

Dams , Rivers & People

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Lead Piece

Ministry of Environment - a Rubber Stamp?

It is a question that has been coming up time and again: Is the Ministry of Environment and Forests merely acting as a rubber stamp for all that the government does, or does it at have a capacity, in the interest of protecting the environment as per the mandate given to it, to say no to ANY proposal put forward to it in the name of development?

We have seen a lot of evidence in the past to show that the MEF is merely acting as a rubber stamp. Here is a latest example. The secretary, the highest official in the MEF, sits as a chairman of the Environment Sub Group of the Narmada Control Authority. The law and the Supreme Court has provided powers to this body to monitor the implementation of studies, action plans and the implementation of environmental aspects of Sardar Sarovar and Narmada Sagar Project. At each stage of additional construction, express sanction from this body is necessary.

On January 6, 2005, the ESG met to consider Gujarat Government's application to raise the height of the Sardar Sarovar Dam from the current 110.64 m to 121.92 m. Upon review of the various environmental aspects, the Sub Group was given following status:

1. Catchment Area Treatment: Madhya Pradesh and Maharashtra: Report on quality of work in non-forest area not available.
2. Felling of trees: All three states: Completed report not available
3. Flora and Fauna: Report to be made available by March 2005, not yet available from all the three states.
4. Carrying Capacity: Report not available from all three states.
5. Fisheries conservation: Final plan not available, implementation not complete in all three states
6. Downstream Environment: Compliance report to be submitted by Gujarat, where this is applicable.
7. Health: Compliance report to be submitted by all three states.
8. Seismicity & Rim stability: Compliance report to be submitted by all three states.
9. Archaeology: Compliance report to be submitted by MP

Under the circumstance, what would be conclusion for giving permission for further construction, when compliance for almost all the aspects is not in place: According to the mandate given to the Environment Sub Group, there can be only one conclusion: Permission to raise the dam height cannot be given.

Guess what was the conclusion of Sub Group? Believe it or not, the sub group gave the permission.

Now tell us are we wrong to conclude that Ministry of Environment and Forests and all the members of the Sub Group present on January 6, 2005 were acting as rubber stamps? Moreover, were they not violating the law, the NWDT award and the Supreme Court orders? It may be noted that the decision taken by the sub group on January 6, 2005 would have far reaching consequences for those thousands of people in the submergence zone of SSP.

However, we would like to give the ministry and others involved in this decision a chance to respond. We look forward to hearing their response.

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Par – Tapi – Narmada Link**No Fear of Unknowns here!**

Benefits areas are not known, how the water will be taken to benefit area, at what cost, when and how much will be taken is not even mentioned, costs are not estimated, people are opposing, water is not available, but feasibility report is ready!

The Proposal The link project consists of 7 proposed reservoirs viz. Jheri, Mohankavchali & Paikhed on Par River, Chasmandva on Auranga River, Chikkar & Dabdar on Ambica River and Kelwan on Purna river and a 401 km long link canal connecting these reservoirs. The total length of the link canal is subdivided into two reaches viz. Par-Tapi (177 km including 5.5 km. tunnel length), and Tapi - Narmada (224 km). The link from Par to Tapi starts with a tunnel connecting Mohankavchali reservoir to Paikhed weir. The open channel link starts from Paikhed weir and drops into Ukai reservoir. The seven proposed reservoirs in this link would submerge 7 559 ha of which 3 572 ha is forestland. 14,832 people and 9,029 livestock would be affected by the submergence. 75 villages will be affected out of which 24 will be submerged fully and the rest will get partially affected. (This is the Task Force Website information, some at variance with the information given in the feasibility report of 1995.)

The proposal envisages transfer of “surplus” water from west flowing rivers between Par and Tapi to undefined “water deficit” areas in N Gujarat. The scheme is located mainly in S Gujarat but it also covers part of the areas of Maharashtra, North of Mumbai on the Western Ghats. The project area falls under the ‘West Cost Plain’ region. Some part of the project area also falls in Peninsula plateaus and central highlands. The basins of the W flowing rivers from Par to Tapi lies between N latitudes 20°13’ to 21°14’ and E longitudes 72°43’ to 73°58’. The Tapi basin lies between N latitudes 20°5’ to 22°3’ and E longitudes 72°38’ to 78°17’ while the Narmada basin lies between N latitudes 21°20’ to 23°45’ and E longitudes 72°32’ to 81°45’.

Aims and claims The main aim of the link is to transfer the surplus water of Par, Auranga, Ambica, Purna and Tapi river basins to Narmada canal command (Miyagam and Vadodara branches) after providing enroute irrigation, so that water saved in Sardar Sarovar Project, as a result of this transfer, could be taken further northwards to benefit Saurashtra and Kutch regions. It is claimed that diverted water will irrigate 0.304 M Ha annually comprising of 0.052 M Ha enroute and 0.252 M Ha in the Narmada command. This link mainly envisage construction of 7 dams, three diversion weirs, 5.5 km long tunnels (two parts), 429.87 km long canal, 6 power houses and a number of cross drainage works. The link is to generate 93 MU through the powerhouses installed at four dam sites at Jheri, Paikhed, Chasmandva and Chikkar and two feeder

canals taking off from Dabdar and Kelwan dams. The total installed capacity would be 32.5 MW.

Par-Tapi reach of canal passes through Valsad, Dang and Surat districts of S Gujarat whereas Tapi-Narmada reach of canal passes through Surat, Bharuch and Vadodara districts. The link project connecting the reservoirs is to be carrying water through Ukai reservoir. The total cultivable command area under the link canal is claimed to be 356 843 Ha, of which 17 411 Ha is enroute command in the reach between Par and Tapi, 23 940 Ha enroute command in the reach between Tapi and Narmada and the balance 315 492 Ha lies entirely in the SSP command. The gross command area is claimed 509 776 Ha.

The Link Canal The capacity of the Par- Tapi portion of the link varies from 44.13 cumecs to 90.9 cumecs. The canal offtake is at FSL 140.70 m. The Chasmandva weir FSL is 130.37 m. After 13 km, Chikkar feeder at FSL of 124.55 m joins the main canal at RD 98.53 at FSL of 120 m. The Dabdar feeder which offtakes from the main dam at FSL 136.96 m joins the main canal at RD 102.3 km at FSL of 119.82 m and Kelwan feeder, offtaking from main dam at FSL 135.46 m joins the main canal at RD 124.20 km at FSL of 115.55 m. The FRL of the Ukai reservoir is 105.13 m. The canal is to outfall into the Ukai reservoir at FSL of 108.31 m.

The 224.53 km Tapi-Narmada portion of the link starts from Ukai reservoir and crosses Narmada River and after connecting the Miyagam branch it terminates at Vadodara branch of Narmada main canal at RD 22.96 km, the FSL of link canal being 48.68 m. The canal capacity at offtake from Ukai reservoir is 196 cumecs and after meeting enroute target area requirements, the canal capacity at the tail end will be 75 cumecs. The canal offtake from Ukai dam is at FSL 81.79 m. There are 60 aqueducts, 32 cross regulators, 20 head regulators, 96 drainage syphons, 4 canal syphons & 106 road-railway bridges along the main-feeder canals.

The total estimated cost of the project is Rs 34.69 B at 1993-94 prices. The annual cost works out to be Rs 3.98 B. Annual benefits are claimed at Rs 4.51 B and the Benefit-Cost-Ratio is claimed to be 1.134.

There is no mention either in the NCAER report, in the feasibility study or on the Task Force Website as to how the water made surplus in SSP command is to be transferred to which areas, when and what will be the quantity of the water, which areas will benefit, what will be costs and the benefits.

Basic Data on Par – Tapi – Narmada Link

| SN | 1 | 2 | 3 | 4 | 5 | 6 | 7 | Total |
|------------------------------------|-------------|---------------|---------|------------|---------|--------|--------|-------------|
| Storages Sites | Jheri | Mohankavchali | Paikhed | Chasmandva | Chikkar | Dabdar | Kelwan | |
| Dam description | | | | | | | | |
| Location (District) | Nasik | Valsad | Valsad | Valsad | Dang | Dang | Dang | |
| River | Par | Par | Nar | Tan | Ambica | Kapri | Purna | |
| Max Height of Dam (m) | Concrete | 36.5 | 70.6 | 90.9 | 35.4 | 29.9 | 62.4 | 62.4 |
| | Earthen | 76 | 70 | 57.4 | 51 | 60 | 51.4 | 50.1 |
| Total length of Dam | 773.5 | 947 | 1306 | 2837 | 1656 | 1046 | 1284 | |
| Length of Dam (m) | Earthen | 515 | 600 | 925 | 2675 | 1444 | 830 | 955 |
| | Concrete | 258.5 | 347 | 381 | 162 | 212 | 216 | 329 |
| Storage description | | | | | | | | |
| Catchment area at the site | 425 | 206 | 315 | 89 | 323 | 482 | 733 | 2573 |
| Catchment area | Gujarat | — | 127 | 46 | 27 | 221 | 482 | 675 |
| | Maharashtra | 425 | 79 | 269 | 62 | 102 | — | 58 |
| Water availability | 75% Dep | 358 | 174 | 244 | 76 | 243 | 289 | 435 |
| | 50% Dep | 487 | 236 | 327 | 112 | 300 | 397 | 555 |
| In Basin & d/s needs | 115 | 61 | 84 | 18 | 132 | 96 | 202 | 708 |
| Surplus water at | 75% Dep | 252 | 116 | 164 | 59 | 124 | 203 | 253 |
| | 50% Dep | 380 | 178 | 247 | 95 | 181 | 311 | 373 |
| Live storage (MCM) | 187 | 180 | 218 | 75 | 130 | 205 | 258 | 1253 |
| Gross storage (MCM) | 203 | 372 | 229 | 82 | 142 | 223 | 284 | 1535 |
| Divertable Yield (MCM) | 242 | 137 | 212 | 76 | 146 | 267 | 270 | 1350 |
| Details of Submergence Area | | | | | | | | |
| FRL proposed by NWDA (m) | 246 | 158 | 248 | 214 | 210 | 169 | 164 | — |
| Water storage cap. FRL (MCM) | 202.76 | 371.65 | 229.43 | 82.00 | 141.91 | 223.00 | 284.33 | |
| Submergence Area: | | | | | | | | |
| Forest Land (Ha) | 408 | 743 | 317 | 300 | 300 | 614 | 890 | 3572 |
| Cultivable and other land (Ha) | 256 | 486 | 589 | 255 | 332 | 482 | 450 | 2850 |
| River Portion (Ha) | 172 | 265 | 88 | 60 | 110 | 153 | 289 | 1137 |
| Total area at FRL Ha | 836 | 1494 | 994 | 615 | 742 | 1249 | 1629 | 7559 |

Note: Nar is a tributary of Par River, Tan is a tributary of Auranga River, Kapri is a tributary of Ambica River.

Forest area submergence in the reservoir

(Ha)

| SN | Basin | Basin Area | Forest Area | % of Forest Area | Forest Area submerged by proposed reservoirs |
|--------------|---------|---------------|---------------|------------------|--|
| 1 | Par | 164800 | 69733 | 42.3 | 1468 |
| 2 | Auranga | 74800 | 28031 | 37.5 | 300 |
| 3 | Ambica | 268500 | 83688 | 31.2 | 914 |
| 4 | Purna | 219300 | 76245 | 34.8 | 890 |
| Total | | 727400 | 257697 | 35.4 | 3572 |

Details of Groundwater Potential

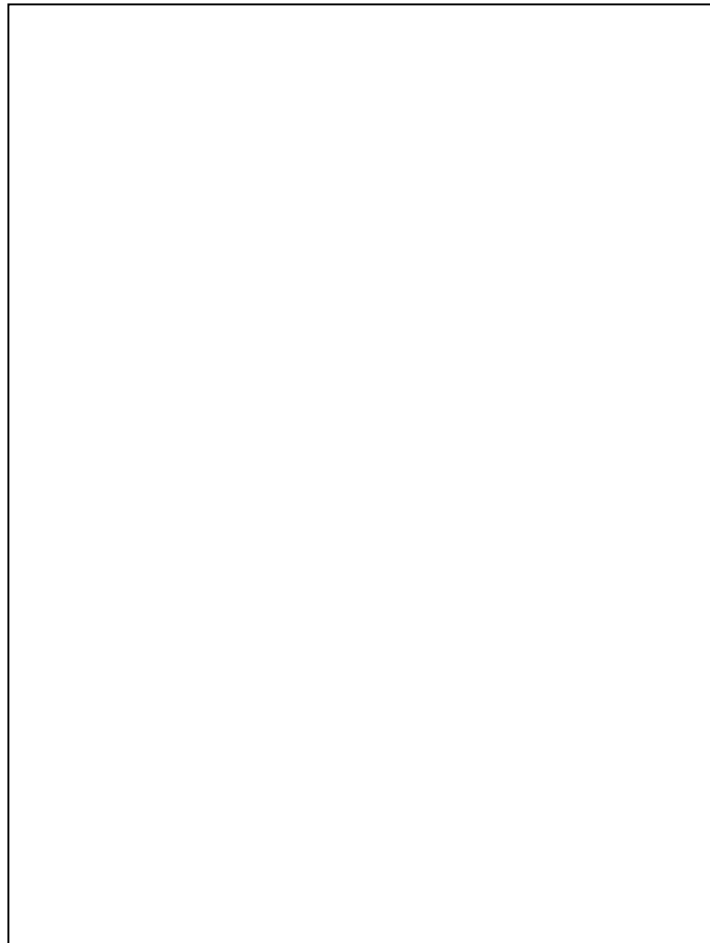
(MCM/year)

| SN | Name of District | Total Replenishable Groundwater | Utilisable Groundwater for Irri. | Net Draft | Balance Groundwater Potential available | %Groundwater Development |
|--------------|------------------|---------------------------------|----------------------------------|---------------|---|--------------------------|
| 1 | Vadodara | 1186.47 | 1008.49 | 146.35 | 862.14 | 14.5 |
| 2 | Baruch | 840.16 | 714.13 | 69.46 | 644.67 | 9.7 |
| 3 | Valsad | 1143.18 | 971.70 | 136.24 | 835.46 | 14.0 |
| 4 | Dang | 144.28 | 122.64 | 0.86 | 121.78 | 0.7 |
| 5 | Surat | 1960.21 | 1666.16 | 162.41 | 1503.75 | 9.7 |
| Total | | 5274.30 | 4483.12 | 515.32 | 3967.80 | |

Source: Groundwater statistics 1991, CGWB

Water balance in the basins

| Basin | Par | Auranga | Ambica | Purna | Mindhola | Total | |
|----------------------------------|---------|---------|--------|-------|----------|-------|------|
| Catchment Area | Sq km | 1648 | 748 | 2685 | 2193 | 1056 | 8330 |
| Gross Annual Yield at (MCM) | 75% Dep | 1522 | 705 | 1818 | 1206 | 427 | 5678 |
| | 50% Dep | 2119 | 962 | 2390 | 1585 | 612 | 7668 |
| Import (MCM) | 71 | 122 | 902 | 578 | 854 | 2527 | |
| Export (MCM) | — | — | — | 80 | — | 80 | |
| In basin water requirement (MCM) | 691 | 637 | 1765 | 1213 | 1098 | 5404 | |
| Regeneration (MCM) | 51 | 60 | 235 | 136 | 185 | 667 | |
| Water Balance at (MCM) | 75% Dep | 953 | 250 | 1190 | 627 | 368 | 3388 |
| | 50% Dep | 1550 | 507 | 1762 | 1006 | 553 | 5378 |



It is proposed to take up the project in 3 phases. In Phase-I, the Link canal originating from Ukai Reservoir and terminating at Kundhela branch of Vadodara branch canal will be constructed to allow transfer of 1554 MCM of available “surplus water” from Tapi at Ukai to Narmada command. In Phase-II, it is proposed to extend the canal upto Vadodara branch of Narmada canal and add Chikkar, Dabdar and Kelwan reservoirs and one weir in the downstream of Chikkar and link canal from Chikkar weir to Ukai reservoir. With the construction of the three reservoirs and main canal of 73.54 km, it is claimed that 683 MCM additional water would become available. There will be three feeder canals of total length 30.27 km connecting Chikkar, Dabdar and Kelwan reservoirs to the main canal. In Phase-III, it is proposed to take up the remaining works.

Ground water The Utilisable Groundwater Resources for irrigation in Gujarat is 1.9169 M Ha m/ year whereas net draft is 0.6411 M Ha m/ year. Thus leaving 1.2758 M Ha m/ year as available potential for future development. Similarly utilisable groundwater resources in Maharashtra is 3.481 M Ha m/ year whereas net draft is 0.6854 M Ha m/ year, thus leaving 2.7956 M H m/ year as available potential for future development. In this way, it is seen that 33.44% and 19.69% of utilisable resources have been exploited in Gujarat and Maharashtra respectively and groundwater potential is still available for development in both states.

Reservoir surveys Based on the toposheet studies, the location of various dam sites were selected for detailed surveys. Survey of three sites, namely Chikkar, Dabdar and Kelwan were earlier got done by Govt of Gujarat through Survey of India. Survey of Mohankavchali and Chasmandva reservoirs were entrusted by NWDA to Survey of India. Survey of remaining two reservoirs namely Jheri and Paikhed were carried out departmentally by NWDA. The survey of Mohankavchali reservoir was abandoned due to resistance from local people.

People's Opposition It is clear from the NWDA reports that there was strong people's opposition to the link even in early 1990s. Specifically, opposition is expressed against portions of Par Tapi link canal, Mohankavchali-Nar link tunnel, Mohankavchali and Paikhed Dams, among others. NWDA does not mention why people are opposed to the project.

Incomplete Assessments The Feasibility reports accepts that it is incomplete in many respects:

- Detailed survey for plant & colony layout not done.
- Detailed surveys in respect of Par-Tapi portion of the link have been carried out for a length of only 196 out of 210 km. The survey work for remaining length could not be done due to opposition by people.
- The link involves a tunnel of 5 km length connecting Mohankavchali reservoir with Nar River upstream of Paikhed weir. The survey for the tunnel could not be conducted due to people's protests.
- A Geophysical and geotechnical investigation of only five sites namely Jheri, Chasmandva, Chikkar, Dabdar and Kelwan could be completed. Surveys of Mohankavchali and Paikhed dams & the tunnel could not be completed due to resistance from local people.
- All the dams proposed in the link are having composite sections; i.e. part of dam is concrete whereas the remaining part is earthen. For the earthen portion, soil samples taken from trial pits were tested at GERI's laboratory. However these trial pits were not sufficient to know subsurface geology in respect of concrete portions.
- Studies for the effect on sub-soil water table have not been carried out.
- It is also mentioned that the reservoir will provide flood relief to the people residing in downstream areas, but no details have given in report about existing floods, flood damages and impact of the project on floods.
- It is also claimed that after providing enroute irrigation, the water saved in SSP could be taken further northwards to benefit Saurashtra and Kutch region of Gujarat, but no details are given as to where, how, how much and when this will happen.
- It is also proposed to provide Drinking water to Vadodara Municipal area but no details are given.

Some other facts:

- The project area falls under zone-III of the seismic zone of India. The value of horizontal seismic coefficient has been taken as 0.12 g.
- The population was projected to 2025 AD from the population figures as per the 1981 census.
- The per capita daily needs for the urban, rural and livestock populations are considered as 200, 70 and 50 liters. The urban water requirement and 50% of rural water requirement are proposed to be met from surface water sources. The requirement in respect of livestock population and remaining 50% of rural population are proposed to be met from ground water resources.
- Actual data on the existing, ongoing and future industries and their water requirement are not available. While the entire industrial water requirement is proposed to be met from surface water resources.
- Two tunnels are proposed in Par-Tapi portion of the link canal. The first tunnel connecting Mohankavchali reservoir and Paikhed weir has a length of 5 km and the 500 m long second tunnel is on the main canal at RD 21.60 km.
- Three diversion weirs are proposed downstream of Paikhed, Chasmandva and Chikkar dams, as the hilly terrain does not permit the link canal to take off from the dam sites.
- According to the revised survey of forest types, these forests fall under "Sub Group 3-B South Indian Moist Deciduous Forests" in which Teak and Sadad form main species.
- The sediment rate of 715 cu m/sq km/ year adopted for the reservoirs of Par-Tapi-Narmada link. While the sediment rate in similar reservoirs are more than the adopted rate. For example the sedimentation rate in Attaria-II and in Machrewa-II reservoir is 726 cu m/sq km/year.
- The average monthly evaporation in terms of depth observed at Madhuban reservoir has been used for simulation studies of all the seven reservoirs.
- Most of the area lying in the basin between Par and Tapi is already under irrigation by the existing schemes like Ukai left bank canal and Kakrapar left bank canal and other projects.
- The terrain of enroute commands in Par-Tapi reach is undulating at number of places. So such portion will be required to be leveled. The cost of the land leveling is to be borne by the beneficiaries.
- The total cost of rehabilitation and resettlement is assumed to be Rs 446 M.
- A provision of Rs 100.4 M has been made towards the cost of land acquisition along the main canal alignment and at the cross drainage works. The total land to be acquired is 2367 Ha. 113 Ha is forestland and the remaining 2254 Ha is cultivated land.
- Total cost of canal and command area development under Unit-I works out to Rs 13.67 B.

Interstate Dimensions As per the study, the utilisable water from Tapi river at Ukai dam site has been

estimated to be 14 500 MCM and the irrigation requirement of Gujarat from Ukai reservoir is of the order of 4546 MCM and the municipal and industrial demand could be of the order of 1000 MCM. Here it seems that the actual demand for municipal and industry have not been estimated. As per the Planning Commission letter of 1961, 7400 MCM of Tapi water should be reserved for utilisation in areas upstream of Ukai project by MP and Maharashtra. Thus NWDA claims that there is 1554 MCM surplus water in Tapi, available for diversion. However, it is not clear if MP and Maharashtra agree to this assessment.

No interstate agreement appears to have been executed on Tapi at Ukai and other rivers.

The entire link canal falls in the territory of Gujarat. However out of seven reservoirs, four reservoirs, Jheri, Mohankavchali, Paikhed and Chasmandva will submerge territory and property of Maharashtra also. Among this Jheri reservoir is completely in Maharashtra whereas other three reservoirs submerge the areas in both the states of Gujarat and Maharashtra. It is not clear if Maharashtra would agree to this.

Earlier Versions Earlier the Govt of Gujarat had carried out study in 1973. The study contained proposal to inter-link the rivers of the state. Thereafter the Central Govt requested the Govt of Gujarat to furnish a master plan, incorporating studies regarding the availability of water, its committed and projected utilization and proposals for diversion of surplus waters to the needy areas. Accordingly a Report was prepared by irrigation dept of Gujarat in 1981: "National Perspective for Water Resource Development - Master plan of Gujarat for utilisation of surplus water of west flowing rivers south of Tapi". The proposal envisaged a link canal interconnecting the Damanganga, the Tapi & Narmada Rivers. But that project could not move forward.

Contradictory Information The official government website on the river links (www.riverlinks.nic.in) gives some information that is at variance with the feasibility report. According to the website, the link will transfer 1 350 MCM of water through a canal of length 401 km by gravity. The total enroute irrigation benefits envisaged are 0.163 M Ha in Gujarat by utilizing 460 MCM and 190 MCM for meeting the transmission losses. In addition to this, about 700 MCM will also be provided to Saurashtra and Kutch areas of Gujarat.

Sources:

1. Feasibility Report of Par-Tapi-Narmada Link, Vol. 1, NWDA, June 1995
2. Lok Sabha Questions, March 10, 2003
3. *Agro-economic, Socio-economic and Environmental Survey of Six Link Projects*, Vol. I & II, NCAER Report sponsored by NWDA, Oct 1993
4. www.riverlinks.nic.in, accessed on 16/02/05

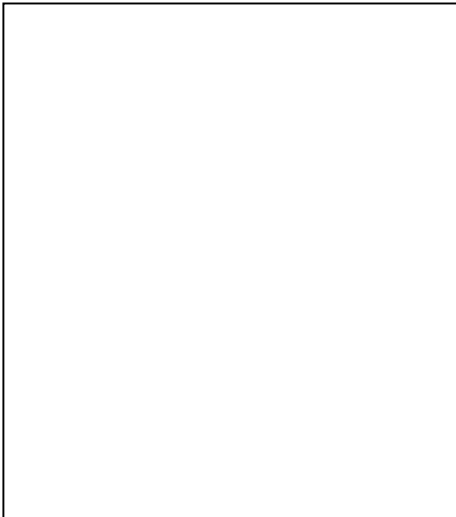
Bipin Chandra and Himanshu Thakkar, SANDRP

The Ganga is Disappearing

Sureshwar D. Sinha [Chairperson of *Paani Morcha*]

Alarmed by various reports that all was not well in the Bhagirathi basin, members of a group of five NGOs led by *Paani Morcha* surveyed the area recently. The group of 25 volunteers, including myself, went up the Bhagirathi {upper Ganga} basin from Haridwar to Gangnani via Rishikesh, Tehri and Uttarkashi. En-route we visited dozens of villages and towns threatened with submergence by the Tehri dam, and met hundreds of peoples uprooted by this project.

After a protest meeting against the stoppage of flow in the diversion channel at Haridwar, we left for the Tehri reservoir area, visiting areas due to be submerged. Men and women threatened with total deprivation were forced into silence, though many were protesting. Meanwhile, agents claiming to assist in their rehabilitation, conspired to arrange the sanction of new plots for them near cities that had nothing of the free water, clean air, firewood, grazing grounds and tillable plots that they now possessed. The same agents would bring buyers for those new plots, and the oustees would be left only with paper money and no livelihood.



After a night halt on Nov 1 2004 at Uttarkashi, the group visited the Maneri Phase I project site. It was observed that only 2 - 3 cusecs of water was leaking from the dam and from another release point, while the rest

of the Bhagirathi was being diverted in a long tunnel to the power project at Dharasu nearly 40 kms downstream, leaving virtually no flow in the river. On the following day, it was confirmed that waters from the Maneri Phase II were also similarly diverted in a tunnel also to Dharasu. The stream was revived only by the flow of the Assi Ganga, which debouched into the Bhagirathi bed, some 4 kms upstream of Uttarkashi. Thus the original Ganga, with its unique bacteria killing viral bacteriophage, now does not exist below Uttarkashi.

Our spirits revived somewhat when we proceeded upstream of Maneri I to a zone where the Bhagirathi had not as yet been touched by the antics of humankind. Here we were able to savor the sight of the full and beautiful winding river and collected its pristine

elements that was being polluted downstream. On our return trip, the group drove past the Dharasu hydel power project, and later got a view of the whole of the Tehri basin, a sight we had missed the previous day due to fading light. What now confronted us was a heartbreaking scene of utter devastation.

We beheld a virtual wasteland, forested vales laid bare and totally destroyed by project authorities. Bare hilltops seemed to be stretching upwards, crying out for help from the gods above. Meanwhile, project bosses waited in vain for the Ganga waters to fill up the reservoir. Driving towards the Tehri dam one strained one's vision to get a sight of some water that should have collected here after four monsoons and three and a half years of the stoppage of Ganga waters through the closure of three out of four tunnels of the dam.

The residents of Old Tehri had initially refused to move out, frustrating project authorities and contractors eager to collect building materials. The former warned the residents that they would be flooded out during this year's monsoons. But when this was not happening, they suddenly released extra waters from the Dharasu power project, flooding the town temporarily, and causing its residents to flee in panic. Was this not a criminal act that displayed utter disregard and contempt by the project authorities?

The old Tehri town was seen as a ghost town, sitting desolate and destroyed, above a small lake and the depleted river, angry at her own deprivation. From data available, it was computed that at least 40 % of the reservoir should have filled up by now. By now, there should have been some 12.5 billion cubic mt of water in the reservoir. But there was only this small lake, which might have had about 20,000 cubic mt. Most of the waters had obviously flowed into the aquifers below.

Thus it was obvious that the Tehri dam had failed. With water not collecting in the reservoir, no power could be generated, no water could be diverted for irrigation and none could be sent for the capital. Surely this was a major catastrophe for the people of India. Lakhs of people had been needlessly uprooted. The policy of keeping data pertaining to such projects and about flows of our rivers as confidential was now proving to be counter-productive.

But when all this is divulged, it is likely that in desperation, authorities might close the last tunnel of the dam, hoping that this would somehow begin to fill the reservoir. But a river that has created a subterranean channel to take in the ten-fold higher flows of the monsoons, would now surely take the easier path of total disappearance in its deep aquifer. The prophecy that she would become *lupta* or invisible in *Kali Yuga* might come to pass. And knowing that their beloved Ganga had disappeared, even the docile Indian people might then rise.

BOOK REVIEW**Ganga: People, poverty, politics and the purity**

Disputes Over the Ganga: A look at potential Water Related Conflicts in South Asia Panos South Asia, Kathmandu, 2004, pp 202

Over sixty years ago, David Lilienthal, of USA, known for propagating the legacy of Tennessee Valley Authority, once famously said, "A River has no politics". Quite erroneously though. For he was trying to sell the idea that the decisions of the powers that be over the river should not be questioned. He glossed over the fact that people too have some use of the rivers. It was like asking people to have no politics.

For many of the basin residents and others in the region, the Ganga remains a symbol of purity. A belief possibly as blind as the advocacy that the governments have the eminent right over the decisions about rivers, to the exclusion of people. But both the ideas remain equally "real". In spite of all the ground realities that point to the fallacy of both.

The book does bring out the stark reality (see the overview chapter by Santa Bahadur Pun) that in spite of the prosperity in terms of natural resources, in the Ganga basin reside more poor people than any other basin in the world. But the Indian government sees surplus water and not surplus poverty in the basin!! Large areas in the basin, including Nepal, India's eastern region and parts of northern region like Uttaranchal in the Ganga basin are also supposed to house large hydropower potential. Here again we can see the dichotomy in these facts in so-called electricity surplus region: percent Schedule Castes and Scheduled Tribes households that did not have electricity connection in 1999: 95.9% in Bihar, 90% in W Bengal and 87.5% in UP, all in Ganga basin.

There is no doubt that Ganga will remain a platform for disputes in years and decades to come. The Panos book has come at opportune time even as the opposition to Indian government's river linking plans mount across the states and countries of the Ganga basin. Particularly since Ganga is described as surplus basin in the plans. There is a lot of material in the book that would show that surplus is a very erroneous description of Ganga. Of course this hinges on the definition whether Ganga constitutes a basin or Ganga-Brahmaputra-Meghna constitutes a basin. The Indo-Bangladesh dispute over Ganga also includes dispute about this definition, as Shri Ramaswamy Iyer said at the book launch function in Delhi. While the Indo-Bangladesh dispute seemed to have been resolved for good through the 1996 agreement, the suspicion of India's intentions in Bangladesh won't go away that easily. And Indian government's moves on the mindless River Linking programmes have not exactly helped

matters in this regard. Lack of substantial progress on Indo-Bangladesh agreement to share the data for flood forecasting has not helped matters either, as noted by Mustafa Kamal Majumder in chapter on Bangladesh. Indian government's phobia over sharing any data about rivers, dams and other projects is well known.

The Panos book has some fresh ammunition on this front as the chapter by Bidisha Mallik and Jayanta Bandyopadhyay warns that the crisis at Farakka is imminent with the near future possibility that the meandering River may make the barrage redundant and bypass the same at more than one location. Bandyopadhyay said at the meeting to launch the book in Delhi that the water resources engineers in India have not faced the open scientific scrutiny of their projects or their performance and such a professional community will keep making costly mistakes even as their salaries go up and the economy of the basin goes down. That remark may sound harsh but is far from callous.

Dinesh Kumar Mishra in the chapter on Bihar so effectively nails the misrepresentation that Bihar is surplus since it is flood prone. India's President and other proponents of the Interlinking of Rivers keep using this representation to justify the ILR proposals. Mishra quotes govt records to show, for example, that Khagaria, which is known for its flood problems, in fact, faced droughts in 7 of the 20 years during 1966-67 to 1986-87. In the chapter on UP, Gopal Krishna notes that the flood problems in Eastern UP, accentuated by the canal network can be significantly solved by greater use of groundwater in the affected areas. He quotes a report that says that full development of conjunctive use in the Ganga basin can lead to 50% reduction in the monsoon flows in the River, reducing the floods and flood damages significantly. That should be an eye opener for those supporting the idea of large dams as flood control solution in India.

As Ajaya Dixit, Pradeep Adhikari and RR Thapa note in the last chapter on Nepal, "In that sense, the report of the World Commission on Dams, *Dams and Development*, introduces a new dimension in the notion of water governance, which is relevant in the countries of Ganga Basin." The book could have possibly included more extensive discussion from the WCD report on the management of a Transboundary river like Ganga. One of the seven strategic priorities of the WCD report in fact is about "Sharing Rivers for Peace, Development and Security" and the report contains elaborate discussion of policy principles and guidelines to achieve the strategic priority. Unfortunately, as the Nepal chapter notes, most so called agreements in the Ganga basin are more about "agreement to 'build a

mega project' than about actual problem solving and making a difference in the lives of people".

The book has chapters on Nepal, Bangladesh, Uttar Pradesh, Bihar, West Bengal and Delhi besides the first overview chapter. [The chapters for some unknown reason flow in direction opposite to that of river flow, beginning with Bangladesh and ending with Nepal!] As Dr Sudhirendar Sharma notes in the chapter on Delhi, this leaves out about 40.6% Ganga basin catchment of India, about which the book does not have significant narration or analysis. Also, the disputes over a river would touch people beyond the states and nations. The state versus people disputes is something that the book has chosen to largely ignore. One hopes that when Panos revisits this arena in future (as it has been doing over the last two years) it would give a greater place to this important issue.

To revisit where we started, Lienthal was using those famous words to show TVA as an example of *Democracy on the March*. Quite erroneously, again, as the people of the region had little role in decision-making process on TVA. Ganga is bound to see many instances of state versus people disputes in future with all the mega engineering structures including large dams, big hydro and the river linking proposals that abound.

The book is certainly worthy of attention from all those concerned and interested in matters of rivers, governance and people. All the more because the book has also been brought out in Hindi, Nepalese and Bengali, along with the English edition. Let the stories of *Ulti Ganga* spread, as Anupam Mishra so aptly said at the book launch function in Delhi.

Himanshu Thakkar (SANDRP) [A slightly different version of this appeared in Down to Earth of Feb 15, 2005]

BOOK REVIEW

Water Rights: A fight that won't go away

BLUE GOLD: The Flight to Stop the Corporate Theft of the World's Water by Maude Barlow & Tony Clarke, LeftWord Books, New Delhi Dec 2003, Rs 195/-, pp 278 + xviii

There is little doubt that situation with regard to access to clean water is getting worse by the day. Many reasons are responsible for this turn of events. The authors of *Blue Gold*, as the subtitle *The Fight to stop the Corporate Theft of the World's Water* says, try to explain one of the less understood aspects of the situation. That indeed is a unique strength of this book.

The book explains the role of the various players like the various tiers of water and cola corporate, the governments, the multilateral agencies like the World Bank, International Monetary Fund, International Finance Corporation, the regional development banks, the World Trade Organisation and others. This section of the book that is contained in Chapters 4 - 6 is the most significant contribution of this book. These chapters explain the evolution, ethics and economy of the largest private water corporate like the Suez and Vivendi and also of the second and third tier of the private water companies. The multilateral agencies have been acting hand in glove with these companies in taking over of the world's water. The chapters also explain the politics of what some call the unholy trinity of the international water bodies like the Global Water Partnership, the World Water Council and the World Water Commission.

In subsequent four chapters the book goes on to narrate how civil society organisations and communities around the world have been fighting against these

agencies to retain control of the sources of water that the people depend on. Indeed, there are many other recent instances where people all over the world have been engaged in attempts to sustain their access to their local water sources and in the process fight the entry of corporate agencies backed by the govts and the multilateral organisations.

Indeed one of the latest successful incident happened in Uruguay when in a national referendum on Oct 31, 2004, more than 60 % came out in favour of introducing a constitutional clause stating that "water is a natural resource essential to life" and that access to piped water and sanitation services are "fundamental human rights". The constitutional amendment "Secures the protection and sovereignty of this natural resource against attacks from transnational corporations transcending the national limits of Uruguay and setting a strong political precedent for the whole region." Piped water will be supplied in this South American country of 3.3 million "exclusively and directly by state-owned legal entities", and concessions to private firms will be cancelled. Uruguay's referendum indeed sets a historical precedent for the whole world.

While there is no doubt that these instances give a lot of hope and most of them are indeed very valiant, the situation is possibly less optimistic than what the authors paint in last four chapters of the book. The control of the corporate bodies around the world on water resources for profit, depriving the access of those in real need is increasing and a lot more will have to be done if this is to be reversed. The increasing number of flashpoints across the world is only one of the indications of this situation.

Some Extracts

The debate over the wise and equitable use of the earth's water resources is far from over. In fact, it is just beginning. In this book, we tell the story of the world's growing fresh water crisis, the corporate assault on the water "commons," and the complicity of govts and international institutions in the theft of the world's fresh water... we show how ordinary citizens all over the world are engaging in a new form of citizen-based politics. (Preface)

India that has the highest volume of annual groundwater overdraft of any nation in the world... According to the International Water Management Institute, a quarter of India's grain harvest could be lost in the near future because of aquifer depletion. (p 24)

India is home to the most polluted water in Asia, outside China. The coasts of Bombay, Madras, and Calcutta are putrid. The sacred Ganges, where millions come to purify themselves, is an open sewer. (p 30)

It's not surprising that all North Americans are carrying at least five hundred chemicals in their bodies that were unknown before World War I. (p 31)

And in strictly economic terms, each hectare of wetland is worth 58 times more than a hectare of ocean, since wetlands protect endangered species and commercially harvested fish... about half of the world's wetlands have been lost over the last century. (p 37-8)

The more this corporate-governments nexus solidifies around water exports, the more we can expect institutions of global economic governance like the World Trade Organisation, the International Monetary Fund, and the World Bank to play a decisive role in determining what kind of world water cartel is likely to be in place by the year 2010. (p 153)

Building our economies on local watershed systems is the only way to integrate sound environmental policies with peoples' productive capacities and to protect our water at the same time. (p 228)

The book starts with narration of the looming crisis and its seriousness. This section of first three chapters however is not a very strong point of this book as a number of inaccuracies creep in this narration. Statements like (By the year 2025) "Demand for water will exceed availability by 56 percent" (p 24) tends to create scare instead of looking at such assertions critically. The water corporate bodies in fact thrive on such scares. While the scary picture may not be entirely wrong, it needs to be put in right perspective. For example, along with the above statement it could have been shown how the prioritised and justifiable water needs of the really needy does not put great demands on world water systems. In fact it is possible to fulfil such needs if the priorities of the world water systems

were right, without need of water corporate or the solutions prescribed by them and their supporters in the form of large structures (dams, long distances canals and pipes) or river linking propositions.

Some limitations The book does not have any tables, graphs, illustrations that could have helped explain some of the aspects in a better way. These have possibly been avoided as a popular book is not supposed to have these. But such dogmas could be avoided in the greater interest of conveying the subject to the readers in a more effective and easy way.

How to change this situation? On p 50 authors say, "... in addition to inertia, ... blind and ill-intentioned governments and corporate greed are combining forces and accelerating the pace at which water is being poisoned and lost. In the end, governments and corporations will pay a heavy price". One is not sure if the governments and corporations will ever pay heavy prices. It will almost always be the common citizens, and mostly the poorest and most powerless who pay the heavy prices. The book does reflect this strikingly when it says (p 58), "According to Water Policy International, South African women collectively walk the equivalent of going to the moon and back 16 times a day just to fetch water." This in a country where following the implementation of World Bank advocated programme of "cost recovery" in August 2000, water and sanitation services of thousands of poor black people were cut off. In a country where six lakh white farmers consume 60 % of the country's water supplies for irrigation, while 16 million blacks have no direct access to water. As the authors say (p 59, 69) when race and class come together, the privileges of the elite can cause shudders. A lower percentage of South Africans now enjoy access to affordable water. In Sept 2001, police killed 15 people including a five-year-old child when the community opposed cutting off of water supplies.

A significant question is how is one to achieve better performance of the public water systems. While privatisation is certainly a cure worse than the disease, it would be nobody's case that the public water systems are working fine. A lot more would have to be done to see that public water systems function in an efficient, cost effective, transparent and accountable way with the participation of all concerned.

The book is recommended reading for all those who are concerned on the increasing corporatisation of essential things like the water, rivers and the global commons. The book is rightly dedicated to a tireless Colombian fighter for indigenous rights to water. That fighter was "disappeared" by Colombian paramilitary forces on June 2, 2001, but that fight is continuing all over the world. It won't disappear under any circumstances.

Himanshu Thakkar (SANDRP) [A slightly different version of this appeared in The Book Review of Feb 2005]

Book Review**“Nature is no competitor for water, Nature is the source of Water”**

Thirsty Planet: Strategies for Sustainable Water Management - by Constance Elizabeth Hunt - Zed Books – New York – 2004 – us \$ 22.50

“Nature is not a competitor for water, Nature is the source of water.” That is the central idea Constance Hunt advocates in the book, *Thirsty Planet: Strategies for Sustainable Water Management*, even as she explores alternative solutions to global water needs. The project at hand is both important and ambitious, and the answer undoubtedly, much-awaited.

It is indeed good to hear Hunt declare at the very outset that, “There is no global solution”. The important thing, as Hunt sees it, is to recognise that ultimately all water problems are local and consequently, it would only be prudent to look for local solutions to these local problems, at least initially. The author goes on to comment, “The danger in viewing the water crisis as a global problem...is that such an approach leads us to search for global solutions”. This is followed by a gentle reprimand, “Rather than resolving the crisis, the grafting of a globally conceived solution on a problem with complex, local causes can exacerbate the problem”. In fact, the trouble with the water sector is just that: all planners, decision-makers and experts nearly always seek a macro solution keeping the macro picture in mind. This results in the inevitable disconnect between local situations and solutions and leads to unwieldy projects such as the many big dams like the Sardar Sarovar or the river-linking proposals.

The book has certain shortcomings. For one, the author appears to underestimate the issue of political economy of decision-making that dictates the choice of projects, policies, companies and technologies. The last chapter makes a feeble attempt to rectify this but the author does not go beyond the level of global bodies. No thought is spared for significant movements around the world such as the Narmada Bachao Andolan of India or the Movement Against Big Dams in Brazil. Similarly, while questioning the drive to privatise water, the author remains quiet about the many global instances of struggles against the commodification of water.

While the author notes that agriculture is the biggest water-consuming sector, the treatment of this issue lacks depth. For example, the author fails to note that food production and access to food cannot be treated as separate issues, as is mistakenly done by many governments and global bodies. She also fails to note the inequities at the local and global levels and how corporate interests are driving the world food markets

and World Trade Organization. On the issue of floods, the blanket statement: “Large dams have been successful in flood mitigation and prevention” stands at variance with the reality. What is more, the author contradicts herself when she goes on to comment on the same page that “dams also cause or contribute to flood disasters”. In the chapter on navigation, the author fails to note that a number of large dams actually destroy the existing navigation when they stop the fresh water flow downstream ---- as is the case with Sardar Sarovar Project on Narmada river in India.

The important thing is to recognise that ultimately all water problems are local and consequently, it would only be prudent to look for local solutions to these local problems

While analysing the reasons used to promote large dams and likewise large projects, Hunt avoids a critical assessment of the hydropower projects. In fact, there is no chapter on hydropower projects and the issue finds only passing reference in the chapter on global warming.

However, the author is very clear about suggestion of large dam lobby that taking up big hydro could be one of the solutions, “these pseudo-solutions to global warming has serious weaknesses... the solutions lies in changing global energy strategies. It is imperative that people switch from a supply-side, fossil-fuel-based energy sector to one that relies on efficiency and non-hydropower renewables.” The book ends rather abruptly leaving one with the feeling that a concluding chapter highlighting the main ideas should have been included.

All the same, the book is a valuable addition to the collection of works on global water issues and the painstaking research that gone into its making is obvious. Chapter one for instance, is a particularly illuminating insight into the working of global water cycle.

Also, the book has rightly predicted, “Water resources development in the twenty first century is likely to play a substantial role in directing money flows in the global marketplace, in maintaining or disrupting regional stability, and in determining the fate of the ecosystem that support life on Earth.”

The concluding message of the book is worth repeating, “The only way to avoid global water crisis is for people to learn about sustainable alternatives to massive and ecologically destructive technologies, and to insist that their governments embrace these alternatives.”

Himanshu Thakkar (SANDRP) [A slightly different version of this appeared in June 30 2004 issue of Down to Earth]

RIVER LINK NEWS

Bhutan against river link plan The King of Bhutan Jigme Singye Wangchuk has expressed his view that he is not in favour of India's River Linking plan. He said Bangladesh has already objected to it and it is not a very feasible idea. "It will lead to large-scale loss of property, dislocation of people and also cause damage to the environment," the king said. He admitted he had not yet studied the proposal in detail but from what he can make out, there is bound to be opposition to it both within and outside India if Delhi ever thinks of implementing it. (THE TELEGRAPH 300105)

Does the Deccan need more water?

The river-linking project would lead to degradation of land and adversely affect the rural majority. This unearthly proposal smacks of a nexus between the govt and the powerful 'engineer-contractor lobby', which would gain immensely from such a gigantic project. In early December last year, the Minister of State for Water Resources clarified that it was decided after the assessment, to continue river linking, with a focus on the peninsular rivers. In reality, the Deccan would be inviting disaster by importing water through river linking. Terrain conditions, besides rainfall, regulate water availability in various natural regions. Most of the 'designated deficit regions' like the Deccan, Chhotanagpur and Vindhayan plateaus, have low water retention capacities, high monsoon variability indices, and low irrigation suitability. Those deriving benefits from this subsidised farm system are the big farmers, sugar barons and corporate farm systems, besides the multinationals and input providers. Paradoxically, despite the short-term production bonanza, such a violation of land capability and irrigability cannot protect the lands from terminal degradation. The current stand-off between Karnataka and Andhra Pradesh exemplifies the fallout of this unsustainable farming system. Earlier, the excessive abstraction of the Krishna waters by Karnataka had left Andhra Pradesh in dire straits. The long-drawn controversy surrounding the Alamatti Dam also remains unsolved. Powerful pressure for river linking emanates from the ever-expanding urban and industrial sectors spawning in naturally 'low water availability' regions like the Deccan. These cater to the global market forces, their Indian and the minuscule fraction of affluent consumers. (Subrata Sinha, Former deputy Director General of GSI in DECCAN HERALD 050105)

ILR a "conspiracy" says waterman Well known environmentalist Rajendra Singh has expressed apprehension about river linking scheme. He has been selected as a member of the govt's committee on ILR. In the first ever meeting of the committee he expressed that the inter-linking programme was not one for management of floods or drought but was a "conspiracy to privatise the water sector". Another member Mala Kapoor has raised the potential health and

environmental related problems that the scheme can lead to. The committee has been asked to look in to the environmental and socio-economic aspects in the terms of reference for the DPRs prepared by the now dissolved Task Force on Inter-linking. The experts were requested to deliberate on the issue and come back to the Committee in two months. It is proposed to take up the Ken-Betwa link between Madhya Pradesh and Uttar Pradesh as an example and get the views of experts. (THE HINDU 190105, HINDUSTAN 210105)

Parbati-Kalisindh on priority The Parbati-Kalisindh-Chambal river link project is now under consideration between Rajasthan and Madhya Pradesh. The officials of MP and Rajasthan have been directed to decide on the issue. Under the project, the water from Parbati and Kalisindh, tributaries of Chambal, would be diverted to Chambal. It is claimed that Malwa region would be benefited from the project and that Indore, Ujjain, Mandsour, Ratlam, Dewas, Sajapur and Rajgarh districts would get water. The Task Force on River Linking had taken this link on priority list. A number of significant differences remain between the two states. While MP wants the diverted water to land in Gandhi Sagar reservoir in MP, Rajasthan wants the water to fall into the Rana Pratap Sagar project in that state. Moreover, Rajasthan wants that MP's share from the link be reduced by the amount MP has used through check dams in the catchment of Gandhi Sagar. MP is opposed to this demand. (DANIK BHASKAR 240105)

DAMS

"Would die but oppose the dam" The people of Rabo village are up in arms against a proposed dam on Kurkut river in Raigarh district of Chhattisgarh. This dam has been proposed for Jindal group's thermal power project. The dam will submerge over 400 Ha and displace over 10 000 people. Rabo is the nearest village from the proposed dam. Gadgaon, Chharatagar, Dokarmuda, Dehridih, Vilaskhat, Vilaskhar, Timaudih, Gudgud, Amapali and Bachgawan villages would also be affected due to dam. The authorities have started work on the dam, while the villagers have started to oppose and put a barrier and banner against the project from Oct 24 2004. The villagers monitor the area round the clock. The villagers are united against dam and committed to save their Ancestral land at any cost. The police and district authorities are trying to threaten the villagers. The SDM of the area said to villagers that they have no right to claim about land. The DM & SP have threatened that if they will not leave the land, they would face arrests.

> People of Rabo village opposed the survey being conducted by officials of Chhattisgarh Govt for constructing dam on Kurkut River. When official visited the village on Feb 14, the villagers who have been dharna since Oct 2004 against dam, opposed the survey. The officials left without conducting survey of village. (DESHBANDHU 040105, 150205)

Tamil Nadu's dam of sorrow

The Orathapalayam dam in Erode dist has an unenviable distinction. Farmers of upstream don't want water to be stored in it, while those downstream don't want water to be released from it. The water flowing in to the Orathapalayam dam is so terribly polluted by the effluents from industrial units of Tirpur that no one wants to have anything to do with it. The farmers in

Dam Details

| | |
|--|-----------|
| Ht above lowest foundation: | 14.2 m |
| Length: | 21 m |
| Gross capacity: | 17.48 mcm |
| Effective capacity: | 17.44 mcm |
| Submergence: | 423 ha |
| (National Register of Large Dams, CWC, April 1990) | |

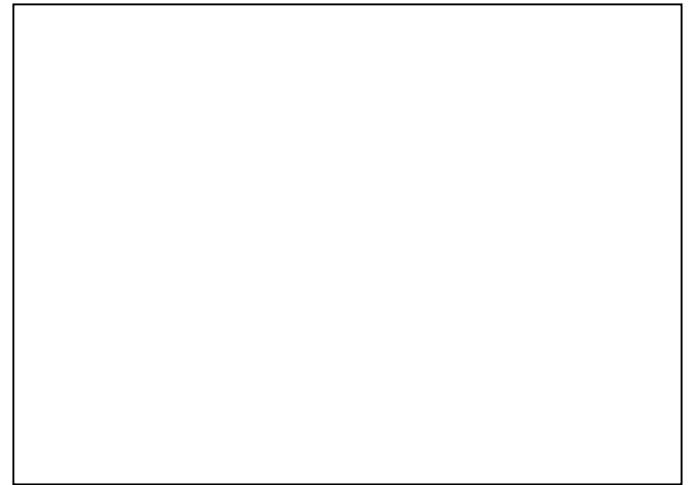
downstream fear that prolonged storage could contaminate groundwater sources irretrievably and the latter that dam water would spell ruin for their

crops. It is the water from Noyyal River, a perennial one, that is stored in the Orathapalayam dam. Despite consistent campaigns by environmentalists, the dyeing units of Tirpur have been merrily polluting Noyyal. Hundreds of agitating farmers protesting against release of water from the dam were arrested recently. Last week Erode collector ordered the release of 400 cusecs water from the dam, assuming that there is sufficient flow in the Cauvery to dilute the water. The present discharge would lower the storage level by hardly 5.5 ft as against the total capacity of 39.45 ft, it is estimated. It is in this situation that the Chennai High Court has ordered the desilting of the dam and raise the necessary fund of over Rs 120 million for the same from the Tirupur units. About Rs 10 m has been mobilized so far. Only 30 of the 720 dyeing units in Tirupur have so far installed Reverse Osmosis plants to treat the effluents. About 280 small dyeing units are putting up Common Effluent Treatment Plants. One hope, in the realm of speculation is that the new water supply scheme from the Bhavani water would reduce the pollution. "Tirupur has money but no heart", remarked a TNPCB official.

By 1992 the govt of TN had built the Orathapalayam dam, about 10 km downstream from Tirupur for irrigating 8 000 ha. The Dam's catchment is 2 245 sq km and includes most of the area in which the bleaching and dyeing units are located. Noyyal River joins Cauvery about 32 km downstream from the dam.

The number of knitting mills in Tirupur went from 22 in 1941 to 2 800 in 1991. Similarly, while there were hardly any dying and bleaching units in 1940s the Tamil Nadu Pollution Control Board indicates that 752 were in operation in 1996. In addition, many unregistered units were in operation. The direct export value of the hosiery products from Tirupur has gone up from Rs 190 million in 1985 to Rs 20 b in 1996. Dyeing and bleaching are important part of knitwear production, requiring

enormous quantity of clean water. Estimated quantity of effluent from Tirupur units is 94 mld, almost all going to Noyyal river and ending up in the Orathapalayam Dam. As Dr S Janakarajan from Madras Institute for Development Studies notes (in *Conflicts over the invisible Source* in *Rethinking the Mosaic: Investigations into Local Water Management*, 1999, p 143), the Orathapalayam dam has never functioned well as an irrigation reservoir. It has become a storage for the pollution from Tirupur and contributes significantly to pollution of the environment, particularly groundwater.



In Feb 1997, when effluents collected in Orathapalayam Dam was released, considerable damage to crops, animals, soils and groundwater resulted both along the Noyyal river and further along the Cauvery River. Several hundred animals collapsed after drinking the water and petitions were filed in the High Court against release of polluted water. The TN govt had to release 20 000 cusecs of water from the Mettur dam upstream to dilute the pollution.

Dr Janakarajan notes that before construction of the dam agricultural production was high. Now only rainfed cultivation is carried out in this area. The groundwater is so polluted that it is unfit even upto the depth of 300 feet.

Many questions arise. Why was the dam constructed if the situation was already known? Why has the government not taken effective steps to stop the pollution from Tirupur industries? (THE INDIAN EXPRESS 230105, See also DRP Aug-Sept 04)

Dam may collapse due to seepage The members of Structure Behavior and Monitoring Committee of Rihand Dam have warned that most of inspection holes on dam's wall have been choked and dam may collapse any time. The dam constructed in 1963 has 344 inspection holes, which are designed for the protection of dam wall, of which two third are choked due to silt. The cracks appeared on the wall are widening and water has started to seep. (RASHTRIYA SAHARA 210105)

Demand to resolve Their dam oustees issues The Their Dam Ousteers Welfare Committee has sought immediate attention of the Himachal Govt towards the grievances and suggested to constitute district and state level Their Dam oustees rehabilitation committees. The Committee urged the CM to review the situation and take up the matter with the Punjab CM for providing jobs to the left out ousted families of Their Dam from the Dalhousie tehsil of Chamba dist. The Their Dam project was undertaken by the Punjab Govt on the Ravi River in Pathankot tehsil of Gurudaspur in Punjab (adjacent to the Dalhousie tehsil of HP) during 1977 with its initial cost of about Rs 3.5 B, which on completion in 2000, escalated to Rs 38 B. 5340 Ha of J & K, 4562 Ha of Punjab and 490 Ha of HP was submerged. In HP, 537 families belonging to the Dalhousie tehsil were displaced, but the oustees of HP were ignorant and their grievances remained unsolved. (THE TRIBUNE 260105)

MOU with NHPC for Shahpur Kandi The Govt of India plans to review the Shahpur Kandi project on Ravi in Gurdaspur dist of Punjab. The dam will help fully utilise the potential of the river. Under the Indus Water Treaty of 1960 the Ravi is allocated for "full use" of India. The Punjab Govt has on January 20 signed a MoU with NHPC for the project. According to the MoU, NHPC would carry out review and updating of DPR cleared by the Planning Commission, and other reports, documents, besides the designs and cost estimates to provide latest designs and technology. The project has been long ago cleared by the Union Environment Ministry and also has the approval of the Planning Commission. The Concrete dam with a height of 54.5 m and length of 725 m is proposed to have installed capacity of 2 X 168 MW and is to irrigate 32000 Ha in J&K and augment intensive irrigation in 0.346 m Ha in Punjab. The dam is to be constructed 11 km downstream from Ranjit Sagar Dam and 8 km upstream from Madhopur headworks. The project will have 7.7 km long hydel channel. The centre had sanctioned the cost of Rs 10.38 B in 1995, which has increased Rs 13.24 B in 2000 and now the cost is expected to be Rs 20 B. Lack of funds forced stoppage of work in May 1999. When the turbines of Ranjit Sagar Dam run at full capacity, 24 000 cusecs of water is discharged. The Madhopur headworks and the existing canal systems do not have the capacity to use so much water. With the construction of Shapur Kandi Project, it is expected that Ranjit Sagar will be able to generate electricity at full capacity. (THE TRIBUNE 200105, BUSINESS LINE 210105, DANIK BHASAKR 220105)

DVC revives dam project The Damodar Valley Corp has revived its proposal for setting up a multipurpose dam on Barakar River at Balpahari. The river forms the boundary between W Bengal and Jharkhand, the dam being located between the existing dams at Maithon and Tilaiya. The proposal was put in cold storage due to the lack of approval from the Jharkhand gov't. W Bengal

has already cleared the project. Planned as the part of its network of dams and barrages in the DVC, the Balpahari project was conceived with the objective of reducing the siltation problems at Maithon dam, increase the reach of canal irrigation and add 20 MW to the hydel generation capacity from the existing 144 MW. The multipurpose projects are set up on Damodar River and its tributaries, namely Barakar and Konar. Of the five projects, Maithon and Panchet are the biggest, both in terms of reservoir and hydel generation capacity. (BUSINESS LINE 310105)

Dam Details

| | |
|----------------------------|---------|
| Ht above lowest foundation | 38 m |
| Dam Length | 3405 m |
| Gross reservoir capacity | 198 mcm |
| Effective capacity | 179 mcm |

Sondur project cleared The Centre has cleared the proposal of raising capacity of Sondur project on Sondur River

situated in Dhamtari dist in Chhattisgarh. Only a third of the project is filled up at present. On increasing the capacity another 529 Ha in Udanti Sanctuary would be submerged and an additional 26 000 Ha would get irrigation in Bhatpara and Kasdol assembly constituencies, it is claimed. However, if the present reservoir is not getting filled, how will increasing the capacity is not cleared from the reports. It is claimed that a committee including Darshan Shankar and chief secretary of Karnataka have approved the proposal of Indian Board of Wild Life. (DESHBANDHU 120105)

Balloon dam across Tapi? Gujarat gov't is trying to create balloon dam, first such project in India, on Tapi River. The design is being cleared by the CWPRS of Pune. The balloons, to be put up about two km from the megdalla bridge, will create a reservoir and also regulate water flow during floods. The Rs 300 m project is to be implemented by the Surat Municipal Corp. The proposed dam will have seven air filled balloons interspersed with six gate piers. This will help create a reservoir. This reservoir will be able to store 12 MCM of water. The balloons, each 2.5 meter high and 90 m wide, will be made of nylon and fabric and will be procured from either Australia or Japan. They can be inflated in an hour and deflated in 10 to 60 minutes. The balloons will be anchored to a foundation that has steel plates with the help of anchor bolts. During flood, the balloons will be deflated to allow the extra water to flow out. In normal conditions, the balloons will keep the water level between the existing barrage and the new one raised, say experts. The SMC at present supplies 55 MCM of drinking water to the city and this will solve the city's water problem, municipal commissioner said. Compared to the conventional types of barrages like vertical lift type gates and automatic sluice gates, the cost for the constructing balloon dams is low. The balloons have a life span of 30 years. (THE TIMES OF INDIA 140105)

Kali River on the edge of death There is a proposal of 7th dam on Kali River in Karnataka. The west flowing Kalinadi has its origin at an elevation of 900m, near the Diggi Village in the Western Ghats of Karnataka. Its 160-km long journey ends at the Arabian Sea near Karwar. The six dams have already submerged 12800 ha of forest. These are Kadra, Kodalalli, Upper Kaneri, Supa, Tattihalla and Bomanhalli pick up dam. Dam has filled up just once in past 19 years of its existence. There clearly is a gross error in design of the Supa reservoir. Technical Director of KPC refused to give siltation rates for the Supa reservoir.

The Supa dam was conceived in 1972 and was cleared by the Central Water and power Commission and Planning Commission. According to the information from Karnataka Power Corp, 10692 Ha of forestland, 2248 Ha of private land and 466 Ha of revenue land were acquired for the construction of Supa dam. The reservoir stretches to 12 300 ha. The remaining 1106 Ha ought to have been utilised for the other purposes such as resettlement. But according to KPCL sources, 1793 Ha was acquired for rehabilitation of the affected families of the Kali Stage-I project. The difference in clearing 687 Ha of forestland seems unaccounted for. While 'Kadra and Kodalalli account for 1080 MU power per annum' according to KPCL sources, "Supa dam feeds water to Supa Powerhouse, Nagjhari, Kadra and Kodalalli powerhouses. The power generated is about 54 000 MU from Supa and Nagjhari power house". The Nagjhari is one of the tributaries of the river Kali, this stream lends its name to the HEP at Supa. The Kali River disappears for a stretch of 14 kms as the river feeds in to an underground tunnel. This tunnel then empties itself into a well in the Nagjhari powerhouse at Sykes Point in Dandeli. It hurts to see the mighty Kali River being humbled in to a simple ground well. All for a HEP for a period less than 50 years. The height of the dam is 564 m (depth of reservoir is 101 m) and the gross capacity of reservoir at FRL is 4178 MCM. The minimum draw down level of the reservoir is 513.5 m above MSL. It is also not clear what additional volume of water is required in reservoir to cushion the drought years. The remaining water (50.5 m above MDDL) in the reservoir presumably suffices for flood control. The MD of the KPCL says, "it is fact that the Supa has not filled up except 1994-95. The project was designed based on empirical data prognosis. It was considered worth while to go for a larger dam then. Flood reservoir is to be achieved only in case of torrential rains, dams also serve the purpose of flood control too. If the KPCL can generate 54000 MU at minimum level itself, then the extent of deforestation is most unjustified.

The Kali River is suffering from industrial toxicity from a larger paper mill and other industries. According to an estimate, the mill releases nearly 64800 kiloliters of effluents daily. According to a study by Peoples' Science Institute of Dehradun, the daily influx of mercury from the effluents in to the river was "around

345 gms/ day". The concentration of toxic metal recorded was 12 microgram per liter at Bomanhalli dam site. Fishes are dying and it pollutes groundwater too. The people at downstream of the Dandeli don't drink Kali water. The Karnataka Pollution Control Board served a closure notice some months ago but the mill got a stay from the High Court. Virtually KPCL's powerhouse producing 1200 MW of power supports the Kaiga nuclear power plant, which produces 440 MW. Folks at Balemane near Kaiga lead an anxious life. They are just 1.5 km from the nuclear plant on the opposite bank of Kali where radiation meters are taken regularly, but the villagers are hardly told what the readings mean. There is supposed to be no human habitation within a three km radius of a nuclear plant. Recently a save Kali campaign has been launched by Shri Pandurang Hegde who had earlier started *Appiko* movement.

➤ The 7th dam proposed will submerge 110 Ha. But the proposal of Dandeli dam has not cleared on environmental grounds.

➤ The water of Kali river is so polluted that the buffaloes stop giving milk once they drink water from the river. The female buffaloes cannot conceive once they drink from the river. The main polluter is the West Coast Paper Mills limited. Even the groundwater in the area is polluted. The Karnataka PCB served a closure notice on the mill four months ago, but the mill got a stay order from the High Court. Moreover, the sand and shell mining at the estuary of the river has proved disastrous. (OUTLOOK 140205, DECCAN HERALD 110105)

FROM KPCL Website: The estimated power potential of the river is about 1700MW, with an annual yield of 6500 MU. So far, 1210 MW has been harnessed from two stages.

In Stage I of the project, the 101 m high Supa Dam was built across the Kalinadi in Joida Taluk of the Uttara Kannada District. The Supa Dam Powerhouse has an installed capacity of 2 x 50 MW with an annual energy generation of 450 MU. The generating units were commissioned in 1985.

Also part of Stage I of the Kalinadi Hydro Electric Project are: The Upper Kaneri Dam built across the Kaneri river - a tributary of the Kalinadi, The Bommanahalli Pick-up Dam, The Tattihalla Dam, and The Nagjhari Powerhouse (3 X 135 MW + 3 X 150MW).

The construction of the composite Kodalalli Dam in 1989 marked the beginning of stage II of the Kalinadi HEP. This stage of power development in the Kalindi Valley comprises dams and powerhouses across the Kalindi, near the villages of Kodalalli (Yellapur Taluk) and Kadra (Karwar Taluk) of Uttara Kannada District. The Kadra Powerhouse (3 x 50 MW) and Kodalalli Powerhouse (3 x 40 MW) will contribute 270 MW of installed capacity with a yield of 1080 MU per annum.

Tehri The Uttaranchal govt has claimed that the old Tehri town had been completely vacated. The project has seen a huge cost overrun of the Rs 65 B dam. According to the Govt, hundreds of families remain still to be rehabilitated in the rural areas. The THDC was hoping to complete the first phase by Dec 2004. But due to a collapse of the tunnel in Aug 2004 in which several labourers were killed, the date of the commissioning had to be postponed. But top officials in the state are still not sure whether the first phase can be completed in six months. (BUSINESS STANDARD 180105)

GSI report on NE projects:

Mawphlang Dam, Umiam-Umtru tunnel can collapse

The Geological Survey of India has undertaken geo-technical investigation work of some dams in North-East. According to survey the dam under the Greater Shillong Water Supply at Mawphlang has the likelihood of a collapse. The top of the dam, which is to be connected by a road at the upstream of dam block No 8 on the right bank, "is highly exposed to patches of debris and weathered boulders". "While the area 15 m upstream of the dam's axis is exposed to moderately weathered boulder conglomerate with patches of debris cover, the area beyond the dam's axis is mainly composed of debris 2 m to 5 m thick," report said. The report also apprehended a tunnel collapse of the Umiam-Umtru HEP. A post-construction stage geo-technical investigation into the Umiam-Umtru stage-IV HEP revealed that a tunnel collapse is imminent as the damaged Head Race Tunnel at 1 870 m is composed of very poor rock mass class and low cover at the chainage. The GSI has also undertaken geo-technical investigations of other projects in the region which include Ranganadi HEP, Kameng Dam, Lohit Dam, Water Resources Development Projects on Naranang and Tawang chu Rivers, Noa-Dihing Dam, Debang Dam, Etalin Twin Reservoir Multipurpose Project, Dikrong HEP in Arunachal Pradesh, Kulsu Multipurpose Project in Assam, Myntdu Laska HEP and Umngot HEP in Meghalaya and Tuirini HEP in Manipur. (SHILLONG TIMES 161004)

CCDD questions Tipaimukh A Manipur based Citizens' Concern for Dams and Development reiterated its opposition to the 1500 MW Tipaimukh Dam, demanding that the project should not be taken up without free, prior and informed consent of the people of Manipur. An independent, accountable and participatory environment impact assessment must be undertaken involving full participation of the people of Manipur. The CCDD sources said the planning and implementation process of the project so far has failed to conduct an independent and accountable study on its impact on ecology, wildlife and general health as well as the socio-economic and cultural impacts on the indigenous people. It accused NEEPCO of ignoring the request by

people for providing copies of the EIA though statutory provisions make it mandatory.

➤ **"Public Hearing" triggers protests** 17 organizations of the country and abroad have objected to the Union Minister of State for Industries and Public Enterprises for pushing Tipaimukh. The project is to be implemented by NEEPCO at the confluence of the Tuivai and Barak rivers adjoining Bangladesh. The project has now received the technical evaluation certificate and the Central Govt has signed MoUs with the Govt of Manipur after receiving the NOCs from the Governments of Assam and Mizoram, the other stakeholder states of the project. But the local people of Manipur and Mizoram have consistently been resisting the project. The organisations argue that in the hearings proper documents relating to the assessment study were not supplied to the people. Rather, fake documents were supplied to the people by NEEPCO authorities. Again, the so-called public meeting on the assessment report held by the Mizoram Pollution Control Board on Dec 2, had to be postponed following public protests. They also said that the authorities concerned have paid no attention to the demand for holding public hearings in Manipur and Assam, which will also be affected by the project. Also, consulting the riparian countries in case the river in question is an international one, is also ignored by the authorities concerned. (ASSAM TRIBUNE 050105, TELEGRAPH 100105)

Rajasthan to take loan from WB The Rajasthan Govt has agreed to take another loan of Rs 1.72 B from World Bank for renovation and modernisation of old dams. Earlier the State Govt had agreed to take loan of Rs 7.34 B for repairing of canals and dams under Rajasthan Water Sector restructuring project. But later the WB had cut the loan amount and sanctioned Rs 5.62 B only. (DANIK BHASKAR 030105)

Pong oustees still not resettled: CM The Chief Minister of Himachal Pradesh has said that the state will consider constitution of fact finding committee to take up issues of Pong Dam oustees. The effected people and Govt of Rajasthan would be taken in to confidence. Over 20722 families were displaced for the Pong Dam. (PTI PR 070105, THE TRIBUNE 170105)

HYDRO PROJECTS

J&K Power Corp loan agreement The Jammu and Kashmir Power Development Corp has signed an agreement with a consortium for raising a loan of Rs 17.7 B to speed up the execution of the 450 MW Baglihar HEP.. The agreement has been signed with a consortium comprising of nine FIs. The consortium consists of the PFC, REC, HUDCO, J&K Bank, the Union Bank of India, UCO Bank, the Central Bank of India, Indian Overseas Bank, and Canara Bank. This is the first project to have been financed by such consortium in J&K. (THE TRIBUNE 100105)

Notices to BBMB from forest dept The Forest Dept in Himachal Pradesh has decided to register an FIR against the Bhakra-Beas Management Board for dumping silt in to the Suketi khud. The 990 MW Beas-Sutlej Link project, which is run by the BBMB, has been throwing silt in to the Suketi khud for over two decades. As a result, aquatic life in the khud waters has been destroyed while the silt has ruined the most fertile Balh valley. As per the provisions of Forest Conservation Act, 1980, forestland cannot be used for non-forest purpose, without the permission of the Centre. In 1977 when the Beas-Sutlej project was commissioned, the Forest Conservation Act was not enacted. Afterwards, the Forest Dept wrote many letters to the BBMB authorities, not to throw silt in to the khud. (THE TRIBUNE 030105)

HP share in BBMB projects The CM of HP has accused the Punjab and Haryana govt and said that HP was entitled to 12% free power and 9.17% share in all three BBMB projects – Dehar, Bhakra and Pong dam – but it had been denied its share. (THE TRIBUNE 100105)

New HEPs in HP The Himachal Pradesh Govt has approved the 70 MW Budhi HEP, 13 MW Siul HEP and 6.5 MW Saal HEP in Chamba dist. The state govt was spending Rs 272.8 M to augment the electricity distribution network in Chamba dist under the APDRP, launched in HP with an outlay of Rs 1.96 B during 2004-5. (THE TRIBUNE 280105)

Larji Inquiry report rejected by HPERC The HP regulatory Commission has rejected the report of the enquiry conducted by the SEB in to the high cost of the 126 MW Larji HEP. The HPSERC lamented that the committee of 3 engineers had failed to investigate the cause of the cost over-run and fix the responsibility. The report said that this is a difficult project and there was geological surprise in the project. Consumer representative pointed that if the project was uneconomical then it should not have been cleared. (THE TRIBUNE 080105)

NEEPCO's plans Under the PM's 50,000-MW hydel initiative, NEEPCO was entrusted the task of preparing pre-feasibility reports of 18 projects in the NE: 15 in Arunachal Pradesh and 3 in Nagaland. Of these 6 projects (total installed capacity: 2 900 MW) claimed attractive returns have been entrusted to NEEPCO for preparation of detailed project reports with an aim to execute the same. The CEA has asked NEEPCO to prepare the DPR for five projects in Uttaranchal. NEEPCO has been operating in the power sector of the NE for the last 28 years, having completed 7 projects with a total installed capacity of 1 130 MW including hydel and gas based projects. NEEPCO plans to add 2 400 mw by the 11th Plan and about 15 000 MW in the coming 20 years. NEEPCO is currently handling 60 MW Tuirial HEP in Mizoram, 600 MW Kameng HEP in Arunachal Pradesh, 280 MW gas based project in

Tripura, 1 500 MW Tipaimukh HEP in Manipur, 110 MW Dikrong HEP in ArP, and 130 MW Ranganadi-II HEP, in ArP. NEEPCO is a wholly owned Gol enterprise and its funding pattern is also governed by Gol norms. Earlier, projects were funded in a debt-equity ratio of 1:1. This has now changed to 70:30. Recently, NEEPCO and PFC signed a Rs 23 B loan agreement for Kameng HEP in ArP and 280 MW Tripura Gas Project and the balance money will provided by the Gol as equity. (Project Monitor 16-311004)

Luri HEP The Sutlej Jal Vidyut Nigam is exploring the possibility to increase the capacity of the 465 MW Luri project by shifting the dam site upstream along the Sutlej. As per the pre-feasibility report, prepared by the state electricity board, the dam was to be constructed at Nathan and the powerhouse near Tattapani, 4 km upstream of the Chaba project. It involved construction of 8.5 km long headrace tunnel with a diameter of 10.5 m. SJVN feels that if the dam was constructed around Sainj instead of Nathan, it will increase the length of the head race tunnel but also help increase the capacity by 60 - 80 MW. SJVN has been asked by the state govt to prepare the DPR for the project, downstream from Rampur project. (THE TRIBUNE 260105)

NHPC to move SC on Subansiri In the face of delays in implementation of the HEPs in the North-east, the Union Power Ministry has decided to intervene, asking NHPC to move the Supreme Court for vacation of the court order staying the implementation of the 2 500 MW Subansiri (Middle) project. The development came following the Power Ministry's decision to prioritise implementation of the Subansiri Middle project over the 1000-MW Siang Middle HEP. The Power Ministry has now stressed the need for a review of power allocation, as well as the overall power supply position in all the five regions of the country before taking a decision on allocating from the 2,000 MW Subansiri Lower project. At a meeting in the Power Ministry the power evacuation scenario for the NER by the end of the 11th Plan (2011-12) was reviewed. The Central Electricity Authority was asked to assess two alternate transmission requirements. One with the available capacity of the 1 500 MW Tipaimukh HEP and the other without it. An estimated 4 000 MW of power is aimed to be wheeled out of the region. With the Tipaimukh project going full steam, the region is estimated to be power surplus of some 5 500 MW by end of the 2011-2012. Sources said that corresponding to the ultimate capacity of hydro projects in region, the evacuation system would require 14-16 transmission corridors passing through the 'chicken neck'. The POWERGRID was directed to carry out necessary survey to identify the total requirement in 'chicken neck' area and submit a proposal for acquiring the Right of Way. Sources said the CEA mentioned that several North Eastern States have agreed to purchase power from Lower Subansiri, based on which NHPC had signed agreements for sale of power from Subansiri to them. (ASSAM TRIBUNE 110105)

Large dams, climate change, Forced evictions

Hydropower proponents are now promoting dams as "climate friendly" in a desperate attempt to gain carbon financing for dams. The International Hydropower Association, together with the World Wind Energy Association and the International Solar Energy Society, has formed the International Renewable Energy Alliance. IREA held a side event during the international climate change meeting in Buenos Aires in Dec '04. Chairing the meeting was Peter Rae, "convenor" of IREA and a board member of the IHA. For 90 minutes the audience listened politely while representatives from the wind, solar and hydropower industries did their best to persuade us that profits were of marginal interest and their companies really just wanted to save the planet. IHA claims that hydropower produces very few greenhouse gas emissions compared to fossil fuel generating options. However, IHA's claims ignore a growing body of evidence, which shows that dams and reservoirs in the lowland tropics are significant sources of methane. Patrick McCully of International Rivers Network has analysed IHA's claims and concludes that they are "variously irrelevant, incomplete or simply wrong." More than 260 organisations have signed on to IRN's declaration to exclude large hydro from renewable energy initiatives. Among the questions that McCully asked the panel was whether the hydropower companies who are members of IREA would agree in future not to take part in building dams, which involve forced evictions. No one on the panel answered the question. Instead of answering McCully's question about forced evictions, Rae talked about IHA's sustainability guidelines, which the association formally adopted in Nov '03. "The World Commission on Dams was a good start, and IHA has gone beyond the WCD recommendations," Rae explained. When the WCD process was completed in Nov 2000, the report concludes with seven strategic priorities and a set of guidelines for good practice. The World Commission on Dams recommendations includes the principle of free, prior and informed consent for Indigenous Peoples. It gives them the power to negotiate the conditions under which a project can go ahead. The word "indigenous" appears only once in IHA's sustainability guidelines in a section discussing the management of existing dams. Free, prior and informed consent is not mentioned at all. The construction of large dams has led to the eviction of tens of millions of people worldwide. No one knows the exact figure. The hydropower industry gives every indication that it intends to carry on evicting people from their homes. The reason that Peter Rae and the other IREA members on the panel in Buenos Aires were reluctant to discuss forced eviction is simple. IHA's sustainability guidelines do not exclude forced eviction. (www.wrm.org.uy Jan 05)

NTPC, CEA deal The National Thermal Power Corp and Central Electricity Authority have signed a MoU for providing design and engineering consultancy to two HEPs of NTPC: the Tapovan Vishnugad (520 MW) and Loharinag Pala (600 MW) in Uttaranchal. (BUSINESS STANDARD 050105)

NTPC takes over Rammam hydel The W Bengal SEB has signed an MoU to transfer ownership of the 207 MW Rammam HEP to NTPC from its present owner WBSEB. The NTPC will allocate funds for the project in the 2005-6. The Rammam HEP was proposed to be set up in four stages of 3 X 12 MW, 3 X 17 MW, 3 X 30 MW and 30 MW. Central Electricity Authority approved the project in 1977. WBSEB initiated construction in 1982 but progress was severely affected for six years owing to political unrest in Darjeeling. Only phase 2 has been commissioned at a cost of Rs 1.88 B. Around 20% of the power generated would be transferred to Sikkim. Phase 1 cost was estimated at Rs 1.77 B and was likely to be completed in the next five years. The phase 3 cost was estimated at Rs 2.8 B. (BUSINESS STANDARD 070105)

Major Public Sector HEP players The hydro sector is dominated by central and state utilities. These account for 97% of the total installed capacity of 29500 MW in the country. The state utilities contribute 23 375 MW (79%) and the central utilities contribute 5 249 MW (18%) while the private sector adds 876 MW.

➤ **SEBs** Some of the big operational SEB hydro projects are the 1 035 MW Sharavathi project in Karnataka, the 960 MW Nagarjunsagar project in Andhra Pradesh and 825 MW Nagjhari HEP in Karnataka. In terms of installed capacity, Andhra Pradesh leads with an installed capacity of 3572 MW. Some new projects promoted by SEBs are the 1450 MW Sardar Sarovar Project in Gujarat, the 304 MW Maneri Bhali-II in Uttaranchal and 900 MW Purulia PPS in W Bengal.

➤ **NHPC** was set up in 1975. Its a total installed capacity is 2 475 MW. The NHPC plans to add 4357 MW during 10th and 15208 MW during 11th Plan. The eight projects under construction are the 390 MW Dulhasti HEP in J&K, the 280 MW Dhauliganga I in Uttaranchal, the 510 MW Teesta V in Sikkim, the 90 MW Loktak downstream in Manipur, the 800 MW Parbati-II in HP, the 120 MW Sewa-II in J&K, the 2000 MW Subansiri (Lower) in Arunachal Pradesh and 132 MW Teesta Low Dam-III in W Bengal. The NHPC is developing the 1000 MW Indira Sagar and 520 MW Omkareshwar project, both in MP, as joint venture.

➤ **BBMB** was formed in 1976. It runs six operational powerhouse with an aggregate installed capacity of 2886 MW. The Bhakra Nangal project consists of the Bhakra dam, the Bhakra Left (540 MW) and the Right Bank (785 MW) projects, the Nangal dam, Nangal hydel channel, Ganguwal (77.65 MW) and Kotla (877.65 MW). The Beas project consists of the Pandoh dam, the 990 MW Dehar powerhouse, and 390 MW pong powerhouse.

- **The NEEPCO** has a total installed capacity of 1130 MW. It serves over 60% of the total demand in the north-eastern region. At present the NEEPCO operates five projects – two gas projects aggregating 375 MW and three HEPs with a total capacity of 755 MW. The most recent addition to the NEEPCO assets is the 405 MW Ranganadi HEP in the Lower Subansiri dist of Arunachal Pradesh. Around 2650 MW of capacity is under development. NEEPCO has set a target to add 365 MW by the end of the 10th Plan, another 2650 MW by the end of the 11th Plan and 11700 MW by 2020.
- **SJVNL** was incorporated in 1988 as a joint venture between Govt of India and the Himachal Pradesh Govt. In March, 2004 it commissioned 1500 MW Nathpa Jhakri HEP. During the course of construction, the project ran in to host of delays due to landslides, floods and labour unrest. The SJVNL is also planning the 439 MW Rampur HEP in Himachal Pradesh. The SJVNL is also proposing to develop four new HEPs in the Sutlej basin. These are Shongtong Karcham (400 MW), Thapowan Powari (400 MW), Jangi Thopan (480 MW) and Khab (450 MW). The CEA has allotted two more projects – Bogudiyar-Sirkari Bhyal (170 MW) and Sela Urthing (230 MW) – in Uttaranchal to SJVNL for preparation DPR and execution.
- **THDC** at the convergence of Bhagirathi river and Bhilangana valley, is yet to generate its first unit of electricity. The project comprises the Tehri dam and hydro power plant, with an installed capacity of 1000 MW each in phase I and 2 and the 400 MW Koteshwar HEP. The projects have facing huge cost over run. (POWER LINE 0105)

Private hydro players in India Total generation from private HEPs is currently 3392 MU.

- The Mumbai based **Tata Power** has 448 MW of operational hydro capacity. This includes Khopli (72 MW), Bhivpuri (76 MW), Bhira (150 MW) and Bhira PPS (150 MW). The Tata Power has picked up 100% stake in DNHPC, which was a joint venture of the Duncans Industries and Synergy Energy Development Inc, USA. The DNHPC is currently executing the 330m MW Srinagar HEP in Uttaranchal.
- **Jaiprakash Industries Limited** commissioned the Baspa-II HEP in Himachal Pradesh in May 2003. The Company also developed 300 MW Chamera-I HEP on EPC basis. The group is currently promoting two HEPs – 400 MW Vishnuprayag and the 1000 MW Karcham Wangtoo on BOOT basis. The Group has been awarded two projects on EPC basis. These are the 2 x 450 MW Baglihar (Stage-I & II) in J & K for the J &* K Power Development Dept and the 520 MW Omkareshwar HEP in Madhya Pradesh for NHDC. Karcham Wangtoo is facing opposition from local communities for over two years now.
- The **LNJ Bhilwara** is promoting three HEPs. Two (Tawa & malana) have been commissioned. Allain Duhangan is facing opposition from local people for almost two years now. World Bank's private sector arm,

IFC, has approved funding to the project. This is the first ever funding to an HEP from IFC in India. Local people and NGOs say that IFC norms are being violated in the project and complaint have been filed with IFC CAO office.

- The 70 MW Dhamwari Sunda HEP in HP was awarded in 1996. The project, to be set up on the Pabbar river in Shimla dist, received its TEC in July 2001. In 2005, the agreement was cancelled, as the company could show no progress on the project.
- The **S Kumars Group** is executing India's most controversial Maheshwar HEP (400 MW) in Madhya Pradesh. The project is facing agitation and delay in financial closure with the lenders and promoters backing out, the project has suffered considerably. Civil works have currently been stopped. The total project cost has gone up from Rs 16 B to Rs 22 B.

Apart from above some private companies are also engaged in small HEPs. These include Bhoruka Power Company, Indsil Electrosmelts, Murudeshwar power Corporation, Energy Development Company etc. (POWER LINE 0105, other sources)

IFC funding for IHDC According to confidential information, World Bank's private sector arm, IFC, has shown interest in funding Indian Hydropower Development Company for a portfolio of small hydro power plants ranging from 1.5 MW to 15 MW. The current asset base of the company includes two operating hydropower projects (total installed capacity of 17 MW) in Maharashtra and Madhya Pradesh, six pipeline projects comprising an additional 24 MW in Himachal Pradesh. The company is owned by Dodson-Sindblom International, a wholly owned subsidiary of DLZ Corp of the US. Total Cost of the project to be funded by IFC is likely to be USD 50 m, out which IFC proposes to finance USD 13 m as loan, USD 3 m as equity and USD 1.4 m as risk management. IHDC is a little known company in India and how the projects of such a little known company owned by US based corporations was selected for IFC funding is not known.

Solan Cement Plant

No proper EIA, no information to the people before the Public Hearing: People demand full EIA in Hindi

At the Public Hearing for the cement plant of Hydro and Dam company Jaiprakash Associates in Solan district in Himachal Pradesh on February 4, 2005 it became clear that people had been given no information about the project, copies of even the incomplete and improper rapid EIA was not made available to people and there was no documents on HPPCB website though HPPCB claimed in the public notice that the same were available. The local people have strongly demanded that EIA be completed in all respects and copies should be made available to them in Hindi before the public hearing. SANDRP also participated with people in this public hearing and people's demand.

CAG ON KERALA AIBP PROJECTS

The Kallada Irrigation and Tree Crop development Project and Muvattupuzha Valley Irrigation Project were included in AIBP during 1996-97 and 1998-99 respectively. The project was to create CCA of 61630 Ha, which was reduced to 53631 Ha in March 2002. The Dept claimed that potential of 51322 ha was created and utilisation till March '03 was 43626 Ha.

World Bank Funded Kallada Execution of KIP, administratively sanctioned in 1961 at an estimated cost of Rs 132.8 M, commenced in 1966 and was expected to be completed by 1975-76, had not been completed as on March 2003 even after incurring an expenditure of Rs 6.599 B. The project cost has undergone revisions ten times. Based on schedule of rates 1999, the cost of the project had been revised to Rs 7.14 B. The project received World Bank assistance of \$80.3 M (Rs 977.7 M). The expenditure of the project till March 1996 was Rs 4.894 B. 24 components costing Rs 679.7 M were taken up for execution during 1996-02 under AIBP. Against the sanction of Rs 347.5 M, the State could get CLA of Rs 285 M. The GOI did not release rest of CLA due to backlog in expenditure in the respective previous years. The GOI also did not release CLA of Rs 200 M sanctioned in 1998-99 under MVIP due to shortfall in expenditure in KIP. CCA of 29074 Ha was created as of March 1996 and CCA of 22248 Ha (under AIBP 3969 Ha, under non AIBP 18279 Ha) was subsequently created as of March 2002. Of the 51322 Ha of CCA created CCA utilised was claimed to be 43626 Ha. The project is still incomplete.

Failure of minor conveyance system Under the minor conveyance system distribution of water was proposed to be accomplished through a network of PVC pipes from spouts in the canals to hydrants in farmers' plots to achieve maximum water efficiency. Though it was decided to create MCS concurrently with the construction of main branch canals and distributaries, MCS works were completed in 30542 Ha out of 40603 Ha targeted incurring an expenditure of Rs 738 M. The intended benefit of MCS could not be made available to farmers due to various reasons. PVC pipes already laid in both private and Govt lands were damaged due to long time lag in completion. Spouts and hydrants became inoperative. Only 17 557 Ha, out of 30 542 Ha in which MCS was completed, were handed over to 1072 Water Users Associations. Most of the WUA to whom the area was transferred were not functioning.

Benefit Claims Questionable The project CCA of 53631 Ha included 40603 Ha that could be irrigated on completion of MCS works. As only 17 557 Ha had been covered under MCS, the claim of the project authorities that 43626 Ha had been benefited by the project was not correct, indicating that the full benefit contemplated in the project could not be derived.

Muvattupuzha MVIP to irrigate CCA of 17737 Ha at an estimated cost of Rs 480.8 M was approved by Planning Commission in June 1983. The CCA was extended to 19237 Ha through lift irrigation canals in 1999. The estimated cost of the project based on 1999 schedule of rates was expected to be Rs 5.75 B. Under AIBP, 57 components estimated to cost Rs 2.035 B were included. The project envisaged CCA of 19237 Ha out of which the irrigation potential created was 7200 Ha, including 2500 Ha created before launching AIBP. The total irrigation potential utilised was 4750 Ha. The assessment was also not correct, as verification on utilisation of potential created was not conducted jointly by Revenue and Irrigation authorities.

Time Overruns, Cost overruns MVIP provided for construction of a masonry dam of 23 m height at Malankara with a network of canals consisting of left bank canal of 37.10 km, right bank main canal of 28.34 km and branches and distributaries of 241.50 km. The project, which commenced in 1975 and was to be commissioned in 1984-85, was yet to finally commissioned though Rs 3.993 B had been spent by March 2003. During excavation for the foundation of flume, the design adopted was found to be not suited to the soil profile of the foundation area.

Unjustified modification of design The SE concluded a contract in March 1996 for the construction of South Kakkad Distributary of MVIP for Rs 50.6 M. In Dec 1998, the SE proposed redesign of the open canal as covered flume on the ground that there was considerable development including construction of houses in the alignment of the distributary subsequent to the execution of agreement. The reasons adduced for redesign were not tenable. The change in after the contract resulted in extra liability of Rs 14.1 M.

Avoidable expenditure In Nov 1995, SE awarded the work 'construction of left bank main canal of MVIP from chainage 36350 m to 37100 m to a contractor for a contract amount of Rs 25.4 M for completion by Dec 1996. Failure of dept in awarding the work before obtaining the approved structural drawing and before ensuring the adequacy and reasonableness of quantities in the tender schedule enabled the contractor to withdraw from the contractual obligations, resulting in avoidable extra commitment of Rs 7.51 M.

➤ The improvement road was arranged under MVIP at the cost of Rs 2.228 M. The decision of state in taking up PWD utilising AIBP assistance was irregular and not in order. An amount of Rs 3.6 M had been diverted from MVIP for meeting payments such as electricity charges, telephone charges, traveling expenses, etc, not connected with AIBP.

CAG concluded that failure in completing the inter-connecting links in KIP resulted in non-utilisation of 3142 Ha of CCA and in blockage of Rs 320.6 M. [Report of CAG for Kerala (Civil) for the year ended 31 March 2003]

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