

Lead Piece

An Example of Excellent Reporting on Environmental issues about Dams FOUR REPORTS BY ARCHANA PHULL FROM HIMACHAL PRADESH



Report 1

Forgotten CAT plan leads to high silt in Suttlej

Even as high silt levels in Suttlej before and after floods has forced closure in 1500 MW Nathpa Jhakri Power Project since June 25 incurring losses of Rs 56 crores to the executing agency SJVNL and the state government (which has 25 % equity share) so far, much because of environment degradation along the river—the Catchment Area Treatment Plan of the project for local environment conservation, which could have saved the losses to a great extent, has been gathering dust in files for long. The SJVNL has so far provided only Rs 4.5 crores to the state govt against the earmarked fund of Rs 29.75 crores under this head since the execution work started in early 90s. State govt, which was to do the afforestation work in the catchment area of the project, has gone a step ahead by not even utilizing this amount and simply putting it in treasury for use elsewhere.

And its here where the things have come to standstill—the SJVNL says it will release more funds only if the government gives the utility account of the money so far given under CAT Plan and the state government is adamant that its none of the business of any of the hydel companies to ask for utility certificate of CAT plan. "Once the hydel company gives money under the CAT plan, its for the forest department to implement it. No body can question the government on this. All the hydel companies are required to give full amount to the government under the CAT Plan at the time of execution of the project", the Forest minister, Ram Lal Thakur said. He, however, refused to comment on the failure of the government to utilize the CAT Plan funds, and added hat he had asked the forest officials recently to arrange for required number of saplings for plantations in the Catchment areas of different hydel projects by involving the local Mahila Mandals, Yuvak Mandals for raising nurseries and work thereof. "We intend to take stock of all the work done under CAT Plan funds provided by us to the government. We are expecting details first. We can release more money only after that", commented the Director, Finance with SJVNL, M.S.Sharma, who is officiating as chairman. He said the non-implementation of the plan could be one of

the contributory factors for increasing the silt levels in Suttlej- which SJVNL will definitely study.

While the hydel companies have so far been reluctant to release funds against the CAT Plan, the practice with the state government in yester years has been to utilize the money for other routine purposes for general shortage of funds. The forest department too has shown extreme laxity in its job. Neither has it been pressing for the release of money for implementation, nor has evinced any interest in arranging the required number of saplings for compensatory plantation around the rivers and other catchment area.

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"High silt level in the Sutlej River can also be attributed to the haphazard dumping of muck along the river by the hydel projects. Then there are around 48 tributaries (streams, nullahs and khadds) of Sutlej, which bring in a lot of silt. And under such a situation, if the CAT plan is also not in place, then one can imagine the extent of silt that can flow into the river from the banks of Sutlej, which are already quite unstable. It's a national loss. We will have to show concern for environment preservation at all levels, given the hydel power exploitation in HP", said the Power minister, Vidya Stokes. She informed that her department had taken it up with the Govt of India to have a joint panel, involving the state and central governments, the hydel projects concerned and locals, for proper planning along Sutlej river- where suitable species of trees and tough grasses could be planted and check dams could be erected on Sutlej tributaries to check excessive damage.

Report 2

Paying two hoots for environment plans, big companies shirk to provide money to state In a sheer lack of concern for the fragile environment of hill state of Himachal, coupled with unmindful meddling by the Government of India and insensitive approach of state government in past years- some of the big hydel power generation companies in HP have allegedly paid two hoots to deposit money for vital Catchment Area Treatment Plans of projects. Three major hydel power generation companies- National Hydel Power Generation Corporation engaged with 800 MW Parbati stage-II in Kullu, Sutlej Jal Vidyut Nigam in 1500 MW Nathpa Jhakri Power project in Shimla and Jai Prakash Group in 300 MW Baspa stage-II in Kinnaur- are not releasing full money for the CAT Plans to be implemented by the state government. Two of these- Baspa-II and Nathpa are already operational. There was initially a inordinate delay in processing of their CAT Plans at different levels, and once approved by GOI (that too many years ago), the companies took a stand to linger on with the payments allegedly taking advantage of non-specific approach of the state authorities till some time ago. The SJVNL has so far deposited Rs 4.5 crores against the total earmarked fund of Rs 29.75 crores, the Parbati stage-II has given Rs 16.1 crores against 25.69 crores and Baspa stage-II has so far given Rs nine crores against specified Rs 20.1 crores in the CAT Plan. Not surprisingly, the 126 MW Larji project, being executed by the Himachal Pradesh State Electricity Board in Mandi district since 1987, is yet to have any environment plan. The CAT Plan for Larji project was processed for approval of GOI last year only, and it is still stuck up there. The HP government, which has been accused of not utilizing the funds on field and diverting the money for some other purposes from the treasury, too has woken up after so many years and has now started exerting. It has now asked the hydel companies to deposit the CAT Plan money at the earliest, and has since decided to

release money regularly for implementation of CAT Plans. Though it's a separate matter that the lax Forest department, which was reportedly sleeping over the matter so far, is now finding it difficult to manage the material - including required number of saplings- for performing on the field. Contrary to it, the Government of India has taken a reverse stand on this front. In one of the glaring instances, the Ministry of Environment and Forests has blatantly come in defence of a private company- JP Group engaged in Baspa-II- and has asked the state govt to give the utility certificate for Rs nine crores this company had deposited out of total Rs 20.1 crores in CAT Plan and then ask for more money. The state authorities have, however, rejected the GOI's plea and asked the private company to deposit the remaining 11.1 crores money immediately.

The hydel companies in the state, on the other hand, allege that they hesitate to give money in lump sum, because the implementation of the CAT Plan by the Forest department on the field has been very poor so far. "The CAT Plan money is not being used by the government for laid down purpose. A field survey of the catchment areas would make it clear. There has been so much of mingling of CAT Plans for the projects on one river, and at times, the work done for one project is simultaneously marked in the second project downstream", alleged some environment experts with the hydel companies. They also point out that the CAT Plans have so far been treated as just afforestation exercise, but actually they include landslide protections, identification of sites for check damn and treatment of tributaries also- which is a ignored aspect. The Conservator of Forests, B.D.Suyal, passes the buck. "The Forest department has been doing its job properly. The state government is providing us money regularly. The problem only lies with the hydel companies, which are not depositing the earmarked money in one go in violation of rules. We have served fresh notices on the three defaulter companies to release full money".

Report 3

Government's "extra concern" for two defaulter private companies raises eyebrows?

It's a case of state government's alleged "extra concern" to favour two Delhi based private companies -- with whom it has already terminated the Memoranda of Understanding for hydel projects in Chamba and Kangra in the wake of strong recommendation by the High Powered Committee appointed by the Congress government to review the allocation of hydel projects in the state last year. After the termination of MoU with the two companies - M/s Ventures Energy and Technologies Limited, New Delhi for 17 MW Sai Kothi hydel project in Chamba district and M/s Om Powers Corporation Limited for 15 MW Neogal hydel project in Palampur- in September and November, respectively, last year, the matter to re-consider allocation of these projects to the

same companies has come up for discussion at least 3 times in cabinet meeting only to be rejected every time.

Immediately after termination of the two MoUs by the cabinet (which had considered the recommendations of High Powered Committee), the officials in the Power department had moved the file twice to the Power minister for examination and re-consideration of cases-- but the latter had reportedly shown reluctance to do so, as she had herself been the chairman of high powered committee which had earlier recommended to terminate their agreements. Following this, the matter was referred to the cabinet, which had rejected it, with Power minister also opposing it there. It was on the agenda of the cabinet on July 2 meeting for the third time again, allegedly without the Power minister in the know of things this time. But with most of the cabinet members opposed it, the cabinet finally decided to give both the projects to the Himachal Pradesh State Electricity Board. "Most of the ministers had strong opinion against the two cases. They questioned that when cabinet has already rejected their cases twice in the past seven months, then who is interested in pushing this agenda. And why should the companies, with whom the government has terminated the MoU on solid basis, be accommodated for the same assignment?", sources in government asked. Documents reveal that the state government had terminated the agreement with the M/s Venture Energy & Technologies Ltd for 17 MW Sai Kothi hydel project in Chamba district on September 20, 2004. The MoU was signed with the private company on June 14, 2002 by the previous BJP regime. The termination order had categorically mentioned that the Company had misrepresented the facts while submitting the papers to the Ministry of Power, Government of India for inducting NRI as foreign direct investment in the project and the company had also tampered with the equity position of clause 16 of the MoU and thus violated the provisions of the agreement. Even the previous government had issued a show cause notice to the said company on 21.12.2002, and the High Powered Committee of this government had also referred that the reply of the company to the show cause notice was not satisfactory.

The termination order stated that the project site will stand reverted to the govt without any liability or compensation, whatsoever, to be paid by the company. The process of reverting this land was, however, kept pending all these months, for reasons unknown. For 15 MW Neogal hydel project, the MoU was signed on 28.8.93 by M/s Om Power Corporation Ltd. The agreement was terminated on Nov 11, 2004. As per the order of Power department, the company had failed to adhere to the obligations assigned to them in terms and conditions laid down in the Implement Agreements. It referred to the "unsatisfactory reply" of the Company to show cause notice issued to the company on 7.2.2004. The Power minister was not available for comments. However the issue concerning the 2 HEPs was revived

time and again at the behest of a minister (having some other portfolio) allegedly in league with some govt high ups, who wield influence in the power circles.

Report 4

Opening of flood gates at Baspa project without warning: Magisterial probe ordered into negligence: FIR lodged, JP company asked to pay Rs six crores for public damage immediately

Taking a strong note of the alleged negligence on the part of JP Company running the 300 MW Baspa-II project in Kinnaur, which had suddenly opened the flood-gates with Baspa river (a tributary of Sutlej) showing rise in water level on Tuesday night without flashing any warning either to the administration or locals-- the Kinnaur district administration has ordered magisterial probe into the incident. The furious waters so let off had washed away 500 m of road stretch between Karcham and Sangla, damaged three bridges, twenty houses, and had caused major losses to public property, including Rukti power project of HPSEB. Sangla valley is now totally cut off, and is without electricity. The administration has asked the company to immediately deposit Rs six crores for public damages, pending final assessment of loss. Besides, a case has already been registered against the company under section 336 and 27 of IPC on the complaint of Pradhan of Chanshu village. Fifteen families have also been evacuated from the damaged houses. The deputy commissioner, Kinnaur, Amandeep Garg, said, the company was required to give prior warning. "It's a major negligence as it could have involved loss of life as well. We have ordered a magisterial probe into it by SDM, Kalpa. We have already served show cause on the management of JP Ltd to explain the reason of not sounding the administration and locals before opening flood gates", he said. The company had yet to respond.

While none could be contacted from the JP, the people are generally upset, "They have to warn the people immediately before opening the flood-gates, giving sufficient time for evacuation and taking out their essential items. They could have informed the local Police and asked them to arrange for a warning on hooter along the stretch to be affected", commented residents of Kinnaur. They said the state govt should strictly deal with the situation, and ensure proper relief for the affected people.

How much is the Baspa CAT Plan? The state govt is perplexed over the issue of Baspa-II's CAT Plan having shrunk from the initially fixed figure of Rs 27 crores to Rs 20 crores. The file carrying the amount of Rs 27 crores CAT Plan has since gone missing from the official records and an inquiry is being ordered at the highest levels to trace it now.

(All from reports by Archana Phull (some with Narender Sharma) The Hindustan Times, dateline Shimla 010705, 030705, 040705, 080705)

SRI FOLLOW UP**BBC: Nepal farmers reap bumper harvest**

Dan Bahadur Rajbansi, a farmer for 35 years, is new convert to SRI. Farmers in Nepal are the latest to reap huge benefits from an ingenious method of rice cultivation. The system was invented by a French Jesuit in Madagascar in the 1980s and has already scored successes in parts of Africa, Latin America and Asia, including India and China. Now it offers Nepalese a ray of hope. During a patchy monsoon, Ananta Ram Majhi, harvested an unusually abundant rice crop he planted in April. These are great thick stalks of rice, 50 or 60 sprouting from each seed. The good yield is thanks to a scheme new to Nepal, the System of Rice Intensification.

Ananta Ram and his neighbours were trained in it by a local farming official, Rajendra Uprety, who read of its success in other countries and took it up. "This method yields more than twice as much rice," Ananta Ram enthuses, estimating the new figure at 240 kilograms per kattha (360 sq mts). "It uses one-tenth of the seeds - and much less water." There are many factors to SRI, but the key can be seen at a nearby farm where a younger crop is being transplanted.

The seedlings are moved from their nursery to the field where they will mature. But crucially, this is happening at a much earlier age - 9 - 10 days, compared with the traditional 40-45 days. Earth is left on the seedlings instead of being shaken off. The women replant them in a strict straight line, singly rather than in clusters, and much further apart than is usual - about 25 cms. Best of all, there is a huge saving on water - the field need only be damp, not flooded. The rice is planted in mud, only needing extra weeding as compensation. The maturing plants flourish, much taller and stronger than their conventional neighbours. SRI is now used patchily in 22 countries - mainly thanks not to govts, but to dedicated individuals like Rajendra Uprety, agricultural extension officer for Morang district. He has hosted Nepal's minister of agriculture and persuaded the govt to promote SRI nationally - so far, the only local agriculture official in the world to achieve this. His efforts have won a World Bank award. He says it is impossible to tell why less efficient and thirstier methods of cultivation have become customs. But he says the rice loses much potential if left in the nursery too long.

SRI's inventor, Father Henri de Laulanie, found in the 1980s that having plants too close together inhibited their growth. Mr Uprety says that two years ago there was only one SRI farmer in his district. "Now I have more than 1,400. There are so many other farmers around Nepal, so many people ask me, telephone me. I send the information." The ministry has now produced 10,000 photographic posters about SRI, but he wants

the word to spread more quickly. In this poor country, 85% of people depend on subsistence farming, mainly rice. Half the districts suffer a food deficit. According to Mr Uprety, these shortfalls would be wiped out if just 10 % of the land switched to this rice system. It would also end the govt practice of airlifting rice to 20 hill districts. Dan Bahadur Rajbansi, a farmer for 35 years, is another new convert to SRI. He showed the BBC a traditional rice plant in his left hand - just eight stalks from one seed. An SRI seedling in his right hand had yielded over 50. "When I first heard about the system, it sounded so wonderful that I couldn't believe it," he says. "But I tried sowing the seedlings on about 1,200 sq mts of land. The results were marred by the drought. But they've still been impressive. We used to get barely 3.0 T of rice per ha. Now we get about 6.0."

The technique demands skilled attention and weeding and the right soil and climate. But it needs no special seeds and works better with natural compost than chemical fertiliser. Its practices such as greater spacing of seedlings have now been extended beyond rice to sugar cane, finger millet and even winter wheat - in Poland. And the crop, as well as being more abundant, matures more quickly. On their farm, Ananta Ram and his family anticipate another bumper harvest in Oct - and savings on water, money and land use. (BBC 020905)

FOLLOW UP: *Unravelling Bhakra*

A number of further events have occurred since the last issue of DRP as a response to the publication of *Unravelling Bhakra* by Manthan Adhyayan Kendra, Madhya Pradesh in April 2005. Here is a quick summary:

Full Day CBIP-BBMB meeting On August 4, 2005, A full day meeting was organised by the CBIP and BBMB to discuss the Bhakra project in the aftermath of the publication of *Unravelling Bhakra*. This clearly showed how rattled the water resources establishment is by the report. Their paranoia was further revealed by the fact they failed to invite either the author of the report or any of the others who they claimed were associated with the report. CBIP also brought out 400 page volume of the proceedings of the meeting, titled "Impacts of Bhakra Nangal Project". A press conference was addressed by the BBMB Chair in Delhi and Chandigarh. A number of articles have also appeared in the media, including one by MS Menon in Tribune, by Bhatia and Mullick in Business Standard, among others.

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Some Critical issues on Groundwater in India

For almost all the water needs in India, groundwater is by far the most important water resource.

- Worldwide, according to a UNEP study (GW its susceptibility to degradation, 2003), over 2 B people depend on aquifers for their drinking water.
- 40 per cent of the world's food is produced by irrigated agriculture that relies largely on groundwater.
- GW constitutes about 95 % of the freshwater on our planet (discounting that locked in the polar ice caps), making it fundamental to human life and development.

Characteristics By its very nature, groundwater has some important characteristics:

- It is almost universally available, with variation in levels, quality and quantity
- It is a common property resource as no single person or organization can own it.
- However, the way it is used, it has become a totally private property. According to current regime and legal situation, those who own the land have total freedom to use as much groundwater as required.
- There is a dynamic equilibrium between rainwater, surface water bodies including ponds, wetlands, lakes, rivers, tanks and groundwater. Forests and trees also are part of this system as both forests and trees play crucial role in groundwater recharge.
- Many aquifers are also able to offer natural protection from contamination, so untreated groundwater is usually cleaner and safer than its untreated surface water equivalent;
- groundwater is relatively easy and cheap to use. It can be brought on-stream progressively with little capital outlay and boreholes can often be drilled close to where the water supply is needed;
- It is a resource that is organisationally easy to develop; individuals can construct, operate and control their own supply, often on their own land.
- According to UNEP report, in 1990-93, India had world's highest land under irrigation, at 50.1 m ha, which consumed 460 BCM water, of which 41% came from surface water and 53% from groundwater.
- In India, the land irrigated by surface water has doubled between 1950 and 1985, but the area irrigated from aquifers has increased by 113 times
- Aquifers serve the important function in the hydrological cycle of storing and subsequently releasing water. The water thus discharged from aquifer storage fulfils two major roles. First, it can benefit the environment by naturally maintaining and sustaining river flow, springs and wetlands. Secondly, it can provide a valuable water supply to meet the growing demand for water for drinking and domestic use, crop irrigation and industry. The reconciliation of
- These different roles is a major task for those concerned with sustainable use of the Earth's water resources. In any parts, where rainfall is scarce, groundwater may be the only source of freshwater

available and is, as a consequence, often heavily exploited.

HOW GROUNDWATER OCCURS Groundwater is part of the Earth's water or hydrological cycle. When rain falls, a part infiltrates the soil and the remainder evaporates or runs off into rivers. The roots of plants will take up a proportion of this moisture and then lose it through transpiration to the atmosphere, but some will infiltrate more deeply, eventually accumulating above an impermeable bed, saturating available pore space and forming an underground reservoir. Underground strata that can both store and transmit accumulated groundwater to outlets in rivers, springs and the sea are termed aquifers.

The water table marks the level to which the ground is fully saturated (saturated zone) and reaches the surface at most rivers and all groundwater-fed lakes. Above the water table the ground is known as the unsaturated zone. The productivity of an aquifer depends on its ability to store and transmit water, and these qualities may vary (see Figure A). Unconsolidated granular sediments, such as sand or gravel contain pore space between the grains and thus the water content can exceed 30 per cent of the volume. This is reduced progressively as the proportion of finer materials such as silt or clay increases and as consolidation occurs, typically accompanied by cementation of the grains. In highly consolidated rocks groundwater is found only in fractures and rarely exceeds 1 per cent of the volume of the rock mass. However, in the case of limestones, these fractures may become enlarged, by solution and preferential flow to form fissures and caverns. Even then, the total storage is relatively small compared with unconsolidated aquifers; one result is that there is less water available to dilute contaminated water that finds its way into the system.

Groundwater systems are dynamic and water is continuously in slow motion down gradient from areas of recharge to areas of discharge. In large aquifer systems, tens or even hundreds of years may elapse in the passage of water through this subterranean part of the hydrological cycle. Such flow rates do not normally exceed a few metres per day and compare with rates of up to 1 metre per second for riverflow. Velocities can be much higher where flow is through fracture systems, dependent on factors like aperture or fracture network density. In limestones with well-developed solution or in some volcanic aquifers with extensive lava tubes or cooling cracks, velocities can be measured in km/day. Thus supplies located in different aquifers, or in different parts of the same aquifer, can tap water of widely different residence time. This is an important factor for contaminants that degrade over time and in the control of disease-causing micro-organisms such as

some bacteria, viruses and protozoa. (Source: UNEP 2003)

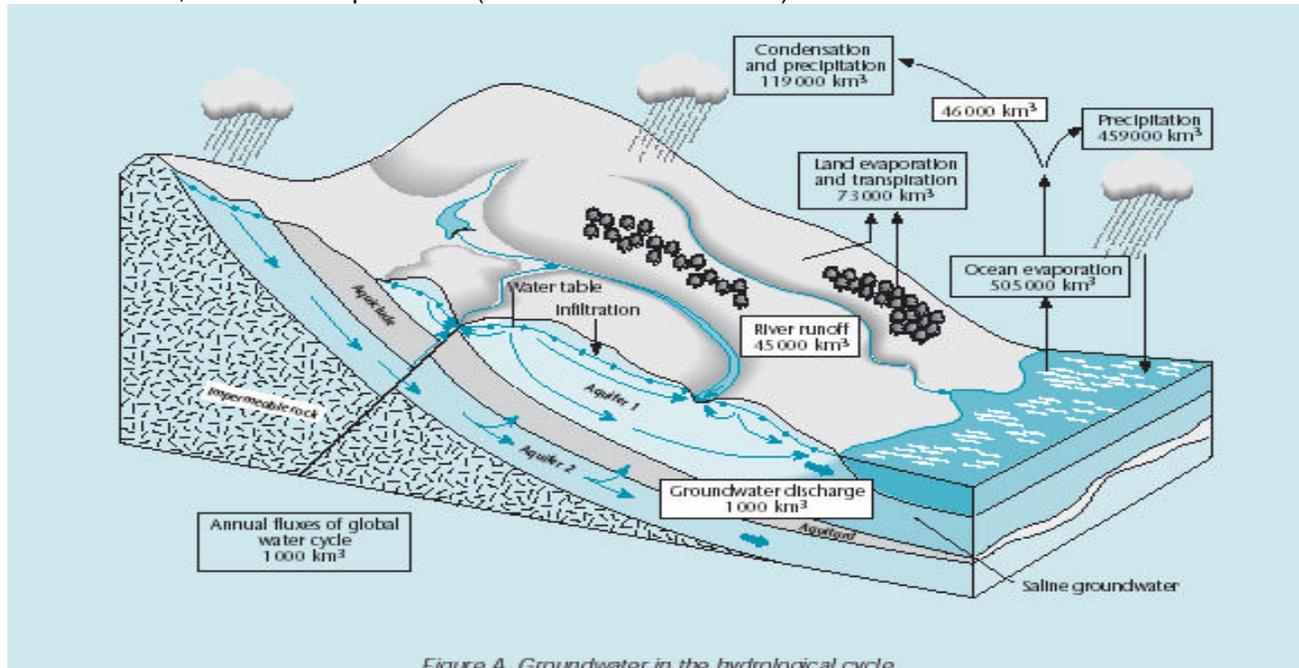


Figure A. Groundwater in the hydrological cycle.

Destruction of Groundwater Recharge Systems

Direct human interventions over the years have led to reduction in groundwater recharge. These include: deforestation, destruction of local water systems (including traditional water systems) (like ponds, tanks, lakes, wetlands and so on), stoppage of river flows by dams and even run of the river projects. Deforestation also leads to change in river flow regime in the affected area that also affects the recharge in the given area.

➤ There are larger and indirect human interventions that has also affected the groundwater recharge systems, including urbanization, concretization of more and more land, the those factors that lead to global warming also contribute in reduction in groundwater levels as evapo-transpiration needs are higher when temperatures go up, leading to more groundwater use.

➤ Mining also leads to destruction of groundwater recharge systems in the mined areas. In fact in mining areas groundwater is many times unnecessarily pumped out so that mining becomes possible. This could be minimized and restored at least when mining in a given area is completed, but that almost never happens.

➤ There are some human interventions that also seemingly add to natural groundwater recharging. These include the increased recharge that happens due to canal irrigation. However, there is little credible evaluation as to how much of this happens. In any case, if groundwater recharge is the objective, than such systems are not the best options.

Legal regime Following the Supreme Court order the Union govt has created a Central Groundwater Authority, under the Environment Protection Act, 1986 “to regulate and control management and development of ground water in the country and to issue necessary

regulatory directions for this purpose”. This gives this body sweeping powers, but there has been little effective action to control the use of groundwater to stop unjustified use that takes this common property away from the members of the society that share the aquifer.

➤ Industries and commercial interests are also exploiting this situation to the detriment of the poorer and weaker section of the society.

➤ Poorer people are worst affected by this situation as when aquifer levels go down, their wells go dry and they do not have the means to dig their wells deeper. So private interests are taking away the social resources from the hands of the poorer people.

➤ According to an answer given by Union Minister for Water resources in Lok Sabha on April 7, 2003, “So far the State Governments of Andhra Pradesh, Goa, Tamil Nadu, Kerala and Union Territory of Lakshadweep have enacted legislation on the lines of Model Bill and State Governments/Union Territories of Assam, Bihar, Haryana, Himachal Pradesh, Jammu and Kashmir, Karnataka, Maharashtra, Mizoram, Orissa, Punjab, Rajasthan, Uttar Pradesh, West Bengal, NCT of Delhi, Pondicherry and Daman & Diu have initiated action in this direction.” The model bill was circulated by the Union govt in 1970, 1992 and 1996.

Groundwater in India According to the report of the National Commission on Integrated Water Resources Development (GOI Sept 1999), the total replenishable ground water is estimated as 432 BCM. Out of this, 396 BCM is considered utilizable – 71 BCM (15%) for domestic, industrial and other uses and 325 BCM (90% of the balance) for irrigation.

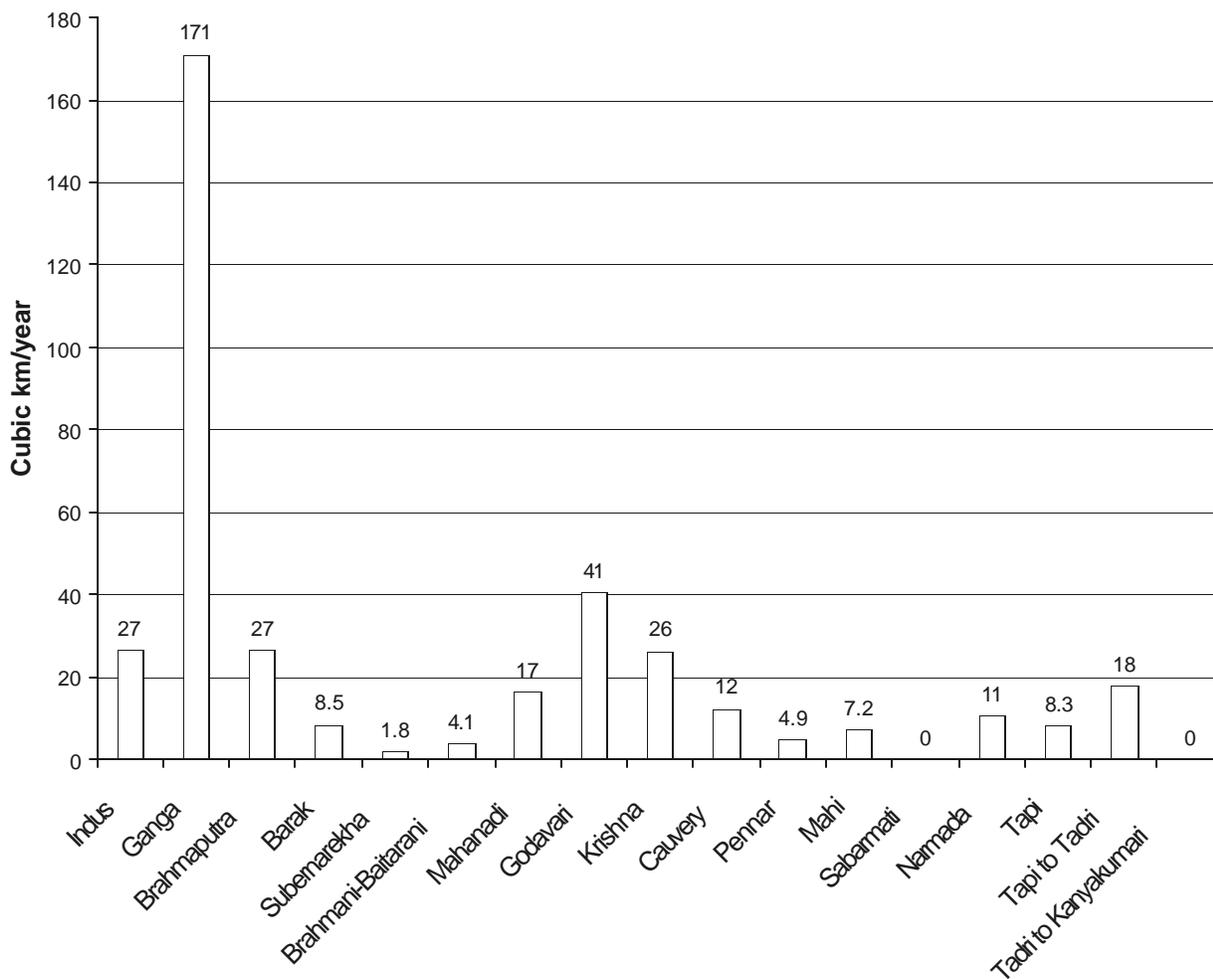
The figure of 431.9 BCM is the estimate of the Working groups (constituted in 1994-5) based on large volume of hydrogeological and related data generated by CGWB and state ground water organizations. This is the sum total of the potential due to natural recharge from rainfall (342.4 BCM) and the potential due to recharge augmentation from canal irrigation system (89.5 BCM).

As noted by the World Bank (1999), the groundwater estimation methodology outlined by the Groundwater Estimation Committee in 1984 is based on water balance concepts: groundwater draft estimates are compared to groundwater recharge estimates in order

to judge whether the existing draft in a development unit (block) is sustainable and to assess the scope for additional groundwater developments for irrigation. An important feature of the methodology is that neighbouring development units are assumed to be hydraulically isolated from each other, i.e. cross boundary flows are considered to be non-existent.

Moreover, as the situation in any block changes over time, the recharge situation would also change. This aspect is not taken into account to update the estimates and development potential figures.

Groundwater Potential in River basins in India



Replenishable ground water run-off in the principal river basins of India

Fig. 1

Source: RJ Rao in Journal of Indian Water Works Association, Jan-Mar 2004

Dynamic Fresh Ground Water Resource - Statewise

(BCM)

No	States	Replenishable GW From Normal Natural Recharge	Replenishable GW Due to recharge from Canal Irrigation	Total Annual Replenishable GW
1	Andhra Pradesh	20.03	15.26	35.29
2	Arunachal Pradesh	1.44	0.00	1.44
3	Assam	24.23	0.49	24.72
4	Bihar	28.31	5.21	33.52
5	Goa	0.18	0.03	0.21
6	Gujarat	16.38	4.00	20.38
7	Haryana	4.73	3.80	8.53
8	Himachal Pradesh	0.29	0.08	0.37
9	Jammu & Kashmir	2.43	2.00	4.43
10	Karnataka	14.18	2.01	16.19
11	Kerala	6.63	1.27	7.90
12	Madhya Pradesh	45.29	5.60	50.89
13	Maharashtra	33.40	4.47	37.87
14	Manipur	3.15	0.00	3.15
15	Meghalaya	0.54	0.00	0.54
16	Mizoram		Not assessed	
17	Nagaland	0.72	0.00	0.72
18	Orissa	16.49	3.52	20.01
19	Punjab	9.47	9.19	18.66
20	Rajasthan	10.98	1.72	12.70
21	Sikkim		Not assessed	
22	Tamil Nadu	18.91	7.48	26.39
23	Tripura	0.57	0.10	0.67
24	Uttar Pradesh	63.43	20.39	83.82
25	West Bengal	20.30	2.79	23.09
26	Union Territories	0.35	0.05	0.40
	Total	342.43	89.46	431.89

Dynamic Fresh Ground Water Resource - Basinwise (BCM)

No	River Basin	Replenishable GW from Normal Natural Recharge	Replenishable GW Due to Recharge from Canal Irrigation	Total Replenishable GW
1	Indus	14.29	12.21	26.5
2	Ganga-Brahmaputra-Meghna Basin			
2a	Ganga sub-basin	136.47	35.1	171.57
2b	Barhmaputra sub-basin	25.72	0.83	26.55
2c	Meghna (Barak) sub-basin	8.52	0	8.52
3	Subarnarekha	1.68	0.12	1.8
4	Brahmani-Baitarani	3.35	0.7	4.05
5	Mahanadi	13.64	2.86	16.5
6	Godavari	33.48	7.12	40.6
7	Krishna	19.88	6.52	26.4
8	Pennar	4.04	0.89	4.93
9	Cauvery	8.79	3.51	12.3
10	Tapi	6.67	1.6	8.27
11	Narmada	9.38	1.42	10.8
12	Mahi	3.5	0.5	4
13	Sabarmati	2.9	0.3	3.2
14	West Flowing Rivers of Kutch and Saurashtra including Luni	9.1	2.1	11.2
15	West Flowing Rivers south of Tapi	15.55	2.15	17.7
16	East Flowing Rivers Between Mahanadi and Pennar	12.82	5.98	18.8
17	East Flowing Rivers Between Pennar and Cauvery and those south of Cauvery	12.65	5.55	18.2
18	Area of North Ladakh not draining into Indus		Not Assessed	
19	Rivers draining into Bangladesh		Not Assessed	
20	Rivers draining into Myanmar		Not Assessed	
21	Andaman, Nicobar & Lakshadweep		Not Assessed	

Static Fresh Ground Water Resource - Statewise (BCM)

No	States	Alluvial/ Unconsolidated Rocks	Hard Rocks	Total
1	Andhra Pradesh	76	26	102
2	Assam	920	0	920
3	Bihar	2557	11	2568
4	Gujarat	92	12	104
5	Haryana	420	1	421
6	Himachal Pradesh	13	0	13
7	Jammu & Kashmir	35	0	35
8	Karnataka	0	17	17
9	Kerala	5	6	11
10	Madhya Pradesh	14	27	41
11	Maharashtra	16	22	38
12	Orissa	162	13	175
13	Punjab	910	0	910
14	Rajasthan	115	13	128
15	Tamil Nadu	98	0	98
16	Tripura	101	0	101
17	Uttar Pradesh	3470	30	3500
18	West Bengal	1625	1	1626
19	Delhi	3	0	3
20	Chandigarh	1	0	1
	Total	10633	179	10812

Static Fresh Ground Water Resource - Basinwise (BCM)

No	River Basin	Alluvial/ Unconsolidated Rocks	Hard Rocks	Total
1	Indus	1334.9	3.3	1338.2
2	Ganga-Brahmaputra-Meghna Basin			
2a	Ganga sub-basin	7769.1	65	7834.1
2b	Barhmaputra sub-basin	917.2	0	917.2
2c	Meghna (Barak) sub-basin	101.3	0	101.3
3	Subarnarekha	10.1	0.7	10.8
4	Brahmani-Baitarani	40.1	3.3	43.4
5	Mahanadi	108.4	11.3	119.7
6	Godavari	36	23.4	59.4
7	Krishna	13.6	22.4	36
8	Pennar	3.9	7.2	11.1
9	Cauvery	39.1	3.3	42.4
10	Tapi	4.3	3.2	7.5
11	Narmada	13.8	4.6	18.4
12	Mahi	9.7	2.9	12.6
13	Sabarmati	25.5	2.7	28.2
14	West Flow ing Rivers of Kutch and Saurashtra including Luni	103.1	10.1	113.2
15	West Flowing Rivers south of Tapi	5.4	5.8	11.2
16	East Flowing Rivers Between Mahanadi and Pennar	34.4	6.9	41.3
17	East Flowing Rivers Between Pennar and Cauvery and those south of Cauvery	63.1	2.9	66
18	Area of North Ladakh not draining into Indus		Not Assessed	
19	Rivers draining into Bangladesh		Not Assessed	
20	Rivers draining into Myanmar		Not Assessed	
21	Drainage areas of Andaman, Nicobar and Lakshadweep Islands		Not Assessed	
	Total	10633.00	179.0	10812.0

Static Fresh Groundwater Resource National Commission has reported the above data from CGWB. The estimates pertain to a depth of 450 m in alluvial terrain and 100 m in hard rock terrain. This clearly is a huge resource that remains unexploited. CGWB surveys are still ongoing, and the national commission has recommended that the investigations be completed expeditiously, particularly in drought prone areas. National Commission did not include any water from the static aquifers in its calculations for future water scenarios. Great care will have to be taken when this is exploited in some urgent situation.

ANNUAL GROUND WATER RESOURCE AND IRRIGATION POTENTIAL

(BCM)

Sl. No.	States	Total Replenishable GW	Net Utilisable GW for Irrigation	Net Draft	Net Balance GW	% GW Dev.
1.	Andhra Pradesh	35.2916	26.9981	7.0922	22.9056	23.64
2.	Arunachal Pradesh	1.4385	1.1005	-	1.2227	-
3.	Assam	24.7192	18.9102	0.9418	20.0695	4.48
4.	Bihar	33.5213	25.6439	5.4676	23.0255	19.19
5.	Goa	0.2182	0.1670	0.0154	0.1701	8.30
6.	Gujarat	20.3767	15.5881	7.1702	10.1500	41.45
7.	Haryana	8.5276	6.5236	6.0798	1.1686	83.88
8.	Himachal Pradesh	0.3660	0.2637	0.0530	0.2399	18.18
9.	Jammu & Kashmir	4.4257	3.3858	0.0500	3.7118	1.3
10.	Karnataka	16.1857	12.3821	4.3010	9.4568	31.26
11.	Kerala	7.9003	5.9281	1.0062	5.5806	15.28
12.	Madhya Pradesh	50.8892	38.9298	7.1312	36.1248	16.49
13.	Maharashtra	37.8673	22.9231	7.7403	17.7298	30.39
14.	Manipur	3.1540	2.4129	Neg	2.3810	Neg.
15.	Meghalaya	0.5397	0.4128	0.0182	0.4405	Neg.
16.	Mizoram		Not	Assessed		
17.	Nagaland	0.7240	0.5535	Neg.	0.6150	Neg.
18.	Orissa	20.0014	15.3009	1.4313	15.5699	8.42
19.	Punjab	18.6550	15.1109	15.7576	1.0322	93.85
20.	Rajasthan	12.7076	9.6418	5.4238	5.2893	50.63
21.	Sikkim		Not	Assessed		
22.	Tamil Nadu	26.3912	20.1892	13.55789	8.8748	60.44
23.	Tripura	0.6634	0.5076	0.1885	0.3754	33.43
24.	Uttar Pradesh	83.8210	64.1233	26.8354	44.4113	37.67
25.	West Bengal	23.0923	17.6653	4.7452	14.8829	24.18
	TOTAL STATES	431.4769	324.6621	115.0055	245.7300	31.88
	UNION TERRITORIES					
1.	Andaman & Nicobar		Not Assessed			
2.	Chandigarh	0.02966	--	0.02454	0.00512	--
3.	Dadar & N.Haveli	0.04220	0.0323	0.00457	0.03130	12.74
4.	Daman & Diu	0.01300	0.0099	0.00900	0.00200	--
5.	NCT Delhi	0.29154	--	0.11800	--	--
6.	Lakshadweep	0.00243	--	0.00155	0.00088	63.79
7.	Pondicherry	0.02877	0.0220	0.00595	0.01850	24.34
	TOTAL UT's	0.40760	0.0642	0.16362	0.05780	--
	GRAND TOTAL	431.8850	324.7264	115.16912	245.7878	31.92

Irrigation Development from Groundwater in India

No	States	Net utilizable GW for irrigation, mhm/ year	Weighted avg delta, m	Utilisable irrigation potential, mha	Potential created, mha	Potential utilized, mha	% of potential developed	Balance irrigation potential to be developed, m ha
1	Andhra Pradesh	2.69981	0.047-1.472	3.96008	1.77420	1.73910	44.80	2.18588
2	Arunachal Pradesh	0.11005	-	0.01800	0.00240	0.00240	13.33	0.01560
3	Assam	1.89102	1.283	0.90000	0.20680	0.15180	22.98	0.69320
4	Bihar	2.56439	0.40-0.65	4.94763	4.29180	3.81590	86.74	0.65583
5	Goa	0.01670	0.57	0.02928	0.00190	0.00170	6.49	0.02738
6	Gujarat	1.55881	0.45-0.714	2.75590	1.77890	1.69370	64.55	0.97700
7	Haryana	0.65236	0.385-0.600	1.46170	1.54490	1.49930	105.69	-0.08320
8	Himachal Pradesh	0.02637	0.385	0.06850	0.01570	0.01150	22.92	0.05280
9	Jammu & Kashmir	0.33858	0.385-0.600	0.70795	0.01160	0.01100	1.64	0.69635
10	Karnataka	1.23821	0.18-0.74	2.57281	0.78010	0.76410	30.32	1.79271
11	Kerala	0.59281	0.53-0.83	0.87925	0.14060	0.12420	15.99	0.73865
12	Madhya Pradesh	3.89298	0.4	9.73249	1.62290	1.50630	16.68	8.10959
13	Maharashtra	2.29231	0.43-1.28	3.65197	1.63630	1.58840	44.81	2.01567
14	Manipur	0.24129	0.65	0.36900	0.00060	0.00050	0.16	0.36840
15	Meghalaya	0.04128	0.65	0.06351	0.01020	0.01000	16.06	0.05331
16	Mizoram				Not assessed			
17	Nagaland	0.05535			negligible			
18	Orissa	1.53009	0.34-0.44	4.20258	0.71720	0.60070	17.07	3.48538
19	Punjab	1.51109	0.518	2.91715	3.41200	3.35300	116.96	-0.49485
20	Rajasthan	0.96418	0.457-0.600	1.77783	2.04840	2.01250	115.22	-0.27057
21	Sikkim				Not assessed			
22	Tamil Nadu	2.01892	0.37-0.93	2.83205	1.31450	1.31190	46.42	1.51755
23	Tripura	0.05076	0.63	0.08056	0.02120	0.02120	26.32	0.05936
24	Uttar Pradesh	6.41233	0.20-0.50	16.79896	22.63400	20.35800	134.73	-5.83504
25	West Bengal	1.76653	0.33-0.75	3.31794	1.85520	1.41310	55.91	1.46274
	Total States	32.46622	-	64.04514	45.8214	41.9903	71.55	18.22374
	Total UTs	0.00642	-	0.00504	0.06240	0.06180		
	Grant Total	32.47264	-	64.05018	45.88330	42.05310	71.64	18.16638

Note: + - Relates to Dadra & Nagar Haveli only

Note: mham = 10 BCM

Source: RJ Rao, May 30, 2003 (http://wrmin.nic.in/resource/irrpot_gw.htm)

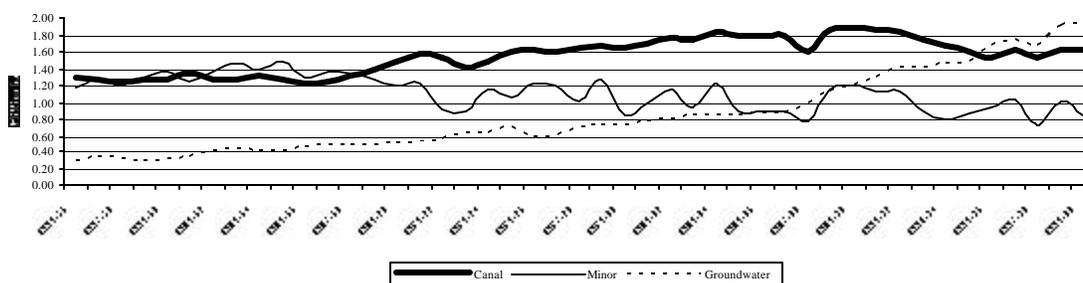


Figure: Year-wise net land irrigated by different water sources in Andhra Pradesh, India
(Source: Prof R Jagadisha Rao, Oct 2003)

In Andhra Pradesh, since its inception in 1956, while the net irrigated land under major and minor works increased for some years and later decreased significantly, the net land irrigated by groundwater has increased steadily from about 0.3 m ha in 1955-56 to 1.9 m ha in 1999-2000.

Falling levels Systematic time series data of precise location and levels of groundwater there in is not easily available. CGWB has been reporting the districts that experience over 20 cm of drop in the pre monsoon groundwater levels for a certain length of years. Such data were earlier reported for 20 year series, but has recently been reported for ten year series. Though these data do not reflect the precise situation as it only reports names of districts where the drop is reported and not how much area or which blocks, we have put together the data from four sets of time series: 1982-2001, 1983-2002, 1994-2003 and 1995-2004. In the following section, the first list under each state is for the period 1982-2001 (unless otherwise specified). For subsequent series data, we have listed the districts that have been added or removed in the problem areas. The districts are included in this list if they experience a drop in GW level of over 4 meters for 20 year period or a drop of over 2 meters over a ten year period. All the information is from answers given in Parliament at various dates.

Andhra Pradesh Adilabad, Anantpur, Chittoor, East Godavari, Hyderabad, Karimnagar, Khammam, Kurnool, Mahbubnagar, Medak, Nalgonda, Nellore, Nizamabad, Prakasam, Ranga Reddy, Srikakulam, Warangal Vijayanagaram, Visakhapatnam,

Added for 1983-2002: Guntur, West Godavari
Removed for 1983-2002: Khammam

Added for 1994-2003: Cuddapah, Khammam, Krishna,
Removed for 1994-2003: Hyderabad, Karimnagar, Medak, Nizamabad, Vijayanagaram

Arunachal Pradesh (added in 1983-2002, removed for 1994-2003) East Siang

Assam Jorhat, Kamrup, Karbi-Anglong, Morigaon

Added for 1994-2003: Nagaon, Sonipur
Removed for 1994-2003: Kamrup, Karbi-Anglong, Morigaon

Bihar Gaya

Added for 1983-2002: Darbhanga, Khagaria, Samastipur

Added for 1994-2003: Nalanda
Removed for 1994-2003: Gaya, Khagaria, Samastipur

Added for 1995-2004: Bhagalpur, Munger, Muzaffarpur, East Champaran, Navada, Saharsa, Saran
Removed for 1995-2004: Darbhanga, Nalanda

Chhattisgarh Bastar, Bilaspur, Champa, Dantewada, Durg, Janjgir, Kanker, Raigarh

Added for 1994-2003: Dhamtari, Kawardha, Koriya, Mahasamund, Raipur, Rajnandgaon, Surguga

Removed for 1995-2004: Dantewada

Delhi South West, South, New Delhi, North West, West, Central

Removed in 1994-2003: West, Central

Gujarat Ahmedabad, Amreli, Banaskantha, Baroda, Bharuch, Bhavnagar, Dangs, Jamnagar, Junagadh, Kheda, Kutch, Mehsana, Panchmahal, Rajkot, Sabarkantha, Surat, Surendranagar, Valsad

Added in 1995-2004: Gandhinagar

Haryana Bhiwani, Faridabad, Fatehabad, Gurgaon, Hissar, Jind, Kaithal, Karnal, Kurukshetra, Mahendragarh, Panchkula, Panipat, Rewari, Rohtak, Sirsa, Yamunanagar

Removed for 1983-2002: Fatehabad, Karnal, Rohtak, Yamunanagar

Added for 1994-2003: Ambala, Jhajjar, Sonipat

Added for 1995-2004: Ambala, Fatehabad, Karnal, Yamunanagar

Removed for 1995-2004: Panchkula

Himachal Pradesh (added in 1995-2004) Kangra, Kullu, Mandi, Sirmur, Solan, Una

Jharkhand Giridih, Lohardaga, Palamu

Added for 1983-2002: Gumla
Removed for 1983-2002: Giridih, Lohardaga

Added in 1994-2003: Giridih, Hazaribagh, Ranchi

Added in 1995-2004: Dhanbad, Dumka, Lohardaga, Paschim Singhbhum, Purvi Singhbhum
Removed in 1995-2004: Gumla

Jammu & Kashmir (added in 1995-2004) Jammu, Kathua, Rajouri, Udhampur

Karnataka Bangalore, Belary, Belgaum, Bidar, Bijapur, Chamarajanagara, Chitradurga, Davanagere, Dharwad, Gadag, Gulbarga, Hassan, Haveri, Kolar, Koppala, Mandya, Mysore, Raichur, Shimoga, Tumkur, Uttar Kannada

Removed for 1983-2002: Chamarajanagara

Added for 1994-2003: Bagalkot, Chikmagalur
Removed for 1994-2003: Bangalore, Bijapur, Chitradurga, Gadag, Gulbarga, Kolar, Mandya, Mysore, Raichur, Shimoga, Tumkur

Added for 1995-2004: Bangalore, Bijapur, Chamrajnagar, Chitradurga, Coorg, Dakshin Kannada, Gadag, Gulbarga, Kolar, Mandya, Mysore, Raichur, Shimoga, Tumkur, Udupi

Kerala Ernakulam, Idukki, Kannur, Kasaragod, Kollam, Kottayam, Kozhikode, Thiruvananthapuram

Removed for 1983-2002: Ernakulam, Kasargod, Kottayam, Kozhikode, Thiruvananthapuram

Added for 1994-2003: Thiruvananthapuram

Added for 1995-2004: Kasargod, Kottayam, Mallapuram, Palakkad

Madhya Pradesh Barwani, Betul, Bhind, Chhatarpur, Chhindwara, Damoh, Datia, Dewas, Dhar, Guna, Gwalior, Hoshangabad, Indore, Jabalpur, Katni, Khandwa, Khargone, Mandsaur, Morena, Narsinghpur, Nimach, Panna, Raisen, Ratlam, Rajgarh, Rewa, Sagar, Satna, Sehore, Shajapur, Sheopur, Shivpuri, Vidisha

Added for 1983-2002: Bhopal, Jhabua, Tikamgarh, Ujjain

Added for 1994-2003: Balaghat, East Nimar, Harda, Seoni, Shahdol

Removed for 1994-2003: Barwani, Bhopal, Narsinghpur, Panna

Added for 1995-2004: Barwani, Bhopal, Dindhori, Narsinghpur, Panna, Mandla, Seoni, Shahdol, Sidhi, Umari

Maharashtra Ahmednagar, Akola, Amravati, Aurangabad, Beed, Bhandara, Buldhana, Chandrapur, Dhule, Gadchiroli, Jalgaon, Jalna, Kolhapur, Latur, Nagpur, Nanded, Nasik, Parbhani, Pune, Sangli, Satara, Sholapur, Thane, Wardha, Yavatmal

Added for 1983-2002: Osmanabad, Raigarh, Ratnagiri
Removed for 1983-2002: Beed

Added for 1994-2003: Beed, Gondia, Hingoli, Nandurbar, Sindudurg,
Removed for 1994-2003: Gadchiroli, Jalna, Parbhani, Osmanabad, Raigarh, Sangli, Thane

Added for 1995-2004: Gadchiroli, Jalna, Mumbai, Parbhani, Osmanabad, Raigarh, Sangli, Thane, Washim

Meghalaya (*Added for 1983-2002, removed for 1994-2003*) West Garo Hills

Orissa Angul, Balasore, Bolangir, Boudh, Cuttack, Deogarh, Dhenkanal, Gajapati, Ganjam, Kalahandi, Keonjhar, Khurda, Koraput, Mayurbanj, Malkangiri, Nayagarh, Nowrangpur, Phulbani, Sambalpur, Sundergarh, Suvarnpur/ Sonepur

Added for 1983-2002: Bargarh, Jajpur, Nawapara, Puri, Rayagada

Removed for 1983-2002: Boudh, Keonjhar

Added for 1994-2003: Jharsuguda, Kandhamal

Removed for 1994-2003: Sonepur

Added for 1995-2004: Keonjhar, Angul, Cuttack, Dhenkanal, Jajpur, Puri, Kalahandi, Phulbani
Removed for 1995-2004: Kandhamal, Bolangir, Deogarh, Gajapati, Khurda, Malkangiri, Nayagarh, Nowrangpur

Punjab Amritsar, Bhatinda, Ferozepur, Jalandhar, Kapurthala, Ludhiana, Mansa, Moga, Patiala, Ropar, Sangrur

Added in 1983-2002: Faridkot, Fatehgarh

Removed in 1994-2003: Faridkot, Jalandhar, Kapurthala, Ropar

Added in 1995-2004: Faridkot, Jalandhar, Kapurthala, Ropar, Gurdaspur, Hoshiarpur, Nawashahar

Rajasthan Ajmer, Alwar, Banswara, Baran, Barmer, Bhilwara, Bikaner, Bundi, Chittorgarh, Churu, Dausa, Dholpur, Dungarpur, Hanumangarh, Jaipur, Jalore, Jhalawar, Jhunjhunu, Jodhpur, Kota, Nagaur, Pali Rajsamand, Sirohi, Sawai Madhopur, Tonk, Udaipur

Added in 1983-2002: Ganga nagar, Karauli, Sikar,

Added in 1994-2003: Bharatpur, Jaisalmer,
Removed in 1994-2003: Ganga nagar, Banswara, Chittorgarh, Dholpur, Hanumangarh, Jalore, Jhunjhunu

Added in 1995-2004: Banswara, Chittorgarh, Dholpur, Hanumangarh, Jalore, Jhunjhunu

Tamil Nadu Coimbatore, Cuddalore, Dharampuri, Dindigul, Erode, Kancheepuram, Kanya Kumari, Madras, Namakkal, Perambalur, Pudukkottai, Sivaganga, Tanjavur, Tirunelveli, Tiruvallur, Tiruvarur Theni, Tiruvannamalai, Tuticorin

Added in 1983-2002: Karaikal, Ramanathapuram, Tiruchirappalli, Viluppuram
Removed in 1983-2002: Tanjavur, Tuticorin

Added in 1994-2003: Karur, Madurai, Salem, Vellore, Virudhunagar, Tanjavur, Tuticorin
Removed in 1994-2003: Karaikal, Chennai

Added in 1995-2004: Karaikal, Chennai, Nilgiri, Virudhanagar
Removed in 1995-2004: Pudukkottai

Tripura (*Removed in 1983-2002*) South Tripura, West Tripura

Uttar Pradesh Agra, Aligarh, Allahabad, Badaun, Banda, Ballia, Barabanki, Bareilly, Bijnor, Bulandshahar, Deoria, Etah, Etawah, Faizabad, Fatehgarh, Fetehpur, Ghaziabad, Hamirpur, Hardoi, Jalaun, Jaunpur, Jhansi, Kanpur, Lakhimur, Lalitpur, Lucknow, Mainpuri, Mathura, Mirzapur, Moradabad,

Muzaffarnagar, Pratapgarh, Raebareilly, Rampur, Saharanpur, Shahjahanpur, Sitapur, Sultanpur, Unnao

Added in 1983-2002: Azamgarh, Bahraich, Gonda, Meerut

Removed in 1983-2002: Bijnor

Added in 1994-2003: Kaushambi

Removed 1994-2003: Agra, Aligarh, Azamgarh, Bahraich, Badaun, Banda, Ballia, Barabanki, Bareilly, Bulandshahar, Deoria, Etah, Etawah, Faizabad, Fatehgarh, Ghaziabad, Gonda, Hamirpur, Hardoi, Jaunpur, Kanpur, Lalitpur, Mainpuri, Mathura, Meerut, Moradabad, Rampur, Saharanpur, Shahjahanpur, Sitapur, Sultanpur, Muzaffarnagar

Added in 1995-2004: Agra, Aligarh, Auraiya, Azamgarh, Meerut, Badaun, Baghpat, Ballia, Bijnor, Chandauli, Chitrakoot, Deoria, Etawah, Gautam Budh Nagar, Ghaziabad, Hamirpur, Hathras, Jaunpur, Kanpur, Kanpur Dehat, Lalitpur, Mahoba, Mathura, Saharanpur, Sitapur, Sultanpur

Removed in 1995-2004: Kaushambi, Raebareilly

Uttaranchal (*Added for 1995-2004*) Dehradun, Haridwar

W Bengal Bankura, Bardhaman, Birbhum, Dakshin Dinajpur, Jalpaiguri, Kochbihar, Purulia

Added in 1983-2002: Howrah, Hugli, Mednipur, Murshidabad, N 24-Parganas, S 24-Parganas

Added in 1994-2003: Malda

Removed in 1994-2003: Dakshin Dinajpur, Jalpaiguri, Kochbihar,

Added in 1995-2004: East Medinipur, West Medinipur

Removed in 1995-2004: N 24 Parganas

Dadra & Nagar Haveli (*Added for 1995-2004*) Dadra & Nagar Haveli

Pondicherry (*Added for 1995-2004*) Pondicherry (Answer in Rajya Sabha, March 4, 2003, July 13 2004, April 26, 2005 Lok Sabha July 5 2004)

Analysis The following table tries to capture the above data in terms of number districts that have seen consistent reduction in groundwater levels over various districts.

State wise Number of districts with falling Groundwater trend

State	No of districts with GW level falling during			
	1982-2001	1983-2002	1994-2003	1995-2004
Andhra Pradesh	19	20 (+2, -1)	18 (+3, -5)	18
Arunachal Pradesh	0	1	0	0
Assam	4	4	3 (+2, -3)	3
Bihar	1	4	2 (+1, -3)	7 (+7, -2)
Chhatisgarh	8	8	15	14
Delhi	6	6	4	4
Gujarat	18	18	18	19
Haryana	16	12	15	18 (+4, -1)
Himachal Pradesh	0	0	0	6
Jharkhand	3	2 (+1, -2)	5	9 (+5, -1)
Jammu & Kashmir	0	0	0	4
Karnataka	21	20	11 (+2, -11)	26
Kerala	8	3	4	8
Madhya Pradesh	33	37	37 (+4, -4)	47
Maharashtra	25	27 (+3, -1)	25 (+5, -7)	34 (+9)
Meghalaya	0	1	0	0
Orissa	21	24 (+5, -2)	25 (+2, -1)	25 (+8, -8)
Punjab	11	13	9	16
Rajasthan	25	28	23 (+2, -7)	29
Tamil Nadu	19	21 (+4, -2)	26 (+7, -2)	28 (+3, -1)
Tripura	2	0	0	0
Uttar Pradesh	39	42 (+4, -1)	11 (+1, -32)	37 (+28, -2)
Uttaranchal	0	0	0	2
West Bengal	7	13	11 (+1, -3)	12 (+2, -1)
Dadar and N Haveli	0	0	0	1
Pondichery	0	0	0	1
TOTAL	286	304	262	368

It is clear from the above table that the situation is much more difficult than the planning commission data given above paints. If the latest data indicates that in 368 districts the GW levels have been falling for the ten years, if we include the districts that figured at least once in the above data, then the number of problem districts go up substantially. It is true that not whole of all these districts have seen such consistent fall in GW levels, nor that the situation is uniformly worrying in all the districts. However, what this indicates is that we need clearer picture with more frequent and precise data about groundwater levels than what we are getting now.

National Commission Data National commission report (GOI 1999), quoting CGWB figures of 1995 said that the problem of overexploitation was limited to eight states as shown in table below.

State	No of blocks	Overexploited		% level of GW development
		Number	%	
Punjab	118	62	52.54	94
Haryana	108	45	41.67	84
Rajasthan	236	45	19.07	51
Tamil Nadu	384	54	14.06	61
Gujarat	218	14	6.42	42
Karnataka	175	6	3.43	31
Uttar Pradesh	895	19	2.12	38
Andhra Pradesh	309	2	0.65	24
Other states	2722	Nil	Nil	-
Total	5165	247	4.78	-

Note: Mandals of AP, Taluks of Gujarat and watersheds of Maharashtra have been converted to equivalent blocks. Thus 184 taluks of Gujarat are equivalent to 218 blocks, 1503 watersheds of Maharashtra are equivalent of 366 blocks and 1104 mandals of AP are equivalent to 309 blocks.

OVER-EXPLOITATION OF THE MEHSANA ALLUVIAL AQUIFER IN GUJARAT

For centuries, the Mehsana alluvial aquifer in Gujarat exploited by large diameter, hand-dug wells using animal power. In recent years, deep tube wells have the deeper aquifers and, as a consequence, water levels in both the deeper aquifers and also the shallow water table declined. In parts of central Mehsana, the decline in the water table was rapid, approached 3.0 m/year in the early 1980s and by the 1990s had reached 4.5 m/year.

The reason for the decline in groundwater levels is that the deeper tube wells do not tap alternative sources of water but derive most of their water (about 95 % according to modelling studies) as leakage from the overlying shallow aquifer. The modelling studies predicted further large declines in water levels with the result that many of the existing tube wells could become dry. (UNEP 2003)

Dams stop groundwater recharge? Large dams almost invariably stop the flow of water in areas downstream from the dam site. As we have noted above, rivers are a very important recharge zones for groundwater. When rivers stop flowing in certain region, this recharge function automatically stops, leading to serious situation for groundwater in such regions. This problem is even more serious when the dams stop the river flow in plains areas, which are in fact the greatest recharge areas. This impact of dams is also visible in run of the river projects as in such projects, the water comes back to the river several kms downstream from the diversion site.

What is immediately required is to mandate that each dam must allow enough water downstream from the diversion point to ensure that groundwater recharge function of the rivers is not affected. This serious impact of the projects should also be part of impact analysis, mitigation plans and cost benefit calculations of these project and also integral to the decision making process.

Planning Commission The Planning commission, in mid term appraisal of the 9th Plan has said that there

been drilled, and the area of irrigated crops has much increased. The success of these early deep tube wells led to further exploitation of had been an increase of 51 % in the number of over exploited and dark blocks from 1985 to 1999. While the number of over exploited and dark blocks was 253 in 1985 it went up to 428 in 1999 and if this rate of exploitation was not reversed their number would double in the next 12 years. The 10th Five Year plan reported that out of 5711 blocks/ mandals/ taluks/ watersheds spread over 470 districts, 310 were in over exploited category and 160 were in dark category, making a total of 470 in the two categories. So that number is going up, but it does not indicate alarming rise. To what extent does this data reflect the reality?

Tamil Nadu topped the States where groundwater was being over exploited with 97 (stated in midterm appraisal of 9th Plan) and 103 (as on April 1, 1998, as stated in 10th five year plan) of the total 384 taluks/ blocks/ mandals being identified as over exploited and dark areas, followed by Punjab with 70 (stated in midterm appraisal of 9th Plan) and 83 (as on April 1, 1998, as stated in 10th five year plan) of the 138 taluks/ blocks/ mandals identified as over exploited and dark areas. However, as stated in 10th five year plan the number 2 states in terms of number of blocks in over exploited or dark category was taken over by Rajasthan with 74 overexploited and 20 dark blocks, total of 94 blocks in the category, up from 56 stated in mid term appraisal of 9th plan.

In Karnataka, 18 of the 175 taluks have been identified as over exploited and dark areas, (the number went down to 16 as on April 1, 1998). They included Anekal, Bangalore (N), Devanahalli, Hoskote (OE), and Bangalore (S) and Channapatna (dark) in Bangalore Rural District, Hukkeri, Raibag, (dark) in Belgaum District, Indi (dark) in Bijapur District, Kolar and Malur (OE), and Chikballapur, Gouribidanur, Mulbagal, and Siddlagatta (dark) in Kolar District, Kollegal (dark) in Mysore District, & Tiptur and Tumkur (dark) in Tumkur District.

The mid-term appraisal of the Planning Commission said that though the Central Groundwater Authority was constituted as per the directions of the Supreme Court a few years ago to regulate the use of groundwater and its better management, there was need to take stringent measures to check further depletion of the groundwater resources. Those stringent measures are awaited. Some of the suggestions made by the report included that the areas identified as over exploited and dark blocks should be declared as notified areas and making it mandatory to obtain permission from the authority for digging new borewells, and prohibition of extraction of groundwater for commercial purposes. The report noted that in a country such as India where more than half of the population was dependent on groundwater, the pollution of groundwater was a serious matter and to forecast any groundwater pollution threat, studies on groundwater pollution need to be carried out in more industrial, urban, and rural areas by establishing groundwater pollution monitoring stations.

Groundwater use and poverty As noted by the National Commission (GOI, 1999), exploitation of groundwater is greater in relatively higher per capita income states like Gujarat, Tamil Nadu, Punjab & Haryana. In the eastern region, groundwater development is quite low, namely eight percent in Orissa, nine percent in Bihar, 20.5 % in Assam and 34% in East UP. These areas are also known for low per capita incomes and wide spread poverty. Hence while groundwater development in these regions needs to be encouraged, care needs to be taken not to repeat some of the mistakes in development of Groundwater in other states. Hence, community monitoring and control should be key aspect. Moreover, along with development, recharge systems to ensure equivalent recharge of GW should also be mandatory.

Groundwater contamination According to UNEP (2003), "Although groundwater is not easily contaminated, once this occurs it is difficult to remediate, and in the developing world, such remediation may prove practically impossible." In the table below (see next page) the list of districts that are facing fluoride, nitrates and arsenic contamination of GW is given from the answers given in the Parliament.

Bright spots of Groundwater status While in very large parts of India groundwater levels are going down, there are some bright spots where the trend has been reversed. One clear example of reversal of trends is seen in Alwar district in Rajasthan. Here, over the last two decades, under combined efforts of the communities and Tarun Bharat Sangh, hundreds of local water systems like *johads* have been constructed. This has not only lead to an area described in dark category of groundwater exploitation becoming grey and then white, but in fact it has lead to rejuvenation of some local rivers.

GROUNDWATER POLLUTION DUE TO LEATHER INDUSTRIES: EXAMPLE FROM TN

India produces about 13 % of world output of hides and skins. Effluents from tanning processes typically have a high biological oxygen demand, high chloride, may contain calcium and ammonium salts, and, depending on the particular process used, also high concentrations of trivalent chromium. In 1994, tanneries in Tamil Nadu accounted for about 60 % of Indian production. They were concentrated into a few centres near to Madras, on the banks of the Palar and Kundavanuru Rivers. These initially perennial rivers supplied the large amounts of water for the tanning process and also acted as receptors for discharged effluent. Ecosystem and other changes mean the rivers are now seasonal and this has prompted greater reliance on groundwater for processing while effluent continued to be discharged to the dry river beds. The declining availability of surface water for potable supply demands also stimulated use of shallow groundwater, which was available at depths of 9 - 12 m. However, effluent seepage to groundwater from the dry river channels has caused widespread contamination of the shallow aquifer, usually manifested as an increase in salinity and hardness. As a result, a whole new industry has arisen, dedicated to tankering in fresh water from uncontaminated areas. Continued high demand from tanneries for clean water has led to intense competition between industry and local domestic consumers, leading to inflated prices for groundwater of potable quality. (UNEP 2003)

The president of India, in an unprecedented move, honoured this community for their efforts. There are some similar examples also seen in some areas Kutch and Saurashtra in Gujarat. In fact, in Gujarat, in 1990s, there was a big well recharging movement that led to recharging of local aquifers by diverting the local streams to the well through a filtration pit. This community lead process led to a remarkable improvement in groundwater levels. Jam Samadhiyala in Rajkot district of Gujarat is another interesting example.

The key aspect of above examples is also the key issue of community lead management of the available or developed resource. Without such management effort, there is little hope of sustaining the benefits of the created resource.

Groundwater and Climate Change According to IAH (International Association of Hydrogeologists) Working Group on Groundwater and Climate Change that was approved by the IAH Council in Bled in September 2003, there are many potential direct and indirect interactions between climate change and groundwater.

No	States	Districts affected by excess nitrates (over 45 mg/l)	Districts affected by excess fluoride (over 1.5 mg/l)	Dists affected by excess arsenic (over 0.05 mg/l)	areas/dist parts affected by GW toxicity due to heavy metals/arsenic
1	Andhra Pradesh	Prakasam, Khammam, Nellore, Nalgonda, Nizamabad, Guntur, Kurnool, Karimnagar, Mahaboobnagar, Vijaywada	Prakasam, Anantapur, Nellore, Nalgonda, Rangareddy, Adilabad, Krishna, Kurnool, Cuddapah, Guntur, Karimnagar	-	Anantapur, Cuddapah, Mehboobnagar, Nalgonda, Prakasam, visakhapatnam, Bolaram Patancheru area in Medak district
2	Assam	Lakhimpur	Darrang, N Lakhimpur, Nagaon, Karbi-Anglong	-	Digboi
3	Bihar	Gaya, Patna, Nalanda, Nawada, Bhagalpur, Banka	Jamui	Bhojpur, Patna	Begusarai, Bhojpur, Muzaffarpur
4	Chhattisgarh	Raipur	Bastar, Bilaspur, Dhamtari, Kanker, Korba, Koriya, Raipur, Rajnandgaon	Rajnandgaon	Bastar, Korba
5	Delhi	West, southwest	Northwest, west, southwest, central	-	SW, S, NW, E and NE, Central (including Najafgarh drain basin)
6	Gujarat	Amreli, Banaskantha, Bhavnagar, Gandhinagar, Jamnagar, Junagarh, Kachchh, Mehsana	Banaskantha, Kachchh, Saurashtra, Panchmahal, Kheda, Mehsana, Sabarkantha	-	
7	Haryana	Ambala, Bhiwani, Faridabad, Gurgaon, Hissar, Jind, Kurukshetra, Karnal, Mahendergarh, Rohtak, Sonapat, Sirsa	Rohtak, Jhajjar, Jind, Hissar, Bhiwani, Mahendragar, Faridabad, Gurgaon, Kaithal, Karnal, Kurukshetra, Sirsa, Sonapat, Rewari, Fatehabad, Panipat	-	Faridabad
8	HP	Una	-	-	Kala Amb, Purwanoo
9	J & K	Kathua	-	-	
10	Jharkhand	Palamu, Sahebganj	Giridih, Dhanbad	-	Dhanbad
11	Karnataka	Bijapur, Bangalore, Belgaum, Bellary, Chitradurga, Dharwar, Gulbarga, Hassan, Kolar, Mandya, Raichur, Shimoga	Bijapur, Gulbarga, Bellary	-	Bhadrawati
12	Kerala	Idukki, Kottayam, Palghat, Pathanamthitta, Mallapuram	Palghat, Alleppey	-	
13	Madhya Pradesh	Bhind, Bhopal, Chhindwara, Dhar, Dewas, Gwalior, Indore, Khandwa, Mandla, Morena, Shivpuri, Sheore, Ujjain	Bhind, Morena, Hoshangabad, Guna, Jhabua, Tikamgarh, Chhindwara, Seoni, Mandla	-	Nagda, Ratlam
14	Maharashtra	Ahmednagar, Amravati, Akola, Aurangabad, Bhindara, Beed, Buldana, Chandrapur, Gadchiroli, Dhule, Jalgaon, Jalna, Kolhapur, Latur, Nagpur, Nanded, Osmanabad, Pune, Sangli, Satara, Sholapur, Thane, Wardha	Bhanadra, Chandrapur, Nanded, Aurangabad	-	
15	Orissa	Angul, Bargarh, Bolangir, Boudh, Cuttack, Ganjam, Jagatsinghpur, Kalahandi, Keonjhar, Malkangiri, Nawapara, Rayagada, Sambalpur, Sundargarh	Bolangir, Khurda, Kalahandi	-	
16	Punjab	Bhatinda, Faridkot, Ferozepur, Patiala, Sangrur	Bhatinda, Sangrur, Mandsa, Moga, Ferozepur, Faridkot, Muktasar, Patiala	-	Ludhiana, Mandi Gobindgarh in Fatehgarh Saheb district
17	Rajasthan	Ajmer, Alwar, Bharatpur, Bikaner, Bundi, Churu, Dholpur, Ganganagar, Jaipur, Jaisalmer, Jhalawar, Jhunjhunu, Jodhpur, Nagaur, Sawai Madhopur, Udaipur	Ajmer, Barmer, Bhilwara, Bikaner, Dungarpur, Ganganagar, Hanumangarh, Jaipur, Jaisalmer, Jalore, Jhunjhunu, Jodhpur, Nagaur, Pali, Rajasamand, Sikar, Sirohi	-	Jhunjhunu (Khetri), Jodhpur, Pali, Udaipur.
18	Tamil Nadu	Coimbatore, Periyar, Salem, NA Ambedkarnagar, T Kottabomman, Dindigul-Anna, VR Padayachi	Dharampuri, Salem, North Arcot-Ambekar, Villaspuram-Padayatchi, Muthurmalingam, Tiruchirapalli, Pudukottai	-	Manali, North Arcot
19	Uttar Pradesh	Aligarh, Agra, Banda, Etawah, Ghaziabad, Hamirpur, Jaunpur, Jhansi, Kanpur, Mainpuri, Mathura, Piliphit	Fatehpur, Raibareilly, Lakhimpur, Kheri, Lucknow, Unnao, Kanpur, Hardoi, Bulandshahar, Aligarh, Agra, Mathura, Ghaziabad, Meerut, Firozabad, Etah, Fatehgarh, Mainpuri, Mahoba, Allahabad, Varanasi	Ballia	Allahabad, Aligarh, Basti, Jaunpur, Saharanpur, Singrauli, Varanasi
20	Uttaranchal	Nainital	-	-	
21	West Bengal	Uttar Dinajpur, Malda, Birbhum, Murshidabad, Nadia, Bankura, Purulia, Howrah, Medinipur	Birbhum, Howrah, 24 Parganas	Bardhaman, Howrah, Hoogli, Malda, Murshidabad, Nadia, N & S 24 Parganas	Bardhaman, Bardhaman, Durgapur, Hoogly, Howrah, Murshidabad, Maldah, Nadia, S & N 24 Parganas
22	Chandigarh	Chandigarh	-	-	-

(Answer to question in Lok sabha, April 18, 2005, April 25, 2005, Rajya Sabha, July 13, 2004)

Urban Rural Conflicts As pressure on GW in Urban and Peri Urban areas increase, the conditions for conflicts develop between rural and urban areas. One example of what disastrous consequences that Urban areas can bring in surrounding rural areas can be seen around Chennai. Another example comes from Jaipur city in Rajasthan.

MNC vs. community conflicts As big industries and factories of Multi National Corps put in big water extraction facilities; it is bound to affect the surrounding rural areas. One well known flash point in this regard is the conflict between the communities in Plachimada in Kerala and the Coke factory there. Similar conflicts are also coming to the fore in Varanasi, in Coimbatore and near Jaipur. Such conflicts would only go up in future. The basic reason for this conflict is that the developers of these factories do not have pay anything for the GW, nor seek permission from the local communities. This situation brings disastrous consequences for the rural areas & farmers.

Groundwater and Electricity This well known issue has many so not well known aspects. Firstly, a lot of the electricity supposedly being used in the farming sector for GW extraction is actually not being used for that purpose, but is being used for other purposes. Another issue to note is that there are huge inefficiencies in the pumps and related infrastructure partly because the quality of availability of electricity to farmers is worst among all the other users. Thirdly, if there were credible community controlled GW monitoring and control mechanisms in place, including necessary legal and institutional set up, lot of the issues could get resolved.

GW aquifers for water storage There is a big campaign on the part of mainstream water establishment, including the World Bank to push for increased surface water storages. However, one option to avoid the huge costs associated with such storages is to use the GW storage spaces that have been emptied because of exploitation. This option has several advantages, arising from the basic character of GW. However, this option is not even explored while advocating more surface water storages. This option becomes particularly relevant when one notes that very many of the GW aquifers in water scarce areas are empty to substantial extent.

According to well known hydro geologist Dr R J Rao, "The Ministry of Water Resources has established that the underground storage space available in the Cauvery basin from which GW could be safely pumped and recharged is 42.4 bcm, while 12 bcm/a of which could be safely utilised. Presently only 5.4 bcm/a GW is being used. The balance could be utilized safely within the basin itself to meet the water needs of the farmers."

GW recharge efforts According to a reply given in the Lok Sabha on July 5, 2004, "With a view to encourage

rain water harvesting and artificial recharge to GW, the CGWB has proposed a Centrally Sponsored Scheme at an estimated cost of Rs 175 crores for Artificial Recharge to GW and RWH for implementation during the remaining part of the 10th Plan. This scheme is under consideration of the Govt of India. Budget allocation of Rs 40 crores has been proposed during 2004-5 for this scheme." According to a reply given in Lok Sabha on April 25, 2005, that scheme remained unimplemented and it remains as a proposed scheme.

In answer to a question in Lok Sabha on May 2, 2005, the govt said, "CGWB has prepared a report entitled "Master Plan for Artificial Recharge to GW", which envisages recharge of 36453 MCM of surplus monsoon runoff, through construction of 39.25 lakhs artificial recharge and roof top RWH structures." As stated in 10th plan, an area of 4.5 lakh sq km is identified in the master plan, the scheme is to cost Rs 24 500 crores.

It is clear that while efforts towards GW recharge has been far from serious, there is little effort to stop the destruction of existing GW recharge systems.

Recommendations We need urgent measure to address the following critical issues concerning GW sector in India:

- Lack of monitoring of GW levels and quality and need to share the information with the communities regularly
- Lack of legal instruments to help communities manage the GW
- Lack of resources for GW recharging schemes
- Lack of mandatory provisions to ensure that those who extract GW have to ensure recharge of GW of at least equal quantity that is being extracted.
- Lack of provisions to ensure that dams release enough water downstream from the diversion to ensure that the GW recharge function of the river continues.
- Lack of provisions to ensure transparency and accountability of the PCB to the communities & nation.
- Lack of provisions to ensure that communities have right to access the industrial premises in their respective areas so that they can check the water use, waste water treatment and disposal and records pertaining to the same. There have been instances where industries even indulge in pumping polluted water into the aquifers. Some time back Haryana PCB and in Sept '05 the Punjab PCB came out with advertisements saying that they know this is happening and warning the perpetrators not to indulge in such practices. This is clearly an acceptance by the PCB that they have failed in their duty. This also highlights the need to ensure central role for communities in pollution control as the PCBs have failed in their responsibilities.
- Lack of provision to stop destruction of local water systems and forests that play a role in GW recharge.

South Asia Network on Dams, Rivers & People
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River Link News



Doubts if ILR would be a reality

Secretary to the Union Ministry of Water Resources and Chairman of the cell constituted by the Govt to prepare the feasibility report for the ILR, Mr J Harinarayan said, "I doubt whether the ILR will become a reality in the near future. It may or may not materialise." He also stated, "We are very far away from preparing a DPR. All I can say is that discussions are taking place. No state is ready to share its surplus water." He said that the govt is doing nothing to even initiate the project. The project put by the UPA govt in the CMP, has been dropped from the progress report of the one year old UPA govt. (DECCAN CHRONICLE 230505)

President at Water convention Seven points were stressed by the President of India in the inaugural speech of National Water Convention 2005 on May 11 '05.

1. Recommend schemes, which will ensure availability of minimum 25 KL of water per year for each citizen.
2. Ensure annual foodgrains production of 400 MT by 2020. The agricultural scientists need to develop crop varieties, similar to ICRISAT seeds, which will need minimum water.
3. Scheme chosen should ensure that flood or drought affects no state.
4. Water harvesting must be made mandatory for all buildings. Necessary legal provisions may be made.
5. Recommend appropriate legal provisions for making recycling of water mandatory in all buildings particularly large hotels and industries where large amount of water is consumed.
6. Expenditure required for rehabilitation and environmental upgradation should become part of the projects. A people oriented governance system should be in place.
7. The Ministry of Water Resources has to consolidate the best aspects and bring out cost effective projects.

Rehabilitation plan should include providing facilities to affected persons well in advance

36,155 million cubic meters water can be stored in aquifers at an expense of Rs 24,516 crore with the help of check dams, dykes and rooftop harvesting structures. There is a potential to build 3 M microstructures, like check dams, which will go a long way to help in India's water security. (Riverlinksyahoogroups.com 160505)

Water Resources Minister emphasized the need to increase irrigation potential to

"Rivers are not pipelines to be cut, turned around, welded & rejoined"

160 M Ha by 2050. The Minister informed that the Feasibility Reports for the Peninsular River links are complete. The minister allayed the fears of Bangladesh, "We are still at a conceptual stage insofar as interlinking of international rivers are concerned and our immediate focus is towards interlinking of Southern Rivers". While advocating open mind on the issue of Inter Basin Transfer of Water, the Minister said that his ministry would involve experts in various fields such as environment, sociology and others so that these projects cause minimum hardship to environment and society. (PIB 110505)

Criticism Former water resources Secretary Ramaswamy Iyer said, rivers are not human artefacts; they are natural phenomena, integral components of ecological systems, and inextricable parts of the cultural, social, economic, spiritual lives of the communities concerned. They are not pipelines to be cut, turned around, welded and rejoined. He said he has no idea about the criteria of defining 'surplus' and 'deficit'. River interlinking project, involving dams, reservoirs, diversion of waters, canal systems and so on, is "potential fraught with serious consequences... It is well-known that the old-style planning in the former Soviet Union led to the diversion of two rivers that were flowing into the Aral Sea, resulting in the virtual death of that sea. That is now recognised as a great environmental disaster, and desperate attempts are being made to reverse it." Iyer warned, "With the 'linking of rivers' project we may be headed for other unforeseen disasters and we may discover this too late. A degree of caution seems warranted before the govt embarks on the enterprise." He also warned that the river linking project could generate new conflicts between more provinces within India and with its neighbours like Bangladesh and Nepal. He said, "Pre-feasibility & FRs, said to have been prepared, are kept under wraps. Only Ken-Betwa link Feasibility Study has been made available so far and it has been examined from different angles and found to be seriously wanting." (The Nation 110505)

Better Options Exist "My worry is that the project is likely to be used by all govts to put off other investments in the sector. There could be a trade off with investment immediately required, in the name of this project" says Sompal, member of Planning Commission and former Minister for Agriculture and Water Resources. "Storage of water over the surface,

We can't afford to lose time. We can't wait for 16 years. Something has to be done either this year or next year.

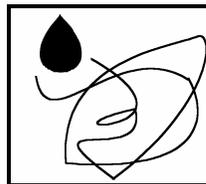
whether in reservoirs or canals, is fraught with high losses and land degradation. Instead, it is possible to store this water in aquifers at much less the cost and time," says Dr. D K Chadha, former chairman of the Central Groundwater Board. The sad story is that NWDA refuses to learn from Aral Sea disaster and Indira Gandhi Canal which has caused loss of fertile land because of water logging. Govt have to see whether there are alternatives which are cheaper in terms of investment and easier to implement in much less time. We can't afford to lose time. We can't wait for 16 years. Something has to be done either this year or next year. Ministry of Water Resources and National Water Development Agency have misguided the President of India and the Supreme Court to become both the advocate and the judge. A working group set up by the Ministry of Water Resources in 1986 has estimated that an area of 5.8 mha is suffering from water-logging and soil salinity in the canal commands. This has resulted in the loss of foodgrains to the tune of 17 MT valued at Rs 70 B. (Riverlinksyahoogroups.com 160505)

A year in office After a year in office, the current Union Water Resources Ministry has little to show by way of achievements (PIB 130505). The govt started with a promise of a comprehensive assessment of the interlinking of rivers proposals, in a fully consultative manner. But nothing of the sort has been seen so far. The govt has continued on the path of the previous dispensation, it seems. It claims to have completed more feasibility studies, but none of them (except Ken Betwa study and in August 05 the Parbati Kalisindh Chambal link proposal) have been put in public domain. In spite of repeated claims about being close to signing the MOU for DPR of Ken Betwa link, the differences between MP and UP continue to persist. Same is the situation with respect to Parbati-Kalisindh-Chambal link. The May 11 2005 convention turned out to be largely a public relations exercise. The Aug 25 MOU signed between UP and MP for preparing the DPR for the Ken Betwa link was made possible after MP had to agree to some touch bargaining by UP powerlords and at the same time resolving the serious differences, but rather postponing the resolution of the fundamental differences to the DPR stage. It is not known how the Prime Minister and the Union Water Resources Ministry agreed to apparently such a lameduck memorandum. The meeting held by the consensus building group on Aug 23 2005 may have put its stamp on an agreement finalised earlier.

Bangladesh Experts at a rally in Dhaka, Bangladesh demanded to the Indian govt to repeal the Indian ILR project considering its possible ecological impacts on the region. They called upon the mass to take a common stance against the Indian project for the sake of protecting themselves. If India is undertaking the project to divert water from the Ganga and the

Brahmaputra to the southern India that would be disastrous for Bangladesh because about 100 rivers will completely dry out. Speakers stressed the need for forging an alliance at the national and regional levels and waging a common movement to prevent the disastrous ILR. They expressed concern over the govt's inaction to prevent the project. (THE DAILY STAR 140505)

Delhi assurance to Dhaka The Indian high commissioner to Bangladesh, Veena Sikri said India would consult with all other riparian countries if its ILR project involved any international river. 'The project is entirely at its conceptual stage and the first focus is on its southern and peninsular rivers,' she told after attending a roundtable on 'Strategic Significance of Water Resources in the Ganges-Brahmaputra-Meghna Basins', organised by the Bangladesh Institute of International and Strategic Studies in Dhaka. Sikri said the Indian govt had formed a committee of experts to look into the project and submit a report. The speakers at the roundtable stressed on the need for regional discussions, in resolving the problem of sharing waters of the international rivers. The Bangladesh representative of IUCN, Ainun Nishat presented a paper on 'Water sharing between Bangladesh and India', while Prof Robert G Wirsing of the US's Asia Pacific Centre for Security presented a paper on 'Bangladesh-India Water Diplomacy: American Perspective' and former ambassador Afsarul Kader presented a paper on ILR. Hafiz blamed India for its lack of initiative to hold the meetings of the Bangladesh-India Joint River Commission as per the decisions. He hoped India would take the initiative to hold the meeting of joint river commission and added that Bangladesh was eager to hold both bilateral and regional meeting with Nepal, Bhutan, China and other countries through which the common rivers flow. Nishat said there was a gap between political and technical initiatives to resolve water problem. (New Age 100505)



Haryana to link seasonal rivers

Haryana plans a scheme to inter-link seasonal rivers with Yamuna. It claims that Rewari, Mahendragarh, Gurgaon, Jhajjar, Faridabad and Mewat dist will get irrigation benefit from the scheme. In the first phase,

Sahabi, Dohan and Krishnavati rivers would be linked with Yamuna River and the water of Yamuna would be lifted in these rivers in the rainy season. The state Finance Minister has claimed that the scheme will not cost much because only floodwater of Yamuna would be lifted in existing barrages and lakes. The water would be collected through Western Yamuna Canal, Jawaharlal Nehru Canal and Gurgaon Canal. The Masani Barrage on Sahabi river, constructed over two decades ago and that was never filled up till date would be filled from water from Yamuna. Similarly, Hamidpur

dam, Mewat, Ujina, Kotla, Bhindvas (Rohtak and Jajjar) and Bibipur (Pehva) lakes would be filled up. (*DANIK JAGRAN* 230505)

An excuse for building dams Rajendra Singh of Rashtriya Jal Biradari and one of the member of Govt's expert committee on ILR has stated, "It is all about big dams. River linking is different name they have given to building dams. It is neither desirable nor workable." He said that experts opposed to the scheme were also concerned about water needs of the country. They were however "disgusted" at the way in which the authorities were proceeding with the project, without considering its serious ramifications. The projected benefits are not feasible. (*THE HINDU* 210505)

Karnataka's NO The Union Minister of State for Water Resources Jaiprakash Narayan Yadav has said in the parliament that Karnataka Govt has not yet given its approval for the Nethravati-Hemavathi link, one of the first inter basin transfer of water, prepared by NWDA. He also said that NWDA had prepared the pre feasibility report of the Nethravati-Hemavathi link project under the Peninsular Rivers Development Component of the National Perspective Plan. He said that the proposal could be taken up only after the preparation of the feasibility report and DPR after obtaining consensus of the basin states. (*DECCANHERALD* 110505)



Dams

Polavaram Dam spells doom for tribals

The Human Rights Forum, Andhra Pradesh, has urged the State Govt to give up the proposed mega project on the Godavari at Polavaram in W Godavari district, meant to irrigate 0.291 M Ha and transfer Godavari water to the Krishna basin to stabilise the Krishna delta. The forum said that the project is "an unmitigated disaster from the point of view of Girijans, as it entails submergence of 276 villages inhabited mostly by Girijans." The forum believes the State Govt is taking up the project in a hurry without conducting any scientific studies on its impact on the lives of tribals and obtaining the necessary clearances from the Union Govt. The report says 276 villages in E Godavari, W Godavari and Khammam districts will be submerged, and nearly 50% of the population in these villages consists of Girijans. While the govt wrongly estimates, only 213 villages will be submerged. It is estimated that 27 798 families (0.117 M people) will be displaced and uprooted from the villages. The Govt's contention that the project is essential to irrigate large tracts of upland areas in the two Godavari districts and for the stabilisation of the Krishna delta is not tenable. The policy of uprooting many Girijans from their natural habitat to provide irrigation facilities to farmers' lands in the plains "is against all canons of equitable distribution of water." Dr Balagopal suggests that, instead of taking up the mega

project, the Govt could take up several lift irrigation schemes on the Godavari in the tribal tracts and contemplate a smaller diversion scheme at Polavaram to provide irrigation to some of the lands in the plains. (*THE BUSINESS LINE* 190505)

Ignoring claim of Telangana region Nearly 79% (61780 sq km) of the catchment area of the Godavari is in Telangana region of Andhra Pradesh but the region barely gets 25% of the river waters. The cultivable area in Telangana under Godavari basin is 252 M ha and in Andhra 1.07 M ha. Allocation of the available resources between Telangana and Andhra should have been in the ratio 70% and 30% respectively, out of the available resources of 1480 TMC water, out of which 760 TMC is being utilised. But the ground position is quite different as the allocation to Andhra area is 320 TMC of water, and in addition, the govt. has already projected plans for utilization of additional 405 TMC water to Andhra region ignoring the claim of Telangana farmers.

➤ **Inchampally** The AP govt had earlier proposed Inchampally dam project to irrigate land in the Telangana region. Inchampally is an interstate multipurpose project across Godavari, 12 km down stream at the confluence of Pranahita and Indravati. The project is envisaged between AP, Maharashtra and Chhattisgarh states. This project, it is claimed, will irrigate 0.063 M ha in Kharif and 69 200 ha in rabi in Karimnagar, Warangal and Khammam dists, under Godavari basin, utilizing 85 TMC of water. The estimated cost of the project is about Rs 45.2 B at the 2000 price level. According to inter-state agreement in 1978, the project was intended to have 975 MW installed capacity. A joint control board was set up to begin proposed Inchampally project but due to non-agreement on the height of the dam, work stopped. According to Union Ministry of Water Resources, the centre had proposed in 1995 to take up on priority basis and clear the Inchampally project, but the State Govt has not showed willingness. The Union Water Resources Ministry had put the condition for clearance that the height of the dam should be reduced from 112 ft to 95 ft. The Chhattisgarh (then Madhya Pradesh) have been opposed to raising the height of the dam above 95 m as they were apprehensive of more villages being submerged. In the beginning this project was not accepted by the central govt on the ground of loss of forestlands and it was suggested to select some alternative site for the head works. With regards to utilization of 50 TMC to irrigate 0.4 M ha, a joint control board has been constituted for finalizing FRL +95M is communicated to the respective govts. Concurrence of govt of Maharashtra is received, and from the govt of Chhattisgarh is awaited. The foundation of this project was laid in 1969. The govt of AP never sincerely tried to come up with a clear mandate to resolve this Inter-State dispute by involving the centre. (*THE ASIAN AGE* 300505, <http://www.telangana.com/Irrigation/godavariproj.htm>)

DVC approaches CWC for Balpahari dam study The Damodar Valley Corp has approached the Central Water Commission to undertake feasibility study of the dam project at Balpahari in Jharkhand. The DVC has carried out pre-feasibility study. The DVC has recently submitted a revised proposal for the Rs 4 B project. The proposal included an increased catchment area in Jharkhand, which was approved by the State, while it was earlier withheld by the State Govt. The project will be situated downstream from the Tilaiya Barrage on the Barakar river, which forms boundary between W Bengal and Jharkhand. The project is to reduce siltation at the Maithon dam, increase the reach of canal irrigation and adding 20 MW HEP capacity in the existing 144 MW. Even after two years of approaching the CWC, the CWC is yet to submit a report. (BUSINESS LINE 260505)

Subarnarekha project The Jharkhand Govt has reviewed its Subarnarekha Multipurpose Project and claimed it to complete by 2008. The project plans to irrigate 170000 Ha of land in Jharkhand, Orissa and W Bengal. The project also claimed to generate 500 MW of power. As a sizeable part of the canal falls within the forestland, clearance of the forest dept is essential. Currently the expert committee of Supreme Court is reviewing the demand of the forestland. The total length of the irrigation canal for the project would be about 128 km and the major part of the canal falls within the Dalma Sanctuary. (THE ECONOMIC TIMES 270505)

Brutality on villagers in Lower Suktel dam area The police of Balangir dist of Orissa with the support of local MLA of Loisingha constituency lathicharged on people who were opposed to the Lower Suktel dam. On 10th May, Mr Narasingha Mishra had tried to build consensus among the community members for the construction of Lower Suktel Dam which had been protested and opposed by Budi Anchal Sangram Parisad since inception. The villagers opposed the proposal. The next day, he came to the Dam site with police force in order to inaugurate the construction work, which disappointed the villagers. Around 1000 persons from 24 villages gathered at the proposed Dam site and started asking questions to the MLA regarding the intention and protested to stop the inauguration, which made the police start Lathi Charge on the innocent villagers. The police arrested 60 persons most of them being women. Then rest of the villagers protested for the release of the arrested persons. Then around 600 police came out and started lathi charge arbitrarily. They entered into Dunguripalli village, and started beating the villagers and arrested another 40 person including children and Parishad's president, M Ghunu Sahu. The Lower Suktel irrigation project is a major irrigation project in Bolangir district, which includes construction of a dam having 1410 m length and height of 36 m. The TBL of reservoir is fixed at RL 209 m and the maximum water level fixed at RL 206 m.

The project includes two main canals i.e. right main canal and left main canal. The length of LMC is 16.58 km whereas the length of RMC is 25.2 km.

➤ In response to the current brutal action, Parishad demanded justice for the innocent villagers. They also demanded from dist administration and police to abide by the decision of Orissa High Court and suspend dam-related proceedings until the DPR is released to the people. (Lower Suktel Budianchal Sangram Parishad 110505, THE PIONEER 130505)

Farakka Jurisdiction area of Farakka project has been extended 40 km upstream and 80 km downstream for the effective anti erosion measures. (PIB 130505)

Orthapalayam filled with polluted water The Madras HC has asked the state govt to admit the demand of farmers for the immediate release of 'polluted' water stagnating in the Orathapalayam dam for years into the Noyyal river. The Advocate-General too told the Court that release of polluted water from the reservoir into the rivers would be "suicidal" for lower riparian areas. The experts' report said the dam had 573.32 million cubic feet of water, "which is dark in colour, indicating the presence of residual dyes and suspended solids." It added: "Releasing such large discharges of highly polluted water will create pollution problems downstream in the Noyyal river and even in the Cauvery that caters to the drinking water needs of many Municipalities and the Corp." It added: "The safe way is to discharge quantities with high TDS when the flow in the Cauvery just above the Noyyal confluence is large enough to dilute the polluted water of Noyyal... Unless there is significant rainfall in the upper catchments of the Cauvery, causing heavy inflows into the river, it is anticipated that Mettur dam might be thrown open for irrigation only by the end of August. In such an event, the water from Orathapalayam dam

could be released during the first week of Sept '05...The reservoir could not be depleted during this summer." However, when the matter was taken up for hearing senior counsel for the Noyyal River Ayacutdars Protection Association (the only forum representing farmers in the case), said the water release must start immediately, and added that a lesser quantity of the "polluted" water could be released into the river for a longer duration. He said that as against the experts' suggestion to release water in instalments for 35 days, it could be done over a period of 60-70 days. Justice Karpagavinayagam said that the release had to be considered at this stage because the polluted water level was nearing the brim, and the water could overflow with one more shower. The experts' report, pointing out that many farmers wanted the decommissioning of the Orathapalayam dam. The dam, constructed for helping farmers, has now become a storage pond for polluters. (THE HINDU 240505)



Hydro Projects

Protest against HEP in Hassan dist

People from various walks of life, under the banner of Malnad Janapara Horata Samithi, have opposed the proposed 300 MW Gundya Overhead HEP at Sakleshpur taluk of Hassan district in the Western Ghats. The MJHS Convenor said Karnataka Power Corp is to set up a HEP across the tributaries of Netravati River. The project will comprise three major dams, 16 bunds, and a 21-km-long tunnel. Thousands of ha of forest and revenue land will be submerged. This will affect the environment of Dakshina Kannada, Hassan and Kodagu districts, which are benefited by the Netravati and its tributaries. Water supply to the Netravati from its tributaries may stop, intensifying water scarcity in Dakshina Kannada district. MJHS charged KPCL with not disclosing information on the project. The pre-feasibility report prepared by the corp does not provide much information, it said. (BUSINESS LINE 040505)

Welcome step of SIDA: Review of Uri HEP The Swedish International Development Agency, the official bilateral agency of Govt of Sweden, has, following the report of the World Commission on Dams, decided to conduct post evaluation of the projects funded by SIDA. One of the first projects selected for this is the 480 MW Uri HEP on Jhelum River in J&K, supported by SIDA many years ago. However, SIDA has not found it necessary to involve or even inform the Indian civil society organisations or media about this it seems. Recently, Scott Wilson Piesold, a British firm, won the contract for this. It is not clear what will be the terms of reference of this exercise. SIDA indicates that completion of this evaluation will be subject to the security situation in the project area. Two other projects SIDA has taken up for such evaluations are the Pangani Dam and Hesawa water and sanitation projects, both in Tanzania. However, this exercise won't be useful unless it is done in an open, transparent way with involvement of the local communities and civil society and the evaluation is comprehensive, including all aspects of the project. (Development Today 020905)

Godavari HEPs The Andhra Pradesh CM offered to NTPC to set up a HEP on Pranahita, a tributary of Godavari. The offer has come as an alternative to the NTPC's request to lower Jurala location on Krishna river in Mahabubnagar district. CM told NTPC that APGenco is already preparing a DPR to set up the 400 MW lower Jurala project. Instead, he suggested NTPC to consider the location on Pranahita. However, the location of Pranahita has its limitations. Submergence of forestland and villages will restrict the size of the project to a much lower level compared to the lower Jurala. Though a proposal to set up a 400 MW HEP on Pranahita was originally conceived in 1970s, the govt

did not follow it up due to problems involving huge submergence of forest land, the submergence of 60 villages in Andhra Pradesh and over 30 in Maharashtra. AP has proposed a series of HEPs totalling 2 050 MW capacity across river Godavari at various locations. The size of HEPs at Yellampally and on Pranahita is yet to be determined. (BUSINESS STANDARD 040505)

Transfer of Salal HEP to J&K? The Centre is considering handing over of 115x6 MW Salal HEP to J & K. This is the largest HEP in J&K situated in Reasi area of Jammu and supplies power at Rs 0.52 per unit to Punjab, Haryana, Rajasthan, Himachal Pradesh, Delhi, UP, Uttaranchal & Chandigarh. The Govt has not even evaluated the modalities of transfer while suggesting a task force, headed by former RBI governor C Rangachari, for the same. Transfer of the NHPC run project to the state will give it a Rs 4 B boost in revenue annually. The CM and the state Power Minister has already suggested to the Centre to hand over the Salal HEP to the State as compensation of Indus Water Treaty. (THE INDIAN EXPRESS 090505, 130505)

Karbi-Langpi HEP in Assam The Power Finance Corp has sanctioned Rs 1.25 B to the Assam State Electricity Board for Karbi-Langpi HEP. Rs 1.852 B has been spent till March '05. Gammon India Ltd has undertaken civil work on Borpani River. ASEB claims that the first unit of the (50x2) MW project would be commissioned by March '06 and 2nd by Dec '06. (BUSINESS LINE 270505)

Larji HEP cost The 2-member Committee constituted for the enquiry of cost over run in Larji HEP in Himachal Pradesh has completed its enquiry and submitted to the HP SERC to be submitted to the High Court. The Committee has raised various questions regarding expenditure on the Larji HEP. While challenging the enquiry, the HPSEB moved the High Court. Then the HC had ordered to hand over the enquiry report. (DANIK BHASKAR 300505) (See related story in DRP Vol-3-Issue 2-3)

SC notices to states and company on RDS The Supreme Court has issued notices to the Centre, Andhra Pradesh, Karnataka and construction company, Sree Swarna Energy Ltd, on Rajolibanda Diversion Scheme being constructed in Raichur district of Karnataka. A PIL had been filed in this regard by the farmers of Mehboobnagar of Andhra Pradesh and alleged that the project violates the Krishna Water Dispute Tribunal Award. Hence the construction of plant should be stopped and the 15.2 tmc flow of water as per the agreement should be maintained. The petition has said that over 40000 farmers from Karnataka and Andhra Pradesh would be affected from the reduced flow of water due to the plant.

➤ The Principal Secretary of Irrigation in Andhra Pradesh has written a letter to Karnataka to stop forth with the construction of the RDS HEP. In his letter he stated that the project violated the Krishna Tribunal

Award and the inter-state agreement signed before implementing the RDS HEP. The inter-state agreement allowed 1.2 tmcft of water to Karnataka to cultivate an ayacut of 2356 ha and 15.9 tmcft to AP for an ayacut of 34800 ha. (THE HINDU 060505, BUSINESS LINE 100505)

BBMB to float company for HEPs The Bhakra Beas Management Board has said that BBMB would form a firm to take up HEP assignments all over India. The partner states including Punjab, Haryana and Rajasthan have accepted the proposal and they would be offered equity in the proposed company. Initially the HEPs in Himachal Pradesh and Uttaranchal are being short-listed to be taken up immediately after the company formation. BBMB has been requesting the partner states for last some years to allow it to take up the HEPs. It proposed various HEPs including micro HEPs on Nirwana branch of Bhakra canal and a 40 MW project at Nehla near Bhakra. However, Punjab didn't agree. (THE TRIBUNE 010505)

Ranjit Sagar land scam The Punjab Vigilance Bureau has booked four persons, including revenue officials and a block development Officer for committing a fraud in the acquisition of land and disbursement of compensation for the Ranjit Sagar Dam. A notification was issued by the govt to acquire 1938 kanals of land in Phangota village, for the RSP. Instead of 1938 kanals acquired, the accused added a zero and made the figure as 10938 kanals. In 1997, they allegedly withdrew about Rs 45 M for compensation for the fictitious land acquired. Later it was brought to the fore by Phangota villagers that the land acquired from their village was actually the common land. The persons who collected the compensation amount were found to be fictitious. During the inquiry the SDM found that the accused had tampered all the records pertaining to the land right from the local Patwari's office to the district headquarters. In his report he recommended a vigilance inquiry. After the inquiry, the DIG indicted the said officers and a case was registered. (THE TRIBUNE 220505)

Protest against Tidong HEP The people of Rispa and Thangi in Kinnaur dist in Himachal Pradesh have up in arms against the proposed 100 MW 'Lambar Rispa' project on Tidong Khad, a tributary of Sutlej. The Rikangpio based 'Jila Kinnaur Paryawaran Samrakshan Samiti' has also actively supported this movement. The people are committed to stop the project at any cost. Local people's concern is that hundreds of trees would be felled for building 5 km long approach road for the project. Another fear of the People is that underground water sources would be affected. The people have constituted a struggle committee named "Tidong Valley HEP Struggle Committee" to oppose the project. The project is being developed by the Hyderabad based Neuzi Bindu Seeds Ltd. This project includes 156 m high dam and the storage capacity of the dam would be 88 MCM. (DIVYA HIMACHAL 180505, SANDRP Database)

Public Hearing rejects Athirapally HEP The 250 odd people from the Chalakudy river valley and other parts of Kerala gathered to attend the People's Public Hearing on May 7 '05 unanimously demanded that the 163 MW Athirappilly HEP be abandoned. Several groups jointly organized the PH. 37 representations were made before the panel that was attended by five of the ten invited panel members. The Chalakudy MLA Prof Savithri Lakshmanan under whose assembly constituency the project falls sat through the hearing and assured the people that she will not allow the project that would create livelihood problems for the people (she changed her stance in favour of the project the very next day in front of the State Power Minister).

➤ **Some Conclusions** (1) A Public Hearing organized by the Kerala State Pollution Control Board should have followed the WAPCOS EIA. This has not happened so far. This is a clear violation of the EIA norms of the MoEF. (2) Neither the Athirappilly Grama Panchayath in which the project is proposed nor the Vazhachal and Pokalapara 'Kadar' tribal settlements who face displacement have been informed or involved in the WAPCOS EIA. The downstream gram panchayaths are unaware of the new EIA. (3) There are a number of factual mistakes and false information in the WAPCOS EIA. (4) The people and local body representatives living downstream are concerned about the impact of the project on the 14,000 ha ayacut of the Chalakudy River Diversion Scheme downstream of the project. The CRDS is already operating at low efficiency due to insufficient flow in the river. (5) The reduction in river flow downstream would affect the operation of existing drinking water and lift irrigation schemes. (6) The impact of the dam and reservoir on the livelihoods of the tribals, on the river fishing communities, on the tourism potential of the area, the riparian ecology, the elephant corridor, and the fish diversity and hornbill distribution are underestimated in the WAPCOS EIA. (7) At present there is scope for generating 17 000 MU of power per annum in Kerala against the requirement of 13 000 MU. Reduction of at least 10% in the present T& D loss of 3360 MU would be more than the power to be generated from the proposed Athirappilly HEP (233 MU). The claim of KSEB that this power is for the peak load demand does not stand since the duration of power generation in summer would be less than 2 hours. For the balance 4 hours of peak load, KSEB would have to depend on the existing thermal units. Moreover the cost of power from this project would be Rs 6 per unit (higher than the thermal power cost).

➤ **Panel Recommendations** The proposed HEP has been imposed on the people without their consent. The projected demand for the new power project for Kerala by KSEB to tide over the power shortage is not justified. Taking in to consideration the anomalies in the WAPCOS EIA and the proposed project, the govt may revoke the environmental clearance given and not go ahead with a project. (Chalkudy Puzha Samrakshan Samiti)

PM dedicates Nathpa Jhakri

State	Allocated MW
Haryana	64
Himachal Pradesh	547
J&K	105
Punjab	114
Rajasthan	112
Uttar Pradesh	221
Uttaranchal	38
Chandigarh	08
Delhi	142
Unallocated quota	149
Total	1500

The PM Dr Manmohan Singh dedicated to the nation the 1500 MW Nathpa Jhakri HEP in Himachal Pradesh on May 29, which was irregularly working since May 2004. A 62.5 m high dam has been designed to divert 486 cumecs water through four intakes, which includes 27.39 km long head race tunnel. The Sutlej Jal Vidyut Nigam has claimed that the

completion cost of the NJPC is Rs 81.871 B, while the original cost was Rs 1.80 B in 1969. The project has been executed with a World Bank loan of \$437 M. Of the total energy generated from the Project, 12% would be supplied free of cost to the Himachal Pradesh. Besides, one-fourth of the remaining 88% of the power would be given to the State at production cost (bus bar rates). The balance power would be sold to Punjab, Chandigarh, Haryana, J & K, Rajasthan, Uttar Pradesh, Uttaraanchal and Delhi. SJVN has earned Rs 16.74 B as net revenue after its units were commissioned during 2003 and May 2004. It is claimed that SJVN has already generated about 7500 MU.

> The spokesperson affiliated with the Centre of Indian Trade Union blamed that the PM barely mentioned the 300 labourers who lost their lives during construction period in different incidents, while no exact data of till date has come out of the exact number of deaths happened since 1993. Economic establishment or jobs have not been ensured to any of the dependants of these workers. Over 100 000 Ha of agricultural land has been submerged in the HEPs in HP so far and insufficient compensation had been given to the farmers. The Union Power Minister P M Sayeed echoed at the gathering again the plans to add 100 000 MW new capacity in 10th and 11th Plans. The PM next day declared Rs 41 B package for HP, including Rs 5 B for providing potable water in 6000 villages up to 2007. (THE TRIBUNE, THE HINDUSTAN TIMES 280505, THE INDIAN EXPRESS, THE TIMES OF INDIA, THE HINDU, DAILY EXCELSIOR 290505, DANIK BHASKAR 300505)

MoU on selling Nathpa power The Himachal Pradesh Govt has signed an agreement with the Power Trading Corp for the sale of 12% free power available to it from the 1500 MW Nathpa Jhakri HEP. This power was being sold by the state power board through the SJVN at Rs 2.35 per unit, while the govt would sell through PTC India at the rate of Rs 2.65 per unit. The power dept sources of HP claimed that as a result the state would earn an additional income of about Rs 180 M till Oct '05. (THE TRIBUNE 170505)

CVC turns down SJVN's plea The Central Vigilance Commission has rejected the plea of the Sutlej Jal

Vidyut Nigam for a review of its direction recommending action against officers responsible for extending discriminate favours to various construction companies and asserted that action must be taken against guilty. The Chairman and Managing Director of the SJVN had written to the Union power ministry and tried to justify the favours and maintained that the board of directors had approved the decision subsequently and as such no irregularity was committed. However, the CVC has found no merit in the arguments. Action should be taken not only against the officers responsible for extending favours but also those instrumental in blocking the recovery. In all 11 officers are involved in the case. The recoverable amount, which has swelled to over Rs 4.6 B along with interest came under the vigilance scanner after the CVC received complains. (THE TRIBUNE 160505)

Protest against Karcham Wangtoo HEP Hundreds of representatives of several villages from Tapri area in Kinnaur dist have gathered at Urni village under the banner of Pangramang Vikas Samiti and protested against 1000 MW Karcham Wangtoo HEP proposed on Sutlej River. People from village panchayats including Chagaon, Urni, Ula, Meeru, Choling and Tapri were present. The Pangramang Vikas Samiti has said that the project is in highly fragile zone of Himalaya and the area experienced several landslides also. During the construction work of the project, landslide may occur and the natural water and irrigation resources may disappear, which would directly affect the livelihood of the people. Earlier in 2000, a resolution has been passed against the project by the general assembly and sent to the then CM. The Samiti alleged that the Govt is ignoring the demand of the people. The Pangramang Samiti had earlier along with SANDRP, boycotted the public hearing being organised by state pollution control board due to large-scale violations. (For related stories see DRP VOL 1 ISSUE 8-9, VOL 2 ISSUE 9-10-11) (DIVYA HIMACHAL 210505)

Protest against Khab HEP People residing near proposed 340 MW Khab HEP has started protest against the project, which is proposed on Sutlej River in Pooh Taluka in Himachal Pradesh. Hundreds of people, including women from Pooh, Doobling, Shyasho, Namgaya, Tashigang, Khab etc marched against the project in a rally and presented a memorandum to the ADM, Pooh that any work related to the project should stop immediately. If the work is not stopped then the project authority should be ready to face steep opposition from the people. Recently the project has been handed over to the Sutlej Jal Vidyut Nigam. People concerned about natural water sources may disappear due to proposed tunnel for the project and it will also be a threat to the environment. These natural water sources are the main sources of potable water and irrigation in the area. (DIVYA HIMACHAL, AMAR UJALA 210505, SANDRP database)

NHPC violations in L Subansiri HEP NHPC's Lower Subansiri HEP in Arunachal Pradesh is violating most of the orders given by the Supreme Court, Ministry of Environment & Forest and the state govt. The NHPC has already violated the norms on allotting contract for electromechanical work. On March 22 '05 people of the affected area gathered in Itanagar and protested against the project. The SC order of April 19, '04 cleared the project with these recommendations:

- Legal status of the 42 Ha of the Tale valley wildlife sanctuary submerged to remain unchanged;
- Reserve forest area that forms the catchment of the project be declared a sanctuary or a National Park. The extent of this protected area to be decided by the state in consultation with the MEF.
- The NHPC shall provide funds of any relocation and resettlement inside the park
- NHPC shall arrange for the supply of fuelwood
- There will be no construction of dam upstream of the Subansiri river in future
- The entire cost - recurring and non-recurring expenses - will be borne by the NHPC for ten years
- NHPC to ensure no siltation in downstream area
- Under no the circumstances excavated material will be dumped in the river or any national park, sanctuary or surrounding forests
- NHPC shall provide all funds for reforestation of degraded sites with indigenous species from the national park or sanctuary

The people believe that once it created, the reserve would displace 5000 tribals living in 14 villages of the Dolok Bongo area from their traditional land and *jhum* forests. The SC order was based on the recommendations of the Central Empowered Committee, that advises the SC on forest related cases. An order passed by the MoEF on April 23, 2004 created the Compensatory Afforestation Fund Management and Planning Authority. The two orders have collectively created confusion and turmoil. When NHPC submitted its EIA and EMP, the ministry revoked the first stage permission because it said that NHPC had not informed it that SLP would submerge 42 HA of the Tale Valley Wildlife Sanctuary in L Subansiri district - a 33700 Ha reserve carved out of the traditional hunting grounds of Apatani tribals in 1994. NHPC went to the court, pleading project be allowed to submerge 42 Ha of Tale valley sanctuary. The state govt also filed a similar petition. The SC sought recommendations from the Indian Board for Wildlife on state govt's petition. The ministry asked for Rs 790 M for compensatory afforestation and also demanded that NHPC ascertain the rights and privileges of the affected people and look into their compensation. The SC had accepted most recommendations of the IBWL and those of the CEC.

Now the NHPC has begun approaching the state for building future HEPs in the Subansiri basin against the

order of SC. It has suggested renaming the Subansiri Middle Project as the Kamla project - since it falls on the Subansiri's Kamla tributary. The NHPC has suggested the state file a petition claiming that it is virtually impossible to create a sanctuary and the Court should re-examine its order. But there is no one to monitor the implementation of the SC orders. The MoEF had ordered the AP govt and NHPC to constitute a committee to ensure SLP did not have any detrimental impacts beyond those permitted. In fact, the project has gone on unabated despite all orders to the contrary. (DOWN TO EARTH 150505)

NHPC project affected not resettled Villagers hit by NHPC's various HEPs in Himachal Pradesh in last two decades have not been resettled properly. People affected by three HEPs are still waiting for compensation. Residents of about 50 villages around 300 MW Chamera-II staged 40 day long dharna in front of Deputy Commissioner's office at Chamba to assert their demands. They alleged that their houses had developed cracks, natural water sources have dried up and water mills have been non-functional due to the project. The protest was followed by number of rallies in the area, under the banner of Akhil Bhartiya Kisan Sabha. They demanded that the govt should hold talks with the villagers and conduct a survey of their land, houses and other natural resources affected. Villagers affected by the 540 MW Chamera-I and living around the reservoir have been deprived of the facilities like bridges and water mills. Only few affected families have received compensation while many of them are also waiting justice from the High Court. Residents of Siun, Seru and Hathni villages affected from 198 MW Baira Siul project (completed in 1980) have not been given jobs in project and also not received any compensation more than Rs 5000 per bigha. (THE HINDUSTAN TIMES 160405, 310505, THE TRIBUNE 270405)

Purulia Pump Storage The NHPC is yet to finalise the financial and technical details relating to the 900 MW Purulia Pumped Storage Project with the W Bengal govt. Last year, the W Bengal govt had indicated to the power ministry that if NHPC does not immediately resolve the issues to start the Purulia Pumped Storage Project, it may offer the project to NTPC. Issues like high generation cost and supply mechanism were hindering the progress of the financial agreement between NHPC and the Bengal govt. The joint venture agreement for the project was signed between the W Bengal govt and NHPC in 2000. Located 445 km from Calcutta at Ayodhya Hills in Purulia district, the project is the largest pumped storage scheme envisaged for execution in the country. Estimated to cost Rs 31.2945 B at Nov '03 prices, the project will have an annual generation of 16,667 MU. The partners had not been able to finalise the arrangement for power required for pumping water back to the Upper Storage. The power is to be supplied by W Bengal. (THE TELEGRAPH 040505)



News from Narmada Valley

Enquiry report on Dharaji incident

The Principal Secretary, Water Resource of Madhya Pradesh, Arvind Joshi, who was asked to inquire into the Dharaji incident, where more than 70 persons were swept away in Narmada by water released from Indira Sagar on April 2005 has said his report submitted to the State Govt that despite being aware of the magnitude of religious congregation, the district administration had failed to take necessary steps. The incident was the outcome of lack of coordination among various agencies. Neither the administration ensured that water could not be released on that day nor sufficient police force was deployed on the spot. Besides, barricades were not installed to prevent the people going in deep water, surrounded by stones, the report observed. The report expressed surprise over the fact that Gazetteer of Dewas is having no reference about Mela, organised twice in a year. Each time, 100 000 to 150 000 people gather at Dharaji but this time number of pilgrimages went up because the place is likely to be submerged after completion of Omkaraeshwar bridge, the report mentioned. 300 MW power is generated by NHDC during 7 - 9 PM and 100 MW during 9 - 11 AM, when, water is released at the rate of 690 m³/sec and 230 m³/sec respectively as a result of which water level increases by 1.8 m and 0.6 m respectively. (THE HINDUSTAN TIMES 050505)

MP to back Gujarat on SSP? The Madhya Pradesh CM has agreed with Gujarat CM to finalise soon the 'Action Taken Report' on the issue of Rehabilitation and Resettlement of oustees displaced by SSP. Once the reports were completed by respective states the height of the dam could be raised beyond 110.64 m with the approval of NCA. Officials from Gujarat said, "Gujarat had already provided MP with details of the submergence area with each metre till 121 m so that MP could see how many PAFs would need to be rehabilitated at every metre." As a result of the recent Supreme Court order to rehabilitate the elder sons of the PAFs, the total number of PAFs has gone up by 14000. According to SSNNL, there were at least 5 000 PAFs, whose rehabilitation was postponed because they were put into the category of "temporary" PAFs as their land was getting submerged only during monsoon. They will have to be given an alternative land site now. There are another 9 000 PAFs who have become elder sons and would also have to be rehabilitated. MP has expressed its inability to rehabilitate them immediately. Gujarat Officials had identified 852 PAFs at 113 m and Gujarat is trying to raise the height of the dam up to 113 m. It An has presented new timetable to raise the height up to 113 m, then 115 m and finally 121 m in order to rehabilitate the PAFs in phases. (BUSINESS LINE, THE TIMES OF INDIA 240505)

NHDC: Violations in Indira Sagar submergence



Several villages in Harda dist of Madhya Pradesh are facing apprehension of submergence from Indira Sagar Project. The Collector of the dist has written a letter to NVDA for re-survey of villages and to include 28 villages under permanent submergence area of the project. The NVDA has declared these 28 villages under temporary submergence. Some villages are also facing the fear of submergence, which have not even been surveyed earlier. It was revealed when the water level of the dam was 243 m in last week of May '05, then the water level touched the mark put at the level of 254 m.

High Court Order About 4500 families affected from ISP have not received compensation and they are facing threat of displacement. The NHDC has accepted that due to some technical and court's procedure these families could not receive compensation. People are still living in various villages including Badkhalia, Bijoura, Bijouramaphi, Purni, Fatehgarh, Dagadkhedi, Sindhkheda, Pamakhedi, Bandaria etc, which have been declared under submerge area in this monsoon at the level of 162 m. The police are threatening the people to vacate the villages. However the Jabalpur High Court, in a PIL filed by the Narmada Bachao Andolan has directed the project authority to present the report about 91 villages, which are coming under submergence this year. On May 18, the HC Bench accepted that the order of Supreme Court of 15 March '05 will also be applicable for NSP. The Chief Justice of the High Court Shri R V Raveendran and Justice Shri S S Kemkar directed the Grievance Redressal Authority to examine the status of R&R of the oustees living in 91 villages slated to be submerged by the Project this year, and file its Report to the Court. The Petition points out that the Project authorities and the State govt have completely violated the provisions of the Narmada Waters Disputes Tribunal Award, the Orders of the Honourable Supreme Court, the Rehabilitation policy of the State Govt, the Memorandum of Understanding dated May 16, 2000 regarding the ISP and the conditions of the environmental and Planning Commission clearances. Although 91 villages of the ISP area were slated to be submerged, their residents were yet to be rehabilitated. A detailed survey conducted by the NBA has found that in 38 out of 91 villages, even payments of compensation for agricultural land and houses is yet to be given. Only 189 out of nearly 7000 families digible for house plots have been given their entitlements, and only three resettlement sites have been developed for the oustees although thousands of families in 58 villages are eligible for resettlement. (NBA PR 200505, SARVODAYA PRESS SERVICE 200505, DANK BHASKAR 290505, 310505)

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