

Dams, Rivers & People

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Lead Piece

Why Baspa HEP of Jaiprakash Group Could become

The Enron of Himachal Pradesh



A look at the tariff petition filed by the Jaiprakash Hydro Power Limited to the Himachal Pradesh Electricity Regulatory Commission (see public notice in Tribune of 070106 and related documents from www.jhpl.com) for the 300 MW Baspa II HEP reveals that the company has many unjustified claims for the cost of the project.

Signs of Himachal's Enron If we read the tariff application carefully, we find that the company has charged all kinds of costs on the projects, including higher than approved capital costs, costs due to damages due to floods in July 2005, costs due to delays due to floods in Sutlej in July-August 2000, costs even when company has not produced designed power (e.g. in 2004-5), costs for operation and maintenance of the project, costs due to staff, 16% guaranteed return on equity, additional incentives for plant availability over 90%, additional incentives for production of what is called secondary energy, among others. The details provided below shows that the company will have absolutely no loss whether they produce power or not, whether interest rates go up or down, where there is flood or drought in the area and so on and all the risks and costs will be borne by the people in local area in particular and the people of Himachal Pradesh in general. Whatever may be the situation, the company will continue to earn profit of about 145 crores each year. One can see all the signs of an Enron of Himachal Pradesh in the making. It should be remembered that a much larger, 1000 MW Karcham Wangtoo project is also to be developed by the same company in the same area in the same state.

Power Purchase Agreement The HP govt has entered into a PPA with the company to purchase all the power generated at the project, besides the 12% free power that is due to HP. The PPA was signed on June 4, 1997 for the period of 40 years, extendable for a further 20 years. A supplementary agreement was signed on Feb 28, 2003. The terms in the PPA reminds one of the similar PPA signed for the infamous Enron project of Maharashtra that ultimately made the electricity from the project so expensive that the Maharashtra govt had to stop buying power from the project and the Dabhol project had to be shut down. It remains shut down in

spite of investment of thousands of crores of rupees, mostly the public resources. The losses were all to be borne by the public, but the profits all went to the companies. Same situation seems to have started unfolding in case of Baspa HEP.

Costs claimed According to the Tariff Application, the costs claimed by the company include the following.

Unjustified escalations in capital cost of the project

The original capital cost of the project as per the approval of the Central Electricity Authority was Rs 949.24 crores. The cost of the project now claimed is Rs 1778.17 crores (an increase of 87.33%). Many of the escalation of costs claimed are not justified and many others should not be allowed to be passed on to the consumers as the costs have increased due to reasons of mismanagement by the company.

The capital cost claimed is important because the capacity charges included in the tariff application includes interest on outstanding loans, depreciation (and advance on depreciation). Also, capital cost is the basis for a number of other components of tariff, including Operation and Maintenance expenses (1.25% of capital cost, with 6% per year escalation for ten years and thereafter related to WPI and CPI).

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Water efficient Rice cultivation in China explains HOW & WHY SRI WORKS

An award winning paper in 2000 on water efficient rice cultivation by Prof Mao Zhi (China) helps us understand why System of Rice Intensification helps reduce water requirements and yet increases yields. (Strangely though, Zhi did not mention SRI.) Let us try and understand this.

Rice contributed 39% of total foodgrains production in China and occupied 31 M ha in 1999 when total rice production was 200.5 MT. In 1997, about 5.7 M ha in China was under water efficient irrigation (WEI) regimes, 3 of them have been described in the paper.

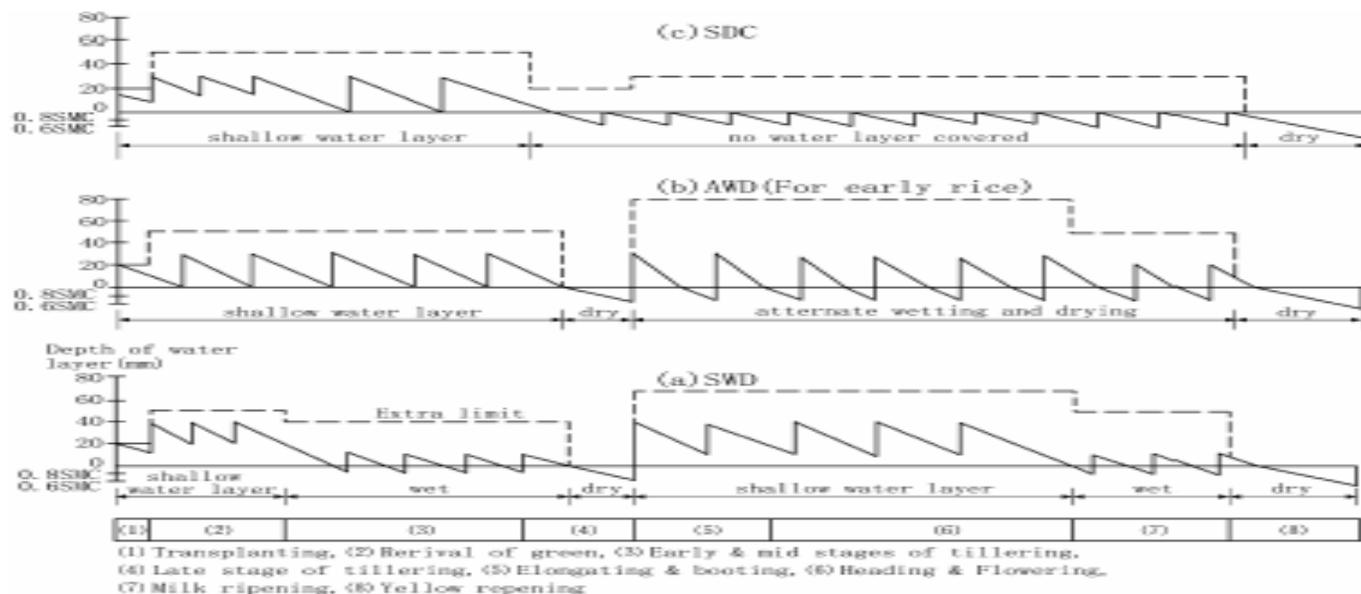


Fig. Graphical description of different water efficient irrigation regimes

The main feature of SWD (shallow water depths) is application of shallow water depth, wetting and drying in the entire growing season of rice. This is mainly spread in the southern provinces of China since 1980s. The feature of AWD (Alternate wetting and drying, found in south, north and NE China) is that paddy field is intermittently submerged and no water depth during the beginning of tillering to the end of milk ripening stage. In long term AWD, irrigation is applied once in 6-8 days and in short term AWD irrigation is applied once in 45 days. In contrast to SWD and AWD, in SDC (Semi-dry cultivation), the water depth is maintained 0 only in the revival of green or revival of green to the middle stage of tillering. There is no water depth on paddy field at other stages. The SDC has been adopted in some districts of East and South China.

The above figure taken from the paper graphically explains the basic differences between three kinds of WEI rice methods. SMC in the figure stands of Saturated Moisture content. One can see that while use of water in SDC is nearest to the same in SRI, other features of SRI (early transplantation of seedlings and reduce plant density) are not seen these Chinese methods. However, the way paper explains how these methods work helps us understand why SRI works.

Causes for reduced irrigation water requirements

- In WEI techniques, the percolation and seepage are reduced, the evapo-transpiration losses are reduced and utilization of rainfall is increased.
- The percolation and seepage losses are lower in WEI techniques as the duration of no water depth and unsaturated condition in paddy field is longer in WEI compared to traditional method and also because the depth of water is shallower in WEI.
- Similarly, the evapo-transpiration losses are lower when there is no standing water in the field. The capacity of the paddy fields to store rainfall is increased greatly under WEI methods, which leads to further saving in irrigation water use.

	Traditional method	SWD	AWD	SDC
% Irrigation water saving	Nil	3-18	7-25	30-50
Relative Rice yield	100	101.6-105.3	102.9-106.4	108.5
Relative Yield per water use	100	114-120.4	136-147.2	169.2
% Reduction in seepage	Nil	20-35	20-35	30-65
% Reduction in ET losses	Nil	3-10	5-15	5-15

Causes for increased yield

- Due to the soil remaining in non submerged conditions for less time, the roots are able to get more

supplies of oxygen in better aerated conditions compared to traditional methods where the longer duration of submerged conditions leads to anaerobic conditions in the root zone.

➤ This is also made possible as due to reduced percolation, the groundwater table does not come upto root zone in WEI fields compared to traditional fields, making more aerated conditions possible in WEI fields.

➤ The rice roots can grow well under oxidized paddy fields even under moderate water stress. The roots go deeper and branches well in the WEI conditions. With more space available to assimilate nutrient and moisture, the roots are able to function better. Following table gives the comparison of roots under AWD and traditional method.

Method	No of roots	Average diameter of roots
Traditional	51	0.57
AWD	58	0.78

Cause for reduced fertilizer requirements Because 20-65% seepage and percolation losses are reduced in WEI compared to traditional method, the fertilizer loss through seepage of water is also reduced to that extent and hence less fertilizer is required in WEI methods.

➤ Due to the favorable aeration, the activity of microorganisms is improved in WEI techniques and better activity of microorganisms leads to increased soil fertility through transformation of organic matter.

➤ According to experiments in China, the quantity of ammonifiers is 26 times greater, number of organo-Phosphorus bacteria is 6 times greater and the cellulose decomposing bacteria is 10 times greater under WEI than under the traditional method. The other important microorganisms in rice fields under WEI are also more abundant in WEI fields than under traditional fields.

Cause for reduced incidents of diseases, pests

Because of the conditions described above, the difference in air temperature at the row space of rice between day and night increases and the relative air humidity also reduces at the row space. These conditions are favorable for reducing diseases, insect pests. Thus less pesticide is required for WEI fields than traditional fields.

Relevance for SRI We can see from above analysis that the explanations as to how WEI yields better results than traditional methods are equally applicable for SRI. In fact if we add the SRI features like reduced plant density, we can see that each of these explanations help us understand SRI performs so well. All this only goes to show how important is to advocate SRI in rice areas all over India.

South Asia Network on Dams, Rivers & People

(The paper *Water efficient irrigation and environmentally sustainable irrigated rice production in China* by Prof Mao Zhi of Wuhan University (full paper can be seen at www.icid.org/wat-mao.pdf), China got the WatSav Technology award by International Commission on Irrigation and Drainage at ICID annual meeting in 2000.)

SRI UPDATE TN Govt Agriculture policy wants 25% paddy area

“If Karnataka and Tamil Nadu mutually agree to implement this method in the Cauvery basin, it will put a permanent end to the water sharing dispute”

area under SRI
According to Govt of TN note on agricultural policy for

2004-5,

<http://www.tn.gov.in/policynotes/archives/policy2004-05/agri2004-05-6.htm> “With the help of Scientific training it is proposed to bring 25% of the paddy area under System of Rice Intensification (SRI) technique during the next fasli year so that with the available water the yield can be sustained.” According to the same note:

<http://www.tn.gov.in/policynotes/archives/policy2004-05/agri2004-05-2.htm> “A high yield rate of 5 to 5.5 MT per Ha has been achieved in areas where there is supplementation by bore well water. Due to drought stress, the yield has been lowered from this level elsewhere. However, in Tenkasi because of SRI techniques, 10.5 MT/Ha. of paddy yield has been recorded in Rabi 2004.” One of the TN Strategy for 2004-5 was, “Adoption of SRI technology in a massive way to take up paddy cultivation with lesser water.” It may be noted that during rabi 2004, Punjab state recorded the highest average yield of 3.506 t/ha and TN came second with 3.415 t/ha, All India average being 1.913 t/ha.

The famous woman farmer of Thiruvarur (TN)

Everyone in Edamelaiyur village in the Thiruvarur district of Tamil Nadu knows where Selvamani Valarmathi lives. This is unusual as most village women in India are known as someone's wife, daughter or mother. But Valarmathi's identity as a special woman farmer is established in the area. Valarmathi, 45, is one of those rare women farmers whose work is recognised by leading agricultural research institutions. The Tamil Nadu Rice Research Institute, near Kumbakonam (Thanjavur district), is full of praise for Valarmathi for having managed to obtain a very good yield of rice by trying out a new method of cultivation - the SRI. She first tried the SRI method in Sept '02 on an acre of land. That year, there were around 25 tillers (green shoots) per plant on an average. Conventionally, a plant does not get more than six tillers. The rice yield was around 7.5 tonnes per hectare, though the area does not report more than 3.5 tonnes per hectare. For various reasons, 2003 was not as successful for her, but now more farmers are following Valarmathi's example. (www.wfsnews.org Dec '05)

Update from Andhra Pradesh According to Govt of AP's season and crop conditioning report of 211205 http://agri.ap.nic.in/weekly_report.doc “Dept. of Agriculture is adopting novel method of paddy

cultivation ie, the "SRI" method of paddy cultivation. The method will reduce water consumption and increase paddy yield. It is proposed to take up awareness among farmers through "Polambadi programme", Farmers' training and wide publicity. Paddy cultivation under "Srivari" method would be treated on par with irrigated dry crops." Andhra Pradesh has 3.8 M Ha under rice, consuming about 30 BCM of water annually. Adopting SRI can save 10 BCM of water, even by conservative estimates (Down to Earth 150905, p 51).

AP's proven experience When SRI was identified as a potential system, the World Wide Fund for Nature in partnership with Acharya NG Ranga Agricultural University, conducted SRI evaluation trials in about 212 farmers' fields in 11 districts in rabi 2004. The districts included Adilabad, Anantapur, Chittoor, E Godavari, Karimnagar, Mahboobnagar, Medak, Nalgonda, Rangareddy, Warangal and W Godavari.

Participating farmers had a wide range of irrigation sources including canal irrigation, borewells or open wells and the trials represented several soil types. The survey showed that SRI performed well in all districts. Average yields ranged from 4.9 tons/ha in Warangal district to 9.5 tons/ha in W Godavari. The variation in average yields was due to cultivation on poor sandy, saline or alkaline soils vis-à-vis highly fertile clay soils. Some individual farmers achieved upto 10-12 tons/ha. The seed rate consumed in this practice substantially reduced from 50 kg/ha to a mere 5 kg/ha. Other advantages that emerged from the study included 20-50 % savings in irrigation water and reduced use of chemical fertilizers & pesticides. (<http://wassan.org/sri>)

PONDICHERRY WOMEN SHOW THE WAY 20 women farmers of village Endiyur have achieved what their male counterparts scoffed at. Using SRI methods, they achieved 47 bags of paddy per acre in Rabi 2004-5 when the traditional farms yielded 29 bags. Now men of the village are learning the technique from the women. Palmyra, an NGO of the area has been spreading the good word about SRI and now farmers of neighboring villages are also coming to learn about SRI. The women have found SRI paddy less labor intensive and more cost effective. Palmyra has been working on tank rehabilitation in the Vaanur and Marakanam blocks in water conservation and tank rehabilitation work. Palmyra had to work hard to convince both men and women of the village to take up SRI, but it has worked. (The Hindu 130505)

Mysore (Karnataka) farmers & SRI In Mysore (and Mandya districts), using SRI methods, the framers are harvesting 25 quintals as against conventional 15-18 quintals of paddy acre. The SRI method uses only 30 % of water compared to conventional method. Thus, the same amount of irrigation water is able to cater to 80% more areas even after taking care of greater seepage losses over larger irrigated area with the same amount of water at the head reach. Karnataka State agriculture

minister promised that the method will be taken up across the state taking up extensive training. Farmers leader Kurbur Shanthkumar admitted, "If Karnataka and Tamil Nadu mutually agree to implement this method in the Cauvery basin, it will put a permanent end to the water sharing dispute". The Karnataka agriculture minister K Srinivas Gowda said that if this method is implemented across Cauvery basin than supplying Cauvery water to the eternally dry Kolar district will become possible. The new method needs only 2 kg seed per acre against 20 kg in conventional method. In conventional method, 70% of the roots get degenerated by the time the paddy plant reaches flowering stage, whereas in the SRI method, very little degeneration happens. (The Times of India 240904)

SRI in Kerala The Krishi Vigyan Kendra at Mitraniketan initiated the evaluation and promotion of SRI in Kerala in fall 2004, with technical and financial support from CIIFAD and with guidance from Dr TM Thiyagarajan of Tamil Nadu Agricultural University. To begin, the KVK demonstrated SRI practices with 12 farmers in 15 ha of land in Aryanad panchayat of Trivandrum district. The farmers transplanted young, 8-day-old seedlings and followed all the practices of SRI. The SRI-adopting farmers harvested an average yield of 7 t/ha compared with the state average of 3-3.5 t/ha. The farmers said this was the highest yield ever recorded. Elated by the unexpected bumper yield, farmers held a harvest festival in the locality and shared their experiences so as to encourage others to take up the innovation. (www.ciifad.cornell.edu)

ICAR Chief still in research mode Mangala Rai, director general, Indian Council of Agricultural Research (ICAR), said while celebrating the year 2004 as international year of rice, SRI, a novel method of cultivation, with very high input (seed and water) is being researched. He said 10-12 seedlings were taken under the method with one seedling each planted as a "hill". Fields are leveled with no undulation and water is maintained as a "membranous" kind of film instead of a "flood". This increases the yield with minimal use of water. (The Economic Times 140404)

Bangladesh Draft law protect water bodies The govt of Bangladesh has finalised the draft of 'River, floodplain, water reservoir, and canal control act 2005' to reclaim and protect the natural water bodies from illegal grabbers. Under the draft law, the violators would be put into jail for a period of minimum six months where as the maximum punishment is five years imprisonment with a fine up to Tk 0.3 M. The proposed law prohibits setting up of any permanent establishment within 50 m of port area and 10 m of both banks of the river. It also empowers the authorities concerned to impose restriction on the construction of permanent establishment even by the owners of the land within the marked area in a bid to stop river erosion and protect the towns. (The Daily Star- BD 070705)

Continued from page 1

16% return on equity guaranteed The PPA guarantees 16% return on equity. Why the company should continue to be guaranteed such a return when the norm now is competitive bidding based on lowest tariff? According to the CERC regulations dated March 28, 2004, the norm of return on equity for HEPs is 14%. Hence 16% ROE claimed by the company is beyond the norm and should not be accepted.

Incentive on higher plant availability The PPA provides 0.35% additional Return on Equity for every additional 1% plant availability over 90% with the maximum of 2% ROE, even if such availability does not translate into more power.

Incentive for Secondary Energy Charges The PPA provides upto 10% ROE on net normative saleable secondary energy upto 155 MU per year.

12% “free” power is not free According to the Tariff application, the Supplementary agreement between HPSEB and JHPL in Feb 2003 provided, “if there is any shortage in debt servicing by JHPL, HPSEB/GOHP agreed that JHPL would be paid the amount from recoveries made by sale of 12% free power.” So the 12% free power that the company is supposed to make available is not free if there is any shortage in debt servicing by JHPL. What this means is that JHPL can create a situation so that 12% free power is no longer free. This is not an acceptable situation. The 12% free power is given to the state to compensate for the social and environmental costs incurred by the state and the people of the area in particular and this cannot be traded off under any such agreements.

“Deemed” generation The PPA has a shocking clause under which an amount for the “Deemed generation” is payable in a number of possible situations including, if there is less water in the river and if the project is unable to generate designed power “due to water spillage due to reasons beyond the control of JHPL”. This is shocking because the company is assured full power generation tariff even if there is less water in the river or if there are floods in the river, causing spillage from the project. Thus in 2004-5, the company has claimed cost of 8.13 Million Units of deemed generation, even when the company has not produced that power!! According to CERC order dated 280304 (www.cercind.org) for determination of tariff, “(xii) ‘Deemed Generation’ means the energy which a generating station was capable of generating but could not generate due to the conditions of grid or power system, beyond the control of generating station resulting in spillage of water”. However, the deemed generation claimed by the company does not fit into this definition. The deemed generation claimed by the company in 2004-5 should not be allowed.

Delay in project completion The tariff application says that the project was delayed by 15 months due to “occurrence of flash floods in river Sutlej disrupting communication and transportation links to the project”. Thus the cost of this delay is also imposed on the tariff being paid by the HP people. This is not an acceptable situation. The 12% free power is given to the state to compensate for the social and environmental costs incurred by the state and the people of the area in particular and this cannot be traded off under any such agreements.

Impact of Floods in 2005 The tariff application claims that on July 5, ‘05, “Occurrence of heavy floods in river Baspa damaging downstream of barrage works of the project”. The company has claimed Rs 40 crores in the capital costs for the work done to repair the damage. This cost will also get transferred to HP people. There is no credible and verifiable evidence from the company to show that the damages claimed by the company due to floods on July 5, ‘05 were not avoidable, what the company did to avoid them, what were the damages and to what extent unpredictable floods were the reasons for such damages. In fact, according to newspaper reports, due to the sudden releases of water due to the company, there were damages to life and property in the downstream areas in July ‘05 and police complaints have been filed by the local people and administration for the same. The company should indeed be penalized for any such damages and such costs should not be pass through costs.

Catchment Area Treatment NOT DONE Catchment Area treatment is necessary to ensure that there is minimum soil erosion in the catchment of the project and there is no damage to the project or the surround areas due to such erosion. It is logical to expect that catchment area treatment should have been completed before the project is commissioned. However, in case of Baspa II, the work of catchment area treatment and compensatory afforestation is yet to be completed. According to the Red Herring Prospectus (page 29-30) issued by the company when making Initial Public Offer of shares in March 2005, “We have made a provision of Rs. 181.00 million in the accounts for FY2004 for implementing the environment management plan and the catchment area treatment plan as well as for payments to the forest department of Himachal Pradesh for this purpose. Out of this provision, we have already paid out Rs. 39 million to the Forest Department. We estimate that the yearly expenses related to the environment management plan would not exceed Rs. 25.00 million per year for a further period of around six years.” This clearly shows that the basic environment protection measures that were necessary to be completed before commissioning of the project are yet to be done even today. The impact of this is already visible in terms of floods in July 2005 and landslides in January 2006 that led to the damage to the project. And yet the company not only does not take minimum

necessary precaution of informing the downstream people about the releases from the project, it on the contrary claims additional costs in the tariff application for the damages due to such events! They really love to have the cake and eat it too. The company should be held responsible for lack of completion of the Catchment Area Treatment (and such other work as required under the EIA norms and plans) work before the completion of the project, it cannot pass this responsibility on to others who may be executing the same. The company should be penalized for such non completion and should be given specific deadlines to ensure such completion and such completion should be verified through independent and credible agencies.

No obligation for HPSEB to purchase power

Under the current liberalized power sector situation, HPSEB should be under no obligation to purchase power from Baspa II. JHPL should be free to sell power to the highest bidder under open access. The supplementary agreement to the PPA dated February 2003 should be declared void for the reasons argued by the advocate for the consumers and amicus curie before the HPERC in 2003.

Incomplete Information The JHPL website does not carry the full petition. Particularly it does not carry the following annexures mentioned in the JHPL application dated Nov 21, 2005: Annexures A, B, C, D, E, F, G, H. The website also does not carry any of the annexures mentioned in the additional information petition of JHPL dated Dec 16, 2005: Annexures A1, A2, A3, B1, B2, B3, B4, B5, B6, B7. Without access to all the annexures mentioned in the petition, it is not possible for anyone to fully understand the implications as a number of annexures carry very crucial information and background. Hence, JHPL should be directed to ensure that all the annexures mentioned in the petition are indeed put on the website and accordingly, HPERC should give further notice and time for people to respond to the application. Mr Anand Sharma, a lawyer from Himachal Pradesh also visited the JHPL office during office hours on Feb 4, 2006 and on Feb 6 & 8 to get a copy of the full petition along with the Annexures, but there was nobody present at the office to show or provide a copy of the tariff application.

What can be done People of Himachal Pradesh had an opportunity to raise these issues before the Himachal Pradesh Electricity Regulatory Commission. Objections to the tariff application from JHPL could have been filed with the HPERC by Feb 8, 2006. If no objections are filed, than JHPL could get away with unjustified tariffs and the burden of the costs would fall on the people of Himachal Pradesh.

It is learnt that a number of submissions have been filed with HPERC, objecting the tariff application, including one by Centre for Water Policy.

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HIMACHAL HEP NEWS

15% water discharge to be must According to the new draft of water policy of the ministry of water resources at least 15% flow of water downstream of all dams is a must irrespective of dams being for HEPs or for irrigation. The policy clearly states that the "sustainability evaluation" of projects will determine the criteria of "environmental discharge" which shall not be less than 15% of the total available discharge in the river at any given time. The minimum prescribed discharge will have to be maintained throughout the year for the survival of the aquatic life. On the other hand big hydro projects, which are either commissioned or under progress are scared because in the project design 15% discharge was not accommodated.

⇒ **Baspa** This condition is also applicable for Baspa and Baspa should also be made to release water downstream from the dam on the same lines. The losses occurred due to the same should not be passed on to the people, as PPA implies. (THE INDIAN EXPRESS 200905)

HP for change in Wild life terms for Renuka Dam

The Central Empowered Committee of the Supreme Court heard on Jan 10, '06 heard an application dealing with the diversion of 49 Ha of forest land falling in Sanctuary area for construction of Renuka HEP, HP. This project for water supply to Delhi was conceived in 1985. The applicant is the Govt of HP. The state govt indicated that the project will take 5-6 years to complete. The project was granted clearance by the MoEF only after it was cleared by the National Board for Wild Life with conditions on 16.4.05. One of these recommendations was the notification of all the Reserved Forest and Protected Forest near the project area should be declared as a Wild Life sanctuary with area not less than 20 sq.km. The state govt highlighted the religious significance of the Renuka Lake and the sentiments of the people attached to it. Further, since the forests around the area are extremely scattered and people are residing around (and have traditional use rights), it will be difficult to declare a sanctuary of 20 sq.km. HP suggested that since the existing sanctuary is about 4.5 sq km and if the dam structure is added to the sanctuary area then it comes to about 16 sq.km. The CEC questioned as to how the dam structure can be a part of the sanctuary area, to which the response was that since there are going to be fishes and other aquatic flora and fauna, the area could be considered as a sanctuary. The CEC highlighted that except for the compensatory afforestation condition of the NBWL, the state govt in their affidavit had suggested that the CEC intervene with changing all the other conditions. However, neither the CEC nor the MoEF can modify the conditions laid out by the NBWL. Therefore if a modification is required the state govt will need to approach the NBWL. The counsel for the MoEF stated that he could not override the conditions laid out by the NBWL. (Forest Case Update, Jan '06)

A critique of SIDA's evaluation of URI HEP**Unacceptable Performance**

In November 2005, Draft report of the SIDA's evaluation of the 480 MW URI HEP in J&K in North India, part funded by SIDA and commissioned in 1997, became available to SANDRP. A number of questions arise from this evaluation. The project has seen time overrun, cost overrun, underperformance, the social impacts remain unaddressed, the environmental plans remain unimplemented. The review itself is totally non participatory, non transparent exercise. SANDRP had sent a detailed note to SIDA on this, but there has been no response from SIDA.

Lower than assumed Power Generation The Evaluation states (on page 3-5): It was expected to generate at full output almost continuously for five months of the year (April-Aug) with production falling to lower levels in the winter months. The "Firm" (90% reliable) output was estimated at 2663 GWh/yr, and the average (50%) output was estimated at 3080 GWh/yr."

P 3-6: "Since the start of commercial operation NHPC has recorded the generation from URI as follows":

Financial Year	Generation GWh/yr	% of design average energy
1997-98	2178.5	71
1998-99	2575.3	84
1999-2000	1948.9	63
2000-01	1780.6	58
2001-02	2088.3	68
2002-03	2453.7	80
2003-04	2873.5	93
2004-05	2206.7	72
Average	2263.2	73

The project has underperformed to the extent of 27%

Out of the eight full years of operation, the project has generated above the 90% reliable in just one year (12.5% reliability) and has not achieved the average projected generation in any of the years. **This is a huge gap between the projected and actual benefits. The power generation figure would go down further if NHPC were to adhere to the minimum flow required, which it has not been adhering to.**

[Even in the current year, that is 2005-6, the generation has been below the design and average figures till Dec end, the figures being available only till this period.]

Assumption about Dry Cycles The reason the evaluators have given for lower than expected generation is dry cycle. But for the years considered (1997-2005), India has experienced relatively better monsoons as can be seen from the figures below, with four of the nine years having average or above average rainfall and three more years having over 90% of average rainfall.

Even in case of J&K, the cycle is not particularly bad with three years almost average or above average rainfall and three more years having 90% or above. Moreover, it should be noted that Jhelum (on which Uri

project is situated) is a snow fed river and the river depends on snow melt for substantial part of the flow.

Rainfall at URI

Year	Compared to normal rainfall – All India	Compared to normal rainfall – J&K
1997	102 %	124%
1998	105 %	85%
1999	96 %	92%
2000	92 %	99 %
2001	91 %	106 %
2002	81 %	89 %
2003	105 %	90 %
2004	87 %	75 %
2005	100 %	88 %

Source: India Metrological Department website www.imd.gov.in, various dates

It seems the evaluator has not really gone into the depth of the issue before making the assertion about dry years and it seems to have been made more to justify the project.

The conclusion of the Evaluators about this huge under performance is: "we conclude that the low output is primarily due to low flows in the Jhelum River. We initially considered it likely that the long-term average flow had been overestimated. However we have now concluded that it is more likely that the last eight years constitute an unusual dry period, and that the long-term energy production will be close to the design estimates." It is clear from the figures given above that this conclusion is not warranted, and it seems the evaluators have reached these conclusions without adequate support of facts. The only plausible reason for such a conclusion seems to that they are attempting to paint a picture that is rosier than what is the reality.

No month wise analysis of power generation The evaluation does not provide an analysis as to what was the projected month wise power generation and what was the actual generation. For example, monthly generation figures available for five years (2000-01 to 2004-05) show that in at least two months (July-August), the actual generation did not reach the designed generation in any of these five years.

No peaking power benefit It is strange that the evaluation does assess if the URI project is providing peaking power benefit. Hydropower projects in India are justified saying that they provide peaking power to the

grid. However, it seems that URI does not provide this advantage. (NHPC petition to CERC in 2004-5 said that URI is a non peaking station.)

Cost of Power more than doubled

On Page 3-7:
"A financial

and economic evaluation of the project was carried out on behalf of Sida in 1989, as presented in the Appraisal Report of June 1989. In this appraisal it was concluded that the expected tariff of 1.14 INR/ kWh in 1995/96 would be adequate to provide NHPC with a "fairly comfortable net income", after covering its costs."

The sale rate for electricity from Uri in selected years is given below from Table 3.5 in the evaluation report. It is clear that the cost of power is more than double the figure given in the appraisal.

Financial Year Regulated Sale Price of Electricity from Uri

	(INR/ kWh)
1999-2000	2.46
2000-2001	2.01
2003-2004	2.4377
2005-2006	2.5091

"At these price levels NHPC has been able to sell the electricity produced to consumers on the Northern Grid. Only J&K has shown a reluctance to purchase more than its free 12% allocation, unless forced to do so by high winter demand."

On page 3-8: "Comparison of the Uri 2005-06 tariff with the tariff for other NHPC HEPs is shown in Table 3.6".

Project Name	Installed Capacity	Year of Completion	Tariff (INR/kWh)
Uri-I (Stage 1)	480 MW	1997	2.5091
Baira Siul	198 MW	1981	0.420
Loktak	105 MW	1992	0.570
Tanakpur	120 MW	1992	1.2022
Chamera-I	540 MW	1994	2.1120
Salal-II	345 MW	1993-5	0.4156
Ranjit	60 MW	1999	2.11
Parbati (forecast)	800 MW	2009	2.47

Source: NHPC Project Details

Some conclusions that follow from the above figures:

- The cost of power from Uri project is more than double the projected costs even over eight years after project completion.
- The cost is so high that J&K, the state in which the project lies is unable to buy this power.
- The cost is clearly higher than the cost of power from projects that have been completed before, with and after the Uri project.
- The higher cost is also not justified from the fact that Uri does not provide peaking power.

Yet there is little the evaluation has to show why this is the case. The main reason for the high power tariff is the high capital cost of the project as described above.

Mohra HEP generation destroyed by URI A 9 MW Mohra (wrongly stated on page 3-48 as a 7 MW HEP) HEP existing on the Jhelum River since June-July 1962 has become practically defunct as URI diverts all the water from upstream of this project. Salient features of Mohra HEP:

Diversion level: 1460 m (note that FSL of URI is 1491 and head is 252 m, which means that Mohra is situated in the Jhelum river stretch downstream of the diversion for the URI and upstream of the point where the water from URI returns back to Jhelum), Head: 122 m, Annual generation: 70 MU, as per CEA Report on Small Hydro Potential in India.

Available figures of generation from Mohra suggest that it has generated no power in 2000-1, 2001-2, 2003-4. In 2002-3 it generated 2 MU, in 2004-5 it generated 1.1 MU and in 2005-6 it has generated 0.96 MU by Dec 05. This clearly shows that URI has destroyed the potential of Mohra HEP, whose effective capacity remains at 9 MW in Dec 05, as per the Northern Region Load Dispatch Centre (www.nrlcdc.org) report for 2004-5 and CEA (www.cea.nic.in) report of Dec 05. The evaluator

Inadequate Hydrological Appraisal

should have noted this and URI in fact should have compensated J&K for this loss of power.

One would have expected the report to make it clear that the hydrological appraisal of the project was far from adequate and a 480 MW project was not viable. The evaluation does not do proper analysis of the hydrological assumptions. It does say in the recommendations, "It is recommended that analysis of the hydrology should be supported under the intervention for such projects", but that is all the more reason to have an analysis of the hydrology. If the report had to say such a self evident basic requirement as first recommendation, then it is clear that the hydrological appraisal of URI was inadequate and the project as such is not viable one.

Very High Capital costs

The completion cost of the project as stated by evaluator is Rs 3388 crores. For a 480 MW project this comes to Rs 7.06 crores per MW, which very high even at current (2005 costs). Why has the project cost been so high is not properly investigated or explained by the evaluator.

The analysis in the evaluation on page 3-60 shows that URI is costlier than the projects constructed around that date in India and elsewhere. The reasons given for higher cost do not justify it as the same reasons apply to most other hydropower projects in India. This again shows the bias of the evaluator.

Corruption Charges not investigated Linked with the issue of abnormally high capital cost of the project is issue of corruption. There have been reports about

specific corruption in this specific project, attributed to the India's highest investigating agency, namely CBI (Central Bureau of Investigation) in a case in the India's highest court that is Supreme Court of India, as given in a media report below:

- “According to the letter, Lal (former CBI investigator) had initiated a scrutiny of power projects like Kawas, Uri and Dulhasti, for which S K Jain had allegedly given kickbacks to politicians and a quid pro quo had been established by the CBI. It was his belief that for these and other projects like the Chamera power project in Himachal Pradesh, the country was paying much more than the world average. Keeping in view the need for such extended investigation, he had already called for the files of the power projects and had identified experts who could help the CBI scrutinise the contracts. However, in July 1995, he was transferred to the CBI's Northern zone.” (Highlight added, <http://www.financialexpress.com/ie/daily/19970511/13150373.html>)

Swedish authorities should have investigated these charges, which were never investigated. Why did the evaluator not look into these issues? Particularly when SIDA claims that it has zero tolerance for corruption?

98.6% cost escalation

The final project cost has gone through a 96.6 % escalation. This is indeed very high. It is not sufficient to say that it is only because of exchange rate changes. The fact is that for the Indian public, the cost has doubled and this certainly needed proper investigation.

18 months time over run

As is clear from the dates given, URI suffered 18 months delay. The evaluator has tried to explain it away by saying this is due to security reasons, delay in land acquisition, delay in explosives license, etc. But for the Indian public, this means that the planned capacity was not available and in spite of incurring all the costs, the benefits remained unavailable for so long beyond the planned completion date.

And yet the evaluation claims (p 2-7), “The completion of the Uri Project within the contract period (other than the awarded extension of time) has given NHPC and others in the hydropower industry the confidence that projects can be completed in a much shorter period, and a number of recent projects, such as Chamera II (NHPC) and Malana (private) have matched or bettered this timescale.” This claim is not only factually incorrect about URI, but is also far from accurate about the other projects mentioned in the quote above, where the situation is quite different. One expects such independent evaluator to be more careful about facts before making such statements.

Availability claims are wrong The evaluation claims, “The availability of the station to generate with the flow available in the Jhelum is typically more than 99%”. On

page 36/7 it is stated: “Some loss of production will have been caused by failure of equipment at the power station, such as the oil-filled cables and the main transformers. However according to the current measure by which such losses are judged – the Capacity Index – such loss of energy should be around 1%, or less than 30 GWh/yr.”

This is clearly a false claim.

The project availability was 92.49% in 2002-3

and 93.06% in 2003-4 (see the reports of the Central Electricity Authority of Govt of India on Performance of Hydropower stations for these respective years). [These are the only two years for which the official availability figures are available in public domain.] These figures show how wrong the claim of the evaluator is.

100 MU/ year Transmission Line losses The evaluation describes the problems associated with the transmission of the electricity generated at URI HEP and says, “NHPC estimate that they have lost at least 100 GWh of generation on average per year due to the problems with the 220 kV Pampore-Kishenpur line”. This is a huge loss. This should be accounted as poor performance of the project, for, what is the use of the power generated if it does not reach the consumer? It is not good enough for the evaluator to claim that the Swedish companies were not responsible for the transmission line. The point is that the project did not deliver these benefits due to lack of completion of all the necessary components.

As accepted by the Evaluation (Page 4-8): “This

R&R of people affected by Transmission Line still outstanding

pressu re resulte d in land being acquired and payments of compensation being made in less time than would normally be available for resolving conflicts with landowners and other stakeholders. Regrettably, some compensation claims remain sources of conflict and unresolved as late as October 2005.” **Thus the compensation issues remain unresolved over eight years after completion of the project. This state of affairs is clearly shocking and not acceptable.** SIDA may say that it did fund the transmission line and hence is not responsible for this state of affairs, but this is rather strange explanation. As the evaluation says, transmission lines are integral part of such projects, without which the project cannot function. The project itself became possible only because of SIDA funding, as the evaluator agrees. Hence SIDA becomes responsible for all the injustices and violations that happen for any component of the project. Unfortunately, the evaluation does not give any further details of the pending compensation issues, nor recommends that SIDA should own responsibility for this and should settle the outstanding claims.

R&R: URI was sanctioned without a R&R Plan

P 2-19: Families affected due to the land acquisition:

Houses	30
Houses and land	47
Land only	169
Total affected families	246

Beside the above, a mosque and custodian land were also affected. The villages affected due to land required for the Project were Buniyar, Gingle, Pringal, Nowagran, Rajarwani, Bandi, Lagama, Mohura, Gantamulla, Helad Peernia, Bela Salamabad and Chahal.

"A "parallel road" was constructed during the project for the transportation of materials to the work site... Around 20 ha land was acquired for the road construction. The total number of families affected was 225, as follows:

Houses / shops	44
Land	181
Total number of family properties affected	225

"The "Rehabilitation Plan of Uri HE Project" was prepared by NHPC in 1992 after completion of the socio-economic survey... The plan was prepared while the land acquisition process was already in progress." How could SIDA approve funding for a project in 1989 when the rehabilitation plan was not prepared and even socio economic survey not done? How can the land be acquired before having a R&R plan made through participatory process. And most shockingly, there is not even a mention about any consultation about even R&R plan. Is this acceptable state of affairs?

Page 2-20: "Neither the Monitoring Team nor the Panel of International Experts included a specialist in sociology or rehabilitation."

Page 4-9 the evaluation accepts that paying cash compensation for land "has led to a loss of livelihood and reduced standard of living." One would have expected that the evaluator would suggest that this injustice must be set right and those thus affected should be helped to regain their standard of living by proving them land for land policy as the evaluator has suggested such a measure has greater chance of success for the affected. Unfortunately, the evaluator has not made the recommendation.

Similarly, as the evaluator says (page 4-9/10): "Contractor undertook to employ at least one member from each of the Project Affected Families." However, this undertaking has not been fulfilled.

Thus what we find is a very shocking state of affairs: SIDA sanctioned funding for the project even without an R&R plan or social survey, without any consultation with the local people about the R&R plan, SIDA did not know the full extent of social impacts, R&R plan did not

include land for land provision, promises were made by Swedish contractor, but not fulfilled till date, the project has lead to impoverishment of the local people.

URI did not replace thermal generation or fuel wood

The statement on page III-IV of executive summary, "The project has largely achieved its objective in displacing thermal power generation... the energy from the Uri project can be regarded as having displaced either thermal projects which did not have to be built, or less efficient and more polluting forms of primary energy use, such as paraffin or wood fuel." is self contradictory, unfounded and misleading. There is no evidence to show back the assertion.

NO Downstream flows

The project mandated 6 cumecs of minimum flow downstream from the diversion, but there is no basis for such a figure. Moreover even this minimum mandated flow has not been ensured.

The following quotes are revealing:

➤ Page 2-17: "The appraisal report pointed out that the minimum flow at the Uri barrage site was 36 m³/s in 1956 and that a release of this magnitude would have made the project unviable, and a release of 10 m³/s would have significantly reduced the project benefits from the standpoint of power economics. Detrimental impacts on the aquatic ecosystem were foreseen but were not ascribed any value." Page 3-50: "At a general level, some maintain that the minimum flow release into the 11 km long bypassed channel should not be less than the minimum recorded flow in the record (36 m³/s in 1956). It was reported before construction took place that constant release of this flow rate would make the project unviable (Sida, 1989)."

➤ Page 2-17 "It appears that the Department of Fisheries of J&K was not involved. Field surveys... taxonomic studies in Sweden... They led to a recommendation for minimum compensation flow releases at the Uri barrage of 5-10 m³/s for the downstream bypassed channel... It is noted that no minimum flow was stipulated. No references to recommended flows have been noted in POE or Monitoring Team reports; these reports were awaiting final results of the aquatic impact study. In the event, no minimum flow rates were stated by the POE" (POE: Panel of Experts). And "Thus in terms of compensation flow for the Jhelum bypassed channel, from the toe of Uri barrage to the tailwater discharge portal, engineering provision is made for a maximum release of about 6 m³/s through the fish pass and lure water conduit. Any additional release would require opening a spillway gate. In this 2005 review, no daily records of fish pass and lure water flows have been seen."

➤ Page 3-7: "It appears that the energy production estimates have not been revised to take account of the flow in the fish pass and compensation releases. If the fish pass and compensation flow results in the loss of 5 cumecs of usable water for six months per year, this

could represent a loss of generation of some 50 GWh/yr. However since the main use of the fish pass is in the spring months, when there is a surplus of flow over the generation capacity, it is believed the generation loss will be less than this figure.”

➤ Page 3-40: “No records of tributary or Jhelum flows are available for this reach since Uri power generation began in 1997.”

➤ Page 3-41: “Responsibility for determining compensation flow rates at Uri barrage for the 11 km bypassed channel – **usually the principal issue in any barrage or dam project environmental management plan** – was divided. Reading of POE and Monitoring Team reports indicates that **neither NHPC nor the POE would accept releases of minimum flows recommended** by the Institute of Freshwater Research which had been commissioned by Sida to carry out an aquatic impact assessment study. IFR recommended releases of 5 – 10 m³/s in its report dated Sept '95 (emphasis added).

➤ It is clear from the description on page 3-42 that the Jhelum river water is also used for irrigation (to Rampur as mentioned on page 3-51) in the dried up 11 km stretch, and yet there is no mention in the evaluation as to how this has been affected due to the URI project. This stretch of the river is also facing increased pollution loads (e.g. from “the discharge of foul effluents from septic tanks at NHPC colonies at Uranbau and Gingle” see page 3-51) in absence of freshwater flows and would also impact the local people. And yet the evaluation could not assess this impact, saying that due to earthquake this could not be done. This also shows how **incomplete is the assessment**.

If Jhelum received minimum flow of 36 cumecs in recorded past, than minimum downstream flow of that quantity in addition to the required for irrigation, drinking water, groundwater recharge should have been maintained. That was not done.

Alternatively, if the channel historically received 88-236 cumecs in non monsoon months, than it is imperative that at least 15% of the average flow (even if we take the 88 cumecs, the lower band of the average flow figure given) or at least 13.2 cumecs should be mandatory release. [15% is the norm decided by the neighbouring Himachal Pradesh in North India for minimum flow in the downstream areas.] This too was not done.

Without any basis an arbitrary minimum flow of 6 cumecs was mandatory. Even this was not done. It is also shocking to see that NHPC is not adhering to follow even the mandated flow releases, and even after these violations, the project is not able to generate designed power. If NHPC were to follow the actually required minimum releases, than the power generation figure would go down further.

This is deplorable state of affairs and shows that SIDA failed to ensure this minimum monitoring of the water flow in the 11 km stretch of Jhelum River dried up due to the URI project. This also reflects very poorly on NHPC. The fact that the evaluator does not make it necessary to make any appropriate recommendation reflects poorly on the evaluation.

The evaluator does not state what was the standard for downstream releases in Sweden in 1989 (when the project funding was sanctioned) and what was the SIDA policy than.

**Muck disposal assessment:
Crucial omission**

This is a very important among the social and environmental measures that one would like to see the evaluation to have gone into, but it has not. How much muck was produced, where and how it was supposed to be disposed and how it was actually disposed and impacts thereof are some questions that one expected the evaluation to look into. It did not.

**Local populations did not
benefit from the project**

Uri is a NHPC project and NHPC is a central govt organization and power generated by NHPC mostly feeds the northern or national grid, even as J&K grid remains starved of power. The evaluation should have noted this, in stead of claiming that the project has benefited the local people. This point is important as it has been repeatedly shown (as also shown by WCD) that such big hydropower projects bring adverse impacts to the local people and whatever little benefits are generated go elsewhere, thus creating further imbalances on the equity issues.

This conclusion gets strength when we read the second recommendation, “Since it is generally considered appropriate that local people should benefit from improved electricity supplies when a major power project is constructed, consideration should be given to additional support to the local electrical infrastructure and institutions.” [This is further strengthened by the following recommendation: “The employment of Project Affected Peoples could be given increased priority in the long-term operation of projects as well as during construction.”]

It is clear that the project area already had access to electricity much before URI project came into existence, that J&K state is unable to buy much power from URI due to high cost and that the situation of availability of power in J&K had improved since mid 1990s for reasons other than URI. Thus URI has played very limited role as far as power situation in J&K is concerned.

Customer Suited lessons? The Lesson that is mentioned on page V of executive summary: "Lessons learned from social and environmental appraisals of the Uri project include ones that need to be replicated in future projects. These are listed in the report. The principal lesson learned concerning adverse impacts is that projects should not now be funded unless they are supported, at the time of Sida appraisal, by comprehensive and completed social and environmental impact assessments and environmental monitoring, mitigation and resettlement plans. In particular, the determination of constant or variable compensation flows should be determined and agreed before giving support to river-related projects". This is a very weak statement. However, this kind of recommendation reflects very badly on the Uri Project. Today EIA and EMP are mandatory even under Indian law and determination of minimum flow does not help if there are teeth in the implementation process, as is clear from the current case. The evaluator has clearly given very weak recommendations. A truly independent consultant would have suggested amendments in the functioning of the project under view. Such an evaluator would have also suggested stronger recommendations about participatory processes, about quality and content of EIA and EMP and about mechanisms to ensure that what is promised is actually practiced. We find none of these in the evaluation. Absence of all these show that the evaluation is not independent.

No value for participation or options assessment

The evaluation has no assessment about participation of the people and society in the project decision and its implementation. Uri project did not have any public consultation either with the local communicates or among the wider public. Nor does the evaluator even mention this. One of the most important and elaborate recommendation of the WCD has been how to gain public acceptance for a project through consultations from the earliest stage of needs assessment, options assessment, planning and decision making. Uri developers and funders did not bother to even inform the local people about this project in their language. This is a shocking state of affairs. Evaluator's not mentioning this is even more deplorable situation.

The evaluation has no recommendation for making the decisions about such projects and implementation thereafter participatory. The evaluation does not say that a participatory options assessment should be mandatory. On the contrary the report goes on to recommend that such projects should be funded in future! This clearly exposes the lack of independence of the evaluator.

Affected people are worse off It is stated on page 3-20: "It appears that some of the PAPs are worse off compared with their standard of living before they were relocated: some of them are now without assured employment and others are not able to continue their

businesses due to lack of demand." And as if to rub salt into the wounds, the evaluator claims on page 3-21: "The loss of income to the local community will have been partly compensated by the money entering the local community as a result of the great Army presence in the region." This is very appalling state of affairs indeed. More shocking is the fact that even after this, the evaluator has no recommendation to offer as to how to correct this injustice.

It may be remembered that Uri had relatively small number of affected population. If proper R&R of such a small number of affected could not be made possible, how can there be any justification for projects that have larger social impacts? Yet the evaluation concludes that more such projects could be funded in future.

Supply of obsolete equipments As noted by review (page 3-23-24), some equipment (e.g. RALZB protection relay and PLC [power line carrier communications system] equipment) supplied under the contract for the project were obsolete equipments for which test kits or spares are not available. This is serious flaw of the Swedish suppliers and the SIDA, but the review suggests no remedy. It could have suggested that the supplier should be made to replace these with the latest equipments and also pay the penalty for the problems created so far due to the supply of obsolete equipments.

Failure of fish pass Following quotes are revealing about the performance of fish pass provided on Uri HEP.

➤ Page 3-43: "However, a number of factors indicate the overall use of the Uri fish pass is at times, perhaps most of the time, poor in relation to the numbers of fish attempting to move upstream."

➤ Page 3-45: "Every fish pass design manual emphasises the importance of creating good approach conditions to fish passes. Although a fish pass itself may be excellent once fish have entered it, it can be useless or almost useless if most fish cannot find and enter it. Because the approach conditions at Uri barrage appear poor in high flows, Professor Yousuf has advocated creation of pool type conditions, similar to conditions observed at Lower Jhelum (NHPC Research Project, 1999). From the above observations, and for illustrative purposes, we might tentatively conclude that when Jhelum flows are greater than 400 m³/s (when spillway flows are typically about 180 m³/s, after diversions of flows to the Uri headrace tunnel) do not provide conducive approach conditions to the Uri fish pass and that flows less than this are more favourable – though not as favourable as they might be with pool conditions at the toe of the barrage. Examination of the 270 10-day periods in April, May and June in the 30-year record indicates that 400 m³/s is exceeded for three quarters of the time in these months." **That means for 75% of the time during periods when fish pass is most relevant, conditions are Uri fish pass**

are not favorable for fish approach. A clear indication of overwhelming failure of the fish pass.

➤ Page 3-48: “The opportunity for creating optimum approach conditions at the toe of the fish pass and barrage structure (similar to Lower Jhelum) appears not to have been foreseen at the time of design and construction”. This is clearly a failure of the contractors, NHPC and the SIDA.

Incomplete Assessment The evaluation accepts (p 3-49) that they could not assess if fish moving downwards along Jhelum are getting killed by the movement through the turbines.

The evaluation accepts that the fish catch from Jhelum seems to have declined by a factor of 5 to 15 (p 3-49) after the commissioning of the Uri and Lower Jhelum projects, even though both have fish passes. **What is most appalling is that the evaluation has no assessment as to how many people are affected due to this and what has been done to compensate the losses.**

The evaluation repeatedly says that (e.g. say page 4-6) there is no attempt to assess the effectiveness of the fish passes at Uri, Jhelum or Buniyar Nala (see below). This is a serious lacuna and shows how incomplete were SIDA's and NHPC's appraisal of the environmental issues and mitigation thereof.

Buniyar Nala Fish pass absent for ten years As the evaluation says on page 3-52-53, the contractors made a significant change during the construction of the project when in place of constructing siphon where the Buniyar Nala crosses the URI tunnel about a km downstream from diversion, they constructed a culvert. Both the contractors and the NHPC did not realize that this would create a barrier for the fish moving upstream on the Buniyar Nala. “In the event, no mitigation was carried out for ten years. A fish pass was finally constructed by NHPC during the second half of ‘04”.

NHPC's callousness is further exposed when the evaluation says (page 3-53): “Staff of Fisheries Dept at Baramulla visited the new fish pass for the first time in Oct '05. They are concerned that there is no known management plan for its protection (against poaching) and maintenance (removal of gravel, trash, repairs) so far as the Fisheries Dept is concerned.” Even after this state of affairs, the evaluation has not recommendation to make to correct this situation.

Grossly wrong claims

➤ **Factually incorrect** Page 3-3: “Hydro-development in India currently constitutes about 30% of the total power generation from thermal (coal, lignite, gas), hydro (storage and run-of-river) schemes.” **This is a factually incorrect statement.** In 2004-5, for example, according to CEA (Central Electricity Authority, the statutory body of govt of India, www.cea.nic.in) figures, total generation in India from thermal stations was 486

075.48 GWhrs and from HEP was 84 495.30 GWhrs. HEP generation constituted 14.8% of the total.

False claims on behalf of NHPC Page 3-16: It is strange to find the evaluator claiming that all the improvements in the NHPC performance between 1997-8 and 2005 is due to URI, without mentioning as to which other projects have been added in the same period and what has been the contribution from those. It is also strange that the evaluator has made this claim without looking at the social, environmental, human rights, economic or financial track record of NHPC. It is indeed very dangerous on the part of SIDA and the evaluator to make such claims as then it would mean that SIDA is responsible for the track record of the NHPC as it helped NHPC reach this stage.

Unwarranted certificate to NHPC The general certificate given by the evaluators to NHPC at several places (e.g. page 3-40: “It reflects well on NHPC's commitment to protect the environment which is proclaimed on various notice boards at Gingle and elsewhere.”) is totally unwarranted, unfounded & contrary to generally well known deplorable track record of NHPC on social & environmental aspects. This is rather irresponsible. How can notice boards be sufficient to ascertain commitment to protect the environment?

Lip service to WCD report The report does mention WCD recommendations, but the treatment seems to fall in the line of lip service as it does not mention most of the recommendations of WCD while evaluating URI. One example in this line is the issue of total lack of public consultations in case of URI project, see below.

Incomplete, inadequate, biased Recommendations After all this, one expected that the evaluator will make strong recommendations for the future of this project and for such future funding by SIDA. Strangely, the evaluation makes very incomplete, weak and inadequate set of recommendations. Very strangely and contradicting what all was said about the experience from URI, evaluator's recommendation about future SIDA funding for such projects worth repeating:

Support for HEP Sida to consider, in the case of supporting hydroelectric and water resources schemes in future, adopting similar approaches to financing or co-financing projects as occurred for Uri.

This, in addition to various other instances shown above, shows that the in spite of some instances of critical comments, on the whole the evaluator has not been able to hide its bias in favour of such projects and in favour of continued SIDA involvement in such projects and in favour of contractors and developer (NHPC). The least one would have expected the evaluator to say about such projects is to recommend that in future such projects must follow the WCD recommendations in letter and spirit.

South Asia Network on Dams, Rivers & People

Maharashtra**Jalswarajya through World Bank funding!**

Under the World Bank funded Maharashtra Rural Water Supply and Sanitation project (also strangely called "Jalswarajya" project) it is proposed that the Maharashtra Jeevan Pradhikaran (www.mahajeevan.com) be restructured into corporate entities. The Maharashtra Water Supply and Sewerage Board was constituted on Jan 1, 1997 under the Maharashtra Water Supply and Sewerage Board Act, 1976 for development and regulation of Water Supply and Sewerage service. The name of the Board was changed as Maharashtra Jeevan Pradhikaran with effect from 10-3-1997. The govt has invited express of interest from consultants for the proposed restructuring.

The Maharashtra govt project targets "empowering and enabling village communities to identify, plan, design, implement, operate, manage and maintain their own water and sanitation facilities... the villagers have freedom to choose designers, consultants, contractors, vendors & other service providers for their supply facilities and O&M operations in a demand driven manner". MJP has already invited Expression of Interest for preparation of water supply scheme to ensure 24 x 7 water supply to Kulgaon-Badlapur, Ambernath town and Ordnance Factory. The proposal is clearly aimed at pushing private sector participation as the options listed in the invitation on the website includes BOT and long term concession for the work. (The Times of India 011105)

NHPC's Under-utilisation of funds**Power secretary orders action against officials**

The power ministry has taken a serious view of the underutilization of funds by NHPC. Figuring out that accountability is the best way to ensure optimum utilization of funds and meet committed targets, power secretary R V Shahi has decided to take administrative action. Shahi has directed that in all the on-going projects, if there is a gap in utilization due to slow physical progress, a predominant entry will be recorded in the Annual Confidential Reports of the officials, including the general manager and executive director.

Owing to underutilization of funds, NHPC's budgetary allocation for 2005-6 has been reduced from Rs 1606 crore to Rs 1200 crore. This has now been further pruned down to around Rs 915 crore.

The issue of underutilization of funds came to light at the NHPC Quarterly Performance Review meeting convened by the power secretary. The meeting noted that the financial performance during the quarter ending Sept '05 has been very poor. In all the ongoing projects, except in the case of Dhauliganga, the financial performance has been below target.

Sardar Sarovar**There is no case for increase in height**

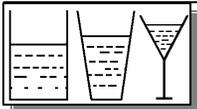
The Gujarat Govt and the Union Water Resources ministry have been pushing for increase in height of the Sardar Sarovar dam from the present height of 110 meters, but they clearly do not have any justification for the same, if we look at the quarterly status report of the SSNNL for the quarter ending Dec 31, 2005. According to this report (Indian Express 310106), the Command Area Development work has been accomplished only for 97 000 ha of command area and the CAD work is in progress only for the 0.468 m ha, which is the first phase of the command area. The current height of the dam can serve full first phase of the CA and more (due to the regulated releases available from the upstream Narmada Sagar Project in Madhya Pradesh. Thus, when CAD work has not even been initiated for CA beyond Phase I and when CAD work has been accomplished only for a fifth of the Phase I of the CA, there is no case for increasing the height of the dam for many years to come. Similarly, the current height of the dam puts no limitation for taking Drinking water from SSP to any part of Gujarat. As far as Power component is concerned, even now unit no 5 and 6 of the river basin power house are yet to be installed. Even if they are installed, that still does not create any justification for increase in height of the dam. It is thus strange as to why the Gujarat Govt and the Union Water Resources Ministry are pushing for increase in height of the dam. The status report is silent as to what extent the distribution system has been completed in Phase 1 or 2, but it makes it clear that the work on distribution system beyond phase 2 has not even been started. The statement in the status report that the project will be completed by 2007-8 is clearly misleading as it is not possible to achieve it.

NHPC**Low Return on Net Worth ratio**

The return on net worth ratio of National Hydroelectric Power Corp is almost half of that of other power PSUs such as NTPC and Power Grid Corp of India. While the return on net worth ratio for NTPC and PGCIL has been estimated at 9% and 10% respectively, in the case of NHPC it is only 5%. The return on net worth ratio of a company is widely seen as the most reliable indicator of the firm's financial performance, profitability and efficiency of the management. NHPC CMD S K Garg attributes the following reasons for this low figure:

- Heavy borrowings for working capital has led to high payment liabilities, including interest payments.
- Writing off of Rs 50.67 crore spent for the Koel Karo.
- Shortfall of Rs 46 crore in realization of bills.

CMD claimed that once the loans are paid off, the financial position would improve and so would the net worth ratio. (Energylineindia.com 091205)



URBAN WATER OPTIONS

Tamil Nadu The concept of treating the wastewater discharges of community and institutional toilets in a decentralised manner at the source, as demonstrated by Exnora International in Tiruchi, had an excellent scope for being replicated in other places. The Decentralised Waste Water Treatment System established at East Devadhanam in the city could be adopted by educational institutions, hospitals, residential complexes and slums. The system, put up with the support of BORDA, a voluntary organisation of Germany and the Tiruchi Corp, would treat the waste water discharges from the community toilet run by a self-help group and recycle it for irrigating vegetables. TN Slum Clearance Board was keen on adopting the technology and a similar unit was being established in Chennai. The projects could be dove-tailed with the Valmiki Ambedkar Awas Yojana scheme. The TN Urban Development Programme could also take this up.

⇒ The Tamil Nadu Water Supply and Drainage Board has a website for Rain Water Harvesting (www.aboutrainwaterharvesting.com, the site does not seem to have been updated recently and is not very viewer friendly). Rain Centre is offering to inspect homes and advise on maintenance. Chennai Metrowater, which has started its RWH campaign through reminders in newspapers, plans door-to-door campaign on RWH maintenance. (THE HINDU 240605, 280905, 290905)

Karnataka Portuguese church established in Dakshin Kannada district in Coastal Karnataka in 1526 and

Decades ago, the Nethravathi turned brackish only in March each year. But the recent construction of a dam in nearby Thumbe makes it saline even before January.

renovated in 1930 has a remarkable RWH system that is in a functioning state today. At the time of renovation the RWH structure had capacity of 60,000 litres. The

reason for building a RWH structure in an area with annual rainfall of 4000 mm and just a stone throw away distance from Nethravathi river is that Salinity in the underground water and polluted water of the Nethravathi river is a major threat here. The authorities had decided to implement RWH to solve the crisis. In addition they recently built another reservoir which can store 25,000 litres more water. At present the water from the seventy years old structure is being used only for non-potable purpose. 60,000 litres capacity storage can harvest 0.4–0.6 m litres of rainwater each year due to continuous use.

⇒ **RWH to stop flash floods** The Karnataka State Police Housing Corp is one of the first govt institutions in the country to implement RWH on a large scale. In over 80% of the 5,924 residential and 42 non-residential structures in 160 locations it has built RWH systems.

RWH can prevent flash floods in low lying areas in cities

"We have successfully implemented these techniques in six major sites. We will be using them in other sites where necessary," CMD of the corp

said. The corporation used RWH to stop flooding of the State Reserve Police Colony in Shiggaon in Haveri district, in Yeshwantpur in Bangalore, Haveri, Karwar, Machenahalli in Shimoga and Chikmagalur. The land allotted to the corp to build a residential complex for the SRP in Shiggaon bordered a lake. Rains used to submerge the entire area. This was stopped using two types of rainwater-harvesting techniques. The surface run off was used to water plants in a garden while the water from rooftops was used to recharge the groundwater. The surface run off was funnelled down using bunds from where a network of drains was used to drain the water into an artificial lake. This prevented the submergence of low-lying areas. According to the CMD RWH can be used to prevent flash floods in cities like Bangalore, "We have done it at a micro-level in Yeshwantpur. This can be replicated on a macro-level to cover all low-lying areas." It plans to conduct a national seminar on preventing flooding of low-lying areas using RWH.

⇒ **Bangalore: Wastewater recycling** 70 m liters of recycled water is being used in Bangalore daily, thanks to four tertiary treatment plants. This is sufficient to meet the needs of seven lakh people. Most of the water is supplied to hotels for non-potable purposes such as fountains and water gardens, a large quantity is used in Lal Bagh, Cubbon Park, Raj Bhavan and golf courses. The sewage treatment plants in K.C. Valley and Raja Canal treat water till the secondary level, which means it is good enough to be used in industries. Water from K.C. Valley is treated and discharged into the Bellandur tank. The advantage of treated water, apart from the saving fresh water is that it is much cheaper than water supplied by the BWSSB.

While the cost of water for industrial purposes is Rs 0.05 per liter when supplied by BWSSB, recycled water costs Rs 0.012 per liter.

⇒ **Bangalore: RWH** Bangalore Mahanagara Palike has signed a MoU with the Centre for Sustainable Development to promote RWH in its parks, playgrounds, hospitals and educational institutions. The BMP will later promote RWH among citizens. A one-time subsidy of Rs 1,000 will be offered to owners of old buildings who come forward to adopt RWH. Expert advice and guidance will be made available through CSD. Building bylaws here were amended in July 2004 that had made it mandatory for all new buildings to adopt RWH. 10,000 building plans were sanctioned from July 2004 but only 400 had adopted RWH. (THE HINDU 090905, 100905, 190905, indiatogether.org 130905)

IIM Kerala runs on Rainwater The 38 Ha campus of the Indian Institute of Management, Kozhikode, Kerala faced no water scarcity even as rest of Kerala was experiencing water problems in May 2005. The IIM shifted to the current campus in 2003. This is probably the only institution in the state that has gone for RWH on such a big scale. It catches rain from at least two thirds of its campus and it is now self-sufficient in water. The institute occupies two steep hillocks. It has no independent water source of its own that can provide water to the whole institute. Barring the floating population, the institute has 350-400 inmates. The average daily water consumption exceeds one lakh liters. Irrigation requirement for the lawn, garden & horticultural crops is additional. At the foot of the hillock, there is a pond (capacity 30,000 cubic meters) of 1.5 acres dug to catch rainwater. The run-off from the upper parts of the hill is not directly fed into the main pond. It is spread in an adjoining piece of 2 Ha land. It has an arecanut garden and a thick layer of weed vines covering the ground. An old pond inside this garden is maintained as it is to accelerate the rate of water percolation. Water from the main pond is treated and pumped to an overhead tank, from where it is distributed to the necessary domestic use, including drinking, at the institution and staff quarters. All the houses are equipped for RWH. The IIM conditions call for exhaustive erosion control measures to make water conservation meaningful. Due to the efforts, the soil erosion is controlled. The whole system cost the institute Rs 8 m. The IIM's sewage water plant can treat 50 000 liters sewage, the output is utilized for irrigation. Students and faculty are partners in all the conservation efforts. (SREE PADRE in www.indiatogether.org, 170605)

Historical tanks grant freedom from anxiety in Ahmedabad

tank can store sufficient water for the family. Bhatt is one of the residents of Khadia in Ahmedabad where, for nearly 1,500 homes summer brings no worries, with a constant supply of sweet water from these underground tanks built by their ancestors to fight perennial water crisis. "I have a 26-ft-deep tank with a capacity of 80,000 litres. The tank water is sweet and prevents any digestive and skin disorders. Underground tanks are the best way of conserving water. The civic body should help people with cleaning of tanks to promote this concept," says Bhatt. Out of 10,000 houses in the area with 'tankas', about 1,500 are still used. The Ahmedabad Municipal Corp's heritage cell and the samiti had undertaken a pilot project to clean and revive 10 tanks in Khadia. It also undertook research and documentation of the 'tanka' technology to create a model that could be adopted by civic bodies. This report is being used by the Porbandar Nagarpalika. Here Fire brigade staff is working to clean nearly 2,500 tanks. (THE TIMES OF INDIA 230505)

Ahmedabad - Gujarat

The blistering summer does not bother Ashutosh Bhatt as his family's underground

SC notices to make RWH mandatory SC has issued a notice to the Centre and all states on a PIL and sought effective measures for conservation of rainwater, making it mandatory for all buildings with an area over 200 Sq meters to have rooftop RWH structures. The petitioners said that out of the average rainfall of 1170 mm that the country received, 90% went waste through drains and nallas for lack of RWH. A bench consisting of Justice YK Sabharwal and Justice GP Mathur issued notices following petition by an NGO, TREE - Tap Rejuvenate Earth's Ecology and Environment, and a Delhi Advocate DK Garg, invoking Constitution's clauses 21, 47, 48A and 51A. (Bhaskar 140705, THE HINDU 150705)

Delhi The Municipal Corp has sought approval of the Union Govt for implementation of RWH in the buildings. If approved then it will be mandatory to have this provision in all buildings.

⇒ **HC Order** Delhi HC ordered the govt to preserve 319 wet water bodies and ensure their functioning before the onset of monsoon. Chief Justice criticised the role of govt and said that if govt is unable to do that then private entrepreneurs will be called up. (THE TRIBUNE 220505, THE TIMES OF INDIA 050505)

Lakshadweep This archipelago in the Arabian Sea has nearly 820 rooftop RWH structures. Nearly 200 ponds and tanks have been renovated over the last 4 years. (THE HINDU 010905)

Darjeeling, Gangtok and Kolkata Three rainwater harvesting systems designed by the Central Groundwater Board will be set up at the Gangtok, Darjeeling and Kolkata Raj Bhavans. Set up at a total cost of Rs 2.3 lakh, the Gangtok system has two tanks with a total capacity of 24,500 litres. The Darjeeling system is a much larger one, with two tanks harvesting a total of 150,000 litres water. The Kolkata system is still in design stage. Darjeeling gets 2,973 mm while Gangtok receives 3,000 mm of rainfall annually. Ironically, the high rate of runoff makes the region prone to water scarcity. (InfoChangeIndia.com 150905)

Poor maintenance in Lucknow Roof-top rainwater harvesting facilities worth lakhs of rupees, set up on the city's public buildings under a pilot project by the Central Groundwater Board during 2002-3, lie neglected and under-used. Experts point out that their "recharge ability" is suffering due to lack of basic maintenance. Nobody cleaned it after installation. Though the District Magistrate office building boasts of an elaborate system to collect, filter, store and recharge the rainwater through a system of pipes, chambers and tubewells, it also shows obvious signs of neglect. "It looks like these departments and bodies have forgotten all about the installations after they were set up, that too, thanks to the Central Government's funding," says R S Sinha, Hydrologist with the UP Groundwater Department, and in charge of roof-top harvesting initiatives. (THE INDIAN EXPRESS 290605)



RURAL WATER OPTIONS

Kerala Award for Water Conservation

Abdul Kareem of Kinanur-Karinthalam panchayat (Kasargod district) has been selected for the 'Jalamithra' award in recognition of excellence in water conservation. The award has been instituted by the district panchayat as part of its Swajaldhara Project, a water conservation scheme under the Rajiv Gandhi Drinking Water Mission. Mr Abdul Kareem has transformed a 13-Ha barren hilly terrain in the panchayat into a natural forest. He began work in 1978. 'Kareem forest' appeared in the advertisement of Indian Oil Corp ('India Inspired'), last year. The award for water conservation under the Swajaldhara project-I goes to Kayyur-Cheemeni panchayat. Chemmanad grama panchayat has been selected for the award for implementation of the Swajaldhara-II. (THE HINDU 300605)

Kerala Mangroves The mangroves have attained great significance after the Dec 26, 2004 tsunami. Experts say that Kerala should develop mangroves at all possible spots along the coast as bio-shields against the fury of the sea. The thick row of mangroves in the Kandakkadavu area of Kannamali in Ernakulam district is the result of the untiring efforts of Mr Ittoop. He has not received any official financial assistance from the govt or help from NGOs. He has made conservation of mangroves his life's mission. He is happy seeing the new-born interests of environmentalists and scientists in his mission. "I started to cultivate mangroves in 1997. My aim is to locate, identify and conserve the mangroves. I had got support from local people and scientists like Dr M Sivadasan of Calicut University and Dr K Sajan of Cochin University of Science & Technology", said Mr Ittoop. Mangroves do not grow on sandy beaches. But in marshy coastal areas mangroves can serve as a natural resistance. The area under mangroves in Kerala has reduced from 70 000 Ha a few years back to 1,400 Ha now. (Pioneer 170605)

Some risks of check dams According to preliminary survey by geologists from the Centre for Earth Science Studies, construction of check dams and RWH systems without adequate precaution, particularly in high rainfall areas, could trigger landslips in areas like the Vadakara and Koilandy taluks of Kozhikode district. Landslides were reported from Pasukkadavu, Prikkanthode, Pambukode, Kongode, Meembatty, Parakulam and Kakkayam, which received above-normal rainfall during 2005 monsoon. Though there was no loss of life, standing crops were destroyed along large tracts. Investigation by the CESS revealed that most of the small streams were dammed and during the rain, the dams overflowed. In the Pasukkadavu area, the large volume of water racing down the slopes had led to the collapse of downstream check dams, in a destructive chain reaction. CESS has suggested measures to improve slope stability and terrain-specific guidelines for check dams. (THE HINDU 060805)

Andhra Pradesh The Chairman of Hyderabad Urban Development Authority laid the foundation stone for a 2.5 ha check dam at Nandergul village near Sarooranagar, Hyderabad with a capacity of 24,000 cubic meters of water. (BUSINESS LINE 130605)

Groundwater Management case study Sustainable management of groundwater can be done by making cultivation of vegetables and flower in 5 % of the area in every one acre of plot once in two years. A team of National Geographical Research Institute, Indo-French Centre for Groundwater Research and Groundwater Dept presented their views in a meeting of farmers at Maheswaram. The team is involved in a collaborative project to carry out GW management studies in the Maheswaram watershed covering five adjacent villages. The team found that the structures constructed under the Neeru-Meeru programme of the previous TDP govt proved a waste as there was not enough runoff water to percolate and there was no maintenance of the structures. (THE HINDU 100605)

Karnataka

⇒ **RWH in Rural areas** Collect rainwater and get a 20 % discount on the property tax. That's the introductory offer from the Karnataka govt which is encouraging rainwater harvesting in rural habitations. Encouraging RWH facilities will not only check depletion of the groundwater table but also tackle fluorosis, a water-borne disease. There are 56,682 rural habitations in the state and half of these face drinking water problems. RWH is the best solution to this crisis.

⇒ **Hassan** Rs 6.3 M has been sanctioned for RWH in 1 580 schools in the district where 2 115 govt schools are facing drinking water problems.

⇒ **Mangalore** RWH units were being installed in 31 govt buildings in 2004-5 by the engineering division of the district panchayat, including 14 gram panchayat buildings, 11 schools, four primary health centers and two hostels. It is for the first time in the district that RWH units have been installed in such large numbers in govt buildings. (THE HINDU 240605, THE TIMES OF INDIA 100805)

TAMIL NADU Check dams over rivers Under a Chennai Metropolitan Water Supply and Sewerage Board project, it has been planned to construct check dams, reservoirs and percolation tanks to store surplus water to enhance recharge in the Kosastalaiyar, Cooum, Adyar and Palar Rivers. The construction of the Rs 3.25 crore check dam across the Adyar by the PWD started in Aug '05 and was expected to be completed by April '06, being funded by the Chennai Water Supply Augmentation Project-II. It has decided to construct four check dams across the Adyar at Anakaputhur, Gowl Bazaar, Manapakkam and Nandambakkam at a cost of Rs. 12.37 crores. The check dam at Nandambakkam is to harness 470 ML to conserve RW that would help in recharging groundwater in the vicinity of the check dam. The check dam would be 125 m wide and 1.5 m high

and would help to limit the draining of water from the Adyar into the Bay of Bengal. During monsoons, a 2 km long reservoir would be created. The riverbed was not being deepened and there was no possibility of inundation anywhere, it is claimed. (THE HINDU 191005)

KARNATAKA Rooftop RWH It is not easy to adopt rooftop RWH here in villages of Kolar districts since most of the

rooftop rainwater harvesting technique in small tiled-roof houses in villages of Kolar district

houses of cultivators and farm labourers are small. Yet, efforts have been made in three villages of Ananthpur, Hosakere and Ramanallur of Mulbagal taluk, where rooftop RWH technique has been adopted in small tiled-roof houses. This initiative has been taken by Grama Vikas, an NGO based in Honnasettihalli in Kolar district. Hosakere is a small village of 47 houses. Here rooftop RWH has been adopted in 10 houses with Rs 6,500 being spent on building a storage tank with a capacity to hold 6,000 litres. A full tank could provide 50 litres per day for four months. Inspired by its success, the remaining houses have come forward to adopt this technique. With 50 % subsidy from the govt for the economically weaker sections, the people can face summer with confidence. This year another 100 houses in the taluk will take this up. There are 1.5 lakh borewells in Kolar district and the groundwater was fast receding. In Chintamani town, it has now been made mandatory for all the new houses to install RWH measures. (THE DECCAN HERALD 160505)

GUJARAT The check dam plans The Water Resource ministry will try to revive dried rivers by constructing 490 big and medium cheeckdams alongside dried rivers 2-3 kms apart. Private Public participation will be considered at 20:80 rate. (THE ASIAN AGE 250705)

Dew Harvesting in Kutch In Suthri of Kutch district, in four months (Feb-May) 1 300 litres of potable water was made available by harvesting dew collected from a temple rooftop. Similarly, at Ashram School in Kothara of Abdasa taluka, 925 litres of potable water was made available from dew harvesting during March-May. According to the research team the technology can be replicated in small isolated islands, desert areas and mountains. Dew fall occurs on about 90 - 100 nights a year. The maximum water collection (70 litres) in one night was on March 13. Total due collection over the season of eight months would be approximately 5,000 litres, coming at an installation cost of Rs 30,000. (THE TIMES OF INDIA 230905)

Maharashtra Pardi village sets an example The 260 families of the Pardi village of Nanded District came together to contribute Rs 400 each for water management systems and govt contributed the rest to put together a Rs 25 lakh scheme involving small dams,

wells, overhead tank, distribution system so that the village no longer faces water scarcity. Those families that could not contribute cash were allowed to contribute their time for the work. Now the families also pay Rs 30 per month for the water they get.

⇒ **Rajiv Gandhi S&T Commission** The govt has approved the recommendations of Rajiv Gandhi Science and Technology Commission on making RWH mandatory for new constructions and reducing energy consumption by conversion to compact fluorescent lamps, claimed the chairman of the commission. The commission was set through an act passed on Dec 15, '04 and a provision of Rs 1 crore was made in the state Budget for 2005-6 for the commission. The commission made a representation before the state govt in Nov '05. (Rashtriya Sahara 010705, www.finance.mah.nic.in, THE FREE PRESS JOURNAL 171105)

PUNJAB Proposals Punjab govt has asked all the Municipal Corps to send their suggestions for RWH. The scheme will be applicable on buildings with an area of over 200 square yards. For buildings only up to the first floor, percolation pits of 30-45 cm diameter and an adequate depth but not less than 1 meter must be made at ground level. The pit has to be filled with a suitable filler material such as well burnt broken bricks or pebbles, up to 15 cm from the top. The top 15cm are to be filled up with coarse sand. The top of the pit is to be covered with perforated RCC slab or any other material suitable for the purpose. The number of such percolation pits will be determined on the basis of one pit per 30 square meter of available open terrace area. The minimum distance between the pits should be 3 m. Different instructions have been mentioned for group development, industries and institutional buildings. The proposal states that every building should be provided with separate pipelines for waste water. While one pipe is for collecting waste water from the bath and washbasins, the other connects the toilets. The waste water from the toilets alone is to be connected to the street sewer. The water from bath and washbasins is to be use for ground water recharge, after filtering it using suitable filter. The old buildings will have to make additions required for RWH. (THE INDIAN EXPRESS 050805)

Chhattisgarh Anicut plans The govt plans to build 204 anicuts and cleared Rs 262 M for the same. The govt has claimed that after completion of the projects in 3 years, additional 12000 Ha would be irrigated. The Irrigation Dept is planning to build 569 more anicuts in 7 years and started work for Rs 16.57 B project. The anicuts are proposed all the districts including Raipur (36), Bilaspur (86), Sarguja (93), Korla (11), Raigarh (41), Janjgir (30), Korba (2), Jaspur (9), Kawardha (13), Rajnandgaon (32), Dhamtari (14), Mahasamund (36), Kanker (24), Jagdalpur (47) & Dantewada (50). The ID sources said that govt can currently save 8000 MCM water from rivers every year, which irrigate 28% of the cultivable land and govt is thinking to increase it to 40-50 % in 3 years. (DANIK BHASKAR 280705)

National Mission for RWH? The govt proposes to launch a "People's Water Conservation Mission" due to run off being 75%. The Prime Minister said that we have huge opportunities for people-centered water conservation at the local level. The mission would be people's movement led by panchayats, using the funds of the National Rural Employment Guarantee. Stating that this opportunity for local-level water augmentation had been unprecedented, he said "through this we hope to revive our tradition of RWH." (DAILY EXCELSIOR 111105)

PAKISTAN Community effort to stop flood damages The residents living along the border in Sialkot dist have crafted a success story of exemplary self help. This year the people in seven villages with a population of 10000 not only warded off floods but also reclaimed several acres of agriculture land, eroded in the past. During monsoon in past, people lost their lives in the swollen Tawi. For decades the life here was insecure. In 1999, villagers formed the Tawi Welfare Society to chalk out a flood prevention scheme. Every person from a village with over 1000 families was asked to contribute. With Rs 25000, a project was initiated. After a survey, it was decided to discard eucalyptus trees as they decrease soil fertility. In the next five years, a massive plantation drive was started that included planting and protecting of neem, jamun, lychee and pomegranate. (THE HINDU 030705)

Global International Herald Tribune In a series of articles on Aug 20, '05, the IHT reported on the trends of revival of TWS. The old ways of managing water in dry regions are winning new attention in urban and rural areas. The old techniques were used to capture, store, transport and distribute water, and some were used for hundreds or thousands of years before they fell into disuse or disrepair. One ancient method being revived is RWH. In agriculture, where intensive irrigation is increasingly identified with resource depletion and pollution, there is a renewed interest in harvesting.

⇒ **Texas Manual on RWH** The authorities in Texas have issued a new edition of The Manual on RWH aimed at individual households. It says simple systems - catchment surfaces, gutters or other channels, storage tanks and gravity - or pump-driven delivery systems - are highly reliable, with costs that are "lower than or equal to those of drilling a well." Texas has introduced sales tax exemptions & tax breaks to encourage RWH.

⇒ **Qanats in Iran** Qanats are being revived. They involve networks of underground aqueducts that originated in Iran 2,500 years ago to bring water from subterranean highland to lowland. Qanats rely on a gravity rather than pumping or any mechanical systems. Iran has 30,000 active qanats, as per the International Center on Qanats, set up by Iran & Unesco.

⇒ **Spate irrigation in Pakistan, N Africa** A traditional Middle East technology in use for thousands of years from N Africa to Pakistan and Mongolia, which harvests flash floodwater in mostly dry rivers, is being revived.

WATERSHED DEVELOPMENT UPDATE

Schemes under Ministry of Agriculture To get a picture of various schemes under implementation on watershed development under the Ministry of Agriculture, here we are giving some basic details.

NWDPR The National Watershed Development Project for Rainfed Areas is the main scheme of the dept for watershed development of rainfed area. The NWDPR was launched in 1991 and is currently in operation in 28 states and 2 Union Territories. The guidelines for this have been changing over the years.

	Target M Ha	Achieved M Ha	Watersheds covered	Expenses Rs Crore
8 th plan	2.8	4.223	2554	967
9 th Plan	2.25	2.766		910.8
10 th Plan	2.0	0.548 by Oct '04	6000 micro Watersheds	1000 (budget) 321.66 (by Oct '04)

Watershed Development Fund Following up on the Union Finance Minister's budget speech (1999-2000), a WDF has been established at NABARD with the objective of integrated watershed development in 100 priority districts in 18 states with total corpus of Rs 200 crores including Rs 100 crores by NABARD and matching grant by Department of Agriculture & Cooperation. According to the Annual Report (2004-5) of Dept of Agriculture and Cooperation, "The fund is being utilized to create the necessary framework conditions to replicate and consolidate the isolated successful initiatives under different programmes in the govt, semi-govt and NGO sectors". The WDF activities are being guided by a High Powered Steering Committee with representatives of Ministry of Agriculture, Ministry of Rural Development, Ministry of Finance, state govts, NABARD and selected NGOs. Secretariat support is provided by NABARD and MoA is the nodal agency. AP, Gujarat, Karnataka, Maharashtra, TN, UP and W Bengal are currently utilizing the support of WDF.

⇒ 289 projects (35 grants & 254 loan component) were sanctioned under Capacity Building Phase with a grant of Rs 13.9 crores covering 26113 ha. These projects are to ultimately cover about 0.271 m ha in Full Implementation phase.

⇒ 125 projects (21 grants and 104 loans) were sanctioned a grant of Rs 1.25 crores for preparation of Project Feasibility Report.

⇒ 50 projects have graduated into FIP, including 33 loan projects with loans of Rs 16 crores and 17 grant projects with grants of Rs 9.14 crores.

⇒ Out of 103 districts identified, implementation has started in 77 districts.

⇒ **TN** The Scheme will be extended to 9 more districts during 2005-6 including Tiruchi, Tiruvallur, Kancheepuram, Villupuram, Virudhunagar, Perambalur,

Karur, Salem and Coimbatore. The scheme is already in vogue in 13 districts at present. The identification of suitable non-govt organisations was currently under way, as they along with the community would implement the scheme under the supervision of the bank. The NGOs would prepare a detailed proposal in consultation with the agriculture dept and also collect inputs from the local villagers regarding the identified watersheds and submit it to the bank for approval through the TN Watershed Development Agency.

⇒ **W Bengal** After RWH projects in Maharashtra, AP and Gujarat, NABARD has identified 43 projects and out of these 19 projects are sanctioned at a cost of Rs 7.5 m. (THE HINDU 050705, BUSINESS STANDARD 081105)

Watershed Development Council WDC was created in 1984 as a Techno Secretariat arm of the World Bank assisted projects. It was set up under Rainfed Farming Systems Division of the Ministry of Agriculture. "Activities of WDC include monitoring periodic physical and financial progress of the projects, conducting mid term and other periodic reviews along with the supervision missions of the donor countries, providing technical assistance to the projects through appointment of independent consultants, conducting impact evaluation studies of the treated areas and capacity building of the community for planning and implementation of the project activities", according to the annual report (2004-5) of the MoA. During the 10th plan Rs 12 crores have been allocated for WDC and Rs 0.86 crores has been spent during 2003-4.

Externally Aided Projects MoA is involved in the supervision, coordination & monitoring of these projects. The funds are directly given to the state govts.

⇒ **Integrated WDP Hills II** The objective of this World Bank funded project is to restore the productive potential of the Shivalik Hills in Haryana, HP, J&K, Punjab and Uttaranchal. The project started in Sept 1999 is to end in Sept '05 and was to treat 0.186 M ha at a cost of Rs 902.84 crores. By Sept '04, 0.18 m ha has been treated at a cost of Rs 760.8 crores.

⇒ **HP** The WB has approved the first phase of the mid-Himalayan Watershed Project for HP. 400 village panchayats in Sirmour, Shimla, Solan, Bilaspur, Hamirpur, parts of Una, Kangra and parts of Chamba dist would be covered. The main priority would be on social forestry. Panchayati Raj institutions, women organisations and youth would be associated.

⇒ **Failed watershed** One of the ancient Hindu pilgrimage centers in the Shivalik hills is facing neglect. A drought like situation is faced every summer and most of the surrounding hills have turned barren despite huge funds having been spent a decade back under the WDP. Several forest closures were developed and water conservation measures taken but today hardly any impact of the works is visible on the ground. The matter needs investigation. The Rural Development depts' activities have failed to provide much respite. (DAILY EXCELSIOR 110505, BUSINESS LINE 300705)

Karnataka (Sujala) WDP The objective is sustainable alleviation of poverty in rainfed areas in 5 districts, namely Chitradurga, Dharwad, Haveri, Kolar and Tumkur. The project was started in Sept 2001 and is to end in March '07. Out of total project area of 0.427 m ha, 0.373 m ha is to be developed at a cost of Rs 677.73 crores. By Oct '04, 61 000 ha has been developed at a cost of Rs 76.53 crores.

⇒ **UK aided project in Karnataka** The project was started in April 1998 in three districts of Bellary, Bijapur and Chitradurga and was to end in June '05. The project was to develop of 45 000 ha at a cost of Rs 86.2 crores. 44 000 has been developed by Sept 04 at a cost of Rs 54.65 crores.

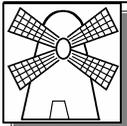
⇒ **Uttaranchal Decentralised WDP** Launched in Sept '04, the total cost is US\$ 89.35 m (WB loan of US\$ 69.62 m) over a period of 8 years to cover 1 m ha area.

⇒ **German (KfW) Assisted Maharashtra project** The objective is to develop microwatersheds in a comprehensive manner to create adequate and sustainable livelihood opportunities with participation of the NGOs. Started in Dec 1991, the project was to end in Dec '05 to develop an area of 0.164 m ha at a cost of Rs 110.68 crores. By Sept 04, an area of 97 000 ha has been developed at a cost of Rs 87.98 crores.

⇒ **Danida project in Koraput (Orissa)** Started in Oct 1992, with the objective to set up locally acceptable land use, the project was to end in March '05 to develop 44 000 ha at a cost of Rs 13.25 crores. 41 000 ha has been treated by Sept 04 at a cost of Rs 12.06 crores.

⇒ **Danida project II in Madhya Pradesh** The project started in May 2003 in Jhabua, Dhar and Ratlam districts was to end in Dec '05 and was to give special emphasis for tribal communities. It was to develop 11 819 ha at a cost of Rs 12.48 crores. 6296 ha has been developed by Oct 04 at a cost of Rs 4.3 crores.

Ministry of Rural Development WDP Ministry of Rural Development also has a number of watershed Development projects. The Drought Prone Areas Programme, the Desert Development Programme and the Integrated Wastelands Development Programme (started in 1989-90) of the ministry are being implemented in accordance with the Guidelines for Watershed Development from April 1, 1995. The guidelines were revised in Sept 2001. From Jan 2003, Hariyali initiative was launched for this programme to empower the PRIs, both financially and administratively, under which all DPAP, DDP and IWDP programmes are to be implemented through PRIs. According to Annual Report of the Ministry for 2004-5, 972 blocks of 182 districts in 16 states are covered under DPAP. 235 blocks of 40 districts in 7 states are covered by DDP. The blocks that are not covered under these two programmes are covered under IWDP. The norm for IWDP is Rs 4000 per ha till 1999-2000 and Rs 6000 thereafter. Rs 5500 per ha is the contribution of centre and the rest is to come from the state govt. At present IWDP is active in 403 districts.



Power Options

'Negawatts are overtaking megawatts'

According to the World Alliance for Decentralised Energy

(www.localpower.org) estimates, decentralised sources (not including biomass or small hydro) generated 52% of energy in Denmark, 39% in Netherlands, 16% in Japan, 14% in China and 7.2% worldwide in 2004. The world is beginning to understand the positive force of negawatts, which is doing more with less megawatts. Micropower has overtaken nuclear power in the global market place. The cheapest, most reliable power is typically produced near the point of consumption. (Business Standard 310106)

Reducing T&D loss can save Rs 14 B The power distribution companies of Rajasthan have started on a project to reduce transmission and distribution losses. If the plan succeeds, there will be no need of raise power tariff up for the next five years. The distribution companies had started feeder renovation scheme with the help of Central Govt, which received good results. Now the companies have started 'Urban Focus' scheme in 12 districts. The T&D loss in these districts is about 33%, which is targeted to reduce to 17% by March 2006. If the scheme is implemented across the state, the companies may save Rs 14 B annually after reducing 20% losses. (DANIK BHASKAR 151005)

Renewable energy Potential in India

Source	Estimated potential	Installed capacity (on 310305)
Wind Power	45000	3595
Biomass power	19500	749.53
Small hydro (upto 25 MW)	15000	1705.63
Waste to energy	1700	44.98
Solar	20 MW / sq km	2.64

(POWER LINE 0605)

Karnataka CDM projects cleared The Centre has approved 10 Karnataka projects as fit for attracting foreign investment under the internationally accepted clean development mechanism. The Union Cabinet has cleared the 10 Karnataka projects proposed by the private sector as well as voluntary organisations. Among the approved projects, there are two biogas-based cogeneration power projects by Shree Renuka Sugars Ltd in Belgaum and Bannari Amman Sugars Ltd in Nanjangud. A 3 MW wind power project at Chitradurga district by Encon Service Ltd has also been declared eligible. There are 4 HEPs— a 6 MW HEP at Somanamaradi village in Deodurg taluk in Raichur; a 10.25 MW HEP at Chunchi Doddi in Kanakapura taluk in Bangalore (rural); a 20 MW Kabini HEP and Mahatma Gandhi tail race HEP at Talakallale in Shimoga by Ambuthirtha Power Private Ltd. Two biomass projects have received the nod. The first one is to create five biomass gasifier based power plants for different locations in Tamil Nadu and Karnataka proposed by Women for Sustainable Development; and the second one is Bagepalli biogas programme by

ADATS. The final one is a project on reduction of green house gas emissions through interventions in the supply and demand side in the electricity distribution network in Gubbi sub-station under the overall Gubbi efficiency improvement project. (DECCAN HERALD 291005)

The Plans of Vishal Ltd The Ahmedabad-based Vishal Exports Overseas Ltd will invest close to Rs 5.5 B to set up a wind farm project in Tamil Nadu (Rs 4.5 B, to be commissioned in two years) and five HEPs (combined capacity 20 MW, investment Rs 1 B) in Himachal Pradesh (3) and Uttaranchal (2). The company has signed power purchase agreements with the electricity boards of these states and will sell power to them. While the PPA with the Tamil Nadu SEB will be for ten years, the pact with other two SEBs will be for 40 years. "For the Rs 4.5 B wind farm project, about Rs 3 B will be in the form of debt from banks and FIs, while the remaining Rs 1.5 B will be in the form of equity," sources said. On the hydro power projects, Rs 700 M will be in the form of debt and the remaining 30% in the form of equity. VEOL has already commissioned 19 wind turbine generators in Tamil Nadu and Rajasthan, aggregating to 16.2 MW, at a total project cost of Rs 690 M. VOEL recently commissioned its Rs 56 M, 1-MW HEP through its subsidiary Hateshwari Om Enterprises Private Ltd at Rohru near Shimla. (BUSINESS STANDARD 110505)

CHINA Energy efficiency An ADB report reveals that energy efficiency improvements at existing power plants are a more cost-effective way of increasing supply than building new plants. In 2002, investment in energy efficiency in China totaled CNY 23 B, only about one twentieth of the amount spent on electricity generation. According to ADB calculations, efficiency modifications to the Jiangsu plant (where ADB is working with China) will increase output by 900 MU in the first year and by 2800 BU in the second year. Efficiency gains will require an investment of a mere CNY 0.06 (less than one US cent) for each additional unit of electricity generated, which is about one quarter the cost of thermal power generation using existing technologies. Consumption per unit of GCP in China is 3.8 times of that of the world average and 11 times of Japan's level. (chinadevelopmentbrief.com 250805)

UK Britain produces about 4% of its electricity from green sources and has a target of raising that to 10 % by 2010. The last decade has seen a sharp increase in the uptake of some technologies, especially solar PV, with the price falling by around 7% per year. (BBC 151005, REUTERS NEWS SERVICE 181005)

A Renewable Energy Law for India? World Institute of Sustainable Energy advocates that India should have a legislation that will help development of renewables. 8 Europe countries have acts and China passed an act in Feb '05. It is not clear what is the definition of renewable energy according to WISE. (Green Energy Nov-Dec '05)

SMALL HYDRO The country has an estimated small hydro potential of about 15000 MW (up to 25 MW), though the table below gives the total potential at 10 300 MW. So far, 514 SHPs with an aggregate installed capacity of 1700 MW have been installed. 159 projects with a capacity of 488 MW are under implementation. The completed and under construction SHPs constitute a mere 1.5% of the potential. SHP projects involve lower investment and quicker financial returns. SHP has emerged as the cheapest source of power amongst renewable energy and yet very small proportion of the resources is being allocated for such projects, whereas the large hydro projects are allocated most of the resources.

SN	State/UT	Potential		Existing Projects		Ongoing Projects	
		Sites	Capacity	Sites	Capacity	Sites	Capacity
1	A P	286	254.63	57	178.81	5	7.30
2	Arunachal	492	1059.03	53	32.50	24	51.51
3	Assam	46	118.00	3	2.11	8	51
4	Bihar	92	194.02	5	45.90	9	14
5	Chhattisgarh	47	57.90	4	13.5	1	5.50
6	Goa	3	2.60	1	0.05	--	--
7	Gujarat	290	156.83	2	7.00	--	--
8	Haryana	22	30.05	5	62.70	--	--
9	H P	323	1624.78	49	108.04	7	52.70
10	J & K	201	1207.27	27	102.24	9	13.31
11	Jharkhand	89	170.05	6	4.05	8	34.85
12	Karnataka	230	652.61	48	268.83	8	21.95
13	Kerala	198	466.85	14	84.62	6	60.40
14	M P	85	336.33	8	41.16	3	24.20
15	Maharashtra	234	599.47	27	207.08	4	15.25
16	Manipur	96	105.63	8	5.45	3	2.75
17	Meghalaya	98	181.50	3	30.71	9	3.28
18	Mizoram	88	190.32	16	14.76	3	15.50
19	Nagaland	86	181.39	8	20.47	6	12.40
20	Orissa	161	156.76	6	7.30	7	40.97
21	Punjab	78	65.26	23	111.40	4	5.75
22	Rajasthan	49	27.26	10	23.85	--	--
23	Sikkim	68	202.75	12	35.60	5	15.20
24	Tamil Nadu	147	338.92	12	77.70	1	6.60
25	Tripura	8	9.85	3	16.01	--	--
26	U P	211	267.06	8	21.50	1	3.60
27	Uttaranchal	354	1478.24	75	72.45	25	25.17
28	West Bengal	145	182.62	20	92.26	3	5.60
29	A&N	6	6.40	1	5.25	--	--
	Total	4233	10324.37	514	1693.34	159	488.79

(Powerline 0605)

HP Himachal's first 1 MW HEP in the private sector started generating power at Ching in the Jubbal area of rural Shimla district. The CM said that 202 MoUs for generating a total of 465 MW from HEPs have been signed with private entrepreneurs. DPRs for 168 out of 202 HEPs had been received and techno-economic clearance to 102 HEPs had been accorded by the competent authorities. The implementation agreements for 81 HEPs having a capacity of 239.8 MW had been signed and were at different stages of getting statutory clearances. 9 HEPs of private developers having an estimated capacity of 22.2 MW had been commissioned and 7 HEPs of 1155 KW had been commissioned by HIMURJA so far. HEPs up to 5 MW were being allocated to the HP residents on a priority basis.

⇒ A Mumbai based Joiner HEP Ltd has proposed to Himurja to undertake 3 MW Joiner-II HEP, in Chamba dist of HP. The estimated cost of the HEP is Rs 201.3 M for the base year Oct '04. The powerhouse is located on the Right Bank of Joiner Nallah, utilising a gross head of 70 m. Another Noida based Kanchanjunga Power Company proposes to undertake 11 MW

Baragaon HEP in Kullu dist at a cost of Rs 515.4 M. The powerhouse will be located near village Manglan on the right bank of Beas river utilizing a maximum gross head of 400.28 m. Both are to be run of the river schemes on Joiner Nallah, a tributary of Ravi river (Joiner-II) and Sanjoin & Bijara streams (Jargaon), tributaries of Beas respectively.

⇒ **Water mills** HP has received clearance from Ministry of Non-conventional Energy Sources for its water mill cum power project, popularly known as Gharat. The first pilot project would be established at Kothi in Kullu dist. HIMURJA had sent a proposal to the Centre to implement 100 such projects, while the Centre has approved only a pilot project. The average cost of one project would be about Rs 0.15 M, the MNES would provide Rs 0.1 M subsidy. The water mills would provide power to the nearby households. Some projects would also be connected with grid. (THE HINDUSTAN TIMES 130505, 200505, THE TRIBUNE 130505, DANIK JAGRAN 030805, THE HINDU 211005)

J&K The Jammu and Kashmir govt has decided to construct 37 mini HEPs, with total capacity of 59.25 MW. The work on four HEPs at Pahalgam, Baderwah,

Faftal and Igo-Mercelang with combined capacity of 7.5 MW was nearing completion. Efforts were on to start construction of 11 mini HEPs at Aharbal, Khamil, Hirapora, Athwato, Ranjala Dumadi, Tangmarg, Mandi, Boniyar, Brenwar and Drung as the technical formalities have been completed. 22 more HEPs have been identified and work is to be initiated soon.

⇒ A scheme for re-modeling of seven ongoing old projects including Lower Jhelum, chenani-II, Old Ganderbal, Upper Sind-II, Bazgo, Hunder and Sumoor has been undertaken at a cost of Rs 137.75 crore. The work would extend the life of these HEPs by 20-25 years and would generate additional 48 MW. 9 large HEPs with installed capacity of 2187.5 MW are being taken up under State Sector. 6 HEPs are taken up by NHPC with installed capacity of 2679 MW.

⇒ J&K has adopted Uttaranchal model of upgrading the water mills. The Army is setting up 1000 mini HEPs in the border belts. While 300 such projects are apace under Operation Sadhbavna, 400 are being set up under Border Area Development Programme and remaining 300 through non-conventional energy corp. (PTI 290505, DAILY EXCELSIOR 120805, 111005)

Punjab The Punjab Energy Development Agency has finalised 135 micro HEP sites on various canals, out of which, 35 sites have been allotted to private parties, while 12-15 are in the process of allocation. For the remaining, the tenders will be called. The irrigation wing will not levy any charges. Eight such projects are running and 41 are in pipeline.

⇒ PEDA has so far commissioned 16 mini HEPs including 8 private projects with total installed capacity of 21 MW. PEDA now intends to bring in more private sector participation for another 42 HEPs on different canal falls. (BUSINESS STANDARD 110505, DIVYA HIMACHAL 150705, THE TRIBUNE 160705, International Water Power and Dam Construction 091105)

Orissa The Govt has cleared 20 mini HEPs in private sector with combined capacity of 250 MW, the govt is to purchase the generated power. (POWER LINE 0605)

Jharkhand The Jharkhand govt has decided to concentrate on small HEPs. The state has identified 44 spots with a capacity of 25 MW each. These include nine dams, 12 waterfalls, 16 rivers and natural water reservoirs, spread over seven districts of Ranchi, Palamau, Gumla, Lohardagga, Dumka, E Singhbhum & W Singhbhum. The HEPs will be developed with the help from private parties and Bihar State Hydrel Power Corp. The HEPs assume significance as only 11,000 villages of the total 32,000 villages in the state have been electrified.

⇒ The Jharkhand Renewable Energy Development Agency established in 2002 has not been able to add a single megawatt capacity from renewable sources till May '05. The state govt is yet to formulate policy on renewable energy. JREDA has conducted a survey of 80 HEP sites and out of these 14 have been selected for a survey for starting construction. The potential of

wind energy in Jharkhand is currently being assessed. JREDA Chairman claimed that the state has a very high potential of biomass energy. Bushes of "lantana camera" (locally known as putus) are found in abundance and by using this source of energy about 2,000 villages can be electrified. JREDA has been able to install solar streetlights at about 500 places. (THE TIMES OF INDIA 250505, IANS PR 181005)

Protests in Karnataka The concerned Cabinet subcommittee has decided to allow the mini HEPs at the Abbi Falls. Different groups had organised protests against the project. Villagers of Kalakeri-Nidugane, where the Abbi Falls is located contended that the project would submerge villages and displace people. Meanwhile, members of Cauvery Sene and Kodagu Anekattu Virodhi Samiti vowed to continue their struggle against the project with the help of the people of Kalakeri-Nidugane villages under which the proposed project falls. The members said the Govt has betrayed the people of the district. The 3MW project is expected to cost Rs 120 M, and the Govt will bear two-third of the cost, the rest will be borne by Rephidim Power Supplies Pvt. Ltd. The State Govt has approved 11 "run-of-the-river" HEPs for the private companies in Kodagu district since 1992, which are as follows:

Project	Commissioned
Harangi project	1992
C.V. Kakkabe project	1992
Kirtihole project	1994
Abbi Falls Project	1996
Balyandrahole project	1996
Irpu project	1996
Manjadka project	2001
Abbimatha-Shantalli project	2002
Payasvini project	2002
Nandimotte project	2003
Barapole project	2004

(THE HINDU 071105, 161105)

Sikkim SBI Capital Markets Ltd has arranged a Rs 70 crore loan for 4 small HEPs in Sikkim with total capacity of 16 MW. The syndicated loan, raised at 8% interest rate for ten years, is committed by a consortium of three banks led by United Bank of India for state Public sector unit Sikkim Power Development Corp. SPDC has a plan to establish 11 small HEPs with total capacity of 25 MW and the 4HEPs mentioned above are part of this plan. (THE ECONOMIC TIMES 181105)

Community HEP in Bhutan Mongar dzongkhag has received Nu 360 000 from the UNDP-GEF, for a 100 kW mini HEP at Sengor. The project is a part

community would have to take responsibility for operation, maintenance, pricing and collecting electricity bills and ensuring the sustainability of the micro HEP.

of the dept of energy's 'community based micro HEP' plan to construct 3 mini HEPs that will supply electricity to off-grid villages in Tang in Bumthang, Sakten in Trashigang and Sengor in Mongar at a total cost of Nu 180 M in the current plan. (Kuenselonline 071105)

Wind Power Nearly 40% of India's installed electricity capacity of over 120,000 MW could be generated from wind energy (at present 2.7% of power is available from wind energy essentially using imported machines). By Oct '05 wind power (4225 MW installed capacity) has already exceeded nuclear power (2770 MW, installed capacity). Cost is the major roadblock to more large scale utilisation of wind power. Typically it costs around Rs 5-6 crores per MW to put up a medium-scale wind turbine. This is partly because all the wind turbines in use in India are either imported or manufactured under license. In fact, the know-how to manufacture wind turbines is still not really available in India. Wind Energy division at the National Aerospace Laboratories, Bangalore, in partnership with private industry is working to provide the critical input. The critical element of wind turbine technology is the design of the blade and rotor. NAL's goal is to develop a wind turbine ensuring that the technology is suitable for Indian conditions & save 50% of the cost of imported turbines.

Minister for Non-Conventional Energy Sources has claimed that of the total grid power capacity in India, 7% amounting to 7000 MW comes from renewable sources. Wind power alone contributes 4% with installed capacity reaching 4,225 MW in Oct '05 making India fourth after Germany, USA and Spain. The installed capacity has increased fourfold in the past three years. The country added 632 MW in April-September i.e. the first half of 2005-6. The govt has adopted an approach to facilitate in raising the capacity utilization factor of the wind energy sector to at least 25% by 2011-12. The govt has been mapping areas most suitable for wind power systems.

The Ministry for Non-Conventional Energy Sources and the Minister have been given the World Wind Energy Award-2005 for "Outstanding Achievements in Favourable Policies for Wind Energy"

India's wind energy capacity addition in 2004 was rated the third largest in the world, with annual installations of 875 MW, only after Europe and US. This accounts for 10.7 % of the total MW of capacity added globally. Europe and US have an installed capacity of 34,725 MW and 6,750 MW respectively as in 2004. It is expected that India's installed capacity would touch 8,300 MW by 2009. Seven states, namely, Tamil Nadu, Karnataka, Andhra Pradesh, Rajasthan, Maharashtra, Gujarat and Madhya Pradesh account for over 99 % of the wind power installations. As of 2004, TN accounts for the highest share at 56.7 % of the capacity, followed by Maharashtra at 12.7 %.

Wind power projects employ 25-30 people per MW installed capacity, through direct and indirect employment. (BUSINESS STANDARD 200905, DECCAN HERALD 041005, REUTERS 091105, PIB 291105, 2004-5 Annual Report of World Institute of Sustainable Energy, Pune)

TN to be the largest wind power producer Tamil Nadu now stands first in the country and could soon become the world's largest producer of wind power when it crosses 2 045 MW. The CMD of TN Energy Development Agency said Tamil Nadu's share was 2 040 MW, thanks to the State Govt's support to set up wind farms at Aralvaimozhi Pass near Nagercoil, Coimbatore, Kayathar and other places. California (US) had installed capacity of 2,045 MW from wind power, TN hopes to cross that figure soon. Officials of the Indian Wind Power Association claimed that number of new windmill units in TN had spurted during 2004-05 adding an aggregate generation capacity of 679 MW. ⇒ TN is also working in other renewable energy sources. The TEDA has selected and recommended 37 bio-mass power projects for a total capacity of 260 MW in the last two years. Director of National Institute of Ocean Technology claimed that the institute was involved in developing technologies for wave & tidal energy. Research efforts were also underway on conversion of ocean thermal energy. The NIOT has taken up a feasibility study for harnessing tidal energy at the Gulf of Khambhat. (THE HINDU 300505, 260905, THE BUSINESS LINE 120805)

Forty homes under the shed of an indigenous windmill

Wind and will power Two boys of tribal origin and an engineer activist built

a windmill that will light upto 40 homes in their village. 1.2 KW windmill was erected in the village Mozda of Gujarat in Narmada valley. Mozda Collective, an NGO, is behind the project. 6-25 km per hour of wind velocity during March-Aug will be utilised. The NGO is also planning solar back up. The funds for fabrication and installation were arranged locally from friends and well wishers in Surat, Vadodara, Ahmedabad and Mumbai. Villagers contribute to the running costs and would come with their smaller 12 volt batteries every third day and recharge from the 48 volt one. That would help them burn 1.2 watt LED lamps for upto five days. 20 days of learning in Dhulia Engineering College under the guidance of Prof Shyam Patil and Ajay Chandak helped these two boys return to their village with an ambition. (THE INDIAN EXPRESS 050605)

UP plans The Uttar Pradesh Govt has drafted a plan to explore windmills. The districts of Lalitpur, Mirzapur, Jhansi, Agra and Mathura have been identified for the survey where wind velocity is higher. A proposal has been sent to the Union Ministry for Non-Conventional Energy Sources for setting up 1200 - 1500 KW units. (BUSINESS LINE 141005)

Kerala Agency for Non-Conventional Energy and Rural Technology (jointly with Kerala State Electricity Board) is in the process of setting up wind farms with 600 MW capacity & has identified 16 sites. (BUSINESS LINE 190905)

W Bengal The W Bengal Renewable Energy Development Agency has recently installed India's first wind-diesel hybrid power plant at Sagar Island and also the country's largest off-grid bio-mass gasifier power plant to electrify five villages in the Sunderbans region. An integrated renewable energy project costing Rs 3 B is to be set up with part German investment to provide electricity to over 0.35 M people. The Union Govt is to bear Rs 1.5 B and the other half to be borne jointly by the state govt and the grants from Germany. It is planned that by 2010, at least 10 % of Bengal's power generation is to come from renewable energy, with 2 M people to get power from renewable energy projects.

⇒ On a visit to Sagar islands, the President of India assured WB govt that he will write to the centre to clear the Rs 1.35 B funding for the project from the centre. The project also includes a significant solar energy component. (BUSINESS STANDARD 030505, Statesman 180106)

Wind-solar energy in telecom One of the telecom majors has started operating mobile repeater & relay stations which uses solar photovoltaic and wind energy with the wind turbines foisted on the telecom towers. The two towers, perhaps the first of their kind in India, are located in the Ranigunj-Asansol coal belt in the DVC area (the area was not electrified). It would cost double to get the power from nearby conventional energy sources. Kolkata based Exide industries has developed the hybrid system. Similarly, the Reliance Infocomm has taped the alternative energy sources in Durgapur (Bengal). (THE HINDU 050605, BUSINESS STANDARD 300805)

Sri Lanka Sri Lanka has the potential to generate 24,000 MW electricity from wind, which is about ten times the present total installed capacity. Wind power installed capacity is about 3 MW at present. The Central Electricity Board is planning to set up a 30 MW wind power plant with the financial assistance of Germany. Studies revealed that nearly 5000 sq km (6% of the total land area) is available for potential wind power generation. (OBSERVER 220505)

Spanish company in India World leaders in wind energy generation and a key player in renewable energy sector, Spanish company Iberdrola announced they are looking for strategic partners to enter the sector in India. Their target is to achieve 8000 MW energy production till 2008. Iberdrola has international experience and has developed activities with international institutions in projects related to renewable energy for the European Commission, World Bank, Inter American Development Bank, in almost every continent. (BUSINESS LINE 291105)

World Denmark is the fourth biggest wind power market in the world after Germany, Spain and the United States. Around one quarter of Denmark's electricity use is covered by wind power but on a global scale, wind power only accounts for less than 0.5%. (REUTERS 271005)

BIOMASS FOR POWER Biomass currently contributes 14% of the total energy supply worldwide. The total capacity in the world is 35000 MW, India's share is 2%.

SN	State	Biomass	Cogeneration
1	A P	182.2	63.0
2	Chhattisgarh	11.0	--
3	Gujarat	0.5	--
4	Haryana	4.0	2.0
5	Karnataka	36.0	116.0
6	M P	1.0	--
7	Maharashtra	3.5	32.5
8	Punjab	10.0	12.0
9	Rajasthan	7.8	--
10	Tamil Nadu	34.0	138.5
11	U P	--	73.0
	Total	290.0	437.0

The estimated potential from fuel wood & crop residues & bagasse (sugar industry) is 19500 MW. The installed capacity has reached 727 MW as above. (Powerline 0605)

Agri Biomass use by Cement Plant Madukkarai Cement Works of the Associated Cement Companies of Coimbatore have partly switched over to biomass. The company decided to try biomass for pyro-processing at its cement plant, where limestone is burnt at high temperature to get clinkers. Normally, coal is used and the plant needed 350 T of coal a day. However, it was able to source just about 200 T. Hence, it decided to try agro-waste such as rice and coffee husk, coconut, tamarind and groundnut shell, cashew cover and coir instead of only coal (up to 50%). The company conducted a study eight months ago on the availability of these materials from places within a 70 km radius of the plant and has entered into an agreement with agro-waste sellers. The company pays for transporting the material. The plant is able to get 150 T a day as against the need of at least 200 T (even 200 T replaces just 20 % of coal). Ash generation from agro-waste (5-6%) is less compared to coal (about 35 %). (THE HINDU 051005)

Electricity from vegetable waste The Chennai Metropolitan Development Authority is promoting a project to generate power from the vegetable waste of the Koyambedu wholesale market. The plant will consume half of the waste generated by the market to generate 4800 units of electricity in a day. The Union Ministry of Non-Conventional Energy Sources is providing Rs 37.5 M grant, with the balance being met by the CMDA. The CMDA has entered into an agreement with the Tamil Nadu Electricity Board, under which the power generated will be sold at Rs.3.15 per unit and the buy-back price from TNEB is Rs 5.8. In Sept 05, the plant started feeding power into the TNEB grid. The full capacity of the plant is 250 KW, generated from 30 T of vegetable waste. At present, the plant operates only for 4-5 hours a day using about 15 T of waste. About 20 KW is being fed into the grid daily. The power generated by the plant can meet only a fraction of the Koyambedu Market's needs. But it would still bring considerable savings. (THE HINDU 250605, 280905)

SHG in TN establishes biogas power plant A self-help groups of Melapatti village in Kadamalaigundu-Mayiladumparai union in Theni district of Tamil Nadu has successfully introduced non-conventional energy to generate power for their total requirements. Amma self-help group, which maintains a sanitary complex in the village, has set up a Deenabandhu model biogas plant at a cost of Rs 0.19 M with a subsidy of Rs 50 000 from the Union Ministry of Non-conventional Energy Sources. The 10 cubic-metre capacity biogas plant has been generating 3.5 KW per hour, using night soil of the sanitary complex. It has been utilised to operate one HP motor for maximum five hours and three HP compressors for pumping water for sanitary complex and to burn lamps in 10 rooms in the complex. The slurry generated from the plant after power generation is manure. (THE HINDU 220705, BUSINESS LINE 230705)

Orissa Govt of Orissa has shown interest in a 6 MW power plant from solid waste for the twin cities of Cuttack & Bhubaneswar. So far 3 firms including Ekadanta Pvt Ltd (Hyderabad) have shown interest. (THE PIONEER 010905)

MP A Village Energy Security project through biomass was inaugurated. Such plants would be installed in 11 more villages. The Ministry of Non-Conventional Energy Resources will contribute 90 % and the rest would come from Forest Dept. (THE PIONEER 311005)

Punjab The Punjab Govt has allocated six biomass-based power projects of 66 MW capacity to 3 private developers, awarding the contracts to TPS Projects Ltd, New Delhi; Energen, Chandigarh and Meenakshi Power Pvt Ltd, Hyderabad. The Director, Punjab Energy Development Agency, said that Punjab has unlimited availability of biomass in the form of agro residue namely paddy straw, rice husk, cotton and arhar stalk. The project will be set up on build, own and operate basis in the tehsils of Malerkota, Batala, Patti, Talwandi Sabo, Ferozepore and Fazilka at cost of Rs 2.64 B. (THE TRIBUNE 141105)

SC: stop payment on Lucknow energy plant The Supreme Court, on hearing a PIL, directed the Centre to cease payments on the Rs 150 M subsidy being provided to the two private companies which set up the Lucknow's waste-to-energy plant. The Chennai-based power company, Asia Bioenergy has alleged that the Lucknow Municipal Corp was supplying completely segregated solid waste. This, the company had claimed, was the reason why it was allegedly producing only 0.3 MW of power at the plant intended to generate 5 MW. However the Mayor has alleged that the company was not interested in running the plant. Asia Bioenergy had shut down the plant in Dec '04 after operating it for two years. (THE INDIAN EXPRESS 250605)

Delhi The president of India has urged Delhi to convert the solid waste into electricity; he said this will also reduce pollution. (Pioneer 230106)

SOLAR POWER The average daily sunlight radiation varies between 4-7 KW per sq meter in different parts of country. There are on average 250 to 300 clear sunny days a year. Thus the country receives about 5000 trillion KW of solar energy in a year. Ironically though, the contribution of solar energy in the total energy mix is negligible. (POWER LINE 0605)

W Bengal Environ Energy-Tech Service Ltd has planned to establish a large solar photo-voltaic module manufacturing unit in collaboration with WBREDA in West Bengal. It will ensure 30 MW solar power station costs Rs 400 crore. WBREDA is also working on an Rs 200 crore project for electrification of 50 000 households entirely based on PV. Environ Energy is recognised by WB and has a finance tie-up with IFC, Washington. As per the power ministry India has nearly 78 M un-electrified households of which over 40 M are in eastern India.

⇒ **Thin Film solar panel** The first-ever unit in South Asia to produce thin-film solar photovoltaic panels with indigenous technology is coming up in Howrah, W Bengal. The Rs 60 crore project is being funded by four private agencies and the central govt's dept of science and technology. Once commissioned, the unit will facilitate supply of means to achieve alternative power to people with modest purchasing power in Bengal and elsewhere. The new panels would be much cheaper than the existing solar panels. A team of researchers is developing the thin-film technology in Kolkata for some years. Now they are setting up a plant for commercial production of thin-film panels. Production is expected to begin in 2005-6. Thin-film solar panels are now manufactured only in the US, France and Japan. The manufacturing process includes putting a coat of silicon-based paint on a special metal sheet.

⇒ **W Bengal** The W Bengal Minister for power has said at the time of laying foundation stone for Solar Housing Estate project that Integrated Solar Housing Estate is going to be the first such housing complex of India. W Bengal Renewable Energy Development Agency will supervise the installation of solar cell. Not only solar panel and water heater but also the design of the house will follow the Passive Solar Technology. The system can supply 250 unit of electricity in a month. He also mentioned that if that power is not required then house owners can sell it to the electricity board. The cost of those houses will be Rs 38-40 lakh. The project is for the New town in Razarhat, a satellite city of Kolkata. (ANANDABAZAR PATRIKA 300605, BUSINESS LINE 290905, THE TELEGRAPH 181005)

Rashtrapati Bhavan One proposal under consideration is to set up a 8 MW Grid Locked Solar Power Photo-voltaic Plant occupying an area of 900 sq m. The cost of the plant would be fully paid back in less than 20 years. (BUSINESS LINE 160905)

AP The state govt has made it mandatory for all apartment complexes, hostels and nursing homes to

install solar water heater units, according to Non-Conventional Development Corp of AP. Necessary instructions were also given to the Municipalities and Municipal Corps to amend their existing laws to include the provisions of the order.

⇒ **APREC Order** For promoting power generation from renewable sources, the Andhra Pradesh Electricity Regulatory Commission has issued an order saying that each distribution licensee, captive power consumer and open access consumer should purchase renewable power amounting to not less than 5 % of their total requirements during 2005-6 - 2007-8. (THE NEW INDIAN EXPRESS 290905 , THE HINDU 221005)

TN Tamil Nadu & the World Bank have agreed to implement the carbon credit program to save energy in 80 municipalities. Commissioner of Municipal Administration stressed on enforcement of mandatory use of solar water heating and the implementation of waste to energy programmes in the Municipal Corps and Municipalities. The state accounted for 35% of the energy produced from renewable energy sources in the country. The govt has now made the installation of solar energy structures mandatory in buildings to be constructed. (THE HINDU 211105)

Power from sea for desalination Two Australian companies have claimed that they can turn ocean waves into drinking water at very little cost. Energetech Australia's initial aim was to generate cheap electricity using wave power, but it realized that in teaming up with desalination specialist H2AU it could use the same power to produce potable water at a low cost. Most desalination installations use electricity to create the pressure needed to drive a reverse osmosis system, but the two Sydney-based, privately owned companies' combined technologies use wave pressure directly to power a reverse osmosis desalination plant. This process avoids the multiple energy losses in converting wave energy to electricity before using the electricity to drive pressure pumps. According to the company the entire operation can be run off the coastline, where the residual concentrated brine is released back into the ocean and the only land connection is a pipe carrying potable water ashore. Energetech is investigating projects at sites including Rhode Island, Spain, England and Australia. (LA Time 071105)

Role of WB criticised A report by advocacy group Friends of the Earth, urged the World Bank to rethink its role in funding and promoting clean energy, amid an energy boom in fast-growing developing countries. The report based on publicly available documents for WB Group energy lending mentioned that the WB has failed to create policies that promote clean energy and rarely considers climate change in its projects. It called on the WB to promote clean technologies like wind and solar power, rather than environmentally harmful dams, oil & coal projects. (Reuters 011105)

Ken Betwa Campaign In Uttar Pradesh and Madhya Pradesh areas of Bundelkhand, a campaign has been launched by local organizations to create awareness among the people about the danger of the Ken Betwa River link proposals. Two cycle yatras were undertaken in the areas between Dec 31, '05 and Jan 14, '06 under the leadership of Shri Suresh Raikwar and Pushpendra Bhai. Both the yatras also met for a convention at Chila in Banda district on January 13. 40 people traveled in the yatras and contacted people 260 villages during the Yatra. Overwhelming majority of the people were against the river link proposal and it became clear in the yatras that the govt of Uttar Pradesh and MP has compromised with the interests of the people. People expressed their determination to oppose the link. Sureshbhai said that if the government were to make proper use of local resources in full participation with the people, then there would be no need for the link. Pushpendrabha said that very few people have been given correct information about the project. The campaign launched by Sureshbhai will also involve the schools to rejuvenate the existing small water resources of the area, some of them existing since the times of Chandel kings.

Book Release On January 19, the Union Water Resources Secretary Mr Hari Narayan released the book *Interlinking of Rivers in India: Overview and Ken-Betwa Link*. The book published by the National Civil Society Committee on Interlinking of Rivers in India and Academic Foundation is edited by Prof Y K Alagh, Ganesh Pangare and Biksham Gujja. While Narayan agreed that there are interstate differences between UP and MP regarding the Ken Betwa link proposal and that the feasibility report of the Ken Betwa link has a number problems, he claimed that the problems will be resolved during the preparation of Detailed Project Report of the link. He did not sound very convincing as the issues are so fundamental that they question the justification of going for the DPR at huge public expenses. The book also contains the SANDRP critique of the Ken Betwa link proposal.

Navdanya Meeting Navdanya had called on a two day convention on "Building Water Democracy, Resisting Water Privatisation" on February 1-2 in Delhi. One of the sessions was on ILR where there was discussion about the opposition to the Ken Betwa Link proposal.

New Publication

Interlinking of Rivers in India Overview and Ken Betwa Link

Editors: YK Alagh, Ganesh Pangare, Biksham Gujja
Published by:

The National Civil Society Committee on ILR & Academic Foundation

Includes SANDRP critique of the Ken Betwa link
Limited copies available with SANDRP

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