authorities and Metropolitan authority to carry forward this mandate.

The district authorities known as the District Level Ground Water Resources Development Authorities and Kolkata Metropolitan Ground Water Resources

Development Authority will be responsible for issuing permits to all users sinking tube wells or hand pump or digging wells for extraction of ground water. However those extracting water for both domestic as well as irrigation purpose without using a mechanical or electrical device are exempted from obtaining permission. The district level authority has the power to issue permit to those units which extract less than 50 cubic meter of water per hour. If the rate of extraction is higher than this then it has to be given by the State Level Authority. But in case of the Metropolitan Authority the limit is 100 cubic meters per hour. While giving permission to extract water availability, quality, probable projections and ground water behavior etc in the locality are to be considered. For the existing tube wells the users have to register them within a stipulated period.

The district level or Metropolitan authorities have the mandate to

- Prepare a district profile on the ground water resources in the district/corporation
- Issue permits or certificates of registration to the users.
- Monitor the quality and quantity of water in the concerned area and keep the state authority informed.
- Ensure the enforcement of the ground water law
- Help the state authority for the preparation of plan for the conservation, maintenance and utilization of ground water resources.

West Bengal has come out with a State Water Policy in the year 2011. Here the state expressed its intent of not allowing any ground water extraction other than drinking in the coastal districts of the state to arrest saline intrusion. While this is not a part of any legally binding act, the mandate given to the State Ground Water Resources Development Authority may implement it.

SUMMING UP

Over extraction of ground water in terms of the quantity of water extracted is not an issue in these eastern states, though in a few localized cases it warrants proactive measures to be taken. But, ground water quality is the major area of concern in these states. None of the states have based their ground water acts to contain the water quality deterioration or to wane away people from using contaminated groundwater. This is a common feature for all the states like Odisha, Bihar, West Bengal and Jharkhand. While the present legislations in the first three states does not address this issue, Jharkhand does not have any separate legislation as yet.

The new thinking in the area of ground water management facilitated by the Planning Commission and put into a framework in terms of Model Ground Water Bill 2011 has not been a part of any of the ground water legislations in the eastern states. While Bihar and West Bengal Ground Water Acts did not have the advantage of this bill of 2011 while the Acts were frames in these two states, Odisha despite being in a position to incorporate the elements from the model bill has failed to do so. But, despite being the oldest of Acts on groundwater in the eastern states, the West Bengal Groundwater Act has to some extent the spirit of the model bil.

In none of these Acts the ownership of groundwater has been held under the public trust at appropriate levels of authority. In the absence of this all these acts are in contradiction with the Panchayatiraj Extension to Scheduled Areas (PESA) Act.

None of the Acts accord any right over the ground water irrespective of the land ownership. None of them also talk of equity. The state acts are primarily aimed at regulation and control of ground water extraction without much thought over precautionary measures or ensuring that the water quality does not deteriorate further. With the exception of West Bengal these enactments primarily address the emerging situation only after an area has become critical, or overexploited and the Authorities have the reasons to declare the area as notified areas. A holistic thinking on ground water management is missing.

As has been suggested in the consultation of stakeholders in Bhubaneswar all the states in the Eastern India should come out with a fresh ground water legislation in line with the model bill 2011 and get into a holistic, decentralized governance of ground water in the respective states before the situation deteriorates leaving less elbow space to operate.

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**PARTICIPATORY IRRIGATION MANAGEMENT IN
EASTERN STATES OF
BIHAR, ODISHA, JHARKHAND & WEST BENGAL**

Supported by

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Year 2013

Desk Study on

State of Participatory Irrigation Management in the Eastern States of Bihar, Odisha, Jharkhand and West Bengal

Background

With exponential growth of the population the need for production of food, fiber, fuel, fodder, raw material for the industries is on the rise at a fast rate. It is a compulsion on the part of the country to increase agricultural production to meet these ever growing requirements. India being monsoon dependant, assured production from the agriculture could be possible only with the support of irrigation. Even during Kharif season there is a need for life saving irrigation to take care of long dry spells. Apart from this, Rabi or summer irrigation increases effective availability of land for cultivation. While development of more and more irrigation infrastructures is badly needed, increasing the existing reservoirs' capacity and taking up of new projects has serious financial, social and environmental problems associated with it. With every passing year, development of new dams and reservoirs etc are becoming increasingly difficult as suitable sites have been exhausted to a great extent, resistance by the project affected persons is becoming stronger and the cost of developing the infrastructure also has gone up substantially. The social and environmental costs to be paid in terms of displacement, submergence of land and forest, change in micro-climatic conditions, ecological impacts etc. are no more affordable. Hence proper management of existing irrigation infrastructures, increasing the irrigation efficiency (more crops per drop) is the need of the hour. At the national level the irrigation efficiency of the existing infrastructures barely crosses 35%. Only a 10% increase in irrigation efficiency will bring in substantial improvement in irrigation situation of the country.

There are myriad issues that plague the irrigation sector in India. There is a wide gap between the Designed Command Area (DCA) and the Culturable Command Area (CCA) as the cropping pattern that was decided during designing of the project are not practiced by the farmers, and loss of irrigation water during conveyance of water is also very high. The tail-end farmers do not get water that leads to conflict between the head-ender and tail-ender farmers. Water release calendar and the need of the farmers for the

crops do not match. Waterlogging in the command area and salinization results in loss of productive land. While the operation and maintenance costs for providing water for agriculture is high, the recovery of water charges is very poor. The difference between the expenses for operation and maintenance and the recovery has resulted in a high burden to the state exchequer.

These problems could be addressed only through active participation of the key stakeholder - the farmers. Only with the cooperation of the farmers a balance can be struck between the need for the agricultural products and production. The gap between the operation and maintenance cost and recovery, farmers' requirement and water release calendar, availability of irrigation water to the head-enders and the tail-enders can be reduced. With this back drop the need for participatory irrigation management has been felt in the country since 1970s. Various initiatives and experimentations in different parts of the country has only emphasized the relevance of Participatory Irrigation Management (PIM). Since 1980s Government of India has been consistently working on participatory irrigation (PIM).

Government of India Initiatives on PIM

Since 1985 Ministry of Water Resources has been promoting farmers' participation in water distribution and management. To begin with, the tertiary systems in the projects covered under the Centrally Sponsored Command Area Development Programme were chosen to promote PIM. The concept of involvement of farmers in management of the irrigation systems has been incorporated in the National Water Policy as well. National Water Policy, 1987 reads :

"Efforts should be made to involve farmers progressively in various aspects of management of irrigation systems, particularly in water distribution and collection of water rates. Assistance of voluntary agencies should be enlisted in educating the farmers in efficient water-use and water management."

In April 1987, the Ministry of Water Resources issued guidelines for farmers' participation in water management, primarily for areas under the Centrally Sponsored Command Area Development Programme. The guidelines covered all aspects like past experience in India and abroad, objectives of PIM, area of operation of farmers' associations in different irrigation schemes, duties and responsibilities of the farmers, training and monitoring. In this guideline the objectives of PIM were articulated as

Objectives of PIM

- i. To create a sense of ownership of water resources and the irrigation system among the users, so as to promote economy in water use and preservation of the system.
- ii. To improve service deliveries through better operation and maintenance.
- iii. To achieve optimum utilization of available resources through sophisticated deliveries, precisely as per crop needs.
- iv. To achieve equity in water distribution.
- v. To increase production per unit of water, where water is scarce and to increase production per unit of land where water is adequate.
- vi. To make best use of natural precipitation and ground water in conjunction with flow irrigation for increasing irrigation and cropping intensity.
- vii. To facilitate the users to have a choice of crops, cropping sequence, timing of water supply, period of supply and also frequency of supply, depending on soils, climate and other infrastructure facilities available in the commands such as roads, markets cold storages, etc., so as to maximize the incomes and returns.
- viii. To encourage collective and community responsibility on the farmers to collect water charges and payment to Irrigation Agency.
- ix. To create healthy atmosphere between the Irrigation Agency personnel and the users.

National Water Policy (2002) refined the policy framework for participatory approach in water management. It mentions:

“Management of the water resources for diverse uses should incorporate a participatory approach by involving not only the various governmental agencies but also the users’ and other stakeholders, in an effective and decisive manner, in various aspects of planning, design, development and management of the water resources schemes. Necessary legal and institutional changes should be made at various levels for the purpose, duly ensuring appropriate role for women. Water Users’ Association and local bodies such as municipalities and Gram-Panchayats should particularly be involved in the operation, maintenance and management of water infrastructures/facilities at appropriate levels progressively, with a view to eventually transfer the management of such facilities to the user groups/local bodies”

In order to put the policies into practice the need for a legal framework was felt. Irrigation being a state subject, the Union government wished that the State governments should either amend their old irrigation acts or should come out with new laws on Participatory Irrigation Management. To assist the states in framing the laws Ministry of Water Resources came out with a model law. Different states in India like

Andhra Pradesh, Assam, Bihar, Chhattisgarh, Goa, Madhya Pradesh, Karnataka, Orissa, Rajasthan, Sikkim Tamil Nadu, Kerala and Uttar Pradesh have enacted new acts or amended the old ones.

The model act and the enactments in the different states provide for creation of different farmers organizations like the Water Users Association (WUAs), Distributary Committee and the Project level committee at different levels of the project to take charge of irrigation systems at different levels. These organizations at different levels are expected to be actively involved in: (i) maintenance of irrigation system in their area of operation; (ii) distribution of irrigation water to the beneficiary farmers (iii) assisting the irrigation department in the preparation of water demand calendars and collection of water charges; (iv) resolve disputes among the members and WUA; (v) monitor flow of water in the irrigation system etc.

PIM IN THE EASTERN STATES

Different states in eastern India namely Odisha, Bihar, Jharkhand and West Bengal took to participatory irrigation management from the nineties. All these states barring Jharkhand have special enactments/amendments to provide the legal teeth to participatory irrigation management.

Provisions in the policy and enactments

State-wise Position of Enactment of New Act/ Amendment of existing Irrigation Act:

Name of State	Amendment of Irrigation Act/ New Act
Bihar	“The Bihar Irrigation, Flood Management and Drainage Rules, 2003” under the Bihar irrigation Act, 1997
Odisha	Enacted “The Orissa Pani Panchayat Act, 2002”.
West Bengal	West Bengal Accelerated Development of Minor Irrigation Project, 19 th March, 2012
Jharkhand	State Water Policy, 2011

Status of PIM

State-wise Number of Water Users’ Associations (WUAs) and Area covered by them:

Name of State	Number of WUAs	Area covered
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	formed	('000 ha)
Bihar	80	209.47
Odisha	18989	1692.60
Jharkhand	NA	NA
West Bengal	10000	37.00

Source: Planning commission

BIHAR

State Water Policy, 1993 lays down the basis of Participatory Irrigation management in the state of Bihar. It mentions - "Water users' associations will be formed by the state government for taking beneficiaries' cooperation in the construction, maintenance, and water rate collection for village channels and sub-channels. An attempt will be made to ultimately hand over all the above mentioned activities to the beneficiary farmers' organizations. The government will consider making a portion of the collected water rates available to the water users' associations so that such association will become self-sufficient. In the beginning, these activities will be undertaken in the Sone, Gandak, Kosi, Chandan, and Badua commands. Thereafter, it will be spread throughout the state in a planned manner".

The Status Paper on PIM (Bihar) has clearly spelled out the rationale for taking up Participatory Irrigation Management in Bihar. It says "the existing irrigation system was breaking down and that urgent remedial action was called for - that the person having the maximum stake in the proper management of irrigation water, namely, the farmer must have participation in the management of irrigation system".

The Bihar Irrigation Act, 1997, clause 46(1), says "the government may transfer any government distributary, minor or water course to the water user associations formed by the beneficiaries or to a group of persons who may be considered fit by the government to be owner of the said channels for their maintenance and operation". The Act also assures adequate water supplies to WUAs through clause 46(2): "in case the management of distributary, sub-distributary or minor is handed over to the WUA, the WUA shall be supplied with authorized discharge at the head regulator of such channel. The executive engineer will ensure that the water so supplied will be in proportion to the area to be irrigated from that channel".

Main objectives of PIM in Bihar

1. To initiate participation of farmers in water management, irrigation scheduling, distribution and maintenance of system at micro level so as to:
 - i). improve irrigation as well as water use efficiency or optimal production per unit volume of water; and
 - ii). make the best use of natural precipitation and groundwater in conjunction with the canal water for increasing irrigation and cropping intensity in the command”.
2. To develop a sense of economy in water use amongst the users
3. To facilitate the users to have a choice in selecting crops, cropping sequence, timing of water supply and period as well as frequency depending upon the soils and availability of water, climate and other infrastructure facilities available in the commands such as roads, markets, cold storages etc., so as to maximize the incomes and profits.
4. To delineate responsibility of water distribution and maintenance of system between the users and the department for attaining high serviceable standards of the system.
5. To promote equity amongst the users both relating to allocation and actual supply of water.
6. To facilitate resolution of conflicts among farmers.
7. To entrust collective and community responsibility on the farmers to collect water charges and payment to government.
8. To improve and sophisticate deliveries precisely as per crop needs by the department at the supply points of the minors and thus reduce operation losses.
9. To create healthy atmosphere between the managers and users in the entire operation.

Bihar has introduced the Bihar PIM model in 2005. This was based on the guidelines prepared for implementation of participatory irrigation management (PIM) by the Water Resources Department in the year 2000. The Model basically suggested to bring in organizational changes both at the state and lower level to implement PIM in the state. It has a two tier structure of a) state organizations and b) farmer organizations. In the State level organization a PIM Cell is headed by a superintending engineer. The cell is supposed to make annual as well as a perspective plan for PIM in the state and implement the same in an effective manner. At the state level there is a steering committee headed by the Chief Secretary. In addition, there are a) PIM advisory committee to advice PIM cell, b) WALMI, to provide capacity building of stakeholders,

c) PIM Unit at the chief engineer level, and d) Field implementation team (FIT), at user's level.

Each Farmer Organisation (FO) comprises: a) Village irrigation committee (VIC) wherein, every water user of the village is a member. B)The executive committee of the VIC comprises of 5 to 11 members through election; this executive committee is responsible for proper management of the area under it.

Till March 2012, a potential of 28.92 lakh ha has been created through 15 major & 78 completed medium schemes. Apart from this there are also 10 major & 3 medium on going schemes in the state of Bihar. Till date the process of management transfer is under process for 622 Irrigation systems in Bihar. Nearly 150,000 ha have been transferred to 46 WUAs under PIM programme, and another 15 WUAs are registered and in process of transfer. Other 31 WUAs have filled application form for registration in the office of Inspector General, Registrar. WRD, Bihar is planning to transfer 50% of the created irrigation potential, i.e., nearly 13 lacks ha of command area under PIM.

Issues and concerns

- Before handing over of the system to the Water User Agencies (WUA) the systems are not rehabilitated to its original shape. Silting, canal breaches, broken outlets etc are the major problems. As the system is not in proper shape the WUAs can not function effectively.
- In the absence of proper maps of the irrigated area the irrigated area keeps on changing with every season posing a whole lot of problem for the WUAs.
- Poor recovery of water cess by the WUA has been posing major financial problems for them. From the estimated cess the WUAs have to pay 30% share to the Water Resources Department. Most of the times the WUAs pay most of the collected money or even have to pay from their own pocket to the government.
- The WUAS are left with no money for the maintenance.
- High establishment cost for the WUAs in the initial years puts strain on the farmers' organization.

- The WUAs have to maintain as many as 16 records which is a major botheration for them.
- The designed and actual irrigated area do not match due to lack of land records and non-availability of system records with the WUAs;
- WUAs are not fully empowered to levy any penalty for non-payment of water fees.
- There is an urgent need for capacity building opportunities at various levels. Capacity building of the farmers and the functionaries of the FOs should be carries out at least once in a season.

JHARKHAND

The Geographical area of Jharkhand is 79.72 lakh ha. The state of Jharkhand has a total cultivable area of about 29.74 lakh ha. Ultimate Irrigation Potential could be created is 24.25 lakh ha of cultivable area in the state. As per assessment of 2nd Bihar Irrigation Commission Irrigation Potential to be created through Major & Medium Irrigation Projects is 12.765 lakh ha. & rest Potential to be created through Minor Irrigation Projects.

Jharkhand is yet to come out with special legislation or amendment to existing legislation to facilitate participatory irrigation management. But it has spelled out its intentions on PIM through the Water Policy that was promulgated in 2011- Jharkhand State Water Policy 2011. It says that for achieving optimal utilization of existing irrigation potential created so far, the renovation and maintenance of all such projects through WUA/ federation of water user associations to the extent possible will be the priority of the State. The policy also says

“7.3 Water Users’ Participation in Planning, Development and Management of Water Resources

Water users, through their recognized organizations or service providers, shall have increased responsibility and be empowered to participate effectively in water resources planning and development, the operation and maintenance of water infrastructures and facilities and to manage their entitlement to water.”

The policy has the following things to mention about farmers, management of irrigation systems

“7.3.1 Farmers’ Management for Irrigation System

Farmers’ participation, through their Water Users' Association, in irrigation management shall be made mandatory and it is intended that water will be allocated, supplied and charged on volumetric basis to Water Users’ Associations (WUAs) only. The irrigation system shall be managed through WUAs as per provisions made in the appropriate act / administrative orders. The women’s participation in the irrigation management shall also be ensured. WUAs will hold a bulk entitlement to water use on behalf of their members and manage and distribute their bulk entitlement. These WUAs shall maintain all irrigation infrastructures up to the distributory level within their jurisdiction and will be federated at the project level. The federation will be responsible for operation and maintenance of canals, structures and other facilities created in the project. Panchayati Raj Institutions shall be involved in the management and conservation of traditional water sources to cover the work of minor irrigation.”

ODISHA

Odisha Government has been promoting participatory irrigation management since late 1990s. A massive interest in farmers’ participation in water management has been demonstrated in Odisha. World Bank funded Odisha Water Resources Consolidation Project (OWRCP) had this component of Farmers Organisation and Turnover (FOT), i.e. involvement of farmers in irrigation management.

FOT actions largely involve processes through which tertiary segments or downstream parts of the canal system such as minors and sub-minors are handed over to beneficiary farmers for their operation and maintenance by forming Pani Panchayats or WUAs. The main purpose of the FOT programme was to entrust responsibility to farmers through the formation of PPs or WUAs. The responsibilities of the PPs include the collection of water rates, distribution of canal water among water users, operation and maintenance of canal at lower level such as minor, sub-minor, and distributory level.

PIM in Odisha is a three-tier system with two informal associations and one formal association on hydraulic boundaries ranging from 300 ha to 600 ha. of command area. At the lowest level, a Chak Committee is formed taking three farmers, one each from the head; middle and tail reach of the ayacut of an outlet. A representative, called the chak leader of each of these chak committees, is an executive member of the PP. The President, Vice-President, Secretary and Treasurer of the PP or WUA are elected from the executive body of the concerned PP. All the water users are members of the general body of the PP. At the project level, a federation of all WUA is established. This body is

called the Apex Committee and has a formal but non-binding advisory role in operation and maintenance of the system. The executive members of the Apex Committee are elected from the Presidents of all WUAs within the command area.

In, Odisha PIM, covers all the irrigation projects of the state. The Orissa Pani Panchayat Act, 2002, is the facilitating tool for farmer participation. The first step made in this process of reform was handing over a part of the network of the canal system/irrigation for its Operation and Maintenance (O&M) to the farmers or the beneficiaries through '*Pani Panchayat*' or WUAs. The utility and benefits of PP have been demonstrated by Water and Land Management Institute (WALMI) to the farmers. Farmers are given suggestions on minimizing maintenance work for ensuring free flow of water up to the tail reaches. They are also helped in organising water distribution within their jurisdiction, resolving disputes, if any, and adopting their own crop planning etc. The PPs were registered as legal bodies to provide them with the required legitimacy and identity.

The state has a cultivable land of 61.65 lakh hectares. It has been assessed that, 49.90 lakh hectares can be brought under irrigation through major, medium and minor (flow & lift) irrigation projects. Many major, medium and minor irrigation projects have been constructed in the state during the last six decades, thereby increasing the net irrigation potential from 1.83 lakh hectares in 1951 to 30.15 lakh hectares in 2011. However, these claims are refuted repeatedly by experts, farmer organizations and various Water User Associations (WUA's). There exists a very large gap between potential created and utilized. Coverage of most of the irrigation structures is shrinking.

The concept has finally led to the transfer of tertiary irrigation networks (Minor/ Sub-minors) to registered '*Pani Panchayats*'. The responsibility of operation and maintenance (O & M) of the reservoir/ diversion weir (as the case may be) dam, spillways, sluices, primary and secondary distribution networks, rests with the Department of Water Resources (DOWR), while the responsibility of 'O & M' of the tertiary systems (below minor/sub-minor) is with PPs. The geographical extent of the programme covers the entire state comprising about 18.25 lakh hectares of Major, Medium & Minor irrigation command areas spread in all 30 districts of Odisha.

Status of PP in Odisha

- Construction of field channel and field drain of 43224 hectare has been carried out by 487 nos. of Pani Panchayats by 2009-10.

- Crop diversion & crop intensification is gradually increasing in the command area.
- 17803 Pani Panchayat have already been formed by conducting election out of 19551 targeted Pani Panchayats.
- 15596 nos. of farmers belonging to Pani Panchayats were trained during the year 2009-10.

Issues and concerns

- Implementation of the idea has never really taken off. Pani Panchayat (Participatory Irrigation Management) functionaries have hardly gained ownership over the total processes and installations. Rather, partial transfer of responsibility is being seen as shifting of difficult burdens like water cess collection to the farmers. Transfer of management control has not happened at the top and middle level which is still controlled by department engineers.
- Proper processes were not followed while the Pani Panchayats were formed. Involvement of many organizations on a piecemeal basis has subverted the process.
- In many places the systems were not rehabilitated properly before the system was handed over to the PPs though this was a precondition. As a result the PPs have not been able to function effectively with such systems. As it has been mentioned in the records (in many cases) that the system has been rehabilitated, there is also no chance of the PPs managing to get funds for system rehabilitation or getting it done by the department.
- While a few Pani Panchayats have been very successful, they have got all the attention of the government and there has not been much of an effort on the part of the government to understand the issues as to why majority of PPs are not successful and what are the remedial measures to be taken.
- There has not been much perceptible change in irrigation efficiency. The head end tail end problem still continues. Now the rotation system has only ensured that all the farmers get water in turn.
- There has not been any real cause for the improvement of irrigation efficiency as the cropping pattern has not been changed. It is all paddy in the command area.

The efforts by the government to bring in change in cropping pattern has not met with much success due to lack of forward and backward linkages.

- Pani Panchayats in lift irrigation systems have been more efficient as they are smaller in size and have the control over water.
- Most of the Apex level Pani Panchayats have been the victim of elite capture. The benefit of subsidized agri-equipment and other input subsidies does not reach the farmers.

West Bengal

In West Bengal the Panchayats play a key role in participatory irrigation management. According to the Section 20 of West Bengal Panchayat Act, 1973, irrigation including minor irrigation, water management and watershed development are activities that the panchayat shall have to perform but subject to devolution by the state Government of West Bengal. While minor irrigation and watershed management has been devolved to the Panchayats, irrigation pertaining to canals has not been devolved legally to the panchayats. The panchayat even does not have the right to perform repair and maintenance of the canals.

GENERAL CONSTRAINTS IN IMPLEMENTATION OF PIM

Lack of legal back up and policy changes:

For the actual irrigation management transfer and operation of PIM in an irrigation project, policy changes and legal back up are essential. In some of the eastern India states there is no or very little legal back up and clear-cut policy decision at the Government level to take up PIM. It is a big impediment in implementation of PIM. As for example Jharkhand is yet to come out with clear legislations to take up PIM. Similarly while the Panchayats are bestowed with the responsibility of managing irrigation, in reality this power has not been devolved properly. Hence, the Panchayatiraj institutions are not in a position to carry forward the mandate of PIM.

Legal provisioning is also important for distribution of required quantity of water at minor / distributary take off points, taking up correction of system deficiency, claim to get the maintenance funds proportionate to its portion transferred to associations,

collection of water charges and retaining some portion of it for WUAs functioning, fixation of water rates, incentives to farmers, resolution of conflicts etc. Clarity on legislation is also required in certain States.

Non-rehabilitation of the System

The existing systems that has deteriorated over years not in a condition to function as per its designated uses. Deterioration of old control and measuring structures, leakages and seepage at various places, erosion of banks, beds, siltation and weed infestation, opening up of the canal outlets by farmers etc. These problems, unless addressed hinders the farmers' organizations to effectively manage the systems. Organizations, just being introduced to operation and management are not in a position both on technical and financial front to take the challenge of a old dilapidated system and function effectively. While as per the provisions in some of the states systems need to be restored to the original condition (as it would have been at the time of construction) before handing over. For example in Odisha in many places the systems were not rehabilitated before handing over and as a result the Pani Panchayats have not been very effective in managing water in these cases.

Mismatch between water demand and supply

Delivery of water in the canal/irrigation points need to be reliable so that the farmers can plan particular crops. There also should be an element of flexibility so that the farmer organization could meet the requirement of all the farmers who are not able to follow the calendar perfectly. At the same time the water supply in the canals should be as per the practical requirement of the farmers. This is another important aspect, as farmers will understandably be reluctant to take on the responsibility for managing the system unless deliveries of water are made as per the requirement of the farmers. The engineers on their part may not be confident about ensuring supply of the requisite quantity of water to the WUAs, as would be obligatory in terms of the MOU signed between Irrigation Agency and WUA. There is need for better coordination between the farmer organizations and the irrigation department supplying water.

Head-end tail end conflict

The farmers who have their holdings at the head of the canal tend to appropriate more water than required, whereas the farmers at the tail end often fail to get their

legitimate share of water. Head-enders, therefore, have vested interest in continuing the existing arrangements. The tail-enders may not be keen to form WUAs as water supply in such areas remains inadequate and erratic and they remain apprehensive that the situation will not be materially altered if an association is formed. These differences in perceptions and conflicts of interests inhibit the coming together of head end and tail end farmers.

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Fear of financial viability

Maintenance and operation of the system demands huge finances. Farmers have got the apprehension that in absence of surety of finance, it would be difficult for them to fulfill the requirement of funds for operation and maintenance. They feel that when Government is not able to handle the system with huge money available with them, how farmers would be able to do justice?

Lack of technical knowledge:

Apart from the financial uncertainty, lack of technical input is one of the inhibiting factors to take over the system. When Government, having such qualified and senior Engineers, finds it difficult to manage the system, how untrained and uneducated farmers would be able to take up such a highly technical operation and maintenance work of big irrigation systems.

Lack of leadership:

On account of limited exposure of the farmers to the rest of the world and PIM in particular, potent leadership is lacking, rather on account of limiting knowledge. At times so called local leaders give the negative or unclear version before other farmers which further create misunderstanding among the farmers bringing them sometimes into a fix.

Lack of publicity and training:

Seeing believes; and knowledge brings confidence in people. This aspect is lacking and there is a constraint to adoption of PIM.

Demographic diversity:

Due to variation in economic, ethnic, education levels etc. diversity of farmers, PIM is taking much time in this country. To handle this aspect deep study, analysis and solution need be found out.

Mega irrigation projects:

In India, there are huge projects having very large distribution system and culturable command area sometimes more than 20 lakh hectares. Larger the project, complex would be its maintenance, operation and management aspects and so the formation and functioning of farmers associations for different necessary activities.

WUAs v/s Panchayats:

In many of the areas, where WUAs have been formed, there is a clash of interest among Panchayats and WUAs on who is to own the system, particularly when watershed schemes are being handed over to the Panchayats.

FUTURE PROSPECTS

It has now been realised that without active participation of beneficiaries, the irrigation systems cannot be managed efficiently. The experience shows that wherever farmers have been actively engaged, the overall management of irrigation system and the water use efficiency have significantly improved. The legal framework, which has been established in various States, will ensure systematic involvement of beneficiaries in the management of irrigation system at various levels. There has to be however, a provision for adequate financial support to these organizations to carry out their responsibilities. The PIM acts of various States do have provisions for the financial management of these associations.

- i) grants and commission received from the State Government as a share of the water tax collected in the area of operation of the farmers' organization;
- ii) such other funds as may be granted by the state government and Central Government for the development of the area of operation;

- iii) resources raised from any financing agency for undertaking any economic development activities in its area of operation;
- iv) income from the properties and assets attached to the irrigation system;
- v) fees collected by the farmers' organization for the services rendered in better management of the irrigation system;
- vi) amounts received from any other sources; and
- vii) investment of private sector in distribution and ancillary/extension services.

Rationalisation of Water Rates:

In several states the water rates have not been revised for a long time. Consequently the revenue collection is too meager to maintain the irrigation system. The Vaidyanathan Committee (1991) of the Planning Commission on pricing of irrigation water mentioned that on an average the revenue collection was Rs. 50 per ha as against the O&M requirement of Rs. 250 per ha. Thus, there is a dire need for rationalization of water rates so as to meet the expenditure on account of O&M of the system. Many of the States have already revised the water rates.

CONCLUSION

After crossing couple of years of this participatory approach, it means that this decentralised collective action and participatory management of resources as a concept is no longer on trial, there is a need to work out the necessary conditions for its success. Many multilateral agencies like World Bank, Asian Development Bank, European Economic Community, USAID, Ford Foundation and other agencies have supported action research Programmes in different parts of the India which make available the foundation for operationalisation of the notion of PIM. The National Water Policy, 1987, emphasized the participation of farmers in different aspects of the management of the irrigation system, principally in water distribution and collection of water rates. The Vaidyanathan Committee on Pricing of Irrigation Water suggested farmers' participation in the management of irrigation systems. . A separate Working Group on PIM was set up by the Planning Commission to re-examine and recommend strategies for the Ninth Five Year Plan, where the legal, financial, and institutional

factors were recognized as vital to the successful implementation of PIM programs. According to the Mid-Term Appraisal of the Ninth Five Year Plan, the progress achieved so far in PIM, in improving water-use-efficiency, is rather low. The irrigated area transferred to WUA in India is only about 7% only.

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Multi-stakeholder consultation on Ground Water and Participatory Irrigation Management

A consultative workshop on Ground Water and Participatory Irrigation Management was held on 11th December 2013 at Hotel Seetal. The workshop was organized by Eastern Zonal Water Partnership and Odisha Water Forum. It was a part of the program of India Water Partnership.



Mr. Kailash Dash of RCDC chaired the meeting. Tapan Padhi welcomed all the participants and stated the workshop objectives. At the outset he briefed the house about Integrated Water Resources Management, the mandate of Global Water Partnership and the initiatives being taken by India Water Partnership. Tapan made a quick presentation on ground water based on the draft report circulated that was followed by an open house discussion. The participants opined that the Ground Water Acts in different states were enacted before the 2011 Draft Ground Water Bill came into being. Again the Draft National Water Framework Bill was not under circulation. As both the draft Ground Water Bill and the framework bill are a quite accepted document that is in line with the Planning Commission perspective, the desk review

should re-casted in this context only. Rather than finding out the deficiencies and water are desired for each of the state, he report also should identify the areas where the existing laws are deficient or has a departure from the 2011 draft ground water bill. Accordingly an action plan also should be prepared to influence these states namely Odisha, Bihar and West Bengal to come out with new legislation. In case of Jharkhand, that is yet to come out with a ground water act, effort should be mounted to see to it that the spirit and content of the Draft Ground Water Bill, 2011 is retained in this Bill for sustainable ground water governance. Ownership, participatory governance, taking proactive measures to ensure the ground water quality should be



some of the non-negotiable for ground water legislation.

During the post lunch session after the presentation on the state of Participatory Irrigation Management in the Eastern Partnerships states the issues around participatory irrigation management was discussed. It was agreed by the participants that there is a need to take up interventions on this front in the eastern states. But that warrants a robust partnership which requires a lot of works that need to be done on this front. A plan of action was agreed upon by the participants that included critique of the statewise ground water reports and the gap that it has with the present thinking on ground water and advocacy through media to

bridge the gap. The house also came out with an action plan to strengthen the eastern zonal water partnership to carry forward the work of ground water and participatory irrigation management. The following decisions were taken by the house

RESOLUTION

After day long discussion on ground water, Participatory irrigation management and various other issues confronting the water sector participants present in the consultation agreed to the following decisions.

There are serious challenges in the water sector, be it ground water, irrigation or drinking water and sanitation. But, the civil society response to these challenges and engagement with the State for policy and practice changes has not been adequate. Though the efforts of Eastern Zonal Water Partnership and Odisha Water Forum have been consistent in keeping the civil society, institutions, water bureaucracy and the policy makers informed, these have been too few and far between. There are genuine issues with these networks, still the present situation does not allow any further delay in respond to the emerging challenges. So the participants present there collectively decided to act with whatever capacities and resources they have or can mobilize.

1. A booklet on ground water need to be prepared both in English and Odia (to begin with, but later need to be in other vernacular languages in other states) that will emphasize on the status of ground water in the state of Odisha and the issues associated with it for circulation among a larger audience to garner support on the issue and build pressure on the government. At a later stage this initiative should be expanded to other states as well. Such a booklet will contain
 - a. Ground water resources on Odisha/State
 - b. Extent of development of ground water and what are the issues associated with it like access, quality, competitive use, saline ingression etc.
 - c. Various case studies on conflict on ground water and how the interest of the common users are violated for the powerful corporates or powerful groups
 - d. Ground water legislation and its critique
 - e. Role of the communities for sustainable use of ground water.
2. Influencing the ground water legislation: To influence the ground water legislation the following action points have been agreed upon
 - o Developing a critique on GW legislation both in English and Odia that could be understood by the common people, for wider circulation
 - o Developing a memorandum for the policy makers
 - o Write or generate articles for the media

- Intervene into the process of developing election manifesto to incorporate the concerns about ground water
- 3. It was agreed that the Eastern Zonal Partnership need to be strengthened and energized to take up the issues on water. But, with the present structure of the partnership, it is not very convenient for the partners to meet and take up a collective action. So the stress should be on strengthening the partners as per each state and once the state units are strengthened their individual as well as collective actions will no doubt strengthen EZWP and its interventions will be effective. With the present state of resources available, it was decided that the Odisha Water Forum will be energized at the beginning without waiting for any external support. This initiative will build on the resources available with the members. Once a beginning is made with the Odisha partners, later on it will be tried in other states.
- 4. All the members of the group present in the consultation agreed that they will be in communication with each other over email at least once a week on WEDNESS DAY
- 5. All the participants present agreed that they will meet at least once every month to discuss on different current as well as emerging issues on water. For every meeting the dates and the themes will be decided in advance and the members will come prepared to have detailed discussion on the issue.
- 6. The discussion on various issues will be documented, converted into small write ups and circulated among a larger group so that those who have not been a part of the discussion also benefit from this.
- 7. Effort will be on to initiate new members interested in water issues into this monthly meetings.
- 8. Ways and means for constant engagement with the government has to be found out.
- 9. The forum will gather evidence and get into evidence based advocacy on various issues. A plan that includes ideas, Resources and Responsibility will be developed soon.
- 10. The members felt that the water related issues need to be discussed at the district level. It will help in understanding the water issues in the state in its totality, identify organizations and individuals engaged with the local issues and also inform them about the larger context and what is happening at the macro level.
- 11. The need for building the capacities of the organizations and individuals in a systematic and sustained manner was underlined by the group. It was decided to find ways and means to carry it forward.

12. The group strongly felt that sporadic engagement with the issues in water sector will not be helpful in meeting the challenges. There is a need for a systematic, sustained effort for it. For this to happen the following things need to be ensured
- a. Within a span of one year at best, alive and kicking network of the civil society organizations, individuals, water bureaucracy should be in place to meaningfully engage with the issues.
 - b. The forum should have a common shared understanding on water issues in the state in its totality.
 - c. The forum needs to come out with a three year intervention strategy by the end of one year that it takes to prepare itself properly.
13. This action plan and a tentative budget should be shared with the Odisha Water Forum in a meeting within two weeks so that the OWF also takes to call to strengthen itself and mobilize resources to engage with the water issues in the state in a meaningful manner. Tapan Padhi was entrusted with the responsibility of developing a tentative budget, sharing it with the members present in the meeting and then facilitating the meeting with the core group of OWF.
14. The decisions in the consultations need to be shared with the core members of Eastern Zonal Water Partnership and be carried forward.

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