



Lead Piece

Maharashtra gifts farmers' water to industries

Between 2005 & 2010, a High Powered Committee was constituted by the Maharashtra Minister for Water Resources which recommended the diversion of 1500 MCM water from 38 dams across Maharashtra to cities and industries. This resulted in 262 503 ha land being deprived of irrigation.

An appeal was made against this illegal and non transparent decision in the court as well as the MWRRRA, through its Appellate Authority. However, the court decision was postponed for a number of reasons and before it could finally come out, the Water Resource Dept issued 'Maharashtra State Ordinance 11: For Modifications in the MWRRRA Act' on 17 Sept 2010.

This ordinance aimed at modifying the fundamental clauses of the MWRRRA on which the appeal was based, and thus made it ineffective. According to the MWRRRA Act, MWRR Authority holds the power to approve of any inter-sector water transfer. However, the introductory note to the Ordinance states that the "this ordinance has been brought about to clarify the roles of Sate Govt and MWRRRA on which certain questions have been raised. State Govt has always held the right to distribute water amongst different sectors, and only after this distribution will the MWRRRA decide the criteria for issuing water use rights."

This is totally against the MWRRRA Act. In the introduction of MWRRRA, it has been stated that it holds power to distribute water equitably. In section 11 (C) of the Act too, it has been stated that MWRRRA has the power to undertake inter sectoral distribution of water. It seems the ordinance has been introduced to nullify the legal challenge to the arbitrary decisions of the state.

This ordinance, specially tailored for allowing siphoning of water from the farmers to the industries & cities, has faced opposition from various quarters. At Hetawane & Surya dams, farmers organised workshops & protests against this. In Nagpur, during the winter session of the assembly, a farmers rally was organised.

In response, a meeting was arranged with the Chief Minister, Deputy CM (who is now the Minister for Water Resources) & other Ministers. Many Ministers opposed the ordinance & it could not be presented before the assembly for its winter session. Looking at the opposition, any democratic govt would promptly cancel such ordinance. However the Maharashtra Water Ministry played one more dirty trick on farmers. On Jan 11, 2011 it cancelled the original ordinance claiming that it has lapsed and a new ordinance has been drafted, with just a few minor changes and submitted to the Governor for his signature.

While it generally takes nearly a week for the Governor to approve an ordinance like this, this ordinance was signed and approved on the same day as the cabinet meeting! When the news that this ordinance has been passed hit the newspapers, the Ministers for Water Resources and Agriculture stated that they are on the farmers sides and oppose the transfer of water from farmers to industries. One wonders where these Ministers were when the ordinance was passed or when the decision to divert water was taken. Why did they not oppose it then?

Through the current ordinance, farmers have lost the water that has been robbed from them in the past by industries/cities as these will now get legal permissions for the share they are using. No new appeals can be made by the farmers on this transfer. Past cases/ appeals regarding this will also be closed. The new ordinance has cancelled clause 1 (c) of the MWRRRA, the one binding clause which potentially supports 'equitable water distribution'.

Many civil society and farmers organisations have vehemently opposed this move and have said that if the ordinance is not cancelled before the 15 March, 2011, a state wide protest will be launched.

In keeping with the industry and city friendly nature of this ordinance, already over 22 million cubic meters of water from the Khadakwasla reservoir which supplies drinking water to Pune and water for irrigation to the downstream, is being siphoned off by private players with help from the state govt. "This is nothing short of dictatorship, as it violates the constitutional rights of citizens." says Bharat Patankar of the Shramki Mukti Dal. (Press note issued by Prayas 100211, Pune Mirror 100211, Personal communications)

Parineeta Dandekar

INDEX

Maharashtra gifts farmers' water to industries	1
CIC orders CWC to disclose backwater studies in public interest	2
Bihar Success Story in System of Crop Intensification	3
Bihar Floods, Breaching Embankments and Suppressing Information	8
A Review of Krishna Water Disputes Tribunal-2 Report	10
Climate Change in Jharkhand: Extreme rain deficit	13
SC Slams Govt on Gosikhurd rehabilitation	14
Sardar Sarovar will take 176 years: Gujarat MLA	16
Below 16% allocation for Artificial Recharge of Groundwater could be spent	17
Corruption in Kulu HEPs: Officers under scanner	19
Successful Participatory Irrigation Development in Vidarbha	20
Communities construct their own canals	21
High Court: Limit withdrawal to 50% from rivers	22
UN: Eco-Farming Could Double Food Output	23
Chhattisgarh proposal for River linkage: For private benefits?	24
Chhattisgarh: Bogda dam sold for Private TPS?	25
Kerala law to hold Coke accountable for the damages in Plachimada	26
China water crisis and why dams wont help, but could worsen the crisis	27
US: Dangers behind Aging Dams	30
European Parliament asks World Bank not to fund big hydro, big dams	31

Central Information Commission Rejects CWC stand on keeping the back water level study secret**CIC orders CWC to disclose the Almatti study in public interest**

In a significant order for transparency in water resources information, the Central Information Commission has asked the Central Water Commission (an Attached office of the Union Ministry of Water Resources) to disclose the back water level study of the Almatti and Hippangi Reservoirs on Krishna River in Karnataka in public interest under the RTI act. The CWC had earlier refused to make the report public claiming that the information is of commercial confidence under section 8(d) of RTI Act, 2005.

In a significant order for transparency in water resources information, the Central Information Commission, following an appeal by SANDRP, has asked the Central Water Commission to disclose the back water level study of the Almatti & Hippangi Reservoirs on Krishna River in Karnataka in public interest under the RTI.

In its order dated Feb 8, 2011 (see CIC website at: http://www.rti.india.gov.in/cic_decisions/CIC_SS_A_2010_000488_M_51725.pdf and on SANDRP website at: http://www.sandrp.in/dams/CIC_Order_Backwater_Studies_080211.PDF), following an appeal by South Asia Network on Dams, Rivers & People, the CIC has rejected this contention of CWC. We hope this helps the CWC and MWR move towards greater transparency.

The relevant portions of the CIC order says, "The Commission is of the view that there is no question of intellectual property or commercial interest of anybody and therefore section 8(1) (d) of the RTI Act is not applicable in this case... The Commission agrees with the contention of the Appellant that disclosure of this information is in the public interest. Moreover, the disclosure of this information would promote the cause of transparency and accountability which is the basic objective of the RTI Act."

In a shocking revelation, the CWC, in response to the RTI said that CWC, which calls itself India's premier technical body on water resources development, has no guidelines on assessment of backwater impact or backwater level studies of dams. CWC happens to be the apex technical body in water resources & all major water resources projects are recommended for techno economic clearances based on its recommendations & the Planning Commission provides investment clearance only after approval of such techno economic clearances.

India has over 5100 large dams and each of such dams has backwater impacts. The backwater impacts of larger projects like Almatti, Polavaram, Sardar Sarovar and Indira Sagar can affect thousands of people. In that context, for the CWC to acknowledge that it has no principles or guidelines for assessing backwater impacts reflects miserably on the state of affairs in water resources development in India. In the hearing before the Central Information Commission, the CWC officials

argued that they only assess the backwater levels and not backwater impacts.

This is a disturbing revelation. The CWC is supposed to comprehensively scrutinize the proposals for dams that come before it before it accords Techno Economic clearance. CWC also has a section on social and environmental issues. Hence CWC must assess the backwater impacts of all projects that it scrutinizes. It must have clearly defined

guidelines for assessment of the backwater impacts. In the context of climate change, this becomes even more important, considering that the frequency and magnitude of high intensity floods is likely to increase in the context of climate change.

SANDRP had sent the press release to the CWC chairman and other concerned officers before it was sent out to media. In the response sent by CWC (No. 2/18-RTI/ RMCD/2011/76-79 date Feb 24, 2011, from Shri M S Dhillon, Director, RM Coordination Directorate) to SANDRP, CWC did not deny any of the contention of SANDRP. Only on the question of not having any guidelines for backwater impacts, the CWC response stated, "In this regard, the undersigned has been directed to inform you that CWC is actively involved in framing/reviewing of BIS Codes in the field of water resources development and the same are also being reviewed by CWC from time to time. The relevant BIS Code i.e. BIS: 11223 – 1985 (Guidelines for fixing Spillway Capacity) was prepared with active participation of CWC and the same is being followed in carrying out back water level studies of dams. Hence, No separate guideline was published in CWC."

A quick review of the BIS 11223-1985 shows that the code was formulated in 1985, full 26 years ago. There have been many developments in methods of estimation of floods and backwater impacts. Secondly, this BIS code provides *Guidelines for fixing spillway capacities* not for assessing backwater impacts, there is nothing in this BIS code about guidelines or norms for assessing backwater impacts. The contention of the CWC even on this count is wrong.

The CWC & the Union Ministry of Water Resources are known for their non transparent, non participatory & unaccountable functioning. We hope the water resources establishment will use such opportunities to bring in more open, inclusive and participatory way of functioning.

SANDRP

Bihar success story on System of Crop Intensification

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Bihar Rural Livelihoods Project The Bihar Rural Livelihoods Project, locally known as JEEViKA is being implemented by Bihar Rural Livelihoods Promotion Society (BRLPS), an independent Society under the Department of Finance, Government of Bihar. The objective of the project is to improve livelihoods of the rural poor through social and economic mobilization and enable them to access credit, assets and services such as social safety nets from public and private sector agencies, including commercial banks. The project is being implemented across 55 blocks in 9 districts (Gaya, Nalanda, Muzzafarpur, Madhubani, Khagaria, Purnea, Supaul, Madhepura and Saharsa).

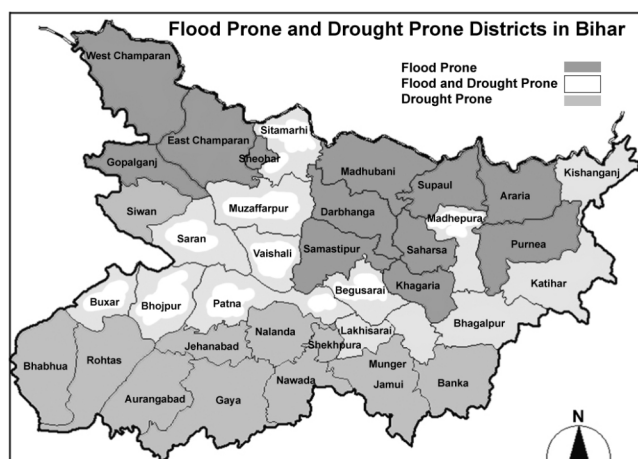
Agriculture Context in Bihar Agriculture is the core of Bihar's economy contributing 35% of state's GDP and employing nearly 75% of the labour force. Given that 88% of the State's poor live in rural areas, growth in agriculture is the key to improving livelihoods and reducing poverty.

Low Size of Landholdings and Prevalence of Lease farming In Bihar, 70% of poor households are small and marginal farmers. Their average landholding ranges from 0.07 to 0.22 ha & usually with no irrigation. A significant proportion of households who are landless, either take land on lease or practice sharecropping for getting their staple food i.e., paddy. The option of a second crop i.e., wheat or pulses will depend on assured irrigation facility or better residual soil moisture availability, if it is a normal rainfall year. Depending on the family size, the present landholding pattern can only provide food security for 4-5 months.

Input Constraints Availability of good quality seeds is typically a big constraint faced by the small and marginal farmers. The prevalence of fake seeds is rampant. Even in district towns, it is difficult to find well stocked good quality seeds and fertilizer stores. Most of the farmers are using the grains of the previous year to sow their crop (seed replacement rate is nearly 30% in paddy & wheat, 17% pulses, 50% oilseeds & 85% in maize) and most of the existing varieties used are over 15-20 years old. With the inadequate government extension machinery, farmers have no access to problem-solving services. Lack of availability of institutional credit for agriculture and poorly developed water and land resources also contribute negatively for the low productivity of agriculture.

Frequent occurrence of Flood and Drought The state experiences flood and drought very frequently. While North Bihar suffers from floods almost every year, about 33% of the area in the state (mostly South Bihar) receives less than 750 mm of rainfall placing Bihar in the category of chronic drought prone state.

FLOOD AND DROUGHT PRONE DISTRICTS IN BIHAR



Low Productivity Bihar has one of lowest agriculture productivities in the country. The average productivity of paddy and wheat, the 2 major crops of the state is lower than National average, see table below, figures in Tons/ Ha.

	Paddy	Wheat	Maize	Pulses	Oilseeds
Bihar	2.3	2.4	2.7	0.8	1
India	3.3	2.7	2.4	0.62	1.1

(Data Source : Department of Agriculture, Govt. of Bihar-2010)

The average district wise paddy & wheat productivity in the project districts is given below. The table shows that productivity in these districts is lesser than the state average. Typically the average yield of the smallholders in Paddy and Wheat is even lower than the district average yield.

	Gaya	Nalanda	Khagaria	Purnia	Madhubani	Muzaffarpur	Madhepura	Supaul	Saharsa
Paddy	1.65	0.89	1.04	1.31	1.2	1.06	1.27	0.95	1.41
Wheat	2.33	2	2	1.8	2.1	2.3	1.76	1.87	1.79

(Source Department of Agriculture, Govt. of Bihar-2003)

Majority of the poor grow Paddy and Wheat Majority of the SHG households are among the poorest and take up Paddy in the Kharif and Wheat in the Rabi seasons. Thus an intervention touching these 2 crops would have the highest outreach and more specifically among the poor. Households retain most of the produce for their own consumption and only the surplus is sold out. Thus the increase in productivity in these two crops would have the twin impact of increase in their food security and increase in incomes.

SRI, SWI & SCI in JEEViKA

System of Rice Intensification (SRI) SRI is a methodology rather than a technology, in which the management of soil, water, plant and nutrients is altered for greater root growth and nurturing microbial diversity resulting in healthier soil and plant conditions. In SRI, practices like seed rate, method of raising of seedlings in nursery, transplantation, control of water in the main field, weeding / hoeing are modified to ensure higher ratios of tillers to mother seedling, increased number of effective tillers per hill, enhanced panicle length and bolder grains, or in short enhanced yield of paddy. The practice of SRI in comparison with the traditional practice may be depicted as given in table below.

PARTICULARS	CONVENTIONAL	SRI
Seed Treatment	Not Done	Done with salt solution & fungicide
Seed Rate (Kg / Hectare)	50 – 60	5
Nursery Area (Sq ft / Hectare)	10750	800
Age of Seedling for transplantation	21 – 35	8 – 14
Spacing	No Spacing	25 cm * 25 cm (10' * 10')
Weeding / Hoeing	No Weeding	3 times
Yield	2 ton / ha	4-6 ton / ha



During SRI pilot in 2007, Barti Devi, an SHG member from Gaya had difficulties in convincing her husband Shri Dilu Yadav to undertake SRI. After 4 rounds of heated arguments at home; Barti Devi finally took up paddy cultivation through SRI and got 272 Kgs per Kattha i.e., 18.3 tons per ha. Today Barti Devi has become a role model for many SHG women and travels to many villages before the paddy & wheat season to mobilize SHG members to cultivate paddy/wheat through SRI. In a public function attended by the Hon'ble CM in 2008, Barti Devi talked about the benefits of SRI and requested the Hon'ble CM to scale up SRI to all the smallholders in Bihar. Her dream came true, when the CM launched SRI on 27th Jan, 2011 to scale up SRI in 3.5 lakh ha with around 12 Lakh households.

Piloting and scaling up of SRI The project thus piloted the System of Rice Intensification (SRI) in 2007 with 128 smallholders belonging to SHG households in 30 ha land. It was observed that the average paddy yield was nearly 10 tons per ha which was significantly higher than the existing productivity. Based on the success of the pilot, the project has scaled up SRI in the subsequent 3 years with 5146, 8367 and 19911 smallholders.

System of Wheat Intensification (SWI) SWI involves modifying the practices like seed rate, sowing of seeds at proper spacing, control of water in the main field, weeding / hoeing to ensure higher ratios of tillers to mother seedling, increased number of effective tillers per hill, enhanced panicle length and bolder grains, in short enhanced yield.

The year wise progress of System of Rice Intensification (SRI)

Particulars / Years	2007	2008	2009	2010
Nos. of SHG members / smallholders	128	5146	8367	19911
SRI Land in hectare	30	544	786	1412
SRI Yield in tons / hectare	10	7.75	6.5	3.22*
Traditional Paddy Yield in tons / hectare	2.7	2.36	2.02	1.66*
Highest SRI Yield in tons / hectare	18.18	19.3	14.2	6.5
State average Paddy Yield in tons / hectare	2.3			
Climatic conditions		Water stressed	Drought	Extreme Drought

* Data of 74 villages analysed

##PARTICULARS	CONVENTIONAL	SWI
Seed Treatment	Not Done	Warm water, Cow Urine Jaggery, Vermi-compost & fungicide
Seed Rate (kg/ha)	100-125	20-30
Sowing	Broadcasting	Line Sowing
Spacing	No Spacing	20 cm * 20 cm (8' * 8')
Weeding / Hoeing	No Weeding	3 times
Yield	1-2 ton / ha	3-4 ton / ha

Piloting and Scaling up of SWI After Paddy; Wheat is the second major staple food crop in Bihar. In 2008 (the 2nd year of SRI) the project felt that, if the yield of wheat can be enhanced through the similar methodologies in wheat then the food security of the smallholders may be ensured. Thus the SWI was piloted with 415 smallholders during Rabi 2008-09 in 16 ha land. The average yield was 3.7 tons per ha against the yield of 1.8 tons per ha through conventional methods. Based on the success of the pilot, the project has scaled up SWI in the subsequent 2 years with 25235 and 48521 smallholders in Bihar. The year wise progress of SWI in the project is given below.

Particulars / Years	2008-09	2009-10	2010-11
No of members / smallholders	415	25235	48521
Area in has	16	1200	2536
Average SWI Yield in tons / ha	3.7	4.5	Cont.
Traditional Wheat Yield, tons/ha	1.8	1.6	Cont.
Highest Yield in tons / hectare	8.4	10.012	Cont.
State average Yield ##in tons/ha	2.4		
Climatic conditions	Normal Rainfall	Little shower at the end of monsoon	Post Drought



Date of Sowing: 05/12/2010



Crop Stage on 02/02/2011

Phool Kumari Devi, an SHG member from Muzaffarpur had started SWI with just 2 Katthas (1/12th of an acre) of land and the increase in yield was so high that it enabled her to recover 8 Katthas of land that she had mortgaged for taking a loan. Today she grows wheat through SWI on all her 15 katthas of land.

System of Crop Intensification (SCI) in Green Gram & Rapeseed SCI in green gram and rape seed involves lower seed rate, seed grading and treatment, sowing with wider spacing or transplantation of young age seedlings with wider spacing, organic manuring, intercultural operation & proper weeding leading to enhanced yield. During the successful scaling up of SRI and SWI; the project has piloted the application of similar methodologies in different crops such as Green Gram & Rapeseed with around 500 SHG households. The results were very positive, the yields almost doubled for both the crops.



Green Gram Seed Treatment under System of Crop Intensification (SCI)



Harvest stage of Rapeseed grown through System of Crop Intensification (SCI)

The year wise progress of SCI in Green Gram & Rapeseed in the project is as follows;

Particulars / Years	2009-10	2010-11
Green Gram		
No of SHG members / smallholders	490	2400
Area in ha	32	527
Average Yield in quintals / acre	7.5	Cont
Traditional crop Yield in quintals / acre	2.5	Cont
Rapeseed		
No of SHG members / smallholders	7	425
Area in ha	0.2	11.2
Average Yield in quintals / acre	12.15	Cont
Traditional crop Yield in quintals / acre	6.75	Cont

SCI in Chilli, Tomato & Brinjal The seeds are treated with cow urine, warm water, vermi-compost, jaggery, trichoderma and the germinated or wet seeds are sown in nursery at 2 inches at either side of spacing. Organic environment is made in nurseries and seeds are sown at proper spacing.

Compost and soils are treated with trichoderma. Every care is taken to minimize the shock by taking seedlings attached with soils. Then 8-12 days old young seedlings are uprooted carefully and transplanted in main field. Shallow transplanting is done.

One feet deep and 0.5 feet diameter pit is made to provide conducive environment for intensification of roots. The farmers should provide favorable environment for the profuse root growth and shoot growth is outcome of attention on roots. Proper irrigation channels are made to facilitate aeration in roots and 2-3 inter cultural operation is done by using SRI-Rabi weeder. The productivity enhancement is around 40-85%.

The difference between yield of Chilli, Tomato & Brinjal through SCI and conventional method is given below;

Veg Crops	No of smallholders	Conventional	SCI
Chilli	69	1.5-2	4.5-5
Tomato	168	3-4	12-14
Brinjal	42	5-6	10-12

It is found that in SRI, SWI & SCI; the disease & pest infestations are less, use of agro chemicals are lesser, requires less water, can sustain water stressed condition, more application of organic matter and yield in terms of grain, fodder & firewood are higher.

Community Managed Extension System One of the key strategies that has played a big role in the scaling up of the intervention has been the use of the community managed extension system. As part of this the Village Organisations (essentially a federation of 8 to 15 Self Help Groups in a village) identifies and appoints a local youth may be a male / female (called the "Village Resource Person") to carry out the extension work for the intervention. The VRPs are given intensive training that includes on-field demonstration. The training module for VRPs was developed and delivered by PRADAN & ASA, the technical support partner agencies. On-the-job technical guidance to the VRPs is provided by Subject Matter Specialists appointed by the support agencies or engaged directly by the BRLPS. Each VRP provides services to 30 to 120 farmers (depending on the ability of the VRP). VRPs undertake farm/plot-visits to note the progress of the crop and advise the farmers on the field operations. The Village organisations review the work done by the VRPs every month as part of their regular

meetings. There is a regular weekly VRP meeting organized to review the progress on quality & quantity of the interventions, updation of agriculture database, training need assessment of the VRPs for organizing & imparting refresher training to the VRPs. During the yield assessment, few of the plots have been measured by the respective District Magistrates, District Agriculture Officers, officials of Krishi Vigyan Kendras and district Agriculture Technology Management Agencies in presence of the smallholders and VRPs. In the process, the VRPs are also trained to measure the yield scientifically. The VRPs measure all the plots scientifically in a cross verification mechanism. Cross Verification Mechanism means one VRP will assess the yield of the plots of another VRP and vice-versa.

VRP Register The VRP register is integral to the Community Managed Extension System to have farmerwise data on land, sowing date, intercultural operation dates, plot observations and yield assessment. After the scientific yield assessment by the VRP, the yield data is mentioned in the VRP register and certified by the concerned smallholder.

In 2010, around 1100 VRPs have been identified by the VOs in 892 villages and trained by technical experts hired by the BRLP. The yearwise VRPs supporting SRI-SWI are as follows;

Year	No of Villages	No of smallholders	Village Resource Persons
2007	15	128	3
2008	194	7753	250
2009	322	25235	510
2010	892	68432	1095

A recent study noted that a village would require 3-4 years of intervention by the technical support organization to introduce the methodology, cover the entire village, set up systems and withdraw. In tune with this, in the current year, the external technical support agencies have been withdrawn from areas implementing SRI since 2008.

A package of inputs are provided to all SHG members desirous of adopting SRI/SWI. These inputs include quality seed, vermi-compost, fertilizers, etc., which are collectively procured by the Village Organisations with facilitation by the VRP. The SHG members repay this amount after the crop season.

Carbon Credit realization from SRI Agriculture releases significant amount of CH₄, N₂O and CO₂ into the atmosphere. These three are the major Green House Gases. In 2005, agriculture accounted for 10-12% of total global anthropogenic GHG emissions. From 1990 to 2005 the GHG emission has increased to 17%. CH₄ is produced when organic materials decompose under anaerobic conditions such as cultivation practices under flooded conditions. Aerobic soils however, act as an important sink for CH₄. N₂O is produced as the

intermediate product during nitrification and denitrification process. Nitrification is the process of aerobic microbial oxidation of ammonia into nitrate whereas denitrification is the process of reduction of nitrate into gaseous nitrogen. Production of N₂O is enhanced when available N exceeds plant requirements, especially under wet conditions. The traditional paddy cultivation emits more methane and use of excessive nitrogenous fertilizer emits more nitrous oxide to the atmosphere. Methane is 25 times and Nitrous Oxide is 298 times more powerful than Carbon Dioxide in global warming. The entities involved in reducing GHGs emissions are liable to get Carbon Credits, which is a source of revenue.

SRI is aerobic paddy cultivation because of its alternate wet and dry method, regular weeding improves aeration resulting into less methane emissions. The emission of CH₄ from SRI soil was found to be 4 times less and N₂O flux from SRI treatment was 5 times less compared to traditional paddy cultivation. SRI practices appear to potentially minimize CH₄ emissions and N₂O emissions. The net GWP (global warming potential) due to combined CH₄ and N₂O emissions were significantly less in paddy cultivation through SRI. This has been adequately proved in many countries such as Sri Lanka, China, Nepal, Vietnam, etc. But the smallholders involved in paddy cultivation through SRI have not been compensated with Carbon Credit benefits. It is envisaged that, systematic research needs to be carried out and reports to be published by the scientific community for rest of the world for developing a carbon credit protocol for SRI.

Key Impacts

- **Increase in Productivity** The SRI & SWI interventions have increased the productivity of paddy & wheat by more than 2 times. In the extreme climatic conditions like drought 2010, the assessment of 74 villages has shown that paddy productivity through SRI resulted in yield of 3.22 tons / ha compared with the traditional productivity of 1.66 tons / ha.

- **Increase in the Food Security** The smallholders, who have carried out these two interventions in more than 5 Katthas of land have achieved year around food security.

- **Inclusion of the Marginalized** It was observed that as a result of demonstration of higher yields through the SRI/SWI methodology intervention, landless households have been motivated into taking land on lease to take up SRI/SWI. Around 30% of SHG members have taken land on lease for taking up SWI during 2010-11 Rabi season.

- **Village Level Agriculture Scientist** Around 1100 Village Resource Persons were developed (out of which around 40% are women) to support the smallholders belonging to the Self Help Groups for undertaking SCI in various crops.

Bihar Floods, Breaching Embankments and Suppressing Information

Dr Dinesh Kumar Mishra

Background Breaching of the embankments is a usual outcome accompanying of the embankment technology that claims to control floods.

Replying to a question raised by S.M. Bannerji in the Lok Sabha, way back in 1967 when the Western Kosi Embankment was threatened with a breach and huge amount of money was being spent on preventing it, Dr. K.L.Rao, then Central Minister for Irrigation had replied on the 12th July 1967, saying, '...In case of a river nobody can say whether a breach will occur or not, and especially, in case of the Kosi, because the Kosi is all the time moving towards the west. It is on account of this peculiar nature of the Kosi that we have taken up the Kosi Project and this has prevented the river from moving and it has stayed in its place for the past ten years, it should have moved on to Jhanjharpur and nearer to Darbhanga.'

It should be noted that when the Kusaha tragedy struck the people, the Minister for Water Resources, Minister for Disaster Management and the Secretary of the Disaster Management Department of the state, were all from that region.

and Power Commission, the embanking proposal of the Kosi would have been thrown to waste basket. His statement was in defense of breaches that were inevitable when embankments were constructed on the Kosi. The same logic was extended to all the rivers of North Bihar.

Govt of Bihar has recently released a list of breaches in the embankments of its rivers since 1987 (see Table) in the Annual Report its Water Resources Department of 2009-10 and it will be of interest to go through it.

This information, although official, is disturbing since the embankments that were supposed to protect people against floods, breached as many as 371 times in the past 24 years. Nobody seems bothered about this, apparently, and the information is circulated as a matter of history.

It is equally disturbing to note that the most vibrant river of Bihar, the Kosi, has been booked under the heading of 'others' to belittle its problems and divert the attention of the public as if the river or the breach incidence at Kusaha and at seven other places (Dalwa in 1963, Jamalpur in 1968, Bhatania in 1971, Bahuarawa in 1980, Hempur in 1984, Gandaul and Samani in 1987, Joginia in 1991) in the past about 50 years of the existence of the embankments were too insignificant. It also leads one to suspect the intentions of the Water Resources Department of Bihar over the issue of damages due to floods.

The Missing Information This table has not mentioned any thing about the Joginia breach in the Western Kosi Embankment in 1991 when the then Minister of WRD of Bihar had to resign because he had asserted in the Vidhan Sabha, a month prior to the breach, that he would resign his post if any of the embankments in Bihar breached.

The table is also silent about the breaches of the Western Kosi Embankment at Gandaul and Samani in 1987 and it is suspected that these accidents might have been booked under 'others' and a handiwork of anti-social elements to keep its own image intact.

This table also does not talk about the Sohrai breach in the Kamala embankment south of Jhanjharpur rail bridge in 1993 when the breach victims had to prove that the breach had actually taken place to get some dole from the Government. These embankments had breached at 4 places in 1994 at Navtoal, Balbhadrapur, Naruar and

History of Breaches in the Embankments on the rivers of North Bihar

Year	Gandak	Burhi Ganda k	Kamala Balan	Bhuthi Balan	Bagmati / Kareh	Others	Total
2010	1	-	-	-	-	-	1
2009	-	-	-	-	1	1	2
2008	-	-	-	-	-	1	1
2007	1	3	14	2	7	5	32
2006	-	-	1	-	-	-	1
2005	-	-	1	-	-	4	8
2004	-	8	26	2	17	6	59
2003	9	-	1	-	1	5	16
2002	13	-	10	-	15	4	42
2001	11	2	3	4	1	12	33
2000	-	-	3	-	-	9	12
1999	3	-	7	-	-	6	16
1998	4	8	3	-	-	9	24
1997	1	3	1	-	2	1	8
1996	1	-	3	2	6	2	14
1995	-	-	-	-	-	-	-
1994	-	-	-	-	-	2	2
1993	-	-	-	-	-	-	-
1992	-	-	-	-	-	-	-
1991	-	-	-	-	-	-	-
1990	-	-	-	-	-	-	-
1989	-	-	-	-	-	-	-
1988	-	-	-	-	-	-	-
1987	-	1	29	6	8	59	103
	44	25	102	16	58	126	371

*This should be 5.

Source: Annual Report, Water Resources Dept, Govt of Bihar 2009-10.

If Dr. Rao had said the same thing in 1954, after his return from China where he had gone to study the performance of the Hwang Ho River along with Shri Kanwar Sain, the then Chairman of the Central Water

Baur. In 1996, they had breached / cut by irate mob at six places at Belhi, Nirmala (2 points), Khairi (Ballia), Khairi (Parsad), and Phaitaki (Parsad) and those breaches do not find any mention in the table.

Beside, the Bagmati embankments had breached at, at least, 14 places in the worst ever floods of 1993 in the basin. All these breaches go unreported and it must be said here that the details

supplied by the WRD are misleading and mischievous. Maintaining silence about the breaches in the Kosi embankments is curious and painful. It seems, the WRD is scared that if it talks about the breaches in the Kosi embankments, it will open a Pandora box, which the engineers would find it hard to defend.

All the earlier breaches of the Kosi have been recorded elsewhere (Ref. *Trapped! Between the Devil and Deep Waters* by Dinesh Kumar Mishra, a SANDRAP and PSI publication-2008) and there have been debates on them in the Lok Sabha and Vidhan Sabha. These have also been reported in the Report of the Second Irrigation Commission of Bihar (1994) and it is amazing that the engineers of the WRD are not aware of that source of information, which anyway should have been kept with all care for future use. Annual Reports of the WRD also talk about these breaches and all these reports are available in public domain.

Sanyal Committee's Views on the breaches GoB had appointed a committee in August 2007 under the chairmanship of Nilendu Sanyal, former Engineer in Chief of Bihar to enquire into the large number of cases of breaches in the embankments, to suggest measures to meet emergencies arising out at the time of floods, to suggest ways and means to manage floods, to establish success rate of flood protection through embankments, to give its opinion on the viability and implementation of short term and medium term measures of flood control keeping in view the behavior of rivers, to define the role of the Central Government in long term measures of dealing with the floods and to help locate resources for implementing these suggestions, to give its opinion on the viability of deepening of the rivers and to suggest ways and means to reduce the sediment load in the rivers.

The committee was also expected to give its opinion on the state of the art methods of plugging the breaches.

Giving its recommendations (Report in 2008), the committee first gives its opinion how should a breach be defined. It says, '...To avoid ambiguity in reporting, only cases where due to the gap created in the breached embankment, water is flowing or may be flowing from the

riverside to the countryside of the embankment should be reported as breach. Cuts made in the embankment for draining the countryside water back to the river should not be called a breach' (p 1, Sub-para 1.3.3 & 4.

We all and some people in the WRD department in particular and the Bihar and Union governments in general should feel concerned about this state of affairs and record keeping in WRD of Bihar.

Qualifying all the benefits and losses of the embankments, the report suggests that this technique of construction of embankments is a relatively simple technology, which enables the use of locally

available materials and labors and quickly provides direct protection against flood to the area where it is constructed' (para 4.1 p-2). Report, however, does not say that the locally available material is only sand.

There is a very disappointing note from the committee on the information of breaches in the embankments. It says, 'In order to assess the success rate of the embankments of WRD since construction, data was sought from the Chief Engineers of WRD. The sought data were to cover records of more than last 50 years. Despite reminders & personal contacts, none of the Chief Engineers could furnish the data, possibly because their office records also did not have the requisite data' (para 4.2 p-3).

The report also hints towards the lack of seriousness with which the WRD of the state deals with cases of breaches in the embankments. The department which is responsible for the maintenance of the embankments does not have the past history of braches in them and, thus, it nips in the bud the problem of breaching and accountability of maintaining the same.

If there is no information available, there won't be any criticism and no suggestions can be given by any body. Whatever could be done would be based on conjectures which do not have a defined framework nor is it easy to verify them. The other possibility could be that the department has all the information but does not want to part with it as a habit.

It should be reminded here that Nilendu Sanyal was occupying the top most position in the WRD of the state as the Engineer in Chief of the WRD of the state a few years ago. If the information is not made available to a person of his stature while he was heading a committee appointed by the same department, it is very easy to apprehend what could be the information level of a concerned citizen despite all the rights of information bestowed upon him.

We all and some people in the WRD department in particular and the Bihar and Union governments in general should feel concerned about this state of affairs and record keeping in WRD of Bihar. For, that is going to be the basis of any corrective work in future.

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A REVIEW OF KRISHNA WATER DISPUTES TRIBUNAL-2 REPORT

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Role of a downstream state in a river basin It is presumed many times that downstream state is demanding unjustifiable share of water from the upstream river basin states. But we should understand the contribution of downstream state of a river basin in a correct perspective.

Before the rain water collects in the river, it picks up many salts in dissolved form from the soil on which it flows or percolates. The nature and quantity of total dissolved salts (TDS) depends on the weathering rate of rocks, industrial activity, mining activity, anthropogenic activity, ground water usage, surface water usage, the extent of acidity in the rain water, etc in a particular area. The rain fall pattern in Krishna river basin is not uniform throughout the year. Most of the rain takes place in four months of south west monsoon. Most of the flood water is generated due to very high rain fall in Western Ghats which are part of uplands in Krishna river basin. The Western Ghats occupy only 9.5% of basin area but contribute 57% of total inflows in the river. Frequently the monsoon floods take place in the entire stretch of main river course causing huge property loss and human fatalities & sufferings.

If we imagine a state constructing a tall dam across the river to prevent its water passage to the downstream state, the water reservoir created behind the dam is similar to the land locked Dead Sea in Israel or Caspian Sea in Russia/Iran or Sambhar lake in Rajasthan state. The water flowing in to the lake from the river will get evaporated accumulating dissolved salts in the lake water. Gradually, the lake water turns unfit for agriculture, human and cattle use due to its high TDS or salinity. In other words, a downstream state is helping the upstream states by providing passage to the Sea for its flood water and also exporting the salts carried from its river basin.

Internationally there are cases where 35 to 40% of the inflows from the upstream state is allowed to flow to the downstream state depending on the river water quality. Most of the dissolved salt load in Krishna river water is originating from the weathering of basalt rocks in Deccan plateau area of Karnataka (K) and Maharashtra (MR). Even the downstream state cannot utilize all the water available from the river because 100% utilization of water without leaving in to the Sea will accumulate salts in its soil & ground water which will gradually make the soil unfit for agriculture and both river and ground waters unfit for human & cattle consumption. This will lead to catastrophic environmental disaster over a period of time reducing sustainable productivity of soil. So it is must to release adequate quantity of water in to the sea to maintain the river water TDS in acceptable limits.

Rejecting the dissolved salts from the river basin to the sea is called "salt export".

These factors are to be considered while making river water allocation for use among the river basin states. The KWDT II should have done an assessment as to how much water Andhra Pradesh (AP) needs to annually release to sea from Krishna River to ensure that such salt accumulation does not happen. This was not done and this is a major drawback of KWDT-2.

Already during the monsoon period TDS of Krishna river water upstream of Prakasam Barrage at Vijayawada is 370 mg/L which is highest among Indian major rivers. The peak TDS is nearly 700 mg/L during summer months whereas safe drinking water limit is 500 mg/L. During the decade 1998-2007, 510 TMC (Thousand Million Cubic feet) on an average per year was discharged in to sea out of 2402 TMC annual average yield in the river which is only 21% of total yield. It is strange that Central Water Commission is not measuring the TDS or water conductivity at its river gauging stations except for Narmada River.

Unplanned water utilization in Murray - Darling River basin in Australia has enhanced the salinity /TDS of river water beyond safe limits which is affecting the long term sustainable productivity of the river basin. The long term average quantity of water let to the Sea has reduced to 15% of total water yield in the river increasing the river water salinity to unacceptable levels. So Murray - Darling Basin Authority decided to take up remedial action plan. Now Water quality and salinity management plan is made part of this plan. It has stipulated that water TDS limit of 500 mg/L should not exceed 95% of the duration in a year. This is proposed by reducing water use in irrigation and letting more water to the Sea.

The present water use allocations is 2130 TMC out of 2578 TMC average yearly flow which is nearly 83% in Krishna basin. With less water discharging to the Sea, salts would accumulate in the river basin's low lands reducing its fertility. Further use of water in the river basin will affect long term sustainable productivity of the river basin particularly in downstream state AP. The average yearly salt export requirement is nearly 12 million tons in Krishna basin area up to Prakasam barrage. At least 850 TMC (24 billion cubic meters) water is required for the purpose of salt export either to the sea or to outside the river basin area to maintain salt content below 500 mg/l in the river water. Presently nearly 400 TMC Krishna water is diverted outside the basin area in AP. This diverted water is also serving the purpose of salt export from Krishna river basin.

Krishna water dispute tribunal (KWDT-1) award: The water required from the river basin is decided as 2130 TMC (2060 TMC plus additional regeneration flows of 70 TMC) for use by the riparian states at minimum success rate of 75%. KWDT-1 has stipulated (clause V of the final order) that the states shall not use in any water year more than the 2130 TMC as permanent allocations. KWDT-1 has clearly defined (clause VII) the term 'water use' stating that the water diverted from a reservoir for a state's use in any water year shall be reckoned as use by that state in that water year and mere water storage in any water year in a reservoir is not water usage other than its evaporation loss.

From the clauses V & VII, it is very clear that water allocation is not done subject to water availability in the river on yearly basis. It has permitted to use water every year at 100% success rate by using stored water from the reservoirs as carry over storage. The water available above 2130 TMC yield during the excess water availability years can be stored as carry over storage to meet the shortages during deficit water yield years. Thus KWDT-1 has allocated water to the extent of 2130 TMC out of average yield in the river alleviating the vagaries of nature.

KWDT-1 has also stipulated (clause VIII) that the right to use the water allocations will not lapse in case of non utilization without any time limit. It is also stipulated (clause XIV) that the allocations made by it shall not be changed by future tribunal if a project / utilization is already undertaken for development. All the projects for which water allocation were made by KWDT-1 have already been undertaken.

KWDT-2 award KWDT-2 was formed in the year 2004 on the request of basin states to resolve various demands. KWDT-2 headed by Justice Brijesh Kumar has given its decision recently for perusal by concerned parties. It has assessed the average yield as 2578 TMC which is equal to 58% dependable yield (i.e. 27 out of 47 years) from the recent river flow data of 47 years duration (refer page 303 of KWDT-2). KWDT assessed the 50% dependable yield in the river as 2626 TMC, 65% dependable yield as 2293 TMC and 75% dependable yield as 2173 TMC. The unallocated water available is 43 TMC at 75% yield and 448 TMC on an average after deducting the 2130 TMC allocation by earlier KWDT-1.

KWDT-2 considered using of water at 58% minimum success rate with a provision to enhance to 100% success rate by building up carry over storages as provided in KWDT-1. It has allocated all the water up to the last drop in the river without sparing water for the salt export to the Sea and for the long term sustainability of river basin productivity and ecology for which minimum 450 TMC yearly average flow is required. KWDT-2 has allocated 6 TMC as environmental flows out of AP quota to release to downstream of Prakasam Barrage. This

quantity is negligible for salt export purpose or for the social & environmental needs of the downstream areas.

KWDT-2 has identified 150 TMC carryover storage capacity available in Srisailem and Nagarjunasagar reservoirs as an additional allocation to AP (refer page 806, s.no. 3) contradicting the stipulation of KWDT1 (clause VII, page no.95 of further/final report of KWDT-1)). As per clause VII of KWDT-1, mere creation of carry over storage in any year for subsequent years use is not water use other than its evaporation loss in that year. KWDT-2 also allows carryover storage to enhance success rate of identified water use up to 100%. So this identified water allocation /use (150 TMC) is not realistic since this carryover storage is used to meet the shortages when water availability is less than 2130 TMC in the river.

The additional allocations made from 2131 to 2293 TMC (46 TMC to MR, 72 TMC to K, 45 TMC to AP and total 163 TMC) and 2294 to 2578 TMC (35 TMC to M, 105 TMC to K, 145 TMC to AP and total 285 TMC) among the states are not on proportional water availability basis in these water availability ranges but blocks wise. Thus, Maharashtra will use first the available water, later by Karnataka and last by AP as per the allocations. The left out water by Maharashtra will flow to Karnataka and left out water by Karnataka will flow to AP.

The block wise allotment leads to inequitable allocation at different dependability among the states. Maharashtra will get water allocation at 75% dependability followed by Karnataka at 70% dependability and AP at 65% for the water allocations between dependability 2131 & 2293 TMC. Maharashtra will get water allocation at 65% dependability followed by Karnataka at 60% dependability and AP at 58% for the water allocations between dependability 2294 & 2578 TMC (the dependability figures are worked out by the author considering 47 years water series used by the KWDT-2, Refer page 303 of KWDT-2). Thus, AP will suffer without affecting Karnataka & Maharashtra up to 145 TMC, if the actual average river water flow is less than assessed 2578 TMC by KWDT-2. If the water use allocations are made in proportion to water availability, the burden is shared among all the states on equitable basis. This anomaly should be rectified by envisaging proportional allotment in each allocation range.

Clause VII of KWDT-1 stipulates only 2.5% of the water diverted for industrial purpose shall be considered as consumptive water use. This norm which was applicable 40 years ago has changed over these years due to technological advancements and it is reasonable to fix 67% of the water diverted as industrial use. Most of the water in industry is used for cooling purpose other than process water consumption. Normally open circulating cooling water system with cooling towers at more than three cycles of concentration are used whose return / reject water is less than 33% of water drawn. Once

through cooling systems where the actual consumption is 2.5% of water drawn are no more permitted (by MEF guidelines for thermal power plants).

If excessive water is diverted for industrial purpose, the return flows (97.5%) from the industry will never reach the main river and it will be used for irrigation in nearby area under the guise of minor irrigation projects since this return water is available constantly throughout the year for growing multiple crops. The magnitude of industrial base anticipated in next 40 years is many times the present industrial base and substantial river water would be used in industry unlike now. So this norm should have been changed to 67% by the KWDT-2.

Diversion outside the basin by Koyna Dam KWDT-2 also made additional allocation of 25 TMC (total 137.5

TMC) for diversion of Krishna river water to Arabian Sea exclusively for power generation in Koyna hydro power station. When the downstream states are bound to suffer from water salinity / quality problems, it is very unreasonable that

very good quality water (TDS less than 150 mg/L) is diverted to Arabian Sea. In fact the KWDT-2 should have directed Maharashtra to utilize earlier water allocation of 112.5 TMC made by KWDT-1 for power generation in Koyna hydro power station & Tata hydro power station to use for its additional irrigation requirement without making any further water allocation to Maharashtra. However it has made further allocation of 81 TMC to Maharashtra disregarding long term sustainable productivity and ecology in Krishna river basin. The power generation capacity from Konya and Tata projects can still continue by running as peaking power station in reversible turbine mode without consuming any water from Krishna basin.

KWDT-2 has not applied broad vision to address all the issues of a river basin. Here issues related to impact of climate change, and also the impact of phenomenally increased use of groundwater throughout the basin on the river inflows and surface water quality also needs to be mentioned. It went on quoting / referring earlier KWDT-1 discussions without trying to understand the changes that have taken place in last 35 years after the KWDT-1 award. It has not bothered to address the problem of frequent floods by using the substantial storage capacity created in the river basin. The floods can be moderated in the river basin with the help of available storage capacity (1750 TMC, see p 312 of KWDT-2) by releasing uniform flows during monsoon months in to the downstream river.

It has also not examined the options to enhance/ optimize the hydro power generation in the river basin by maintaining uniform water flow during monsoon months.

Presently, the initial flows are used to fill the upstream reservoirs and subsequently downstream reservoirs get filled with the flood water. The excess water overflows all the dams during floods in few days without being used for hydro electricity generation. If water is uniformly allowed to flow downstream from upstream reservoirs during monsoon season, a substantial part of the surplus/ flood water can be put to use for hydro power generation enhancing electricity generation by 100%. Krishna river basin has nearly 360 meters head available for power generation. It would be useful to think how to derive optimum productivity from the available flood water during good monsoon.

Recommendation Already the water utilization in Krishna river basin is touching the maximum limit constraining the salt export to the Sea. Near zero outfalls to the sea are also resulting in salinisation of fertile delta lands and affecting fisheries. We should learn from the bad experience of Australia in over exploiting the river waters of Murray-darling

Presently, the initial flows are used to fill the upstream reservoirs and subsequently downstream reservoirs get filled with the flood water. The excess water overflows the dams during floods in few days without being used for hydropower generation.

river. Krishna Basin Authority in line with Murray-Darling Basin Authority shall be constituted by the GoI, It should reject the archaic river water allocations done by the KWDT-2. Krishna Basin Authority should be headed by a panel of experts representing environment, irrigation, agriculture, ground water, health, geology, ecology, etc to protect the river basin area for its long term sustainable productivity and ecology. At least 50% members of the authority should be from outside the government. The functioning of the authority, including all its proceedings and agenda notes should be in public domain. Krishna River is the first major Indian River where water utilization has reached more than 80% of average water availability. The proposed Krishna Basin Authority should be constituted in such a way that it will become an exemplary precedent for the sustainable productivity and ecology of all river basins of India.

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CLIMATE CHANGE & WATER SECTOR**Nobel Economist blames Climate for the Food Crisis**

The Nobel Prize winner Economist Paul Krugman says that more than political and socioeconomic factors, extreme weather events are responsible for the record rise in global food prices currently and world's second food crisis in the last three years. This has had a very severe impact on world's poorer populations who spend most of their income on foodstuffs. He holds the food crisis and resultant unrest responsible for the uprisings against oppressive regimes in the Middle East as the undemocratic situations have compounded the effects of food crisis and price hikes. He asserts that these extreme weather events are a direct consequence of rising concentrations of greenhouse gases and climate and suggests that the current food price surge may be just the beginning.

A record heat wave and drought in Russia, which pushed Moscow temperatures above 100 degrees Fahrenheit for the first time, caused wheat production to drop sharply, causing a spike in prices. Similar extreme weather events have been experienced in the form of droughts in Brazil and severe floods in Australia. Globally, two years in this decade, 2005 and 2010 are the hottest years on record. Temperature records have been set in 19 countries, covering a fifth of global land area. He sums up ominously, "what we're getting now is a first taste of the disruption, economic and political, that we'll face in a warming world. And given our failure to act on greenhouse gases, there will be much more, and much worse, to come." (New York Times, 060211)

Climate Change in Jharkhand: Extreme rain deficit

Jharkhand is facing acute water crisis because of two consecutive drought years and extreme rain deficit. Villagers dependent on open wells for drinking water are finding their wells dry. In Ranchi city, with 140% groundwater draft, water supply to the 1.4 million population is restricted to between 15 minutes and half an hour every alternate day because the three reservoirs that supply water to the city have very little reserves. Rain deficit in Jharkhand last year was 41 per cent as against two per cent in the rest of the country. Against the normal rainfall of 1,100 mm the state receives, some districts received merely 500 mm rain. According an NGO study, drinking water availability in three districts of the state will be exhausted by mid-February. Jharkhand's water table has declined by an average three meters between 2009 and 2010, from 17 m to 20 m. According to the Directorate of Groundwater decline in water table level was in centimeters till eight years ago. This is a serious issue as Jharkhand has porous, rocky aquifers which go dry with over exploitation. Rain deficit has hit agriculture badly and at 2.2 million tonnes agricultural produce this year, the state has produced less than half of its requirement. More and more extreme weather events are expected as a result of climate

change and in the absence of a long term strategy to cope with Climate change, stop gap measures will have a limited success. The state needs to demand compensation for the losses it is suffering from those responsible for the climate change. (Down to Earth, 280211)

High Noon project The principal aim of the EU FP7 High Noon (which is a compound word derived from high (Himalayas) and from noon of Monsoon) project is to assess the impact of Himalayan glaciers retreat and possible changes of the Indian summer monsoon on the spatial and temporal distribution of water resources in Northern India and to provide recommendations for appropriate response strategies that strengthen the cause for adaptation to hydrological events. The study project is for the period May 2009 to 2012 (<http://www.eu-highnoon.org/>)

UP drafting action plan with GTZ help The Uttar Pradesh government is formulating the State Action Plan on Climate Change, to be ready by March 2011, with eight missions in line with the National Plan. The Centre has signed a memorandum of understanding with German consultancy firm GTZ, which is helping the respective state governments in drafting the Action Plan. The state draft Action Plan would be sent to the Centre, which would give its views. Thereafter, the high-powered committee led by the state chief secretary would give a final nod. (Business Standard 170211)

Floods linked to Climate Change: Studies Man-made greenhouse gas emissions are linked to more frequent heavy rainfall, two studies published have found, portraying a clearer human fingerprint after a spate of floods around the world. Scientists agree that greenhouse gas emissions are warming the world and expect that in turn would lead in the future to more evaporation of water, more moist air and heavier rainfall. The two new papers were the first to pin an increase in heavy rainfall in the second half of the last century directly on climate change, as well as one particular extreme flood in Britain.

A Canadian study published in the journal Nature analyzed a general increase in heavy rainfall globally from 1951-1999, and for the first time matched those observations with climate simulations, where the effects of man-made greenhouse gas emissions were included, said co-author Xuebin Zhang, from Environment Canada, a government agency. Studies show that likelihood of extreme precipitation on any given day rose by around 7% over the last half of the 20th century at least for the land mass of the northern hemisphere for which sufficient figures were available. The principal finding of the new study is "that this 7% is well outside the bounds of natural variability".

A separate paper, also published in Nature, went a step further and forged a link between climate change and a

particular extreme flood in Britain in 2000, the wettest autumn since record keeping began there in 1766. The authors found that the flood was more likely when greenhouse gases were included in simulations than without. "In two out of three cases we found around a doubling of risk," said co-author Myles Allen from Oxford University. Extreme weather caused devastating floods in Pakistan and China in 2010, which was tied as the warmest year since records began and heavy rains in Australia late last year and early 2011 disrupted coal mines and damaged transport infrastructure. (Reuters 170211, Mint 180211)

Centre for Climate Change Research Under the Global and Regional Climate Change programme of the Ministry of Earth Sciences during the XI plan, the Government has established a dedicated Centre for Climate Change Research under the Indian Institute of Tropical Meteorology, Pune. The primary focus and goal of the CCCR is to build a high resolution Earth System Model, which is a fully coupled atmosphere-ocean-land-biosphere-cryosphere dynamical model, required to address issues on attribution and projection of regional climate change; and provide reliable inputs for various multi-sector impact assessments studies. CCCR addresses the critical issues of science of regional climate change with particular emphasis on the variability of the South Asian monsoon system in the global warming environment. (PIB 030311)

Questions over use of NCEF money The Union Finance Minister has allocated Rs 600 cr for some environment conservation programmes from the corpus of the National Clean Energy Fund in his budget for 2011-12. Rs 200 cr each has been allocated for forestry, cleaning rivers/ lakes and unspecified environment remediation plan. The NCEF was created in the budget last year by charging Rs 50 per ton of coal used in India (produced in India or imported) and the fund already has Rs 3700 cr. The Union Environment Minister has said that all the missions under National Action Plan on Climate Change as also the Union Ministries of Environment and the Union Ministry for New and Renewable energy sources are eligible for using money from the fund. However, questions are being raised as to why this money is used for forestry projects. Firstly, when the fund was mooted, it was supposed to be for research into new energy sources. Secondly, there is already a lot of money lying with the Supreme Court for forestry purposes. (The Hindu 030311)

DAMS

SC Slams Govt on Gosikhurd rehabilitation While asking the Government of Maharashtra as to how many land owners/ family members from affected people that have been provided employment in return of the land acquired for the Gosikhurd Dam on Wainganga River in the Vidarbha region, the Supreme Court came down

heavily on the GOM for failing to rehabilitate land owners whose land has been acquired. A bench of justices GD Singavi and Ashok Kumar Ganguly said that the govt which "granted exemption to the tune of 1.25 lakh crore for SEZs" was fighting shy of providing employment to the landowners whose only source of livelihood has been taken away by acquisition proceedings. "Unfortunately, the Land Acquisition Act is being abused in the country. It was first enacted by the British in 1884. The white men have left but their legacy continues. The colonial mindset is continuing."

Counsel for some of the land owners affected by the



Gosikhurd dam submitted that the victims were without any source of livelihood after their land was acquired in October 1999. In 2001, the

Nagpur bench of the Bombay High Court directed the state to provide employment to certain land owners who were promised government jobs by a circular brought out by GOM. However, the state filed a review petition claiming employment would be provided only after they fulfill stipulated rules and obtain a certificate of displacement from the district rehabilitation officer. The petition was dismissed in 2002, following which the state appealed in the apex court.

Taking exception to the manner in which the government sought to fight the legal battle, the bench said the case has been pending in the SC for the past eight years. "How do you expect people to come to the Supreme Court from places like Kerala, Karimnagar, Mahabudabad, Nagaland and the eastern states? In the name of land acquisition for dams and industrialization, you are taking away their land, and depriving them of their livelihoods."

2nd phase The second phase of Gosikhurd national irrigation project has begun. In this phase, water will be stored in the dam up to 242 m in 2011 monsoon. 3,181 families of 19 villages are to be displaced in the second phase as 1,620 ha agriculture land of 12 villages will be submerged. However, the Rs 10 crores 'voluntary rehabilitation proposal' of village Sawargaon has been rejected by the state government. The Supreme Court has referred the Sawargaon proposal to the zonal office of central forest department to consider forest clearance proposal of a rehabilitation settlement near village Pagora.

The land owners will be given 8% rent if they do not use land for agriculture after passing of award till submergence. While those who use it for agriculture

won't be given rent for their land. In a cruel move, the Executive engineer of Gosikhurd rehabilitation division says that when project affected families move to rehabilitation settlements, they are given compensation for their houses, but they have to demolish their houses to be eligible for the compensation. A protection bund is being built around Bhandara city along the Wainganga river bank. The 8.6 km long bund from Ganeshpur to Warthi road is for protection of some 2,200 families. Water coming from Bhandara city will be diverted to a tank built near the bund, with a capacity to store 5.5 million cubic m (MCM) water. Water pumps of 2,000 HP would be pressed into service to lift 1.42 MCM water from the tank to the river. The remaining 3.42 MCM water will be left in the tank. The government has approved Rs 15 crore for the project. (The Times of India 170211, The Hitavada 180211)

Damodar valley displaced on fast The people of Jharkhand affected by the thermal power projects and dams on Damodar River in 1950s are still fighting for their rehabilitation. The Supreme Court in its order in 1992 had directed rehabilitation, which is yet to happen. The affected people were forced to go on indefinite fast in March 2010 and now again in Feb 2011 to ensure the rehabilitation promised at the time of displacement. (Jansatta 140211)

March against proposed Kanhar Dam The Uttar Pradesh Chief Minister laid the foundation stone for the Kanhar dam project on the Kanhar River, a tributary of Sone in her office in Lucknow, triggering protest from tribals who will be displaced by this dam in the Sonebhadra district of Uttar Pradesh. They will be launching a 100 km padayatra on 3rd March, 2011 from the construction site to the district headquarters in Robertsganj. More than 5000 people will be a part of this padayatra under the banner of Kanhar Bachao Andolan. It is estimated that the dams will submerge 11 villages of the Sonebhadra district, displacing 8000 families, mainly tribals. Additionally, 16 villages of Chhattisgarh & 5 from Jharkhand will be affected. This is not the first time that the Kanhar dam is opposed. In 1976 too, foundation stone for the dam was laid, but the project was cancelled following popular opposition. The protest is supported by Gram Swaraj Samiti and The People's Vigilance Committee on Human Rights. (Times of India 010311)

HC says Kanhar dam DPR eyewash The Jharkhand High Court has said that the Detailed Project Report submitted by the state govt to the court is eyewash. The Central Water Commission filed an affidavit before the court stating the report prepared by the state government was incomplete. The commission said the dam would require no objection certificates from Chhattisgarh, Bihar and Madhya Pradesh, which come within the catchment area of the dam. The government will also have to seek no-objection from the coal ministry as substantial area of the South Eastern Colliery will be

submerged if the dam is constructed. Without these, the report prepared by the government has no value, the commission informed the court. The court was also informed that the government had already spent Rs 19 crores on the project. (Telegraph, Bhaskar 010311)

Campaign against Polavaram The Polavaram project will displace nearly three lakh people in more than 300 villages in E, W Godavari & Khammam districts and destroy a large swathe of pristine forest, according to the Human Rights Forum. The majority of the displaced people would be adivasis of the Koya and Konda Reddy tribes. Apart from AP, the project would also destroy forest in parts of Konta block in Dantewada district of Chhattisgarh and Motu block of Malkangiri district in Orissa. The project was intended to water regions that were already developed and to feed several hugely water-guzzling industrial corridors by the coast. It would also do great injustice to Telangana particularly the water-starved areas of N Telangana because it seeks to divert substantial quantities of water from the Godavari basin districts of the region. The forest clearance given by the Ministry of Environment and Forests for the project was the result of violation of the Forest Rights Act, HRF took up 'No to Polavaram dam' campaign on Feb 19-20 in about 30 villages in Velerpadu & Kukkurun mandals of Khammam district. (The Hindu 190211)

Bhakra oustees demand original agreement Bhakra Dam oustees, who have been fighting for the past 50 years to get a chunk of land, now want the government to get the original documents of the agreement back from London library. In lieu of submergence of 41600 acre land for Bhakra dam, an agreement was signed on Feb 2, 1948 between the Raja of Bilaspur Anand Chand and the chief engineer (irrigation) Sarup Singh on behalf of Punjab government. The agreement was further revised and finalized in July 1948. Now, the dam oustees want the contents of the agreement be made public, which have not been disclosed in the past 50 years. One of the three original documents of the agreement was destroyed in a fire at the old secretariat building at Chaura Maidan in Shimla. While the second copy of the agreement was with the raja which he sold to India House Library in London along with historical documents and valuable articles. The third copy of agreement, which is with the Punjab government, has not been made public.

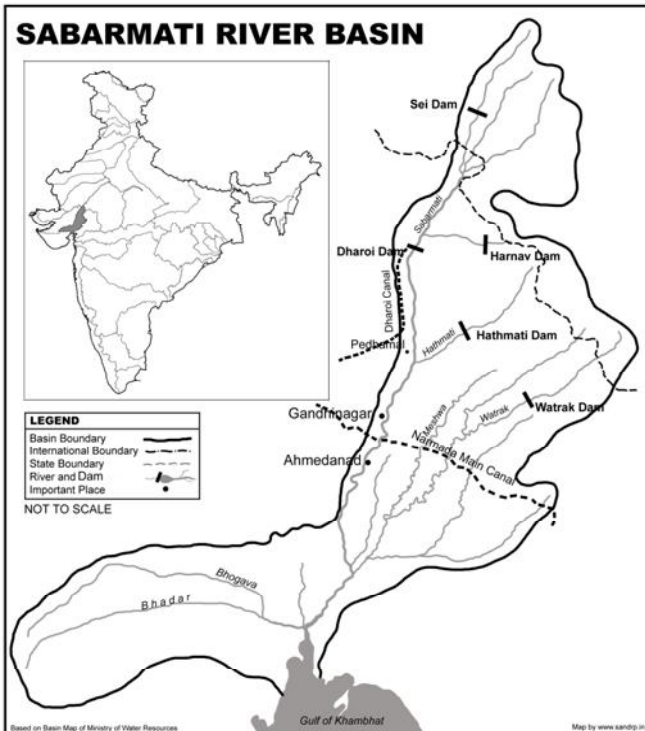
Bhakra Visthapit Sudhar Sabha president Nand Lal Sharma said, "The government should initiate efforts to bring back the original documents from London at the earliest." But neither efforts were made to procure the original copy of the agreement nor were efforts made to safeguard the legitimate rights of the Bhakra dam oustees. He said, "The share sought by the state government in the civil suit 2 of 1996 is meant only for rehabilitation of Bhakra dam oustees and should not be used by the state government for other purpose." (thenewshimachal.com 260211)

SARDAR SAROVAR PROJECT

SSP will take 176 years: Gujarat MLA The state government will pay 30% more than the prevailing jantri rates for acquiring land for constructing canals under the Sardar Sarovar Narmada Nigam Ltd. Replying to Karjan MLA Chandu Dabhi's query, Gujarat water resources minister Nitin Patel informed the assembly that the land was earlier acquired free of cost from the farmers. As for the project's completion, the minister failed to specify a time frame. To this, Dabhi argued that the government was dragging its feet on the project and that only 580 km length of canals was constructed in the past two years. "At this rate - constructing 280 km of canal per year - the project will take another 176 years to get complete", added Dabhi.

Under SSP, 51,168 km of canal which includes main, distribution, minor and sub-minor canals are to be constructed. Of this, about 18,855.90 km of canal work has been completed. To a query from Dabhoi MLA Siddharth Patel, the minister replied that by Dec 31, 2010, it has spent Rs 32,654.49 crore, while another Rs 18,363.10 crore would be required for completion of the project.

Narmada River for Gandhinagar: Tailends to suffer



The state government has decided to fill the Sabarmati in state capital Gandhinagar with the Narmada water and revive the dry river bed. In the process, it intends to develop the stretch of the river bank from the capital right up to Ahmedabad with parallel roads. To do this it will have to pump the Narmada water through the main canal near Karai, which is 15 km away from Gandhinagar.

Riverbed dry for past 20 years For the past two decades the river in Gandhinagar has been running dry. The ground water now runs 1,000 feet deep. Since the capital is at a height from the Narmada canal, it is not possible for the water to naturally flow up to Gandhinagar. For this reason, the irrigation department has decided to construct around 10 check dams on the Sabarmati. The dams will be filled using pumps.

After the river in Ahmedabad was filled up by the Narmada water, the ground water level has gone up. Similarly, the government wants the ground water level in Gandhinagar to go up. Political observers say the chief minister is keen to win Gandhinagar Municipal Corp and in this regard Modi has already proposed the plan in this budget. So now the SSP will be used by the ruling party in Gujarat to win corporate elections. This exemplifies the complete non-accountability of the state government in operation of dams and irrigation systems and in allocation of water. There is no credible legal mechanism available to challenge such patently wrong decisions of the state governments.

Unfortunately, people seems to have forgotten that the river was dried up after building of the Dharoi Dam on the upstream, which is not allowing any water downstream from the dam, killing the river in the process. The groundwater levels along the river has also depleted and lakhs of people staying along the river have been deprived of their river and also their access to groundwater has become more difficult and expensive.

Moreover, it may also be noted that in SSP plans, there was no allocation for municipal or industrial water supply for Ahmedabad, Gandhinagar or any area south of Sabarmati. All these allocations for Ahmedabad, Gandhinagar, Vadodara and others is completely illegal. Such out of plans allocations would also be at the cost of the drought prone regions of Kutch, Saurashtra and N Gujarat, in whose name the SSP was conceived, pushed and justified.

Allocation up for 2010-11 The allocations for the Sardar Sarovar Project for the financial year 2010-11 has been doubled to Rs 7010 crores from the Rs 3500 allocated for 2009-10.

- The works of branch canals, distributaries and minor canals is to be undertaken at the cost of Rs 3500 crore in Kachchh district. Also, works of 3 pumping stations will be undertaken at the cost of Rs 515 crore in Kachchh.
- Rs 2400 crore have been provided for the 470 km length of branch canal in Saurashtra, distributaries and work of minor canal, out of which work of Morbi, Botad, Limbdi and Dhrangdhra branch canal will be undertaken.
- Rs 1500 crore has been allocated for the Branch canal, distributaries and minors in N Gujarat, including 135 km length for Rajpur, Amarapura, Dhima and Gadhsisa branches in Patan and Banaskantha districts.
- Rs 175 crore provided for sprinkler and drip irrigation. (The Times of India 270211, Ahmedabad Mirror 030311)

GROUNDWATER**Less than 16% of allocation for Artificial Recharge of Groundwater could be spent**

The Union Govt has said that since the scheme for 'Artificial Recharge of Ground Water through Dugwells' is over, steps are underway to get it evaluated. Union Minister of State for Water Resources said in the Lok Sabha that the scheme was launched by the Govt in 2008 with a total outlay of Rs 1,798.71 crore. The scheme was to be implemented by 31.03.2010. The scheme covered seven States, namely Tamil Nadu, Gujarat, Madhya Pradesh, Maharashtra, Karnataka, Andhra Pradesh & Rajasthan with the objective of recharging existing dugwells in areas underlain by hard rock using runoff rain water from agricultural fields.

Shri Pala informed the House that under the scheme an expenditure of Rs 283.457 crore was incurred up to March 2010. The Ministry of Water Resources monitored overall progress of the scheme through National Level Programme Implementation Committee. The participating States have created State Level Steering Committees and District Level Implementation and Monitoring Committees. (PIB 090311)

It is shocking that only 15.75% of allocated money for this most essential scheme has been spent, while government manages to spend several fold more money on completely wasteful schemes of big irrigation schemes. A credible investigation is in fact required as to why the government was unable to spend the money allocated for this scheme.

Water meters on tube wells in Gurgaon a must The Central Ground Water Authority has directed that all registered and permitted tube wells in the notified area of Gurgaon be fitted with water meters and a record of the withdrawal of groundwater from the tube wells be maintained. Gurgaon DC said that as per the CGWA order dated Feb 8, 2011, it had been made mandatory for all registered as well as permitted tube well owners in the notified area of Gurgaon to install water meters on their tube wells within 60 days of the date of issuance of the order. Hence, the tube well owners in the district have to get water meters installed on their tube wells by April 9 so that an audit of groundwater extraction can be done. The tube wells of those violating this order would be sealed and strict action taken against the violators under the Environment Protection Act, 1986.

The Punjab and Haryana High Court had ordered on Dec 24, 2010, that the water of bore wells be used only for domestic purposes. Gurgaon city, municipal corporation area, industrial area and 105 villages of the district have been included in the 'Notified Area' where no new borewells can be dug. If any tubewell is found functioning in violation of the rules, it should be sealed and dismantled, directed the court, adding that FIRs would also be registered against violators. (The Tribune, The Times of India 220211)

Delhi HC: Cancel bore well permits without RWH The Delhi High Court has asked the Delhi government that the sanctions for bore wells given in Delhi to residents or groups that have failed to put rainwater harvesting systems be cancelled. The HC has also reiterated that "Water is the basic necessity for the survival of a human being and its supply to people has to be construed as a human right under Article 21 (Right of Life) of the constitution." The counsel for the Delhi govt told the court that advisory committees have been set up in each of the nine districts that have been according permission for groundwater extraction. (Indian Express 240211)

HYDRO PROJECTS**Former Minister and Former KSEB Chairman Jailed**

The Supreme Court has convicted and sentenced the former Kerala Minister, R. Balakrishna Pillai; the former Chairman of the Kerala State Electricity Board, and a close aide to one-year rigorous imprisonment in the Idamalayar Hydroelectric Power Project corruption case.

Idamalayar dam corruption case was first filed in 1991 and is related to the inappropriate procedures followed while awarding contracts for the construction of the Idamalayar dam in Idduki district when Balakrishnan Pillai was state power minister. The bench found Pillai guilty of having caused the Kerala State Electricity Board a loss of Rs 2 crore by awarding contracts at inflated rates.

The 75 MW Idamalayar Dam is located on the Idamalayar River, a tributary of the Periyar River in Kerala. The Idamalayar Dam is a multipurpose concrete gravity dam with a length of 373 m. The dam created a multipurpose reservoir covering 28.3 sq km submerging forests in the Western Ghats. (The Hindu 110211, Dainik Jagran 110211)

HEPs in Sakleshpur opposed Protesters took to the streets demanding that the proposal to build two small hydroelectric projects in the ecologically sensitive Western Ghats in Sakleshpur Taluk be scrapped. The protesters led by Malenadu Janapara Horata Samithi announced that the two hydro-electric projects would destroy the biodiversity in the Western Ghats. With more than 200 acres of protected forest being destroyed, the construction of the plant will further cause a problem to the elephant corridor. Furthermore, this would lead to elephants venturing into townships. MJHS President H A Kishore Kumar said that 11 small hydro-electric projects have been sanctioned in the Sakleshpur region and they will cause irreplaceable damage. (Deccan Chronicle 190211)

J&K for shorter gestation HEPs The Jammu and Kashmir Chief Minister, Omar Abdullah on Feb 24, 2011 stressed on launch of shorter gestation power projects. Chairing the 61st meeting of Board of Directors of Jammu and Kashmir State Power Development Corp, the CM constituted a Sub-Committee headed by the Chief Secretary and comprising of Principal Secretary Planning and Secretaries of Finance and Power Depts for early launch of Rs 2113 crore, 450 MW Baglihar-II. He laid thrust on speeding up the implementation of 600 MW Kiru, 520 MW Kawar and 1000 MW Pakaldul HEPs in joint venture with NHPC and PTC for which promoters' agreement has been executed. The Board noted appointment of MY Khan as Chairman of JV Company of JKSPDC, NHPC and PTC.

The Chief Minister gave approval to Rs 409 crore, 50 MW Lower Kalnai HEP in the State Sector under Engineering Procurement and Construction mode. He directed for speeding up Rs 686 crore, 93 MW New Ganderbal HEP, the bidding process for it would start in Aug 2011. The Lower Kalnai HEP is to be commissioned in 2015 while Rs 398 crore, 37.5 MW Parnai HEP is being awarded in Sept 2011. Managing Director, JKSPDC, Shaleen Kabra stated that Rs 6080 crore 990 MW Karthai-II will be processed for bidding under EPC mode while Rs 1257 crore 240 MW Karthai-I will also be implemented in the State Sector & is likely to be awarded in 2011. (groundreport.com 240211)

GVK wins Rattle hydro contract GVK Development Projects Ltd has been awarded a Rs 3,805 crores contract for the 690 MW Rattle hydroelectric project in Jammu & Kashmir. The state govt awarded the contract following an international competitive bidding. Pre-construction work has started on the project, located on the Chenab River in Kishtwar district. (International Water Power Magazine 140311)

HYDRO PROJECTS IN NORTH EAST INDIA

Assam's urge to PM on downstream impacts The Assam Govt has made a rather mild plea before the visiting Prime Minister regarding the serious downstream impacts that the state is likely to suffer due to the ongoing 2000 MW L Subansiri project and other hydropower projects in upstream Arunachal Pradesh. Referring to the widespread apprehension prevailing among the people of the State, the State said in its memorandum that the Central Government or the NHPC authorities should set up a technical team consisting of internationally acclaimed seismologist and other experts on the subject, including some members of the eight-member committee that studied the downstream impacts of the Lower Subansiri project. Further, the NHPC should form a steering group to advise it on flood and erosion control measures in the downstream areas.

The state govt said that the Central Water Commission should a comprehensive & cumulative river basin study of Subansiri, Lohit and

Siang basins based on the terms of reference given by the Ministry of Environment and Forests to determine the cumulative impact of the 150 proposed hydel projects on the downstream areas. This is very strange request, since CWC is basically acting as a lobby for big projects and is completely inappropriate for such a task. The opposition parties Assam Gan Parishad & BJP are also going through the motions of opposing the Lower Subansiri project in half hearted manner.

The State Govt memorandum, submitted to the Prime Minister by Chief Minister called for speedy measures to consider for funding the project – assessing and analysing the integrated hydrologic-hydraulic system dynamics of the Brahmaputra river basin of NE India – under the Indo-German cooperation. The project was submitted to the Union Ministry of Water Resources in June, 2010 and it is yet to be finalised, said the memorandum. The memorandum stated that since 1954, the State has lost 4.27 lakh ha land, or 7.4 % of its gross geographical area and 2,534 villages, due to erosion. Around 130 000 families have been affected by erosion. (Assam Tribune 190211, 240211)

L Subansiri machines lying at port since 6 months

On August 21 2010, the All Assam Students' Union had blocked three barges and two vessels carrying runners' for turbines and other equipment for the Lower Subansiri Hydel Project at Tezpur Jahaj Ghat. Six months on, the entire consignment is still waiting. The only movement these vessels have made since then is to return to the Pandu port in Guwahati some two months ago, after waiting at Tezpur for over 3 months. Five cargo ships from Bangladesh were used by Assam-Bengal Courier India Ltd. for NHPC to bring almost 679 MT of logistics for the ongoing NHPC mega dam project at lower Subansiri. AASU, which has been protesting against the dam, had stopped these vessels as part of their blockade drive against NHPC.

- **No PPA** NHPC and Arunachal Pradesh are yet to sign the Power Purchase Agreement for the L Subansiri HEP. (The Times of India 220211)

CAG frowns on Umiam pollution A CAG report has rapped the Meghalaya Energy Corp Ltd for not initiating any steps to protect the 10 sq km Umiam reservoir which feeds five downstream hydropower plants of the corporation. In addition, the reservoir supplies drinking water to the army cantonment at Umroi and to the villages situated downstream of the powerhouses, the report said. The report said in 2008, the Pollution Control Board, Meghalaya, carried out a check on the water quality of the reservoir and certified it "D". "We are of the view that the sources of pollution pointed out by the state board will also contribute to silting of the reservoir at a faster rate than what the reservoir was designed for, thereby, reducing the life span of the lake," the report said. Of the total capacity of 186.7 MW installed by the state's energy corp, 185.2 MW is wholly dependent on the reservoir water. (The Telegraph 220311)

HYDRO PROJECTS IN HIMACHAL PRADESH**Corruption in Kullu HEPs: Officers under scanner**

The role of some senior bureaucrats and state govt officials responsible for granting approvals to big hydro-power companies for setting up projects in Himachal has come under the scanner of the Vigilance and Anti-Corruption Bureau. They had allegedly accepted huge monetary benefits for granting favour to these companies. The role of two IAS officers and one IPS officer who served as Deputy Commissioner and Superintendent of Police in Kullu district is under the scanner of the Vigilance Bureau. The bureau acted on getting information about an SP-rank IPS officer making financial gains by favouring a big hydro-power company while being posted in Kullu district. The bureau was likely to probe the role of forest officers who were responsible for granting permission and monitoring the execution of a hydro-power project in Kullu district which had committed gross violations, including that of the Forest Conservation Act. Arrest of Ramesh Valegha, a businessman from Kullu on Feb 19, 2011 by vigilance sleuths, has opened up a can of worms. Charges held against him are that he was acting as a front man for collecting payments. A Kullu court sent him, after arrest last week, under Section 8 of the Prevention of Corruption Act, to judicial custody for eight days.

Allain Duhangan officials questioned The HP Vigilance and Anti-Corruption Bureau has summoned officials of the Allain Duhangan Hydro Power Company, which is executing two major projects in Kullu district, in connection with the graft case. Summons was also being sent to a couple of senior administrative officers who had served in Kullu district, asking them to join investigation. (The Tribune 200211, Indian Express 240211)

Malana II goes to CERC to settle dispute with ADP

The 100 MW Malana II HEP of Everest Power Pvt Ltd has approached the Central Electricity Regulatory Commission to settle a dispute regarding cost of transmission of its power through the transmission line built by the Allain Duhangan Project of Bhilwara group. The Malana II project is likely to be commissioned during 2011-12 as per the latest available update from the Central Electricity Authority. The CEA has blamed the HP state electricity board for not implementing the transmission plan in time bound manner. ADP is asking the Malana to bear the transmission losses, but latter is saying that as per CERC norms, those are to be borne equally by the generator and transmitter. As per ADP terms, the transmission cost for Malana would come to Rs 0.7-0.8 per unit. (The Tribune 180211)

SJVN chief removed – vigilance probe Shri H K Sharma, Chief Managing Director of the Sutlej Jal Vidhyut Nigam Ltd since 2005 has been removed from his post. He is under vigilance probe for financial irregularities. (The Tribune 260211)

JP Transmission line to destroy 9621 trees An estimated 9,621 healthy, green trees, including 1260 deodars will be axed in order to lay a 70-km long transmission line for the Karcham Wangtoo project. The project was already mired in controversies and had faced stiff opposition of the local population. The Karcham Wangtoo - Abdullapur (Yamuna Nagar, Haryana) transmission line involves the use of 322 ha of forest land. Congress MLA and former Minister G S Bali said in the state Assembly that the company be asked to abandon this plan and work on an alternative line to save the forests. Bali demanded setting-up a high powered committee, including NGOs and other public representatives, to explore an alternative transmission route. Chief Minister rejected Bali's demand.

Last year, a high level committee headed by Avay Shukla Additional Chief secretary (Forests), set up by the state High Court to study adverse affects of the hydro-power projects on the ecology and livelihood of people, had recommended scrapping of some projects in the Sutlej and Beas basins - which posed a threat to the local ecology. SANDRP's letter (see Feb 2011 issue of *Dams, Rivers & People*) to Union Environment Minister with photographic evidence of the violations that the Karcham Wangtoo project indulged in has remained unanswered. (Indian Express 170311, 180311)

Centre, Punjab oppose HP demand: Bhakra Share

The Centre and the Punjab Government have contended in the Supreme Court that no additional share of electricity could be given to Himachal Pradesh from the Bhakra and Beas hydro-power projects even as the SC felt that under the federal structure larger states should not ignore the pleadings of smaller states. The Bench also felt the original suit filed by HP in 1996, claiming 7.19 per cent share on the basis of transferred population and 12 per cent free power due to the location of the BBMB projects in Himachal could not be treated as a dispute over a contract or a property.

Appearing for the Centre, Additional Solicitor General said that at a meeting convened by the Union Irrigation & Power Secretary on April 17, 1967, HP & other states agreed to share the power on a certain ratio: Punjab 54.5 %, Haryana 39.5 %, Chandigarh 3.5 % & HP 2.5 %. On the demand for 12 per cent free power, he said this was applicable only to central projects set up after 1990, while the BBMB projects pre-dated this cut-off. Further, BBMB projects have been set up by Punjab and Haryana, not by the Centre.

Punjab counsel said it was Punjab & Haryana which were sharing the financial burden of BBMB projects, not HP & Chandigarh. The 2.5 per cent share in the Bhakra project was decided on the basis of the consumption of HP that time. Further, it was decided to provide 15 MW from Beas-1 on the basis of the requirement estimated by HP. He, however, clarified that Punjab "is not saying that HP's claims are illegitimate". (Tribune 180311)

IRRIGATION**Successful Participatory Irrigation Development in Vidarbha**

28 villages in Maharashtra, 21 of them in the agrarian crisis belt of Vidarbha, including the most suicide prone district of Yavatmal, have attained water & livelihood security through a scheme by which they not only maintain their irrigation projects, but plan, build and own these projects. Unlike the Participatory Irrigation Management, this scheme is appropriately known as Participatory Irrigation Development and Management wherein the farmers have been involved as decision makers & implementers right from the initial planning stage.

German Bank KFW extended a soft loan, which was passed on to Rajasthan, Andhra Pradesh & Maharashtra for this scheme. The Scheme bears the entire cost of building the dam and 32.5 % of the main canal work, farmers were supposed to contribute the remaining 62.5 % of cost — either by cash or through labour — of the main canal and sub-canals passing through their fields. This innovative scheme which was conceived in mid 90s, suffered departmental delays for 5 years.

Looking at the critical importance of community participation, a number of local NGOs were involved in the project for effective social mobilisation. Initially, the villagers viewed this as one more of the govt project and were wary of contributions, but as they got convinced of its effectiveness and the role in decision-making and planning that they could have through this, many more villages joined up and Water Users associations were formed. Many villagers sold their gold and valuables to raise contributions for the project. President of the Pimpri Hathgaon WUA states: "We feel this situation of 'we, being the owners and maintainers of the dam' is much better than being dependent on the govt", while the WUA Secretary from the parched village of Bibkhed says "We were so desperate to have water that we instantly agreed to pay". The KFW Consultant lists many factors which were new in this project including quick land compensation, maintaining good construction quality and training of the govt officials.

Today, the WUAs have their office buildings in each of the villages, office-bearers are elected by consensus and politicians and party politics are kept at bay. They collect water cess ranging from Rs 400 to Rs 1,500 per ha. The project affected persons, whose land was submerged for dams and canals, are given priority in fishing business. They are also given fishing contracts by the WUAs, which a drastic change from the conventional approach.

Through PIDM approach, these villages have attained new heights of water and livelihoods security. Bibkhed village in Buldhana faced acute water shortage with most farmers migrating to cities after a poor Kharif season. Now 75 % houses in the village are pucca structures. Same is the case with villages like Jamrun, Jahangir and

Shelgaon in Washim district. More importantly, agricultural loans which proved to be the bane of Vidarbha farmers are being rapidly paid off.

All the prosperity through community management and small dams and canal networks has come as a surprise to the Irrigation Department whose majority minor irrigation projects lie defunct with just 25 % of the irrigation capacity being achieved till date. Mr Shankar Amilkanthwar working with an NGO Dharamitra, from Pimpri Hathgaon, Yavatmal told SANDRP that there is an immense qualitative difference between minor irrigation works done by the Irrigation Department and similar works done by villagers. Canals and distributaries built by the villagers in Pimpri Hathgaon are much superior, while the canals built by Minor Irrigation Department have been leaking and water does not reach the tail enders. He also stated that while many of the water users do not pay water taxes to the Irrigation Department, they have started paying advance water taxes to the newly constituted Water User Associations. In Pimpri Hathgaon villagers have built a small dam 2 meters in width and 10 meters in height with planned distributaries and canal networks. The village which had never cultivated wheat before has been cultivating wheat and groundnuts as Rabi crops.

However, community contribution also meant that the WUAs had limited funds and could not match the govt compensation rates to be given to the PAPs. WUAs have accepted this as a major issue and are looking for solutions. Some of the innovative solutions they have used are giving fishing rights and contracts in the reservoirs and rights to practice draw down farming on the exposed lands in summer months to the PAPs.

There have been a number of important lessons learned from this experience. These include making the farmers involved in planning and decision making of the projects, ensuring their sense of ownership in the projects, keeping party politics out of water management, planning a sustainable cropping pattern so that available water suffices all farmers and maintaining utmost transparency and accountability in all dealings, etc.

Following the success of this project, Secretary, Water Conservation Department, Government of Maharashtra, said that GOM is looking at handing over 230 of its existing minor irrigation projects (below 250 ha capacity) across the state to respective villages.

Currently the project has created 3,620 beneficiary farmers from 4320 ha in 28 villages of the state. The maximum number of projects — 10 — are in Yavatmal district, a district most severely hit by farmer suicides, with 1,708 suicides during 2001-09. (Financial Express, 120211, Personal communication with WUA members)

Parineeta Dandekar

Communities construct their own canals

Communities of the Lalitpur district of Uttar Pradesh, which has been facing severe drought for the past seven years, have started tackling the drought on their own by digging channels to bring water from the govt canals to their fields.

This has transformed villages of Lalitpur, Tindra and Budwani, which are now harvesting 2-3 crops a year. Main link canals have been built by the community through voluntary labour, whereas 35 feeder canals have been built with the help of NREGA. NGO Parmartha and village association 'Gram Chetana Samiti' have initiated and coordinated these efforts.

Constructing these canals was the only option for these villages as all the dug wells had dried and silted up and the monsoon has been consistently playing truant. However, they were told that such diversion is illegal. Nonetheless a 2.37 km link canal, two feet deep and three feet wide, was made by 60 people, which has now ensured farming in 35 ha. The entire village now grows two crops a year, including vegetables and average annual income has doubled in the past two years.

This idea was picked up by the neighbouring Budwani where it was decided to dig a government-proposed canal by themselves. Surprisingly, though a link canal was proposed in the village nearly 40 years ago, the proposal never materialised but the villagers have been paying irrigation tax since then. After several discussions, villagers stopped paying this tax. Here, more than 100 people from the village made a 3.4 km link canal from a nearby govt canal. The link canal now irrigates 445 ha of the village. Most residents are growing three crops a year, including vegetables.

So far, 35 feeder canals have been dug in both villages to cater to individual fields. It is estimated that, 10 villages neighbouring Tindra and Budwani are drawing plans for similar community canals. As the next phase, villagers are now learning the techniques of canal maintenance, water distribution mechanisms and equitable water sharing. (Down to Earth 150311)

Sprinkler irrigation in Rajasthan Narmada command

In the entire Narmada Canal Project area, the irrigation will be done through sprinklers. A similar method would be applied to 28,000 ha in the lift schemes of the Indra Gandhi Canal Project. (The Hindu 160211)

Mahindra enters micro irrigation Biz Mahindra and Mahindra has approved the acquisition of 38% equity in EPC Industries, a listed company engaged in micro irrigation systems, for Rs 43.3 crore. This will be achieved through preferential allotment of 6.5 million equity shares by EPC to M&M at Rs 66.1 per share. (Business Standard 100211)

LOCAL WATER BODIES

Lonar Lake restoration to begin, following PILs

The Nagpur bench of the Mumbai High court has ordered Municipal Council of Lonar to undertake restoration of Lake Lonar, world's third largest meteorite lake in the Buldhana district of Maharashtra, following a Public Interest Litigation petition. As a first step, a 15 member apex committee of experts has been constituted, to develop a restoration plan. A committee is also being constituted at the local level to give suggestions and implement the recommendations of the state level committee. Lonar municipal council is seeking NEERI's help for evaluation of feasibility report of sewerage treatment plant, located near the lake.

⁵ In 2009, Kirti Nipankar, a young advocate from Mehekar filed a PIL to protect the lake and its environs from rampant pollution, sewage disposal, seepage of water from a nearby percolation tank, affecting the salinity and deforestation. Following the PIL, High Court formed a three-member committee under retired forest principal chief conservator to study the lake's condition and make recommendations. The PIL has also demanded nomination of the site for UNESCO world heritage sites list. Before this, another PIL was submitted by Prof Sudhakar Bugdane, who has been working on conservation of the lake for nearly 30 years. He told SANDRP that Forest Department has planted exotic trees like Acacia in the lake environs, which are harming the fragile ecosystem. He also said that Lonar Sanctuary needs to be included in the list of places declared by the Forest Department for developing Eco Tourism.

About 60,000 years ago, a meteor struck the landscape at Buldhana, creating a crater 1.8 km long & 150 m deep, which is fed by perennial streams, forming the Lonar Lake. This lake is unique because of its origin, and its extreme salinity. It has a Ph level of 11.6. (Seven is normal or neutral) and provides a unique and extremely rare habitat for extremophile bacteria which can survive in these harsh conditions. Some of these bacteria are of special research interest as they are found to consume methane. (Down to Earth 151110, Tehelka 160211, personal communication with Adv. Nipankar and Prof. Bugdane)

Conflict over use of water from Tank in Tikamgarh

The use of water for irrigation from the talab in Purainiya in Palera Tehsil in Tikamgarh district in Madhya Pradesh has created a conflict. The use of water from the tank for irrigation was prohibited by the Tehsildar on complaint by the fisheries contractors. The question arises, whether the use of water for life saving irrigation should be a priority in drought prone area like Bundelkhand over the fisheries cultivation. (Bhaskar 030311)

Fish farming in Purana Qila Lake The Archaeology Society of India, that is managing this 6.1 acre lake in Delhi is considering introduction of fish farming in the lake to keep it clean & generate revenue. (Tribune 180311)

RIVERS

Pune Corp's plans angers citizens On Feb 24, 2011, over a hundred citizens of Pune broke down portions of the central channelling of the Devnadi. The rivers of the city are being channelized under the guise of river restoration plans under the Jawaharlal Nehru national urban renewal mission. The small river, Devnadi, has been in news since Aug 2010. Residents of Concord Proxima and other residential complexes were up in arms against the Pune Municipal Corp's plans to concretise the central course of the Devnadi and channel its flow. Pointing out to the overall destruction of the river basin, the residents had stopped work. (DNA 260211)

Chambal river water for Dholpur TPS The Rajasthan Rajya Vidyut Utpadan Nigam Ltd has filed an application before the Central Empowered Committee (CEC) set up by the Supreme Court for laying of an additional water pipeline over the existing water pipeline from Chambal River to the Dholpur Combined Cycle Power Project, Stage II. The applicant highlighted that the Standing Committee of the National Board for Wild Life is reviewing the proposal. The CEC members posed questions on the purpose of the pipeline and also the allowing for the minimum flow to be continued in the river. The applicant responded stating that the pipeline is for cooling purposes. The CEC also asked a statement in writing that there will be no further requirement of water. It was concluded that once the Standing Committee of the National Board for Wild Life has taken a decision, the applicant will submit the same to the CEC, after which a hearing can be fixed. (Forest case update January 2011)

Dholiganga River to be inside Askot Sanctuary The CEC has decided that the entire River Dholiganga will remain within the modified boundary of the Askot Musk Deer Wild Life Sanctuary in Pithoragarh district in Uttarakhand wherein the provisions of the Wild Life (Protection) Act, 1972 will be applicable for the stretch of river inside the sanctuary. (Forest case update January 2011)

Dibrugarh University: International Seminar on Rivers The University is organising an international Seminar on "River, Society and Sustainable Development" during May 26-29, 2011. The Introduction on the webpage reveals, "In four years following the great earthquake of 1950, the Brahmaputra eroded and submerged eighty percent of Dibrugarh town. The town (on the south bank of the river) has been under threat of erosion ever since." However, the next line is a bit of a shocker: "Society is intimately bound up with rivers. It is imperative that we find means to make rivers our resources and do not let them create problems." The World, incidentally, is moving away from that paradigm of control of the rivers to the one that says rivers should not be seen as a mere resource or object, but must have a space of its own. One hopes the sentence does not reflect a mindset. (www.dibru.ac.in)

LIVING RIVERS with freshwater flows**High Court: Limit withdrawal to 50% from rivers**

In a landmark decision, the Allahabad High Court has ordered State of Uttar Pradesh to release at least 50% of the water from the Narora barrage into the river channel and limit water withdrawal to 50% of the water release. It has noted that decreasing water levels are an important reason behind the deteriorating water quality of Ganga in Uttar Pradesh and has raised some very important issues related to unchecked water withdrawals.

This Interim Mandamus has been issued by a bench of Arun Kumar Gupta and Vijay Chandra Shrivastava on Jan 12, 2011 in response to a PIL regarding the deteriorating water quality and water quantity in the Ganga, just before important river related festivals.

The High Court, after examining the daily pollution levels in the Ganga, submitted by the Uttar Pradesh Pollution Control Board noted that the water quality of Ganga is 'not fit for human use' and framed 3 fundamental issues:

- "(a) Can the State draw unlimited quantity of water from a river event to the extent of rendering its main stream a dry zone?
- (b) Can the State because of drawl of water from upper portion of river Ganges render its quantity or quality of water completely unfit for human use even for bathing purposes?
- (c) Can the natural resources like river Ganges be permitted to be completely destroyed by drawing unlimited quantity of water for irrigation purposes?"

The Court had ordered the Irrigation circle Allahabad, to release 1100 cusec water in the river channel, till the time water is not released in the river from Tehri. The High Court further opined that "there should not be withdrawal of water from main course more than 50 % and at best 50 % of the river water could be diverted for other purposes."

The Court noted significantly that though the respondent holds disruption of water release from Tehri Dam to Narora Barrage responsible for low water levels in Ganga, water from Narora is already being diverted by the State to a number of other uses and sufficient amount is not being released in the river channel in any case.

The Court issued an interim mandamus to ensure that 50 % of the water released from Narora should reach in the main course with liberty to show cause to the respondents by the next date. The State will be submitting relevant papers justifying its water use and current withdrawals. It is hoped that such PILs and Court orders motivate States to use water judiciously and importantly, limit water withdrawals to a sustainable value which will allow the downstream communities and ecosystems to thrive as well. (www.elegalix.allahabadhighcourt.in)

AGRICULTURE**UN: Eco-Farming Could Double Food Output**

A move by farmers in developing countries to ecological agriculture, away from chemical fertilisers and pesticides, could double food production within a decade, a UN report says. "Agriculture is at a crossroads," says the study by Olivier de Schutter, the UN special reporter on the right to food. So far, eco-farming projects in 57 nations has demonstrated average crop yield gains of 80 % by tapping natural methods for enhancing soil and protecting against pests, it says.

Recent projects in 20 African countries resulted in a doubling of crop yields within 3-10 years. Those lessons could be widely mimicked elsewhere, it adds. "Sound ecological farming can significantly boost production and in the long term be more effective than conventional farming," De Schutter said of steps such as more use of natural compost or high-canopy trees to shade coffee groves. "Agro-ecology" could make farms more resilient to extreme weather conditions associated with climate change, including floods, droughts and a rise in sea levels that the report said was already making fresh water near some coasts too salty for use in irrigation. Benefits would be greatest in "regions where too few efforts have been put in to agriculture, particularly sub-Saharan Africa," he said. There are also a number of promising experiences in parts of Latin America & Asia.

"The cost of food production has been very closely following the cost of oil," he said. Upheavals in Egypt and Tunisia have been partly linked to discontent at soaring food prices. Oil prices are around \$115 a barrel. "If food prices are not kept under control and populations are unable to feed themselves ... we will increasingly have states being disrupted and failed states developing," De Schutter said. Examples of successful agro-ecology in Africa include the thousands of Kenyan farmers who planted insect-repelling desmodium or tick clover, used as animal fodder, within corn fields to keep damaging insects away and sowed small plots of napier grass nearby that excretes a sticky gum to trap pests. The study called for better research, training and use of local knowledge. "Farmer field schools" by rice growers in Indonesia, Vietnam and Bangladesh had led to cuts in insecticide use by 35-92 %, it said.

De Schutter also recommended a diversification in global farm output, from reliance on rice, wheat and maize. Developed nations could be a little slower to make a shift to agro-ecology because of what he called an "addiction" to an industrial, oil-based farming – but a global long-term effort to shift to agro-ecology was needed. It cited Cuba as an example of how change was possible, as the collapse of the Soviet Union in 1991 led to supplies of cheap pesticides & fertilisers being cut off. Yields had risen after a downturn in the 1990s as farmers adopted more eco-friendly methods. (Reuters 100311)

The importance of millets A recent proposal of the National Advisory Council that deserves policy attention relates to the supply of millet and other coarse cereals through the public distribution system. It is an idea whose time has come for many reasons. Apart from being nutritious, millet can also bridge the food gap likely to be created by the implementation of a food security law. The inclusion of millet is a good idea for several reasons. Millet, such as sorghum (jowar), pearl millet (bajra), finger millet (ragi) and other coarse staples like maize, barley, oats and the like may not match rice and wheat in grain quality, but they certainly score over them in nutritional value. In fact, these are now often described as "nutri-cereals". While the protein content of many millet is close to that of wheat, they are richer in vitamins, especially vitamin B, iron, phosphorous and many other key micronutrients. Besides, these are gluten-free alternatives to finer cereals which make them alkaline rather than acidic in nature. That explains why coarse cereals have been a preferred staple food in many parts of the country, especially in rural areas. Regrettably, they have been gradually edged out of the food chain largely because the govt began supplying highly subsidised wheat and rice at cheaper rates.

The biggest factor in their favour is that these crops are innately more efficient converter of energy and plant nutrients into biomass, including grains. Water-guzzling crops like rice and wheat should, in fact, give way to millet and other coarse cereals in areas where the former are irrigated with groundwater, causing rapid depletion of underground water aquifers, to prevent today's grain bowls from becoming tomorrow's deserts. (EDIT in Business Standard 100211)

World Bank pushes for agriculture in carbon market

The World Bank president Robert Zoellick continues to champion efforts to bring agriculture into carbon markets. In Jan 2011, Zoellick delivered a pro-market message addressing food prices in the UK newspaper the *Financial Times*. "The answer to food price volatility is not to prosecute or block markets, but to use them better," he argued. This differs from both French President Nicolas Sarkozy, who blamed commodity speculators for the price increases and Nobel laureate economist Paul Krugman, who emphasised the impacts climate change is beginning to have on agriculture.

World Bank's Incongruent conclusions At end Jan 2011, Olivier De Schutter, the UN Special Rapporteur on the Right to Food responded in an editorial to the nine measures Zoellick set out for the G20 to address the food crises. He instead argues that the G20 should support countries' ability to feed themselves and that the international community should work to establish food reserves. Support for farmers' organisations, protection for access to land and limitation of financial speculation are among the recommendations set out by De Schutter. He also highlights the need to defend the human right to

food and to complete the transition to sustainable agriculture. (Brettonwoodsproject 180211)

Danger: Herbicide market grows at 25% The herbicide markets that was worth Rs 700 crores three years back is now at around Rs 1300 crores and expects to grow at 25% per annum to Rs 2400 crores in another three years. Companies like Monsanto India, United Phosphorus, Insecticides (India) and Rallis India -- a unit of Tata Chemicals see big business opportunity and are launching new products. However, this could be dangerous for India's waters, soils, biodiversity, people and environment. (Reuters 240211)

Soil without life

Going by the estimates put out by the Indian Council of Agricultural Research in its latest document "Vision 2030", about 120.72 million ha of the country's arable land of around 140 million ha is degraded by erosion.

Besides, some 8.4 million ha suffers from soil salinity and water-logging. Worse, the country is losing annually nearly 0.8 million T of nitrogen, 1.8 M T of phosphorus and 26.3 M T of potassium as a result of all this.

The problems are exacerbated by the imbalanced application of nutrients, especially N, P and K, and excessive mining of micronutrients, leading to deficiency of macro and micro nutrients in most soils.

Besides, the use of compost, farmyard manure and other types of manures and organic fertilisers is woefully inadequate. The net result is steady deterioration in soil health in all its dimensions — physical, chemical and microbial.

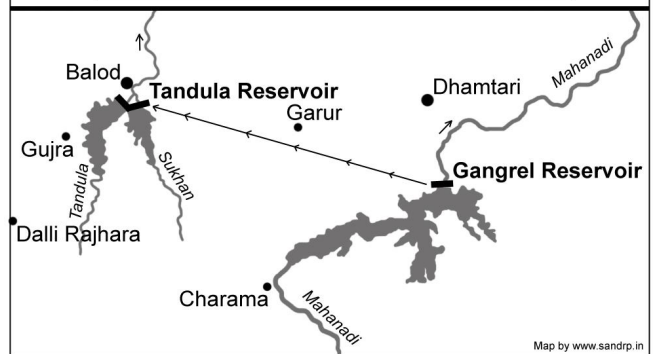
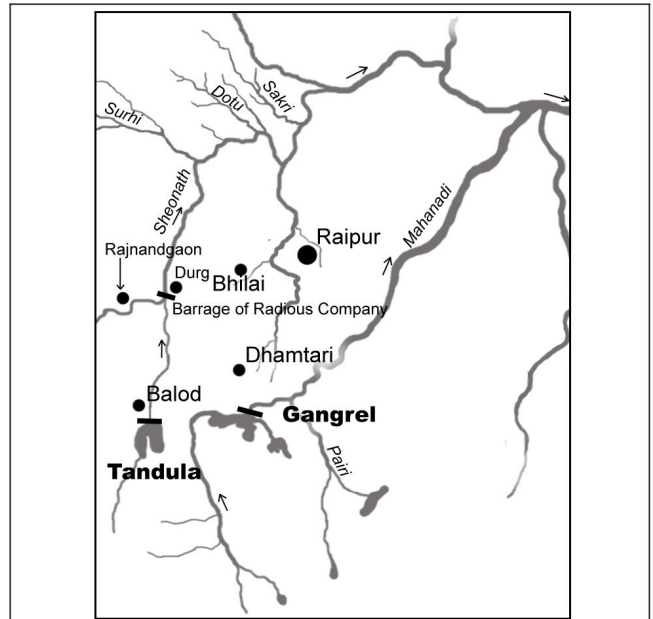
Farmers, fortunately, are well aware of this menace, though they are handicapped, economically and otherwise, to take corrective measures. This has been borne out by a recent "social audit" of soil health conducted by environment campaigner Greenpeace in five states — Assam, Karnataka, Madhya Pradesh, Orissa and Punjab. 98 % of the 1,000 farmers surveyed were ready to use organic fertilisers if these are subsidised and made easily accessible.

An important indicator of soil health is the presence of living beings, such as micro-organisms, earthworms and the like. They help the soil breathe and maintain its physical structure, water-holding capacity and fertility.

Unfortunately, the indiscriminate use of chemicals over the years has destroyed much of this vital soil fauna. All the respondents in the survey were categorical that they could not find living organisms in the soil anymore, though they did find them before 1980. However, over 80 per cent of these farmers say they had seen living beings in soils till as late as 2000, a clear indication that most soils have been deprived of their livestock in the past decade or so. (Business Standard 220211)

RIVER LINK PLANS

Chhattisgarh proposal for River linkage The proposal



will be discussed in the cabinet meeting for approval, Hemchand Yadav, state's water resources minister, said in the Chhattisgarh legislative assembly. As an experiment, the department has already started a project that would link two reservoirs in the state to meet water scarcity in some pockets. The proposed 60 km long canal project will link Gangrel Dam in Dhamtari district with the Tandula reservoir in Durg.

Salient features

Tandula Tank	
Year of Commission	1920
River	Tandula, Sukhanala
Height	21.95 m
Reservoir Area	46.102 sq km
Effective Storage Capacity	312.3 mcm
Purpose	Irrigation

The state govt will spend Rs 250 crore on the project. The govt had provisioned Rs 15 crore for the project in the current financial year. Due to scanty rainfall in catchment areas of Tandula, the reservoir was filled not even half of its capacity. On the other hand, Gangrel

dam had been holding surplus water that the authorities were flowing out to river Mahanadi. The reservoir linking project will help to bring 30,000 ha land in the command Area of Tandula under irrigation, Yadav said.

Salient features

R S Sagar (Gangrel)

Year of Commission	1979
Type of dam	Earthen, Gravity/Masonry
River	Mahanadi
Height	30.5 m
Gross Storage	910.5 mcm
Reservoir Area	95.4 sq km
Effective Storage Capacity	766.89 mcm
Purpose	Irrigation, Hydro Power, Water Supply

Source: NRLD- 2009, CWC

Hydro Power Generation (Million Units) at Gangrel Dam

	Gangrel (10 MW)
2004-05	5
2005-06	9
2006-07	30
2007-08	37
2008-09	30
2009-10	25

Source: CEA

However, this claim of the Chhattisgarh govt that Gangrel has surplus water does not seem sound if we look at the power generation at the Gangrel dam, see table above for the figures of power generation in recent years, which is much below the design generation of 40 Million Units that the project was supposed to provide as per the techno-economic approval it got. However, the project has not achieved 40 MU generation in any of the years so far. Thus, the claim of the Chhattisgarh govt that Gangrel has surplus water seems questionable. There could be some other intentions of this transfer.

It seems the transfer would help the Radius Water Limited to whom the 23 km stretch of the Sheonath River was handed over under the most controversial and legally challenged contract in 2005 is likely to benefit from this transfer, as the controlling barrage of the company lies downstream from the Tandula reservoir. (Business Standard 180311)

Status of ILR The Union Minister of state for water resources Shri Vincent H. Pala said that NWDA has received 36 intra-state river links proposals from 7 States viz. Maharashtra, Gujarat, Jharkhand, Orissa, Bihar, Rajasthan and Tamil Nadu. Out of above, Pre-Feasibility Reports of 12 intra-state river links have been completed by NWDA. He said that NWDA has incurred an expenditure of Rs 312.12 crore from 1982-83 up to Jan, 2011 against a budgetary provision of Rs 316.93 crore upto FY 2011-12 for preparation of PFRs/ FRs/ DPRs of inter-state river link proposals, preparation of PFRs/ DPRs of intra-state river links & other studies. (PIB 030311)

WATER SECTOR

Rajasthan Regulatory Authority proposed The Rajasthan Chief Minister, who also holds the finance portfolio, announced in his budget speech on March 9, 2011 that the state proposes to a State Water Management and Regulatory Authority would be appointed and a new law on groundwater management would be enacted this year. (The Hindu 100311)

THE WATER BUSINESS

Bottled water business of \$ 330 m, growing at 20% Both domestic and international players are slugging it out, with Indians currently spending about \$330m a year on bottled water. The packaged water market constitutes 15 per cent of the overall packaged beverage industry, which has annual sales of at least \$2.6bn. Bisleri International boasts a 40 per cent share, followed by Kinley (25 per cent) and Aquafina (around 10 per cent). The sales are growing by 20 % a year. (FT.com 210211)

Bogda dam in CG sold to TPS? Congress demanded a statement from the Chhattisgarh state government as to why it had sold the Bogda dam to a private power company that is setting up a 3,600 MW plant in the Janjgir-Champa district. The govt said that a committee headed by the Chief Secretary had decided on Feb 23 2010 that since the farmers in the area did not need irrigation from the dam, the dam and the canals can be sold to the revenue dept at Rs 332.77 lakh.

The dam was constructed in 1962 using 52.85 ha land and was irrigating 221.85 ha land till 1989-90. Approval of the state cabinet was not taken for this deal. On March 4, 2011, the speaker of Legislative Assembly declared that the issue will be investigated by a committee of MLAs.

35 firms allowed to use water from CG Rivers 35 industrial houses have so far signed agreements with the Chhattisgarh government for using water from the state's various rivers for their units, state Water Resources Minister Hemchand Yadav told the state assembly on Feb 23, 2011. In a written reply he said that the govt has signed deals in this regard with 35 firms between Jan 2004 & Jan 2011.

5 barrages proposed on Mahanadi The CM of CG announced in the assembly on Feb 24 that the govt has proposed to build 5 barrages on Mahanadi to supply water to industry. The barrages will be built at the cost of Rs 300 Cr and would generate revenue of Rs 400-500 crores per year, he claimed. He also claimed that the CGWB has cleared the proposal. While making this statement he made the erroneous assertion that 90% of the 26.12 BCM flow in Mahanadi is going waste as CG is able to use only 2.5 BCM. Both figures are wrong. (IANS 220211, 230211, Bhaskar 250211, 050311, Jansatta 040311)

Kerala law to hold Coke accountable for the damages in Plachimada

In a remarkable development, the Kerala assembly has unanimously passed a Bill to set up a tribunal which will allow individuals adversely affected by Coca-Cola's bottling operations in Plachimada to seek compensation from the company. The passage of the Bill by the state legislature on Feb 24, 2011 formalizes the state govt's position that Coca-Cola is responsible for causing environmental damages in and around its bottling plant in Plachimada in Kerala, and that the company must pay for the damages it has caused. The bottling plant in Plachimada has remained closed since March 2004 as a result of the community-led campaign.

In a remarkable development, the Kerala assembly has unanimously passed a Bill to set up a tribunal which will allow individuals adversely affected by Coca-Cola's bottling operations in Plachimada to seek compensation from the company.

The Bill is based on the report and recommendations of a High Power Committee which released a report on March 22, 2010 holding Coca-Cola responsible for causing pollution and water depletion in Plachimada. The High Power Committee report, on which the Bill is based, had confirmed that Coca-Cola had violated a number of laws in its reckless operations, including: Water (Prevention and Control of Pollution) Act, 1974; The Environment (Protection) Act, 1986; Hazardous Waste (Management and Handling) Rules, 1989; Land Utilization Order, 1967; and the Kerala Ground Water (Control & Regulation) Act, 2002. R Ajayan and Velur Swaminathan, conveners of Plachimada Solidarity Council and Adivasi Samrakshana Samiti respectively, have welcomed the passage of the bill on the last day of the last session of the current assembly.

The panel comprising 15 directors of departments and independent experts and chaired by Additional Chief Secretary K Jayakumar determined, after work over 11 months that the depletion and pollution of groundwater was caused by activities of Coca Cola company. It had recommended setting up of a tribunal with judicial powers to make Coca Cola pay individual claims.

The Coke bottling plant set up in March 2000 in Plachimada village in Kerala, began drawing over five lakh liters of water a day from the wells on its premises. This resulted in the drastic depletion of water levels. The heavily polluted groundwater of the village containing hazardous chromium, cadmium, lead, etc., caused severe health problems to the villagers.

Key Findings of the Panel Report:

- The Coca Cola company caused environmental degradation through over-extraction of groundwater and irresponsible disposal of sludge. The water sources of the area have been affected and the water scarcity has become more acute.

- The company misguided the farmers by passing off the sludge as manure and is responsible for soil degradation, water contamination & consequent losses.

- There has been a steady decline in the agriculture production in the area and the production of milk, meat, and eggs has declined.

- Metals like cadmium, lead, and chromium have been detected in the sludge. Skin ailments, breathing

problems, and other debilities among the locals have been on the rise.

- Low birth-weight in newborns has also been noticed.
- Women have to fetch drinking water from far-off places and this has deprived them of their wages.
- Children have dropped out of schools on account of the social, health & economic impacts of the pollution.
- The gram panchayat has been providing drinking water through tankers ever since the wells and water bodies were rendered useless by the pollution.

Damages assessed

Agricultural losses:	Rs 84.16 crore
Health damages:	Rs 30 crore
The cost of providing water:	Rs 20 crore
Wage losses and opportunity cost:	Rs 20 crore
The cost of polluting resources:	Rs 62.1 crore
Total:	Rs 216.26 crore

Though Coca Cola Company has shrugged off the report stating that the report has been based by "gross assumptions", the report and the bill has been welcomed by the civil society in Kerala and beyond.

The Bill provides for constitution of a 3-member tribunal to be chaired by a person in the rank of a district judge and having an administrative member and an expert member. The tribunal would have all the powers under the Code of Civil Procedure and two-year tenure. Cases arising from ecological damage caused by the company and applications for compensation or restitution of damaged property would be taken up by the tribunal, which would decide on the compensation after hearing both the appellants and the company.

The tribunal shall, while passing any award or order, apply the principles of sustainable development, precautionary principle and the polluter pays principle. Once compensation is awarded, the company shall deposit the entire award amount with the tribunal. All appeals against the tribunal's decisions would lie with the High Court. The tribunal has also been granted legal authority, including the power to summons individuals and documents, as well as seek and examine witnesses. The adoption of the legislation by the Kerala state legislature legally binds Coca-Cola to follow the directives of the tribunal. (India Together 300410, Indian Express 140211, India Resource Centre 180211, 240211)

WATER SUPPLY & SANITATION

UP, Rajasthan demand share in water from Palla In a recent meeting of the Upper Yamuna River Board, where Delhi tried to get consent for building the Rs 600 Crore Palla barrage on Yamuna river within the territory of Delhi to utilise its share of water from the river, the basin states Uttar Pradesh and Rajasthan demanded their share in the water from the proposed barrage. Delhi has written to the UYRB, rejecting these claims and said that no other states should have claim on water from the barrage. (The Hindu 260211)

QUOTES

"The motive is very clear. The (Polavaram) dam is built at the cost of submergence of areas in Telangana only to ensure that the Godavari water is taken away permanently from the people of Telangana in the event of formation of Telangana."

K T Rama Rao, TRS leader (NDTV 130211)

"Development and planning in India are associated with spending of money. That planning means expenditure and this will lead to development is the mindset behind such beliefs."

N C Saxena, member, National Advisory Council (The Financial Express 160211)

There is not a single state in the country which has a Land Management Policy or legislation.

MS Vani (SRI Group 230211)

INDIA AIDING DAMS ABROAD

USD 50 m for Zambia Hydro Zambia has secured USD 50 million from India to develop the 120 MW Ithezi Thezi hydro power project. This was secured from the Indian government through TATA Africa Holdings which seeks to partner with ZESCO in a 50:50 JV in the project. The financing is part of the USD 240 million needed to upgrade the plant. The expanding mining sector is estimated to consume about 50% of Zambia's power while the rest is shared with the other industries and domestic consumers in the country with population of 13 million. Under the agreement, Zambia's state power utility and TATA Africa are expected to raise the shortfall and ensure the plant is rehabilitated and commissioned before the end of 2011. (Steel Guru 230211)

NEPAL

Work at Chameliya hydel halted A Chinese company constructing the 30 MW Chameliya Hydro Project has suspended the construction work citing Nepal Electricity Authority's failure to pay the contractor on time. China Gezhouba Water and Power Group Company (CGGC), which has been constructing the Rs 7.49 billion project in Darchula has written to NEA, "We have no option left, as we have not been paid in accordance with the contract". A week ago, Korean EXIM bank, which had provided Rs

3.54 billion as soft loan for the project, had sent a letter to the Ministry of Energy about the delay in payments. CGGC was awarded the contract worth Rs 2.88 billion for the civil work in Dec 2006. Rs 2.34 billion have already been paid to CGGC. (Himalayan Times 230211)

PAKISTAN

Dam set to submerge Buddhist relics Pakistan is set to construct 4,500 MW Diamer-Basha Dam in the Northern Himalayan Mountains that will submerge thousands of Buddhist relics, inscriptions and rock art that represents centuries old civilization with 30 registered sites and 50,000 documented rock carvings. Some of the rock art that will be submerged by the dam's reservoir dates back 30,000 years and includes pictographs, painted images and other drawings thought to have been scratched on to varnished rock faces and boulders by prehistoric inhabitants. Erected on a narrow gorge of the Indus River at Basha in Diamer District, which is a center of Buddhist relics and ancient rock carvings across the riverbanks at upper Indus River valley. Apart from endangering the Buddhist relics, the dam will also submerge 100 km of the Karakorum highway, which was constructed over ancient Silk Route, one of the oldest trading routes in the world.

Till date, dams have submerged numerous sites of cultural and archaeological significance. The Dams and Development Report of the World Commission on Dams states that no investigation of cultural and archaeological resources has taken place as part of the planning process of most dams. In India, reconnaissance surveys in 93 of the 254 villages submerged in the Narmada Sagar dam impoundment area yielded hundreds of archaeological sites ranging from Lower Paleolithic to historic temples and iron smelting sites. Though projects like Narmada Sagar, Tungabhadra, Bhadra, and Nagarjunsagar have paid some attention to major temples and places of worship, almost all the dams built so far suffer from lack of cultural heritage studies, let alone mitigation measures. (International Rivers, WCD)

Tarbela extension to add 960 MW The extension plan of Tarbela Dam would add 960 MW capacity in next four years. US \$ 700 million would be spent on the project funded by the World Bank. Engineering consultants have reached Pakistan for the 4th Tarbela extension project, its existing capacity is 3,400 MW. (AP 180211)

CHINA

Dam-building will cause more problems In 2007, China became the world's biggest emitter of greenhouse gases. At the 2009 Copenhagen summit, China announced that it would reduce its carbon intensity - the amount of greenhouse gas emissions per unit of economic output - by at least 40% by 2020. The draft of its new five-year plan, which will be discussed by the

National People's Congress in March, includes an environmental tax and other carbon-cutting measures.

The five-year plan also includes the most relentless dam-building effort that any nation has ever undertaken in history. If approved, this program would cut off the country's nose to spite her face. It would irreversibly destroy China's great rivers and biodiversity hotspots of global importance.

China already counts more dams within its borders than any other country. It has paid a huge price for this development. Chinese dams have displaced an estimated 23 million people. Dam breaks in the country with the world's worst safety record have killed approximately 300,000 people. Scientific evidence suggests that one particular project, the Zipingpu Dam, may have triggered the devastating earthquake in Sichuan of 2008. Dams have also taken a huge toll on China's biodiversity, causing fisheries to suffer and driving charismatic species such as the Yangtze River Dolphin to extinction.

As part of its low-carbon diet, the Chinese government plans to approve new hydropower plants with a capacity of 140 000 MW or 140 GW over the next five years. For comparison, Brazil, the United States and Canada have each built between 75 and 85 GW of hydropower capacity in their entire history. Achieving the new plan's target would require building cascades of dams on several rivers in China's south-west and on the Tibetan plateau - regions which are populated by ethnic minorities, ecologically fragile, rich in biodiversity, and seismically active.

As a harbinger of the new trend, the Chinese govt recently announced that it would allow a dam cascade on the Nu River or Salween - a pristine river at the heart of a World Heritage Site - to be built. China's premier, Wen Jiabao, had stopped these projects in 2004 as a major concession to environmentalists. The govt also agreed to shrink the most important fisheries reserve on the Yangtze River so that a new hydropower scheme could go forward.

The unprecedented dam building spree is being pushed by provincial govts and state-owned energy companies, which often pursue vested interests. In the past, these actors were kept in check by a coalition of environmental activists, journalists and govt officials, who often managed to gain the ear of China's top leaders. This has changed since Copenhagen. International pressure to limit greenhouse gas emissions is the single most important factor behind the push for hydro in China.

Climate change is the most serious environmental threat of our generation. Yet the international community should address this threat in a holistic way, without losing sight of other challenges to the planet's future. The world is losing biodiversity at an alarming rate.

Rivers, lakes and wetlands have suffered more dramatic changes than any other type of ecosystem. Because of dam building and other factors, freshwater species have on average lost half their populations between 1970 and 2000, and more than a third of all freshwater fishes are at risk of extinction.

As the head of the UN Environmental Programme warned last year, it would be arrogant to assume that humanity can survive without biodiversity. We cannot sacrifice the planet's arteries to save her lungs. China not only has a moral obligation to participate in the fight against climate change. The country has also committed to protecting its ecosystems under the Convention on Biological Diversity. It deserves respect for trying to limit greenhouse gas emissions at a per-capita level which is much lower than what industrialised nations emit. World leaders should let the govt in Beijing know that they don't want China to destroy her rivers and the rich biodiversity they support to reach her carbon goals. (Peter Bosshard in Guardian 050311)

Water crisis ahead: Impact on global wheat prices?

President Hu Jintao sounded a warning note during his lunar New Year visit to North China's Hebei province. He urged the need for adequate measures for preventing drought and ensuring that the summer grain output does not suffer. His statement came on the back of Northern China being affected by severe drought for more than three months and worries over dips in grain output. It is being described as the worst drought in 60 years, affecting 8 of China's major wheat growing areas, producing 80% of China's wheat.

The dimensions of the drought are alarming. Official agencies indicate that areas in North China have gone without rainfall for more than 120 days. Rizhao in Shandong province is suffering its worst drought in the last 300 years. Beijing is not far behind—having not seen any rain or snow for almost 100 days. Along with urbanisation, depletion of water and lack of irrigation has led to total volume of arable land in China shrinking by more than 8 million ha over the last 10-12 years. Persistence of the trend can have serious implications.

Irrigated area, as a percentage of total land area in China at 48%, has hardly experienced much increase over the last couple of decades in aggregate terms. Some analysts argue that this is on account of diversion of water resources to industrial use. Whatever the reason be, as the Chinese Vice-Premier Hui Liangyu pointed out a few months ago, China's irrigation system is in a poor shape. The shift from collective to individual farming since the late 1970s, while offering incentives to farmers for increasing output, also led to the erosion of ownership rights of collectives over water resources. China hopes to add 2.7 m ha to irrigated area by 2015.

Lack of adequate surface water irrigation has forced farmers to rely more on groundwater. This has been

accompanied by a steady increase in private ownership of tube wells. And this is where problems have arisen in managing a public good like water through private means. Though several experts argue that the privatisation of wells has helped in offsetting water scarcity in Northern China, this has also probably led to the over-exploitation and depletion of groundwater tables. Returning to collective ownership though is not the solution since agricultural land use rights have been privatised. (Financial Express 100211, The Hindu 140211)

China's choked water future Stripped to its essence, China's globally significant choke point is caused by three converging trends:

- Production and consumption of coal has tripled since 2000 to 3.15 billion tons (BT) a year. Govt analysts project that China's energy companies will need to produce an additional BT of coal annually by 2020, representing a 30 % increase. Fresh water needed for mining, processing, and consuming coal accounts for the largest share of industrial water use in China, roughly 112 billion cubic meters (BCM) a year, a fifth of all the water consumed nationally.
- Though national conservation policies have helped to limit increases, water consumption nevertheless has climbed to a record 591 BCM annually, which is 42 BCM more than in 2000. Over the next decade, according to govt projections, China's water consumption, driven in large part by increasing coal-fired power production, will reach 630 BCM annually—40 BCM more than today, 15 BCM of that increase will go for coal related water use.
- China's total water resource, according to the National Bureau of Statistics, has dropped 13 % since the start of the century. In other words China's water supply is 350 BCM less than it was at the start of the century. Chinese climatologists and hydrologists attribute much of the drop to climate change, which is disrupting patterns of rain and snowfall.

A Big Water Transport Project in the West A big water transport project appears to be gaining new momentum. An important researcher at the Chinese Academy of Sciences told Circle of Blue that the go-ahead for a western canal—which would transport water from the Yangtze River in the south to the headwaters of the Yellow River in the north—is likely to be included in China's 12th Five-year Plan that is expected to be made public in March. The western canal (once thought dead because of its cost) thus seems to be revived.

Conservation along the Yellow River Since the end of the 1990s, China has enforced a successful water conservation and water supply quota system along the entire length of the Yellow River. Each of the provinces served by the Yellow River is bound by an annual water allotment to serve industrial, agricultural, residential, and ecological needs. The result is more efficient water conserving practices, as well as more water for fish, birds, wetlands, and other ecological resources. More

than a decade after its flow stopped well short of the mouth, the Yellow River now reaches the sea. In 2007, China established a new "water intensity" requirement that calls for industry and agriculture to cut the amount of water they use per unit of gross domestic product by 20%. In 2009, that target was increased to 60 %.

Water Rights Transfer The Inner Mongolia Autonomous Region and the Ningxia Hui Autonomous Region are at the forefront of a national policy to transfer water use rights from agriculture to industry through investment in efficient irrigation. The new policy—a lifesaver for new and rapidly developing local industries—and the region's water-energy security are essential to China's goal to promote economic growth in its west and to improve the political stability of its border areas. (*Choke Point: China on CircleofBlue.org* 150211, 230211)

WORLD DAMS

Half a million people against Belo Monte-Brazil dam

In a protest in Brazil, indigenous people delivered a petition signed by 500,000 people to authorities calling on them to cancel the controversial Belo Monte dam on the Xingu River, a tributary of the Amazon. Proposals for greater democracy in planning alternatives to Brazil's energy matrix were presented along with the signatures by the Alliance in Defense of the Rivers of the Amazon, led by indigenous and dam-affected people who traveled to Brasilia to face Brazil's new president, Dilma Rousseff directly. The delegation was supported by the Movement of Dam Affected People and the Movimento Xingu Vivo Para Sempre, and had the backing of a protest that marched from the Brazilian Congress straight to the Presidential Palace.

In their proposal, the Alliance called for President Dilma to democratize energy planning by making it transparent and participatory, and by opening a dialogue between govt planners at the Ministry of Mines & Energy and civil society organizations, social movement representatives, & the academic community.

50,000 indigenous people will lose their livelihoods and at least 12,000 will have to be relocated from the Xingu River for the Belo Monte Dam. Environmentalists warn that the dam will release massive amounts of the potent greenhouse gas methane due to rotting vegetation and disrupt fish migrations. In addition, the dam will flood over 100,000 acres of primary rainforest.

In a strategic development, the head of Brazil's environment agency, IBAMA, stepped down, reportedly under pressure to approve the dam despite environmental concerns. Following his resignation, IBAMA granted partial license to the project, allowing the first phase of construction and clearing rainforest to go ahead. Belo Monte consortium Norte Energia, S.A. backed out of a bridge loan with Brazilian National Development Bank to begin construction because they

are avoiding meeting the project's 40 social and environmental conditions, a prerequisite to obtaining the full installation license. Brazil's Federal Council of Attorneys issued a statement calling for the paralysis of the Belo Monte Dam until the project's 40 social and environmental conditions have been met by NESAs.

During 3-4 months of the year the dam will run on only 10-30% capacity due to low waters. According to the Alliance in Defense of the Rivers of the Amazon, anything less than the "definitive cancellation of the Belo Monte Complex, considering its social, environmental, & economic viability" would present the Brazilian govt with the risk of *an explosive situation*. (International Rivers 080211)

Dams affect local climate, rainfall Researchers investigating how large dams can affect local climates say dams have the clear potential to drastically alter local rainfall in some regions. A study by researchers at Tennessee Tech University, Purdue University, the University of Colorado and the University of Georgia, Pacific Northwest National Laboratory and Hellenic Center for Marine Research concluded that artificial reservoirs can modify precipitation patterns. The study—published in *Geophysical Research Letters*—marks the first time researchers have documented large dams having a clear, strong influence on the climate around artificial reservoirs. The study reports that large dams influence local climate most in the Mediterranean and semi-arid climates. If the dam's reservoir is large enough or if the water is spread around by uses such as extensive irrigation or recreational activities, then the expanded distribution of water creates an altered climate. A change in water available for evaporation can change humidity, temperature and other aspects of the climate system around a reservoir. All of these play an important role in determining rainfall quantum & pattern.

This perspective should change the way civil engineers think in the classroom and on the job. "Our profession generally has never looked at climate and what we do to it once we build large structures like dams," said Faisal Hossain, Tennessee Tech University civil engineering professor. "That work is missing at the interface of our profession. We now need to adapt, be more climate cognizant". They can now do a life cycle assessment before planning a dam. This work is also relevant for India. One implication can be that the Environment Impact Assessment of the proposal for dams should address these issues. (Mail Today 210211, www.tntech.edu)

Us: Dangers behind Aging Dams Frank Brassell, owner of Nelda's Diner in this town wedged between the slopes of the southern Sierra Nevada, knows his fate should Lake Isabella Dam, a mile up the road, suddenly fail when the lake is full. I work here," he said, looking around the brightly lighted diner. "And I live right over there," he added, pointing across the town's main street.

Lake Isabella Dam is just one acute example of a widespread problem: Of the nation's 85,000 dams, more

than 4,400 are considered susceptible to failure, according to the Association of State Dam Safety Officials. But repairing all those dams would cost billions of dollars, and it is far from clear who would provide all the money in a recessionary era.

The stakes are particularly high not just for Mr. Brassell and the other 4,000 residents of Lake Isabella, but for the 340,000 people who live in Bakersfield, 40 miles down the Kern River Canyon on the edge of California's vast agricultural heartland. The Army Corps of Engineers, which built and operates the 57-year-old dam, learned several years ago that it had three serious problems: it was in danger of eroding internally; water could flow over its top in the most extreme flood season; and a fault underneath it was not inactive after all but could produce a strong earthquake. In a worst case, a catastrophic failure could send 180 billion gallons of water — along with mud, boulders, trees and other debris, including, presumably, the ruins of Nelda's Diner — churning down the canyon and into Bakersfield. The floodwaters would turn the downtown and residential neighborhoods into a lake up to 30 feet deep and spread to industrial and agricultural areas.

The potential is for a 21st century version of the Johnstown Flood, a calamitous dam failure that killed over 2,200 people in western Pennsylvania in 1889. But corps and local govt officials say that the odds of such a disaster are extremely small, and that they have taken interim steps to reduce the risk, like preparing evacuation plans and limiting how much water can be stored behind the dam to less than two-thirds of the maximum. Still, they acknowledge that the impact of a dam failure would be enormous. "It's not just the loss of life, potentially," said David C. Serafini, lead technical expert for the corps on the project. "It's the economic damages and the environmental damage, too."

Corps engineers are preparing to propose fixes later this year. But at best, repairs would not begin until 2014 and could cost \$500 million or more, money that would have to be approved by Congress. Nationwide, the potential repair costs are staggering. A 2009 report by the state dam safety officials' group put the cost of fixing the most critical dams — where failure could cause loss of life — at \$16 billion over 12 years, with the total cost of rehabilitating all dams at \$51 billion. But those figures do not include Lake Isabella and other dams among the approximately 3,000 that are owned by the federal govt. The corps, for example, says that over 300 of the roughly 700 dams it is responsible for need safety-related repairs, & estimates total bill at about \$20 billion.

The corps has already spent about \$24 million just to determine the scope of the problems at Lake Isabella. With the New Orleans levee failures during Hurricane Katrina a lingering memory, Congress has appropriated money for other federal dam repair projects as well. But about two-thirds of all dams are private, and financially

struggling state and local govts own most of the remainder. It is difficult to predict how needed repairs to these dams will be financed; legislation to provide federal money to help has languished in Congress. What's more, the number of high-risk dams keeps rising as structures age, downstream development increases and more accurate information is obtained about watersheds & earthquake hazards. (New York Times 210211)

Dam breaches following Japan earthquake A dam in the Fukushima prefecture of Japan was breached following the March 11, 2011 earthquake and tsunamis which have devastated the country. The dam broke on March 11, with a wall of water washed away 1800 homes downstream. At least 18000 people have been killed, it is feared, in the aftermath of the 8.9-magnitude earthquake – but the final toll is expected to be much higher, with thousands still reported missing and unfolding nuclear disaster. Three of the nuclear reactors have already exploded in full view of televisions across the world. (International Water Power Magazine 140311)

N Korean Hydro to Finance Nuclear Weapons? The Reuters have reported that North Korea is trying to earn some much-needed foreign currency by selling carbon offsets from three hydropower projects through the UN's Clean Development Mechanism. However, many experts doubt that N Korea can drum up enough interest from European countries, especially with fears that the millions of Euros that N Korean would gain from these hydropower projects might be funneled towards their nuclear arms or other military programs.

The European govts haven't had the best track record of picking legitimate projects for their carbon credit purchases. Many of the hydropower projects in the CDM, for instance, have lead to forced evictions, violence, and none can be credited to have achieved additional reductions in carbon emissions. (International Rivers 090311)

WORLD WATER

EP critical of World Bank's big dam agenda The European Parliament plenary has approved a remarkable resolution on the World Bank energy strategy. The Resolution criticizes the fact that WB's investment in coal-fired power plants locks developing countries into coal-based energy for decades to come and that the Bank mainly promotes large-scale project instead of supporting small-scaled decentralised energy project. The European Parliament also urges financial intermediaries (that are poorly monitored) to meet

requirements of development objectives, social & environmental safeguards.

The resolution

- expresses its concern about the fact that the World Bank considers hydroelectric, biofuel and nuclear energy as clean energy
- urges the World Bank to scale up its investment in renewable energies and energy efficiency, but to refrain from investing in large hydroelectric projects, whose negative social and environmental impact resulting inter alia from greenhouse gas emissions from reservoirs must be properly assessed prior to their financing; underlines that small hydropower dams are more sustainable and economically viable than large hydropower facilities;
- Regrets that the World Bank mainly promotes a large-scale and export-oriented energy model rather than supporting small-scale decentralised energy projects that are often more appropriate and effective in meeting basic needs in rural areas; urges the World Bank to support alternative, small-scale decentralised energy projects which take account of the needs of local communities and the economic realities of different countries, and to set specific targets & monitoring goals to ensure that energy lending will benefit the poor;
- states that energy from large hydropower dams & biofuels should not be considered by the WB as clean energy;
- urges the World Bank to concentrate its lending on renewables;
- recalls G20' commitment in Pittsburgh (Sept 2009) to phase out lending to fossil fuel projects by 2015;
- emphasises the importance of internalising the costs related to climate change and to use an Environmental Life Cycle Costing Approach in the accounting process;
- asks the WB to refrain from investing in large hydroelectric projects;
- asks to identify salient barriers to the dissemination of green technologies in developing countries to address climate change and to consider new flexibilities in terms of intellectual property rights.

Hopefully, this resolution of the European Parliament will have sufficient influence to ensure that these recommendations are included in the new Energy Strategy that the World Bank Executive Directors are likely to discuss in April 2011. One also hopes that European and other Executive Directors of the Bank are listening. (www.europarl.europa.eu 180211)

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