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Lead Piece



A much needed *Reality Check* on Bhakra

Ever since April 18, 2005, when *Unravelling Bhakra: Assessing the temple of resurgent India* a report of Manthan Adhyayan Kendra, Madhya Pradesh was released at a packed hall of India International Centre in Delhi, the pillars of fanatically pro large structures water resources establishment of India have been shaken. In a flurry of activity, several institutions that constitute these pillars have responded rather vehemently to the report. Bhakra Beas Management Board, Indian Water Resources Society and Central Water Commission, among others have sent out strong reactions. In addition, Ministry of Water Resources, Central Bureau of Irrigation and Power, Yamuna River Board, WAPCOS and the World Bank have bought copies of the report. The release of the report was mentioned in the Parliament on April 20, 2005, within two days of the release.

Strong Reactions What is it about Bhakra that warrants such reactions to a report that in essence tries to put a reality check on the claims of contributions of the Sutlej Valley Dam? One reason is that since about early 1980s, the water resources establishment of India, including the politicians, have been trying to use Bhakra to silence those who raise questions about large dams. Under increasing pressure to answer difficult questions about real costs, benefits, impacts and options of large dams, and not finding convincing answers, the government and the engineers have repeatedly used Bhakra and its supposed contribution to silence the critics. In their support, they have often used India's first Prime Minister Jawaharlal Nehru's words that he spoke at the Bhakra dam site on Oct 22, 1963, while inaugurating the project, "Bhakra, the new temple of resurgent India, is the symbol of India's progress." But the establishment, in the process, have created a lot of myths about the contribution of Bhakra dam and in fact started believing in them. Off late, even the proponents of such projects from World Bank

have also started using Bhakra to avoid answering difficult questions about justifications of large dams.

The myths about the Bhakra-turned-into-an-icon continue to be perpetuated even today. On April 20, 2005, while initiating the debate on the working of Water Resources Ministry in Rajyasaba, the BJP MP and former Chief Minister of Gujarat, Keshubhai Patel said, "If we did not have Bhakra even today we would have been standing in queue of fair price shops. Big dams have been built in India, dams like Bhakra Nangal have been built and today the queues before the fair price shops have reduced."

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(Lead piece continued from page 1)

Findings

Unravelling Bhakra, a study spread over three years and led by Shripad Dharmadhikary essentially tries to assess the real contribution of Bhakra Project. Some of the main findings include:

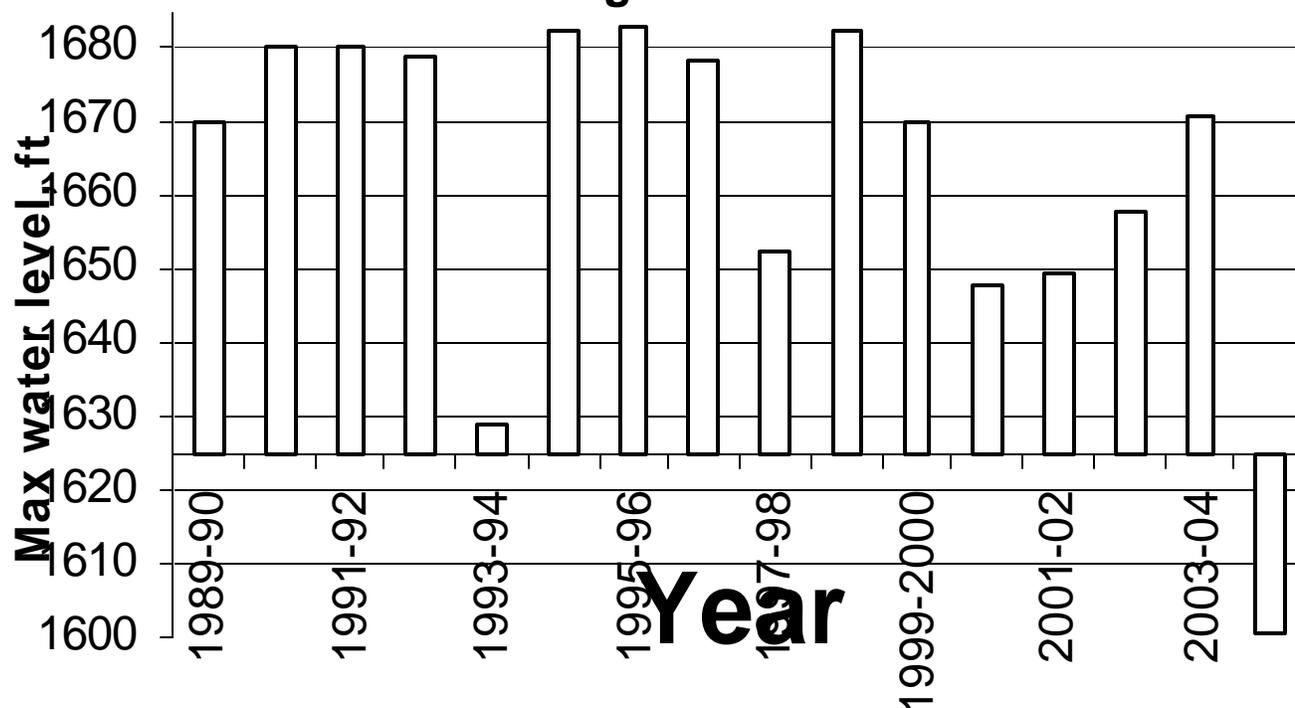
- Bhakra did not lead to India’s Green Revolution, Food Self sufficiency or agricultural growth of Punjab and Haryana. Bhakra played relatively small role in all this compared to what is made out. Other factors, namely high yielding varieties, chemical fertilizers, pesticides and groundwater based irrigation played much larger role.
- Bhakra did not add any new areas under irrigation – it only transferred or shifted the irrigation from one set of areas to another – from areas that were already irrigated to other areas. Only additional dry area that Bhakra served were the Hissar tracts in Haryana and a small part of Rajasthan.
- Bhakra project did not produce any dramatic impact on the country’s foodgrains production.
- A little controversial and somewhat arguable contention of the report is that real reasons for advocating the project had much more to do with the interstate disputes of the (then British) provinces of Sind and Punjab and later India-Pakistan, than the interests taking water to dry areas.

- The figures put forward for areas to be irrigated by the Bhakra project were highly exaggerated.
- Real options to projects like Bhakra, known to the government when planning of Bhakra was going on, existed, but they were neglected in favor of Bhakra.
- Bhakra was an over designed dam.
- The assertion by Large Dam lobby that groundwater based irrigation is made possible because of recharge from canal irrigation is not correct. A very large part of water used by tubewells in Punjab and Haryana is mined groundwater, not recharged groundwater. The contribution of canal recharged groundwater is marginal. Moreover, for recharging of groundwater, constructing a huge project like Bhakra is not the best option. Much better options exist if recharging groundwater is the objective.

Bhakra could have been smaller: It has rarely filled up to capacity

Bhakra was basically built to harvest waters of Sutlej River. When it was found that Sutlej waters were insufficient to fill up Bhakra, Beas River was diverted to Bhakra through Pandoh dam and Beas Sutlej Link Project. Even after effecting this diversion in July 1977, Bhakra Dam has been rarely filled to its Full Reservoir Level, even after lowering the designated FRL.

How Over designed is Bhakra Dam



If one takes the figures for the last fifteen years from 1989-90 to 2004-05, what we see is that Bhakra did not achieve storage upto the lowered designated full reservoir level even once as shown by the following graph where 1685 feet is the Full Reservoir Level (All figures from website of Bhakra Beas Management Board). It may be noted here that more than half of these years had more than average rainfall in India.

This means that some of the costs (social, environmental and financial) paid in terms of building the Bhakra dam to the FRL of 1690 feet were avoidable by this information alone. It should be noted that the marginal costs (social, environmental and financial) are greater for each additional feet increase in FRL of the dam as the dam height goes up. This shows that there was little rigorous assessment of the need of the dam and its various parameters, as also suggested by eminent economist K N Raj. (This is not to argue that lower Bhakra height was justifiable, but to show that there was little credible appraisal of the project.)

Limitations

The study does have limitations. It for example does not go deep into the issues of political economy of decision making and some of the claimed benefits of the Bhakra, like those of flood control and fisheries, as is accepted by the report. The report is hampered, not surprisingly, by the lack of full data about the area irrigated each year by Bhakra and production from such lands, water used, and so on. The official agencies like BBMB and the governments were not ready to part with many of the data and in other cases simply did not have the required data.

Also, the assessment of the report that the real reasons for advocating the project had much more to do with the interstate disputes of the (then British) provinces of Sind and Punjab and later India-Pakistan. There are reasons to believe that some other strong reasons were also at play. If we go through the history of decision making in case of Bhakra we notice that individuals like AN Khosla and Kanwar Sain, Royal states like Bikaner and international organizations like the United States Bureau of Reclamation played very significant role in decision making process.

Punjab & Haryana agriculture won't survive without the support of foodgrains procurement

There is extensive discussion in the report about the strategy and costs of producing market surplus food production through islands like Bhakra in place of a more wide spread strategy of local water systems. The report could have made its case stronger by also pointing out that the Bhakra in particular and agriculture in Punjab and Haryana in general could sustain only because of the foodgrains procurement system that used lion's share of scarce public resources to support agriculture in these areas.

The government spends huge resources to create and sustain the foodgrains procurement system and one would expect that farmers all over India would benefit from this system. Unfortunately that is not the case. As is argued by large dam lobbyist like B G Verghese, a lion's share of foodgrains procured and used in the Public Distribution System comes from Northwest Indian states like Punjab and Haryana. But while Verghese would like to see it as a virtue of Bhakra, the situation is exactly opposite. Punjab and Haryana Agriculture in fact stands on the support of the foodgrains procurement system and would fall flat on its face if that support were to be withdrawn.

This is not to argue that foodgrains procurement system is not required. On the contrary, we would like to argue that the support provided to Punjab through the foodgrains procurement system should in fact be made available to farmers all over India. Farmers all over India need such a support system and it is not fair on the part of government to use scarce public resources to support agriculture in only one part of the country while neglecting other equally or more needy parts of the country. Particularly when poorer areas like those of Orissa, Bihar and Madhya Pradesh are in act greater need of such support and it is their right to get that support, but do not get it.

As shri BN Yugandhar, member, Planning Commission so strongly argued at a public meeting recently, areas like those served by big dams like Bhakra received waves after waves of intense public support which did not go to other needy areas. The point being argued here is that agriculture in areas served by Bhakra depended on such favours that were not available to other areas and should have been available to all areas.

When areas served by Bhakra gets disproportionate share of such support, some other needy areas are deprived of a more justified support.

Scepticism about big dam agenda from high ranking officials

This article began with a quote of Nehru that establishment uses to support projects like Bhakra. But that quote gives a very partial picture. The same Nehru, on Nov 17, 1958, at the 29th annual meeting of Central Board of Irrigation and Power said, "For some time past, however, I have been beginning to think that we are suffering from what we may call, "disease of gigantism"... We have to realise that we can also meet our problems much more rapidly and efficiently by taking up a large number of small schemes, especially when the time involved in a small scheme is much less and the results obtained are rapid. Further, in those small schemes you can get a good deal of what is called public co-operation..."

Nehru was not the lone sceptic of wisdom of building large dams. Stronger words came from Sudhir Sen, the first Chief Executive Office of Damodar Valley Corporation, India's attempt at copying United States' Tennessee Valley Authority. In 1974, in *A Richer Harvest: New Horizons for Developing Countries* Sen noted, "During this TVA phase of India's economic development, a well-known Indian engineer used to proclaim off and on that he was going to build the highest dam in the world, suggesting implicitly a new yardstick for measuring national greatness – the height of a dam and the millions of cubic yards of concrete poured. Yet such flamboyance used to flatter many egos and invited surprisingly few frowns. That many engineers in India if left to themselves, like to build monuments to themselves regardless of the time and cost involved is a commonplace of history."

Sen chose not to name who he is referring to when he says "a well known Indian engineer" in the above book. But we know that man was Ayodhya Nath Khosla, senior of the two designers of Bhakra Dam (Kanwar Sain being the other designer). Needless to add, the significance of the above words is that they came from some of the highest persons from within India's Water establishment in 1940s and 1950s.

Significance

It should be shocking for all concerned to learn that no credible, independent comprehensive post facto evaluation of any large dam project of India has been conducted. We may note that large dams have taken up lion's share of India's water resources sector budget and they continue to take up disproportionate resources. As shown by the report of the World Commission on Dams (www.dams.org), and also the India country study done for the WCD, large dams generally have delivered far less benefits than those projected. As shown by *India Irrigation Options Study* done for the WCD, the total *gross* contribution of lands irrigated by ALL large dams in India comes to just around 10%. The *net* contribution (net of the lands lost for dams, net of the potential contribution of these projects without large dams, etc) would be much less. But unfortunately the government that has built and supported such projects have not bothered to assess performance of large projects.

There can be no plausible argument for not doing a credible independent assessment of performance of large dams. The most important significance of the Bhakra study is that the study has tried to do just that for Bhakra Project. It is nobody's case that Bhakra has brought no benefits. Far from it. Nor is it our case that *Unravelling Bhakra* is the perfect or final word on the history or performance of Bhakra. Far from it.

But one had hoped that the authorities would take a serious look at the study and come out with a studied response to the report. We have been disappointed so far as most of the responses have been rather non serious and some plain frivolous. In any case they provide no credible response to the case made out in the report.

If the authorities do not come out with a more credible response, the inescapable conclusion would be that they *do not have* a credible response. The country is waiting.

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Follow Up**SYSTEM OF RICE INTENSIFICATION**

Following SANDRP's SRI story published at www.infochangeindia.org (*More rice for less water*) and also as lead story in the last (March-April 2005) issue of *Dams, Rivers & People*, we have heard some encouraging news. On May 31, 2005, Press Information Bureau of Government of India came out with a press release titled 'Adopt SRI for better yields'. We were delighted. However, the press release had just one opening sentence about SRI: "The Government has advised farmers to adopt 'System of Rice Intensification' wherever it is feasible for better yields." That brief description was less encouraging and intriguing.

We were further delighted when former Planning Commission Member Shri L C Jain called us to tell us that after reading about SRI in DRP, he mentioned it at a meeting of farmers in Karnataka where the state minister was also present. What transpired then was penned down by Jainsaab and published by Deccan Chronicle on June 13, 2005 (<http://www.deccan.com/ideasplus/ideasplus.asp>). We are happy to publish an edited version of the article below with permission from Jainsaab. We have received some other feedback, which we hope to carry in next issues.

Mexico gave us the magic wand for wheat revolution some decades ago. Now the small island of Madagascar, off the Mozambique coast, has sent India a heavenly gift: System of Rice Intensification, a new method of rice cultivation. Count your blessings. Under SRI, paddy needs only half the volume of water consumed by the conventional method. First, this means doubling the irrigation coverage for paddy with no extra rupee to be spent on augmenting irrigation supply. Second, it raises paddy yields by 50 % at the same time. Hard to believe, isn't it?

But my disbelief vanished in thin air listening to hundreds of farmers from the southern states of Tamil Nadu, Andhra Pradesh, Karnataka and Kerala at a convention organised by Jala Spandana on May 26 at Bangalore. The clinching evidence came from a woman farmer, S. Poongodi of Erode: She has adapted SRI over her entire two acres of land since 1999. This year she tried new experiments in the SRI, depending upon her soil features.

She cultivated the traditional variety, called "Ponni", a fine rice variety. In one portion of her land she followed the regular SRI method of planting younger seedlings, wide spacing, shallow planting, intermittent watering. In another portion, which is seepage-affected area, she raised nursery beds after dry ploughing and transplanted the seedlings in the raised beds after irrigation. In another small patch of land she tried just throwing the seedlings instead of planting.

In all the fields she applied one tonne of Vermi compost as the fertiliser. A herbal decoction to repel leaf rollers, and other insects that cause damage, was sprayed twice. In addition, she sprayed a special brew called "Panchakavya", made out of cow dung, cow's urine, milk, curd and ghee. This brew is widely used by organic farmers to promote disease resistance, drought resistance, and for increasing yield. The coconut milk & buttermilk combination is used as a growth promoter.

The average yield per acre obtained by Poongodi under SRI is 2161.57 kg, about 50 % higher than the 1,560 kg

per acre obtained by non-SRI farmers. Poongodi, got an added bonus for her adventurous spirit. The entire produce was purchased by an admiring consumer at Rs 3,450 per pothi (260 kg). During this time the same variety of rice with non-SRI fetched Rs 1,600 per pothi.

At the end she delivered a startling message of great impact to the country. Poongodi says happily, "When fellow farmers were fighting for water in the command area, I was watchfully avoiding more water into my field as it proved that more water means less yield." What a magical solution to the core problem of the farming community. Farmers from Karnataka and Tamil Nadu said this means that they don't have to break each other's heads for sharing scarce water.

The SRI method has doubled the availability. They cited this as an example of finding solutions by the community itself, and not waiting for the endless inter-state water disputes to be resolved. How one wishes the Prime Minister and chief ministers were listening?

They beamed this message to Karnataka's law and parliamentary affairs minister, H.K. Patil, who chaired the farmers' convention. They reiterated, "Please promote the SRI method of paddy cultivation, which requires less water, to save water and prevent inter-state disputes." Patil was not only one with them, but was one up. He said in his water scarce district Gadag, several farmers were already trying the SRI— with equally encouraging results — maximising yields, minimising water use. He was busy advocating its spread.

"Such methods should be popularised as their use will help in ending water disputes between states," he said. Patil added: "Because the state borrows from external agencies, such as the Asian Development Bank and the World Bank, these agencies tell us what we should do. But this does not mean we do not know anything. We should think of ways of resolving inter-state water disputes, and it can happen through the use of advanced technology in cultivation."

Disastrous implications of Chennai sucking up rural water

Over the last 5 years the farmers of two districts outside Chennai have started selling water from their irrigation wells to the city's water utility. Farmers find themselves fighting a losing battle with those among them selling water from their irrigation wells and with the water mafia. Mostly the selling is being done illegally. Farmers have obtained permission to sink wells for irrigation, but separate permits are needed for using irrigation wells to sell and transport water under the Chennai Metropolitan Area Groundwater (Regulation) Act, 1987.

Impact Vengaivasal's 42 ha lake was deepened and encroachments removed in 2001 under the NABARD-funded Water Resource Conservation Project-II. A Water Users' Association was formed and the villagers given the responsibility of maintaining the irrigation lake and channels. The lake overflowed in 2001 and 2002 but was filled only to half the capacity in the next two years. The average GW level has dropped 15 ft over the last summer to around 50 ft now. Wells have either been deepened or abandoned due to steady fall in the water table (The average depth of the present wells in the Palar basin is 69 ft, according to a study by MIDS).

In the Palar basin, the village of Pazhayaseevaram has become a case in point for the devastation that over-exploitation can wreak. As compared to 1972-75 when there was 24-hour water supply in the village it was 1.5 hour a day in 2002. The irony is that this village, while supplying water in millions of litres per day for millions of urban citizens, is distributing water to its population lower than the permissible WHO standards says a DFID report of 2004. (The first pumping station was started on 24 Jan 1972 and can deliver up to 118.2 MLD.)

The farmers of Thiruvallur & Kancheepuram districts are up against selling of GW. GW exploitation has been happening for 40 years now and its impact is for all to see. In Minjur and neighbouring areas, there is seawater intrusion into the water table up to a distance of 5 km in-land. Agriculture in Minjur is now impossible. This would continue along the Arani-Kortrailaiyar basin if GW exploitation is not stopped forthwith. In villages like Velliyur, Vishnuwakkam, Magaral, Selai, and Kaivandur, Chennai Metrowater extracts ground water 24 x 7 with thirty 10 HP pumps. With dwindling levels, the decline in agriculture is clear in the last 2 years when water utility has started pumping from private irrigation wells.

Authors Marie Gambiez and Emelie Lacour of an Indo-French study on the "Tripartite agreement in peri-urban Chennai: Rural impact of farmers selling water to Chennai Metropolitan Water Board" note that while the number of farmers selling water has increased from 12 in 1993 to 22 in March 2001 in the village of Magaral, the duration increased from 12-hrs a day for four months in 1993 to round-the-clock, round-the-year in

2001. Though the agreement said farmers must give 18 hrs water per day "in reality we saw that the number of hours per day was never regular. In fact, the CMWSSB sometimes asks farmers to give water for 24 hrs."

The local body had no role to play in the negotiations or in regulating the amount of water extracted. Says, M G Devasahayam, managing trustee of the Chennai based Citizens Alliance for Sustainable Living: "This is leading to the conflict, be it in the Telugu-Ganga Project, New Veeranam augmentation project or the farmers around the city. When the TGP was envisaged to bring 15 TMC of water from Krishna through the drought-hit Rayalseema, the farmers were left out of the talks."

Similar is the case of the New Veeranam Project (an irrigation lake that is a reservoir for the surplus from the Cauvery River). "While the quantum promised was 180 tmc after the irrigation needs are taken care of, if the water managers had held grassroots consultation, they would have realised it would be impossible to conjure it up. Now well fields like those in Arani-Kortrailaiyar basin are being dug and the farmers are apprehensive of loss of irrigation water," says Devasahayam.

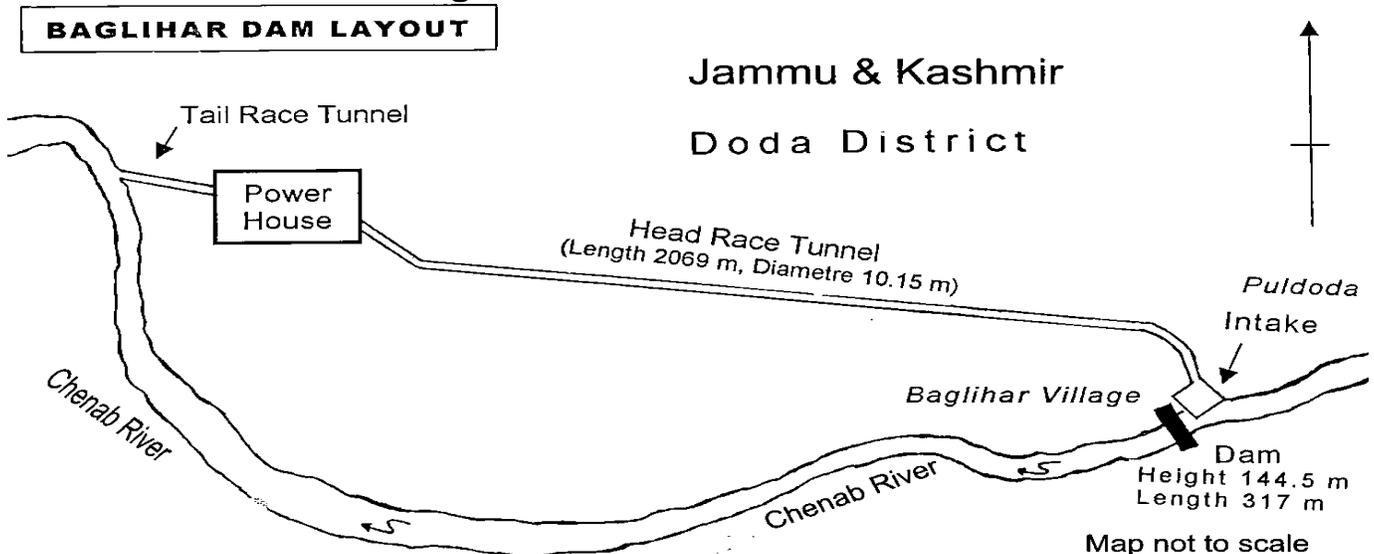
(On April 2, '05 Madras High Court endorsed the TN Govt's action of drawing sub-surface water from riverbed of Kollidam, that drains from Veeranam lake. Farmers of Cuddalore and Perambalur are now considering appealing the order in the Supreme Court.)

It is the case of the lawbreaker and the implementer being the same person. Chennai Metropolitan Area GW Regulation Act, 1987 vests powers with bodies such as Metrowater to issue licenses for wells. The Act does make the sinking of wells contingent on availability of GW. But Metrowater is itself proceeding to extract water over the contracted amount with no responsibility for the dwindling supply.

Farmers have taken recourse to rain-fed agriculture as their wells have failed and the irrigation lake is no more able to meet their needs. Paddy cultivation has come down from 63.6 ha annually to 2.5 ha, leading to loss of livelihood also among landless agricultural labourers. The study notes: "...the loss in agricultural work is so high, despite the non-agricultural work (from a sugar mill), their workdays have decreased from 250 to 190 (24% decrease). For women the reduction is from 190 to 150 (21%)." The socio-economic cost of such unbridled exploitation can be seen in the neighbouring district of Thiruvallur (where the Arani-Kortrailaiyar basin and the 3 reservoirs feeding Chennai are).

(Krithika Ramalingam, this is an edited version of the article that was originally published by www.indiatogether.org on 250405 and republished with permission)

Baglihar HEP: some crucial facts



Baglihar hydropower project on Chenab River in Doda district in Jammu and Kashmir has been in news for some time now. The main reason for this 450 (3 X 150 mw) MW project to be in news is that the objections raised by Pakistan to the project has lead to the project being referred to a World Bank appointed Neutral Expert. Pakistan feels that project violates the 1960 Indus Water Treaty where as India says the project does not violate IWT. The incident of the differences being referred to a NE is happening for the first time in 45-year history of IWT.

According to the Indian Water Resources Ministry, Pakistan has mainly six objections on the construction of the Dam: Pondage level, Gated Spillways, Lower Wear Level, Level of Intake Tunnels, Height of Gates and Elevation of Tunnels.

Brief Background The Baglihar project located about 120 km upstream of the Pakistan territory, has two stages each of 450 MW. The stage II powerhouse will be housed in the caverns to be formed by extending the existing caverns of Stage I. The reservoir capacity is 15 MCM and the headrace tunnels are designed to divert water to the extent of 430 cubic metres per second. An MOU was signed in April 1999 for the project by the Jaiprakash Industries, in a joint venture with SNC-Lavalin of Canada. A 144.5 m high dam is to be constructed to deliver water through a 2.1 km long tunnel to the power station. The Project was then to cost Rs 3495 crores, to be completed in five years. In Nov 2002 J&K state cabinet noted with concern that the project was started without financial closure and it would cost over Rs 4600 crores, thus making per MW installed capacity cost to be Rs 10.22 crores. In Jan 2003, the work on Rs 1750 crores second phase of the project to generate 450 MW has started, to be

commissioned in Oct 2006. On March 25, 2003, the J&K Govt indicated setting up of a

Commission to probe whether the norms were observed in the allotment of Baglihar dam contracts.

J & K State govt has said that J & K had the right to use the water of its rivers.

WB The govt of Pakistan formally sought (Jan 18, '05) the WB mediation over the dispute of the Indus Waters Treaty. Pakistan also asked India to stop construction work on the Baglihar HEP. The WB dispatched a list of three water dispute experts to Pakistan and India for their consensus. Those three experts were one each from Switzerland, Australia and Brazil.

Prof Raymond Laffitte who has been appointed the NE by the World Bank after consulting the two counties as provided under the IWT, met the teams from the two countries for the first time in Paris on June 9-10 .

Raymond Laffitte Age 70, A professor at the Swiss Federal Institute of Technology in Lausanne, chairman of the committee on governance of dam projects of the International Commission on Large Dams, a member of the advisory committee to the president of ICOLD and Dam Safety Committee of ICOLD. ICOLD essentially being a lobby in favour of large dams, it is clear that Prof Laffitte is a supporter of large dams.

As per IWT, the NE's findings will be final and binding on both the parties. If the NE feels that the points referred to him are beyond his purview or that there is a dispute (as different from "differences" as is the Baglihar issue is described now), the matter will have to go to a Court of Arbitration, as per Shri Ramaswamy

Iyer, former Secretary, govt of India (The Hindu 090605).

Iyer goes on to say that Pakistan's concerns about Baglihar are only partly over violations of the treaty; they are more over security aspects. Pakistan is afraid that the possible water storage at Baglihar can be used as a weapon by India to the detriment of Pakistan. India's Prime Minister Dr Manmohan Singh, in fact clarified to the visiting Pakistan editors that Pakistan has nothing to fear on that score.

RN Malik, former Engineering in Chief said in his article (Daily Excelsior 110505) said that India cannot agree for a dam with ungated spillway because the reservoir will be filled silt in just 3 to 4 years. He said that both Jhelum and Chenab rivers are notorious for transporting high load of silt, because of erosion of thick mat of sand or the hills in the entire catchment area during the rains. Pakistan knows this fact very well because Mangla dam reservoir across river Jhelum in occupied Kashmir has been heavily silted up. Indian engineers too know this fact very well because 690 MW Salal project, the first one on river Chenab, got silted up within four years of its commissioning

That some of the benefits of projects in India on three western rivers (Chenab, Jhelum and Indus) 'given' to Pakistan under the IWT would flow to the people of Jammu and Kashmir state in India add another dimension for the differences on projects like Baglihar.

Call to stop work on Baglihar Pak said India wanted to resolve the matter bilaterally but Pakistan did not agree because Islamabad had exhausted all options to find a settlement through bilateral talks before approaching the WB as a last resort under the Indus Waters Treaty. However, the spokesman said, even now if India stopped work on the dam, Pakistan was willing to consider the Indian proposal for bilateral talks.

Indian PM Dr Manmohan Singh assured a group of visiting Pakistani editors that the design of the Baglihar Dam could be changed if it was found to be violating the Indus water treaty. "Nothing will be done which violates the Indus Water Basin Treaty in letter and spirit," Dr Singh stressed and said: "If weighty and credible evidence is demonstrated to us in its design we are duty bound to rectify it."

However India needs to worry about many aspects of the Baglihar project. Here are some of the important issues on which we need to worry.

Hydrologic viability Is the 900 MW Baglihar viable? How many days in a year can it generate power at that rate? It will require 860 cumecs of water, but Chenab flow reduces much below that in winter. In fact flow in Chenab reduced to upto 50 cumecs. The authorities

have not made public the hydrologic data or the projected power generation from the project. The experience of the existing 690 MW Salal project on Chenab 480 MW Uri HEP on the adjoining basin Jhelum shows that these projects in fact generate much less power in winter when the need for power is maximum in J&K.

Siltation Chenab River is known to be highly silt laden river and there are frequent events of landslides, increasing the siltation rates. Construction of so many mega projects on the same River (Salal existing project, Baglihar, Dulhasti are under construction and Sawalkote is already being seriously considered) is also adding to the silt load of the river. In fact as made clear by the paper on tunnelling experience at Baglihar, the rock quality at the Baglihar site ranges from poor to very poor to extremely poor. The huge silt load of the river means that the projects' useful life will be very low.

Cost As noted above, even at current cost estimates, the 450 MW installed capacity of the Baglihar project is to cost Rs 4000 crores (Rs 2700 crores have already been spent). This means that per MW cost of the Baglihar HEP will be around Rs 8.89 crores even at current rates. This is much higher than the current cost of Rs 56 crores per MW installed capacity for most such projects. The cost of electricity from the project would consequently much higher than Rs 5 per unit. This when the citizens of the valley are unable to pay ever Rs 2 per unit charged currently. Who will pay the cost of such expensive project and who will really benefit? There was earlier attempt to show lower per MW cost of the project by clubbing the two stages of the project. However, stage II work is yet to start and it is far from clear if stage II is even feasible particularly in view of the poor geology encountered during construction of stage I.

As Omar Abdullah, the leader of National Conference and former Union minister of state said, there is little consultation with the local people before taking up such projects.

The project thus should not be interesting from the point of view of the questions raised by Pakistan. There are many questions around this project to which Indians too do not have clear answers.

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2. The World Bank website www.worldbank.org
3. Website of Union Ministry of Water Resources. www.wrrmin.nic.in
4. Various newspaper reports over the last four years, including the latest one in The Daily Excelsior 110505 The Hindu 090605

River Link News



Ken Betwa link: unthinkable planning

Prof. Alagh has said in his article on Ken Betwa river linking project that the central plateau and hills region curved out of the adjoining districts of UP in its south-west, MP and Rajasthan are some of the most difficult and delicate areas to develop policies for since it had poor soil, high

“unthinkable planning in 2005”

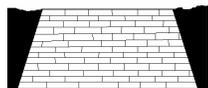
slopes with high run-offs and medium rainfall. In such areas he suggested that there should be sub-regional water development strategies for each area. Geologists can contribute in this field. The Ken Betwa study does not have good information on irrigation planning. The plains are best suited for jowar, pulses, oilseeds and wheat which need little water and some will die with too much. While the engineers designed the project for a lot of rice with flood irrigation, this is “unthinkable planning in 2005”. Prof Alagh mentioned, the Ken Betwa has to go back to the drawing board. The Air vice marshal Sahni’s plans to take college kids from the region, walk the proposed canals, make land use maps and give the

Water Resource Minister conveyed to the Bangladesh Health and Family Welfare Minister that river interlinking project would not affect its neighbours and it was only for peninsular rivers.
(THE INDIAN EXPRESS 080405)

Time Frame The Water Ministry has taken the stand that it would take 35-40 years to complete the 30 major links that have been planned. National Council of Applied Economic Research study said that with the use of remote sensing and construction techniques the programme could be aimed for completion in 25 years. (THE HINDU 210405)

engineers a real feel of what is happening down there. (THE INDIAN EXPRESS 060405)

Dams



Action against BBMB for dumping silt in Suketi? The Ministry of Environment and Forest has asked the forest dept to send the factual report regarding the dumping of silt in Sukheti Khud so the further action could be initiated against the BBMB for the violating the Forest Conservation Act. The Central Pollution Control Board has criticised evacuation of silt from the open hydel canal and the reservoir of the Beas Sutlej Link project at the Sundernagar in Mandi district. The Conservator of Forest in the Mandi circle confirmed that they have served notices to the Bhakra Beas

Management Board that no silt could be thrown out into the Suketi Khud without the prior approval of the forest dept as Suketi a tributary of river Beas has come under the jurisdiction of the forest dept since 2002. According to the study of the state PCB silt is ejected into Suketi daily from the canal and reservoir as a result of which the Balh valley, once the granary of Mandi district, is rapidly converting into a desert over the past 28 years. The BSL project diverts 4716 million cubic metres of Beas water into the Sutlej by constructing a dam at Pandoh. The water has been taken to the Sutlej through a 38 Km water conductor system comprising two tunnels and a reservoir. The fall of water in the Sutlej runs 990 MW HEP. However the people of Himachal Pradesh are surprised that their state is not a partner in the project built on its land and financed upto 90% by the Centre. It is an irony that the BSL project has left a trail of misery on the land where it was executed. The people uprooted due to the project are not properly rehabilitated. Some years ago the BBMB referred the siltation problem to the National Environmental Engineering and Research Institute of Nagpur for solution and three years ago they had suggested 14 points for both short and long term solution. An official of the BSL project said that process of implementation had been started according to the recommendation of the Institute and they would have to build a tunnel.

➤ **BBMB claims** The BBMB chairman claimed that the HP High Court has expressed satisfaction about the measures being taken by the BBMB. He mentioned they had been dumping silt only in the monsoon when it would automatically be washed by the river. But last year rain fall was not enough to take that entire burden. So it was not washed away. There is no evidence to substantiate the claims of the BBMB chairman. (THE INDIAN EXPRESS 260405, THE HINDUSTAN TIMES 270405, NATIONAL HERALD 280405, THE TRIBUNE 110405, 160505)

Call to shelve NE dams Organisations in a seminar urged the Centre to shelve its plan of turning the North-east into the country’s power-house. The seminar on ‘Assam’s Flood Problem and Big Dams’ organized by the Lakhimpur-Dhemaji-Majuli Unnayan Sangram Samiti called for a public hearing on the L Subansiri HEP before the State Govt signed the MoU on the project. “Any move to construct large dams in the North East is fraught with grave danger in view of the region’s seismic sensitiveness and the perennial flood problem in Assam. The speakers included representatives from reputed NGOs like Kalpavriksh, WWF-India, Brahmaputra-Barak Watch, etc., besides other bodies of students, farmers and flood-affected people such as Dayang Mukti Sangram Samiti, Brihattar Tengani Unnayan Sangram Samiti, People’s Movement for Subansiri Valley, Asom Jatiyatabadi Yuva Chatra Parishad and Takam Mising Porin Kebang. The flood-hit people coming from different places like Rangiya, Goalpara, Lakhimpur, Dhemaji, Nagaon, Majuli, Golaghat, Mangaldoi, etc., narrated their experiences.

The speakers said that environmental norms were blatantly flouted while clearing mega dams. "There has been no proper study of the Lower Subansiri project's adverse downstream impact on the people as also the rich but fragile biodiversity," Neeraj Vaghlikar of Kalpavriksh said. Amit Sharma of WWF-India said that international cooperation was a must for ending the scourge of floods, as the Brahmaputra traverses a length of 1600 km in China before entering India, and then again it passes through Bangladesh on its way to the Bay of Bengal. (Assam Tribune 060405)

Ranjit Sagar-Shahpur Kandi: Extra staff? 7500 employees working at present at the Ranjit Sagar Dam have been declared surplus by the Dept of Finance. The dept has calculated that just 4000 employees were needed for the operation and maintenance of the Ranjit Sagar Dam as against 11500 persons posted there. The salary bill of employees posted at both the projects was about Rs 1.86 B per annum. The Budget of Rs 1.63 B has been passed for paying the salary. The annual salary burden of 461 employees posted at Shahpur Kandi Project, who has been without work for more than one decade now was Rs 230 M. The work on the Shahpur Kandi Project could start after the detailed project report is submitted by NHPC.

➤ **J&K seeks recovery from Punjab** Jammu & Kashmir has sought the appointment of an arbitrator for assessing the losses accrued due to failure of Punjab to construct the Shahpur Kandi dam within the stipulated period. The J&K Govt has sent the Ranjit Sagar dam authorities a notice for recovery of Rs 8.5 B as losses. An agreement was executed between Punjab and J & K where it was signed by Punjab that the Shahpur Kandi would be completed by Punjab as early as possible so that the water could be supplied to J&K. Earlier the Minister of Finance of Punjab promised to make adequate budgetary provisions for the project. However, no action was allegedly taken by Punjab to honour the commitment. The J&K had invested Rs 1 B on the Ravi Canal complex. (THE TRIBUNE 150405, 200405)

Mogra dam Bhurbhushi village in Chhattisgarh's Rajnandgaon district is facing submergence due to Rs 700 M dam on Sheonath River. Residents say that only 32 villages were studied for the Dam's impact when the proposal in 1975 mentioned 56 villages. The survey started after the construction began for the dam to be completed by Dec '05. The project was revived in '03 to cater to industries 20-30 km away. The Govt says the project is to irrigate 9 500 Ha for kharif and 2 500 Ha for rabi. The Irrigation Dept claims only agricultural land will be submerged not the villagers. The govt says it will compensate 12 villages in phase-I. Locals say the compensation will be inadequate as it won't include any livelihood options. (DOWN TO EARTH 150405)

MEDIA BLOOMERS Pulichintala clearance The MEF website on May 19, '05 showed that the application for EC for the Pulichantala project was received on May 11 and the project was considered by the expert committee on May 18 and the project was shown under pending project on May 19, 2005.

➤ However, *The Hindu* reported on April 20, 05 that the "project has finally got the nod from the Union Ministry of Environment and Forest... The Union Ministry accorded the sanction on April 15 for construction of reservoir to irrigate 1.308 M acres. The project is conceived to generate 120 MW power and provide 1370 cumecs of drinking... The project requires 18609 Ha, of which the forestland is 1153 Ha". It seems the newspaper was reporting the (rather unfounded) claims of the Chief Minister, but one expects greater care from *The Hindu*. In stead of reporting Chief Minister's claims as facts, it should have given it as claims. Better still, it should have checked the facts. (THE HINDU 200405)

Agitation mounting against the Ang Project

On Feb '05, hundreds of youth from 21 villages of the Pujaripali Dam area in Bargarh Dist of Orissa organised a cycle rally from the Deodarha along the river Ang. The rally was called by the anti Pujaripali Dam Committee in Padampur area. A general public had been expressing their anger against the Govt decision to build a dam over the river Ang, which will submerge a very fertile area and a highly populated region of Bargarh district. The Ang Irrigation Dam has been in controversy since its survey was started in 1965-66. Even though a few engineers claim that it will irrigate a large parts of the drought prone block of Padampur and Gaisilat block many engineers think that it will not be able to provide irrigation as claimed and instead of a diversion weir should be built so that no one will be displaced. (Paschim Orissa Krishijeevi Sangha PR 250305)

Police firing on Thotapalli project oustees The police opened 15 round of fire and lobbed teargas shells on nearly 2000 farmers displaced by the Thotapalli barrage project, which was the centre of a controversy over allegations of irregularities in the tenders. The firing climaxed a pitched battle for over 30 minutes between supporters of the displaced persons and the police at Mettupaka junction, 2 km away from the project site. 20 persons have injured due to this action. The farmers, gathered under the banner of Thotapalli displaced Persons Association near the Mettupaka junction were led by the CPI (M) MLA from Naguru and others. The agitators decided to proceed towards the project to paralyse the spillway work that was re-launched recently. The Joint Collector assured them of rehabilitation package and said that the compensation package would be announced only after completing survey of their lands. (THE HINDU 170405)

Tipaimukh: opposition in Bangladesh The Union Minister for Heavy Industries has said that India will hold talks with Bangladesh regarding the Tipaimukh Dam on River Barak in Manipur. The 390-m long, 162.8-m high earthen core rock-filled dam is expected to have installed capacity of 1500 MW. It is also claimed that the project will help mitigate the floods in the plains of the Barak in Assam. Many groups in Bangladesh, including Khalequzaman-led Bangladesher Samajtantrik Dal, are opposing the Tipaimukh project. According to National Committee to Stall the Invasion of Rivers by India, the construction of the dam on the Barak at Tipaimukh would reduce the flow of water in the river system in Bangladesh. The Barak, which bifurcates into the Surma and the Kushiara in Assam's Karimganj district, flows into Bangladesh to merge with the Meghna. According to experts, the dam is located in a geologically unstable area.

➤ **CCDD objects to Union Minister** The Citizen's Concern for Dams and Development has expressed objection to the recent statement of the Union Minister for Heavy Industries over commencement of construction of Tipaimukh dam as highly irresponsible and an utter disregard of peoples' concerns over irreversible damages that the project will inflict on the environment and survival of indigenous peoples of Manipur and people of Bangladesh. A detailed and independent Environmental Impact Assessment, required under the Environmental Protection Act, 1986 and its amendment of 1994 is still overdue for the Project. The Environment Management Plan for formulating, implementing and monitoring environmental protection measures during and after the project commissioning and a concrete Rehabilitation and Resettlement Plan for indigenous peoples to be affected by the project are also absent. Public Hearings, mandatory under 1994 Amendments to EPA 1986, where EIA, EMP and Resettlement Plan are made available to the public for comments has not been conducted in Manipur and the only Public Hearing on the Project at Mizoram in Nov '04 was criticised for its procedural lapses and lack of transparency on the part of project proponent. (BD News Bangladesh 010405, CCDD PR 050405)

Rehabilitation of Pong displaced fisherman The Himachal govt has submitted a Rs 100 M project for the economic rehabilitation of Pong displaced. It has received Rs 30 M, to be distributed among eligible fisherman. (THE TRIBUNE 250405)

Renuka Dam environment clearance Renuka dam has received clearance from MEF, it is claimed. The ministry has permitted clear felling of 19 ha forest. The catchment area of the dam is 2175 sq km and Rs 100 M has been proposed for catchment area treatment. The state forest dept had proposed Rs 407 M in 1997 for soil conservation. (DANIK BHASKAR 090405)

Displaced People of Kankadajore in Bolangir

When Govt of Orissa decided to build a dam across the Kankadajore nala in Bolangir district for providing irrigation and drinking water for the Titilagarh Township, the villagers to be displaced agreed to sacrifice their land and homes thinking that it will be a pious activity to solve the water problem of Titilagarh town. However, taking advantage of the simplicity of the villagers the Govt are not even paying the due compensation to the villagers and they have been continuously harassed whenever they are demanding compensation.

➤ The rehabilitation advisory committee for this project, chaired by the district collector, decided not to declare Bankel as a fully submerged village. "In accordance with the clause 9 (b) of the Resolution on Resettlement and Rehabilitation Policy of Govt of Orissa 1994 for the purpose of displacement, village where 75% of total agricultural land is acquired or it is found on due enquiry that partial acquisition of land and property in the submergence zone may lead to a socially and economically unviable living, the entire village is to be treated as fully submerged village and R & R benefits given to all the villagers" (Govt. R & R Policy, 1994). Bankel is suffering a loss of 48% of its agricultural land. The villagers of Bankel say that out of 514 Ha of cultivable land of the village, 277 ha will be submerged, and out of the remaining 277 ha, about 160 ha will be water logged, following the construction of the dam, just 23 - 100 m away from these lands. While the project report claims the villages are situated 300 m away from the danger level, a recent study says that these villages are coming under the purview of danger i.e. 50-100 m away from the proposed dam site.

➤ The project is going to submerge seven villages and thousands of people, mainly tribal, are going to be affected. However except for some pittance, the villagers have not yet been paid any compensation. The Titilagarh project was started in 1994, under the accelerated irrigation benefit programme of the central govt with an initial estimated cost of Rs 267 M, which has been escalated now to Rs 372.1 M. The project lies across two nullas Kankadajore and Jamunajore, which are tributaries of river Tel, a major right tributary of Mahanadi. The dam site is located near village Pithapara, 9 km away from Titilagarh town. While the govt is determined in its decision to not declare Bankel and adjoining villages as fully submerged, the people affected by the project, most of whom are farmers and agricultural labourers are continuing with their drive to stop work, in the hope that it will force the state govt to change its behaviour toward the people. The villagers have been demanding that due benefits be provided to the displaced people. In a few months the Project will be completed and hundreds of the displaced families will have to scatter here and there without getting their due compensation. (Sahabhazi Vikash Abhiyan 060405)



Hydro Projects

Plan to increase capacity at Luri HEP The Sutej Jal Vidyut Nigam proposes to increase the generation capacity of the Luri project to 700 MW by shifting the sit of dam upstream along the Sutej. As per the feasibility report prepared by the SEB, the project was to have an installed generation capacity of 465 MW. The dam was to be constructed at Nathan, 11 km downstream of Luri, and the powerhouse near Tattapani, 4 km upstream the Chaba project. It involved construction of 16 km long head race tunnel. The SJVN engineers claimed that if the dam is constructed around Sainj instead of Nathan, the installed capacity could be increased. The length of the head race tunnel will increase to 27 km. The height of the dam will be restricted to 80 m to keep the level of the reservoir well below the tailrace of the upstream Rampur HEP, also to be executed by SJVN. (THE TRIBUNE 080405)

Damages slapped on construction companies The SJVN has imposed over Rs 2.3 B as liquidity damage charges to the three big construction companies for delay in completion of works during the execution of the 1500 MW Nathpa Jhakri project. It is for the first time in the country that such heavy damages have been imposed on erring construction companies by a public sector undertaking. The maximum damages of Rs 1.15 B had been imposed on the Continental Foundation Joint Venture, which had two major contracts. The damages for a 35 months delay in the construction of the dam at Nathpa works came to Rs 635 M and in the second contract pertaining to headrace tunnel and related works, they stood at Rs 515 M. The delay in case of tunnelling work by the Nathpa Jhakri Joint Venture Company worked out to 10 months and accordingly liquidity damages of Rs 730 M had been imposed. In the case of JP Industries, which constructed the under ground powerhouse, liquidity damages of Rs 470 M had been imposed for a delay of nine months. The provision of liquidity damages was in-built in the contracts whereby the SJVN could impose damages up to a maximum 10% of the contract value. (THE TRIBUNE 180405)

Reliance's entry in hydro sector The Reliance Energy Ltd has entered the hydro sector, bagging its first HEP – the 280 MW Urthing Sobla HEP on the Dhauliganga river in the Pithoragarh district of Uttaranchal – on a build-own-operate-transfer basis. The company, which plans to further expand its operations in the hydropower sector, is also eyeing 5-6 projects in Uttaranchal. The company had also expressed interest in expanding its area of operations to Himachal Pradesh and the Northeast. (BUSINESS LINE 080405)

People demand control over Bhilangana HEP

The proposed 22.5 MW Bhilangana HEP has triggered a debate in the hill region on issues like privatisation and control of local community on natural resources. The people of Bhilangana valley in Utaranchhal apprehend that the project would deprive them of their traditional rights of the natural resources and have protested against the project. The run of the river in Tehri dist includes of a 5 m high dam on Bhilangana river. The MoU of commissioning and later operating this project has been signed with a private company Swastik from Andhra Pradesh. The people have demanded that the state should build the project. In fact the people feel that with some assistance from the govt the villagers could themselves execute the HEP. (SAHARA TIME 020405)

Dispute around HEP near RDS canal The Rajolibanda Diversion Scheme canal dispute is going on for over 26 years. But now the people's concern is about the permission to construct a HEP at the lower end in the river basin, upstream of the RDS. It has been alleged that Karnataka is utilising more water from the RDS canal for cultivation, owing to which farmers of Andhra Pradesh are facing severe water crisis. The Andhra Pradesh is opposing the HEP as it feels that the HEP would affect the flow of water in to the RDS on whom rests the tasks of supplying water to Telangana and Royalseema regions. This time Karnataka has sanctioned 3 X 1.5 MW installed capacity and the Rs 246.4 M project is on in full swing. The Andhra Pradesh has sought an end to the HEP construction. Under the present scheme, power can be produced only during three months. And that too, if the water level in the reservoir rises above 1090.95 ft. While the full capacity of the RDS canal, around 860 cusecs, used to irrigate over 40 000 ha in its surrounding areas, water flow has dropped to around 650 cusecs due to accumulation of silt and lack of rainfall. Following the green signal for building a power plant across the Tunga river, a new argument – that of building another canal by the side of this one – is taking shape. It is also said that permission has been given for release of 4300 cusecs of water during monsoon for the HEP. And then the level has been restricted to 3500 cusecs. It is alleged that Andhra Pradesh is violating of the Krishna Water Dispute Tribunal Award. But the Karnataka just utilising its share of water 1.2 tmc ft, as per the KG Committee recommendations. Every summer the demand for water from the canal increases. (DECCAN HERALD 050405)

Buried alive at NHPC's Parbati HEP Two persons were buried alive at the NHPC Parbati HEP site in Himachal Pradesh. These victims were working with Jai Prakash Bholu Nath company, engaged in civil works with the HEP. (THE TRIBUNE 200405)

NTPC pact with Bengal for Rammam-III NTPC Hydro Ltd has signed a MoU with the W Bengal SEB for implementation of 90 MW Rammam-III HEP. This will be NTPC's first HEP venture in the eastern region. Rammam-III is a run of the river schemes similar to Rammam-I (36 MW) and II (51 MW). Rammam-IV (30 MW) is a storage scheme at the terminal stage of the river basin. Of the four stages on the Rammam river finalised by WBSEB, only Stage-II has been commissioned. The Rammam river, one of the tributaries of the Teesta river originating from Phalut-Sandakphu range at 3631 m above sea level, forms a natural boundary between W Bengal and Sikkim all along its meandering course of 42 km up to its confluence with Rangit. (BUSINESS LINE 290405)

Loan for Baglihar The J & K Power Development Corp will raise a loan of Rs 17.7 B for the 450 MW Baglihar HEP and has signed an agreement in Jan '05 with a consortium of 9 big FIs. (BUSINESS STANDARD 180405)

Petition against Athirapalli HEP in Kerala On March 21, Chalakudy Puzha saramkshan Samiti filed the first petition against Athirapalli HEP in Kerala High Court. On April 1 another petition was filed through Athirapalli Gram Panchayat in which the Dam is proposed. A third petition alleging contempt of High Court order has also been filed. The petitions are to come up in June '05.

➤ **People Again Reject the HEP** The 163 MW Athirappilly HEP proposed on the Chalakudy River, Thrissur, has again raised its ugly head with fresh environmental clearance from the Ministry of Environment and Forests. The controversial project was once categorically rejected by the people at a Public Hearing held on Feb 6, '02 at Thrissur. The High Court of Kerala had criticized the slipshod EIA conducted by Tropical Botanical Garden and Research Institute, Thiruvananthapuram, without even a Public Hearing on the basis of which sanction had been accorded to the project 7 years back. The tremendous response of the people against the project at the Public Hearing held later on Court Orders Feb 6 '02 was proof enough that people had absolutely no need of the Project. The Public Hearing Panel communicated the strong dissent of the people to the MoEF. After a long period of silence of the Kerala SEB, Feb 18 '05 brought the news that Athirappilly HEP has obtained fresh clearance from the MoEF on the basis of a "new" EIA conducted by a Delhi based agency- WAPCOS- again without a Public Hearing!! Not only that but the EIA report of WAPCOS contains outrageous factual errors and fallacies regarding the agricultural area of the affected Panchayaths, the tribal settlements to be displaced by the project, electricity generation details etc. At many a place the WAPCOS study is a blind replica of the TBGRI study! (CPSS 020405, 080505)

IFC violates policies in Allain Duhangan

The International Finance Corp has committed \$42 M of loan and \$ 7 M of equity financing (10% stake) to India's AD Hydro Power Limited—one of the first HEPs to be financed on a merchant basis in South Asia. The 192 MW HEP in the Kullu district of Himachal Pradesh will utilise the perennial flows of the Allain and Duhangan rivers and combine the flows through two underground headrace tunnels to feed a single powerhouse near Prini village. The estimated construction period is about four years and the total cost is approximately \$195 M. The project sponsor is Malana Power Corp Ltd which is owned 51% by the LNJ Bhilwara group and 49% by Statkraft Norfund Power Invest AS of Norway (SN Power).

➤ **Violations** IFC has violated a number of its policies in taking this decision. The EIA of the project is incomplete. The project does not a no objection certificate from the local community. The consultation with the local community is as yet incomplete as the EIA is yet to be completed. IFC has refused to part with crucial basic information about the project with the local people. The people of Jagatsukh are totally opposed to the project as almost whole of the Jagatsukh river on which the village depends for all its needs will be diverted for the project. A complaint filed by the affected people with the IFC ombudsman office is pending resolution. The report of the CAO office after field visit in fact supports all the issues raised by the affected people in their complaint. IFC has shown how little respect it has for its own policies and for the concerns of the local people. This is the first ever funding to a HEP in India by IFC, the private sector arm of the World Bank. (IFC PR 250405)

HP plans Himachal Pradesh is planning to exploit 8000 MW additional power in the next three years. 11 projects having installed capacity of 2 860 MW were taken up for a detailed survey. The State is formulating its power policy, to ensure at least 30% state equity participation. To attract Independent Power Producers, incentives like easy land acquisition procedures and speedy clearances are offered. 56 SHPs having capacity of 155 MW and investment of Rs 2.7 B were entrusted to the IPPs last year. Tidong (100 MW), Budhil (70 MW) and Sorang (60 MW) have also been entrusted to IPPs recently. 16 HEPs with 1800 MW capacity are under implementation with the IPPs. The 434 MW Rampur HEP has been assigned to SJVN. Luhri (465 MW) and Khab-I (450 MW) are allotted to SJVN for investigation and implementation. Two special purpose vehicles have been formed — HP SJVN for Uhl-III (100 MW), Kashang-I (66 MW) and Ghanvi-II (10 MW) and Pabbar Valley Power Corp for Pabbar basin HEPs including Sawara-Kuddu HEP (100 MW), Sal-I (6.5 MW) and Siul (13 MW) HEPs. (Daily Excelsior 180405)

DVSS to move HC over Ranganadi diversion

The Dikrong Valley Suraksha Samity has decided to move the High Court against the proposed "water diversion" scheme of the 405 MW Ranganadi HEP of NEEPCO in Yajuli in Arunachal Pradesh. The DVSS said that if the water of the Ranganadi is diverted to the Dikrong river the whole valley might be washed away in due course. The Dikrong River is already creating havoc by its annual floods and massive erosion, the water diversion have stirred the people. (Sentinel 040405)

Assam asks Centre to review Subansiri HEP The Assam Govt is aware that there is no provision for flood moderation in the L Subansiri HEP under construction by the NHPC and the Central Govt has been requested to review the project. The state Water Resources Minister said that the State has submitted a report in this regard to the Task Force of the Govt of India. The State has placed its reservations before the technical group of the Union Ministry of Water Resources for flood moderation in the Brahmaputra basin. The Power Dept has given a no objection certificate for the HEP on condition that a % of free power should be given to Assam after taking into consideration the views of the Flood Control & Irrigation Depts.

➤ **NHPC act condemned** The People's Movement for Subansiri Valley has condemned the destruction of an old Naamghar and a place of elephant worship of the local people of Geruka Nalah near Gerukamukh site of the Subansiri HEP. (The Assam Tribune 310305, 090505)

Japan firm offers to upgrade Bihar HEP A team from Sumitomo Corp has submitted a Rs 1090 M proposal to the State HEP Corp for the renovation and upgradation of the 25 MW Katiya HEP in Supaul district. Early this year, the Bihar govt had approached the Union Power Ministry to help it source funds for the same. The HEP set up in 1978 has been closed for the past few years due to poor management. (IANS 290405)

NEEPCO The NEEPCO has an aggregate installed capacity of 1130 MW: 755 MW of hydro and 375 MW of gas based projects. Its HEPs are the 405 MW Ranganadi in Arunachal Pradesh, the 275 MW Kopili in Assam and the 75 MW Doyang in Nagaland. NEEPCO is working on projects with a total capacity of 2680 MW: 600 MW Kameng HEP in Arunachal Pradesh, the 60 MW Turial project in Mizoram, the 1500 MW Tipaimukh project in Manipur and the 130 MW Dikrong & 110 MW Ranganadi-II in Arunachal Pradesh. Kameng has picked up pace. Tipaimukh was recently given techno-economic clearance by the Central Electricity Authority and NEEPCO has invited bids for the EPC contract. It has been asked to prepare DPR for projects with a total capacity of 4700 MW in the Kameng and the Subansiri basins of Arunachal Pradesh. (POWER LINE 0405)

World Bank's convoluted 'logic' John Briscoe of the World Bank, ushers seemingly convincing arguments in favour of the WB's renewed interest in country's big water projects. Speaking at the annual conference of the International Water Management Institute, Briscoe didn't allow reams of evidence get in his way! Choosing 'infrastructure' to justify a four-fold jump in its current annual water-sector lending, Briscoe has sought to add the controversial big hydro-power and irrigation projects in Bank's folder. Over the next four years, water-sector lending of the Bank will be: \$1.39 B in irrigation projects; \$550 M in HEPs; \$700 M for rural water and \$424 M for improving management that includes the much-favoured sector-reform. It means annual lending of \$800 M against the present \$200 M. Given that the poverty reduction is the guiding mantra for govts, the Briscoe conveniently says that investment in watershed projects, improvement in performance of water utilities and expansion of HEP sector as the critical areas for poverty reduction.

Clearly, in 60th year of existence the WB is re-inventing itself. In WB's parlance, area under surface water storage has been inversely related to poverty! Briscoe relates India's poverty to its inability to store surface water. India's per capita figure of 130 cubic meter of stored water is lowest in comparison to China and the USA, claims Briscoe. He forgets that to achieve storage there are many options and his figures do not include all the options. With the hidden motive of justifying its renewed interest in big projects, the World Bank has conducted an impact evaluation of the Bhakra dam after four decades of its commissioning. He argues that the project had benefited the land less and the poor by generating employment opportunities, for poor as far as from Bihar. Bringing in a convoluted poverty linkage of big dam, he defends the need for big dams. While he argues for enhancing country's hydro potential from the present 20%, he evades mentioning the downside of hydropower development and real performance of such projects. The issue of rehabilitation; submergence of people and forests; loss of biodiversity; and other ecological concerns seemingly cease to exist for him.

Not surprising, while a just rehabilitation policy has yet to be in place, environmental clearances have been made easy nevertheless. Going by the current rate of siltation of reservoirs, 65 BCM or 38% of the storage will get replaced by silt in the next 40 years. Why is nothing being done to stop this? That do not seem to be WB's concern. Tragically, it doesn't seem to be the concern of country's planners either. With India fast emerging as a dam building nation, over 200 HEPs proposed for the north-east alone, it will only be at the cost of the poor and marginalized for whom these structures are proposed at the first instance! (Dr Sudhirendra Sharma in New Nation- Bangladesh 040405, others)

News from the Narmada Valley



NCA warns about downstream impacts

The Narmada Control Authority, in a recent report, has asked the Gujarat govt to focus sharply on the deteriorating environment downstream of the Sardar Sarovar dam. Restriction of the flow of Narmada waters beyond the dam has led to an acute shortage of sweet water along both sides of the river, making saline sea waters gush right up to Tilakwada, the region just 25 km downstream of the Narmada dam. Ramesh Mistry, Bharuch MLA, said, "The dam is useful for the rest of Gujarat. But in our area it has created serious salinity problems for agriculture in 666 villages of Bharuch." The NCA report regrets, "A comprehensive plan for management of the downstream environment is not yet available." Asking the Gujarat govt to release a "minimum quantity of water required from environmental considerations", the report quotes two different studies to point out how the flow downstream was considerably less than expected. Hence, "issues related with health hazards, fisheries, conservation, river morphology, sedimentation, water table, pollution" were arising. Distressed by the fact that the Narmada Water Dispute Tribunal Award, 1979 "has not quantified any water for requirement of environmental control downstream", the report says, the MS University, Vadodara, had recommended 1 600 cusecs water flow to restrict salinity ingress to about 72 km from the mouth of the estuary. And the Central Water and Power Research Station, Pune, on the other hand, had recommended 1060 cusecs water to "keep salinity ingress to about 75 km". Significantly, as against this, a Gujarat govt official has been quoted as telling the NCA that 600 cusecs of flow "would be adequate for maintaining downstream environment". The official agrees that there is a need to meeting "additional downstream requirements", but the NCA insists on the need "to monitor and evolve a mechanism to ensure that the water downstream never falls below the minimum specified, if feasible hourly". The report counters the argument that the water received in the downstream through the regenerated flow coupled with discharges from the industries shall take care of the downstream needs. (THE TIMES OF INDIA 130405)

The Central govt's 12th finance commission report has qualified Gujarat as one of the states whose financial situation has been "consistently deteriorating". In its voluminous document sent to the state govt early this month, after being placed in Parliament, it has bracketed Gujarat with Himachal Pradesh, Uttaranchal and Jharkhand.

(TIMES OF INDIA 180405)

Kutch drinking water Netherlands-sponsored drinking water and sanitation programme has been completed in 280 villages. Gujarat CM claimed that water from Sardar Sarovar will reach Narayan Sarovar (the last coastal village on the western-most tip) this year. CM said that storage of rain water has been made mandatory for every village school. Soon, every house will be involved, he said. (THE INDIAN EXPRESS 250405)

Gujarat wants to raise SS height A senior Gujarat official of has asked Union water resources secretary to urgently call a Narmada Control Authority meeting and allow the state immediately raise the Sardar Sarovar Dam's height to 115 m, if not 121 m. The CMD of SSNNL had rushed Delhi to discuss a solution to the problem arising out of the apex court ruling. The Court ruled that each elder son of the Narmada project-affected families also be treated as a PAF and provided land. It has also ruled against the earlier NCA decision not to give land to those PAFs whose land is temporarily submerged during the monsoon. A senior bureaucrat said, "If one goes by available calculations, the number of PAFs in Madhya Pradesh, where the land would now submerge once the dam is taken to the new height, is likely to go up by over 5000".

➤ NBA has called any attempt to take the dam beyond the current 110 m without resettling the elder sons and the 'temporary' PAFs as "contemptuous, to will be challenged in court." (THE TIMES OF INDIA 090405)

NCA asks States to comply with SC An emergency meeting of the NCA – held on April 12 - directed the basin states of the SSP to comply with Supreme Court order on rehabilitation and resettlement of the project affected persons. Representatives from Gujarat, Madhya Pradesh, Maharashtra, Rajasthan and officials of the Water Resources Ministry attended the meeting. A recently formed task force of engineers and officials would assess the fresh number of the project-affected people. After that the Action Taken Report of the States would be considered by the Grievance Redressal Authorities in respective states. Their findings would be taken up in the NCR Sub-Group for the R&R before a view is taken on raising the height.

➤ The environment sub-group of the NCA met to review the various measures to be completed before the height of the dam is increased. Shockingly, on Jan 6 the sub group gave the clearance for raising the dam height from 110.64 m to 121.92 m and asked party states – Gujarat, Maharashtra and Madhya Pradesh – to implement all the environmental safeguards in letter and spirit. Sekhar Singh, member of the sub group said, "most of the conditions were to complete by March 31, but the conditions are not fulfilled. This is clearly a violation of the Supreme Court order, which specifies that every increase must take place after completion of both rehabilitation and environmental safeguards." (THE HINDU 130405)

NBA on Dharaji incident The Narmada Bachao Andolan has expressed extreme grief and shock at drowning and death of people. The Indira Sagar has rendered the river both upstream and downstream dangerous and treacherous by completely changing the seasonal river regime that can swell and shrink at any time now due to human manipulation of the river waters. It is a point to ponder that when the officials cannot control and regulate the releases of the Indira Sagar dam, what is to happen when the cumulative impact of the 30 large dams in the river - the ISP, Maheshwar, Omkareshwar, SSP, Bargi, Handia, Chinki, Tawa and other dams are all built. In the circumstance that the State and Central govts and NHDC officials have become callous to people's survival concerns, the NBA calls on the people of the Narmada valley to raise voices of sanity to stop these projects. (see "NHPC drowns people" in DRP March-April '05, NBA 090405)

Rally by Indira Sagar PAFs Over 2000 people to be affected by the Indira Sagar dam demonstrated on April 15 at the Khandwa District headquarters. The dam-affected people expressed their anger at the injustice being meted out to them. Representatives of the Maheshwar, Maan and Upper Beda participated in the meeting. NBA said that thousands of houses between the FRL and the Backwater Level have not even been acquired by the govt (as required by law) and are going to be submerged without due compensation. Whatever the affected people are asking is rightfully theirs by law. The Narmada Waters Dispute Tribunal's Award, Supreme Court judgements, clearance by the Ministry of Environment and Forests, R&R Policy etc. –all clearly state that full resettlement and rehabilitation has to be completed six months before submergence. Affected people from every village described how rehabilitation was incomplete. People also complained about rampant corruption and other irregularities, as also about the low rates at which their land had been acquired. They averred that they were steadfast in their resolve to not vacate their lands, houses or villages till they have been fully rehabilitated. The District Collector and the Superintendent of Police were present. After the meeting, the General Manager of NHDC joined them in listening to the memorandum addressed to the CM, and accepted it from the affected people. (NBA PR 150405)

SSPA official arrested for corruption A K Singh, the suspended Sardar Sarovar Punarvasat Agency Assistant Commissioner, was arrested. In February, an FIR was filed with police against Singh for defrauding SSPA of Rs 5 M by acquiring bad lands for distribution to the landless in connivance with Vadodara-based builder Viral Ajmera. Singh was wanted for another offence registered with Vadodara taluka police for attempting to fraud compensation seekers and the agency to the tune of another Rs 5 M. (THE INDIAN EXPRESS 010405)

Issues about River

GAP: Only 35% work done According to the mid-term review of the 10th Plan, Planning Commission has said that two decades after the Ganga Action Plan was inaugurated, despite spending Rs 4.517 B and despite the declaration regarding the completion of its first phase five years ago, only 35% of the work is complete. GAP in 25 towns in UP began 20 years ago, but two third of the pollution load of the Ganga is yet to be cleaned. The GAP phase-2, approved in 1993, involves cleaning the Yamuna, Damodar and Gomti and covers 95 towns located along the Ganga and its tributaries. In Phase-2 30% of the river's pollution load would be cleaned up, leaving another 35%. The Commission is asking for an independent assessment of the project. On Yamuna, the report said the 22 km stretch between Wazirabad and Okhla is polluted with the average BOD at 25 mg per litre, much higher than the desirable level of 3 mg per litre. (THE STATESMAN 150405)

Puthimari changes course The residents of several villages under Rangia subdivision in Kamrup district who have also been living on the both banks of the river Puthimari since hundreds of years have to face a greater problem in maintaining their daily life in view of the scarcity of water. The Puthimari river bed has nearly completely dried up. Only a little course of water of the Puthimari River is seen in its northern part. In the southern parts the river has dried up. The change in the original river course of the northern stretch of the river has resulted in the southern part of the Puthimari river turning dry. For the time being there is no possibility of the river flooding this area during the coming monsoon. The people living on both banks of this river have been hard hit by the dry bed of the river. The changed course of the Puthimari River through the breached western dyke has got added to the Baralia River, resulting in possibility of a massive flooding of the entire Rangia town if the authorities concerned do not take appropriate measures. (www.assamtribune.com)

Polluted Rivers

Pollution kills Fish in Yamuna Preliminary investigation has revealed that thousands of fish died in the Yamuna river in the Yamunanagar district of Haryana due to chemicals and heavy metals in water. Haryana Fisheries Dept says that Industrial waste from UP through two drains is the cause of death of fish and possibly other aquatic animals also.

➤ A Shahrampur based factory has released effluents in the Yamuna River via the Maskara drain. An enquiry showed presence of high acids and alkali metals and reduced level of dissolved oxygen led to the death of fish. The Haryana Fisheries dept. has recommended to take up the matter with UP. (THE TRIBUNE 050405, 210405)

Yamuna Pollution "At the point of its exit from Delhi at Okhla, the water quality is unfit for sustaining aquatic life and does not conform to water quality of bathing standards" says the latest report of Comptroller and Auditor General on water pollution of Yamuna river in Delhi. After 10 years of official Yamuna cleaning and expenditure of Rs 872 crore by the Delhi govt the project was unable to clean the river. "Big flop" project was mentioned in the report and the money has gone down the drain. The DJB failed to utilise Rs 159 crores of the Rs. 599 crores provided for the construction of sewage treatment and disposal plant by the Delhi govt during 1999-04. Revitalising the river requires managerial effort orders of magnitude above the abilities of our existing bureaucracies. The Supreme Court directed the Secretary, Urban Development Ministry, to submit an affidavit within four weeks explaining the reasons for non-compliance of court orders. Bench said: "it seems the govt and its functionaries have failed in the public duty towards the citizens of Delhi". (BUSINESS LINE, 060405, THE TIMES OF INDIA 060405, THE HINDU 070405, THE HINDUSTAN TIMES 080405, THE HINDU 130405, BUSINESS LINE 130405, THE TIMES OF INDIA 130405, THE HINDUSTAN TIMES 130405)

Pune The National river protection scheme has granted fund for the cleaning of two rivers the Mula and the Mutha. The Centre had told the Pune Municipal Corp that the grants will be released after it tables a report, giving details of the schemes. Last year, the PMC appointed a city-based consultancy firm to prepare a river improvement project report. A year later, the report is still not ready. The administration has sought the civic standing committee's approval to sanction Rs 24 lakh to the new firm for preparing the project report. The issue proves that the elected members approve tenders, but keep no track of the work for which the funds have been sanctioned. (TIMES NEWS NETWORK 180405)

Ganga: Domestic sewage The Central Pollution Board has warned in its report that plans for domestic sewage treatment are not enough for Ganga. There is a huge gap between domestic waste water generation of 48 towns on the riverbank and 23 on its tributaries and its treatment capacity. 23 towns on the tributaries of the Ganga generate 8250 million litres per day domestic waste water of which 2460 MLD is discharged directly to the Ganga, 4570 MLD through the tributaries and 1220 MLD in the open land. Only 3500 MLD undergoes treatment. In last 30 years the waste water has increased by 300 %. Study notes that though industrial waste water was targeted for the pollution control, domestic waste water creates more problems. According to CPCB 22 900 MLD of domestic waste water is generated from urban centres where as 13 500 MLD of industrial waste water. The treatment capacity of domestic waste water is for 5 900 MLD as against 8 000 MLD of industrial water. (INDIAN EXPRESS 270405)

Cauvery River: Dumping of animal waste On an average 800-1,000 kg of animal waste is dumped into the Cauvery river. Practice was to fill gunny bags with animal waste, tie a large stone to them and then dump into the river. The practice has been going on for many years and dumping takes place four times a week. Karnataka State Pollution Control Board has directed the local village panchayat to take preventive measures and curb such practices in future. (THE HINDU 060405)

Cooum, the most polluted river of TN After the Cooum then the Cauvery, Noyyal, Adyar and the Bhavani are the polluted rivers of TN according to the survey by Anna University. The Cooum and the Adyar receives maximum pollutants from Chennai. The Cooum, the Adyar, the Cauvery, the Vaigai, the Noyyal, the Tamarabarani are the rivers were covered. The draft report of the survey "Assessment of water quality in river of TN" was submitted to the Environment Dept and this is the first state wide survey. Samples have been taken from 39 sampling stations in 13 major river basins and 31 sub basins from Nov '04 to Jan '05. The Palar, one of the most polluted rivers was left out because it had completely dried up. The salinity level in the Vaigai had gone up five times since 2001. (THE HINDU 290405)



Lakes, Glaciers, Wetlands

Chennai Water bodies listed for eco-restoration The Environment Dept of Tamil Nadu has short listed 13 water bodies on the South and West fringes of greater Chennai Area for eco-restoration. The study commissioned by the dept and conducted by CPR Environmental Education Centre surveyed 46 lakes in the Chennai Metropolitan Area and identified 13 lakes in sub-urban Chennai that could be taken up for restoration. Only one water body in the list – the Chetpet Lake – is in the city limits. The dept would prepare DPR to submit it to the Union Ministry of Environment & Forest. The dept would also assess the quality of water in the lakes and treatment facilities that need to be installed. Amongst the biggest threats to the water bodies was the disposal of solid wastes and discharge of sewage. (THE HINDU 230405)

Melting glaciers Almost all the glaciers of the Antarctic Peninsula are receding as noticed in a study of thousands of aerial photograph taken since 1940. 244 glaciers were studied and 87% showed a net retreat after comparing the photographs since 1940. 50 years ago they were growing. Change of water current can be the a factor besides the global warming. The article in *Nature* was alarmed about the 2 degree C temperature rise. Antarctica contains over 90% of the world's ice. If even a small part of it melts the effect of sea level rising could submerge low-lying islands, cities, towns and deltas. (THE HINDU 230405, BUSINESS LINE 230405)

Dal Lake The Jammu and Kashmir Lake and Waterways Development Authority has sanctioned a Rs 8 crore project for a water treatment plant in Dal Lake. Pune based Thermax Group have already started on Phase I, which will take care of 40% of the effluents. (THE INDIAN EXPRESS 030405)

Eco violation of REG The eco fragile Dahanu Taluka Environment Protection Authority has directed Reliance Energy Limited of Maharashtra to furnish a bank guarantee of Rs 300 crore to demonstrate its intention to set up the pollution control device and violation of the order can lead to closure of the plant by April 2005. Emission from the plant affects agriculture and horticulture of the region. Moreover fly ash from the plant is disposed in wetlands, which can also go against the wetland preservation act.

➤ **Fine cut to 100 crore** REG will have to pay 100 crore instead of 300 crore as fine. Bombay High Court reduced the fine after the REG petition. (TAHELKA 090405, BUSINESS LINE 270405)

Himalayan glaciers Himalayan glaciers are receding 10 - 15 m per year on an average. The Gangotri glacier, origin of the river Ganga, is receding at an average rate of 23 m per year. Now to see the glacier one has to trek another about 18 km beyond Gangotri to Gaumukh. "Himalayan glaciers are among the fastest retreating glaciers, globally due to the effects of global warming," the World Wildlife Fund for Nature says in its latest report. The WWF warned that this will eventually result in water shortage for hundreds of millions of people who rely on glacier-dependent rivers in India, China and Nepal. (DAILY EXCELSIOR 140405)



Water Sector

Arsenic, fluoride in Assam The Assam govt has admitted the severe threat to people's health posed by arsenic and fluoride contaminated drinking water in the state, the state's minister for public health engineering said. While arsenic contamination was detected in Karimganj, Dhemaji & Dhubri districts, fluoride was found in Nagaon, Karbi Anglong, Kamrup and Krimpur districts. The Govt, in collaboration with the UNICEF has collected samples from over 4200 sources of drinking water in the arsenic affected districts and sent them for laboratory test. (DOWN TO EARTH 300405)

"The water(Ganga) is ours, the sacrifice is ours (families displaced due to the Tehri dam) and the payment is also ours (what Delhi residents will eventually be paying). But Suez (Suez Lyonnaise des Eaux), a French company will have control and charge us..."

Vandana Shiva (THE TIMES OF INDIA 090405)

Maharashtra's proposed Water Bill

The proposed Maharashtra Water Resources Regulatory Act enables the Govt to deny irrigation benefits to such farmers who have more than two children from the date that the Act comes in to force. It will not apply to those who already have more than two children. The new law makes it mandatory for farmers to use drip irrigation, sprinkler irrigation or other measures to help save water if they intend to avail of irrigation benefits. The new law provides for the establishment of a Maharashtra Water Resources Regulatory Authority to regulate water resources, facilitate and ensure judicious, equitable and sustainable management, allocation and utilisation of water resources, besides fixing rates for use of water for agriculture, industrial, drinking and other purposes. The state could penalise water-users with more than two children by charging higher water rates as per rules set up by the Maharashtra Water Resources Regulatory Authority a quasi-judicial body. Cooperative societies of water users will become mandatory. The entitlements to draw water will be given to the societies, not individuals.

➤ The regulatory authority will consist of a panel of experts from water resources management, economist, and river basin representative and to be headed by retired Chief Secretary. It is first such attempt in the country. It is supposed to regulate sectoral allocation, Water rates, changes in water use/ diversion of water use and compensation for such changes in water use. It aims to protect the rights of water users and ensure equitable water distribution. The policy emphasises on Integrated Water Resources Management, watershed management, ground water management, aquifer management and river basin management. It is also to address drought management. The policy has features like water auditing, benchmarking of water resources projects, water entitlements etc.

➤ **Protests** Various organisations and women's groups have opposed the Water Bill, 2003 that will in effect deny irrigation water to farmers who have more than two children. The law states that "a person having more than two children shall not be eligible to entitlement of water for agriculture". The organisations pointed out that the framers of the law, the State Irrigation Dept, did not consult the Health and Family Welfare Dept before including this provision in the law. The organisations including- Population First, Cehat and others- pointed out that the provision is "against the principles of democracy, especially when viewed from the perspective of informed choices and reproductive rights." It states that this is also contrary to the National Population Policy and the Programme Action adopted at the International Conference on Population and Development in Cairo in 1994 of which India was a signatory. (riverlink@yahoogroups.com 080405, THE TIMES OF INDIA 090405, THE HINDU 130405, THE INDIAN EXPRESS 150405)

Vajpayee gov't's Plans and problems In Nepal, China and India there are 1.1 B people who have inadequate access to water and 2.4 B without proper sanitation. Realising the seriousness of the problem, the then Prime Minister had on Aug 15 '02 announced three programmes: installation of one lakh hand pumps, providing drinking water facilities to one lakh Primary Schools and revival of one lakh traditional sources of water, to be completed in two years. The programme was to be completed in two years and the total cost involved was Rs 80 B. Of this, 10 % was to come from community contribution. However, a Parliamentary Committee looking into the programme found that almost 70 % of the funds released are lying unspent with various state govts. It sought an explanation from the govt. The physical achievement was: the number of hand pumps installed was 25 % of the target, number of traditional sources could achieve only 10 % of the target while the schools covered was 30 % of the target.

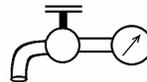
➤ The reforms in the rural drinking water sector was opened up through the launching of the Swajaldhara programme on Dec 25, '02. A Parliamentary Committee expressed concern over the move to have this replace the ongoing Accelerated Rural Water Supply Programme saying while the latter is applicable to all states and districts, Swajaldhara is a demand driven scheme. The position of implementation of Swajaldhara is also not very encouraging. Excepting Andhra Pradesh, Chhattisgarh, Rajasthan and Tamil Nadu, none of the states show completion of even a single project under the scheme. According to the guidelines of ARWSP, up to 20% of annual ARWSP allocation may be utilised for institutionalisation of community participation in rural water supply programme, including Swajaldhara schemes. The Swajaldhara Guidelines states that community contribution towards capital cost of schemes could be in the form of cash, kind, labour, land or combination of these, with at least 50% of the community contribution being in cash. For Scheduled Tribes areas, the cash contribution is reduced to 25%. (Daily Excelsior 140405)

CAG ON WATER RESOURCES PROJECT

Billions spent, not helped even an acre At least 11 of the pending irrigation projects on which Rs 25.29 B had been spent had not benefited even a single acre as against the contemplated irrigation potential of 0.275 M ha. According to the report of CAG for Andhra Pradesh for 2003-4, since the inception of the Five Year Plans in 1951, AP Govt had up to March '04, taken up 100 irrigation projects (21 major and 79 medium) with an envisaged irrigation potential of 3.705 M ha. As of June '04, 24 projects, with scheduled date of completion expired long ago were still in under execution including 17 over 20 years old. Partial benefit was yielded to 1.292 M ha as against the expected irrigation potential of 1.656 M ha by 13 projects. The major irrigation projects under which no benefits accrued are Singur,

Srisailem Right Bank Canal, Srisailem Left Bank Canal and Yeleru Reservoir. The medium irrigation projects under which no benefits accrued are Suddavagu, Surampalem, Kovaddakalva, Jhanjavati, Pedderu, Veligallu and Gundlavagu. The delay in completion of the irrigation projects resulted in cost over run of 583 %.

➤ The report said the objective of the Neeru-Meeru to recharge groundwater was not achieved due to injudicious selection of sites, unscientific selection of works and poor maintenance after completion. The groundwater levels fell during 2003-4 in 8 districts – Ananthpur, Chittoor, Krishna, Kurnool, Mahabubnagar, Nellore, Prakasam and W Godavari. (THE HINDU 010405)



Water Privatisation

World Bank pushes Water Privatisation through back door in Delhi

The World Bank, it seems is pushing water privatisation through backdoor in Delhi. It has virtually been dictating to the Delhi govt, Delhi Jal Board and Union govt through a step by step process with clear agenda to benefit the multi nationals. The process has been totally non transparent that has made the Bank push Price Water House Coopers as consultants for the project, though this company lost out in initial bidding. In fact whole bidding was redone to include them in. Now the Bank is about to push for a 24X7 water project in two zones of South Delhi. Here, without any basis, an assumption has been made that total non revenue water is 59% and on that basis a contract has been drawn up for the companies. The local people, civil society, elected representatives all seems to be in complete dark. In fact, the consultants have also prepared a draft Water Regulatory Bill that clear is geared to full privatisation in five years. Though the process wont be called privatisation, it seems, for strategic reasons.

➤ Project called twenty-four hours water in Delhi, will be implemented in south Zone II and III with total involvement of private sector. French company is in charge of the project have already short-listed 200 appointments with the cooperation from DJB without any tender. DJB has already applied for 100 million dollar loan from WB. But there is no progress due to water scarcity at the Sonia Vihar Plant. (Parivartan, THE HINDU 110405)

4240 tap connections surrendered Due to the new tariff from Dec 1, water users in Delhi are in crisis. West and South West Zones are more in percentage to surrender their connections. DJB sources claimed that those having multiple connections are surrendering additional taps. (THE TIMES OF INDIA 130405)

Cycle rally against Sheonath privatisation Several organisations under Sheonath Nadi Mukti Andolan held a bicycle rally at Raipur in Chhattisgarh against privatisation of Sheonath River on April 14 and submitted a memorandum to the Governor demanding cancellation of the agreement between State and Radius Water Ltd. (DESHBANDHU 150405)

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Interstate & Transboundary Disputes

Inter-state Punjab and J&K on Ravi waters

Punjab state Irrigation authorities have locked horns with the J&K over the issue of desilting of 5 km patch of Kashmir canal flowing in J&K territory in Lakhanpur area of Kathua district. The canal being fed by the Ravi River is under the control of Punjab Irrigation authorities despite the fact that this portion of nearly 5.183 km flows in J&K as per the old agreement. Last time in 2002, Rs 2.5 lakhs were provided by the J&K authorities for the clearing/desilting of this portion of the canal but taking undue advantage, the Punjab Irrigation authorities demanded Rs 25 lakhs for the desilting works before releasing the water in the Kashmir canal. (Daily Excelsior 130405, THE TRIBUNE 160405)

Karnataka and AP on Krishna-Godavari Karnataka will lodge a protest with the Tribunal and if necessary file a contempt petition before the Supreme Court on Andhra Pradesh's "illegal" irrigation projects in the Krishna and Godavari basins. "When Karnataka wanted to increase Amatti dam height, AP govt went to the Centre. Now if they are going to construct irrigation projects, we too will battle it out," Karnataka CM said. Karnataka wanted the Centre and CWC to direct AP govt from impinging on Karnataka's rights. Karnataka alleged that AP had taken up projects amounting to Rs 12,025 crore to utilise the surplus water when the matter was pending before the tribunal. Similarly, in the case of Godavari too, AP was trying to use the non-allocated share, Karnataka alleged. (THE TIMES OF INDIA 040405, THE INDIAN EXPRESS 140405)

TN-AP on Telugu Ganga TN govt has planned to move towards SC to get its actual share on Krishna water to meet the water needs of Chennai. According to the agreement in 1983 AP govt has to give 15 thousand million cubic feet of water each year for Chennai with contributions of 5 tmcft each from AP, Karnataka and Maharashtra. After taking into account the losses, 12 tmcft was to reach Poondi reservoir in Chennai. TN claimed that AP had never supplied more than 3 tmcft in any year. AP govt had stopped supply in February due to acute shortage of water in the Kandaleru reservoir. TN also pointed out the lack of efficiency of the AP on the Telugu Ganga project which was inaugurated 22 years ago but AP still has not completed its 60%. (THE ASIAN AGE 080405, 090405, DECCAN CHRONICLE 090405, DECCAN HERALD 130405)

Alternative to SYL canal Haryana govt is thinking to construct a 80 km long new canal from Narwana to Panipat to carry water to the southern districts of the state. The proposed canal has also been seen as an alternative to the SYL canal. Bhakra canal which supplies the main water share to the Haryana passed from the village located in the Narwana subdivision. If a canal is constructed from that point and connected at Panipat which is a part of the Yumuna system then there is no need to construct the SYL canal. This proposed canal is 80 km in length and could carry not only the additional but also more water in future from Punjab. The new canal will cost Rs 250 - 300 crore and could be completed in two years. (THE TRIBUNE 030405)

Trans-boundary issues Neelum-Jhelum HEP India's Kishanganga HEP could deprive Islamabad of 27% water flows, claimed some Pak experts. With completion of Kishanganga HEP, the water flows towards Pakistan from Neelum River would reduce drastically, making it almost impossible for Pakistan to generate 1,000 MW from the proposed Neelum-Jhelum HEP of Pakistan. India is to divert Neelum (Kishanganga) river waters to Jhelum. The foreign investors are reluctant to invest in Neelum-Jhelum project in view of the site of the project. Pakistan is expected to call competitive bidding shortly. Indo Pak teams met in Islamabad on May 7 to discuss the issues related with the proposed Kishanganga HEP. However, the meeting ended without any resolution. The teams again met in Delhi in first week of June, but the meeting ended abruptly, without any resolution. (THE NATION 200405, THE TRIBUNE 210405, updates)

Sutlej river flood and Chinese cooperation China was likely to give a firm assurance for the controlled release of water from the lake in Tibet on the Parchu tributary of Sutlej, which had threatened to cause flood in 2004 and had caused floods in 2000. India and China have finalized a MoU under which China would give India hydrological information on Sutlej in flood season. Two sides had also agreed to continue bilateral discussions to finalize at an early date similar arrangements for the Parlung Zangbo and Lohit/ Zayu Qu rivers. (THE TRIBUNE 030405, others)



Irrigation

Punjab: copybook of don'ts Department of Soil and Water Conservation indicate a 4 m drop in underground freshwater level in 78% of the state. Overexploitation of the groundwater through tube wells and submersible pumps is the major reason. Quality of the ground water has suffered, because of the over-use of fertilisers and pesticides. In some area salinity and chloride content and in others fluoride concentration and nitrate presence is at alarming levels. (THE INDIAN EXPRESS 010405)

From the grain bowl to the dry land, Punjab is rapidly emerging as the blueprint of **what not to do** in agriculture

Punjab water crisis

In an article Prof BP Singh of Dept of Sociology and Social Anthropology from Punjab University has written about the "unfortunate" Punjab water crisis in the

land of five rivers. Two rivers were lost during partition and the remaining are given to pollution and natural upheavals of more or less availability of water. Farmers, induced by modern science and technology cannot rely on rain or nature. So tubewells and submersible pumps were used to reach the ground water level deeper and deeper. Not only the issue of water scarcity but also crop diversification, wheat paddy duo, depleting water table, ensuring environmental hazards, the role of the state and farmers and the emancipating role of science and technology are important. The problems lie in the agricultural growth of the region with the means and methods used to achieve it. Not only paddy but also any high yielding variety is terribly water thirsty as compared to the indigenous varieties. If we cannot go back to them we should at least try only those varieties those are water conservative. (THE TRIBUNE 190405)

Wrong Prescription again: Mega scheme to complete ongoing projects

The Centre is likely to launch a new mega irrigation scheme for completion of 9 major ongoing irrigation projects, each having a potential of over 100 000 Ha by tapping funds through the 'special purpose vehicle' route, which was announced in the 2005-6 budget. In Mid-term Appraisal of the 10th Plan, the Commission made out a case for considering Central support for the new scheme. The projects are: Teesta Barrage Stage-I (Phase-I) in W Bengal, Indira Gandhi Nahar Stage-II (Rajasthan), W Kosi (Bihar), Shahpur Kandi (Punjab), Sardar Sarovar (Gujarat), Indira Sagar and Omkareshwar (Madhya Pradesh), Upper Krishna stage-II (Karnataka) and Gosikhurd (Maharashtra). Completion of these projects at a cost of Rs 277 B is expected to add a potential of irrigating 3.3 M Ha. (THE HINDU 110405)

Arkavathy dam to irrigate Kanakpura The plan to supply water to farmers through the Arkavathy reservoir, which had been abandoned for two decades due to the negligence of bureaucracy and paucity of funds, is going to start to irrigate 6232 Ha in Kanakpura taluk. This year, 3000 Ha is likely to get water from the left bank lift irrigation. The Arkavathy river, which originates at Nandi Hills of Kolar dist and is an offshoot of the Cauvery, flows for a distance of 154.5 km through Kolar and Bangalore rural districts before merging in to the Kanakapura confluence. The state had given green signal for building a dam across this river near the taluk's Harobele in June 1984. (DECCAN HERALD 150405)

Water body restoration project The Centre has selected Gulbarga and Bangalore Rural among 16 districts in nine states under the Rs 3 B national project for repair, renovation and restoration of water bodies directly linked to the agriculture. The scheme will be implemented by the states with 75% funding to be put in by the Centre and the rest from the state. Rs 3 B is for the programme to be implemented during the remaining part of the 10th Plan period, a sum of Rs 200 M has already been spent. For 2005-6, the Centre will spend Rs 1.8 B and the remaining amount will be used in 2006-7. To start with the 16 water bodies situated in Karnataka, Andhra Pradesh, Jharkhand, Chhattisgarh, Orissa, Rajasthan, W Bengal, Tamil Nadu and Madhya Pradesh will be taken up. These will cost Rs 1.68 B. (DECCAN HERALD 280305)

Tank to benefit contractor? The 1460 ha remain un-irrigated in Kushtagi taluk in Koppal dist of Karnataka, despite a multi-million tank being constructed. The Pura tank was taken up by the govt not to wipe the tears of farmers, but to provide employment to the contractor, it seems. The tank gates have rusted and collapsed even before water can flow in to the canal. Farmers continue to totter under severe drought even when the tank is full. The project to irrigate 1460 ha was originally estimated to cost Rs 16 M. after clearance, the cost jumped to Rs 110 M. by the time some works like bund and waste weir were completed, the cost crossed Rs 150 M. (DECCAN HERALD 040405)

MP irrigation scheme The Madhya Pradesh Govt has made provision in the 2005-6 budget to complete and extend pending irrigation schemes in the Chambal region. The Govt has also prepared a Rs 2.76 B plan under the water sector restructuring project with a view to improving the Chambal canal. The work on the plan will start in 2006-7 after the initial steps on the plan were completed. The Chambal lift (Kanera) irrigation scheme at Ater area in Bhind dist was sanctioned in 1986 at a cost of Rs 40 M, but no funds were provided for the scheme until Dec '03. The cost of the scheme is now estimated to be Rs 640 M and a provision of Rs 30 M has been made in the current budget. The scheme is to irrigate 15 500 Ha. (BUSINESS LINE 180405)

Maharashtra plan to divert 'surplus' water The Maharashtra Govt has approved a plan diverting 'surplus' water from the Krishna river in the western Maharashtra to the districts of Latur and Osmanabad. Water from Kolhapur, Sangli and Satara districts would be diverted in to the Nira river in Baramati taluka, Pune. Water would then reach its ultimate destination via the Ujani dam in Indapur taluka of Pune. The Maharashtra Krishna Valley Development Corp will implement this Rs 60 B project. (DOWN TO EARTH 150405)

Resources for NCMP The planning commission, which is fleshing out the National Common Minimum Programme, has said that there has been inadequate investment in irrigation and water conservation is dryland farming, and a serious effort in this area would require an additional expenditure of at least Rs 7 000 crore a year. (BUSINESS LINE 050405)

Mid Term Appraisal of 10th plan The Planning Commission admitted more investment is necessary in irrigation, water conservation and dryland farming to pick up the target of agricultural growth from 1.5% achieved in first two years of tenth plan to 4% target of the plan. The Planning Commission and the ministry of agriculture will jointly formulate a long-term agenda to bring dynamism in the agriculture sector. Shockingly, the mid term review says that to achieve the economic growth of over 7% strengthening of private sector in certain of infrastructure like irrigation, sanitation and other rural infrastructure is necessary. (THE HINDU 060405, THE ECONOMIC TIMES 060405)

ADB's Chhattisgarh irrigation loan ADB has sanctioned a US\$ 46.1 M loan for improving irrigation services and agricultural practices for Chhattisgarh. "An integrated approach is needed to increase productivity and maximize the impacts of irrigated agriculture on rural growth and poverty," claimed an ADB Water Resources Specialist. The project is to help the Water Resources Dept to develop and manage the irrigation sector by strengthening its existing capacity, initiating reforms, upgrading procedures, modernizing equipment and developing new facilities by Sept 2012. Despite abundant land and water resources, rural poverty in Chhattisgarh is widespread due largely to low agricultural productivity. Only wet season rice is grown in most areas, although diversified cropping provides a high-value opportunity to improve the livelihood of many farmers with irrigation. Irrigation system performance is low, mainly due to inadequate operation and maintenance, which stems in large part from a lack of involvement of the water users. ADB's strategy for India recognizes the importance of expanding agriculture and rural development in reducing poverty. The Chhattisgarh project is ADB's first loan in the rural sector. (www.adb.org)

NABARD assistance to AP The National Bank for Agriculture and Rural Development has sanctioned a loan of Rs 1.004 B to AP for development of rural infrastructure, including 21 irrigation projects (14 minor schemes and 7 lift schemes). The Forest Dept would implement the SMC projects to improve forest cover over an area of 0.271 m ha. The projects also envisaged to provide 0.893 m mandays of recurring employment and 7.147 m mandays of non-recurring employment. The irrigation projects were expected to provide irrigation to 7746 ha. (Daily Excelsior 030405)

Water Options

Kangra kuhls dying slow death The community kuhls, the only source of irrigation in Himachal Pradesh, are slowly dying out. The farmers blame the govt for neglecting the kuhls, officials of the Irrigation Dept say most channels don't fulfil criterion laid down by the Centre for receiving grants. Mark Baker, researching on kuhls of Kangra, said that kuhls were very unique, as an example of community participation. "There are nearly 750 major kuhls in Kangra dist, which irrigate more than one village. Also, there are nearly 2500 smaller ones, fed by snow and rain in the Dhauladhar range", he said. Only 10% of the total kuhls have been taken over by the govt and the local kuhl committees maintain the rest. In fact, people would rather seek financial help from the Govt than want it to entirely take over the kuhls, said Mr baker. "Although some kuhls have gone defunct, many have adapted with time and in the absence of major canals due to its peculiar terrain, it is very important to keep this sole system of irrigation going," he said. (THE TRIBUNE 070405)

River Restoration A special profile on river restoration is under publication by the British Ecological Society in their forthcoming issue of Journal of Applied Ecology. Opening the debate is a paper by 22 leading US river ecologists proposing five criteria for ecologically successful river restoration. Their aim is to arrive at an agreed set of standards which would eventually be endorsed by the United Nations Environment Programme. The success of river restoration should be judged according to five criteria: a guiding image; improving ecosystems; increasing resilience; doing no lasting harm; and completing an ecological assessment. The first step should be articulating a "guiding image" describing the ecologically healthy river that could exist at a given site. The second step should be to demonstrate that there have been measurable changes towards the guiding image, such as larger fish populations and clearer water. Palmer et al stress that restoration success should not be viewed as an all-or-nothing, single endpoint, but as an adaptive process where small improvements build up and lessons are learned from any failures. The third criteria for successful river restoration is to create hydrological, geomorphological and ecological conditions that allow the river to be a resilient, self-sustaining system. The fourth criteria is to do no lasting harm. The final criteria is ecological assessment. According to Palmer: "It is critical that the broad restoration community, including funding agencies, practitioners and citizen restoration groups, adopt criteria for defining and assessing ecological success in restoration. Standards are needed because progress in the science and practice of river restoration has been hampered by the lack of agreed upon criteria for judging ecological success." Palmer argues, many current waterfront restoration

schemes lack ecological dimension. "Riverfront revitalisation projects may be successful in increasing economic and social activity near a river, but can constrain natural processes of the river and floodplain. Projects labeled restoration successes should not be

...the
community
was able
to arrest
1.5 ft soil.

assumed to be ecological successes," Palmer says. Several other papers on river restoration are included in this issue. (www.sciencedaily.com 200405)

Solar water disinfection Here is a process to disinfect your drinking water. The water container must be exposed to bright sunlight for six hrs (two days if full cloud). Containers with a larger exposed area would be more effective. Shake the bottle before placing it under the sun which will improve the dissolved oxygen level. Place the bottle horizontally. Solar Water Disinfection is already in use worldwide and received special award at the Energy Globe Awards 2004. SODIS gets rid of most bacteria and viruses. SODIS is a simple, low cost technology with great health potential where one child in every 15 seconds is dying due to diarrhea dehydration in developing countries. Thailand, Sri Lanka, Kenya are using SODIS. The League for Education and Development, a Tiruchirapalli based women's organisation of Tamil Nadu is using SODIS since 3 years. Over two years 43,833 families and 99 schools were trained in SODIS and hygiene. In Assam, Dept. of Ecology and Environmental Science of Assam University collaborated with two partner organisations and village institutions to link SODIS promotion with community child improvement programmes. Coupled with rain water harvesting, SODIS can help people get clean water in arsenic and fluoride prone areas. (BUSINESS LINE 150405)

Rainwater Harvesting

Water conservation by villagers In Wardha District 10 000 villagers of six villages irrespective of caste, class and creed are working together with the Magan Sangrahalaya Samiti to solve the crisis of water. With the financial help of the Council for Advancement of People's Action and Rural Technology. The Samiti formed a group of local youths, civil engineers, agriculturists, foresters, and social scientists to mitigate the problem. Their idea was to save every drop of water where it falls and to keep the village's money within the village itself. The Samiti earmarked a catchment of 2500 ha to work on. Within three months they made five major drainages around the hillock covering 35 km, 10 ha of continuous trenches, 1628 m of trenches, desilted four ponds. During rainfall in January, they were able to arrest one-and-a-half foot of soil. (THE HINDU 040405)

Delhi metro to harvest rain DMRC has planned to make rainwater harvesting compulsory at all metro stations. (THE TRIBUNE 060405)

RWH in Delhi College of Engineering Rainwater harvesting and waste water management will soon start at the Delhi College of Engineering. 800 sq m area of their hostel rooftop can harvest water which can substantially fulfil their demand. In Delhi the average rainfall is 600-700 mm. There could also be partial recycling of wastewater from bathing/ washing that can be used for horticulture. (THE INDIAN EXPRESS 220405)

HP RWH Master Plan The state Minister for Irrigation and Public Health said that "a comprehensive master plan will be prepared to undertake soil conservation and flood control measures so that rain water can be properly utilised." HP will bring a legislation to curb unscientific mining causing damage to various drinking water and irrigation schemes and to ensure scientific tapping of ground water. (THE TRIBUNE 010405)

'Tanker-free mission' in Pune The Pune district administration is to launch a water conservation programme in 492 villages under the 'Tanker-free mission' to avert water scarcity. The mission will tap the catchment area of a water source in every village. The projects will conserve the rain water by constructing watersheds. As part of the mission, the district administration is undertaking 492 projects at a cost of Rs 89 m. Majority of the projects would be completed before the monsoon. District collector said, "A study of the catchment areas is going on and would be completed in 3-4 days. The developmental projects would be executed on the basis of the study." Last year, many talukas of the district faced a severe drought situation, affecting over 326 villages and 1,449 hamlets. The district administration deployed 379 tankers in the drought-affected areas and spent Rs 189.5 m on tankers. (THE TIMES OF INDIA 210405)

Bottled Water

Kerala HC order favours Coke A Division Bench of the Kerala High Court have ordered that Hindustan Coca-Cola Beverages Pvt Ltd are entitled to draw 0.5 m litres of ground water every day under the normal rainfall condition without any right for accumulation in case of non-use. The Court also mentioned that the restrictions imposed for would not be applicable when water is drawn for additional requirements such as supply of water to the local community. The court dismissed the contention of Perumatty Gram Panchayat that down fall of ground water level of adjacent area is due to over exploitation by the soft drink company. The expert committee appointed by the court was headed by EJ James, Executive Director, Centre for Water Resources Development and Management, Kozhikode.

➤ The initial High Court ruling, on Dec 16, '03 proclaimed that even if it was assumed that Coca-Cola could extract water safely, it should not be allowed to do so because "the underground water belongs to the general public and the 2nd respondent [Coca-Cola] has no right to claim a huge share of it and the govt have no power to allow a private party to extract such a huge quantity of ground water, which is a property, held by it in trust."

➤ Perumatty Panchayat has rejected the soft drink company's application to renew its license on the basis of the Kerala High Court order permitting it to draw groundwater. A meeting of the Panchayat board had turned down the company's request claiming it did not furnish required documents like license under the factories act and clearance from the State Pollution Control Board along with its application. When Coke went to High Court challenging the Panchayat decision, High Court, rather strangely, ordered the Panchayat on June 1 to renew license of Coke by June 10 and failing which, Coke can assume that the license is renewed. On June 6 the Panchayat renewed the license subject to 13 conditions. The license said that any violation of the conditions will entail cancellation of the license, subject to the order of the Supreme Court, where the Panchayat has filed a petition.

➤ The Plachimada controversy entered into Lok Sabha and MP Virendra Kumar said that govt should back the Panchayat who are fighting against a big company. (THE HINDU 080405, 090405, 300405, 070605 THE BUSINESS LINE, THE ECONOMIC TIMES 080405)



Ground Water

10 June as Ground Water Day "June 10 will be officially celebrated as Ground Water Day and all necessary steps would be taken to harvest rainwater and recharge groundwater", said UP Minister for Minor Irrigation and Ground Water. (Everythingaboutwater.com 220405)

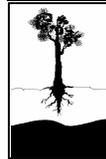
Tamil Nadu According to a study by the TN Groundwater and Surface Water Resources Data Centre, groundwater resources in about 140 blocks have been overexploited as on Jan '03 and only 28% of the groundwater in TN is of good quality. The Data Centre, which is a wing of the Water Resources Organisation of the PWD states in a publication 'Groundwater Atlas of Tamil Nadu' that 63% of water was of moderate quality. The total dissolved solids level is 500 - 2000 milligrams a litre. The water quality is good in observatory wells located in 15 districts, including Dharampuri, Kanyakumari, Kancheepuram, Coimbatore, Salem and Tanjhavur. But in wells in 10 districts such as Vellore, Cuddalore, Nammakkal, Tirunelveli and Tiruvarur, the quality is poor (9%). The study of Theni districts recommends construction of sub-surface dykes and percolation ponds in five overexploited blocks. In Madurai district, five of the 13

blocks fall under safe category for extraction, while three blocks have been overexploited, one is in a critical stage. (THE HINDU 020405)

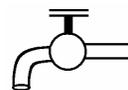
Gurgaon Ground water in Gurgaon is depleting at 1 m per year and if it goes on at the same rate it will empty the ground water in next decade. According to the Central Ground Water Commission report the city water table, particularly in new Gurgaon, is drying up fast. Gurgaon Water Supply is providing 30% of the total demand of water of the new colonies. 70% of new Gurgaon residents are 100% dependent on ground water. In contrast old Gurgaon receives 90% water from GWS through canal. (THE HINDUSTAN TIMES 110405, THE TRIBUNE 190405)

Company sealed According to the complaint of the Jangpura Extension Residents' Welfare Association the SDM sealed the supply room and boring equipment of a Pure Water Company who were illegally extracting ground water for a long time and which caused down fall of ground water level. (THE TIMES OF INDIA 300405)

Ground Water Contamination



Ramnathpuram fears pollution from desalinisation The residents of nine villages under the Panaikulam panchayat in Ramnathpuram district of Tamil Nadu are up in arms against the Water desalination plant. The plant is aimed to supply purified water to a power generation unit. The villagers fear that it may affect the groundwater. The project promoters are the Chennai based South Ganga Waters Technologies. The Dist Coastal Regulation Committee had granted permission with the concurrence of the State committee to set up the plant 800 m off the coast of Panaikulam. The plant will be using chemicals for the purification process. People fear that the chemicals will pollute groundwater and bring about a drinking water crisis. (THE INDIAN EXPRESS 060405)



Urban Water Supply

24-hour water in Greater Noida? The greater Noida authority is working on a plan to ensure 24-hour water supply to its residents. At present only a handful of cities in the developing world such as Colombo and Bangkok provide 24-hour water. (BUSINESS LINE 050405)

Study on urban water The Tata Institute of Social Sciences in a recent survey on urban water said that out of seven major cities Delhi (400.1 liters) and Kanpur are in the low rank on water consumption per person. Madurai is the worst (370.9 lts.). 65 % households in these cities are water deficient. 12,880 respondents of 2734 households of different income groups, were interviewed. Average water consumption per household per day is 408.6 lts and consumption per person is 91.6



lts (according to WHO, 100 lts is the minimum requirement for each person per day). Water usage for bathing and washing doths contributed 28% and 19% of the water consumption. 30% water is lost due to leakage in Delhi and 20% in Mumbai. (INDIAN EXPRESS, BUSINESS LINE 020405)

Grey water recycling in Delhi?

B2 block residents of the Vasant Kunj area of Delhi are likely to set an example of grey water recycling for their own use. With the help of Water Workers' Alliance they are now setting up the structure. Grey water can be used for toilet, washing and gardening. Another such project could come up in Greater Kailsh. According to WWA, 200 MGD of grey water of Delhi can be treated which can satisfy the needs of 2.5 m citizens. (THE INDIAN EXPRESS 220405)

Delhi's Sonia Vihar Delhi Jal Board has persuaded Oudeo Degremont not to invoke clauses pertaining to non-supply of raw water. Sonia Vihar is without any raw water. Delhi govt have not found any way to negotiate with the UP govt for discharging Yamuna water. Only hope is that dams and barrages on the Himalayan River will soon over flow and the excess water will come to Delhi.

➤ **Tehri Water** The capital has to wait for another 6-8 months to get the water from Tehri dam because still its one tunnel is under construction. UP govt has refused to give any commitment to give additional water to run the Sonia Vihar Plant. Uttaranchal has also refuse to give any commitment to give extra water. So the summer crisis of water in Delhi is still on the hand of Wazirabad pond where 671.9 feet depth of water persisting. But when the level will drop below 271 feet then Delhi will stop getting water.

➤ **UP says No, yes, no** UP stands on the brink of yet another conflict with the centre after its refusal to release additional water from the Upper Ganga canal for Sonia Vihar Project. State govt have expressed their inability to release 80 cusec additional water. (THE TIMES OF INDIA 090405, 270405 THE HINDU 210405, 270405, THE HINDUSTAN TIMES 230405, Source UNI, BUSINESS LINE 250405)

MP Water supply projects in four cities in MP, namely Bhopal, Indore, Jabalpur and Gwalior, is to be developed on the pattern of schemes in Phnom-Penh (Cambodia), Thailand, Philippines, Kathmandu (Nepal) and Rawalpindi (Pakistan). The projects costing Rs 13.66 B, would be implemented with Rs 9 B loan from ADB, the project to be completed by March '09. The state govt would contribute Rs 22.8 B and local bodies Rs 23.5 B. (www.projectsmonitor.com 180405)

Rural Water Supply

Water for AP Dalits The Chief Minister of Andhra Pradesh has announced Rs 253 B Ambedkar Jeevan Dhara scheme to provide drinking water to all the 21 407 uncovered dalitwadads. The scheme will start with 9 812 dalitwadads, the population of which was more than 250 each and the rest 11 595 dalitwadads whose population was below 250 would be covered in two years. There were 32 520 SC inhabitants in the state but most of them had "already been covered either by schemes or extended pipelines from existing sources" he added. (THE HINDU 150405)

Jaipur Suburb's water crisis

There is considerable disquiet among the rural folks on the outskirts of the Jaipur about the spreading tentacles of the big city, which is taking into its grip the countryside. As colonisers acquire agricultural lands to convert them into townships, the villagers are feeling threatened about their future, especially on the water front, in an already water-scare area. The sense of insecurity about the ground water situation has grown so much that the residents of a village called Machwa (20 km from Jaipur), convened a 'Paani panchayat' to discuss the fundamental question of ownership of water. On the one hand when only from one hand pump 600 villagers are getting their drinking water and on the other side each urban occupant is flushing toilets and using scarce water for gardening. Over last 30 years the level of water has dropped 135 feet and it will just take five years to make the village waterless. The developers should promote water conservation techniques including rainwater harvesting and multiple use of water urgently. (THE HINDU 150405)

Water through ration shop in Karnataka?

Karnataka govt has a plan to supply water through ration shops when the peak of summer sets in. Large parts are heading for parched days. Already, the govt is supplying water through tankers to 317 villages. This figure is likely to go up to 683 by the end of June, even if there is rain. Rural water supply minister said "We have identified 2,426 habitations which are likely to face severe water crisis if the rains fail. But this figure might even cross 5,000. In such an eventuality, supplying water through ration shops could be one solution, to ensure that the people have access to some water instead of being completely deprived... We will also use other modes like supplying water through trains, lorries and tankers." The govt will soon take up a village in each of the 176 taluks and implement rain water harvesting to create awareness. (THE TIMES OF INDIA 210405)



Floods

PM Task Force on Brahmaputra Former vice-chairman of the Brahmaputra Board, SN Phukan has ruled out dredging of the Brahmaputra for mitigating the flood. The width of the Brahmaputra is 2.5 - 14 km. Dredging operations are practicable only in narrow width. Dredging could yield results only if it is done throughout the length of the river, impractical at 1,600 km in case of Brahmaputra. A Central task force in a bid to control the floods had recommended to the Union govt to install HEPs by constructing dams and reservoirs in various tributaries of the Brahmaputra. The TF had also recommended the strengthening the existing embankments and also for constructing spurs in the critically eroded areas. The TF proposals have been submitted to the Prime Minister.

➤ The TF has recommended levy of 1-2% on new infrastructures such as roads, building and power plants in the flood prone states. (THE HINDU 05405, Sentinel 270405)

Silt laden Brahmaputra UNESCO under its International Hydrological Decade Programme has carried out a study on the Brahmaputra River and has ranked it fourth in order amongst the rivers of the world in respect of known maximum historic flood discharge. Heavy rainfall, physiographic conditions, earthquake and landslides, high silt load, encroachment of riverine areas, steep slope, inadequate drainage, deforestation and watershed degradation, obstruction at the tributaries' confluence with the Brahmaputra, effect of works on other side of the International border and loss or destruction of wetlands are some factors responsible for this. Brahmaputra annual sediment load is estimated to be about 397 MT with a flow of 477 BCM during 1978- 2003, at Pancharatna. This river has the highest sediment yield next to the Yellow river in China. Its tributaries also carry high sediment load, which is normally more than 10 T per ha per year. Moreover, the development of various infrastructures in the river catchments like construction of roads, bridges, railway lines and dwelling units also obstruct the natural drainage in the catchment and accentuate the silt inflow. (ASSAM TRIBUNE 230405)

Funds for NE The Centre will release Rs 2.3 B for tackling the floods of Assam. There is a recommendation for an additional Rs 1.08 B. Another separate scheme for taking up critical flood control and anti-erosion schemes in the NE states has also been approved at an estimated cost of Rs 1.5 B to be implemented in the NE states. A scheme amounting to Rs 412.8 M has been approved for the protection of Majuli Island and the work is being executed through Brahmaputra Board. The drainage condition due to floods is another area which needs to be tackled on priority as acres of fertile low lying lands are submerged due to spills from rivers during monsoon. (PIB 050405)

WB loan for Swan River Floods management? The govt of India recommended the WB to finance Rs 485 crore Swan river Flood Management and Integrated Watershed Development Project. (THE TRIBUNE 020405)

Call to protect Dhemaji, Lakhimpur The Lakhimpur-Dhemaji-Majuli Unnayan Sangram Parishad has urged upon the Govt to take immediate steps to save the people of Dhemaji and Lakhimpur districts from the threat of a catastrophe being faced by them due to an 'artificial dam' spread over an area of 6 km, created by landslide on the upper reach of the Subansiri River in Arunachal Pradesh. The Sangram Parishad, in its memorandum to the Revenue Commissioner said that an artificial dam was created by huge landslides in Oct '04 blocking the natural flow of the Subansiri 2 km off Siyum, around 80 km away from Daporijo, headquarters of Upper Subansiri district. The All Upper Subansiri Students Union has also expressed concern. (Arunachal Times 110305, Assam Tribune 270305)

Bihar Flood scam Last year massive floods occurred in Bihar. 800 people were killed and 9300 villages, 21 M people were affected. DM of Patna who was the nodal authority of the flood relief had received Rs 130 M from the govt and additional Rs 50 M from the Chief Secretary and paid Rs 171.8 M to Bihar Small Scale Industries Corp, the sole organisation in charge of supplying relief material. According to the Managing Director of the BSSIC they have so far received Rs 1.3 M out of their total expenditure of Rs 2.2 M. The money allocated for flood relief was siphoned off by a group led by Patna DM, including politicians, it seems. The person who was handled the money on behalf of BSSIC is fictitious. The Then DM, a 1992 IAS officer of Bihar Cadre is now in the Sahara Group. Arrest warrants have been issued against him and he is absconding.

➤ Chief Secretary of Bihar claimed that the vigilance enquiry "he ordered" will deal with the diversion of funds from one account to the other made by the then DM of Patna. However, the vigilance DG has not received any order for enquiry though Chief Secretary "ordered".

➤ Baba Satya Sai Industry instead of BSCIC had procured all the money for the entire relief operation. Not only that they had still not given any account and they had given 6% commission to the BSCIC for the cooperation.

➤ Santosh Kumar Jha is identified as the recipient of siphoned-off funds in the Bihar flood scam, exposed by *The Indian Express*. Jha is a govt contractor and flourished under the RJD regime. Jha had a good relation with the RJD leader Sadhu Yadav. But he did not get RJD ticket to stand in assembly elections. Jha manages to get a ticket from LJP. LJP has now expelled Santosh Kumar Jha from the primary membership of the party. Jha has now been arrested. (THE INDIAN EXPRESS 240405, 260405, 280405, 290405, THE HINDUSTAN TIMES 270405)

Avalanche feared in Himalayas International Red Cross and Red Crescent Societies have expressed fear of a flood in North India owing to melting snow that could cause heavy avalanches in the upper western Himalayas. They are monitoring the situation. This year the region received maximum snow fall of the decade. (THE TRIBUNE 210405)

Fisheries



Punjab to promote prawn cultivation

Infertile and unfit agricultural land is to be converted to pond for diversity into pisciculture specially prawn cultivation in fresh water. (THE TRIBUNE 250405)



Agriculture

Normal Monsoon predicted According to IMD's Operational Long Range Forecast the south west monsoon (June-Sept) would be "98% of the long period average." Met Dept also said "our probabilistic model suggests a very high (75%) probability of the monsoon being near or near normal." By mid June, with the delay in arrival of monsoon and with the slow progress, there are already fears of impact on agriculture and contingency plans are being drawn up. (BUSINESS LINE 210405)

Agriculture outlay for 2005-6 up by 43% The plan outlay of the Ministry of Agriculture has been raised by 43% from Rs 41.92 B in 2004-5 (Budget Estimates) to Rs 59.98 B in 2005-6 (BE). (PIB 290405)

Seed bill to select panel "The proposed seed bill which is loaded to safeguard the interest of the Seed industry, must be radically changed. The bill should be referred to the Select Committee of Parliament" said the General Secretary CPI. The CPI said that a law regulating seed trade was necessary to ensure that the farmers are protected against spurious seeds and that seed producers are obliged to supply seeds of reliable quality. (THE TRIBUNE 020405)

PM at Agri summit 2005 "The importance of agriculture has many dimensions to it. Not only is it a major segment of our economy, contributing almost a quarter of our GDP, but is also the provider of gainful employment and incomes to the maximum number of people. I wish to point out that given the state of our economy agriculture and the rural economy act as the only social safety net available in rural areas, particularly for those who have no other employable skills... What is alarming, however, is that there seems to have been a neglect of agriculture in the past decade... no one can deny the fact that Indian agriculture has been performing much below its potential in recent years... our priority would be to give a "New Deal to Rural India"."

Contract farming in Gujarat The govt has taken a step towards introducing contract farming. The state decided to act as a "benefactor" for industrial houses and trading companies to undertake procurement of the produce directly from the farm. It does not permit the farmer to directly enter into contract with the trading companies. The state's approval for any agreement has been made obligatory. (THE TIMES OF INDIA 110405)

Farmers' Suicide in Maharashtra Over 644 farmers mainly in Vidarbha, Marathawada and Khandesh regions committed suicide between March '01 and Dec '04, according to a report submitted to the Bombay High Court by Tata Institute of Social Sciences. The HC had appointed TISS a consultant under a PIL filled by All India Bio-dynamic and Organic Farming Association. Repeated crop failures, inability to meet the rising cost of cultivation and indebtedness forces farmers to commit suicide. In the cotton belt, the crop seems to have failed more than once in the last four years. The causes are an increase in pest attacks, especially from 1995 onwards, said the study spread across 12 dist. It says the input costs for agriculture has increased tremendously, chiefly due to increased uses of fertilisers/ pesticides, rising prices of high yielding variety seeds, electricity bills, energy consumption and transportation. The report also highlights the water crisis in affected areas. Another important reason for the crisis is that most farmers are involved in cash crops but don't get any govt aid like credit and support price. Almost 75% of them have taken loans from the informal sector. (DOWN TO EARTH 150405)

Foodgrains Management

UP scam Action has been initiated against 174 officials on multi crore UP food scam. Bungling in the foodgrains meant for the public distribution for poor was thriving in 66 of the 70 districts and food grains are found in the open market and even abroad. (THE TRIBUNE 060405)

Haryana scam Missing foodgrains worth Rs 20 M and the discovery of over 4000 sacks of husk meant to hold that grain has failed to shack the Food and Supplies Dept. In Sept '04, an anonymous complaint received at the dept's head office had stated that 2 000 T of wheat meant for the public distribution system in Panipat had been sold in the open market. The Dept had initiated a preliminary enquiry and found that not only had the wheat gone missing but the sacks meant to hold the food grains had instead, been stuffed with husk. Later the matter was handed over to the police and a case was registered against three employees among the lower staff managing the godown. (THE TRIBUNE 030405)

Adivasi died due to starvation An adivasi person Lula Shavar has died due to starvation in the Amlasole in the Medinapur dist of W Bengal. (*Rashtriya Sahara* 230405)

Sugar

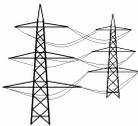
Sugar production India's sugar output which touched an all time high of 20.1 MT in 2002-3 (Oct-Sept) season declined to 14 MT last year and was pegged at 13 MT in 2004-5. This may change. With Maharashtra and UP together generating an additional 3 MT and production in Gujarat, Tamil Nadu, Punjab, Haryana also likely to go up significantly, the country's total sugar output in 2005-6 could be 17-18 MT.

➤ Demand for sugar for the Asian countries is rising. India is biggest consumer and second biggest producer.

➤ **Import** India will import raw sugar from the open market despite the expected crop recovery, a senior economist of ISO claimed. (BUSINESS LINE 140405, 190405 BUSINESS STANDARD 160405, 200405)

Punjab Sugar mill privatisation Only 6 out of the 15 cooperative sugar mills can survive as the govt of Punjab has decided to sell the loss making mills to the private entrepreneurs because of the backdated crushing machines and low production, which is not competitive with the modern private mills, it claims.

➤ Farmers of Punjab have decided to oppose the privatisation of Sugar Mills. They said that the govt policies are the reason for the losses of cooperative sugar mills. The Bharti Kisan Union presented a memorandum to the govt. The farmers said that if the mills are allowed to sell molasses in open market they would not be in loss. But govt forces them to sell the molasses at Rs 8.9 per T till date and this year to Rs 7.4 per T when market rate is Rs 34.5 per T. Under the pressure of liquor barons the govt is creating loss making situation for the mills. (THE TRIBUNE 180405, 220405)



Power Sector

Govt to support flow of captive power The Centre is working on a way to tap captive power capacity. As per the

provision of the Electricity Act, captive power producers can sell power through the power grid by paying a surcharge to the SEB. An estimated 4000-5000 MW of additional power is expected to flow in to the grid over the next 6 months from the captive stations. India has a total installed captive power of about 20000 MW. The Power Ministry is also working towards improving the efficiency of stations with a plant load factor below 60% with the involvement of NTPC. (BUSINESS STANDARD, BUSINESS LINE 130405)

Deadline for the release of NEP The Central Electricity Authority has brought forward the deadline for the release of the National Electricity Plan to June. The CEA, in its draft NEP, has projected a capacity addition of 41110 MW during the 10th Plan and 60769 MW during the 11th Plan. (POWER LINE 0405)

Plan panel wants clarity on Electricity Act Worried over the status of power sector reforms specially in distribution, the Planning Commission wants the Union Power Ministry to announce the extent of review envisaged in the Electricity Act as early as possible to remove apprehensions of potential investors. The Commission also wants the ministry to include provision in the forthcoming tariff policy to implement open access for bulk consumers before the Jan 2009 deadline to encourage private investment in generation projects. The Commission has recommended that the proposed tariff policy require SERCs to allow open access in a phased manner instead of waiting for Jan 09 set by the Electricity Act. (BUSINESS STANDARD 040405)

APDRP in 2005-6 After a cut in allocations for the Accelerated Power Development and Reform Programme from Rs 35 B in 2004-5 to Rs 21 B in 2005-6 due to under-utilisation, the power ministry has recommended 85 schemes from 14 states worth Rs 15 B. The steering committee has suggested the approval of schemes worth Rs 4.57 B for J&K, Rs 2.52 B for Uttar Pradesh, Rs 2.47 B for Assam, Rs 1.74 B for Maharashtra, Rs 350 M for Bihar, Rs 390 M for Rajasthan, Rs 280 M for W Bengal, Rs 90 M for Madhya Pradesh, Rs 150 M for Karnataka and Rs 580 M for Kerala, Rs 430 M for Tripura and Rs 770 M for Nagaland. (BUSINESS STANDARD 260305)

Avoidable losses in Delhi: CAG The report from CAG for the Delhi Govt for 2003-4, stated that three plants of the Indraprastha Power Generation Company erring in several key technical areas of power generation, caused monetary losses worth millions to the exchequer. The report states that the generation losses in the gas turbine plant could have been easily avoided if the requirement of gas had been properly and timely assessed. Similarly excess consumption of coal due to its low calorific value resulted in the additional expenditure of Rs 555.1 M, while the company suffered Rs 185.5 M losses due to greater consumption of secondary oil required to lignite boilers and for flame stabilisation. The report notes that both Rajghat and IP had been unable to meet their generation targets ranging between 107 to 419 MU in the past six years. The report highlighted wasteful expenditure of Rs 4.84 M due to improper shunting and tripling of operations while failure to maintain proper records and co-ordination with other departments and agencies resulted in a loss of Rs 243.7 M. The company incurred an extra expenditure of Rs 510.8 M on procurement of coal at higher rates for the Rajghat Power Station. Low Thermal efficiency at Rajghat and Indraprastha plants resulted in a generation loss of 2773 MU valued at Rs 8.03 B. The Rajghat power station consumed excess coal valued at Rs 555.1 M and company also failed to recover claims worth Rs 243.7 M for missing wagons. (THE HINDU 080405, THE TIMES OF INDIA 060405)

Maharashtra signs up for 12500 MW projects The Maharashtra Govt has signed MoUs with eight private sector firms to set up power plants with 12500 MW capacity over the next five years with investments of over Rs 500 B. These include Essar (1000 - 1500 MW at Ratnagiri), GMR (1000 MW), Jindals (1000 MW), Reliance (4000 MW), Spectrum (500 MW) and the Tatas (1500 MW). Two power projects from the Ispat stable for 3000 MW will be executed by Ispat subsidiaries— CIPCO and Ispat Energy. Power purchase from these projects will be based on competitive bidding as per the guidelines of CERC & MERC. The Govt is providing special incentive and to avail of these benefits, IPPs will have to sell 50% of the commissioned capacity and energy generated at any time within Maharashtra. (BUSINESS STANDARD 050405)

DVC-TPC joint venture The Tata Power Company has entered in to a 74:26 joint venture with the Damodar Valley Corp for the proposed 1000 MW project in Jharkhand. Prior to financial closure, DVC will have the option to enter in to a bankable power purchase agreement with the company to purchase a specified quantum of power. (POWER LINE 0405)

Power Finance

ADB TA for NE Power The ADB has sanctioned \$ 750 000 as technical assistance for preparing a Northeast power development project. Its aim is to aid the overall improvement of the power sector. The Bank claimed that the objective of the technical assistance is to support expansion of the regional power system in the Northeast in an economically, financially, environmentally and socially sustainable manner, with minimum expenditure. ADB says the power sector in NE suffers from high T&D losses, un-metered connections, theft and subsidies to agricultural consumers. States in the NE are beginning to implement power sector reforms required under the Electricity Act '03, and the SEBs and power depts have begun unbundling. (THE TELEGRAPH 030405)

PFC IPO plans The govt will divest 10% of its stake in the PFC. The finance ministry has also given its green signal. The PFC has been allowed by the Planning Commission to raise capital through public offering. The route taken is similar to that taken for NTPC last year. PFC had sought govt's permission to raise up to 10% equity of the total paid-up capital of Rs 10.3 B. Given the PFC's equity base, it would raise equity by Rs 1.03 B at face value through this. PFC expects to garner over Rs 10 B translating into over Rs 100 premium per share of Rs 10. It's likely to mop up over Rs 20 B through the IPO route and proposed disinvestment. 50% of this amount will go to the govt as disinvestment proceeds while the rest of the funds will be used by PFC for expansion. (THE FINANCIAL EXPRESS 090405)

PFC disburses Rs 95.15 B The Power Finance Corp has disbursed Rs 95.15 B to the power sector as against Rs 89.74 B in 2003-4. The loan sanctions for 2004-5 increased to Rs 185.73 B from Rs 164.72 B of last FY, recording an increase of 12%. The PFC has been able to raise Rs 1.32 B at a coupon rate of 6%. Some of the major projects funded in the state sector include, Kameng HEP (4x50 MW) of NEEPCO, Koteswar HEP (4x100 MW) of THDC and Sardar Sarovar HEP. The support to the private projects during this period include, sanction to 10 projects amounting to Rs 41.81 B, which include loans to Jaiprakash Karcham Wangtoo 1000 MW. Rs 10.10 B were disbursed to the private sector. (UNI 130405)

PTC to shop for stakes Power Trading Corp has shortlisted 35 power projects where the company will pick up equity up to 15%. PTC officials sources said the total generation capacity of these projects is 2 309 MW. The company is in talks with them for power purchase. PTC's list includes Kameng HEP. (THE ELEGRAPH 040405)

Power Options

State Renewable Energy Development Scene

Gujarat GEDA, constituted in 1979, was then the first such agency. Geda has signed MoUs with Suzlon Energy, NEG Micon, Enercon India and NEPC India, amounting to an investment of Rs 127 B to set up wind farms with a capacity of 2700 MW. Suzlon, Enercon and NEG Micon have invested Rs 49.5 B. As of July 2004, the installed wind power capacity is 1100 MW. The govt has allotted 766 Ha of land to seven developers. Under the Renewable Power Policy 2001, the state offers incentives such as energy wheeling, energy banking, buy back and third-party sale from solar photovoltaics, geo-thermal, solid wastes and biomass. To encourage privatisation, energy wheeling for self-consumption is charged 4% whereas energy sale at Rs 2.25 per kWh and an increase of 5% per annum for 10 years is allowed to industries. (THE FINANCIAL EXPRESS 120405)

AP Andhra Pradesh does not have a clear policy on non-conventional energy. Against a potential of 2 397 MW and sanction of 1 090 MW, 554 MW has been commissioned. About 38 biomass units have invested over Rs 10 B. Unable to pay loans, most will have to shut down. For wind power, the situation is worse. Though 60 MW units are set to generate power, AP Transco has not given grid connectivity. The state has identified 34 locations capable of generating 745 mw, only 97 MW has been set up. The govt is more bullish on power from municipal waste. While plants in Hyderabad and Vijayawada are generating 12.6 MW, there are plans to set up 60 MW additional capacity.

W Bengal At present, around 100 000 families in remote districts like Bankura, W Midnapore, Darjeeling and the Sunderbans have renewable electricity, mostly solar. WB plans to connect 200 000 more households by 2008. WB grid gets 40 MW mainly from rice husk. The lead producer of rice and husk in India, it plans to supply another 100 MW from the same source by 2008. According to CII, W Bengal has the potential to generate 20 MW solar power per square km and 1 100 MW from biomass, municipal and industrial wastes, SHP and wind power. WBEDA has tied up with the Salt Lake Municipality in Kolkata to produce coal from garbage, using the partial combustion method. It has also installed solar water heating system (each costing Rs 19 000) in over 450 households in Kolkata.

Tamil Nadu TN leads the nation in the renewable energy initiatives. 18% of the installed power capacity of 10 855 MW in Tamil Nadu is based on renewable energy. The national average is 4.5%. By Dec '04, the RE installations were: wind 1 664 MW, co-generation 274.8 MW, biomass 16 MW and solar 0.165 MW. TN accounts for over 55% of the total installed wind power capacity of 2909 MW in India. Of the total wind power capacity in the state only 19 MW comes from the public sector. The state-level initiatives include 5% wheeling and banking charges, power purchase by TNEB at Rs 2.7 a unit, good grid connectivity, consistent state-level policy and a well-established framework for people interested in setting up wind generators. Major industrial sectors have taken to wind power in a big way. 70% of wind energy generators wheel energy for captive consumption. Co-generation, (producing steam-based power in sugar mills) has been successful with total installed capacity is 275 MW. Of this 165 MW is exportable surplus. TN also has a biomass-based power programme. A technical sub-committee has selected and recommended 37 applications for biomass power projects worth 259 MW to TNEB, which has already issued consent letters for 15 projects for 145.5 MW. A 20 MW project has already started functioning.

Rajasthan 200 MW capacity addition is expected this fiscal to be installed with at a cost of Rs 10 B. Last fiscal, the project generated over 393 MU. Initiated as a pilot project by Rajasthan RE Corp in 2002-3, it offered windmills to private investors through the developers on sub-lease. Suzlon and Enercon in collaboration with MNCs and also Westos and NEPC have made a headway into privatisation of these windmills. A 1.25 MW project costs Rs 45 M, and promises good returns apart from the tax exemptions and tax holidays. The developer is provided 10 Ha land per MW capacity at subsidised rates. At a remunerative tariff of Rs 2.91 per unit, the producer can sell power to RVVN or any third party.

Maharashtra Against the potential 6 481 MW power from renewable sources, it has achieved capacity addition of 663.06 MW so far. The state has wind power generation capacity of 411.35 MW (against a potential 3 650 MW), small hydro: 207.08 MW (600 MW), bagasse cogeneration: 32.5 MW (1 000 MW), biomass: 6 MW (781 MW), municipal solid waste: 0 MW (100 MW) and industrial waste: 6.13 MW (350 MW). The state has recently taken a decision to promote RE through policy initiatives. The MERC has announced a tariff of Rs 3.5 per unit for wind based power. The state has set up a Green Energy Fund and proposes to collect nearly Rs 910 M per year to be used for development of infrastructure for renewable energy. A wind energy policy envisaging greater private participation has been announced. The state has set for itself a capacity addition target of 1 062 MW from RE sources by 2007: 500 MW each is from wind & biomass/ bagasse co-generation, 25 MW from SHPs, 35 MW from waste and 1 MW each from solar thermal and solar photovoltaics. Meda has submitted a report on the changes in by-laws needed for making solar water heating systems mandatory within municipal limits. Once implemented, a peak load shaving of 11.7 mw would be achieved in the first year. At the end of 12 years, an annual 500 mw peak load shaving is expected.

Parliamentary Panel for MNES The Parliamentary Standing Committee on Energy in its 6th report on demands for grants (2005-6) of MNES, has noted that SHPs up to 3 MW were transferred to MNES during 1989. With effect from Nov 29, 1999, HEPs of 3 - 25 MW were brought under the Ministry. A capacity of 1693.94 MW has been achieved out of total SHP potential of 15000 MW. The MNES has set a target of 600 MW to be achieved by 2007 and 2000 MW by 2012. (THE HINDU 240405)

mHEPs in Karnataka Prof SS Murthy of Indian Institute of Technology (Delhi) said that there is good potential for micro and pico HEPs in Western Ghats, Himalayas, J-K and NE States. He said power would be available for villagers with their own resources at Rs 3 a unit with an investment of Rs 0.141 M per KW. Future of the country will be in decentralised power generation, he said. In the case of centralised power generation, one unit of electricity will cost around Rs 20 for a villager. 5 mHEPs have been established in Western Ghat of Karnataka under a Science & Technology project.

Project/ village	District	Capacity	Serving
Banjaru	D Kannada	8 KW	33 houses
Menasinahadya	Chikmagalur	5 KW	20 houses
Asolli	U Kannada	3 KW	7 houses
Sirimane	Chikmagalur	4 KW	12 houses
Jambardi	Hassan	3 KW	1 house

(BUSINESS LINE 280405)

Himachal mHEPs Loss due to delay The report of CAG for Himachal Pradesh has pointed out several irregularities in mHEPs being promoted by HIMURJA. Delay in the commissioning in Chamba, Kangra, Kullu and Lahul Spiti dists resulted in a loss of Rs 22.8 M. The HP Energy Development Agency, promoting mHEPs up to 5 MW through private investors had given contracts for the execution of mHEPs in these 4 districts to three firms at a revised cost of Rs 240 M. Delay in the commissioning of these projects resulted in no generation of 9.11 MU, resulting in a revenue loss of Rs 22.8 M. The CAG report also pointed out the loss of Rs 12.1 M due to under utilisation of the installed capacity of five projects, which had been running at 75.6 % of their installed capacity. Work on only two projects, Chandni and Mannal in Sirmour dist has been started out of the 178 mHEPs for which HIMURJA had signed MoUs with private investors. Work on these projects allotted during 1996 - 2002 had not started till last year.

➤ **Hydram** To popularise the hydrams for harnessing the irrigation potential of fast flowing perennial streams, 600 hydrams were to be bought at a cost of Rs 57.1 M. Of these, 159 hydrams, valued at Rs 15.1 M had not been installed resulting in blocking the funds of Rs 25.2 M, including an unutilised amount of Rs 10.1 M. The CAG report also makes a reference to undue favours extended to firms as advance payments aggregating to Rs 4.122 M. (THE TRIBUNE 120405)

Anni mHEP in HP The Himurja has showed its interest in favour of ABB Power Pvt Ltd to allot 1.5 MW Anni-II HEP, contemplated as a run of the river scheme on Anni Khad, a tributary of Sutlej River in Kullu dist. The powerhouse of the project is to be located on right bank of Anni Khad utilising a gross head of 86.1 m. The estimated cost of the project is Rs 208.1 M at 2003 prices. (THE TRIBUNE 090405)

Apprehension of Himachalis The belated decision of the HP Govt to reserve the mHEPs up to 2 MW capacity may not yield desired result as most of the viable projects have already been allotted. Under the new policy, projects up to 1 MW are to be assigned to bonafide Himachali individuals and up to 2 MW to cooperative societies of bonafide Hiamachalis. As most of the techno-economically viable project have been allotted over the past decades to outsiders. In all 264 projects with an aggregate generation capacity of 478 MW have been assigned to private companies so far. The cost of construction in case of these projects ranges from Rs 50 M to Rs 60 M per MW. However, the projects, which are yet to be assigned, will cost over 70 M per MW. Only 92 identified projects with aggregate generation capacity of about 100 MW have been left for Himachalis. Initially, 469 sites were identified but 113 sites have been dropped for environmental reasons and non-availability of grid for evacuation of power generated. (THE TRIBUNE 200405)

Developing Nations potential The Solar and Wind Energy Resource Assessment, a group of 25 global institutions organized by the UN's Environment program, found renewable wind and solar power potential in 13 developing nations in Africa, Asia, and South and Central America. Industrialised nations such as Germany and Japan are currently the leading developers of solar and wind power. But the potential wind and solar power in developing nations is much bigger than the roughly 50 000 MW of total installed power from those sources in the entire world. China has the potential for over 100 000 MW of renewable power. Sri Lanka has a wind power potential of 26 000 MW, which is 10 times the country's installed electricity capacity. And windy Lake Nicaragua gives that tiny Central American country 20 000 MW of potential renewable power. (Reuters 150405)

ENRON Saga

GE-Bechtel demand The GE-Bechtel combine, in its final offer, has demanded \$ 350 M as equity and non-debt Dabhol claims from Indian lenders. Setting a July 1 deadline for payment of dues, the two companies have threatened to go ahead with arbitration process in London with the potential liability to the Indian Govt exceeding \$ 7 B. GE-Bechtel has said they would drop all pending legal proceedings and all future claims if the offer is accepted. The GE-Bechtel combine has rejected the last offer of \$ 213 M made by Indian lenders against their claims of \$ 460 M.

➤ **Guarantee to FIs** The Cabinet Committee on Economic Affairs approved a proposal for furnishing a guarantee to domestic financial institutions for settling the dispute among various stakeholders of Dabhol Power project. The Govt is targeting 2006-end for switching on the project through a special purpose vehicle to be set up by NTPC, GAIL and domestic lenders led by IDBI, which will chip in Rs 5 B each as initial capital. (BUSINESS LINE, THE TIMES OF INDIA 090405, THE INDIAN EXPRESS 150405)



Inland Waterways

Two more waterways in the offing The govt. is planning to declare two more interstate river/canal systems as national waterways: Kakinada-Pondicherry canals integrated with the Godavari and Krishna rivers, linking Andhra Pradesh, Tamil Nadu and Pondicherry; and the East Coast Canal integrated with the Brahmani river and Mahanadi delta, linking Orissa and W Bengal. Currently there are three national waterways: The Ganga from Allahabad to Haldia; the Brahmaputra from Dhubri to Sadiya, linking Assam & W Bengal through Indo-Bangladesh protocol routes and Sunderbans; the West Coast Canal in Kerala. (Financial Express 280405)

South Asia

Pakistan Mangla dam row aggravates The differences between the provinces and WAPDA over the Mangla Dam level during raising work have further aggravated. The dam height is to be raised by 30 ft. At present the IRSA and the provinces want to store water in the Mangla Dam with the maximum limit where as WAPDA wants to carry out the construction by lowering down its level up to a certain limit. (THE TRIBUNE 070405)

Death due to polluted drinking water The death toll due to contaminated water in villages near Hammal Lake, Warah, Shahdadt district reached 15, no of victims of gastro-enteritis 500. (Jang 140405)

French investment in power sector French Companies have shown keen interest to invest in the proposed Bhasha Dam and other water sector projects in Pakistan. They also showed the interest in power generation projects. (Nation 140405)

People's Assembly on NDP Villagers of Badin district in SE Pakistan are demanding compensation from the WB for the National Drainage Project that has created environmental devastation and led to the loss of lives. NDP is a massive plan to transport excess saline water generated upstream of the Indus basin through a network of surface drains for disposal into the Arabian Sea. The WB's IDA has provided \$285 million for the programme, with co-financing coming from the ADB and the Japanese Bank for International Cooperation. The communities affected by the drainage projects organised a people's assembly in March. They have filed a claim with the WB's inspection panel for investigation of multiple safeguard policy violations. The panel members were supposed to attend the assembly to listen to the project-related problems of the people, but postponed their visit after receiving a letter from the regional govt in Sindh. Over 500 men, women and children attended the assembly including a local Member of Parliament, civil society groups and journalists. The assembly passed some judgments:

- The projects have violated economic, social and cultural rights. The human and material costs of the projects are huge (32 people were killed during the rains and flooding in 2003; 50 000 acres of crops have been damaged; over 100 000 people were displaced for three months; 12 000 fishermen have lost their livelihoods; over 4 000 ha has been encroached by sea water and diseases are common due to unsafe drinking water and improper food, and children have been pulled out of schools as a result.)
- The drains have made local people more vulnerable during the monsoon leading to malnutrition & disease.
- The WB and ADB provided over \$1 b to the projects. The Pakistan people will have to pay back the loan with interest, they must also bear the economic, social and environmental costs of a bad project.

The assembly demanded that steps be taken to solve the failings of the drains: diversion & closure of offending effluent drains; de-linking the tidal link canal which is the main cause of salt water intrusion and wetland destruction; restoration of damaged wetland ecology; the cancellation of any further plans for extension of the drains. Short-term measures are urgently required including: compensation of families of people drowned in drains and of those who have lost crops, livestock, houses and land; creation of emergency employment programmes to protect the right to life and food; the provision of equipment & inputs for those whose livelihoods have been threatened. Villagers have vowed not to allow the WB-ADB to loan in the name of development in this area.

If the above demands are not met in the next 3 months or appropriate measures are not taken which indicate the seriousness of the WB and the govt., people plan to respond appropriately. (<http://actionaidpakistan.org>)

Nepal Melamchi Resumption of construction work of the largest ongoing development project remains uncertain while the costs continue to swell up. The project, with initial cost estimate of \$ 464 m, is designed to pump 170 MLD through a 26.5-km diversion tunnel from Melamchi river to Sundarijal, and has a prospect of adding another 170 MLD from Larke and Yangri rivers. Repeated standstills have already pushed the project's completion time from 2006 to 2010.

➤ **Project assistance might be suspended** The Melamchi Water Supply Project now faces possible suspension of assistance by one of its main donors. The Canadian International Development Agency has

The Kathmandu Valley currently needs 170 MLD to quench the thirst and sanitation needs of its residents. On an average, Nepal Water Supply Corporation has been supplying only 80 MLD. Over 1.5 million residents of the Valley still do not have access to safe drinking water.

suspended nearly \$5 m assistance to the project. CIDA's contribution toward the total Rs 38 B cost of the project is \$25 m. CIDA had not signed for the issuance of the said amount, \$5 m. Besides the recent political concerns, the donors are also reportedly concerned about repeated suspension of work due to security concerns and the Royal Commission for Corruption Control's ongoing investigation into the project. (THE KATHMANDU POST 050405, Kantipur Online 240405)

South Korea to finance Chameliya HEP The South Korean Govt has showed interest for financing of the 30 MW Chameliya HEP. The total estimated cost is \$ 74.78 M at Dec '01 prices and Korea is likely to give \$ 35 M. The project is located in the Chameliya Valley in the remote Darchula district. The feasibility study has been completed along with some other works. The design was prepared by the Korean International Co-operation Agency in Dec '01. (The Rising Nepal 050405)

Bagmati - Bishnumati Rivers in crisis The govt has been allowing illegal occupation and settlements along the banks of the Bagmati River. The river banks that were so pleasant to walk along in the early 1970s became the target of illegal occupation. The govt ignored the developments. Also, most of the sewerage pipes empty into the river, polluting the river considered holy by most residents. (KATHMANDU POST 120405)

Power Price for farmers lowered Nepal Electricity Authority has decided to reduce the price of electricity for irrigation from Rs 3.6 to Rs 2.4 per unit. The price has been reduced to increase the competitiveness of farmers and utilize off-peak electricity, which is being wasted. According to NEA, it has 1 721 customers for irrigation who contribute Rs 170 m in revenue to NEA. (Kantipur Online 030405)

Bhutan Basochhu HEP inaugurated The "hall mark of cooperation" between Austria and Bhutan was unveiled as the prime minister, Lyonpo Yeshey Zimba, and the Austrian foreign minister, Dr Ursula Plassnik, inaugurated the Basochhu Lower Stage HEP in Wangduephodrang on March 26 by switching on the generators of the 40 MW project phase, increasing the total power output of Bhutan to 457 MW. The project has been constructed at a cost of about Nu 2868 M. The Basochhu stream at 1 800 m above sea level is tapped and brought to the Rurichhu basin to produce 24 MW, called the Upper Stage. The 40 MW Lower Stage uses the tailrace water of the Upper Stage combined with the Rurichhu that has been diverted into a reservoir of 74,000 cubic metres capacity. The water is piped through a 2.5 km long penstock line to the second powerhouse called the Lower Stage. Commissioning of Basochhu would also enable the Chukha project to release its power for export to India. However, the lower stage is currently generating only 9 MW because of the low water flow in the two streams. (Kuensel Online 300305)

Bangladesh WB funds for water supply project The World Bank has decided to support the govt in implementing a project for Water Supply and Sewerage in Dhaka and Chittagong to meet the Millennium Development Goal in coordination with other financing agencies. Dhaka and Chittagong Water Supply and Sewerage Authorities will implement the projects. (The dailystar 170405)

Sri Lanka Small HEPs are priority Sri Lanka uses 7 000 MU of electricity. Last year, only 3 000 MU were generated from HEPs, while the balance of the requirement was met by thermal power plants (mainly diesel), owned by either CEB or private producers. CEB needs another 300 MW of low cost power to meet even the present demand. The only immediate solution is to establish of small hydro power projects (of capacities less than 10 MW) as proposed in this year's budget. Delaying the implementation of these projects is tantamount to inviting disaster. Though the cost of a unit of electricity generated by the projects is high, it is well below the cost of purchasing thermal power from private power producers. The govt has promised to encourage the development of HEPs of 10-50 MW capacities, on the basis of a public-private partnership. (www.infolanka.com 110405)

Around the World



Merowe Dam - a Test Case for Sudan

The Merowe/ Hamadab Dam in Sudan is the largest dam under construction in Africa. A dam on the fourth cataract of the Nile will create a 174 km-long reservoir, and will displace about 50 000 people. The dam being financed by China's Export Import Bank and several Arab financial institutions is being built by Chinese and Sudanese companies, with Germany's Lahmeyer International and French Alstom playing a major role. About 10 000 people have already been displaced. International Rivers Network and the Corner House have just published a report that documents the massive social and environmental problems. Some of the findings are:

- The affected people are being displaced from the fertile Nile Valley to the Nubian Desert. The soils at the resettlement site are very poor. The resettlers were promised free services such as water, electricity and fertiliser for a two-year transition period, but are being cheated out of most of these services.
- The environmental impacts have never been properly assessed. The dam has never been certified by the competent Sudanese environmental authorities.
- On 11-12 April, international donors pledged \$ 4.5 B over three years to support the peace and reconstruction process in Sudan. Donors and private investors need to ensure that the benefits of the new projects are widely shared, and the rights of affected communities and the environment are protected.
- The report presents a series of recommendations on problems of the Dam and Sudan's electricity sector. The report has been sent to the project authorities, other Sudanese govt authorities, the companies involved in the project, and the main donors. They recommend that as long as the social and environmental problems of the project are not addressed, construction should be suspended. (www.irn.org 280405)

Dams Control Most of the World's Large Rivers More than half of the world's large rivers are fragmented and regulated by dams, including all the largest and the most biologically diverse rivers, according to new research from the University of Umea in Sweden and the Nature Conservancy in the United States. The study shows that flow in 172 of the 292 largest rivers is regulated by dams, and that this number would be larger if irrigation were included. There are dams on the world's 21 largest rivers and on 8 that are biologically and geographically most diverse. Over 45000 dams over 15 m high have been constructed and together they can store more than 6500 BCM water - equal to 15% of the annual freshwater runoff in the world. The Three Gorges dam on the Yangtze River in China is the world's largest. When completed in 2009, the dam will funnel water through 20 generator stations. The dam itself will be the largest in the world at 181 m high, and the lake formed behind it has displaced over a million people. The article *Fragmentation and Flow Regulation of the World's Large River Systems*, published in *Science* says Europe has the highest proportion of dam impacted rivers. The study's principal researcher Christer Nilsson is a landscape ecology professor in the Dept of Ecology and Environmental Science. Nilsson's interest in cataloguing the impact of dams began in the late 1980s, when an intense debate raged in Sweden over plans to dam the country's remaining free-flowing rivers for hydropower. He says that proponents of the project told him not to worry about the environmental impact because most rivers elsewhere in the world remained untouched. "I didn't believe them, so I started looking around, but there were no summarized data," he recalls. "This is the first study that shows the full picture, he said." His team has now identified 292 large river systems, of which 172 are counted as affected by dams. In Europe, more than 60% of these rivers were classified as 'strongly affected', meaning that the constructions alter the flow by at least 2%. Australia - including New Zealand and neighbouring islands in the South Pacific - has the smallest proportion of strongly affected large rivers, at only 17%. In another study in *Science*, researchers led by James Syvitski of the University of Colorado, Boulder, show that dams prevent significant amounts of sediment from reaching coastlines. Without this replenishment, the regions around river mouths can experience severe soil erosion. Nilsson says that his survey highlights the global nature of the damming problem and notes that most new dams are being planned for Asia and South America. (www.nature.com 140405, ENS 160405)

Vietnam Feasibility study for 2 X 260 MW Huoi Quang HEP in NW province to generate 1.84 BU per year has been completed. Work is to begin in late 2006 at a cost of \$ 560 M, to be completed in Sept '09. 980 households with 6500 people will be displaced. (POWER LINE 0405)

Estreito HEP license in Brazil Brazil's environmental protection agency Ibama awarded a preliminary environmental license for the \$ 941 M, 1087 MW Estreito HEP in the northern state of Tocantins. The project has been held up after Ibama asked its sponsor Ceste to redo public hearings in the region that will be affected by the plant and its 550 sq km reservoir. Ceste was awarded the project concession at the beginning of 2002 and public hearings were held that year, but construction has not yet started because Ibama identified problems in the environmental impact studies carried out by Brazilian consulting firm CNEC. Public hearings were held again in Jan-Feb '05 to get the local population's view of changes to the EIS. Ibama completed this week its final analysis of the EIS needed to award a preliminary license, which details the necessary environmental protection activities. After meeting Ibama's requirements, Ceste will need to obtain an installation license before starting construction. (www.BNAmericas.com 280405)

Liquid revolution? 53 year old Yu Xiaogang is an environment activist. To him the way that China handles its watershed areas is a matter of life and death. "The last drops of water in China will be our tears," he says. He witnessed the after effect of dam at Lashi Lake and how it destroyed the ecosystem. Fishermen suffered as fish became scarce; peasants were paid a pittance to have their land requisitioned for golf courses. Yu invited Lashi county govt. private entrepreneurs and villagers to form a watershed management committee and environmental protection group. He established Green Watershed in 2002. His team consists of seven people. A national competition organized by several central govt. agencies selected his project on the preservation of the Lashi watershed near the popular tourist spot of Lijiang as one of the top 10 cases of sustainable development. That project was selected at the 2003 Kyoto World Water Forum as one of the world's best "water actions". "It is the first watershed project in China that involves the participation of NGOs, local govts and residents," says Yu. Lashi Lake is home to thousands of Naxi and Yi ethnic people and 80,000 migratory birds.

- He has witnessed how dams along the Lancang River, upstream of the Mekong, caused damage. The Manwan HEP on the Lancang was hailed as one of the "five golden flowers" of China, for its cost-efficient investment and high profit. In 2002, he submitted a paper to Beijing. That prompted then-premier Zhu Rongji to order the Yunnan govt to investigate. Last year the provincial govt allocated HK\$ 65.98 m to compensate Manwan residents.
- He was also involved in the campaign that led to the temporary suspension of the Nu river dam project. (See DRP Oct-Dec '04 for details on this issue.) (rose.tang@singtaonewscorp.com, www.thestandard.com)

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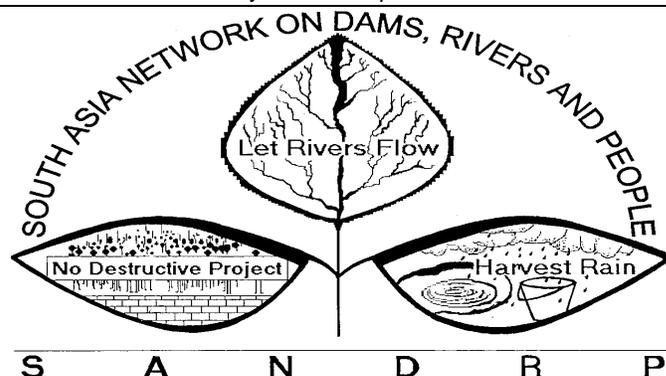
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About the Dossier

More large dams are being proposed in North East India than in any other part of India. And yet very little organised information is available about what is happening in this region. This Dossier is an attempt by SANDRP and Kalpavriksh to provide information around the Large Dams being planned, constructed and operated. The dossier was initiated by SANDRP in July 2001 at a "Regional Consultation on Dams and Development" in Mawlein, Meghalaya, where SANDRP, along with a number of other groups, was a co organiser.

Section 1: Power Sector in North East India

Section 2: Case studies and notes from North East India dams

Section 3: Thematic Papers

Section 4: Official Documents from Some Projects

Section 5: Reports from Media

Section 6: Citizens' Responses

Section 7: Spaces for People's Participation in Decision making for Hydroelectric Projects