

## Lead Piece



### National R&R Policy in Three months?

## No, Mr PM, your credibility is too low on this issue

On January 8, the Prime Minister announced at a FICCI meeting (the venue of the announcement has a lot to tell as to for whose benefit the announcement was) his govt will come out with a more humane national policy on Resettlement and Rehabilitation (R&R) in three months. The trouble is, this promise does not inspire confidence on many counts. The stand now taken by the govt that no more Special Economic Zones (SEZ) will be taken up till a new R&R Policy is a step in right direction, but does not go far enough in bringing credibility for the UPA govt on this issue.

Firstly, the current National R&R Policy (NRP 2003), gazetted in Feb 2004 (which incidentally, was the first ever National R&R Policy for India) remains unimplemented till date, as became apparent at a meeting called by the Union Ministry of Rural Development on Dec 27, '06. The NRP 2004 has numerous provisions, including appointment of National Monitoring Committee, National Monitoring cell, project specific administrator and commissioner for R&R and so on. The Ministry official agreed that almost three years after the NRP 2003 became effective, nothing has been done by the govt in terms of ensuring implementation of the policy. None of the specific provisions in the policy have been implemented. What credibility does this govt have to talk about *humane* or otherwise R&R policy, when it has done nothing to implement the current policy? It should be noted here that for most of the period since the NRP 2003 became effective, it is the UPA govt that has been in power.

Secondly, the current govt has taken many decisions that have been most inhuman for the people to be affected in the name of development. Allowing increase in height of the Sardar Sarovar Dam in 2006 and Narmada Sagar dam earlier in complete violation of legal requirements, enactment of the SEZ act and taking up of hundreds of SEZs, bulldozing clearance for projects like the Tipaimukh, Polavaram and Karcham Wangtoo without any plan for resettlement of the affected, displacement of lakhs of urban slum dwellers in Delhi, Mumbai, Kolkata and many other cities, to name the most prominent instances. To claim that this same govt now wants to bring about a *humane* R&R policy won't convince anyone.

Thirdly, the current govt has been sitting on the draft of the R&R policy that has been sent to by its own National Advisory Committee (NAC) in early 2006. In stead of acting on that draft, the govt came out with a new draft in Oct '06, which is much worse than the NAC draft and which is diluted than the NRP 2003 in several respects.

Fourthly, in stead of enacting a new land acquisition act (in place of the colonial act of 1894) and a new R&R act which would be mandatory for implementation, his govt still indulging in promises of a new draft of a policy, which in any case would have no teeth and is likely to have the same fate as that of NRP 2003.

At the meeting with the Ministry of Rural Development officials on Dec 27, '06, it was unanimously suggested to the Ministry of Rural Development that the govt should consider the NAC draft as a starting point, should translate the NAC draft and the draft NRP 2006 into all the national languages and a month after circulating these should hold regional consultations in the North, East, West, South, North East and one for the Himalayan states. The whole process should be conducted by a credible team in which at least 50% of the members should be outside the govt. The team should also visit some of the big projects currently underway. This whole process should be completed in six months.

Rather than agreeing to this credible process agreed to by everyone present at a meeting called by his govt, the PM has gone to a FICCI meeting to promise for bringing out a new National R&R policy in three months. No, Mr Prime Minister, your govt's credibility is too low on this issue. It would help everyone if you in stead immediately agree to the above mentioned process and in the meantime implement the provisions of the NRP 2003 in letter and spirit. Secondly, set up a credible National Commission to review of experience with displacement and R&R of past and suggest measures to ensure just R&R for those displaced in the past. That is the least you can do.

SANDRP

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## Interlinking of Rivers in India

### Dimensions of Social Impacts

There is a convincing case that ILR is neither desirable, nor needed for India's water needs of 21<sup>st</sup> Century. This paper concludes that the serious nature of social impacts of the project only reinforce that case. This exercise of estimating the social impacts of the Inter Linking Rivers (ILR) does not assume or agree that ILR is either desirable or inevitable. It only tries to give an estimate about the kind of social impacts that ILR may bring about, if implemented.

#### Track record on addressing social issues

The first issue that confronts us when looking at the social impact of any

new projects is the track record of the govt and project developers in addressing the social impacts of the past projects. After displacing millions (the govt and the project developers do not even have a credible figure about the number of people displaced by river valley projects in the past, some of the more credible estimates put the figure between 33 and 50 millions) the project developers cannot claim to have satisfactorily resettled the people displaced by even a medium size project. The people displaced by the dams like the Bhakra, the Hirakud, the Pong, the Gandhisagar and so on remain to be resettled even as per the norms accepted by the official agencies when these projects were taken up. Nor do we have proper policy, law or institutional mechanism to ensure that resettlement actually happens. Most importantly, even the appraisal of the social impacts of the projects has been shoddy.

In such a situation, it becomes important to map the possible social impacts of the mammoth project like the ILR, as the official agencies call it. This paper attempts to do just that. It does not mean that in the LR project becomes justifiable in the unlikely scenario that the social impacts are adequately addressed.

**Broad contours of ILR** The Table 1 below gives broad contours of the Himalayan and the Peninsular Components of the ILR in terms of number of links, number of reservoirs, cost, water transfer, claimed benefits and so on.

**Dimensions of Social Impacts** There are many kinds of social impacts of a typical large river valley project like a dam or a hydropower project. The social impacts are experienced in the upstream, downstream and the command areas of the projects. The reservoirs behind the dams bring displacement for the upstream

communities. Those affected upto the Full Reservoir Level (FRL) are generally considered when talking about Resettlement and Rehabilitation (R&R). However, the impact due to the reservoir is higher considering the fact that water level is expected to go to Maximum water

level and there is also the backwater effect as the water flows in sloping profile. The dam and the related structures also require colonies, roads, fine aggregates, coarse aggregates, steel and cement and each of which would bring its own impacts. Generally, these additional impacts are not included by the official agencies in estimations of displacement.

**There is a convincing case that ILR is neither desirable, nor needed for India's water needs of 21<sup>st</sup> Century. This paper concludes that the serious nature of social impacts of the project only reinforce that case. This exercise of estimating the social impacts of the Inter Linking Rivers (ILR) does not assume or agree that ILR is either desirable or inevitable.**

**Table 1. Broad Contours of ILR**

	Himalayan Component	Peninsular component	Total
<b>Links</b>	14	16	30
<b>Reservoirs</b>	16	58	74
<b>Power Installed Capacity</b>	30 000 MW	4 000 MW	34 000 MW
<b>Cost, crores</b>	454 000	106 000	560 000
<b>Water Transfer</b>	141.3 BCM	33 BCM	174 BCM
<b>Additional Irrigation</b>	22 M ha	13 M ha	35 M ha
<b>Link Canal Length*</b>	6100 km	4777 km	10877 km
<b>Drought mitigation*</b>	1.7 m ha	0.85 m ha	2.55 m ha

Source: NWDA 2005-I (183) and II (173)

\*: PK Sikdar in *Interlinking of Indian Rivers: An impact assessment* edited by Mamata Desai et al, ACB publications, Sept 2005 (p146-7)

In the downstream areas, there are many dimensions of social impacts. Firstly, since the dams divert or stop all the water in the river at least in the non monsoon months, the river is taken away from the downstream people. Their source of drinking water, irrigation water and water for other needs is taken away. Secondly, the groundwater is also affected as the recharge function of the river for the downstream areas is destroyed. Thirdly, fisheries and other bio diversity in the downstream river are destroyed. Fourthly, the concentration of pollution in the downstream stream increases due to stoppage/diversion of freshwater flow. Fifthly, in absence of freshwater flows, the river no longer can act for navigation for the downstream communities. Sixthly, the construction of the dam changes the character of floods in the downstream areas and the floods becomes sudden and many times more destructive. Seventhly, the

geomorphological behaviour of the river changes as the silt in the river water gets trapped in the upstream dam. The eroding capacity of the silt free water flows increases significantly, which can bring fresh social impacts for the downstream communities. Lastly, with the drastic reduction in freshwater flows at the mouths of the rivers, the salinity ingress increases, which can affect the remaining freshwater in the river, the groundwater in the coastal zones, and also the soil in the coastal areas. All these impacts need to be appraised and estimated for each of the links. None of this has been done for any of the links, and hence our estimates do not include them here.

The whole canal networks include the main canals, the branch canals, the distributaries, the minor, sub minors and the field channels. Moreover, the impacts due to the structures along the canals, the drainage network required to compensate for the drainage congestion and the additional capacity required to drain away the water added in the area by the canals, and also the land required for the coarse and the fine aggregates and the earth required for the canals should be included in the social impact assessment. However, the National Water Development Agency (NWDA) has not included these impacts in the feasibility studies for the 14 links that it have made public.

Information about how much forest land will be required for the ILR is even less satisfactory. Available information suggests that the ILR will require at least 104 000 ha of forest land, but actual requirement is likely be much larger. The destruction of such large quantity of forests will bring large scale social impacts. In addition, the related works like the compensatory afforestation, the catchment area treatment, wildlife protection measures are also likely to have significant social impacts. However, sufficient information is not available to put numbers for these impacts.

Another class of impacts includes the impacts due to land slides, soil erosion and floods due to the ILR dams and link canals. Similarly, the land required for the resettlement and rehabilitation of the affected people will bring its own impacts. There is insufficient information about these impacts of ILR.

The social impacts will also be experienced in the neighbouring countries of Nepal, Bhutan and Bangladesh due to the ILR, but we do not have sufficient information to assess these impacts.

**Lack of Information** Like in case of all water resources development projects, very little information has been made public by the govt in case of ILR. It was a struggle to get the report of the National Commission for Integrated Water Resources Development, which was set up by the Govt of India and which submitted the report in Sept 1999. After a lot of struggle, the first

volume of the report could be made available only in 2002. Then following repeated orders from the Supreme Court of India, the feasibility reports of only the 14 Peninsular links were made public in 2005. However, this still leaves out the remaining 16 links, about which NWDA has not made any of its reports public. Moreover, the reports of the 14 peninsular links are far from complete. To illustrate, the Ken Betwa link is supposed to involve at least five big dams, but the feasibility report of the link includes detailed information about only one of these. Similarly, the Parbati-Kalisindh-Chamal link is to include ten large dams, but the feasibility report includes some detailed information only about three of these dams. The NWDA has refused to make the pre-feasibility reports, the water balance studies and so on public for any of the links.

**Previous estimates of Displacement due to ILR** In several ways the govt has indicated how non serious it is about the issues of Displacement, Resettlement and Rehabilitation. One of them has been the ridiculous estimates put forward by the government officials. Let us look at the some such instances.

In a paper by the National Water Development Agency in the volume published at the time of Eleventh National Water Convention on May 11, 2005, three senior officials of the Central Water Commission (SK Sinha (a Chief Engineer), AK Sinha (Director) and Sharad Chandra (Deputy Director) have said, "It is estimated that about 4 to 5 lakh people may get affected or displaced due to creation of reservoirs and due to canals". These senior govt officials go on to say, "It is expected that due to construction of storages about 79 000 ha forest land will come under submergence". Available information shows that these figures are going to be several fold larger.

Maj Gen (Retd) S Vombatkere (Medha Patkar, Jan 2004, p 46-7) estimates that total land requirement for ILR will be 8 lakh ha, including 4.4 lakh ha for canals.

B Senapati and LM Garnayak from Orissa University for Agriculture Technology (NWDA 2005-II p 386) estimate that 3.5 lakh ha of land of which 1.2 lakh ha will be forest land, will be submerged due to ILR.

Dr HH Uliveppa of Karnataka University estimates that the 10 500 km long canals of ILR will displace about 5.5 million people. (Singh and Shrivastava, 2006, p 104)

Rainer Horig (*Water Management on a Grand Scale: India's Programme of Interlinking of Rivers*, Reuters Foundation Paper no 260, July 2005) had made estimates of displacement due to ILR based on assumption that ILR has 60 large dams and each dam submerges 8748 ha (based on figures of 213 dams in India Country Study for the World Commission on Dams) or 13 000 ha (based on a World Bank study of 11 large dams) or 24 555 ha (based on a 1992 study by Central

Water Commission involving 54 dams). Horig estimates that depending on the basis that you select, the ILR dams would submerge 5250 sq km, 7800 sq km or 14750 sq km land. If each sq km involves displacement of 151 persons per sq km land acquired (India country study for the WCD), the ILR dams would displace 7.93 to 22.25 lakh people. Horig also estimated that the 12500 km long main canal of ILR will need 625<sup>1</sup> sq km land assuming 50 m width of land acquisition for the link canals. It further estimated that this will displace about 1.962 lakh persons (considering average population density of 314 per sq km in India). Thus he estimates that ILR will take away 5875 to 15375 sq km land and displace between 9.9 lakh and 24.21 lakh people. This is the most elaborate estimate available so far on the issue of displacement due to ILR.

**Available Information** As mentioned earlier, sufficient information is not available to arrive at accurate estimates of likely displacement due to ILR. We have relied mostly on official reports for this paper, where available. Thus, we have relied on the feasibility reports of the 14 peninsular river links that have been made public by the NWDA following orders of the Supreme Court of India. For the Himalayan links, we have relied on the reports of the Bihar Govt and papers by officials of the W Bengal govt, where available. The available relevant information about the Himalayan links is described in the following sections.

**Himalayan Links** Available relevant information about the Himalayan Links is given here.

**Sharda-Yamuna-Rajasthan-Sabarmati Link** 1835 km long link canal, of which 75 km is in Gujarat state. Total 14.52 MAF (Million Acre Feet), (or 17.906 Billion Cubic Meters (BCM)) of water to be diverted, of which, Gujarat to get 1.32 MAF to irrigate 2.03 lakh ha in Gujarat. Rajasthan-Sabarmati link to irrigate 7.38 lakh ha, of which 5.35 lakh ha is in Rajasthan. (NWDA 2005 p 86)

○ **Sarda Yamuna link** The 384 km long link canal will start from a major barrage on Sarda River near Tanakpur town (Nainital district). The canal will have a bed width of 43.5 m and full supply depth of 7.8 m. (NWDA 2005-II p 192)

○ **Yamuna Rajasthan Link** The link involves a barrage on Yamuna and a 786 km long canal off taking from Right side of the barrage. 196 km of the link length lies in Haryana and 590 km in Rajasthan. The full supply depth and bed width of the canal at head are 7 m and 53 m respectively.

○ **Rajasthan Sabarmati Link** The total length of the proposed canal is 725 km, of which 650 km is in

Rajasthan and 75 km in Gujarat. The full supply depth and bed width of the canal at head is 6 m and 39 m respectively. (NWDA 2005 p 145-6)

**Ghaghra-Yamuna Link** The link is to divert water from the proposed Chisapani reservoir on Ghaghra River (the river is called Karnali in Nepal), The height of the proposed Chisapani dam above mean bed level is 175 m. A regulating dam is also proposed downstream of the Chisapani dam site with FRL 200 m and MDDL of 193 m. The 417 km long link canal will tail into Yamuna River at Etawah district in UP. The canal width would vary from 85.5 m in the head reach to 18 at the tail end and depth would vary from 8 m to 5 m in the same stretch. The canal is expected to irrigate additional 11.7 lakh ha in India and 2.54 lakh ha in Nepal. (NWDA 2005 p 123) The link also involves construction of two barrages. (NWDA 2005-II p 328)

**Manas Sankosh Teesta Ganga Link** Water from Manas and Sankosh dams to go to existing Teesta and Mahananda barrages through a link canal. The link canal outfalls into Ganga 60 km upstream of the Farakka Barrage. From here through another link canal, water will go to a barrage on Subernarekha River. A link canal from here will transfer the water to proposed Manibhadra dam on Mahanadi in Orissa. (NWDA 2005-II p 218) The 457 km link canal (full supply depth 10 m and slope 1:20 000 for the entire canal) comprises of: Manas-Sankosh canal – 114 km (the design discharge 1370 cumecs and the bed width of canal 66 m); Sankos-Teesta canal – 137 km (design discharge 2355 cumecs, canal bed width 121 m) and Teesta-Ganga canal 206 km (design discharge 2355 cumecs, canal bed width 121 m). 151.2 km of the canal will be in Bihar. The requirement of land in Bihar alone will be 7000 ha in thickly populated areas. “The acquisition of such vast area of land in this thickly populated area will be difficult... will create a big problem of rehabilitation”, says Govt of Bihar. (Govt of Bihar '03 p V-1)

According to Biswatosh Sarkar, the then secretary, Irrigation and Waterways Dept, Govt of W Bengal, 192 km of the MSTG link will pass through W Bengal, and 4327 ha of land will be required for the same, including 2133 ha of forest land and 2194 ha of private, tea garden and state govt land. “The cutting of the canal will create huge amount of spoil to the tune of 1.8-2.5 million cum. This will create disposal problem because it will require 13500 ha of land for disposal, 40% of which likely to be forest area, 30% tea garden area... The canal will cut across the natural drainage of the area and so may cause drainage congestion as well as flooding of the area”. (The Institute of Engineers, Sept 2004, p 121-2)

PK Basu, the then advisor, State Planning Board and former secretary, Irrigation & Waterways dept, Govt of W Bengal, noted (WBAST 2004, p 62) some conclusions from the West Bengal govt study of the Sankosh Teesta Link in 1997, “The alignment of the proposed S-T link

<sup>1</sup> Here it should be noted that there is a slight error in Horig's calculation, which has been corrected. Horig estimated that if 50 m width of land is acquired for canals, every km of link canal will require 0.5 sq km or 50 ha of land, where as the correct figure is that every km of link canal will require 5 ha. Accordingly, corrected figures are given in the paragraph.

canal would follow the foothills so that the transferred waters have necessary elevation to reach the level of the existing Teesta barrage (113 m) without pumping. Enroute, it would cross 22 tea gardens requiring acquisition of 530 ha of land. This would mean sure death of tea gardens. It would pass through the Buxa Tiger Reserve and reserve forests of Raidak, Upper Tandu and Appalchand, requiring 770 ha of land of the reserve forests. It would virtually separate the Himalayan foothills from the N Bengal plains, creating very adverse impact on the flora and fauna of the fragile forest cover that W Bengal still has in its northern parts. Land acquisition would lead to displacement of indigenous peoples who live in these areas and is likely to heighten the already existing social tension between the tribals and non tribals."

In another article, PK Basu estimates, "Total area of land to be acquired for the present proposal of MSTG link is 27 020 ha, out of which forestland accounts for 20505 ha" (South Madras Cultural Association, July 2003, p 36). It is not clear what components Basu includes in this estimates and if the land requirement is only in W Bengal or it also includes land requirement in Bihar, Assam and Bhutan.

According to the Feasibility study of the Sankosh Project by the Central Water Commission (1997), totally 2834 ha of land will be required for the main canal from the Sankosh project, of which 260 ha is in Bhutan (including 174 ha of forest land) and 2574 ha in India (including 1145 ha forest land). A strip of 200 m width will be acquired for a canal bed width of 121 m and about 178 houses/ building will come in the way of the canal.

**Farakka Sunderbans Link** This link involves use of 9000 MCM of water, out of which 2000 MCM is to be used for activating moribund Jamuna & development of Kestopur Bhangarakata Khal and 7000 MCM for diverting water to Hooghly to improve navigability of Kolkata Port. This link will require widening of the Feeder Canal and acquisition of land in Murshidabad, not known to what extent. (Inst of Engineers Sept 2004 p 123)

**Ganga Damodar Subarnarekha link** This 394 km long link to transfer 28913 MCM will require about 8300 ha of land in W Bengal. (Inst of Engineers, Sept 2004, p 124)

**Jogighopa Alternative** In this option for the upper reach of MSTG link, there would be barrage on Brahmaputra at Jogighopa, from where a 97.53 km long canal will take water to Sankosh barrage, rest of the link from thereon remaining same as in MSTG proposal. In this proposal, it is proposed to have a 300 MW power plant at Jogighopa and a five stage 100 m lift involving pumping capacity of 1059 MW.

**Kosi Mechi Link** The 112.55 km long canal will have full supply depth of 6.5 m and bed width of 155 m and slope of 1 in 20 000 and velocity of 1.3 m/s. (GoB 2003, p V-8)

**Kosi Ghaghra Link** The canal is to off take from Chatra barrage, downstream of the proposed Kosi High Dam, to outfall into river Gaura, a tributary of River Rapti, which joins Ghaghra. Out of the 428.76 km link canal, 278.22 km is in Nepal and 150.47 km is in India. The canal bed slope is 1: 20 000. (GoB 2003 p V-15)

**Gandak Ganga** The live storage of proposed diversion dam on Gandak is 1960 MCM. In addition, NWDA envisages storage facilities on tributaries of Gandak to the extent of 13954 MCM. This total of 15 914 MCM of storage capacity is for utilisation of 53 828 MCM of water. The link canal will be 639 km long, starting from the right side of the proposed dam across Gandak in Nepal, falling in Ganga river near Mustafabad in Rai Bareli district in UP. (GoB 2003, p V-37)

**Chunnar Sone Barrage Link** The link envisages transfer of 6 BCM water from Ganga at Chunnar to River Sone at Sone barrage. (NWDA 2005-II p 330) The link canal is to be 149.1 km long, 98 km being in Bihar, the rest in UP. The Link canal has three lifts, of 38.8 m, 16.1 m and 4.4 m. About 251 MW of power will be required for these lifts. A new barrage on Kudra Nadi is proposed. The link will require 92.25 ha forest land in UP portion. Total 1614 ha land will be required in Bihar, including 42 ha for Kudra barrage. About 40 families (200 people) will be displaced due to the Kudra barrage. (GoB 2003 p V-39)

**Sone Dam STG (Southern Tributaries of Ganga) link** The proposed link canal is to off take from the tail race of Kadwan HEP and outfall into Badua Left Bank canal after traversing a distance of 339 km. The link includes a 32 m high dam across river Sone with gross storage capacity of 3100 MCM, having a power house of 90 MW. The bed width and full supply depth of the canal are 30 m and 5 m respectively, with a slope of 1:20000. The water velocity would be 0.986 m/s at the head. Kadwan reservoir will submerge 19300 ha (25 100 ha mentioned at another place), of which forest land is 4300 ha. Barrages are planned on North Koel and Sakri Rivers, for which about 160 ha of land will be required. For the link canal, 4100 ha of land will be needed. About 40 000 persons from 40 villages are to be displaced by Kadwan reservoir. (GoB 2003 p V-56-61)

**Yamuna-Sarda Dams** As MS Reddy, former secretary, Ministry of Water Resources, Govt of India states (NWDA 2005-II, p 99), Pancheshwar, Purnagiri, Kishau, Lakhwar, Vyasi, Renuka dams are imperative for ILR, though they may not be mentioned separately in a Link project. [Similarly, Bodhghat & Bhopalpattanam are imperative for the peninsular component of ILR, Reddy adds.]

**Displacement in Nepal** As a Superintending Engineer, NWDA (NWDA 2005-II p 55) notes, the Himalayan component depends on construction of dams on the tributaries of Ganga in Nepal. Some of these dams in Nepal include the following.

⇒ **Pancheswar (Sarda)** about 12 000 ha of land is likely to be submerged in Nepal due to this dam. This dam and the downstream Purnagiri dam are crucial for the Sarda Yamuna and related links.

⇒ **Chisapani Dam (Ghagra)** This big dam is entirely in Nepal and will submerge only Nepali lands. At least 34000 ha of land will be required only for the dam. The land required for the link canal in Nepal will be additional.

⇒ **Kosi High Dam (Kosi)** The dam, part of the Kosi Mechi Link, is to be in Morang Dist in Nepal, 1.6 km upstream of village Barakhshetra. The 269 m high dam with FRL of 335.25 m will submerge 19063 ha, all in Nepal. It will have gross storage capacity of 13450 MCM and Live storage capacity of 9370 MCM. A barrage near Chatra village 8 km downstream of Barakhshetra dam site is also planned. (GoB 2003 p V-7-8) It will submerge the habitat of Rai tribals and that of Gorkhas. (NWDA 2005-II p 214-5) In addition, at least 278 km of the Kosi Ghagra link canal would be in Nepal.

⇒ **Gandak Dam** The Gandak dam would be entirely in Nepal and will submerge significant amount land, it is not clear how much. In addition, a number of reservoirs are planned on Gandak tributaries, no information is available about them, but most submergence due to these reservoirs is likely to be in Nepal. In addition, part of the Gandak-Ganga canal would also be in Nepal.

⇒ **Link Canals** Parts of Kosi-Ghagra, Kosi-Mechi, Gandak-Ganga and Ghagra-Yamuna link canals would be in Nepal, requiring significant amounts of lands in that country.

#### Displacement in Bhutan

⇒ **Manas Dam** A 250 m high dam on the Manas River, a tributary of Brahmaputra in Bhutan, 4 km upstream from Indo-Bhutan border is proposed with Live storage capacity of 8750 MCM.

⇒ **Sankosh Dam** A 253 m high dam with live storage of 4930 MCM on Sankosh river, a tributary of Brahmaputra in Bhutan, 12 km upstream of India-Bhutan border is proposed. (GoB 2003, WBAST 2004, p 62) However, the 1983 Indo Bhutan pre feasibility study had fixed 239 m as the height of the dam with gross storage capacity of 4700 MCM and submergence area of 4700 ha. The proposal included 1400 MW power house at the main dam and a component of 125 MW lift dam. However the Feasibility study of the project by the Central Water Commission in 1997 conceived the project as 265 m high and included 62.5 m (above the deepest foundation level) high regulating dam in the downstream. The main dam (4000 MW installed capacity) is to have a gross storage capacity of 6325 MCM and submergence area of 6178 ha. (CWC 1997, p 1.1)

⇒ **Sankosh regulating dam** This 60 m high barrage will be 11 km downstream of the Sankosh Dam. (GoB 2003, WBAST 2004, p 62) The dam height proposed was 62.5 m in CWC feasibility study in 1997. the dam will gross storage of 144 MCM and live storage of 24 MCM would have submergence area of 821 ha. (CWC 1997)

⇒ **The Link canal** The Manas Sankosh link is entirely in Bhutan. In addition, part of the Sankosh Teesta link canal would be in Bhutan.

**Estimated displacement due to the Dams and the Canals** Based on firm information about how much land will be required for the various dams and link canals of ILR (see the Tables 3-6 at the end of this paper for details), we arrive at the following table for the land requirement for the Himalayan and the Peninsular components of ILR, for the dams and the link canals (only the main canals). Next step is to estimate how many people will be displaced for these components of ILR. For dams, the most reliable figure one can use is 1.51 persons per ha, based on a study of 213 dams done as part of India Country Study for the World Commission on Dams. For canals, we have used the figure of population density in India (3.14 persons per ha), as canals pass through more areas with greater population density and canals are spread all over India. The figures in the last column in Table 2 are thus arrived at based on these norms.

**Table 2. Displacement due to Dams and Link Canals of ILR**

	Forest Land required, ha	Total Land required, ha	Estimated number of people that may be displaced
Himalayan Dams	4 300	162 304	245 079
Himalayan Link Canals	16 758	99 315	311 849
Peninsular Dams	73 646	404 843	611 313
Peninsular Link Canals	9 165	99 046	311 004
<b>Total</b>	<b>103 869</b>	<b>765 508</b>	<b>1 479 245</b>

These estimates suffer from a number of limitations. Firstly, even for the two main components, there is no information from the official agencies about a number of dams. Similarly, there is no official information about the link canals for at least two of the Himalayan links: the Subernarekha Mahanadi link and the Farakka Sunderbans link. Thus, while table 1 gives total length of the link canals as 10877 kms, the information available is only for 9677.34 km (4833.31 km in Himalayan component and 4844.03 km in Peninsular component) link canals.

Secondly, the estimates include land required only for the main canals, which would be around 0.8% of the

expected command area (from surface water use) of 25 million ha expected from the ILR. In reality, such long distance canal based projects are likely to take up between 7.5 and 10% of the land projected to be getting irrigation. Thus, ILR is likely to require 2 to 2.5 m ha for the total canal network.

Thirdly, these estimates do not include other dimensions of the social impacts like downstream impacts, the impacts due to drainage network (or lack of drainage), the impacts due to water logging and salinisation, the impacts due to "conservation" measures like the catchment area treatment, the compensatory afforestation, the creation of new wildlife protection areas and the impacts due to the land slides.

**This paper estimates that based on available information, the ILR will require at least 7.66 lakh ha land and will displace at least 14.8 lakh people. In addition, ILR will need at least 20 lakh ha of land for the canal network. ILR will also need at least 1.04 lakh ha of forest land**

Fourthly, these estimates do not include impacts due to the requirement of land for sand, fine and coarse aggregates, the steel and cement that would be required on massive scale for these projects and the impacts thereof. Following figures of requirements of fine, coarse aggregates and earth for three of the link canals (all from NWDA feasibility studies) shows that this component of the project too will bring big social impacts.

⇒ The Ken Betwa link will require fine aggregates of 2 million cubic meters and coarse aggregates of 8 million cubic meters.

⇒ The Krishna (Almatti) Pennar link will require 61.355 million cubic meters earth for canals.

⇒ The Cauvery Vaigai Gundar link will require 0.518 million cubic meters fine aggregates, 1.035 m cubic meters coarse aggregates and 17.39 million cubic meters of earth.

Fifthly, this does not include the substantial impacts that the project construction brings in the surrounding areas in the form of land slides, erosion, flooding and also tremors.

Finally, whatever resettlement and rehabilitation consequent to the projects would require land, which in turn could bring fresh social impacts.

So the figures in table 2 provide far from full and complete picture about social impacts due to the ILR, but they possibly give some idea of the situation, when taken with the above mentioned provisos.

**NWDA on R&R** The NWDA reports provide at best very sketchy information about what is planned about the

resettlement and rehabilitation of the people to be affected by the ILR. In the sections on R&R, there is no provision of land for farmers and others affected by the projects. Only provision is land for housing plot for the people who will lose their homes to ILR. The provision of cash compensation for the people who will lose land due to the ILR shows that the govts do not intend to provide land for the displaced. The NWDA reports do not mention the National R&R policy norms, but they state that each state will deal with the affected as per the state policies.

The first objective of the current National policy on Resettlement and Rehabilitation (NRP 2003) is "To minimize displacement and to identify non-displacing or least-displacing alternatives". If this objective were to be applied to ILR,

than we won't need the ILR projects at all, as less displacing options for India's water needs even for the justifiable demands projected for the 21<sup>st</sup> century exists. Thus, even if the current National Policy (with all the huge inadequacies it suffers from) were to be applied to ILR in an honest, objective way, we won't need the ILR.

**Conclusion** The govt and the NWDA have not made public any of the hundreds of studies done over the last 24 years with public resources till recently. Recently, after repeated Supreme Court orders, the govt has made public the feasibility reports of 14 of the ILR proposals. These reports suffer from serious inadequacies.

**The govt and the NWDA have not made public any of the hundreds of studies done over the last 24 years with public resources till recently. Recently, after repeated Supreme Court orders, the govt has made public the feasibility reports of 14 of the ILR proposals. These reports suffer from serious inadequacies**

This paper estimates that based on available information, the ILR will require at least 7.66 lakh ha land and will displace at least 14.8 lakh people. In addition, ILR will need at least 20 lakh ha of land for the canal network. ILR will also need at least 1.04 lakh ha of forest land as per available official information. ILR will bring about significant displacement in Nepal and Bhutan due to the dams and link canals. The ILR will also bring about significant social impacts in Bangladesh.

This exercise only helps get a picture of some dimensions of the possible social impacts of the ILR. However, the exercise of doing such estimation does not mean that ILR is either necessary or desirable. As said at the outset, there is sufficient case to show that ILR is neither desirable, nor necessary and we have less expensive options for taking care of justifiable water needs of the 21<sup>st</sup> century.

South Asia Network on Dams, Rivers & People

Table 3. The Dams in the Himalayan links

Link	Dam	River	Location (country, state, district)	Gross Water storage (Live)	Height of the dam	Submergence area, Ha	Displacement, No of persons
MSTG	Manas	Manas	<b>Bhutan</b>	(8750 MCM)	250 m	8000 ha <sup>2</sup>	
	Sankosh	Sankosh	<b>Bhutan</b>	6325 MCM	265 m (LS 4930 MCM if dam ht 253 m)	6178 ha	
	Sankosh barrage	Sankosh	<b>Bhutan</b>	144 MCM (24 MCM)	62.5 m	821 ha	
Sarda-Yamuna	Pancheswar	Kali River	Pithoragarh, Uttaranchal, India & <b>Nepal</b>	(6.56 BCM)	315	26000 ha in (12186 Nepal)	15400 people, 65 vil in Nepal
	Purnagiri	Kali			145	5000 ha	
	Sarda Barrage	Sarda	Tanakpur town (Nainital Dist)				
Yamuna Rajasthan	Yamuna barrage						
Rajasthan Sabarmati							
Ghagra Yamuna	Chisapani	Ghagra (Karnali in Nepal)	<b>Nepal</b>	20 BCM (16.2 BCM)	175 m (above bed level); 270 m (Bapa '04)	33900 ha%	Over 60 000 in Nepal (Dhungel et al, Nepal)
	Karnali barrage-1	Ghagra (Karnali)			FRL 200 m; MDDL 193 m		
	Barrage-2						
Kosi Ghagra (proposal to construct barrages on enroute rivers at Kamla (121 km), Bagmati (202.8 km) and Gandak (333.7 km))	Kosi High Dam		<b>Nepal, Morang dist, 1.6 km u/s of barahkshetra</b>	13450 MCM (9370 MCM)	269 m (FRL 335.25 m; MDDL 259)	19603 ha	
	Chatra barrage		<b>Nepal, 8 km d/s of barahkshetra</b>		Pond level 113.4		
Gandak Ganga	Gandak dam		<b>Nepal</b>	(1960 MCM)		6000 ha	
	More dams on Gandak tributaries			13954 MCM		20000 ha	
Chunnar Sone Barrage link	Kudra Nadi barrage (129.2 km)	Kudra Nadi	Bihar			42 ha	200
Inter connecting reservoirs	Jirgo		UP (12.9 km)	(140)	FRL 98	(4000 ha)	
	Ahroura		UP (20.9 km)	(58.2)	FRL 110		
	Musakhand		UP (46.55 km)	(110.5)	FRL 110.7		
	Kohira		Bihar (67.3)	(25.5)	FRL 104.4		
Sone Dam STG	Kadwan HEP	Sone		3100 MCM	32 m (FRL 165)	25100 ha (4300 ha FL)	40 000 (from 40 villages)
	Barrage	N Koel				160 ha	
	Barrage	Sakri					
Yamuna dams not direct part of ILR but imperative for the same (totally 11.98 bcm water available in Upper Yamuna basin)	Kishau	Tons (Yamuna)	Dehradun dist, Uttaranchal	(1230)	253	3000 ha	
	Lakhwar	Yamuna	Dehradun, before Tons meets Y	(333.04)	173 (above riverbed)	2000 ha	
	Vyasi	Yamuna	5 km d/s of Lakhwar		80	500 ha	
	Renuka	Giri (Yamuna)	Sirmour dist, HP	542 (498)	148 (above river bed)	2000 ha	

2: (www.english.ohmynews.com, 091106)

<sup>2</sup>: The shaded figures are estimates based on other parameters for the respective project.

**Table 4. The link canals in the Himalayan Links**

Link	Canal Length, km	Canal bed width at head, m (slope)	Supply Water depth at head, m (velocity)	Canal carrying capacity at head, cumecs	Water to be diverted, BCM	Approximate land requirement for the link canal	Irrigated Area, lakh ha
Kosi Mechi	112.55	155 (10 at tail) (1: 20 000)	6.5 (1.3 m/s)	1407.8 (98 at tail)	23.702 (0.883 transfer to Mahananda basin)	2624 ha	4.74 (1.75 in Nepal; 2.99 in India)
Kosi Ghagra	428.76 (278.22 km in Nepal and 150.47 km in India)	(1: 20 000)		928	7.482	6992 ha: 4661 in Nepal and 2331 in India	10.58 (1.74 in Nepal; 8.84 in India)
Gandak Ganga	639 (tailing in Ganga river near Mustafabad in Rai Bareli district in UP)			3000	53.828 (15.27 MCM for Enroute use)	23170 ha	17.49 [CCA 14.34 (9.95 in Bihar, 3.75 in UP, 0.44 in Nepal)]
Ghagra Yamuna	417 (to tail in Etawah district in UP)	85.5 (18 at tail)	8 (5 at tail)			5796 ha	11.7 in India & 2.54 in Nepal
Sarda Yamuna	384	43.5	7.8		17.906 to be diverted, of which Gujarat to get 1.628	4909 ha	
Yamuna Rajasthan	786: 196 in Haryana and 590 in Rajasthan	53	7			9360 ha	
Rajasthan Sabarmati	725: 650 km in Rajasthan and 75 km in Gujarat	39	6			4325 ha	7.38 - 5.35 in Raj and 2.03 in Guj
Chunar Sone	149.1 (98 km in Bihar and 51.1 km in UP)			405.09 (85.18 at tail)	5.92	1572 ha in Bihar; 800 ha in UP (92 ha FL - UP)	0.668 new area
Sone-STG	339 (terminate in Badua reservoir)	30 (1: 20 000)	5 (0.986 m/s)	190.43 (14.02 at tail)	2.512	4100 ha	3.07 (2.39 new area)
MSTG: Manas-Sankosh	114	66 (1:20 000)	10	1370	43.208 (22.56 from Manas, 12.433 from Snkosh and 8.215 from intermediate major streams; 37.913 transferred to Ganga; 4027 used for Enroute irrigation and 1.268 transmission losses; 15 to be used at Farakka)	2280 ha	6.536 (2.64 in Bihar)
MSTG: Sankosh-Teesta	137	121 (1:20 000)	10	2355		192 km of Sankosh Ganga Canal in W Bengal, for which 4327 ha land (2133 ha FL) for canal and 13500 ha for disposal of soil (40% land in FL); in addition, 260 ha in Bhutan	
MSTG: Teesta-Ganga	206 (151.2 km in Bihar)	121 (1:20 000)	10			7000 ha in Bihar	
Farakka Subderbans					9 BCM, of which 7 BCM for Kolkata port	Widening of feeder canal will need land in Murshidabad	
Ganga Damodar Subarnarekha	394			1864	28.913	8300 ha in W Bengal	
Subarnarekha Mahanadi							

FL: Forest Land; PL: Private Land

**Table 5. The dams in the Peninsular links**

Link	Dam	River	Location (district, state)	Gross storage (Live) mcm	Height of the dam (annual Irrigation – I ha)	Submergence area, Ha	Displacement, No of persons
Mahanadi (Manibhadra)– Godavari (d/s)	Manibhadra	Mahanadi	Nayagarh, Cuttack dist, Orissa	6000 (4290); for FRL 86 m; for FRL 91 m, 8520 (6608)	86 m FRL (MDDL 73.15 m) figures given here, NWDA proposal is for FRL 91 m	63043 (4040 ha FL + 5520 ha village FL); 70 000 ha at FRL 91 m	110 000 (2001 census) 15120 PAFs, 266 villages; at MWL 91.5 m, 218 vil fully & 114 villages partially affected
	Salim Dam (increase FRL)	Salia	Khurda dist, Orissa	59.5 (52.1)	FRL up from 58.52 m to 63.3 m)	92 ha additional sub, totally 1365 ha	44 PAFs (300 people)
Godavari (Inchampalli) – Krishna (Nagarjunsagar )	Inchampalli	Godavari		10374 (4285)	FRL 112.77; MDDL 106.98	94620 ha (30170 ha FL)	10080, 229 villages (1991 census)
	D/s dam for pump storage	Godavari		34.2			
	Peddavagu				Pond level 140 m	4113 ha FL	
	Upper Tummalagutta				Pond level 197 m		
	Lower Tummalagutta				Pond Level 176 m		
	Nusi				Pond level 140 m		
Godavari (Inchampalli) – Krishna (Pulichintala)	Pulichintala	Krishna	Guntur Dist, AP	1296 (1026)	FRL 53.34 m; MDDL 42.7 m	14399 ha	25000; 5000 PAFs; 16 vil (1991 census)
	Bhopalpatanam	Indravati	Sironcha tehsil, Mah	9494 (8421)	FRL 200.25; MDDL 174.5; MWL 201.1	77380 (10000+ ha FL) [CSE 1985 p117-8]	Displacement in Mah and CG
	Bodhghat	Indravati	CG		90 m high dam	13783 ha (5704 FL) (CSE 1999 p 156; UNEP)	10 000 tribal families; 42 vil
Godavari (Polavaram) – Krishna (Vijaywada)	Polavaram	Godavari	W Godavari dist, AP	5511 (2130)	FRL 45.72 m Dead level 41.15 m	63691 (3705 ha FL)	144812; 16207 PAF; 250 vil; 23095 houses
Krishna (Almatti) – Pennar	Kalvapalli	Pennar	Anantpur, AP	83 (73)	FRL 473 MDDL 466	1323 ha (2 villages)	1333 (Anantpur dist), 249 houses affected
Krishna (Nagarjunsagar ) – Pennar (Somasila)							
Krishna (Srisaillam) – Pennar	Four balancing reservoirs are planned: Gorakullu (50.22 km) & Owk (112.73 km – tail) on SRBC and Velugoda (7.78 km) and Sri Pothuluri Veera Brahmendra Swamy (106.66 km) on Telugu Ganga Canal. However no details are given about these reservoirs.						

**The dams in the Peninsular links (cont from previous page)**

Link	Dam	River	Location (district, state)	Gross Water storage (Live) mcm	Height of the dam (annual Irrigation - l ha)	Submergence area, Ha	Displacement , No of persons
Pennar (Somasila) – Cauvery (Grand Anicut)							
Cauvery (Kattalai) – Vaigai – Gundar	Kattalai barrage	Cauvery	Karur (TN)		Pond level 101.2)	910 ha (40 ha FL)	
Ken – Betwa	Greater Gangau	Ken	Chhatarpur dist, MP	2755 (2753 - DSL)	FRL 287; MDDL 268; DSL 238	8650 (6400 ha FL)	8550; 900 PAFs; 750 houses, 10 vil
	Berari barrage	(Betwa)			(0.87009)	4350	
	Neemkhera	(Betwa)			(0.01053)	150	
	Richhan	(Betwa)			(0.36828)	1842	
	Kesari	(Betwa)			(0.1840)	920	
Damanganga – Pinjal (for transfer of what to Mumbai as mentioned in bracket with the names of the dams)	Bhugad (1181 mld)	Damangan ga	Peint Taluk, Nasik Dist	426.4 (400)	FRL 163.87; MDDL 124.83	1903 ha (890 ha FL) in Guj (916) & Mah	3046 (1991 census); 14 vil; 503 PAFs
	Khargihill (1181+1193 mld)	Vagh	Behadpada, Mokhana Taluk, Thane	460.8 (420.5)	FRL 154.52; MDDL 109.75	1558 ha (734 ha FL) in Mah	1484; 10 villages – 220 PAFs
	Pinjal (2374+1367 mld)	Pinjal (T of Vaitarna)	Jawahar Taluk, Thane	413.57 (401.6)	FRL 141; MDDL 92.4	1500 ha	
Parbati – Kalisindh – Chambal	Patanpur	Parbati	Rajgarh dist, MP	156 (110)	FRL 419; MDDL 407	2998 ha (69 ha FL)	4255 (1991 census); 22 vil, 851 PAFs
	Mohanpura	Newaj (T of Kalisindh)		140 (87.5)	FRL 400; MDDL 390	2510	2530 (1991); 506 PAFs; 8 vil
	Kundaliya	Kalisindh		1234 (959)	FRL 378; MDDL 369.2	11800 ha (176 ha FL)	20270; 4054 PAFs, 35 vil
	Chitabad			(200)	(0.52957)	6200	19 vil
	Sonechiri			(52)	(0.14359)	2240	11 vil
	Padunia			(42)	(0.11881)	1640	10 vil
	Sewarkheri			(37)	(0.10066)	1150	9 vil
	Sekri- Sultanpura			(36)	(0.10232)	2600	12 vil
	Ramwasa			(21.25)	(0.05778)	650	3 vill
	Bachora			(15)	(0.04127)	1280	7 vil

**The dams in the Peninsular links (cont from previous page)**

Link	Dam	River	Location (district, state)	Gross Water storage (Live) mcm	Height of the dam (annual Irrigation – I ha)	Submergence area, Ha	Displacement , No of persons
Par – Tapi – Narmada	Jheri	Par	Peint Taluk, Nasik Dist, Mah	203 (187)	FRL 246; MDDL 203.7	836 ha in Mah	14832; 75 villages (24 fully and 51 partially); 2247 houses; out of 7559 ha, 3572 ha is FL
	Mohankavch ali	Par	Dharampur Taluka, Valsad Dist, Guj	372 (158)	FRL 158; MDDL 143	1494 ha (1372 ha in Mah; 122 ha in Guj)	
	Paikhad	Nar (T of Par)		229 (218)	FRL 248; MDDL 190.22	994 ha (894 ha-Mah, 100 ha-Guj)	
	Weir D/s of Parikhad				Crest level 143		
	Chasmandva	Tan (T of Auranga)		82 (75)	FRL 214; MDDL 75.08	615 ha (32 ha in Mah, 583 ha in Guj)	
	Weir D/s of Chasmandva				Crest level 132		
	Chikkar	Ambica	Ahwa Taluka, Dangs Dist, Guj	142 (130)	FRL 210; MDDL 130	1249 ha (Guj)	
	Weir D/s of Chikkar				Crest level 129		
	Dabdar	Kapri (T of Ambica)		223 (205)	FRL 169; MDDL 137.1	1629 ha (Guj)	
	Kelwan	Purna		284 (258)	FRL 164; MDDL 136.1		
Bedti – Varda	Pattanadahalla	Bedti basin	North Kanara dist, Karnataka	18 (13)	512.75 FRL	1005 ha (787 ha FL)	1 vil, 967 PAPs
	Shalamahalla			80 (72.5)	480.4 FRL		
Netravati – Hemavati	Yattinhole	Sekleshpr Taluk, Hassan Dist, Karnataka			900 m FRL	295 ha (78 ha FL)	No displacement , says NWDA website
	Kerihole				866 m FRL	120 ha (33 ha FL)	
	Hongadhallad hole				866 m FRL	350 ha (97 ha FL)	
Pamba – Achankovil – Vaippar	Punnamedu	Pamba Kal Ar		208 (118.5)	FRL 246; MDDL 212.7	440 ha	
	Achankovil	Achankovil Kal Ar		496.9 (184.9)	FRL 210; MDDL 192.2	1241 ha (871.67 ha FL); 1270 ha at MWL	
	Achankovil PS dam			30.6 (27.8)	FRL 65; MDDL 50	323 ha (218 ha FL); 340 ha at MWL	10 villages, 297 PAPs

T: Tributary; D/s: downstream; FRL: full reservoir level; MWL: maximum water level; FL: forest land; PAPs: project affected persons; PAFs: project affected families; PS: pump storage; vil: villages

**Table 6. The link canals in the Peninsular Links**

Link	Canal Length, km	Canal bed width at head, m (slope)	Supply Water depth at head, m (velocity)	Canal carrying capacity at head, cumecs	Water to be diverted, BCM	Approximate land requirement for the link canal	Irrigated Area, lakh ha
Mahanadi (Manibhadra)– Godavari (d/s)	210.45 m (Manibhadra-Rushikulya)	73.5 (1:20 000 through out)	7	801.98	12.165	22267 ha (1098 ha FL) 6048 PAPs to be resettled due to LC	3.52 in Orissa: 0.91 in AP; 4.43 total
	436.05 (Rushikulya-Sarada)	43	7	500.23			
	181.2 (Sarada-Godavari)	28	7	352.79			
Godavari (Inchampalli) – Krishna (Nagarjunsagar)	299.256	109.6 (1: 20 000 through out)	7.4	1090	16.426	7567 (661 ha FL + 300 ha FL for colony/road)	2.87
	21.8 km lead canal	9 (1:7500)	1.9	16	0.218		0.5686
Godavari (Inchampalli) – Krishna (Pulichintala)	312.2 (12.5 km Tunnel)	33.4 (17.9 m at Tail) (1:20 000)	6.75 (1.183 m/s)	304 cumecs (187 cumecs at tail)	4.37	4555; Pop Density in Command area: 6.7 per ha (2001 census)	6.13
Godavari (Polavaram) – Krishna (Vijaywada)	174 (Right)	68.5 (1: 20 000)	4.9 (3.95 at tail) (1.05 m/s)	405.12 (280 at tail)	8.233	24000* (pop density in command area is 4.97 persons per ha)	2.096 (CCA of 1.4 l ha in RBC and transfer to 2265 mcm; CCA of 1.75 l ha in LBC)
	208 (Left)						
Krishna (Almatti) – Pennar	587.175	32 (1: 20 000 then 15 000 and then 12 000)	5.25	230	1.98 (population density in command: 1.11 per ha)	3500 ha; 71 ha FL, 178 villages along the canal alignment	2.58 (1.46 in Krishna basin and 1.12 in U Pnnr basin)
Krishna (Srisilam) – Pennar	204 (existing) (180 th natural streams)			186	2.31	80 ha (embankment & power house)	
Krishna (Nagarjunsagar) – Pennar (Somasila)	Offtake 202.75 393.02 (tail)	21.3 67.5 58.9	7 6 6	488 565 498	12.146 (slope varies from 1: 2200 to 1: 20 000)	9823.8 ha (895 ha FL) 5148 PAPs, 9 villages	5.81 (4.13 existing area u NSRBC; 1.68 proposed)
Pennar (Somasila) – Cauvery (Grand Anicut)	529.19 (1: 20 000)	72.4 (39.55 – tail)	6	603.33 (351.02 at tail)	8.565	12708 ha (1025 ha FL)	4.91
Cauvery (Kattalai) – Vaigai – Gundar	255.6 (1: 13 000)	20.4 (4.1 m at tail)	5 (3.4 m at tail)	180.3 (30.03 at tail)	2.252	3146 ha for main canal, 28 ha for colony+offices, includes 40 ha FL	3.38
Ken – Betwa (1: 10 000)	134 km 61 36.5	12 9.7 8.5	3.56 3.56 3.56	72 62 57	1.02	320	0.47 enroute & 1.27 Betwa basin
Parbati – Kalisindh – Chambal	55.37 (Patanpur-Mohanpura)	19.5 (1: 10 000)	5 (1.331 m/s)	199.3	1.36	3449 ha	2.3 (1.19 enroute; 1.09 upper Chambal; 0.0215 Ex Kota Barrage)
	73.17 (Mohanpura-Kundaliya)	21.3 (1: 8 000)	5 (1.502 m/s)	238			
	98.09 (Kundaliya-G'sagar)	7 (1: 10 000)	3.4 (1.07 m/s)	49.1			

**The link canals in the Peninsular Links (Cond from previous page)**

Link	Canal Length, km	Canal bed width at head, m (slope)	Supply Water depth at head, m (velocity)	Canal carrying capacity at head, cumecs	Water to be diverted, BCM	Approximate land requirement for the link canal	Irrigated Area, lakh ha
Par – Tapi – Narmada	205.34 km (Par Tapi)	6.6	3.12	44.13 – 90.9	1.35	1700	3.04 (0.52 enroute and 2.50 in Narmada command)
	190.14 (Tapi-Narmada)	12.5	3.5	196 (75 at tail end)	1.554		
	33.27 km feeder canals from Chikkar, Dabdar and Kelwan dams)						
Damanganga – Pinjal	16.85 + 25.7 km tunnels				0.287 ex Bhugad+ 0.29 ex Khargihill+ 0.332 ex Pinjal		
Bedti – Varda	23.33 km (9 km tunnel)				0.242		0.60200 (Tungabhadra IP)
Netravati – Hemavati	11 km (8.4 km Tunnel)				0.188		0.33813 (Hemavati IP)
Pamba – Achankovil – Vaippar	51 km (+ 17 km tunnel)	13.8 (1: 10 000 to 1: 7500)	3.6	72	0.634	210 (125 ha FL for roads, colonies)	0.914

FL: Forest Land; PL: Private Land

\*: As estimated by Venkat (see *Dams, Rivers & People* Feb-Mar '06)

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**When 2007 is declared a Water Year****Future Water Solutions for India**

“Go back to the basics”.

That is the message experts give to Indian cricket team when the team is not performing well.

Exactly the same advice is relevant for the huge challenge that India's water sector faces.

**The Challenges** Consider the contours of the future water demands for a population that could be anywhere between 1.4 to 1.65 billion in 2050. With foodgrains demand going upto 450 Million tonnes per annum (remember that 84% of water use is in agriculture sector today). With per capita water demand going up everyday. With demand for industries and cities increasing almost on daily basis. With more rivers and groundwater aquifers getting polluted day after day. With Power Demands (and every major option of power generation requires water one way or the other) likely to be 3-4 times what it is today, even as half the households remain without electricity access. With looming climate change making the rainfall (the primary source of water), droughts and floods more and more destructive and yet more and more frequent and at unusual places and times. Add the real possibility of diversion and damming of our rivers in the upstream by China.

The challenge could not have been more daunting.

**The Responses** And now consider the responses the governments have come up with: More Big dams, More Big Hydropower projects, more long distance water transfer, interlinking of rivers and desalinization (how that can be an option at current energy costs is difficult to understand) on large scale.

The response could not have been more off the mark. For it shows that the governments have learnt nothing from the experience, ignore the realities about our resources, the nature of needs, available infrastructure and options available. In short, ignores the basics.

And ignorance seems to be the bliss for the decision makers. This seemed clear when Union Water Resources Minister Prof Saufuddin Soz, speaking at a public function in Delhi said on Dec 13 that his govt is going ahead with river linking plan, the Ken Betwa is a success story (in reality even the Detailed Project Report of that project is yet to be done and the differences between Uttar Pradesh and Madhya Pradesh seem insurmountable), that Polavaram is a good dam project and should go ahead (when the Central Water

Commission is yet to give final clearance and when Orissa and Chhattisgarh are yet to agree to the project and strong movement is taking shape on ground). The minister was clearly parroting the line given to him by the bureaucrats in the Water Resources Ministry, but what he said had little foundation in facts or ground realities.

Remember that India has the largest irrigation infrastructure in the world, but as Union Finance Minister said in his last budget speech, performance of that infrastructure is possibility the poorest in the world. The World Bank's report card on India's water sector in June 2005 (interestingly titled: *India's Water Economy: Bracing for a Turbulent Future*) said, “the cost of replacement and maintenance of India's stock of water resource and irrigation infrastructure would be about \$ 4 billion a year, which is about twice the annual capital budget in the Five Year Plan”. Needless to add, we do not allocate even a tiny fraction of that amount for maintenance of existing water infrastructure.

The implication is clear. As International Water

**The govt of India's plans to bring the water issue into the concurrent list would be against the letter and spirit of decentralisation of powers. More importantly, it is bound to fail in view of increasing powers of the states in coalition era.**

Management Institute's paper in early 2006 showed, the proportion of canal irrigated areas is going down across the country. In a number

of states (e.g. Tamil Nadu and Andhra Pradesh) even the actual area irrigated by canal has been going down for a decade. Our reservoirs are silting up: the latest data from Central Water Commission, analysed by us showed that capacity equal to at least two thirds of the additional storage capacity we are adding annually through new large dams at huge economic, social and environmental cost is silting up. And we are doing nothing to reduce the siltation.

The generation of electricity per MW installed capacity from large hydropower projects has reduced by over 20% in last twelve years as a result of aging machines, silting reservoirs and overdevelopment in some of the river basins.

The clearest sign of how wrong we are in the way we are dealing with water resources development and management is available from the fact that water related conflicts are growing at every level. What is the response of the government to this reality? At the public function on Dec 13, the Union Water Resources Minister said this is because Union Govt does not have much power over the states as Water is a state subject. He could not have been more off the mark. The trouble today is that Union and state govts are already too powerful and people have little role in planning, decision

making, operation or maintenance of water resources development and management. There is no democracy in water resources development. And the solution lies in changing that situation in fundamental ways.

**Options in Agriculture and Irrigation** Understanding the ground realities of state of our water resources has to be the first step of an outline of future solutions, as Mahasweta Devi said in another context. An objective stock taking throws some interesting pointers for future action.

⇒ Average foodgrains yields from irrigated areas in India is around 2.5 tonnes per ha. This can be increased to 4 tonnes per ha without involving rocket science or toxic dreams.

⇒ Our water use efficiencies are at best around 25-35% in canal irrigated areas and a little higher groundwater irrigated areas. As Mid term review of tenth Five Year Plan showed, a 10% increase in irrigation efficiency can add 14 million ha of additional irrigated area. That's higher than the target of entire Bharat Nirman Yojana. And remember the cost of each additional ha of irrigated area this way will be much less in every sense of the term, than the cost from such benefit from new projects.

⇒ The gap between the irrigation potential created and actual irrigation is around 10 million ha. Bridging that gap would be more cost effective than hankering for more storage capacities.

⇒ Arresting the siltation of storages of all sizes and desilting them where feasible would be more cost effective with multiple spin offs, precious little is being done in that direction.

⇒ While over 90% of the additional irrigation in last decade came from groundwater and while about two-thirds of our irrigated foodgrains output comes from groundwater, we do not seem to have understood the dire implications of plunging aquifer levels and irreversible nature of pollution of the aquifers. One major consequence of depleting aquifer is the rising energy costs. This can be arrested and in fact reversed if we take up groundwater recharging on massive level (the plan for this has been submitted by the Central Ground Water Board to the Planning Commission for some years now, without any action towards implementation) and this will also prolong the lifeline that groundwater provides. Moreover we need to remember that groundwater availability, use and recharging options are much more widespread than any other option like the large dams.

**Average foodgrains yields from irrigated areas in India is around 2.5 tonnes per ha. This can be increased to 4 tonnes per ha without involving rocket science or toxic dreams.**

**If we adopt SRI over even half the paddy irrigated area in India, the resultant water saving could help add at least an additional 6 million ha of irrigated area and at the same time increase the rice production by over 50%**

India has the largest number of big dams under construction today, more than any other country. The most important justification provided for large dams in India is to store water available in monsoon to use it in non monsoon months. However, there are many options available for storing monsoon water. One of the most important one is storing water in the underground aquifers. Another option is to store it in small, decentralised projects, nearer to where the water demand is. Another important issue to keep in mind here is to assess the performance of large storages already created. Our analysis of data from the last twelve years shows that on an average, in each year, 36.25 Billion Cubic Meters (BCM) storage capacity out of the 133 BCM storage capacity through large dams monitored by

the Central Water Commission remains empty. This means that in each year, capacity equal to 6.4 Sardar Sarovars is not used. We need to see

how we can achieve better performance of existing capacity rather hanker for more capacities.

The concept of virtual water (water content of the products we consume, trade, export) is increasingly going to be important in future. Can we afford to export sugar and basmati rice, produced after consuming so much water, even as large parts of India continue to starve for water for basic needs? We need to understand

the water content of the products we consume and export and ensure optimum benefits without taking away water for basic needs.

**System of Rice Intensification** Large scale adoption of new methods like the System of Rice

Intensification (SRI) can get us huge benefits. One crop that is grown over the largest irrigated area in India is Paddy and it is very water intensive crop. Under SRI, tried in dozens of country over the last decade and also tried over thousands of hectares in states like Andhra Pradesh, Tamil Nadu, Karnataka, Kerala, Orissa and W Bengal in India, some basic modification in the cultivation method (e.g. increasing the spacing between plants, transplanting younger seedlings and transplanting just one plant per location in place of 2-3 plants per location and no flooding of the fields to name a few), it has been shown that rice yield can be increased to upto 8 Tonnes per ha and in the process water requirements (as also other inputs like seed) is reduced by over 50%. Even if this method, endorsed by the Union Agriculture Ministry and the Andhra Pradesh govt (though not pushed whole heartedly for some unknown reasons), is adopted over just half of the 24 m ha paddy irrigated areas and even if we achieve half of

the possible gains, we can still add 6 m ha to irrigated areas with the water saved.

**Hydropower Options** While the biggest projected USP of large hydropower projects is supposed to be provision of peaking power, we neither monitor how much of the power generation from such projects is during peaking hours, nor do the consumers have to pay anything extra for consumption of power during peaking hours. If we can put peaking hours demand management system in place and also ensure optimum peaking power generation from existing hydropower projects, the need for such projects would go down significantly.

⇒ Similarly, regular independent assessment of performance of large hydro (and also large irrigation projects) would help us understand why the generation per MW installed capacity is going down and what we can do to arrest and reverse the same.

It would be interesting to note here that 90% of our existing dams do not have hydropower component, where we have the water storage and heads available for generation of hydropower without additional social and environmental costs. We need to assess at how many such existing dams we can add hydropower component.

Similarly, hydropower can also be generated through small projects. According to a United States Dept of Energy study published in January 2006, US has potential of generating 300 000 MW through

small hydropower projects of lower than 30 MW installed capacity. It was assessed that 100 000 MW of that is feasible even according to the feasibility norms of 2005. That capacity is three times larger than existing projects in US currently. Considering the way energy costs have gone up over the last one year, that figure would go up substantially. We in India have not even comprehensively assessed the potential with similar study. We are fond of giving the example of China, but we can do better by learning appropriately from Chinese experience, as they already have more than 88 000 small hydro projects, and the number is fast going up.

A system of transparent and accountable project appraisals would also eliminate some of the unviable projects, saving the society in terms of economic, social and environmental costs.

Some other options that are relevant in power sector include demand side management (DSM - potential of 25 000 MW as per a Power Ministry study), off shore wind power, solar and biomass power, use of decentralised power generation systems, reducing transmission and distribution losses, time of day metering and increasing end use efficiencies. A study by Prayas energy group recently showed that if every electrified household in India replaces just one 60 W

incandescent bulb with a Compact Fluorescent Lamp of sufficient wattage to give same light, the peak load demand of electricity can be reduced by 5 000 MW. That should open up many eyes and minds.

Mr MK Midha, Commissioner, Hisar Division, Haryana, recently said on energy conservation day in Dec '06, "The DSM has the potential to address the needs of filling the gap between demand and supply of electricity and providing uninterrupted electricity supply to consumers at reduced rates". This is like double benefits. DSM can not only bridge the outstanding demand, since it saves the electricity, it will make the cost per unit of power less as more power becomes available at same costs.

**Water Supply Options** In the years to come, the water requirements for urban and industrial use is going to increase in a big way due to increasing population, increasing per capita demands, increasing urbanization and industrialization. This will further add to the load of pollution to the rivers and aquifers, many of them are already unusable currently. Among the big unexplored options in this area include demand side management, pollution control, reuse of water after adequate treatment

and local supply side solutions like the rainwater harvesting and decentralised water treatment. Evidence of this working is piling from all over the world.

**Global Warming and Climate Change** The best that science is able to tell us

today about the impact of global warming on our climate is that the frequency of extreme weather incidents would increase. However, that is not great help as we won't know where and when exactly such instances will occur. Under the circumstances, we need to put in place better systems of monitoring and communications so that the impacts of such extreme weather incidents when they occur, is minimized. Adaptation is the key word that the global agencies use in this context. Unfortunately, today we do very little in that direction. As we saw in 2005 and 2006 monsoons, a lot of the damages during the floods could have been avoided had we put in better systems of forecasts and preparedness. The flood forecasting done by the Central Water Commission currently is highly inadequate, non transparent and unaccountable. We can do a lot more to use information technology and knowledge base to move towards a knowledge using society.

It is clear that we have a large number of technological, management and institutional options before us.

It is often said that we know what to do, the trouble is, we don't know how to do it. I guess we will learn the hard way.

Himanshu Thakkar

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Jan '07

**It would be interesting to note here that 90% of our existing dams do not have hydropower component, where we have the water storage and heads available for generation of hydropower without additional social and environmental costs.**

## Kanhar Multi Purpose Project

The Jharkhand govt has recently become very active on this project, it seems. The interstate project on Kanhar River, a tributary of the Sone River west of North Koel and east of Rihand tributaries affects Uttar Pradesh (Sonbhadra district), Chhattisgarh (possibly the Sarguja district) and Jharkhand (Garhwa district). The project seems to have seen many incarnations and in its latest incarnation, it is claimed that the project will have an installed hydropower capacity of 302 MW, besides irrigation in Jharkhand (1.79 lakh ha) and UP. Chhattisgarh is being promised 0.16 Million Acre Feet water. It is hoped that the project will act as feeder for some of the smaller irrigation projects in Jharkhand including Annaraj reservoir project, Utmahi Weir project, Samsatiya and Left Banki Irrigation projects.

**Recent Developments** Chhattisgarh govt has raised objections against the project and a meeting between the two state govts is planned at minister level in January 2007. Union Minister for Water Resources informed the Lok Sabha on Aug 14, 2006 that the project is pending before the Central Water Commission for clearance. On Nov 16, '06, Jharkhand water resources minister met Union Water Resources minister for getting clearance for the project.

The dam is planned at Baradih and a hydropower station at Lowodori. The project is likely to submerge some coal fields of Chhattisgarh.

**The UP Project** It is not clear if this is the same project as the Kanhar Irrigation Project listed under Uttar Pradesh in the planning commission report of April 2003. The report says that the latest cost of the project with original cost of Rs 27.75 crores (when approved by the CWC in Sept 1976) was Rs 475.19 crores as in April 2003. The cost was revised to Rs 55.8 crores in 1979 and Rs 69.47 crores in 1981-82. The project was to have ultimate irrigation potential of 33130 ha (26085 ha in

Dudhi tehsil in Sonbhadra district in UP and the rest in Jharkhand-Chhattisgarh). It would submerge at least 3000 ha land. The 40 m high dam is to have a storage capacity of 0.262 million Acre feet. As per the 1973 Bansagar agreement, UP is to use 0.15 MAF water from the Kanhar Project.

**Submergence** The Kanhar reservoir is to submerge lands in UP, Jharkhand and Chhattisgarh. The dispute between the three states about the extent of submergence in Jharkhand and Chhattisgarh was one of the reasons that did not allow the project to go ahead. 227.6 ha land in Jharkhand and 358.05 ha land in Chhattisgarh is to face submergence due to the project.

**The Agitation** An agitation has been going on against the project in Sonbhadra district of UP for some years. 7500 families of the 25 villages of the district are likely to face submergence if the project is built. About 9 lakh trees, 2700 houses, 500 well and 25 schools would face submergence. In 2004 general elections, the people of the affected area threatened to boycott the elections if the project was not shelved.

**CAG Report** The Report of the Comptroller and Auditor General of India for UP for 2002-03 states that even when the work on the project remained stalled for various reasons (paucity of funds, lack technical preparedness and interstate disputes, besides the agitation), 2 construction and 1 mechanical division remained station with no work, leading to unfruitful expenditure of Rs 17.5 crores. The work done so far has already been deteriorated for lack of maintenance. Project has spent Rs 48.86 crores by March 2001, Rs 57.57 crores by March 2002 and Rs 63.9 crores by March 2004. ([www.jharkhand.gov.in](http://www.jharkhand.gov.in), [www.irrigation.up.nic.in](http://www.irrigation.up.nic.in), [www.cag.nic.in](http://www.cag.nic.in), [www.planningcommission.nic.in](http://www.planningcommission.nic.in), PIB 140806, Telegraph 161106, Jagran 301206, *Dams, Rivers & People* June '02)

### DAMS

**Kabrai dam cracks create panic** The Kabrai dam at Mahoba district of Uttar Pradesh has developed cracks during blasting for stone mining. The blasting has damaged about 2.5 km soil embankment of the dam. The cracks have created panic in the nearby areas with population of 40000. Some people have started to leave for the safer places. The construction of the Kabrai dam had been completed on 1955. The height of the dam is 15.25 m, which has been constructed on Magaria and Kulharni Nala near Kabrai township in Mahoba district. Kabrai Dam provides Irrigation to 14960 Ha in Mahoba & Hamirpur districts through the 23.54 km long main canal and 66.4 km long distribution system. It provides 1.73 MCM water for drinking purpose in Kabrai township. The live storage capacity of the dam is 11.94 MCM. Earlier the dam had breached in 1978 resulting in heavy loss of life and property. The state irrigation dept had

completely banned the stone mining in the area in 1995. However, the mining Mafias have again started illegal mining in the area. (*RAJASTHAN PATRIKA 071006*, <http://irrigation.up.nic.in/pbr.htm>)

**Check dams washed away in first monsoon** The check dam built at a cost of Rs 12 lakh at Hurhuri village on the outskirts of Ranchi and inaugurated on June 17, could not withstand even its first spell of heavy rain. On Aug 2, the wall was washed away at several places. Villagers said that due to malpractices in materials used and improper design the checkdam could not withstand the flow. Another check dam on Budmu river near Shindraul, built in 2004 by the state water resources Dept has a wall missing. (*THE INDIAN EXPRESS 070806*)

**Pechipparai dam: Water for Nplant from opposed** People and NGOs in Tirunelveli & Kanyakumari districts

have been opposing the plan to use 31891 cubic m water from the Pechipparai dam for the proposed 2000 MW Koodankulam nuclear power plant. The dam irrigates paddy fields in Kanyakumari and Tirunelveli. The dam, built in 1906, has not attained full capacity since 1963. The Nuclear Power Corp and the EIA report from NEERI in March '04 make it clear that the water for the project is to be brought from the dam, 65 km NW of the plant. Now the collector is trying to mislead everyone by saying that is not the case. (Down to Earth 301106)

**Dam on Ghaggar** The Haryana govt has decided to construct a dam across river Ghaggar near village Chhamla in district Panchkula. The Project envisages water supply to hilly terrain of Morni. The cost of the project has been estimated as Rs 20 crore. (THE FINANCIAL EXPRESS 280806)

**Renuka project gets Court's approval** The Renuka dam has got Supreme Court Clearance with a condition that the Himachal Pradesh and Delhi Govt, executing the Rs 10.75 B joint venture shall strictly follow the norms laid down by the Central Empowerment Committee on forest and environment. The Renuka dam has been proposed on the Yamuna River in Sirmaur district, which would supply drinking water to Delhi. Delhi will get its share of 275 MGD as per the Yamuna Water Sharing Agreement signed in May 1994. The project will be executed by HPSEB and will include 40 MW HEP. The Project was conceived by the Himachal Govt in 1990 but had been hanging fire for want of permission from the Supreme Court and the committee appointed by it because 49 Ha of the Renuka wildlife sanctuary will get submerged under the proposed dam. The SC gave permission for the execution of the project after perusing a report of the committee. The approval also came after the Himachal Govt agreed to provide more land in exchange for the 49 Ha. The Himachal govt has also cleared the decks for Renuka Dam on Nov 7. The state Govt has obtained clearance from the Central Electricity Authority. (THE INDIAN EXPRESS 081106, THE TRIBUNE 181106, www.himvani.com, www.delhiplanning.nic.in)

**Polavaram Chhattisgarh CM demands fresh survey** The Chhattisgarh CM has demanded that a fresh survey of the submergence area of the Polavaram project should be done. The CG govt has already written a letter to the Centre with this demand. If the project is implemented in its present form, it will submerge over four thousand families of 13 villages in CG. It will also submerge a vast area of forestland in CG. He also demanded a concrete rehabilitation package before starting any work of the project. (DANIK BHASKAR 301106)

⇒ **Orissa for joint survey on Polavaram** The Orissa has agreed to a joint survey to decide the extent of land to be submerged due to the Polavaram project. The outcome followed talks between officials of Andhra Pradesh and Orissa Govts at Bhubaneswar on Nov 11. (THE HINDU 151106)

### **Tipaimukh Manipulation to show the project is viable**

Following intervention by the Prime Minister's Office, the administrative ministries will bear the additional costs for setting up of Tipaimukh project in Manipur, so that an unviable project can be showed to be viable. This would help cut down the first year tariff from Rs 3.87 per unit to Rs 3 per unit. Estimated to cost Rs 5885.57 crore, the project would require more than 800 crore because of flood moderation, national highway diversion and security costs. The finance ministry has asked the home ministry to bear the security cost around Rs 500 crore. 9 foreign companies including Siemens have bid for different components.

**Fraud Public Consultation** Executive member of Citizens Concern for Dams and Development has asserted that the Union Govt is refusing to publish the project report till date. Maintaining that the demerits of the Project far outweigh the merits, he said that the State Govt was still unwilling to hold a public consultation thereby denying the rights of the people to deliberate on the pros and cons of the project.

**Petition in HC against the clearance** Barely 3 days after Union Power Minister laid the foundation stone of the controversial Tipaimukh Project, a Division Bench of the Guwahati High Court has issued notices to the State Govt on a Public Interest Litigation filed against the illegal Public Hearing for the project conducted at Tamenglong. Justices TN Singh and Agarwal issued the notices following a PIL filed by Centre for Organisation Research & Education. The PIL contended that the 'so-called' proceedings of the public hearing conducted on Nov 22 at Tamenglong district headquarters is 'self-explanatory on the question of illegality and incompetency' of it. It said the people of Tamenglong district who had come to participate in the public hearing were not allowed to enter the DC office complex by the security personnel.

Major underground tribal groups have declared that they will oppose the Tipaimukh project the Tipaimukh project as it would seriously affect relations among the co-existing communities of Manipur among whom deep bonds have existed since time immemorial. Their statement noted that it would be wrong to completely destroy natural environment for the sake of energy. The project, it maintained, would not only devastate the local ecology, but also adversely affect the natural environment of Manipur as well as of its neighbours.

**Sylhet agitation** Scores of leading civil society personalities, political, youth, student, trade union leaders and eminent educationists under the chairmanship of eminent lawyer Emadullah Shaheen has raised voice against possible adverse impact of the Tipaimukh Dam on Sylhet region in Bangladesh. They sent postcard addressed to the Prime Minister of India urging immediate cancellation of the project. (Angikar-BD 170806, THE ECONOMIC TIMES 290806, Sangai Express 040107, Imphal Free Press 060107)

## SARDAR SAROVAR: The Propaganda vs. the facts

Most of the Media seems to be obediently spreading the Gujarat Govt propaganda that the work on the Sardar Sarovar dam is over, when the final height of the dam is to be 138.68 m, against the current height of 121.92 m.

Increase in the height to 138.68 from 121.92 m would affect additional families almost in same numbers as those affected so far by the reservoir. And yet, the media has chosen to uncritically spread the lie that the work on the dam (and the controversy) is over.

**Most of the Media seems to be obediently spreading the Gujarat Govt propaganda that the work on the Sardar Sarovar dam is over, when the final height of the dam is to be 138.68 m, against the current height of 121.92 m**

the work on the power stations began in 1987 along with the work on the dam. The delay in installation of power house machines has meant loss of generation for the nation and the mismanagement of the project authorities

is solely to be blamed for this delay. In stead of asking questions about this delay and holding the concerned responsible, the media has gone around saying that the power house

has been completed in "record time of 22 months". When in reality it has taken them 20 years.

### When a newspaper indulges in propaganda

Indian Express is at it again. In 2006, Indian Express newspaper was at the forefront of spreading false propaganda for the need to increase the height of the Sardar Sarovar Dam to 121.92 m. It seems in 2007, it wants to follow up with a media campaign to push for increase in height of the dam to 138.68 m. It wrote (Jan 8, '07) that it is important to increase the height of the dam so that power generation and flood control benefits from the dam can be increased. It was interesting that the report did not quote either any official or any report, but made out claims as if they were self evident truths. But the trouble is, as usual, the claims have no factual basis. For example, the dam has no provision of flood cushion. Secondly, the project has not been able to install all the power generation units till date. Due to the mismanagement of the project authorities, the power generation units were not installed in time (and installation of power generation units have no technical link with the increase in height of the dam). Most significantly, the PM appointed and SC approved Shunglu Committee report on Resettlement and Rehabilitation of those affected gave Madhya Pradesh time till March 2007 to put in place R&R sites for those affected for the dam height of 121.92 mts. It is shocking that newspaper is interested in pushing falsehoods about *What 138 means for the state*, but is not bothered about the illegalities and injustice for the tens of thousands of families already affected.

About power component also ignorant is bliss for the media. They push all kinds of lies that the power component has been completed in record time to saying that it can produce at peak capacity soon. The fact is that installation of power machines is not technically linked with raising the height of the dam and

**About power component also ignorant is bliss for the media. They push all kinds of lies that the power component has been completed in record time, when the delay in power component has lead to losses of hundreds of crores for the nation**

One of the leading National Newspaper wrote in its edit that the "dam has canal network of 80 000 km covering 8200 villages across Rajasthan, Madhya Pradesh, Maharashtra and Gujarat". How wrong can the media get such simple facts? The dam does not have 80 000 km long canals. The project is planned to have 75000 km long canal network (excluding the field channels), but hardly a fraction of that has been constructed so far, and less than 10% of the ultimate irrigation has been achieved so far. The irrigation network won't cover 8200 villages, but 3112 villages in Gujarat ([www.sardarsarovardam.org](http://www.sardarsarovardam.org)) and 400 odd villages in Rajasthan. The dam will not irrigate any area in either Madhya Pradesh or Maharashtra. The edit goes on to say that the reservoir is "India's largest", when the upstream reservoir in MP itself is bigger than Sardar Sarovar reservoir. Could not the *feel good* media have at least checked the basic facts?

Most shockingly, the editorial goes on the claim that the rehabilitation of nearly 25 000 families have been satisfactorily completed. The fact is that even a team of union ministers that visited the affected area in April 2006 said in their report that resettlement of those affected is far from over. Here again the facts could have been easily verified the *Feel Good* edit writers.

Editorial next day in another national daily (pink one this time) had more shocking falsehoods. The edit declared that the "dam over the Narmada was completed" and that "rehabilitation of those displaced was finally

completed". It claimed that as per Narmada Bachao Andolan over 300 million people were displaced by the dam. It put the cost of the project at \$2.2 billion, when already over \$ 5 billion has been spent as per the Gujarat Govt. It

went on to say that the dam will provide drinking water even in Maharashtra and MP, for which there is no

provision. Another false claim the edit made was that the project would generate 1450 MW peaking power, when in reality, the dam is not likely to have sufficient water to produce that much power consistently at any stage. All these claims are wrong and this could have been easily checked by visiting a few websites. The pink papers these days are known to be the epitome of *feel good* journalism, but surely, it needs to be factual and sensible?

Even reputed international agency like the BBC could not escape the false propaganda as it reported on Jan 2 that the dam will be dedicated to the people latter in the month. Since an incomplete dam cannot be dedicated, it is the power house that is planned to be dedicated to the people if and when the last unit may start generation. BBC report

was also way off the mark on the number of people affected when it said, "But critics say the project has displaced at least 35,000 people who lived in the dam area." The Sardar Sarovar reservoir alone has displaced over 44 000 families (at least 2.25 lakh persons) as per official estimates. The credibility of BBC is also crumbling fast, it seems.

The ignorance of the media is further highlighted when many of them say that now the dam can store 65000 cusecs of water. Unfortunately, cusec (cubic feet per second) is a unit of flow rate and not volume. For storage volume, you need to use units like million cubic meters or million acre feet for such large volumes.

This is possibly because most of the media wants to carry only the *feel good* news and anything that seems to depart from what they define as *Feel Good* news is no news for them. If facts are sacrificed in the process, than be it.

It seems that for the government, the judiciary and now the media, thousands of people being displaced by the dam does not matter. They may not like it, but the affected people are again out on the streets demanding just resettlement and rehabilitation.

**The Sardar Sarovar Propaganda bubble** Despite the water level at Sardar Sarovar dam being at 122 m only a trickle is being released in to the main canal because there is no distribution network where the water can be used. Of the four major branches of the Narmada main canal, the most important one, the 104 km Saurashtra branch canal, is complete only for 70 km. Of the 360 km Kutch branch canal, work is progress in 76 km length only. The only work done on the 118 km Vallabhpur sub-branch is the earthwork. Of the 124 km Dhrangadhara sub –branch only for 74 km is completed. Work has started in only 16 km of the 109 km Botad sub branch

canal. Gujarat gets rattled at the mere mention of halting construction at Sardar Sarovar Dam. Today when the water level there is at its highest, only 3200 cusecs is being released though 10000 to 15000 cusecs is available. It is claimed that water is being taken to 1.72 lakh ha now, however, there is lack of clarity about the management of command area. The Water Users Associations formed on paper are mostly inactive.

**The PM appointed and SC approved Shunglu Committee Report (with all its gross inadequacies) on Resettlement and Rehabilitation of those affected gave Madhya Pradesh time till March 2007 to put in place R&R sites for those affected for the dam height of 121.92 mts, which is an admission that raising of the height to 121.92 is illegal, as contended by the NBA, now also in a contempt petition**

A study by the Centre for Development Alternatives at Ahmedabad has found that more than 1000 villages in Saurashtra which are in the far end of the pipelines do not receive Narmada water regularly. The centre has suggested that the whole idea of supplying water through pipelines needs to be reassessed.

**The Finances** The govt had spent Rs 221.4 B on SSP by Sept '06. Annual interest bill is Rs 8-9 B. Rs 140 B has been spent on canals and another Rs 50 B will be spent on the same. The power house has cost Rs 52.8 B and the Dam Rs 22 B. Rs 3 B more would be spent on the dam. The total cost of the SSP is likely to cross the whopping Rs 410 B mark, once it is completed by 2011. The Sardar Sarovar Narmada Nigam has so far borrowed Rs 110 B. Nabard has given a loan of Rs 9 B and is in the process of lending another Rs 5 B. The state budgetary support was Rs 9 B in 2003-4, Rs 14.5 B in 2004-5, Rs 22 B in 2005-6 and Rs 26 B in 2006-7. The assistance under the Accelerated Irrigation Benefits Programme is Rs 2.4 B in the current year.

**Water overuse, water logging** An expert Rohit Shukla predicts that there could be "water logging" leading to soil erosion in SSP command area, as it happened in the Mahi and Kadana command areas of central Gujarat. He says there is a tendency among farmers to draw as much Narmada water as possible and use it for water intensive crops like paddy and sugarcane. The abundant water availability in the initial reaches is fueling this tendency. All this shows that Rajasthan canal like conflict situation would develop in Gujarat too.

**Dam Height** The dam has reached 121.92 m by Dec 29, thus adding 1700 mcm additional storage capacity. The work of completing the dam to 138.68 m could take two more years. However, the increase in the level from 119 m from Oct 27 after the monsoon of 2006 is in violation of the Supreme Court orders. In Jan '07, the officials of Gujarat, Maharashtra and Madhya Pradesh will meet to discuss integrated operation of Narmada dams. SSNNL claims that by June '07 5.5 lakh ha will be able to receive Narmada waters. (THE TIMES OF INDIA 301006, THE INDIAN EXPRESS 131106, 291206, The Hindu 281206)

**DISPLACEMENT**

**Bhakra & Pong dam displaced awaiting R&R** The CM of Himachal Pradesh has said that the people displaced from Bhakra and Pong dam have not been rehabilitated yet. The CM has said the state had been deriving only 2.12% of the power share in the Bhakra Dam Project and no power from the Pong Dam. He said 75000 acres was acquired, which rendered over 20000 families homeless and landless, while 339 revenue villages were completely submerged under the reservoirs. About 12000 families have been displaced from the Bilaspur area. About 31000 acre land of the town has been submerged under Govindsagar. (THE INDIAN EXPRESS, DANIK BHASKAR 141106)

**Displaced waiting R&R since 30 years** The people displaced 30 years ago from Mand diversion project in Chhattisgarh have not rehabilitated till date. The 1663 families from 44 villages in Jajnagir-Chanpa district had been displaced for the project in 1976. The Revenue Minister of the state has accepted in the State Assembly that the govt has distributed only partial compensation to the displaced farmers. He assured that the distribution of compensation would be completed with in six months.

⇒ According to the Planning Commission Report on Water Resources Projects as on April 2003, the scheme has attained the potential of 13120 ha and expenditure on the project by March '03 was Rs 52.49 crores against the original estimate of Rs 2.89 crores. The scheme involves a diversion structure on river Mand (tributary of Mahanadi), 42 km from Raigarh district headquarters. (DESHBANDHU 241106, [www.planningcommission.nic.in](http://www.planningcommission.nic.in))

**UKP Displacement** The Karnataka Govt wants to increase the height of the Alamatti dam up to 524.256 m to increase the storage capacity to 227 tmc ft. It is claimed that the irrigation potential of the Upper Krishna Project will go up to 2.5 M acres. If the dam's height is increased, another 55000 acres in 22 villages will be submerged and the Govt will have to acquire further 25000 acres for R&R. Narayanpur dam backwaters currently stretches to 13 200 ha and Almatti backwaters to 18 120 ha.

⇒ The UKP was conceived in the early 1960s to irrigate 0.6 M acres in Gulbarga, Bijapur and Raichur. The initial estimate of the project was Rs 580 M.

⇒ In 1978, funding for the first stage was provided by the World Bank. The irrigation potential was re-estimated at 1.06 M acres and was to be achieved by utilising 119 tmc ft of water and at an enhanced cost of Rs 2.83 B. The cost, which consists a balancing reservoir at Narayanpur, the Alamatti dam (current FRL 519 m) and a series of lift irrigation schemes, canals and HEP, has mounted to around Rs 100 B. Karnataka's farmers are not yet in a position to utilise the stored waters fully.

➤ The UKP dislocated 93263 families, submerged 174787 acres of land and 70010 structures in 177 villages and Bagalkot town. The Govt acquired 72327

acres for canals, R&R centers and roads. The R&R cost until the July '06 totaled Rs 24.14 B (of which Rs 17.53 B was used for land acquisition). Most of the R&R sites do not have basic amenities & employment opportunities.

➤ Dr S M Jaamdar, Commissioner (R&R and Land Acquisition) says that more than 40% of the 4.25 lakh displaced persons are illiterate, landless labourers and hopes that once agriculture picks up they will get employment. The govt has reserved just 5% of the class C&D jobs for the educated, leaving a large number unemployed.

➤ Initial compensation packages, especially in the case of the 11317 displaced families from 41 villages whose lands were submerged under the Narayanpur dam, ranged from Rs 4000-10000 an acre. Even those families that were displaced from 54 villages before 1995, when the height of the Alamatti dam reached FRL 509 m, received meager compensation. However, post 1995, after govt offered the choice of a consent award, compensation amounts went up, ranging from 54000-148000 an acre, benefiting families in 82 villages. The enhanced compensation, coupled with R&R package that include a house construction grant (Rs 22000) for those living in the rural areas, a land purchase grant of Rs 20000 and an employment generation subsidy, not only speeded up the acquisition process but enabled the Karnataka Govt in 2002 to impound water up to 519.6 m. The hoses and land have been acquired in the affected areas up to backwater level of 521 m.

➤ **Bagalkot** UKP also submerged a third of the Bagalkot town. The govt acquired 4320 acres of land six km away, off the Raichur-Belgaum state highway and the architect Charles Correa was commissioned to design a new town called Navanagar. 4719 families that live in structures that correspond to the backwater level of 512 m in the reservoir have been provided with 7590 sites. The affected people continue to go back and forth between the old and the new town as many of the important offices and markets remain in the old town. The govt would rather wait for permission to raise the height of the water in the dam before acquiring new structures in the Bagalkot town. (FRONTLINE 031106)

**HP to formulate R&R policy** The Himachal Pradesh Govt has decided to formulate a "proper" rehabilitation policy for the families displaced due to land acquisition to set up various big HEPs in the state. The Chief Minister Mr Veer Bhadra Singh has said, "the Govt has taken a policy decision to incorporate provisions of proper relief and rehabilitation in the agreement of execution entered in to with the executing agencies of these big projects." He said the Govt would consider a change in the existing land acquisition laws. He added that the lack of proper compensation based on the market value was driving people to move courts. It also delayed compensation and project execution. He emphasized the need for updating the procedure of land acquisition and its subsequent monitoring. (THE INDIAN EXPRESS 141106)

**HYDRO PROJECTS**

**People challenge HEP in AP** A division bench of Andhra Pradesh High Court admitted a writ petition filed by Girijana Sangam challenging the lower Sileru HEP in Mothugudem village in Khammam district, taken up by the Krishna Priya Power Project. The Court has sent notices to the State Govt on complaint that the lands fall under scheduled area and any transfer of land to a non-tribal is unconstitutional. The petitioner also contended that the action of the Govt would cause undue hardship to the scheduled tribe community residing in the area and was violative of provision of AP Land Transfer Regulation. (DECCAN CHRONICLE 111106)

**Mukerian HEP: Vigilance to probe** The Punjab Vigilance Bureau has initiated an inquiry into the construction of 18 MW Mukerian HEP of the PSEB. The technical wing of the bureau was conducting an inquiry into the bungling of that led to the failure of the project and loss of about Rs 30 crores. The work at the project had come to a standstill due to the eruption of water at the proposed power houses in Sept 2005. 17 months down the line, the PSEB authorities have failed to stem the flow. As per original design, the power houses were to be set up at 220 m level. BHEL, which was to supply turbines, demanded that the level should be 219 m, which is 19 m below the groundwater level in the region. AHEC (Roorkee) insisted on further geo physical investigations before agreeing to such a lowering. Once a well was bored for testing, water started gushing out.

The project was designed on the Mukerian hydel canal because, firstly, there was a design fault in the MHC at the place where it joins Beas. Here, the canal almost every year cracks, leading to loss in generation at the Mukerian Hydro project. To tackle the problem the PSEB decided to build an escape channel and in the process create an 18 MW power house over it. Even as the vigilance has started the inquiry, PSEB has issued fresh tenders for the project. (The Tribune 030107)

**Uttaranchal to set up hydrological monitoring** The Uttaranchal is developing hydrological system for monitoring on HEPs. The govt will install telemetry system on Yamuna, Bhagirathi, Alaknanda, Tons and their tributaries for flood forecasting. This system will also measure the gauges of Alaknanda, Bhagirathi, Yamuna, Tons, Mandakini, Nandakini, Pinder, Vishnuganga and other tributaries. The Asian Development Bank has granted Rs 400 M for establishment of the system, scheduled to be completed by 2011. The Central Monitoring system will be set up at Rishikesh. (DANIK JAGRAN 231106)

**HC stays cancellation of Sawalkot contract** The J & K High Court has stayed the decision of the state govt to cancel the contract for the 1200 MW Sawalkot HEP given to a consortium including NCC from Norway, the Hindustan Construction Company and a company from Turkey (Ozaltin) and invite global tenders. The Rs 7340

crore project on Chenab River in Doda district was allotted to the Sawalkot alliance in July 1999 for a 600 MW project. The earlier Mufti Mohammed Sayeed Govt renegotiated the deal on Feb 3, 2005, and raised the power generation component to 1200 MW. The decision was taken after a six member cabinet sub-committee constituted for reviewing the project, following allegations of kickbacks. The committee reportedly said in its report that project could not be allotted without a competitive bidding as required under Ministry of Power guidelines and recommended cancellation of the contract. The State submitted a DPR to the Central Electricity Authority in March '06. The CEA had denied the clearance with remarks that guidelines of the Union Ministry of Power were not followed by the state while allotting the contract without competitive bidding. The consortium has filed a petition in High Court against the decision of the state govt. Under the 2001 agreement, Norwegian major NCC international was to set up the project at Euro 967 M. In Feb '05, the state govt signed a fresh agreement after financial reappraisal with Sawalkot Prosjektutvikling AS – NCC's special purpose company to lead the Sawalkot Consortium – under which it was to implement the project at Euro 750 M. (THE HINDU, 171106, 241106, THE ECONOMIC TIMES 171106, DANIK JAGRAN 231106)

**Khasiabada HEP** The NTPC will set up a 2X 130 MW Khasiabada HEP on Gaurigang River, tributary of Sharda River in Pithoragarh district of Uttaranchal. The Uttaranchal Govt and the NTPC have signed an MoU in Nov '05 in this regard. The WAPCOS is preparing the DPR for the project. (HINDUSTAN 201106)

**SHPs in Bodoland** The Bodoland Infrastructure Development Company (a Joint venture between Bodoland Territorial Council and Infrastructure Leasing & Financial Services Ltd) from Assam has invited expression of interest for development of three small hydro projects on existing irrigation projects: 2.25 MW Champamati, 2.5 MW Pahumara and 0.5 MW Rupahi SHP. The projects are also likely to be eligible for MNES and CDM benefits, the notice said. The DPRs of the project are under development. (Financial Express 151106)

**Arunachal HEPs: NHPC complains** Following a raising of calling attention motion in the Lok Sabha on Nov 28, '06, Union Power Minister informed that the matter has been taken up with the Arunachal Pradesh govt for reimbursement of costs incurred by NHPC in preparing the DPRs of 1000 MW Siang Middle (Siyom) and the 1600 MW Siang Lower. The HEPs have now been awarded to JP Associates & Reliance Energy. The minister also informed that five HEPs with total installed capacity of 8100 MW have been awarded to NHPC and two HEPs of 4500 MW have been awarded to NTPC. Two other HEPs with total capacity of 1200 MW have been awarded to NEEPCO. One gets the impression that this awarding of contracts for big HEPs to various companies seems to be seen as game by the govt. (Business Line 291106)

## New Himachal Hydropower Policy

On January 2, '07, the Himachal Pradesh Chief Minister came out with a new Himachal Pradesh Hydropower Policy. JP Negi, Principal Secretary (Power) of Himachal Pradesh, took the initiative to formulate the policy. The policy, aiming to tap the hydropower through big projects, however, has some very significant provisions.

About the various sizes of projects, the policy has the following provisions:

- ⇒ Projects upto 2 MW will be reserved for Himachalis.
- ⇒ For 2-5 MW projects, preference will be given to Himachalis.
- ⇒ The projects upto 25 MW will be taken up as per the policies of the Ministry of Non Conventional Sources of Energy.
- ⇒ HP govt will allot projects above 25 MW.
- ⇒ Projects of 5-100 MW will be allotted through a memorandum of understanding.
- ⇒ Projects of over 100 MW will be allotted through international competitive bidding.
- ⇒ The govt will charge a premium of Rs million per MW for projects above 100 MW.
- ⇒ The state govt will reserve the right to equity participation of upto 49% in private HEPs over 100 MW. The state will realist 12% to 30% of power generated as free power as royalty. 40 years after the commissioning of the project, it will go back to the state govt.
- ⇒ The policy proposed to put a premium on peak hour electricity.

The policy said that no Clearances necessary from the Central Electricity Authority for projects selected on competitive bidding route for projects costing upto Rs. 2500 crores. 100% Foreign Equity has been permitted on the automatic approval route provided it does exceed Rs 1500 Crores. The cap of 40% financing from Indian Financial Institutions has been waived off. The website of the Himachal Pradesh State Electricity Board declares that HPSEB is to purchase power @ Rs. 2.50/ kWh from projects upto 5 MW capacity. However, this is at variance with the norm that the power tariff is to be decided by the state electricity regulatory commission.

The policy makes it mandatory to maintain at least 15% of the total discharge in rivers downstream from dams and diversion structures. The policy makes it mandatory for the promoters of projects to spend at least 1.5% of the total project cost on local area development. The local area development committee will oversee the restoration of facilities affected due to the projects, implementing the resettlement and rehabilitation plans and the catchment area treatment plan.

State CM said that the State Government was actively considering creation of an authority for hydro project

safety, quality control and management of water flows and discharge in the near future. He said that the Authority would be responsible for the appropriate use of excavated mud, boulders and stones, the developmental departments like PWD, IPH and others shall be allowed to use such material free of cost besides private crusher owners and other private users could also be permitted to utilize the same.

Chief Minister said that his Government had made it mandatory to provide 70 percent employment at all levels to the unemployed youth of the State. Himachal Pradesh Power Corp has been created, which will start functioning soon to take forward the projects in HP. (HP govt press release 020107, The Tribune, The Financial Express 030107 [www.hpseb.com](http://www.hpseb.com))

**Allain Duhangan fined for illegal use of forests** The Forest Dept of Himachal Pradesh has stopped work on the 192 MW Allain Duhangan HEP in Himachal Pradesh due to non-payment of fine of Rs 15.7 M. The Forest Dept had fined the project authority for illegal clear felling in forest area. The project developer did not pay the fine till the last date for depositing fine expired on Nov 25, '06. The forest dept has so far imposed total fine of Rs 37 M on the company for illegal clear felling, debris deposition and mining. While the authority has deposited Rs 21.6 M to the Forest Dept, which is the principle amount for illegal clear felling. The project officials claimed that the company had sought the permission for the diversion of 10 Ha of land and cutting down of 400 trees on the project site in May from the State Forest Dept. But the Dept has not cleared the same. The Conservator of forests Kulu dist, Mr S S Negi said that the company had violated the norms as it had damaged over 300 trees in over 9.5 Ha of land by dumping the debris on the forest land, for which it had no permission. The residents of Prini village and people from Domya Ganga Sangharsh Samiti have been opposing the diversion of the Duhangan river water through a tunnel to the Allian River. The people accused the company of polluting the drinking water sources in upstream Duhangan River and desecrating the sacred Panduropa, a small island lake connected with ancient religious faith. The company had blocked water flow into the lake by dumping debris.

⇒ Meanwhile, in response to an RTI application, the Union Ministry of Environment and Forests has replied on Dec 27, '06 that approval for diversion of 37.639 ha was given for the ADP on Jan 17, '05, including 32.117 ha for surface works and 5.512 ha for the underground works. The Assistant Inspector Gen of Forests in MEF implied that he is ignorant about the current problem. (DIVYA HIMACHAL 261106, THE TRIBUNE 271106, 281106)

**SJVN refuses to resettle affected people** The people from Kandar village in Rikangpio area of Kinnaur district, affected by the ongoing construction connected with the Nathpa Jhakri HEP have rejected the report of state geologist regarding landslides in the project area. The village has been experiencing falling stones and boulders on the houses following explosions for the tunnel work for the HEP undertaken by the Sutlej Jal Vidhyut Nigam. Following land slides, the villagers had asked the district administration to stop the tunnel work in Dec '04. After assurance for compensation from the company, villagers permitted the project work to go ahead. The villagers again complained to the administration in March 2005 when stones started to slide. Then administration ordered to stop the work and also ordered to state geologist for inspection of works. However, since the none from the village or the district administration was present when explosives were loaded for the geologist to assess the impact, villages are saying the conclusion of the geologist is not acceptable. Another round of discussions has been promised in 15 days. The project has been funded by the World Bank and the affected people have written to the Bank, but they have yet to get any response from the Bank officials. (*DIVYA HIMACHAL* 301106)

**Budhil HEP ignores Pollution Board's notice** The Himachal Pradesh Pollution Control Board recently issued a notice to a company executing the 70 MW Budhil HEP under the provisions of the Prevention and Control of Pollution Rules to stop work but the company has so far failed to comply with the directions. The company is not paying any attention to the prescribed environment and pollution norms. The 70 MW Budhil HEP is under construction on the Budhil rivulet, a tributary of the Ravi in Bharmour tribal subdivision of Chamba district. (*THE TRIBUNE* 161106)

**Kol Dam: The tragedy of forests continue** The Forest dept of Himachal Pradesh has decided to carry out a fresh demarcation to ascertain if any forest area had been actually left out while obtaining clearance from the Centre for the Kol Dam project. The demarcation is likely to take 3-6 months. The Central Empowered Committee of the Supreme Court has directed to take action against officials responsible for concealing facts regarding protected wildlife area to be diverted for the Kol Dam project. The committee has issued notices to the Chief Secretary and the Principal Secretary, Forests, to stop work till the issue was settled. The wildlife wing had all along maintained that no protected area was to be diverted whereas as per the Revenue Dept, 130 Ha from the Majathal Wildlife Sanctuary is involved. Demarcation jointly carried by the NTPC (the project developer) and the Wildlife Dept revealed that some forest areas were left out. However, the FD refused to accept that as it said the demarcation was not carried out by the competent authority. The Dept said that, forest clearance has been obtained for diversion of 954 Ha for the project. No

clearance has been taken under the Wildlife Protection Act. However, the works on the Kol dam do not seem to have been stopped. The CEA's status report of Hydro projects as on Dec 1, '06 showed the work on the dam is ongoing, regardless of the order of the CEC. (*THE TRIBUNE* 031106, *Dams, Rivers & People*, p 20 in Aug-Sept '06)

**Parbati-3 HEP: NHPC refuses proper compensation** The people of Salah & Soti villages in Kullu district of HP have refused to vacate their land for NHPC's Parbati-3 HEP. The NHPC has fixed compensation for the land at the rate of 1999 market price. The villagers are demanding compensation for their houses and land as per '03 market price. The NHPC does not agree with villagers' demand. Total 35 houses have to be vacated from the two villages. Villagers would have to manage alternate land at their own cost, as NHPC has not provided alternate land to rehabilitate the villagers.

➤ **Traditional water sources destroyed** Due to the tunneling work for Parbati-3 HEP the traditional water sources in the near by areas are drying up in nearby villages. The local villagers use these sources for drinking water and for irrigation.

➤ **Cement black marketing threatens the project** With the help of officials of Parbati-3 HEP, black marketing of cement is going on. The special grade cement bought at Rs 200 per bag for the project is available outside for less than half that price. This illegal affair has put threat on the quality of the project work. (*DANIK JAGRAN* 011106, *DIVYA HIMACHAL* 181106, *DANIK BHASKAR* 291106)

#### **Karcham Wangtoo: Police firing, violations**

The agitation by the people against the 1000 MW KW HEP in Kinnaur district is continuing. The state govt, in stead of addressing the issues being raised, has unleashed a reign of terror, including beating up people, using water canons, promulgating prohibitory orders, filing false cases, arrests & even police firing on Dec 9.

⇒ **MEF finds novel way to bypass tribal rights** The Union Ministry of Env and Forests have found a novel and unconstitutional way to bypass the rights of the tribals given under scheduled areas act. Under the forest conservation act (1980), it was necessary that whenever any proposal for diversion of forest land is submitted, it was to be accompanied by a resolution of the Aam Sabha of the Gram Panchayat/ local body of the area endorsing the proposals. In response to an application filed under RTI, the Assistant Inspector Gen of Forests replied, "However, such resolution would not be required in projects requiring public hearing for getting environmental clearance". This change in the FCA requirement is clearly violative of the rights of the affected persons as not everyone in the village is able to participate in the public hearing. Moreover, while FCA required the Aam Sabha consent, which in letter gave the village community right to object to the diversion of forest land, the public hearing does not give that right. Thus this change in the FCA requirement is in violation of fundamental rights of the affected people.

## IRRIGATION

**11<sup>th</sup> Plan: Central directives to states** The govt of India has asked states to step up plan allocations for irrigation projects and to implement the Participatory Irrigation Management Act. At present 11 states have enacted the PIM Act. At present 20% of the irrigated area is covered by the Water Users Association. The centre plans to increase the allocation under the Accelerated Irrigation Benefits Programme. The National Rainfed Area Authority is expected to provide critical inputs to design watershed management programme. (The Financial Express 030107)

**Farmers open dam gates for irrigation** On Nov 27, over 200 farmers of Mahoba district in Uttar Pradesh had got to the Lachura and Devri dams and opened dam gates for their irrigation needs. The MLA of the Charkhari in the district (Samajwadi Party) had also marched with villagers and supported their action. The irrigation department has made security arrangements for all ponds and reservoirs after the action. The officials say that water in the dams has been conserved for the drinking water needs in the district. The administration has extended security also on Urmil, Moudaha, Kabrai, Arjun and others dams. A similar incident had occurred at Urmil dam, when farmers from Madhya Pradesh had opened gates to get water for their irrigation needs. (RASHTRIYA SAHARA 291106)

## AGRICULTURE

**Flood prone Assam became drought affected** Unprecedented low rainfall has forced flood prone Assam to a drought. State govt has announced 22 districts (out of total 27 districts in the state) are drought hit. During the period of June 1 to August 23 757 mm rainfall has occurred against the average rainfall of 1172.2 mm i.e. 33% departure from the average rainfall. According to Asom Gana Parishad 80% farmers in the state reeling under an unprecedented drought. Official estimate shows that over 3.85 lakh farmers family have been directly hit by the drought. State govt has released Rs 1.64 crore for distribution of diesel among affected farmers for using water pumps to irrigate their paddy field. (THE INDIAN EXPRESS 220806, THE HINDU 260806)

**Punjab** The Punjab CM has stated that the state has faced drought like situation. 18% shortfall of rain has been noticed till August 15. (THE TRIBUNE 160806)

**Five districts are drought affected in W Bengal** Districts of North Bengal have been declared as drought affected due to 33% of deficit rain fall and state govt has estimates that loss of crops at nearly 1000 crore. (THE HINDU 260806)

**MP districts declared drought affected** The revenue minister of Madhya Pradesh has declared Panna,

Chhatarpur and Tikamgarh as drought affected. (DANIK BHASKAR 0091106)

**Collective farming in Vidarbha** NABARD has started a village farm development programme in May '06 on pilot basis in five villages each in Wardha and Amravati districts in Vidarbha (Maharashtra) and 95% of the about 5000 farmers are participating in the programme. They jointly purchase seeds and fertilizers and try to jointly sell the produce. (Indian Express 050107)

**Weather predictions for 2007** According to the World Meteorological Organisation, El Nino is already established over the tropical Pacific basin, which in the worse case scenario could develop into an extreme weather pattern lasting upto 18 months as in 1997-98, when the world experienced the warmest year so far in 1998. Prof Phil Jones, director of the Climate Research Unit at the University of East Anglia has said that this could make 2007 the warmest year on record, with extreme global weather patterns in the year. On January 4, '07, the British Met office predicted that there is 60% probability that 2007 may be the warmest year so far. (The Tribune 020107, The Financial Express 050107)

## POWER SECTOR

**Power SEZs have no justification** As part of the drive of setting up of Special Economic Zones all over the country, at least four have been suggested as stand alone Power SEZs, that is zones that are reserved for power generation. Adani and Essar have proposed such Zones near Surat in South Gujarat. The Maharashtra Industrial Development Corp has proposed such zones in Raigarh and Chandrapur. None of these have received formal approvals, except the Adani proposal. Now The Revenue dept in the Union Finance Ministry has raised objections that such zones go against the spirit of SEZ act. According to the rule 53 of the SEZ Act, a developer within SEZ needs to have a positive foreign exchange, but that criteria cannot be fulfilled for Power SEZs. Thus, the concept of a power SEZ went against the principle of giving tax breaks to projects boosting forex earnings through exports, Finance Ministry has argued. The power units in such SEZs would enjoy a lot of tax breaks, which won't be available to power units catering to domestic tariff area. The revenue and the commerce ministry also have different views about captive power projects within SEZs. While Revenue Dept wants that at least 75% of the power generated by such projects should be sold within the SEZ, the Commerce ministry, strangely, wants the norm at 25%. It is clear that even by their own definition, there is little justification for SEZs. (The Economic Times 030107)

**Power Tribunal: SERCs to fix trade margins** In an order on Dec 22, '06, the Appellate Tribunal of Electricity has directed all state regulators to fix profit margins on intrastate trading in four weeks, keeping in mind the interests of the consumers and that "the trading is also to

be encouraged". The order came following a petition by Mr Gajendra Haldea, who argued that generating and distribution companies in surplus states were selling power at a price much higher than that fixed by the regulators. This is expected to lower the price of power bought by deficit states as the Central Electricity Regulatory Commission had fixed trading margin at four paise per unit for interstate trading about a year back. (Business Line 020107)

**Reforms in Gujarat** Gujarat is the only state that has separated the rural power feeders, so that the actual consumption in rural areas can be quantified. (The Economic Times 030107)

## ENVIRONMENT

**Plan to set up Environment Courts** The Union govt is considering setting up a network of courts exclusively for cases relating to environmental laws. The proposal is part of a draft bill finalised by the law ministry and will be put up before the cabinet soon. The Ministry of Environment and Forests has suggested creating national and state environment tribunals with status of high courts. No other courts will have power to enter into the jurisdiction of these tribunals. The appeal against the tribunal's order would be allowed only in the Supreme Court within thirty days of the orders, extendable by another thirty days. The tribunal will have a chairperson and a member from judicial background. The remaining eight members would be experts from relevant fields. With the implementation of the new act, the National Environmental Tribunal Act and the National Environment Appellate Authority Act would be repealed. The plan could have some sinister implications. (The Hindustan Times 030107)

## WATER OPTIONS

**Employment Guarantee works in Dungarpur** Under the National Rural Employment Guarantee scheme, some remarkable work has been done in Dungarpur district in Rajasthan. A lot of the projects revolve around water harvesting, conservation, afforestation, flood control and drought proofing. Around 11 000 water conservation related structures have been built in the past 11 months. Only 7% of the structures have been

found to be below acceptable quality levels. (The Times of India 030107)

## RIVER LINK NEWS

**Rural development minister disagree on ILR** The Union Minister for Rural development Raghuvansh Prasad Singh has stated that river linking would not be solution to India's water problems and also it was not possible due to inter-state disputes. He suggested that water conservation, watershed and water management are the only solutions to the problem. (THE INDIAN EXPRESS 111106)

## POWER OPTIONS

**Mini waterwheel** Ian Gilmartin and Bob Cattley from Scotland have designed an off the shelf waterwheel system which can generate electricity from a water fall of as low as 20 cm. This waterwheel has been generating at least 24 units of power a day. It will possibly cost 2000 pounds. (The Times of India 030107)

## REVEALING QUOTES

Your dynamic Chief Minister, Dr. Rajasekhara Reddy ji is a leader endowed with foresight and vision. The massive irrigation programme which he has initiated under the name Jalayagyam has the goal of taking irrigation to each and every corner of the State. Sir Arthur Cotton created a miracle in the Godavari delta 150 years ago. Walking on the same path, Dr. Rajasekhara Reddy wants to repeat the miracle across the entire State.

**Prime Minister Dr Manmohan Singh** in a Speech on Oct 26, '06 at Mehboobnagar (AP), <http://pmindia.nic.in/speeches.htm>

The British Raj had ensured a lifeline for the people of drought prone Madurai and Ramanathapuram districts by way of the Mullaperiyar dam. But in Independent India, same lifeline created by the British is being denied. Indeed, it is a historic tragedy.

**TN CM M Karunanidhi** (Indian Express 24x06)

Our track record in rehabilitation and resettlement is deplorable, to put it mildly. The country needs to change the way it handles R&R.

**Suresh Prabhu, MP and Former Union Minister** (The Times of India 030107)

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**YOUR RESPONSES**

I saw *Dams, Rivers & People* on the website and was very much impressed by the same. I would like to get each and every issue of your publication. What is the procedure for that? Please let me know.

Rathnakumar Vakkalagadda Sr. Design Engineer (CIVIL), L & T Limited - HQ, Chennai

We receive *Dams, Rivers & People* regularly, and find the information contained within of great interest. The news items in the Oct-Nov issue highlighting the contribution of dams to flood disasters deserve to be brought to the attention of everybody. I find myself wanting to laugh when geography textbooks highlight one of the benefits of multipurpose dam projects as 'flood control'!

David Hopkins, Almora, Uttaranchal

I read your article (on Floods and Dams in *Dams, Rivers & People*) and understand the situation. I want to design a computer system that can monitor water levels of dams, suggest amount of water to be shed and even track the failure if floods occur. For this I will need some information about the mechanism of water shedding.

Gavaksh Saxena - BE III year, Information Technology, Indore M.P

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