SOUTH ASIA NETWORK ON DAMS, RIVERS AND PEOPLE
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S A N D R P

Dams, Rivers & People

VOL 5 ISSUE 12 – VOL 6 ISSUE 1-2 JAN MARCH 2008 Rs 15/-

Lead Piece

The Disappearing Ganga: Is there any hope for this HOLY River?

In the map on next page, we have shown the path of the Bhagirathi River, considered to be the origin of the Holy Ganga River. We have also shown the available information about the existing, under construction and proposed dams and hydropower projects on this river.

Many of these hydropower projects are so called run of the river projects. What it means is that large stretches of river will be flowing through underground tunnels for these projects and we have shown such stretches of river going underground by dashed lines. These stretches of rivers would disappear as far as the people on the banks and others interested in seeing rivers are concerned.

We can also see that the backwater of the Tehri reservoir goes quite far upstream of the Maneri Bhali-2 tail race tunnel. Similarly the back waters of the Koteshwar touches the upstream Tehri Dam and back waters of the Kotli Bhel 1A touches the Koteshwar and so on. On Bhilangana side too the backwater of the Tehri reservoir would go upstream of the tail race tunnel of the Bhilangana-1 hydropower project.

What this diagram tells us, among many other things, is that between Gangotri and Haridwar, there will be no flowing river as we know it, if all these projects come up. This is true because even in tiny stretches where there is no reservoir or tunnels, the flow in the river would be dependent on the upstream hydropower projects, almost all of them have some storage to store the water during off peak hours and use it during peak hours.

This situation is not unique of Bhagirathi, it is also not the only or necessarily the most important of the issues concerning the dams, hydropower and the rivers. A number of other rivers like the Sutlej, Ravi, Teesta, Alaknanda, Pabbar, Tons, etc are going to have the same fate.

But considering the cultural and religious significance of Ganga and Bhagirathi, it may be worth noting the fate of this river that our rulers have decided. It is not entirely a coincidence that BJP rules in Uttarakhand and the Congress lead UPA at centre (with outside support of Left, the left too have not shown in any interest in such issues). There seems to be a political consensus about what is to be done to the rivers, Holy or otherwise.

SANDRP (See the Bhagirathi map on page 2)

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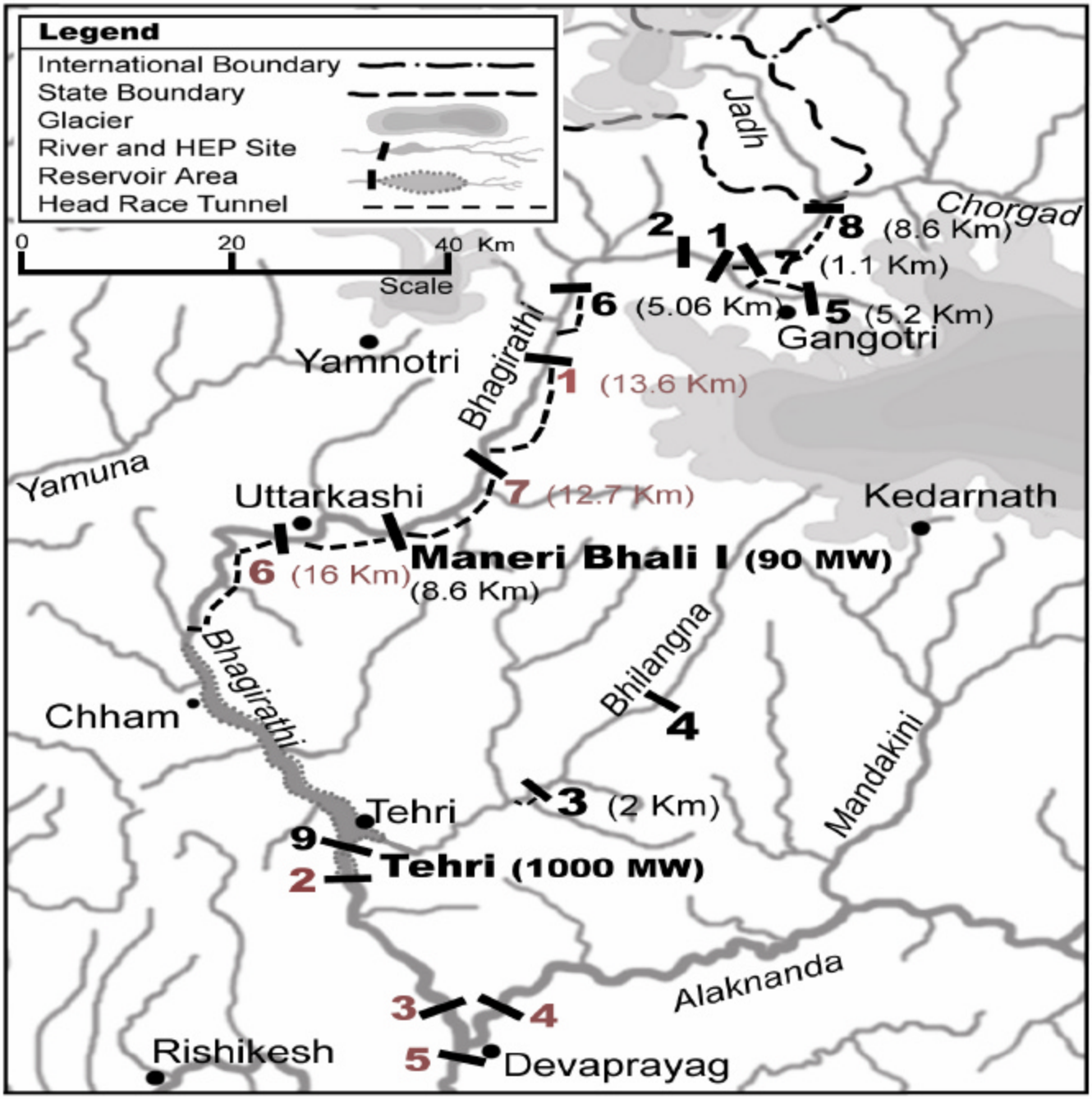

Projects Under Construction

Loharinag Pala (520 MW)	1
Koteshwar (400 MW)	2
Kotli Bhel IA (195 MW)	3
Kotli Bhel IB (320 MW)	4
Kotli Bhel II (530 MW)	5
Maneri Bhali II (304 MW)	6
Pala Maneri I (480 MW)	7

Proposed Projects

Bhaironghati I (380 MW)	1
Bhaironghati II (65 MW)	2
Bhilangana I (22.5 MW)	3
Bhilangana II (11 MW)	4
Gangotri (55 MW)	5
Harsil (210 MW)	6
Jadhganga (50 MW)	7
Karmoli (140 MW)	8
Tehri PSS (1000 MW)	9

Map by www.sandrp.in

Ankhon mein Dhul ya Dhul mein Ankhe – Scams in India's Water Business

The great Indian EIA Fraud

It well known that most reports of Environment Impact Assessments (EIA) done in India are cut paste jobs, full of wrong information, biases, full of contradictions, reporting surveys that have never been done and various other frauds. The EIA consultancy business is a big business and those who do an EIA that is liked by the project promoter, are not likely to get another EIA consultancy, so all consultants indulge in this fraud to keep their pork barrel running. The Ministry of Environment and Forests, which is supposed to give clearances based on EIAs, though in full know of what is going on (for many reasons, but also because a lot of us have been writing to them about this), is least bothered and happily keeps giving clearances based on such EIAs.

"Of what use is a dedicated ministry if it can neither ensure duly diligent approvals of projects nor genuine monitoring of the mitigating measures that are supposed to arise from honest and explicit EIAs?"

This has been well known. It was interesting to see a front page top story on this in the newspaper MINT (brought out by the Hindustan Times Group) on Dec 27, 2007 and then a hard hitting editorial on the next day. The report showed, how, Yogiraj Industrial Consultant, Pune based firm, had done an EIA for a mining project in Maharashtra, but it was a basically a cut and paste job of an EIA for mining project in Russia. As the report says, "unless by some amazing coincidence, mineralization in the Barja river in India and the Vorykva river in Russia both peak at 452.95 mg/l during the summer months, then the water quality information in the Indian EIA for the Ashapura project in Ratnagiri is fraudulent".

"…unless by some amazing coincidence, mineralization in the Barja river in India and the Vorykva river in Russia both peak at 452.95 mg/l during the summer months, then the water quality information in the Indian EIA for the Ashapura project in Ratnagiri is fraudulent."

This is not the first time that such frauds have been exposed. Earlier, Environment Support Group, Bangalore had exposed how the EIA for the Dandeli hydropower project on Kali River in Karnataka was a cut and paste job from and EIA of another project in another state over a hundred kilometre away. When this was exposed, the proponent hired The Energy Research Institute (TERI) to re do the EIA. As MINT editorial on Dec 28, 2007 noted, TERI filed "a hurried, inadequate" report, which too was exposed and ultimately the project did not get clearance. But not all cases have such happy endings.

SANDRP has in the past shown how the ERM International had, in its EIA of the controversial Allain Duhangan Hydropower project now under construction in Himachal Pradesh, had lifted passages from other documents without even bothering to put quotation marks or saying that this is taken from another document. ERM had to redo the EIA after many such glaring errors were exposed.

Similarly, in the EIA of the Parbati III hydropower project on Beas river in Himachal Pradesh, the EIA done by National Environment Engineering Research Institute wrote the following on section 4.4 on water availability: "A long term gauge & discharge series upto the year 1987 is available at *Baramula*, which is about 15 km upstream of *Uri-I barrage* site, this discharge series has been used to develop average 10 daily water availability and discharge for the period 1988 to 1990 has been taken from *Lower Jhelum hydroelectric project*, which is just upstream of Uri-I hydroelectric project and maintained by Power Development Department of *J&K* Government. From 1991 onwards the discharge measured by NHPC at *Buniyar* is available. *Uri-I* project was commissioned in the year 1997 by NHPC and after commissioning of the *Uri-I* the discharge is measured at barrage site. By using the discharge data of all these sites the average 10 daily water availability series for the period 1976 to 2002 has been prepared at *Uri-I* barrage site. While clearing the average 10 daily water availability series at *Uri-II* dam site, Central Water Commission increased the average 10 daily water availability series developed at *Uri-I* barrage site by 5% on account of additional catchment area between *Uri-I and Uri-II* diversion sites. Thus the 10 daily water series for the period 1976 to 2002 has been recommended for power potential studies" (emphasis added).

The projects like Uri-1, Uri-II and Lower Jhelum mentioned in the above quote are on another river (Jhelum) in another state (J&K) as is apparent also from the mention of names of places like Baramula and Buniyar.

Thus, while talking about water availability for Parbati-3 hydropower project on Beas River in Himachal Pradesh, the whole section in the EIA discusses the water availability in another (Jhelum) river in another state (Jammu & Kashmir)! In this case, NEERI even forgot to change the name of the places while doing the EIA for Parbati III project for NHPC! This was brought to the notice of the MEF and also published (Down to Earth, Sept 15, 2005), but the project got the clearance, nevertheless.

Thus, while talking about water availability for Parbati-3 hydropower project on Beas river in Himachal Pradesh, the whole section in the EIA discusses the water availability in another (Jhelum) river in another state (Jammu & Kashmir)! In this case, NEERI even forgot to change the name of the places while doing the EIA for Parbati III project for NHPC! This was brought to the notice of the MEF and also published (Down to Earth, Sept 15, 2005), but the project got the clearance, nevertheless.

This is not the only time when NEERI was caught doing problematic EIAs. In case of its EIA for Karcham Wangtoo hydropower project in Himachal Pradesh, it was asked to redo the EIA after SANDRP exposed the inadequacies and biases in the EIA. There have been many other cases where NEERI EIAs were found to be problematic.

"The (EIA) reports are apologies even on the paper they are written on. These reports are mostly written at a very junior level… Information on the 10th page will not tally with the 12th page and so on… more often than not, the consultants hardly visit the sites", said one of the members of MEF's expert committee.

The MINT editorial raised some very important issues; we can do no better than quote it.

⇒ "And if the regulator (MEF) is so lax as to approve what was a plagiarised version of a Russian mining project, why should the promoters care about any ecological damage from their projects"?

⇒ "Public hearings, mandated officially, mostly continue to be formalities at best."

⇒ "Of what use is a dedicated ministry if it can neither ensure duly diligent approvals of projects nor genuine monitoring of the mitigating measures that are supposed to arise from honest and explicit EIAs?"

⇒ "Not only is the clearance process largely mechanical – euphemism for a sham, actually – but the regulation too is quite deficient."

MINT has done a great service to the people and environment of the country by raising this issue prominently and also following up with a forthright editorial comment. We hope MINT will continue to follow up on these very serious issues and other media agencies will also follow the example of set by MINT.

As far as MEF is concerned, one is reminded of the dialogue in *Guru* Film, where this journalist from *Swatantra* newspaper tells the big boss of the *Shakti Textiles*, about the fraud being done by the company, "*log to kabhi ankhon mein dhul jhonkte hain, lekin aap to puri ki puri ankhen hi dhul mein jhonkte hain*". For those who do not understand Hindi, the rough translation is, "people sometimes throw sand in others eyes to cheat them, but you are throwing the whole eyes into the sand". (MINT 271207, 281207)

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Godavari Embankments: Contractors cheat The contractors employed for the Rs 600 crores to construct and strengthen embankments along 400 km length of Godavari River in Andhra Pradesh are likely to benefit hugely because of the faulty estimates of the irrigation department and because of proper clauses in removal of trees on the path with the roots. (Deccan Chronicle 221207)

Form IV (Required under Rule 8 of the Registration of Newspaper 1956)

Dams, Rivers & People (Monthly)

Place of Publication:	Delhi
Periodicity of Publication:	Monthly
Printer, Publisher, Owner, Editor	Himanshu Thakkar, c/o 86-D, AD Block, Shalimar Bagh, Delhi 110 088

I, Himanshu Thakkar, hereby declare that the particulars given above are true to the best of my knowledge & belief.
February 29 2008. Himanshu Thakkar, Publisher

When Infrastructure Can Impoverish

Bharat Jhunjhunwala

The Deputy Chairman of the Planning Commission, Montek Singh Ahluwalia, has said that the 11th Plan aims "not only at faster economic growth but also inclusive growth so that fruits of developments reach the *aam aadmi*". The Plan has placed special emphasis on infrastructure ~ both urban and rural. "Many people think of infrastructure as relevant only for economic growth; (but) it is also relevant for inclusiveness," he said.

But we have been hearing the same for the last 200 years. Even the British proclaimed that development of the telephone, telegraph and railway network was essential for economic development. Yet India's share in world income fell from 21 per cent at the beginning of British rule to two per cent at the end.

But we have been hearing the same for the last 200 years. Even the British proclaimed that development of the telephone, telegraph and railway network was essential for economic development. Yet India's share in world income fell from 21 per cent at the beginning of British rule to two per cent at the end.

A similar trend is noticeable since independence. In recent years our villages have been given access to mobile phones, cable TV, diesel pumps and bus services. Yet the exodus to the cities continues unabated. The rural youth are typically eking out a livelihood by washing dishes in dhabas and cleaning trucks. Indeed, the development of infrastructure runs parallel to impoverishment.

The problem areas The problem lies in the nature or direction of infrastructure. The road to the village can be used by the doctor to come for a visit; or it can be used to reach the cheap crops to the city. The electricity supply line can be used to reach power to the village; or it can be used to supply power generated from big hydropower projects after taking the land, river and other resources of the rural people or from the thermal power station using coal mined from the rural agricultural land or from bio fuels or from rural windmills to the city. The direction in which the infrastructure is used determines who gains and who loses.

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Water from the canal has reached my ancestral village Malsisar in Rajasthan's Jhunjhunu district through pipelines. An all-weather road has been constructed. It is used to transport the local produce to the markets. Guar (a plant grown as a vegetable and for gum used in the food and paper industries) is cultivated in the area and reached to the processing factories. The water pipeline and the road have had a reverse impact though both are in the "infrastructure". The pipeline reaches water to the village while the road extracts resources from the village.

Dadua village in Tehri district of Uttarakhand is facing a shortage of drinking water. Women trek many kilometres with pots on their heads to the nearest spring. The village is situated 3 km above the banks of the Alaknanda River. The locals have demanded that drinking water be pumped from the river as being done in nearby Bagwan town. The proposal must be gathering dust in govt files.

On the other hand, the government is going ahead with a dam on the same river. Section 17 of the Land Acquisition Act, which was promulgated for such eventualities as a war, is being invoked to acquire land forcibly from unwilling farmers. The dam is likely to have a negative impact on the people and the environment. Stretches of river may

dry up, land slides may increase, houses may crack due to blasting, water sources may dry up, common lands may be taken away, agricultural yield will suffer, fisheries may be destroyed, water mills may become dysfunctional, mosquitoes will proliferate increasing the risk of malaria, global warming methane gas will be emitted from the reservoir and river water will have less oxygen.

The dam is a curse for the local people, but will provide power to run air-conditioners at Delhi, Dehra Dun and other towns. The pumping station to supply water to Dadua and the dam to supply power to Dehra Dun are both part of the infrastructure. But one is a relief (which does not get implemented) while the other will go against the interests of the *aam aadmi* (which will get expeditiously implemented, ignoring reasoned arguments).

The British had laid the telephone and telegraph network. This enabled traders in Manchester to know the price of cotton in India and to place orders accordingly. The major objective of the railways was to transport cotton from Maharashtra and indigo from Bihar to England.

Our farmers received a lower price for these exports as trade was controlled by the British traders and sea transport was expensive. As a result, India was impoverished while England prospered thanks to the development of India's infrastructure.

Infrastructure can be compared to the child's sea-saw. Two children can play equally happily. But if one that is too heavy sits pretty and lifts the other higher. The latter urges the "big bully" to bring him down. The sea-saw signifies joy for the bully and curse for the little boy. Infrastructure offers a similar analogy.

It connects the village and the city, India and England and Gurgaon and New York. But who gains and who loses depends upon who is stronger in the bargaining process. Thus the all-weather road at Malsisar, the hydropower dam on the Alaknanda and the rail lines laid by the British led to impoverishment. On the other hand, water supply pipeline at Malsisar and Dadua and Internet lines at Gurgaon could be vehicles for development.

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Manmohan Singh and Montek Singh Ahluwalia have consistently laid stress on infrastructure without raising the issue of prices and bargaining power. They have never spoken of the need to raise the prices of rural produce and lowering the prices of urban products so that the lives of the rural populace can be improved. By maintaining a studied silence on this critical issue, they unwittingly ensure the impoverishment of the rural people, the poor and the *aam aadmi*.

Bargaining power The building of infrastructure should be preceded by economic policies that strengthen the bargaining power of the *aam aadmi*. For example, high import tax can be imposed on cheap cloth being produced on automatic looms in China. This will lead to a higher price of cloth, revive the handlooms and empower the rural artisans to demand a higher price for their produce. In that scenario, a road in Malsisar will see more doctors traveling to the village and less trucks reaching rural resources to the city. Or, higher import tax can be imposed on cheap wheat being imported from Australia and America. This will strengthen the rural farmer against the urban consumer.

The building of infrastructure should be preceded by economic policies that strengthen the bargaining power of the aam aadmi. For example, high import tax can be imposed on cheap cloth being produced on automatic looms in China. This will lead to a higher price of cloth, revive the handlooms and empower the rural artisans to demand a higher price for their produce.

Such policies should precede development of rural infrastructure. Little wonder why Gandhiji demanded financial autonomy under British rule. He wanted India to have the freedom to make economic policies that would increase the price of Indian goods and lower the price of British goods. It is a sad commentary on India's leaders that they have no place for such policies. (Edited version of the article published in The Statesman 020208)

Big role of meandering rivers in fighting pollution

A meandering stream appears to play a powerful role in filtering out pollutants like nitrogen, and understanding this role could help prevent oxygen-depleting blooms of algae that threaten fish and shellfish downstream, researchers say.

The research was part of a project to determine whether rivers actively process pollutants and remove them from the ecosystem, or simply act as drain pipes that flush polluted waters into lakes or out to sea.

"They are most definitely processors," said Stephen Hamilton, an aquatic ecologist at Michigan State University, who led one of several teams studying the problem.

A meandering stream appears to play a powerful role in filtering out pollutants like nitrogen, and understanding this role could help prevent oxygen-depleting blooms of algae that threaten fish and shellfish downstream.

The trick is to allowing lazy, meandering rivers to do their job instead of diverting them into straight drainage ditches that act more like water pipes and less like filters.

The study, which appears in the journal Nature, looked at how 72 streams across eight regions in the United States and Puerto Rico neutralize nitrogen.

"There is a remarkable amount of processing that takes place," Hamilton said in an interview. "We were able to see how streams vary in that nitrogen processing."

If overloaded, however, they found the streams were less efficient at removing the nitrogen that enters the stream through agricultural runoff, acid rain and human waste.

We've been very industrious and successful in draining vast amounts of wetland. We've re-engineered our streams to conduct the water and any nutrients in the water out as fast as possible. We think it's fair to say as a group there are a lot of ways we could do that better

Too much nitrogen in the water can cause excessive growth of algae and aquatic plants in lakes and coastal marine waters, which deplete oxygen stores, killing fish and other marine life. Such so-called "dead zones" already are seen in the Chesapeake Bay, the Gulf of Mexico and the Baltic Sea.

NOT SO LAZY RIVER To measure this clean-up effort, the researchers added a small amount of a harmless, radioactive isotope of nitrogen into the streams. This acted as a tracer, allowing the researchers to track its path.

Hamilton's team stationed itself in the headwaters of the Kalamazoo River, dribbled the tracer into the water, then field workers took samples as it made its way downstream for a distance of about 1000 metres.

"Most of the nitrogen we found in a stream was taken up by the stream organisms in a fairly short distance downstream," he said.

The nitrogen was gobbled up by tiny organisms such as algae, fungi and bacteria. But, a large portion of it was permanently pulled from the streams by a process known as denitrification, which converts nitrate to nitrogen gas that escapes into the atmosphere.

"We were able to quantify the fate of how much nitrogen goes into each of these potential pathways," he said.

"That allows us to understand how some streams do better than others and that opens up the possibility of understanding how we can manage streams to promote denitrification or importantly, how we are managing them to discourage it," he said.

Hamilton said the trick is to allowing lazy, meandering rivers to do their job instead of diverting them into straight drainage ditches that act more like water pipes and less like filters.

"We've been very industrious and successful in draining vast amounts of wetland. We've re-engineered our streams to conduct the water and any nutrients in the water out as fast as possible," he said.

"We think it's fair to say as a group there are a lot of ways we could do that better."

(REUTERS NEWS SERVICE 130308)

India's Dam Building Abroad: Lessons from the Experience at Home?

In sectors such as steel, automobiles, oil and gas, wind power and hydropower, Indian companies and state-owned enterprises have rapidly expanded their overseas investments in recent years. Not least motivated by the example of Chinese investors, they are trying to gain access to foreign resources, win international contracts, and strengthen their relations with trading blocks such as the ASEAN countries. They have had a presence in neighboring countries such as Nepal and Bhutan for a long time, and are now also spreading to more distanced countries in Asia and Africa.

This article presents the Indian institutions which are engaged in building dams and other power projects abroad, and provides an overview of the projects which they are involved in. It summarizes the track record of Indian dam builders at home, and analyzes some of the problems which their new projects have created. The paper concludes with recommendations for future action.

Leading corporate actors and government representatives have adopted the mindset of economic globalization. India's Prime Minister Manmohan Singh said: "Brand India has begun to make its mark on the world stage. This is just a beginning and the best is yet to come." And Montek Singh Ahluwalia, deputy chairman of India's Planning Commission, added: "Indians have superior management skills. Acquisitions are essential to make a global impact."[1] The Indian government supports Indian foreign investments through its export credit agency and other tools.

The actors A large number of Indian companies are involved in the current foray into foreign power projects. They include

⇒ state-owned hydro and thermal power developers and equipment suppliers (National Hydroelectric Power Corporation (NHPC), Sutlej Jal Vidyut Nigam Ltd. (SJVN), National Thermal Power Corporation (NTPC), Bharat Heavy Electric Limited (BHEL)),

⇒ private power plant developers and equipment suppliers (GMR Energy, Reliance, Alstom India),

⇒ wind power companies (Suzlon),

⇒ transmission companies (e.g. Power Grid Corporation of India Ltd, Tata Power Ltd, Power Trading Corporation),

⇒ and state-owned and private consultancies (e.g. the Water and Power Consultancy Services Ltd (WAPCOS), the Central Electricity Authority (CEA), the Central Water Commission (CWC), and Sivaguru Energy Consultants & Software Development Pvt Ltd (SECSD)).

The Export Import Bank of India has provided support for Indian power projects abroad through various instruments. They include direct loans (e.g. a US$45 million loan for the Nam Chien Project in Vietnam) and lines of credit (e.g. for projects in Burma, Nepal, Uganda and Rwanda). The Indian government has also offered Nepal and Tajikistan outright grant assistance for the construction of hydropower projects by Indian developers.

Overview of projects The following is a brief overview of foreign dam projects with Indian involvement. It shows that a lot of projects are already being implemented in Nepal and Bhutan, India's neighbors to the north. A small number of projects are also going forward in other Asian countries, while projects in Africa are still in the exploratory phase.

Afghanistan WAPCOS and to a lesser extent NHPC have been involved in a number of projects in various capacities, including in the 118 MW Kajakai Hydropower Project, the 40 MW Salma Dam Project, and the 40 MW Khanabad Hydropower Project.

Bhutan India has been involved in most hydropower projects in this country, from planning to funding to construction and the purchase of power. These projects include the 336 MW Chukha Hydropower Project, the 1020 MW Tala Hydropower Project, and the 60 MW Kurichu Hydropower Project. More projects are in pipeline. Among other companies, WAPCOS, CWC, Tata Power and the Power Grid Corporation have been involved in these projects in various capacities.

Burma In October 2007, India provided a loan of US$ 60 million to Burma to help fund construction of the 113 MW Thahtay Chaung hydropower project. The funds were made available via a Line of Credit from the Export-Import Bank of India. CEA and WAPCOS carried out the design and engineering of the 25 MW Sedawyagi Hydroelectric Project. NHPC prepared a pre-feasibility report for the 1200 MW Tamanthi multipurpose storage project on the Chindwin River in the Irrawady Basin and seems to be involved in further stages of development.

Congo In November 2007, senior NHPC representatives met with officials from the Democratic Republic of Congo and Ethiopia to explore opportunities for Indian hydropower projects in these countries. At the 4th India-Africa business conclave in Delhi in March 2008,

[1] Manmohan Singh and Montek Singh Ahluwalia quoted in The Hindu Business Line, November 24, 2006

Congo's energy minister also advertised his country's potential for Indian hydropower companies. So far, no specific projects have been identified at least in the public domain.

Ethiopia WAPCOS commissioned a master plan for hydropower development in Ethiopia already in 1988/89. The head of Ethiopia's electricity utility also encouraged Indian companies to invest in his country at the business meeting of March 2008, and NHPC has expressed an interest in taking up Ethiopian hydropower projects.

Ghana SECSD, an Indian consultancy company, carried out a series of studies to identify potential private power projects in Western Ghana, and to prepare pre-feasibility and feasibility studies for a series of projects on the Pra, Tano and Ankobra rivers. Various Indian institutions were also involved in small hydropower projects in Ghana, but none of the projects seem to have been completed.

Dams in India have a long and extremely conflictive history. Poor, marginalized and often tribal people bore the brunt of dams' impacts, but received few if any of their benefits. Dams have triggered many large-scale social mobilizations, with huge demonstrations, the blockade of construction sites, hunger strikes, court cases and other forms of conflict.

Indonesia WAPCOS was involved in Batang Hari Hydropower Project.

Iraq WAPCOS had contracts in the Bakuman and Khalikan Dam projects.

Malaysia WAPCOS was involved in the 21 MW Sungai Piah Hydropower Project.

Nepal Indian institutions are involved in a series of hydropower projects in Nepal at different stages of development. India's Power Trading Corporation will purchase all the power produced by the 750 MW West Seti Project, which is currently being developed by Australia's Snowy Mountain Engineering Company. In February 2008, Nepal's government awarded the 300 MW Upper Karnali Project to GMR Energy Ltd, a private Indian company, and the 402 MW Arun III Hydropower Project to the Sutlej Jal Vidyut Nigam Ltd.

In October 2006, the Indian government offered Nepal grant assistance for the construction of a hydropower project of up to 250 MW. The 240 MW Naumure Project on the West Rapti River is currently being considered for this purpose. In September 2007, the Export Import Bank of India also extended a Line of Credit of US$100 million to the government of Nepal in support of various projects, including hydropower projects.

Finally, India is in the process of planning and investigating the 5600 MW Pancheswar under the Mahakali Indo-Nepal Treaty that came into force in June 1997 for a period of 75 years. The two countries are also in the process of planning the Sapta Kosi High Dam Multipurpose Project and Sun Kosi storage and diversion scheme.[2] India's gigantic River Linking plans crucially hinge on the construction of huge storage dams in Nepal (and Bhutan).

Rwanda In October 2007, the Export Import Bank of India approved the first tranche of US$ 20 million of a US$ 80 million line of credit for a hydropower project in Rwanda.

Sri Lanka WAPCOS is involved in the biggest hydropower project currently planned in this country, namely the 150 MW Upper Kotmale Project.

Tajikistan An Indian delegation, including NHPC engineers, visited this mountainous country in August 2007 to explore hydropower projects. According to the Tajik ambassador to India, NHPC and BHEL stand ready to reconstruct the 7.4 MW Varsob I Hydropower Project.[3] The Indian government has offered US$13 million in support of this project.

Uganda In February 2008, Alstom India got the contract to supply electro-mechanical equipment for the controversial 250 MW Bujagali Hydropower project in Uganda. In March 2008, India approved a US$ 350 million line of credit for development of a 100 MW hydropower project by BHEL of India at Isimba falls in Upper Nile basin. BHEL will first prepare the feasibility report for the project.

Vietnam In January 2008, the Export Import Bank of India approved a loan of US$45 million for the 200 MW Nam Chien Hydropower Project in Northern Vietnam. BHEL will provide equipment for this project.

The impacts No detailed studies on the impacts of India's foreign investments, including hydropower projects, exist. There is evidence that Indian dams abroad also have serious impacts on affected communities and the environment. Here are some examples:

⇒ **Tamanthi** According to students' groups from the affected region, the Tamanthi Hydropower Project in Burma will submerge about 68 square kilometers of

[2] Annual Report of Central Water Commission for 2006-07, p 86.

[3] The Ambassador of the Republic of Tajikistan, Message, see www.tajikembassy.in/message%20by%20the%20ambassador.html

land, and displace about 30,000 people from 35 villages. The affected communities belong to the indigenous Kuki people. Some of the affected people have already been displaced by the country's military rulers without any compensation, and the students' groups have protested against the project in India.

West Seti The West Seti Hydropower Project in Nepal will submerge 22 square kilometers of land, displace at least 1500 families, and dry out about 20 km long stretch of the Seti River.

Tala The project involves 92 m high dam and 860 m of head available over 30 km stretch of the Wangchu River in Chukha division in south western Bhutan. The reservoir submerged about 360 ha of land, about half of which is very rich forestland. About 30 km stretch of the river would almost totally dry up for most part of the year and the adverse impact on biodiversity would be spread over longer stretch of the river.

Indian dam builders and financiers have not developed credible policies to address the negative social and environmental impacts of their projects. In numerous cases, they have circumvented laws, government and court decisions. Already, dams with Indian involvement have also triggered protests and court cases in Nepal, Burma and Uganda.

The project area has very fragile geology and the project and the area suffered extensive damages in June and August 2000. Almost the entire power generated (3962 Billion Watt Hours at 90% dependability) would be exported to India. [4]

Conclusion Dams in India have a long and extremely conflictive history. Poor, marginalized and often tribal people bore the brunt of dams' impacts, but received few if any of their benefits. Dams have triggered many large-scale social mobilizations, with huge demonstrations, the blockade of construction sites, hunger strikes, court cases and other forms of conflict. Indian dam builders and financiers have not developed credible policies to address the negative social and environmental impacts of their projects. In numerous cases, they have circumvented laws, government and court decisions. Already, dams with Indian involvement have also triggered protests and court cases in Nepal, Burma and Uganda.

As they expand their foreign operations, Indian dam builders and financiers risk exporting their negative domestic track record and creating conflicts over their projects abroad. The Export Import Bank of India and companies such as NHPC, BHEL, SJVN, GMR, WAPCOS and others are well advised to adopt the WCD's recommendations for good practice in water and energy sector development

In many host countries of Indian projects, there are no appropriate laws and policies which regulate the social and environmental impacts of dam projects. In countries such as Bhutan, Burma, Ethiopia and Vietnam, there is no political space for an independent civil society, judiciary, and media. In such countries, foreign investors and financiers have a particular responsibility to address the social and environmental impacts of their projects.

The recommendations of the World Commission on Dams were elaborated in an open and inclusive process in which stakeholders from all sides of the debate were involved. Two of the Commission's twelve members were from India, one of the WCD's ten in-depth case studies covered India's experience with dams, India's Ministry of Water Resources was a member of the WCD Forum and India's Planning Commission member was a member of the Dams and Development Forum, which was to take up follow up work on WCD report. The WCD framework is therefore highly relevant for Indian dam builders and financiers.

As they expand their foreign operations, Indian dam builders and financiers risk exporting their negative domestic track record and creating conflicts over their projects abroad. The Export Import Bank of India and companies such as NHPC, BHEL, SJVN, GMR, WAPCOS and others are well advised to adopt the WCD's recommendations for good practice in water and energy sector development, to avoid getting embroiled in international conflicts over their projects.

"Hungry for oil and minerals, India and China have become Africa's new colonialists, exploiting the world's poorest continent in the same way as its European masters. They are in the process of repeating the mistakes that the colonial powers have made". This is indeed a realistic quote, not true just for Africa, but for all poor or weak countries of the world. If only it had come from a more appropriate source than a billionaire called George Soros, who himself sees Africa as another business opportunity.[5]

Himanshu Thakkar (This an edited version of the paper that is being published as part of *International Rivers*'s forthcoming report on *the environmental responsibility of new financiers*)

[4] Project Design Document of the project from UNFCCC website, the document dated July 26, '08, accessed in Dec '07.

[5] http://www.livemint.com/UserControls/2008/02/07002534/India-China-are-new-coloniali.html

PARAMBIKULAM-ALIYAR PROJECT PAST and PRESENT

Dr. K. Sivasubramaniyan, (Madras Institute of Development Studies)

The details presented in this paper are all part of the effort to understand the dynamics of irrigated agriculture in the command area under the Parambikulam-Aliyar Project (PAP), see the flow diagram on the next page. Original PAP survey – to understand patterns of agriculture and water management and its outcome in terms of crop productivity - in 12 sample distributaries with 630 sample farmers located in 104 blocks was conducted in 1986-87. A resurvey in all the above distributaries with 686 farmers in 100 blocks were undertaken in 2006 with the same basic objectives to find out the changes that have happened in the PAP command.

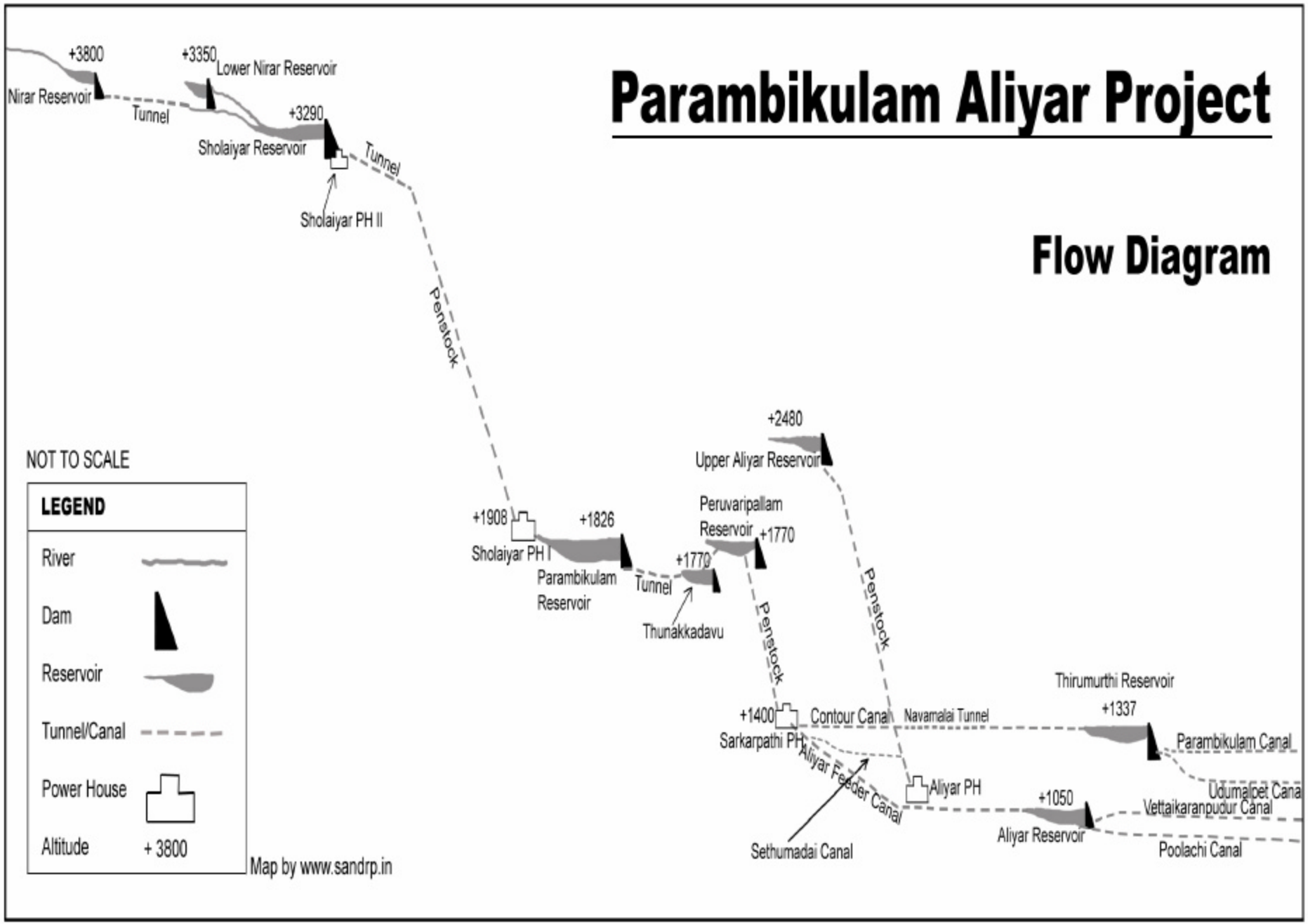
The PAP was commissioned in the late nineteen fifties and completed in stages by 1967. Initially, the total command area was fixed around 2,40,000 acres to be served in Coimbatore district. However, due to political reasons and farmers' agitations the ayacut was gradually extended to the adjoining district. As a result, the command area had been increased to nearly 4,30,000 acres -spreading both in Coimbatore and Erode districts - which is entirely through direct canal irrigation. There are hardly any tanks in this canal command but conjunctive use of groundwater along with canal is rampant. The rainfall in the command area is marked by a bimodal distribution with North-east monsoon being the main season (327 mm) and South-west monsoon brings 193 mm (27.8 %) with an annual normal rainfall of 694 mm which is only 72 % compared to the State average (962 mm). Being a lower rainfall region, the difference in productivity per unit of cultivated land with irrigation and one without is larger in the PAP. This is mainly due to the fact that it serves purely in a dry tract with low rainfall region; hence all PAP farmers are eager to get the meager supply even after two years gap.

The responsibility for managing the PAP – which function covers both system maintenance and regulation of water allocation at main / branch canals and distributaries - vests with the PWD which has undergone considerable change over the last 40 years. A Chief Engineer is stationed at Coimbatore who was then at Chennai (CE–general) for the entire state. A superintending Engineer posted at Pollachi who exclusively oversee the PAP system management. Although the number of divisions (4) sub-divisions (12) and section offices (around 40) are more or less the same over a period of time, considerable reshuffling of section offices are noticed to manage the system efficiently. Up to the turn of the last century Management of water allocation was entirely with the government, right down to the outlet. However, this has been changed since the introduction of Alternate Sluice Irrigation System (ASIS) which necessitated the formation of Village Water Users Association (VWUA) throughout the PAP command. The formation of VWUA has facilitated farmers to distribute water by themselves within the distributaries taking-off from the main/branch canals. This change has resulted to a considerable reduction in the number of PWD irrigation functionaries such as Work Inspectors and Laskars who supervised irrigation at outlet level in the entire PAP command. Previously, each section had at least 2 work inspectors and 4 Laskars. But, now only one or two functionaries in both the cadres are working. Since vacant positions are not filled up majority of these posts were dissolved.

Access to irrigation and the source of irrigation have a significant bearing on the cropping pattern. Before the extension of ayacut in 1994, water was supplied for one season, once in 18 months with three zone system. Farmers received copious supply in most canals for almost 135 days with alternate week supply. The supply is usually given 7 days on and 15 days off method. This supply helped farmers even to grow paddy in most distributaries although supply was given only for dry irrigated crops. The ayacut area under Parambikulam Main Canal (PMC) and Udumalpet Canal grow a large variety of crops, the more prominent among them being coconut, sugarcane, paddy, cholam, cumbu, maize, pulses, groundnut, cotton, vegetables, chillies and onion. Due to extension of ayacut in the mid-1990s the supply pattern was changed from three zone pattern to four zone pattern. This has resulted in dwindling of canal supply available to the farmers. Consequently, there was a reduction in groundwater recharge.

On the whole, the situation in the Parambikulam Aliyar Project indicates that groundwater exists between 60 - 100 feet depth in the Parambikulam main canal and in the Udumalpet canal command. In other canals the depth varies between 50 - 80 feet.

In order to improve distribution in canal supply, a newer system called ASIS was introduced from August 2000 in the PAP command. This system required intensive supervision and distribution of canal supply among farmers. To promote this newer system, VWUA was formed to oversee water management. After introduction of ASIS the quantum of supply available to each acre was considerably reduced. Actually, in a spell of 135 days only 30 to 35 days - 5 to 6 watering - canal supply was possible. Again, each acre may get at the maximum 25 to 30 hours supply during this period. As a result of change in the supply pattern, farmers have been seeking more of supplemental irrigation through wells and bores to save their crops. The 2006 survey results in the PAP command indicate that the crop pattern was changed considerably.


Parambikulam Aliyar Project
Flow Diagram
+3800
Nirar Reservoir
Tunnel
+3350
Lower Nirar Reservoir
+3290
Sholaiyar Reservoir
Tunnel
Sholaiyar PH II
Penstock
+2480
Upper Aliyar Reservoir
Penstock
+1908
Sholaiyar PH I
+1826
Parambikulam Reservoir
Tunnel
+1770
Thunakkadavu
Peruvaripallam Reservoir
+1770
Penstock
+1400
Sarkarpathi PH
Contour Canal
Navamalai Tunnel
Aliyar Feeder Canal
Aliyar PH
Sethumadai Canal
Thirumurthi Reservoir
+1337
Parambikulam Canal
Udumalpet Canal
Vettaikaranpudur Canal
+1050
Aliyar Reservoir
Poolachi Canal
NOT TO SCALE
LEGEND
River
Dam
Reservoir
Tunnel/Canal
Power House
Altitude
+ 3800
Map by www.sandrp.in

The crops grown in large majority of the command area were coconut, Mango, maize, cholam, cumbu, pulses, groundnut, vegetables, chillies and onion. A total of more than 40 crops were grown in the PAP ayacut. However, due to change in the supply pattern the previously grown important water intensive crops such as paddy, sugarcane and banana were to a large extent stopped in the survey area. Coconut cultivation increased from less than 20% in 1986 to over 45% in 2006. Interestingly, in one of the sample Distributaries (13-5-263 Kolarpatti of PMC) cent per cent area under PAP command was devoted to coconut. Due to this perennial crop, all farmers developed wells and groundwater extraction through bores has also been widespread. Due to groundwater irrigation, the water use efficiency for coconut was the highest ranging from 70 to 90%. This higher percentage was mainly due to drip irrigation. Over 75% of coconut farmers in the PAP command installed drip system.

Hydropower projects in PAP Basin

Sl. no	Name of Power Station	Capacity (MW)	Year of commissioning
1	Sarkarpathy Power House	30	1966
2	Aliyar Power House	60	1970
3	Sholayar Power House - I	2 X 35	1971
4	Sholayar Power House - II	25	1971
5	Kadamparai Power House	4 X 100	1988
6	Poonachi Mini Power House	2 X 1	1992
7	Thirumurthy Mini Power House	3 X 0.650	2002
8	Aliyar Mini Power House	2 X 1.25	2004

Survey of Farmers in the PAP Command The entire PAP design was based in certain expectations as to the amount of water likely to be available through the reservoirs, the likely losses in conveyance and application, and the irrigation duty. The total capacity of all the reservoirs in the system is 31 TMC. Since most reservoirs were designed to harness low dependability of river flows, the reservoirs would not be filled in all years. As against the 27.5 TMC a year expected to be available on the average, for irrigation in Tamil Nadu, in actual fact the yields at Sarkarpathi off-take averaged only 23 TMC.

A survey of selected farmers in different PAP canals in 1980s showed that only 72% of land localised under the PAP ayacut was in fact used to raise irrigated crops, and of this nearly 70 % was under paddy. Thus nearly half the total ayacut area was devoted to paddy against the permitted 20%. However, this observation has changed dramatically now.

Scheduling of Canal Operation An important drawback in the functioning of the PAP system in the earlier period was the failure to observe the scheduled timing and duration of irrigation season. Schedule was often violated. The prescribed schedule for particular spells in terms of date of starting supply to a particular canal/ zone and of duration of supply was seldom kept. The initial survey indicated that the dates of start of irrigation spells instead of being concentrated in June/ July and October/ November are in fact spread practically throughout the year. Also the duration of each spell has been, with few exceptions, prolonged beyond the prescribed 135 days. Before 1976, this practice was nearly universal, the average duration of the extension being 24-34 days per spell. It is also quite common, though not universal, since 1976. But when extensions are granted they seem to last longer, the average ranging from 28 days per spell under the Pollachi canal to 61 days per spell under Sethumadai canal. Because of these factors farmers cannot be sure as to when a spell will start and how long it will last, and at the same time, the meshing of irrigation seasons with crop seasons become extremely difficult.

In this circumstance, the govt appointed an expert committee in 1981, to suggest ways of improving the efficiency of the system. The committee noticed that "though the specific dates of commencement of irrigation as also the period of irrigation have been proposed by the Chief Engineer, PAP to the Govt and is accepted by everybody by convention, but in practice we find that no spell has been completed in the prescribed span of 4 months." It went on to explain the consequences of extending the period of supply in a particular season: "The immediate effect of this is that the Department not knowing exactly when a spell ends and hence not being in a position to determine the date of commencement of the next spell in advance."

A close examination of the scheduling and operation of all the canals during the period from 2001-02 to 2004-05 reveals three important points. One, due to introduction of ASIS since august 2000 extension of irrigation was stopped altogether in almost all the canals. Two, although general opening and closure of irrigation supply in four canals (excluding PMC and UC) was between last week of Dec and first week of May it was seldom observed in all the five years. Especially, from 2004-05 onwards there was greater irregularities in supply pattern. Three, the total period of irrigation supply is 135 days in a season. This is not at all given in any of the canals. In the case of PMC and UC – both gets supply for two seasons in a year due to 4 zone pattern – in all the five years these canals received supply only less than 200 days instead of the required water release period of 270 days. In two years -2002-03 and 2003-04 – the total storages in all the PAP reservoirs were barely adequate to feed the ayacut. The quantum of supply released in these two years was respectively 25 % and 20 % of the expected supply (27.5 TMC) to all PAP canals serving in Tamil Nadu. Due to this poor storage the number of supply days in these two years was almost touched the bottom level and it averaged less than 50 days in all these canals.

With the extension of PAP ayacut in the mid 1990s the quantum of supply given to the command area was reduced. Also the duration of supply available in each Distributary was also reduced considerably. With the introduction of ASIS in August 2000 the entire supply

pattern was changed. One can observe from water release data in all the PAP canals - from the inception period up to 2000 - per mcft of water was served on an average 5 acres. However, after 2000 the acreage served per mcft of water in almost all the PAP canals was more than 10 acres. In a few canals this ratio goes beyond 15 acres per mcft. This probably resulted to vanishing of all wet cultivation in the PAP ayacut in the past one decade. This is a welcome aspect. And it is the purpose which is fulfilled for supplying water only for dry crops cultivation in the PAP command.

PAP Supply and Agriculture An analysis of the quantum of supply released in two periods starting from 1967-68 to 2004-05 in all the PAP canals indicates that the second half of the period (1986 to 2004) received relatively a larger share (on an average 15.4 TMC per annum) than that of the first half of the period (14.4 TMC per annum). Availability of PAP supply to the command area solely depends upon monsoon in the catchment areas served by the dams. Further proper management of available supplies also have significant bearing on the availability of supply to the command area. Apart from PAP supply the supplemental irrigation through groundwater in recent years also makes a difference in cropping pattern between well and non-well farmers in the command.

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Development of wells and bores in the PAP command based on the latest survey gives an interesting picture. Among 686 farmers surveyed two-thirds have access to well irrigation. These farmers owned 447 wells. More than half the wells were developed before the PAP commenced. 28 % of wells dug between 1966 and 1985 and the remaining 17 % were developed after 1985. Another interesting feature of well irrigation is the development of bores in the command. Some two decades ago only a limited number of bores existed. But now, well farmer without having a bore is rare. In our survey, the well farmers have developed 376 bores with depths varying between less than 350 feet to over 1200 feet. Some farmers have also constructed multiple bores. Actually, in one of the distributaries, a farmer developed more than 10 bores with varying depths but only a couple of them were successful. This led to huge financial loses to a large number of bore well farmers when the bores went dry but there was no other option to save their coconut groves.

In the PAP command during the three year period (2003-04 to 2005-06) farmers grew coconut and other tree crops (mango, tamarind) to an extent of 50 - 65 %; maize and cholam 10 - 25 %; Rain fed crops 10 - 20 % and fodder and vegetables less than 10 %. Irrigated dry crops account less than 5 %.

Another feature in the PAP command is its cropping intensity. During the three years taken for the study cropping intensity was high during 2004-05 and 2005-06 (178 %) and it was 157 % during 2003-04.

The past two decades have witnessed a lot of developments within the village society. Villages have been transformed into semi-towns. Provided with all basic facilities and most important was tremendous increase in transport facilities in almost all areas. Coimbatore was already an industrially developed district coupled with the efforts taken by Tamil Nadu Agricultural University to promote yield of various crops by advancing the latest technologies to farmers help them to produce more which in turn increase the income of the PAP farmers. The water saving technology through drip irrigation method to coconut growers in the PAP areas is commendable. Likewise, the recent feed mill development for poultry industry as envisaged by Suguna Industrial group helping the PAP farmers to sell their maize produce immediately through many retail outlets without facing any marketing problem. This has induced majority of farmers to grow more of maize during the spell period. Finally, it should be mentioned that the IAMWARM project which is just entering into the PAP command with the motive of restoring and modernizing the old canals and other structures will improve the efficiency of irrigation system and this will lead to further success in the operation & management of the PAP.

IAMWBRM is the US $ 485 million Irrigated Agriculture Modernisation and Water-Bodies Restoration and Management project, funded by the Word Bank. This project is supposed to help to modernize the canals and infrastructure facilities in 63 sub-basins located in16 river basins in Tamil Nadu including the PAP within a period of 7 years from 2007.

Post Script from SANDRP The above write up on PAP project experience is largely written from the Tamil Nadu perspective. However, PAP is an interstate project with Kerala being the donor state. Experience of Kerala has not been a happy one in this water sharing as one can see from the periodic news reports. A larger critique of the PAP treaty has been done by colleagues from the River Research Centre, Thrissur, Kerala and has been published by RRC and SANDRP under the title: "Tragedy of Commons: The Kerala Experience in River Linking". For copies (price Rs 120/- plus Rs 30/- for postage) write to RRC (rrckerala@gmail.com) or SANDRP (ht.sandrp@gmail.com).

SARDAR SAROVAR PROJECT

Salinity Ingress in Bharuch The problem of salinity ingress in Bharuch district in Gujarat has become serious after the height of the Sardar Sarovar Dam was raised to 121.92 metres, reducing water flow into the river. There are fears that the famous Kabirvad, spread over 3.7 acres on the banks of the river would also be destroyed due to this. Professor P J Shah from J P College, Bharuch's chemistry department says, "Roots of Kabirwad's banyan tree are deep and take nutrients from Narmada River. Saline water will definitely affect the tree's health. It is only a matter of time that the leaves will start turning yellow." The chief conservator of forests, H S Singh says, "You will not find such a rich ecosystem anywhere else. There is a description of Kabirwad by a British official who had visited it in 1778. He had said that the tree is so huge that 10,000 persons along with their horses can take shelter under its shade". (The Times of India 220308)

CAG critical of SSNNL The report of the Comptroller & Auditor General of India for year ending on March 31, '07 has criticised Gujarat's SS Narmada Nigam Limited and Gujarat Water Resources Development Corp. GWRDC incurred imprudent expenditure of Rs 17.02 crore on failed economic design of check dams of Sujalam Sufalam Yojana, while SSNNL lost interest of Rs 1.92 crore due to premature investment of Rs 16.78 crore in construction of concrete lining of branch canal, the report says. (Business Standard 2803038)

Narmada Water reaches Rajasthan border The Narmada water for the first time touched the Rajasthan border when it reached Silu village through the Narmada Main canal on March 18. The water was released in the last part of the Narmada Main canal in the end of February, 2008. Rajasthan is preparing to lift the water to some of the branch canals, once the water flow reaches significant levels in the canal by about March 27. This has been possibly after much delay and violations of many promises by the Gujarat and Rajasthan governments. If the canals had been ready, the water could have reached Rajasthan 4-6 years earlier, but due to delays in construction of the canals, it has been possible only now.

Gujarat CM absent On March 27, '08, the Rajasthan CM at a function at village Lalpur in Sanchour Tehsil in Jallour district welcomed the first flow of 300 cusecs (to be increased to 500 cusecs) waters from the SS Dam. The Rajasthan part of the project costing Rs 1975 crore is supposed to provide sprinkler irrigation to 2.46 lakh ha in 233 villages of Jallour and Barmer districts. This is up from the 75 000 ha land that was to be irrigated as per original plans, it is doubtful if it is practical to achieve this. It is also expected to provide drinking water to 1336 villages in Jallour, Bhinmal & Sanchour tehsils, according to the full page advt issued by Rajasthan govt. She said the water could not reach Rajasthan earlier as it had not paid Gujarat its share of Rs 646 crore for the project cost. Gujarat CM was supposed to come for the Rajasthan function, but he did not come for unexplained reasons. He came till Tharad in Banaskantha district in Gujarat, about 30 km from the site of the Rajasthan function.

Why the six years delay **It should be noted here that water started flowing into the Narmada main canal in 2002-03 itself. What this means is that had the main canal been constructed upto Rajasthan border in 2002, water could have reached Rajasthan six years ago. Politicians and officials blame opposition to the dam for the delay, but nobody stopped them from building the canal and had they built it, Rajasthan would have got the water six years back. But the government is not interested in such questions.**

Water passes by for Banaskantha but they cannot use it On March 26, '08, a reply given by Gujarat Water Supply Minister in response to a query in the Assembly, caused a major embarrassment to CM. In his question, Palanpur MLA had asked by when the Narmada water would be available for drinking purposes in Vav and Tharad talukas. Replying to this, Minister Patel informed the House that depending on the financial situation, the water would be available by March 2010. He also informed that the tendering process for the water works would begin soon. (Rajasthan Patrika 190308, Indian Express, The Times of India, IANS 270308)

Gujarat canals work far from over The SSP proponent may like to given an impression that SSP work is over after water starts flowing to Rajasthan. However, the Gujarat Chief Minister accepted in reply to a question in the Gujarat assembly on March 18, 2008 that 1139 km of branch canal work is yet to be completed (1620 km completed) and 15316 km of sub branch canal work also remains to be completed (4711 km completed), in addition to about 80-90% of the command area development remains to be done. (The Times of India 190308)

R&R Scam Madhya Pradesh has been indulging in giving cash rather than land to the Project Affected Persons and using what it calls Special Rehabilitation Package. This is in complete violation of the Narmada Tribunal Award. MP claims that the PAFs have been buying and registering land from the money given under SRP. However, a lot of corruption and fake registrations have been going on, which the govt initially denied. Finally, in Nov 2007, the Govt of Madhya Pradesh admitted that out of 2777 registries submitted by the Project Affected Families and examined by the Govt, 758 (27%) were found to be fake! The NBA says that this is a gross underestimate and the total fake registries could go up to 2000, a scam involving crores of rupees.

DAMS

Polavaram: AP HC suspends NEAA order The Andhra Pradesh government has gone to the AP High Court, challenging the order of the National Environment Appellate Authority that quashed the environmental clearance to the project. On Dec 31, 2007, a division bench of the High Court suspended the NEAA order, following AP govt application for interim relief. Final hearing date has been fixed as Feb 11, '08.

⇒ **Supreme Court** On Feb 15, the SC asked the Central Water Commission to examine and submit a report on the nature and extent of submergence due to the Polavaram project. This was after Orissa & Chhattisgarh submitted that the level and extent of submergence in their States had not been examined. (The Tribune 291207, The Hindu 010108, 160208)

INTERLINKING OF RIVERS

ILR can impact India's Monsoon Vedaraman Rajamani, a geologist at Jawaharlal Nehru University's School of Environmental Sciences (Delhi) invited several Indian Earth scientists to a one-day meeting in Bangalore in Oct '05. It was the first scientific discussion of the project's environmental ramifications outside government walls. It was also one of the last. The group concluded "based on a simplistic interpretation of presently available data", that attenuation of water flow into the Bay of Bengal due to river diversion could very well affect the volume, duration and spatial distribution of the monsoon cycle. The freshwater run-off that flows from India's east coast forms a 10–20-m layer of water over much of the northern Bay of Bengal. This blanket of low-saline water is thought to play a part in the formation of the monsoon clouds which, in turn, deposit most of India's freshwater on its landmass. The group's conclusions make sense, says Edward Maltby, a specialist in wetland management at the University of Liverpool's Institute for Sustainable Water, Integrated Management & Ecosystem Research in the United Kingdom. (Nature 200308)

WATER OPTIONS

Unique initiative for Ahars, Pynes in Gaya

A unique initiative to revive the Ahars, Pynes and tanks is underway in the villages and towns on the banks of Falgu River in Bihar. The initiative called Magadh Jal Jamaat started with desilting of seven tanks of Gaya city in May 2006, entirely from voluntary efforts of people and this has helped solve half the water problem of the city. Now this initiative is also spreading into villages. An 8 km long pyne from Maanpur block to Nanouk village was desilted by the people in 2006-07. This helped fill about 32 tanks of the area, leading to huge improvement in crop yields. Similarly people desilted the 11 km long Vanshi Nallah, which helped fill 25-30 ahars. Desilting of another 26 km long pyne from Chapardah village to Thaneta village has been undertaken now by the people. (Anil Prakash in Hindustan 190308)

WATER SECTOR

Significant decline in rainfall

According to a research paper from the scientists of Centre for Mathematical Modeling & Computer Simulation (Bangalore), the quantum of pre monsoon rainfall (May 15-31) has decreased by 59% and post monsoon rainfall (Sept 15-Oct 10) by 39% in the last 50 years, based on data of 1951-2003. The number of rainy days (days with over 5 mm rainfall) has decreased by 47% for the pre monsoon period & by 24% for the post monsoon period. This makes the prediction of onset and withdrawal of monsoon difficult. While the all India monsoon (June-Sept) does not show any significant decline, there has been a 30% reduction in the spatial coverage of the monsoon. Says Dr P Goswami, one of the authors, "The difference in temperature over the land and ocean, or the 'thermal gradient' is decreasing, as the land is warming at a slower rate than the ocean in this region. This translates into less rainfall on the land. Some regions are becoming non-monsoonal, which will soon be unviable for certain crops." (The Hindu 301207)

Parliamentary Committee indicts the Ministry The Parliamentary standing committee on water resources, in its Nov 2007 report has indicted the Union Ministry for Water resources for its incomplete & casual responses on the issues raised by the committee in its previous report. The committee said that on artificial recharge of groundwater, the response of the ministry was silent about the time frame for operationalisation of the scheme. The report noted that 10 consultancy firms were employed by the ministry of statistics & programme implementation to evaluate the Accelerated Irrigation Benefits Programme and their reports were submitted by Dec 2006, but the Ministry of Water resources had yet to process the report. (The Tribune 271207)

For accurate weather forecasting Ministry of Earth Sciences, through the India Meteorological Department, plans to set up 550 more automatic weather stations & 1350 automatic rain gauges by March 2009. The stations will be linked with a satellite to provide more accurate weather forecasts, including rainfall. It is hoped that every district in the country will have a weather monitoring equipment. 125 automatic weather stations have already been being set up. (The Hindu 311207)

Water Use in Rajasthan The Rajasthan Water Resources Minister informed the assembly on March 18 that out of 21.71 Billion Cubic Meters flowing in the rivers of state at 50% dependability, use of 16.05 BCM is economically feasible, 11.23 BCM is being used & 4.82 BCM flows out of state borders. (Rajasthan Patrika 190308)

Blue & Green water Globally, 39% of rainfall contributes to 'blue water' sources in rivers, lakes & groundwater, the rest is 'green water' and is crucial to forests, biodiversity and rainfed agriculture. Among human activities, agriculture is the biggest user of both blue and green water. (Nature 200308, p 273)

HYDROPOWER PROJECTS

Mega hydro benefits for HP above 500 MW The Finance Ministry has said that the benefits of mega project status should go to only projects above 500 MW, thus shooting down the Power Ministry attempt to get such benefits for all projects above 25 MW. These benefits include exemption from tariff based bidding, zero Customs duty on equipment imports and permission to undertake merchant sale of power. Finance ministry says, "Only a large project could ensure cheap power to consumers on a long term basis. (The Economic Times 261207)

CERC amends tariff rules for Hydro The Central Electricity Regulatory Commission (CERC) has increased the tariff of power for Unscheduled Interchange (UI) to Rs 10 per Kwh with effect from January 7, 2008, from the current Rs 7.45 per unit that came into effect in April 2007 as it found that current rate was not sufficient to stop overdrawal of power. Along with this, CERC has also made certain change in tariff rules for hydropower projects to ensure that they do not manipulate generation to get benefit for high UI charges.

The amended Central Electricity Regulatory Commission (Terms and Conditions of Tariff) Regulations, 2004, say, "The hydro-electric generating stations are expected to respond to grid frequency changes and inflow fluctuations. They would, therefore, be free to deviate from the given schedule, as long as they do not indulge in gaming, and do not cause a grid constraint. As a result, the actual net energy supplied by a hydro-electric generating station over a day may differ from the Scheduled Energy (ex-bus) for that day. A compensation shall then be made by the concerned Load Dispatch Centre in the schedule for the (Day + 3), as described in clause (xix) of Regulation 45."

"(xix) The schedule finalized by the concerned Load Dispatch Centre for a hydroelectric generating station shall normally be such that the scheduled energy for a day equals the total energy (ex-bus) expected to be available on that day, as declared by the generating station, based on foreseen / planned water availability / release. It is also expected that the total net energy actually supplied by the generating station on that day would equal the declared total energy, in order that the water release requirement is met. While the 15-minute wise deviations from schedule would be accounted for as Unscheduled Interchange (UI), the net energy deviation for the whole day, if any, shall be additionally accounted for as shown in the illustration.

Illustration Suppose the foreseen/expected total energy (ex-bus) for Day 1 is E1, the scheduled energy is S1, and actual net energy (metered) is A1, all in ex-bus MWh. Suppose the expected energy availability for Day 4, as declared by the generator, is E4. Then, the schedule for Day 4 shall be drawn up such that the scheduled energy for Day 4, shall be
S4 = E4 + (A1 – E1).
Similarly, S5 = E5 + (A2 – E2),
S6 = E6 + (A3 – E3),
S7 = E7 + (A4 – E4), and so on." (CERC PRs 281207, 010108)

HYDROPOWER PROJECTS – HIMACHAL PRADESH

HP Elections: Some lessons In the assembly election in Himachal Pradesh, the ruling Congress Party has been defeated, all concerned can take some lessons for this result. There was strong impression among the people that the Congress government was allocating hydropower projects indiscriminately, without bothering about the environment, rivers, benefits to people or to the state. It was alleged that projects were being allocated to Hyderabad based companies, not to the Himachal people as the policy claimed. It did not bother about the adverse impacts of the projects on the people and also did not bother to ensure that the projects are implemented with sensitivity to the impacts on people and also with strict adherence to the management plans and environmental laws. "For parties though it will make sense to readjust their priorities and include conservation based development and livelihood generation as their selling points", wrote the editorial in year end issue of The Hindustan Times. During the elections, the opposition promised to review the indiscriminate Memorandums of understanding signed by the outgoing government and also promised to review the controversial skiing village proposal near Manali. The incoming government will do well to keep that promise. The Communist Party of India said in its manifesto that it will support only small hydro projects and will ensure greater share of benefits for the local people. The party would do well to pursue the promised policy for it to have some chance in the next elections. In Kinnaur district, the community opposing the proposed Khab dam and under construction Karcham Wangtoo hydropower projects fielded their own candidate. In case of Allain Duhangan project, the new government would do well to keep their promise to ensuring that the company that has indulged in rampant violations of forest conservation law, environment management plan and people's rights is taken to task. Congress would do well to work as a responsible and active opposition and raise real people's issues in the context of large hydro projects. (*Divya Himachal* 281207, EDIT in *The Hindustan Times* 311207)

Hydro projects are affecting Apple Crop The big hydropower projects coming up in Kinnaur district in Himachal Pradesh are hurting the economy of Kinnaur where apple cultivation is the oldest business. For this, locals hold the mega dams responsible. "There is a change in the apple season as the climate is changing due to hydro power projects. There is pollution, warming and less rain when needed," says apple orchard owner, Sanjeev Kumar. Across Himachal over 100 multiple

projects are underway. Locals fear that these mega dams are destroying Kinnaur's fragile ecology. Says environmental activist and BSP candidate Sushil Sana, "These projects are going to take on a dangerous form. Kinnaur is known for apples, but these apples are endangered due to the big projects." While people may not be displaced physically - the dams have caused large-scale soil erosion. The locals here wonder if the region will pay too heavy a price in the name of nation's progress. (CNN IBN 020108)

HYDROPOWER PROJECTS – NORTHEAST INDIA

Subansiri Landslide The National Hydroelectric Power Corp, who is implementing the Subansiri dam project, has informed that the recent landslide which occurred on 28th Jan, 2008, was due to geological reasons and incessant rainfall during the preceding fortnight. It was also reported that slide was entirely with in the power house area. (PIB 270208)

NTPC, Arunachal in power struggle NTPC Ltd has decided not to take lying down the scrapping of two of its hydro-power projects in Arunachal Pradesh. The state government had scrapped the projects, totaling 4,500 Mw, after NTPC declined to pay the upfront fee demanded by the state government in the form of an interest bearing loan. NTPC has taken the issue to its parent ministry - the ministry of power. The government-controlled company is also not interested in giving this loan, as there is no security for it "when even the Detailed Project Reports (DPRs) have not been prepared and we do not know if the project is viable". The ministry is likely to convene a tripartite meet - with NTPC, Arunachal Government and power ministry officials - shortly. The Arunachal government had entered into an memorandum of agreement with NTPC for harnessing 4500 MW hydropower projects in Sept '06. NTPC was to build the 4,000-Mw Etalin and the 500-Mw Attunli projects in the Debang valley on a build-own-operate-maintain (BOOM) basis. However, even before it could complete the techno-economic viability study of these projects, the state government demanded an upfront payment of Rs 250 crore, which was not part of the agreement signed earlier. Interestingly, NHPC, another central power utility, was also asked by the Arunachal government to pay an upfront fee (in the form of interest-bearing loan) of Rs 225 crore for the 4,500-Mw Debang project (Debang — 3,000 Mw and Debang I and Debang II of 750 Mw each). NHPC has paid the amount as it did not want the other project in the state (2,000-Mw Subansiri Lower) to suffer. Though the state has already awarded projects of about 25,000 Mw to both central utilities and private sector companies lke Reliance Energy, JP Associate, DS Construction, KSK Energy, GMR and Mountain Fall, industry observers are skeptical about fruition of these projects. (Business Standard 261207)

Arunachal: Most villages not electrified; SHPs best option Even at the Arunachal Pradesh govt pushes for accelerating development of large hydro projects, 45% of its villages, home to over 31000 households, remains without electricity. For them, the best option, according to state Planning Secretary, is either small hydro or solar power as they are dispersed, and most not connected with motor-able road. But those options largely remain unimplemented as yet. Then for whose benefit is the state government pushing for large hydro? It is surely not for the people of the state. (The Indian Express 251207)

Rangit IV invitation for bids The Jal Power Corporation Ltd has invited international competitive bids for the Francis Turbine driven generating units for the 4 X 30 MW hydropower project in West Sikkim. (The Times of India 281207)

SOCIAL & ENVIRONMENTAL ISSUES

Displacement without Rehabilitation is the norm Displace people at will, who bothers about resettlement, rehabilitation or even compensation, seems to be the norm according to a study of displacement in four states in India over the last one decade. Close to 1 crore people have been uprooted and robbed off their livelihood and at least two thirds have not got even compensation according to a new report by Action Aid and others. Totally some 1.97 crore acres (AP – 51.45 lakh acres, Chhattisgarh 15.18 lakh acres, Jharkhand 1.1 crore acres and Orissa 16.44 lakh acres) of land has been acquired for projects like dams, industrial units, mines, SEZs, etc. Many of those affected do not have legal titles of the land them depend on for generations, so they do not qualify for the compensation. The only possible work that some of the affected get is unreliable casual labour work under contractors. The report strongly recommended fundamental changes in the Land Acquisition Act. (The Economic Times 271207)

ICAI norms for sustainability reporting The Institute of Chartered Accountants of India has formed a committee for new accounting standards to deal with the environment related aspects to be reflected in the sustainability reporting, which includes social and environmental performance of the companies. If accepted, the suggestions might lead to an additional accounting norm that the companies will have to report. (The Economic Times 281207)

SMALL HYDROPOWER PROJECTS

SHPs to be run by tribal women in AP The four mini hydropower generation plants, each of 1.2 MW, which are coming up in the Tribal Agency area of the Rajahmundry district in Andhra Pradesh will be managed by tribal women. The units are being set up in the tribal villages of Pinjarakonda, Vetamamidi, Mittapalem in Addateegala mandal and in Devamadugula village of Y Ramavaram mandal. Each plant will use 16 cubic metres of water available from the natural streams and

waterfalls in the adivasi area. The State Government established the AP Tribal Power Company Ltd in 2002 and granted autonomy to the company for taking up hydro plants in Agency areas to be managed by tribal women. Eastern Power Distribution Company, Integrated Tribal Development Agency of Rampachodavaram, tribal women management committees and APTRIPCO entered into an agreement in Dec 2005 for setting up such plants. EPDCL will buy power at the rate of Rs 2.40 per unit from the committees. (NewIndExp.com 281207)

Ganwi-2 & Bhaba Augmentation: HPSEB looks for CDM credits The Pabbar Valley Power Corp Ltd, a company promoted by the Himachal Pradesh State Electricity Board has invited bids for consultancy for the CDM process for the under construction 4.5 MW Bhaba Augmentation Project (at village Kafnoo in Kinnaur district) and 10 MW Ganwi-2 hydropower project (village Ganwi, Dist Shimla) in Himachal Pradesh. The advertisement claims that the Bhaba project will generate 26.63 MU in 75% dependable year, which looks unlikely considering that average generation from small hydropower projects is much lower than that figure. The Bhaba project that is expected to be completed by December 2009 is going to cost Rs 35.63 crores, which means per MW cost would be Rs 7.92 crores, which would be one of the highest in India for a project of that size. Similarly, for Ganwi-2, the notice claims that the project cost will be Rs 49.449 crores, which means per MW cost is Rs 4.95 crores. The notice says that the Ganwi-2 will generate 5.227 MU per MW installed capacity, which looks unlikely. (The Hindustan Times 010108)

POWER OPTIONS

Grid interactive renewable capacity The grid-interactive power installed capacity from renewable energy sources such as wind, biomass, solar and small hydro in the country at the end of the 10th Plan, i.e., upto 31.3.2007 was 10,250 MW which has reached 11,447 MW as on 31.01.08. Thus in the ten months in current year, a capacity of 1197 MW has been added. A capacity addition of 14,000 MW from renewable energy sources is proposed during the 11th Plan. (PIB 170308)

Efficient windmills to pump water Indian industrial group JCT Ltd has signed a memorandum of understanding with the US based Dakshidin Corp, producers of Restec windmills, for first distribution and at a future date production of such windmills in India. This low wind speed high performance water pumping windmill can pump water from upto 4000 feet at even low wind speed of 4 miles upper hour can distribute water in 10 km radius. Conventional windmills need wind speeds of 15-18 miles per hour to operate and can pump upto 300 feet. The first windmills are expected in India in first quarter of 2008. (The Tribune 251207)

New Wind power plants see *Slow down* Setting up of new wind power plants have slowed down in Tamil Nadu due to increasing interest costs on the one hand and failure of the electricity board in evacuating all the power generated (for lack of sufficient transmission capacity) on the other hand. This year the wind speeds were also lower. Compared to addition of 500 MW of new capacity during 2006-07, current year may see about 10% lower capacity addition. TN has an installed wind power capacity of 3684 MW, of which 2400 MW is in southern districts. 1 MW wind power installed capacity can generate 1.8 to 3.4 million units of power in TN, depending on the wind capacity. (Mint 261207)

Indowind Energy's $ 30 m FCCB The Indowind Energy Ltd, an Indian wind power company based in Chennai has issued $ 30 million of Foreign Currency Convertible Bonds with an option to raise additional $ 5 million, to be used for overseas expansion. The company has 36.74 MW of wind power projects in India. (Financial Express 271207)

Ocean current power A Canadian company has commercialized a turbine that generates electricity from ocean current - one of the largest untapped renewable energy sources in the world with an estimated potential of 450 GW. (The Tribune 251207)

SOLAR POWER

New GOI scheme for grid connected Solar Power Recently the Ministry of New and Renewable Energy, government of India has announced a demonstration programme to support MW size grid interactive solar power generation projects, up to a maximum capacity of 50 MW. Any registered company, as project developer, would be eligible to set up solar power projects on build, own and operate basis. Proposal from each project developer with a maximum aggregate capacity of 5 MW, either through a single project or multiple projects of a minimum capacity of 1 MW each, would be considered. A maximum of 10 MW capacity solar power generation projects would be considered in a State. Preference would be given to the projects from the States where the State Electricity Regulatory Commissions have announced or are in the process of announcing tariff for solar power. For the projects approved and commissioned by 31st Dec 2009, the Ministry will provide generation based incentive up to Rs 12 per kWh for solar photovoltaic power and Rs 10 per kWh for solar thermal power fed to the grid by the solar power project developers, after taking in to account the tariff provided by the SERC or the utility. The Ministry will also provide incentive to the concerned utility and the State Nodal Agency, which will be involved in implementation and monitoring of the projects in that State. This sounds like a rather high subsidy when the cost of solar power is going down, but may be, to kick start the solar power economy, such initial incentive is required. (PIB 170308)

Indian company to set up Solar plants in Spain Hyderabad based XL Telecom & Energy, through its wholly owned subsidiary, Saptashva Solar plans to invest Rs 1000 crores to set up 28 MW solar power farms in Spain by Dec 2008. The first farm of 2.3 MW is expected to come up by March '08. It has medium term target to install about 200 MW of such farms in Spain and Portugal. Spain government is offering incentives like land on long term leave and subsidised loans for such plants. The project would have a 25 year power purchase agreement with 20% margin with a local utility. (The Hindustan Times, The Hindu 271207)

Production of wafer thin panels starts Nanosolar, a company supported by the US government and Google, started production of wafer thin solar cells printed on aluminum film in California on Dec 28. The company says its order book is full till mid 2009 and a second factory would be soon opened in Germany. Its vision is to produce panels at 99 US cents a watt so that the cost of the power generated is comparable to that from coal. The cost benefit is also in the speed with which these plants can be deployed. Solar Plants of up to 10 MW size can be put up in months compared to 10 years or more for coal plants. There are some unanswered questions about the efficiency, durability and reliability of these panels. (The Hindu 301207)

Hot roads heat homes in Netherlands A Dutch company, Ooms Avenhorn Holding BV, has developed a system that uses the heat from the hot roads and parking plots to heat homes, thus saving on power consumption and reducing carbon emissions. Originally developed to reduce road maintenance to avoid formation of ice on the road, the system was latter developed to use the excess energy stored to heat homes. The system is already being used in heating some buildings, though the system is expensive and inefficient as of now. (The Hindustan Times 010108)

CLIMATE CHANGE AND WATER

GOI studies Realising the need for proper assessment of the effect of climate change on water resources and flow characteristics, research on specific issues including impact assessment of climate change on water resources has been undertaken by Ministry of Water Resources through Central Water Commission, Brahmaputra Board and National Institute of Hydrology with active participation of reputed academic institutes. (PIB 110308)

GLACIERS ARE MELTING

Glaciers suffer record shrinkage The rate at which some of the world's glaciers are melting has more than doubled, data from the United Nations Environment Programme has shown. Average glacial shrinkage has risen from 30 centimetres per year between 1980 and 1999, to 1.5 metres in 2006. Experts have called for "immediate action" to reverse the trend, which is seen as a key climate change indicator. Estimates for 2006 indicate shrinkage of 1.4 metres of 'water equivalent' compared to half a metre in 2005.

Achim Steiner, Under-Secretary General of the UN and executive director of UNEP, said: "Millions if not billions of people depend directly or indirectly on these natural water storage facilities for drinking water, agriculture, industry and power generation during key parts of the year. There are many canaries emerging in the climate change coal mine. The glaciers are perhaps among those making the most noise and it is absolutely essential that everyone sits up and takes notice."

The findings were compiled by the World Glacier Monitoring Service, supported by UNEP. Thickening and thinning is calculated in terms of 'water equivalent'. Glaciers across nine mountain ranges were analysed. Glaciers have been monitored for more than a century. Dr. Wilfried Haeberli, director of the service, said: "The latest figures are part of what appears to be an accelerating trend with no apparent end in sight. This continues the trend in accelerated ice loss during the past two and a half decades and brings the total loss since 1980 to more than 10.5 metres of water equivalent."

The record annual loss during 1980-1999 - 0.7 m in 1998 - has now been exceeded by three out of the past six year (2003, 2004 and 2006). On average, one metre water equivalent corresponds to 1.1 metres in ice thickness. That suggests since 1980 a total reduction in thickness of ice of just over 11.5 metres or almost 38 feet. (BBC 160308)

CLEAN DEVELOPMENT MECHANISM

21 million credits in 2007 Indian projects earned 21 million Certified Emission Reduction (CER) credits in 2007 under the Clean Development Mechanism of the UNFCCC. This is up from 12 million CER in 2006 and it is expected that this will go up further in 2008. However, the price per CER is likely to reduce in 2008. (The Times of India 020108)

POWER SECTOR

TN Nod for 16140 MW Merchant Plants Tamil Nadu government on Dec 25, 2007 gave nod to five coal based thermal power plants with total capacity of 10140 MW to come up as private merchant power plants in the state. Earlier the state had given clearance for four projects of total 6 000 MW capacity. The state electricity board will have the first right to refuse offer of 25% of the generation from such plants.

The 11th Five year plan hopes to add 15 000 MW through merchant power plants, but there have been no takers so far even as 15 coal blocks with 3.2 Billion Tonnes reserves have been identified for such plants. Central Electricity Authority has been asked to identify sites for such projects. The current policy on these plants is likely to see revamp. (The Hindu 261207, The Hindustan Times 271207)

IRRIGATION

Maharashtra wants to divert EGS funds for BIG irrigation projects

Maharashtra is planning to amend the state employment guarantee act to divert the fund for BIG irrigation projects in Krishna basin. On February 21, the cabinet decided to do away with a mandatory grant to the Employment Guarantee Scheme (EGS). Saying a large chunk of the fund is 'unused', the cabinet fixed the annual EGS budget to Rs 1,000 crore. Jayant Patil, state finance minister, says the government will allocate a contingency fund for EGS, which will be available when a need arises.

It plans to amend the Maharashtra Employment Guarantee Act, 1977, through an ordinance, which will enable it divert the EGS fund to other projects, primarily irrigation projects in the Krishna basin.

The move has invited sharp criticism. It should come before the legislature for discussion. Why can the government not wait till the state budget session begins? We will ensure that the governor does not sign it said an opposition leader.

The government made a similar move last year too by introducing a bill to amend the 1977 act. After the attempt met with opposition, it referred the matter to a joint select committee of MLAs from all parties. The committee's decision is pending. This new ordinance is the brainchild of the ministers Jayant Patil and Ajit Pawar, minister for water resources. They want to pump money into the irrigation projects in their party stronghold—western Maharashtra. In the past also they had tried to divert funds from social welfare schemes. The contractors for large irrigation dams have also influenced the current move alleges opposition leaders. The status of irrigation projects in the state is anything but rosy. Estimates of the 12th Finance Commission shows Maharashtra is in a debt trap and needs over Rs 40,000 crore to complete ongoing irrigation projects.

MLAs from the Vidarbha, Marathwada and Konkan regions are not ready to give up their share in the irrigation funds for the benefit of Western Maharashtra. This has also prompted the government to target EGS. "Maharashtra is desperate. It tried to divert Rs 529 crore from the social justice department to the water resources department, but Chandrakant Handore, social justice minister, objected to it. Later, it tried diverting funds for the Konkan area but Narayan Rane, the state revenue minister, opposed the move," says Praful Shinde of Mumbai-based ngo, Sampark.

The Finance minister Jayant Patil and the Water Resources minister Ajit Pawar want to pump money into the irrigation projects in their party stronghold—western Maharashtra. In the past also they had tried to divert funds from social welfare schemes and also the money allocated for Konkan area. Last year too they had tried to amend EGS act of 1977. The contractors for large irrigation dams have also influenced the current move

Maharashtra is also finding it tough to spend the fund under NREGS. "Our district had Rs 60 crore of the NREGS fund lying unused. We were barely able to use 10 % of the total fund. It is difficult to find labour for EGS works and often we had to stop work after two to three days," says Nyandeo Wathare, member of zilla parishad, Parner taluka, Ahmednagar district.

Diverting EGS fund to irrigation projects is bad idea. Afforestation activities and similar micro projects under EGS can make Maharashtra drought-free.

The Union Minister of State for Rural Development, Suryakanta Patil, recently criticized Maharashtra for its "poor performance". Of the 12 districts included in the first phase of NREGS, the beneficiaries got only 41 days' work in 2006-07. NREGS is expected to provide 100 days of work. The total expenditure in the first phase had been 22 % of the total allocated, said Suryakanta Patil in a review meeting on NREGS in Mumbai on February 20.

Many blame the government's indolence for the crisis. Shinde asks, "If the government believes that rural people no more need work under EGS, why are people still migrating to cities?" For instance, Wathare says, there are close to 10,000 migrant agriculture labourers working in Parner, who come from Nanded, Parbhani and Konkan districts of Maharashtra.

Many experts say diverting the EGS fund to irrigation projects is meaningless, especially because EGS itself can make the state drought-proof. Maharashtra has 60,000 micro watersheds and by creating bunds and undertaking afforestation under EGS, results can come in one season. The available fund for the scheme is enough for this.

The state government is already in a legal row over EGS. In December, H M Desarda, a former planning commission member, moved the Bombay High Court saying the state govt had failed to contribute its EGS share since 2000 and was instead diverting the fund to other projects.

The Maharashtra govt's single minded attention to BIG irrigation projects should not amaze too many people. The lobby for such project is strong as the benefits for them huge. (Down to Earth 310308)

Will Rs 2000 crore & slogan of *Irrigation year* Wash? The Orissa government, seeing the protests against diversion of water from Hirakud dam and also the obsession with big industry, has decided to wash these sins by declaring that 2008 will be declared as *Irrigation Year* and Rs 2000 crores will be spent on irrigation facilities in the state. Under the plan, an investment of Rs 5 lakh will be made in those villages that has less than 35% agricultural land under irrigation (most of Orissa villages will qualify for this, it seems). Also, some 1000 tubewell based lift irrigation schemes will be set up, which is really required in a state that has very low and stagnating groundwater utilisation under the onslaught of World Bank funded Power reforms. The trouble is these measures are not likely to wash the sins of the state government. (Asian Age 261207)

AIBP Claims The year wise details of Central assistance provided to the States during 2004-05 to 2006-07 and potential creation under AIBP during the corresponding period are given in the following Table: (Amount in Rs. Crore; Irrigation potential in lakh Hectare)

Year	Central Assistance Provided (Loan/Grant)	Irrigation potential created
2004-05	2867.3372	4.96
2005-06	1900.3142	6.00
2006-07	2301.9722	9.32
Total	**7069.6236**	**20.28**

This is as per PIB 180308. These can only be treated as claims till there is evidence to show that the potential has translated into actual irrigation on ground. Past claims like these have not proved to be credible.

INTER STATE ISSUES

Maharashtra's Babli barrage: SC to hear AP plea The

Supreme Court has rejected Maharashtra's arguments against maintainability of Andhra Pradesh's petition objecting to the former building the Babli barrage on Godavari River upstream of the Pochampad (Sriramsagar) Dam in AP. Maharashtra had argued that this was an interstate water dispute and the Godavari Water Disputes Tribunal could resolve the issue. Supreme Court will take up the matter in August to adjudicate the issues decided, including whether Maharashtra's action in taking up the barrage inside the water spread area of the Pochampad reservoir is contrary to the Tribunal award and what relief is the downstream state entitled to. (The Hindu, Indian Express 270308)

Hansi-Butana: SC hearing in March The Supreme Court has fixed March 11, 2008 as the next date of hearing for the Punjab-Haryana-Rajasthan dispute regarding Hansi Butana canal of Haryana after the Central Water Commission pleaded for time till Feb 28 for submitting the final report. CWC told the court on Jan 16 that it has received the affidavits and responses from the three states, but needs time to analyse and submit final report. (*Dainik Bhaskar* 170108)

WATER POLLUTION

Budda Nullah Pollution: Industry spared, dairies booked In a clear case of discrimination, the Ludhiana administration has taken action against the dairy farmers for polluting Budda Nullah (a tributary of Sutlej) but spared the industry, which in fact is the major contributor towards the pollution. The police has registered eleven cases against 52 dairy farmers of Haibowal and three farmers of Salem Tabri under section 188 of the IPC for flouting the high court and district magistrate's orders. But no cases have been filed against the industries. (The Tribune 280308)

Periyar Polluters Refuse to Pay Periyar River in Kerala is an "ecological disaster in the making" said the report of the Supreme Court's Monitoring Committee on Hazardous Wasters in its report on Kerala and recommended to the Kerala State Pollution Control Board to collect Rs 2.5 crores from the factories in the Eloor-Edayar industrial belt. But the industries are refusing to pay and have pressurised the government to go slow in formulating the individual industry's penalty. (The Hindu 261207)

URBAN WATER SUPPLY

Police protection for Gurgaon Canal! The govt of Haryana has decided to set up four police stations along the 70 km long Gurgaon Canal so that farmers do not take water from it or breach it. The police stations will have total of 40 armed police to begin with, which will be increased to 100 at a later stage. A large number of cases (863 in 2005-06, 635 in 2006-07 and 519 in 2007-08) have been registered against farmers already, but the maximum penalty currently is a fine. In the latest case when canal was breached on Feb 28/29, a number of farmers have been arrested. The canal runs from Kakroi in Sonipat district to Basai in Gurgaon and it is used only for water supply of Gurgaon and Bahadurgarh towns. There are about a dozen villages on its route that have no source of irrigation. (Bhaskar 250308)

Karnataka move to set up regulator The Karnataka govt is planning to set up State Urban Water Supply and Sanitation Council as a regulator for urban water supply and sanitation sector, having all the functions except the

power to formulate policies. This is clearly a move towards large scale privatisation of this sector in Karnataka. The five-member proposed council will have a chairman and members in charge of technical, financial, public affairs and secretarial responsibilities. A consortium of three consultants, including the Tahal Consulting Engineers, CRISIL Infrastructure Advisory and TERI have been asked to look into the modalities of setting up the Council. (The Hindu 261207)

RURAL WATER SUPPLY

Arsenic in W Bengal According to W Bengal Chief Minister, 79 of the 314 blocks in the state are affected by Arsenic contamination of groundwater. (Business Line 170308)

Arsenic in Bihar According to a report from the Bihar Public Health Engineering department, groundwater in 15 of the 38 districts of Bihar is affected by Arsenic beyond safe limits. Buxar is most affected district. The Arsenic contamination is found to a greater extent in villages within 10 km from the banks of the Ganga River on both sides. Some districts of Uttar Pradesh is also affected.

⇒ **Fluoride** Groundwater in six districts of Bihar bordering Jharkahnd is affected by fluoride contamination. (Jansatta 170308)

WATER BUSINESS

British Govt's NO to Bottled Water Bottles of water will no longer be served at British govt meetings under a "tap water only" policy announced. Britain's top civil servant, Cabinet Secretary, sent the order to all govt departments. Britain has seen the stirrings of a public backlash against bottled drinking water. (Reuters 100308)

Premium water market Premium water brands sale at rates of Rs 80-150 per liter. Danone's Evian is one of the main brands in the market. It will be joined by new brands from Tauraus company (earthmoving equipment maker, plans to name its water brand as *Rain*), Finewinesandmore and Wipro, as *Leh Berry* brand from Delhi based Seabuckthorn Indage entered the market earlier this year. Total bottled water market in India is worth Rs 1000 crore and is growing at 25-30%. (The Economic Times 261207)

RIVERS

Yamuna gets the certificate: The most Polluted River

According to a study conducted by the Central Pollution Control Board, the stretch of river Yamuna between Wazirabad and Okhla in Delhi is among the most polluted stretches of major rivers across the country. This is after spending over Rs 720 crores on Yamuna Action Plan Phase 1 and 2. It has been reported that the volume of wastewater generated from Delhi accounts for about 79 % of the total wastewater generated from major towns located along the banks of river Yamuna. (PIB 200308)

FLOODS

EMBANKMENTS TO DISASTER People from several villages in Bihar are opposing the construction of a pair of embankments on the Bagmati River and have stopped work on one of them. Less visible behind their cries is a state administration that seems to be set on continuing a history of trapping villages in flood waters. A pair of embankments along the Bagmati River is under construction from Runni Saidpur in Sitamarhi to Hayaghat in Darbhanga district in Bihar. The Bagmati, flowing into the Indo-Gangetic plains from Nepal, has a length of about 270 km in Bihar. Bihar has a history of flooding from embankments, and in this case too, many villages are likely to be trapped between these mud walls. Floodwaters will pass over these villages for all times to come. Villagers from Benipur, Bharthua and Jivajor, under the banner of Punarwas Sangharsh Samiti, Benipur are staging a dharna since 25 Dec 2007 demanding rehabilitation. They have been sitting here off and on since 11 April 2007 after the construction of the Rs.792 crores project started in the middle reaches of the Bagmati. (DK Mishra, IndiaTogether 160308)

Dominic Dam flood kills 30 A Dominic committee charged with overseeing dams in emergencies ordered the floodgates open shortly before midnight on Dec. 11, 2007, giving authorities less than an hour to warn residents in the central province of Santiago that a wall of water was on its way. Octavio Rodriguez, one of the officials who decided to open the dam, told The Associated Press a day after the storm that they were aware lives would be lost, but feared the mostly earthen dam would collapse under heavy rains. Critics contend that the release of water was unnecessary. In January, a panel of engineers accused emergency officials of poor planning and concluded that the dam was never in danger of collapsing. Flooding from the dam caused the majority of the 36 deaths recorded across the Caribbean after the rare December tropical storm. Another panel in March gave a clean chit to the dam operators, but that report is yet to be made public. (Associated Press 190308)

Ichhamati River Dredging According to Union Water Resources Ministry, as per the information given in the Parliament, the Govt of W Bengal has completed resuscitation of the river for a length of 24.3 km within Indian Territory in the North 24 Parganas district at a cost of Rs 24.88 Crore. For the balance portion of about 20 km length, which forms common border between India and Bangladesh, W Bengal Govt prepared a Rs 23.59 crore scheme for desilting/ dredging of river Ichhamati for better drainage and flood management. As the river Ichhamati forms the international border between India and Bangladesh, the matter has already been taken up by Govt of India with Bangladesh during 36th meeting of Indo-Bangladesh Joint Rivers Commission in Sept, 2005 to work out the modalities for undertaking desilting/ dredging work. (PIB 170308)

AGRICULTURE

FAO Report:

Organic Agriculture contributes less to climate change, generates more employment

United Nation's Food and Agriculture Organisation came out with a report in August 2007 titled: "ENERGY USE IN ORGANIC FOOD SYSTEMS". Its conclusions are significant and clear: Organic agriculture contributes less to climate change in every way and importantly for a country like India, generates more employment. This known, but as they come from a mainstream UN organisation, they are very important. We are carrying here the summary of the report. We hope the Indian govt, Agriculture Ministry, Food Processing Ministry and state govts take a note of this and devise systems to encourage organic farming in big way.

Agriculture and food systems play an important role in fossil fuel consumption and climate change because of their significant energy use and because of agriculture's potential to serve as a sink for the negative externalities of energy use and a source for renewable energy. Comparing organic and non-organic production in terms of energy use is crucial to understanding the energy inefficiencies of different food systems and their potential for reducing energy consumption and mitigating environmental impacts especially of climate change.

Based on existing research, this paper considers the environmental efficiency of energy use in organic & non-organic agricultural systems, with implications on the natural & socio-economic environment of organic production as compared to non-organic production.

Because organic and non-organic food systems maintain separate but parallel supply and transport chains, it is important to include in the analysis of energy consumption not only agriculture production but also post-harvest practices and distribution networks and the energy consumption therein. Conventional agriculture production utilises more overall energy than organic systems due to heavy reliance on energy intensive fertilisers, chemicals, and concentrated feed, which organic farmers forego.

Other production practices such as irrigation, use of heavy machinery, and use of heated greenhouses are high energy consumers and are utilised by both organic and conventional operations. Organic systems, with exceptions, however, use less of these energy-demanding implements. Organic systems partly compensate for the decreased fossil-fuel based energy used on a farm with generally higher labour requirements and higher returns on labour.

Regarding processing, packaging, storage, and distribution; there is some indication that organic systems may offer less energy intensive methods than their conventional counterparts.

With lower energy inputs, organic systems contribute less to greenhouse gas emissions and have a greater potential to sequester carbon in biomass than conventional systems. The energy efficiency of organic agriculture is attractive for bioenergy production as the aim of this renewable fuel source is to reduce dependency of fossil fuel energy and mitigate environmental damage caused by emissions.

Because organic agriculture relies less on external inputs, human labour needs are increased. Organic agriculture can provide employment opportunities supported by price premiums and decreased costs for purchasing inputs; however, in some circumstances, additional labour is unavailable or could burden overworked demographics.

Agriculture's role in both climate change and non-renewable resource consumption needs a more prominent position in the global discussion of curbing greenhouse gas emissions and reducing dependency on oil. Designing a food label to display the energy used in the production, packaging, and distribution of products may offer incentives to streamline energy use and educate consumers; however, standards are needed for measuring energy consumption in food systems.

Irrigation On the use of irrigation the report says, "Pump irrigation is another energy-intensive agricultural practice, one that is utilized by both organic and non-organic farms. While some methods of irrigation are more energy efficient that others, overall energy use for irrigation is largely determined by depth from which water is pumped, climate, and crop type. Organic agriculture has been shown to decrease irrigation need because the higher soil organic matter generated by organic practices retains water better than the soil from conventional systems." Thus organic farming would require less of groundwater, which is lifeline of India on water issues. It would also require less energy, which would help reduce the electricity shortages and also the balance sheets of the electricity companies as power use in agriculture fetches less returns.

An important conclusion of the report is, "Typically, organic agriculture uses 30-50 % less energy in production than comparable non-organic agriculture. Though organic agriculture on average uses energy more efficiently, it often requires an indirect trade-off of energy intensive inputs with additional hours of human labour—about 33% more than conventional agriculture."

We hope all concerned in India will take note of this report and take actions to encourage organic agriculture.

MP Drought The Madhya Pradesh government has declared drought in 151 tehsils spread over 37 districts. (The Hindu 291207)

Early Paddy sowing is crime in Punjab The Amritsar district administration in Punjab has ordered a ban on sowing of paddy before May under Section 144, CrPC and violation would be punishable under law. This was also done last year with a view to arrest the depleting groundwater level. (The Tribune 250308)

Rice export price raised to $500/t The minimum export price of rice has been increased by the government of India from $ 425 per Tonne to $ 500 /T through a notification. This is one of the steps taken to ensure that adequate quantity of rice is available for domestic consumption. The food ministry has informally told the Commerce ministry that the export quantity should not exceed 8 lakh T of non basmati rice. India exported 3.7 MT of non basmati rice worth Rs 4258 crore in 2006-07. India had banned export of non basmati rice between Oct 9 and 25, 2007. Indian rice is more in demand as it is known to be non GM rice. (The Economic Times 010108)

Brazil invites Indian cos to invest in cane farming Brazil, the world's largest ethanol producer, has invited Indian firms to invest in sugar cane farming, ethanol extraction and exporting ethanol. (Mint 270308)

THE CHINA PAGE

Steps towards diversion of Brahmaputra China has recently announced that a 141 km highway linking Bome to Medok city in Nyingtri Prefecture will be constructed next year. An airport has also been opened in this Prefecture. Some observers see these as signs of China preparing to start work on the diversion of Brahmaputra northwards, work on which is to be started in 2009, they say. Such diversion would be detrimental to downstream India and Bangladesh, particularly when India has no agreement with China on utilisation of shared rivers. China also did not have agreement on utilisation of Mekong river waters, either with the downstream countries or with the Mekong River Commission. China's building of two hydropower projects on Mekong and their indiscriminate operations have impacted the agriculture, fisheries and tourism activities in the downstream countries. The devastating floods of 2002 are also partly due to sudden release of large quantities of water from these dams, it is alleged. Unfortunately, some of these observers want to use this to push the Indian government to take up destructive dams like the Khab on Sutlej and the Siang on Brahmaputra, showing the Chinese threats. (The Tribune 261207)

Three Gorges Dam: An Environmental Catastrophe Even the government suspects that the massive dam may cause significant environmental damage. Chinese officials now acknowledge that the massive dam, sandwiched between breathtaking cliffs on the Yangtze River in central China, may be triggering landslides, altering entire ecosystems and causing other serious environmental problems and, by extension, endangering the millions who live in its shadow. A month after first stage filling of the reservoir in June '03, around 20 million cubic meters of rock slid into the Qinggan River, just 3 km from where it flows into the Yangtze, spawning 20 m waves that claimed the lives of 14 people. Since Sept '06 when the water level in the reservoir was raised to 156 m, the area has experienced a series of problems, including dozens of landslides along one 32 km stretch of riverbank. In Nov '07, the ground gave out near the entrance to a railway tunnel in Badong County, near a tributary to the Three Gorges reservoir; 3,050 cubic meters of earth and rock tumbled onto a highway. The landslide buried a bus, killing at least 30 people.

Fan Xiao, a geologist at the Bureau of Geological Exploration and Exploitation of Mineral Resources in Sichuan province, says the landslides are directly linked to filling the reservoir. Water first seeps into the loose soil at the base of the area's rocky cliffs, destabilizing the land and making it prone to slides. Then the reservoir water level fluctuates as engineers partially drain the reservoir in summer to accommodate flood waters and raise it again at the end of food season to generate power. The abrupt change in water pressure further disturbs the land. In a study published in the Chinese journal Tropical Geography in 2003, scholars at Guangzhou's South China Normal University predicted that such tinkering with the water level could trigger activity in 283 landslide-prone areas. Local news media report that whole villages of people relocated to make room for the dam will have to move a second time because of the landslides and tremors, indicating that officials failed to foresee the full magnitude of the dam's effects.

That is apparently what happened to the 99 villagers of Miaohe, 17 km upstream of the Yangtze, who saw the land behind their homes split into a 200 m wide crack last year, soon after the reservoir water level was lowered for the summer floods. Chinese Academy of Engineering scholar Li Wangping reports that the dam area registered 822 tremors in the 7 months after the Sept 2006 reservoir-level increase. So far, none have been severe enough to cause serious damage.

Now, the dam seems to be spurring drought in central and eastern China. In Jan '08, the China Daily reported that the Yangtze had reached its lowest level in 142 years – stranding dozens of ships along the waterway in Hubei and Jiangxi provinces. Meanwhile, at the mouth of the Yangtze residents of Shanghai, China's largest city, are experiencing water shortages. The decreased flow of fresh water also means that saltwater from the East China Sea now creeps farther upstream. This, in turn, seems to be causing a rise in the number of jellyfish, which compete with river fish for food and consume their eggs and larvae, thereby threatening native populations that are already dwindling as a result of overfishing. (Scientific American 250308)

US Hydro moves to smaller, non dam options

This interesting report should demolish many of the myths spread by big hydro lobby in India and other developing countries about big hydro projects in US and such other developed countries.

While the U.S. has seen a slight decline in total energy production from hydro resources over the last two decades, the industry is gearing up to reverse that trend.

But in order to stimulate new growth, industry leaders say they must correct misinformation about hydropower and get the permitting process moving faster for both project upgrades and installation of new technologies like hydrokinetics. For many people, hydropower conjures images of towering hydroelectric dams that flood land, displace communities and kill aquatic wildlife. In the U.S. the industry plans to install more small to micro systems.

Large hydroelectric dams above 30 MW make up only 8% of the total hydropower plant population in the U.S., according to the Hydroelectric Power Resources Assessment Database. The rest of the plants in the U.S. are low power (under 1 MW) or small hydro (1 - 30 MW).

Vermont hasn't seen a new grid-connected hydroelectric facility built in 20 years. That's because the slow, expensive permitting process makes projects economically unfeasible. Obtaining federal and state permits can add $2,000 per installed kW for a small hydro system, a figure that some call "a project killer."

The Idaho National Laboratory's Water Energy Program released a study in 2006 that identified 130,000 stream reaches around the country that are suitable for projects of 10 kW - 30 MW. While the study estimates those sites to hold around 100,000 MW of capacity, a more realistic estimate is around 30,000 MW considering technological and environmental limitations. Even with such restrictions, these projects could increase U.S. hydroelectric generation by over 50%, says the study.

"We have so many opportunities to upgrade existing dams, put up new power houses at non-powered dams and build out the resources at other sites in a sustainable way," says Linda Ciocci of National Hydropower Association. "Then we have all these new technologies that are in the beginning stages like wave, tidal and in-stream hydrokinetics."

While obtaining a preliminary permit can take as little as six months (more than 50 have been issued), it can take up to five years to get a full-project permit from FERC. NHA is concerned that start-up hydrokinetic developers with limited financial resources won't be able to handle that five-year timeframe.

"[It's] too long for a nascent industry that has very difficult times in terms of funding to really go through that process and do what is necessary for studies. The cost involved, the time involved, the delays involved are very, very difficult for an industry that is just getting off the ground," Ciocci says.

One such company, the Virginia-based kinetic hydropower developer Verdant Power, estimates that there are around 12,500 MW of hydrokinetic resources in the U.S. and about 250,000 MW worldwide. If the U.S. wants to take advantage of the untapped potential of its oceans and tidal estuaries, FERC and MMS need make it easier and less costly for new companies to get permits, says Verdant Co-Founder and President Trey Taylor.

In December 2006, Verdant placed six of its Free Flow turbines in the East River in New York City. Called the Roosevelt Island Tidal Energy (RITE) Project, it was the first multi-turbine hydrokinetic field in the world and generated 1,000 kilowatt-hours per day on average. Taylor says that a third of the $6 million needed for the RITE project went toward environmental impact studies. He supports the need for such impact assessments, but believes the amount of testing can be "cost prohibitive," and is making it challenging to move onto the next phase of the project.

"It's tough. Of course you need to test. But there's a lot of money that goes into the tests, which are showing we have very little impact on fish species. We'd like to be able to move on without the prospect of spending so much of our money on this process," says Taylor.

Indeed, these are the issues that businesses, lawmakers and state and federal regulators are dealing with as the hydropower industry expands capacity and diversifies technologies. There is a need to bring more clean hydroelectricity online as quickly as possible while also ensuring development is done in an environmentally-friendly way, says NHA's Ciocci. She is confident that stakeholders will work out a solution to ensure a positive future for the industry. (www.renewableenergyworld.com March 18, 2008)

THE PAKISTAN PAGE

River inflows lowest in 10 years River system inflows in Pakistan on March 15 reached the lowest level in 10 years, lowering water in Tarbela to dead level of 1339 ft. River inflows during Jan-March '08 have been lowest compared to the corresponding period in the last ten years. The total inflow in rivers was 69,380 cusecs and a total outflow was 23,384 cusecs on March 15. The lowest level of inflows recorded in the last 10 years was 89,400 cusecs. The Indus River System Authority is not storing any water in Tarbela and releasing all of its 19,300 cusecs inflow for irrigation. Water level in Mangla has increased because of an increased inflow from Jhelum River. Inflow in Mangla was 23,384 cusecs and outflow 24,000 cusecs on March 15. Water releases for hydropower had been reduced from 29,000 cusecs to 18,000 cusecs after water reached dead level in Tarbela, lowering production by 1,000 MW to 2200 MW. (Daily Times 170308)

WB to give $750m for Munda Dam The World Bank has expressed its willingness to provide $750 million to Pakistan to meet the extra cost of building the Munda Dam. The Munda Dam will be able to store 0.67 million-acre feet of water, and will have installed hydropower capacity of 740 MW. The dam is also envisaged to help to control flooding in Peshawar. The cost of the dam, which was estimated at $6.1 billion in Sept 2005, had increased by 10 percent. The feasibility study of the dam was originally conducted by Japanese consultants. But many assumptions of that study were wrong and the tariff setting stage was far away. The Dam is to be constructed on the River Swat and is to irrigate 29,000 acres. (Daily Times 200308)

THE WORLD DAMS

Chinese Dam industry under attack The Chinese dam industry, now very active across the world, is under increasing attack for its lack of concern for the local people, environment or corruption. China has become the most important financier of the large dams around the world, says Peter Bosshard of the International Rivers Network. At the USD 2 billion Merowe dam along the Nile valley in Sudan, financed in part by the Export-Import Bank of China, several villagers protesting forced displacement were killed in April 2006. China is supporting dams in places were there is no or little democracy, for example in Pakistan, in Myanmar, in Laos, among other places. In Southeast Asia alone, some 21 Chinese companies are involved in 52 hydropower projects. In Myanmar, China supported dams are forcing forced relocations on local people under an authoritarian regime. In Laos, Sinohydro, which build the controversial Three Gorges Dam, is constructing two dams to export electricity to China and Thailand. China is under attack for its no strings approach to aid, which allows human rights abuses and corruption to flourish. (Mint 020108)

IHA's failed attempts to undermine WCD Presumably in response to the report of the Word Commission on Dams in Nov 2000, the International Hydropower Association (largely a lobby for big Hydro projects), in 2003, developed Sustainability Guidelines or environmental and social standards for hydro projects. IHA claims that the SGs "provide a framework for good practice which is in accordance with [WCD] values." This claim is clearly wrong as the SG is hugely diluted version of WCD recommendations.

In 2006, IHA approved a Sustainability Assessment Protocol. The Assessment Protocol was designed to help dam builders assess their own compliance with the Sustainability Guidelines. While it has reportedly been used by some developers to show that their hydro projects meet the SGs, no information has been disclosed to date about these "self-assessments."

Finally, the IHA recently initiated a two-year process to strengthen and legitimize their Sustainability Guidelines and accompanying Sustainability Assessment Protocol. This process is clearly driven by a desire for IHA members to access concessional finance earmarked for renewable energy projects. The long-term goal of the IHA process would be a certification scheme for "sustainable hydropower", perhaps modeled on the Forest Stewardship Council or other industry-led initiatives.

To carry out this process, the IHA has created a new body called the Hydropower Sustainability Assessment Forum. The membership of the HSAF has been limited to 2 representatives from each of the following categories: hydropower sector, environmental specialists, social specialists, economic/financing specialists, developed country representatives and developing country representatives (total of 12 people).

From discussions leading up to the HSAF's formation, it is clear that the IHA wanted to avoid the large number of stakeholders that characterized the WCD process, and are anxious to promote a more "implementable" alternative to the WCD framework. (International Rivers 240308)

REVEALING QUOTES

On Bhutan A booming industry selling hydro power to India creates wealth but few jobs. Unemployment, crime and drug addiction are rising along with rural-urban migration.

Reuters 250308 (reporting on elections)

On GM Crops "Resources for GM development have been spread very abundantly, with a great deal of overselling, So far, we do not have a direct gain from GM or molecular biology in terms of drought resistance."

Pasquale Steduto, Italy based chief of the United Nations Food and Agriculture Organization's Water, Development and Management Unit (Nature 200308, p 273-4)

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Publications available with SANDRP

PUBLICATIONS IN ENGLISH:

1. *Large Dams for Hydropower in NorthEast India* SANDRP-Kalpavriksh, June '05, p 228, Rs 150 (indv), Rs 300 (inst)
2. Tragedy of Commons: The Kerala Experience in River Linking, River Research Centre-SANDRP, '04, p 146, Rs 120
3. *Unravelling Bhakra*, Shripad Dharmadhikary, Manthan, 2005, pp 372, Rs 150/- (individuals); Rs 300 (institutions)
4. THE GREATER COMMON GOOD by Arundhati Roy, Published by India Book Distributors, 1999, pp 76, Rs 80/-
5. *Water Private Limited* Manthan Adhyayan Kendra, 2006, pp 124, Rs 50/-
6. Citizens' Guide to the World Commission on Dams, By A Imhof, S Wong & P Bosshard, IRN, pp 59, Rs 30/-.
7. *Green Tapism: A Review of the EIA Notification–'06*, Environment Support Group, Bangalore, 2007, p 201, Rs 250/
8. *Insidious Financial Intrusions in India's North East*, IR & FIPA, April '06, pp 100, Rs 50/-
9. *Conserving Raindrops a Much Better Option than Linking Rivers* by Bharat Dogra, pp 8, Rs 4/-.
10. *Alternative Power Planning: 20 Questions* Prayas and Kalpavriksh, Sept 2007 pp32, Rs 20/-
11. *The Forest of the Buddha*, B Imam & P Carter, Sanskirit Publishers, Jharkhand, 2005, pp 121, Rs 650/- (copies not available with SANDRP, request can be sent to: rch_buluimam@sancharnet.in)

PUBLICATIONS IN HINDI:

1. *Bandh, Nadi evam Adhikar* Dam Action Guide for Communities, SANDRP, 2007, pp 44, Rs 30/-
2. *Ken-Betwa Nadi Jod : Pyasi Ken Ka Paani Betwa Mein Kyon*?, SANDRP, 2004, pp 46, Rs 20/-.
3. *Nadi Nahin Jodnaa, Bund Bund sanjonaa* by Bharat Dogra, pp. 16, Rs 8/-
4. *Bade Bandh, Bharat ka Anubhav*, SANDRP, 2001, pp 268, Rs. 100/-.
5. *Vishwa Bandh Ayog per Nagarik Margadarshika*, SANDRP, 2002, pp 63, Rs 30/-.
6. *Vishwa Bank ke bare main Suchana Avam Advocacy Margdarshika*, SANDRP & BIC, 2008, Rs 40/-
7. *Rahiman Paani Bik Raha Saudagar Ke Haath* (Hindi) By S Dharmadhikari, Manthan, pp 55, Rs 10/-.
8. *Bina Jaankari Kaisy Jan Sunvai?*, MATU (Delhi), 2004, p 32, Rs 15/-
9. *Kasbe Ka Paani* By Rehmat/ Mukesh Jat, Published by Manthan, pp 40, Rs 20/-
10. *Sudhar Ya Bazaar: Commodification of Water in MP by IFIs,* Manthan, pp 20, Rs 5/-

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YOUR RESPONSES

I have read the Nov-Dec 2007 issue of *Dams, Rivers & People* with usual interesting details on irrigation related aspects. The crisp summary picture regarding the "11th FYP - Why it may not achieve the irrigation targets" is more useful to understand how effectively different states are utilising the Centre's funds on different irrigation schemes. As usual Tamil Nadu's share is negligible compared to Karnataka & Andhra. Your service to the society is appreciable.

Dr K Sivasubramaniyan, MIDS, Chennai

I was reading the cover article in Sept-Oct 2007 issue of DRP. Great analysis in all the articles. You must accept my congratulations. Great work. I could not keep the issue before finishing all of them. On page 3 you give figures of gross and net irrigated areas from canals for some six major states. And I was looking at the corresponding graph for MP+CG. So the Net area has increased in 2004-5. How come we see such a variation from 2000 to 2004. Can you explain it to me? Do you have more figures for Chhattisgarh (& MP). I will be keen to write about it in my column with general figures for the country from your column and some specific figures about CG.

Shubhranshu Choudhary, Gurgaon, Uttar Pradesh

I have forwarded your analysis on irrigated areas in Sept-Oct 2007 issue of DRP to the water and democracy group. One wonders whether the decision makers derive any learnings out of such meaningful analysis and pass on the benefits to the people. Instead, they seem to continue to waste precious resources. Hopefully, such analytical bombardment transforms them, one day, for the better. Looking forward to more of such eye openers,

Udaya Shankar, Hyderabad, Andhra Pradesh

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Edited, Published, Printed & Owned by Himanshu Thakkar at 86-D, AD Block, Shalimar Bagh, Delhi – 88
Printed at Sun Shine Process, B-103/5, Naraina Indl. Area Phase – I, New Delhi – 110 028