



IN THE HON'BLE HIGH COURT OF HIMACHAL PRADESH AT SHIMLA

CWPIL No. 24/2009

In the matter of:-

Court on its own motion

PETITIONER

Versus

1. State of H.P Through its Additional Chief Secretary(Forests) to the Govt. of Himachal Pradesh, Shimla-171002.
2. The Principal Secretary (Institutes) to the Government of Himachal Pradesh, Shimla-171002.
3. The Secretary (Environment) to the Govt. of Himachal Pradesh, Shimla-2

RESPONDENT

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DEPONENT
Additional Chief Secretary (Forests)
to the Govt. of Himachal Pradesh, Shimla

(through the Advocate General,
State of Himachal Pradesh)

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1. State of H.P Through its Additional Chief Secretary (Forests)
to the Govt. of Himachal Pradesh, Shimla-171002.
2. The Principal Secretary (Industries) to the
Government of Himachal Pradesh, Shimla-171002.
3. The Secretary (Environment) to the
Govt. of Himachal Pradesh, Shimla-2

.....RESPONDENT.

CWPIL AINCE AFFIDAVIT IN RESPONSE TO ORDERS DATED 23.12.2009

I, Avay Shukla, son of Shri Govind Prasad Shukla, aged 50 years, occupation Government Service, presently posted as Additional Chief Secretary (Forests) to the Government of Himachal Pradesh, do hereby solemnly affirm and state as under:-

1. That the above mentioned CWPIL is pending adjudication before the Hon'ble Court. That the above mentioned CWPIL appeared before this Hon'ble Court on 23.12.2009 when this Hon'ble Court was pleased to appoint the applicant as member of the one man High Power Committee to submit report on following issues:-
 - i) Whether the hydel projects while undertaking the construction of projects have followed in letter and spirit

the mandatory conditions of environmental clearance and forest clearance granted by the Central and State Agencies;

- ii) Whether the precautionary/necessary steps have been taken by the companies to restore environment and ecology in the project areas;
- iii) Whether it is advisable for the State Government to sanction construction of hydel projects at the height of more than 7000 feet above sea level. The alpine forests grown at the height of 7000 feet above sea level;
- iv) The Committee shall visit all the projects to assess the damage already caused and the essential steps required to restore the same;

That the applicant has been directed to furnish report to this Hon'ble Court within a period of three months. The report could not be submitted within the period of three month and reasons of non filing the report in this Hon'ble Court have been given in the affidavit filed on 30.1.2010 and 6 months time was prayed for the Committee to accomplish the work assigned to the applicant.

That as intimated by learned Advocate General, Himachal Pradesh vide his letter No.24/2009-11075 dated 26.4.2010 that the Hon'ble Court vide order dated 23.4.2010 has granted 6 months to file the report of one member high power Committee in this Hon'ble Court.

That one member high power Committee constituted in pursuance to the directions of this Hon'ble Court has inspected Hydro Electric Projects of 100 MW & above capacity which are under construction. The report of the one member high power Committee with respect to spot inspection is enclosed with this application as annexure A-1

Shimla on this 21st day of 2010.


DEPONENT.

Attestation of the Deponent
by the Court

VERIFICATION:

I, Avay Shukla, son of Shri Govind Prasad Shukla, aged 59 years, occupation Government Service, presently posted as Additional Chief Secretary (Forests) to the Government of Himachal Pradesh, do hereby solemnly affirm and declare that the contents of this affidavit are true and correct to the best of my knowledge as derived from official record which I believe to be true. No part of it is false and nothing material has been concealed therefrom.

At Shimla on 21st July, 2010

PLACE: SHIMLA
DATE: 21st JULY, 2010


DEPONENT

Attestation of the Deponent
by the Court

REPORT OF THE ONE MAN COMMITTEE TO MONITOR ENVIRONMENTAL COMPLIANCE OF HYDEL PROJECTS IN CWP NO. 24/09.

The Hon' High Court vide its order dt. 23.12.2009 appointed the undersigned as a one man Committee to report on the hydel projects in the state with the following terms of reference:

- i) Whether the hydel projects while undertaking the construction of projects have followed in letter and spirit the mandatory conditions of environmental clearance and forest clearance granted by the central and state Agencies;
- ii) Whether precautionary/ necessary steps have been taken by the companies to restore environment and ecology in the project areas;
- iii) Whether it is advisable for the state government to sanction construction of hydel projects at the height of more than 7000 feet above sea level. The alpine forests grow at the height of 7000 feet above sea level;
- iv) The Committee shall visit all the projects to assess the damage already caused and the essential steps required to restore the same.

An application was filed in the Hon'Court on 30.1.2010 pointing out that there are approximately 150 big and small hydel projects in the state and it would be extremely difficult for the Committee to inspect each and every hydel project. It was therefore prayed, inter-alia, that the Committee be allowed to inspect and report on only projects over 100 MW capacity, and that the time allowed to the Committee for submission of its report be extended to six months. It was intimated by the Id. Addl. Advocate General vide his letter no. CWPIL- 24/2009-11075 dt. 26.4.2010 that the case was listed before the Court on 23.4.2010 and time to file the report was extended to 31.7.2010 and the case has now been listed on 6.8.2010.

The committee has held a number of meetings from time to time in which officers and experts from the Departments of Forest, Environment, Pollution Control Board and Ministry of Environment and Forests have been associated. After detailed deliberation it was decided that since the concern of the Hon' High Court was to monitor the projects "while undertaking the construction of projects", and since damage to the environment is caused during the construction phase of the projects, projects whose construction phase is over and which have been commissioned, need not be taken up for monitoring, and the Committee should concentrate on an environmental audit of hydel projects under construction.

The following hydel projects of 100 MW and above were identified for monitoring:

- 1] KARCHAM WANGTOO.
- 2] PARVATI-II
- 3] PARVATI-III
- 4] ALAIN DUHANGAN
- 5] UUL-III
- 6] KOL DAM
- 7] SAWRA KUDDU
- 8] NORANG
- 9] CHAMERA-III
- 10] TIDONG
- 11] RAMPUR

[MALANA-II (100MW) also falls into the category of on-going projects eligible for inspection by this Committee. However, since the Court has appointed a separate committee under the Chief Secretary in CWP no. 29/2007 to report on the environmental aspects of this project(and the undersigned is a member of that committee also), it was decided not to include this project in the list of projects to be inspected by this committee].

Hydel projects are required to obtain two sets of clearances relating to the environment: Forest clearance and Environment clearance. There is a lot of overlap between the two, but broadly the former clearance is monitored by the state Forest Deptt., while the latter is monitored by the state Directorate of Environment(through primarily the State Pollution Control Board) as well as by the central Ministry of Environment and Forests(MOEF). The Committee, therefore, has obtained the latest status of compliance of conditions of various forest and environmental clearances by the above projects from all three agencies. These have formed the basis for the Committee's field inspections.

I would, however, like to begin with a caveat in order to place hydel projects in states like Himachal in their proper environmental context. All policy makers must understand, and accept, that hydel projects in mountainous terrains, constrained by the requirements of design, technology, geography and finances, shall inevitably cause damage to the environment during the construction phase. There cannot be a totally environment friendly hydel project in the Himalayas. The results of blasting, excavating, tunneling, cutting, dumping, tree-felling, diverting of rivers- all these

are bound to have a severe and damaging effect on the environment and ecology of the area,

affecting water sources, green cover, wild-life. Conditions imposed on the project developers can only attempt to minimize these effects but cannot do away with them altogether. It is therefore for the concerned governments, both at the centre and the states, to weigh the pros and cons and decide whether this is a cost worth paying, and if the answer is in the affirmative then they must accept that there will always be collateral environmental damage in the process. **The responsibility for such damage has to be shared between the government and the project.** It would be extremely naïve to believe that the mere imposition of a few conditions while according clearances would prevent any environmental impact.

A detailed analysis of the reports submitted by the three agencies indicates three prime areas of concern in practically all the projects: **delay in implementation of CAT (Catchment Area Treatment) Plans including CA (Compensatory Afforestation), road construction and dumping sites.** The latter two are responsible for 90% of the damage, whereas the restoration which the former was meant to achieve has not happened in most cases. Whereas these three factors would be discussed project-wise in the following pages, there is a common explanation for the delay in implementation of CAT and CA plans: most Projects have deposited these funds as per the requirement of their clearances, but since 2004 these funds have been deposited in the central CAMPA on the orders of the Supreme Court, and for various reasons, CAMPA was not able to release any moneys to the states for six years. It was only in 2009 that the CAMPA has released 10% of the accumulated amount of each state, and now the state govt. has sanctioned proportionate amounts for each project to be spent in 2010-2011. This delay or non-compliance cannot, therefore, be attributed to the laxity of either the project developers or the departments of the state govt.- it is a result of a systemic failure.

The Committee's observations on each of the individual projects are given below:

[1] ALLAIN DUHANGAN (192 MW), KULLU.

This project was inspected on 1.5.2010. there are in all 9 Dumping sites of which 7 have been closed and only 2 are still being used. These too shall be closed in about 6 months'time when the remaining tunneling of 685 meters is completed and the expected muck of about 6000 cum. is dumped. The Committee inspected four of the dumping sites in Duhangan and Allain valleys. The biggest of about 3 ha. at RD 5500 in Duhangan is Khanool. This is at the base of a sheer rock face across which a road has been made- the debris from the road construction is also dumped here. The

Area was being leveled and protection walls erected at multi levels when the team visited. Part of the

site, about ½ ha. has been treated by the Forest deptt. by planting trees, but most of them had died. DFO Kullu was directed on the spot to ensure re-planting of the area in the coming monsoons. The dumping sites at Bhujdar and Pandu Ropa have been closed for dumping: both have been nicely leveled and gabion walls erected/ being erected to prevent any spill-over into the forests; however, a couple of walls have intruded into the forest itself and the ED was directed to ensure that this does not happen. Top soil was also being spread on the sites, and fencing erected, in preparation for planting. The large dumping site at potato ground in Sethan is still being used but toe walls have also been constructed here to prevent spillage. **On the whole substantial progress has been made on this front by the project authorities since the last review by the PCCB in September 2009 and the Committee was quite satisfied by the progress.** The ED was directed to ensure that protection works on all 7 closed dumping sites is complete by July 2010, and planting work in them is done this monsoon in consultation with the Forest deptt.

The road in the Allain valley upto the reservoir has been completely stabilized- extensive protection walls have been provided both above and below the road, and there is now lush green vegetative growth on both sides. In fact I would recommend this road as a model for other projects and even the state PWD! The road on the Duhangan side, however, being of later vintage still has to stabilize: the debris on the slopes, however, is being contained by toe walls and on some stretches such as at RD3300 plantation work has also been started successfully. It would take at least a year for this road to stabilize. The Committee would like to make a specific recommendation here based on its extensive site visits that is relevant to all projects across the board, viz. **project authorities should not be compelled to start plantation works on the debris littered slopes of roads in haste.** Our observations and experience has shown that unless these (usually very steep) slopes are first stabilized (either naturally or by intervention) constant rolling of muck, water and stones removes the top soil applied there and completely demolishes any plantation done. The money spent in such situations is a complete waste. It is therefore strongly recommended that only protection works should be carried out for the first year or two and plantation done only after the slope is stabilized. Secondly, one has noticed a tendency on the part of both the project authorities as well as the Forest Deptt. to go in immediately for the planting of regular tree species so as to attain quick visibility. This also is a complete waste of money as we have observed in every project visited. Regular tree species do not survive such difficult conditions unless at least a minimum base

Vegetative cover is created at the site to provide shade and protection. Therefore, initially only fast

ing shrubs, bushes and even medicinal shrubs should be planted, and only after these have established themselves should tree species be planted. Here also only species native to that area should be planted as they have the best chances of survival.

Since construction phase of this project is almost over there are only about 100 labour at the construction sites. They are housed in temporary camps on the potato ground and not in the forest areas. Proper latrines have been provided and the solid garbage is trucked down to Manali every day. LPG connections have been provided for cooking and the project has also established a fuel wood depot with the approval of the DFO Kullu for which fuel wood is obtained from the Forest Corporation.

One of the conditions of the forest clearance is that the reservoir area would be notified as a Reserve Forest- this has not been done. It was explained that this can be done only after the reservoir comes into being with the filling of water in it, i.e when the project is commissioned. This is not correct. The boundaries of the reservoir or FRL (Full Reservoir Level) are already known since forest land has been diverted for the reservoir and the area within the FRL can be calculated and notified as Reserve Forest by the state govt. The project authorities were directed on the spot to have the area demarcated, marked by boundary pillars and thereafter DFO Kullu would forward the case to PCCF/ Govt. for issuing the notification.

The project has deposited Rs. 6.05 crore towards the CAT Plan(Rs.5.84 crore in CAMPA and Rs. 21.03 lakhs with the state govt.). So far Rs. 2.75 crore have been spent by the Forest Deptt. out of this. An amount of Rs. Xxxxx lakhs has been provided in the APO of the current year. The position appears to be similar with respect to Compensatory Afforestation- the project has deposited the full amount of Rs. 67.53 lakhs required for planting a total area of 115.58 ha. However, only 60 ha. has been covered so far, primarily because the Deptt. has not been provided the necessary funds, half of which remained locked up in the CAMPA. However, Rs. Xxxxx lakhs have been provided in the current year.

III PARVATI-III (520 MW), KULLU.

Situated in the Sainj valley, this project was inspected on 1.5.2010. It is compliant with most conditions but more work needs to be done by it to restore dumping sites and areas affected by road debris. The project has an approved CAT Plan of Rs. 25.29 crore, out of which Rs. 25.11 crore has

been released to the state. The expenditure by the Forest Deptt. On the CAT plan so far is Rs. 2.75

more. The budget allocation for the current year is Rs.110.00 lakhs. Compensatory Afforestation was required to be done over 182.4846 ha. out of which it has been completed over 167.34 ha. The project has released payment of Rs.95.87 lakhs to the Forest Deptt. for the purpose. There are no labour camps in the forest areas, labour has been provided with LPG and electricity for cooking and lighting (according to figures furnished by the company an amount of Rs. 4.44 crore have been spent on this account from January 2006 till March 2010). Boundary pillars have been erected(though the DFO Banjar has been asked to number them and enter them in a Boundary Pillar Register for better monitoring and maintenance), no quarrying has been carried out although one quarry site was specifically provided for in the forest diversion case, but on the spot it was found not to have been excavated; there have been some deviations by the project in the matter of felling trees(against 1800 trees permitted, 40 excess were felled for which a damage bill of Rs. 282971.00 has been raised against them but has not yet been paid. They have been asked to deposit this amount with the DFO within ten days). During site inspection it was found that though serious steps have been taken to restore the damage in the last few months, the project is not yet fully compliant in the following areas, for which it has to make more strenuous efforts:

* Out of eight dumping sites two have been closed and six are still functional. I inspected DS Behali and DS Larji which are still in use and DS-6 which is being rehabilitated. On DS-6 concrete grids have been formed and top soil being filled in, seeds have been planted and there are some signs of vegetation and grasses taking root: rehabilitation efforts here seem to be paying off. But both Behali and Larji, which are on the banks of the river and from which aggregate is being recovered for lining the tunnels, have inadequate protection and the muck can slide down into the river at any time. Without waiting for finally closing the dump and only then beginning rehabilitation work, the project authorities should immediately erect strong gabion and toe walls as prescribed by Sh. DK Sharma, SEE of the HPSPCB to prevent scouring by the river. Later on rehabilitation as in DS-6 can be done. Same treatment needs to be followed for all the dumps, functional and closed.

* The project has constructed a road on the right bank of the river that goes upto their residential colony at Sapangini. This road has caused immense environmental damage at some spots because proper walls have not been constructed either above or below it, and a large amount of debris has rolled down into the river and more will inevitably follow in the days to come. Project authorities should take up protection works on this entire stretch of about 5 kms. on a war footing.

They should also physically remove the muck that has rolled down between the river and the road so that space can be cleared for vegetation to regenerate naturally.

* The reservoir area has to be demarcated so that it can be notified as a Reserve forest. DFO would ensure that this is done within 15 days and proposal sent to govt. The reservoir would be about 15 ha. in size. The rim plantation can be done only after it is filled, but preliminary works such as raising of nursery and pit digging can commence right now. DFO Banjar should prepare the necessary cost estimate and submit to the project within 30 days and the latter should make the funds available to him.

Other than the above the project was found to be generally compliant.

13] PARVATI-II (800 MW) KULLU

An upstream project of Parvati-II, it is located partly in the Parvati valley and partly in the Garsa valley. Both the valleys were inspected on 2.5.2010. The CAT Plan has been approved for Rs. 25.69 crore and the entire amount has been deposited by the company- Rs. 16.09 crore with the state govt. and Rs. 9.61 crore with CAMPA. Expenditure so far has been quite poor, with only Rs. 5.11 crore having been spent so far, even though most of the funds were with the state govt. itself and not locked up in CAMPA. The provision for the current year is Rs.61.69 lakhs. There appears to be a genuine capacity constraint with the Forest Deptt. in spending such huge amounts of money, especially as there are a large number of hydel projects in the Kullu circle, each with their own CAT plans. Nonetheless, the state govt. needs to find means and methods of utilizing these provisions meaningfully in the approved time frame. A beginning has been made in this year by sanctioning and locating a Company of the Eco Task Force in the valley which would enable plantation of an additional 200-250 ha. every year. The position regarding Compensatory Afforestation is much better: against the total target of 258 ha, actual plantation has been done over 230 ha. The balance area should be completed this year. The project is compliant in the matter of labour camps and an amount of Rs. 369.00 lakhs was reported to have been spent from December 2006 to November 2009 on providing fuel and electricity in the camps. The number of trees felled is well within the approved figure of 8124 trees and 3462 saplings. We did notice some labour huts on forest land, but as there is practically no non-forest land in this remote area, this cannot be treated as a violation.

The area of concern is the dumping sites and the debris generated by road construction. In the

Garsa valley the most effected stretch is along the Jhuni-Manihar road leading to the trench wiers at

Manihar, Pancha and Hurla. An area of 9.15 bighas was measured by the Department as effected and a restoration plan was prepared which was to have been executed by 15/12/2008. During site inspection it was found that most of this work was yet to be done. The position is more or less similar with the dumping sites. DS at Adit III A and DS 5 at Adit II (where the TBM is stuck) are still in use, either for **dumping** of muck or for extraction of the dumped muck for making aggregate for lining of the tunnels. Minimum protection has been provided to these dumping sites on the ground that they are still in use and restoration can be done only when they are closed. This is a fallacious argument- protection has to go hand in hand, pari-passu, with the dumping as otherwise the muck shall keep spilling over into the water courses and/ or destroying vegetation. Providing of grid, soil cover and plantation can wait till the dump is closed, but protection walls, gabion and toe walls should be constructed and continuously raised along with the increase in height of the dump, even if later on this expenditure is infructuous. There is a temporary dump created at the site of the trench weir at Hurla where ultimately the muck will be removed and a platform created for building an Energy Dissipation Structure. However on the spot it was noticed that till then there is every likelihood of the accumulated muck being washed down into the Hurla nallah: strong toe walls need to be erected here immediately- project authorities were advised so on the spot.

My inspection of the Parvati valley revealed that the position here was much better as much more work has been done here. I inspected the two biggest dump sites in this valley- the first at Adit II and the other at the Dam site at Pulga. The former is still in use as the muck from about 50 meters of the remaining tunneling is still to be dumped here. But adequate protection works have already been done on this dump site, including toe walls at various levels. The project authorities informed us that immediately on closure of the dump they shall begin the grid work, laying of jute matting, top soil treatment and planting. The site at Pulga is even bigger, and here the complete treatment for restoration has already been applied- the grids are visually pleasing and once the vegetation comes up the site would be indistinguishable from the surrounding terrain. Plantation shall be done in the coming monsoon and the Forest Deptt. should involve itself fully in the process of selection of species etc.

[4] KOL DAM (800 MW), BILASPUR.

This project was visited on 28.5.2010. The total land requirement for the project was 1486

Ha. of which 954 Ha. is forest land. The area of the project is spread over three forest circles, viz.

- 1 -

Bilaspur, Shimla and Mandi. Initially all the clearances were obtained by HPSEB but subsequently the HP Govt. transferred the project to NTPC. Forest clearance originally obtained on 11.6.90 was transferred to NTPC on 23.11.2000, and the Environment clearance, obtained on 29.8.1989 was transferred on 10.5.2000. The project is at a very advanced stage and the main remaining work is on the Dam and spill-way package. It is regularly being monitored by the Environment Deptt. of the state govt. and the Pollution Control Board. The status of compliance of conditions of forest and environmental clearances was observed to be very satisfactory.

The approved CAT Plan outlay is Rs. 6523.00 lakhs out of which the project has deposited Rs. 6455.00 lakhs till 31.3.2010. An additional Rs. 50.00 lakhs worth of equipments/ vehicle has been given by NTPC to the Forest Deptt. in kind, leaving a balance of Rs. 18.00 lakhs to be deposited which the project was requested to do this year. The total expenditure on the CAT Plan by the Forest Deptt. till the same date was Rs. 5076.02 lakhs. For the current year the govt. has approved an outlay of Rs. 522.42 lakhs. The reason for the slow pace of expenditure was the fact that substantial amount of the funds deposited by NTPC were locked up in the central CAMPA and have become available to the Deptt. only in the current year; the pace is expected to now pick up considerably.

The clearances also stipulated Compensatory Afforestation(CA) over an area of 2000 ha. at a cost of Rs. 719.40 lakhs. The entire money has been deposited by the project and the Forest Deptt. has reported a coverage of 2931.72 ha. at a cost of Rs. 645.50 lakhs. There appears to be some error in the reportage of the area covered, which exceeds the stipulated target by 931.72 ha. It is likely that some area covered under the RIM plantation scheme has inadvertently been shown under CA. The Deptt. should reconcile these figures.

A RIM plantation around the proposed reservoir, upto a width of 100 metres was also stipulated- this required plantations over 2000 ha. at a cost of Rs. 9.15 crore spread over six forest Divisions- Bilaspur, Kunihar, Shimla (WL), Shimla, Suket and Karsog. The project has deposited the entire amount with the state govt. but the area has been reduced to 1531 ha. owing to non-availability of adequate land around the reservoir fit for planting. So far an area of 533 ha. has been planted at a cost of Rs. 649.31 lakhs. It was observed that the expenditure incurred was (proportionately) far in excess of the area covered, and that the available funds would not be enough even for 2/3 of the area required to be treated. The reason for the disproportionately high expenditure

Is the fact that a Territorial Army Eco-Battalion has been deployed for this work in the Sutlej Valley,

and its expenditure is about ten times the norms on the basis of which the financial provisions were worked out. However, the state govt. would like to continue with this unit as the quality of its work is very superior. The Forest Deptt. is working out a mechanism to make more funds available for the Battalion so that the targets for the RIM plantation are fully achieved.

Perhaps the biggest environmental issue in this project, involving as it does the construction of a mammoth dam and Asia's largest diameter diversion tunnel(16.40 meters), was the generation of muck. The various project components (Dam, spillway, diversion tunnel, desilting structure, power house, tail race and access tunnel) shall generate 3,51,95,350 cu. m. of muck. Fortunately, of this 1.25 crore cu.m.(i.e. more than 33%) shall be utilized in the construction of the dam, leaving a balance of 2.26 crore cu.m. to be dumped at approved locations. For this a total of 11 Dumping sites have been approved with a combined capacity of 2.56 crore cu.m., that is, an excess capacity of 30 lakh cu.m. So far upto 30.4.2010 about 1.83 crore cu.m. of muck has been actually dumped in the DS, which is 71% of the amount expected to be dumped. Out of the 11 approved DS 8 are located upstream of the Dam and would be submerged in the reservoir as per the DPR of the project- they do not, therefore, require any particular reclamation or restoration work. The three DS which are downstream and require restoration work were inspected by the Committee. DDT 3 is adjacent to, and below DDT 4, both on the right bank of the Sutlej. The former has been very well restored, with strong concrete walls along the river, and its surface provided with stone pitching and some plantation. However, more top soil needs to be added and additional planting carried out during the coming monsoons. DDT 4, which is above DDT 3, has not yet been rehabilitated as a private stone crusher has been permitted by the state Geology Deptt. to lift and utilize this muck- this is a welcome move as it will ensure utilization of even more muck than originally planned. The project authorities have assured us that they shall begin the restoration work on this site the moment the crusher had finished its lifting. It was noted on the spot, however, that there is an overflow of muck from DDT 4 to DDT 3 which can damage the plantation work in the latter: measures have to be taken immediately to stop this. We were informed by the project authorities that they have already entrusted this work to the BRO. The third dumping site DCW 7 on the left bank of the river has been very successfully reclaimed: the project has adopted sound bio- engineering techniques including laying of jute matting to hold the soil. The trees and shrubs planted- mainly Jatropha- have taken hold: more planting should be carried out in the ensuing rainy season.

Other conditions are also being complied. There are no labour camps on forest land; the camps have been supplied with kerosene and gas for cooking and 572 commercial LPG cylinders were utilized for the purpose in 2009-10; no fuel wood is being extracted from the forests. There was initially a condition imposed by the Ministry of Environment and Forests that "possibility of incorporating mechanized lift in the dam design should be explored to facilitate transfer of migratory fish up or downstream of the high dam." Subsequently however this was replaced by another condition by MOEF letter of 1.10.2004 as follows: "A hatchery should be constructed for breeding of the migratory fishes like Mahseer, Trout etc. The fingerlings raised in the hatchery may be released in the upper reaches of the river." In compliance the Project has deposited Rs. 26 crore for the purpose with the state Fisheries Deptt. Finally, there appears to be some confusion about complying with the stipulation imposed by the state Environment Deptt. to the effect that 15% of the mean flow should be discharged from the dam at all times to maintain the ecology of the river downstream. It is important to ensure this in this project because the dam will completely block the flow of the river for hours at a stretch since it shall store water to provide for peaking power. During discussions with the General Manager and his team it distinctly emerged that the present design of the dam does not have any provision to meet this vital requirement. The GM maintained that since the tail end waters of the Govind Sagar Dam would extend right up to the Koi Dam there would always be water in the river bed downstream and therefore there would be no need to release 15% at all times. This argument has to be examined by the State Pollution Control Board and its hypothesis tested. This has to be done immediately so that mid-term corrective measures can be taken before the dam construction reaches a stage where no changes could be made or new elements introduced.

[5] UHL-STAGE III (100 MW) JOGINDERNAGAR, MANDI.

This project was inspected over two days, on 28th and 29th May 2010. Forest clearance approvals for this project were obtained in 2004. A total of 49.78 ha. of forest land has been diverted for various components of this project including the transmission lines. 334 trees (as per the sanctioned number) have been felled. Permission has also been accorded for the removal of 679 trees for the Transmission line corridor but so far no trees have actually been felled as the enumeration work is still in progress. There is no reported case of damage to forest areas.

CAT Plan of Rs. 9.57 crore has been approved by the GOI; the user agency has deposited the full amount, including the cost of one vehicle provided to the Forest Deptt. Since most of these

moneys were deposited after 2004 (the year from which all moneys got locked up in the central CAMPA) only Rs.2.08 was actually available for spending, against which Rs. 2.02 crore has been spent till 31.3.2010. However, now that CAMPA funds have started flowing from this year an APO for Rs. 1.62 crore has been approved for the current year, out of which 50% has also been released to the implementing agency.

The position is much better as regards CA (Compensatory Afforestation). As per GOI approval CA for the main project was to be carried out over 39 ha. at a cost of Rs. 23.22 lakhs; this target has been achieved at a cost of Rs. 16.88 lakhs. For the other components(quarry and transmission lines) additional CA over 68.26 ha. was to be carried out at a cost of Rs. 30.69 lakhs. Though the **entire amount** has been deposited by the user agency expenditure so far has been only Rs. 10.55 lakhs. The Forest Deptt. needs to improve upon this in the coming monsoons.

The project is generally compliant with all conditions of forest and environmental clearances. There is very little road construction involved since it is in a plain area and most of its above - ground components (trench weir, power channel, storage reservoir, power house) are more or less located on existing roads. The total quantity of muck to be generated is expected to be 7.00 lakh cu.m. Most of this- 6.81 lakh cu.m.- has already been generated; of this 1.15 lakh cu.m. has been utilized in various site developments and as aggregate for lining of the tunnels. 5.66 lakh cu.m. has been dumped in the 10 approved DS (Dumping sites) of which 7 have been closed and are being re-claimed, while 3 are still in use (Dart Bagla, Balh and Raktat). The project authorities reported that reclamation work is being done/ has been done in all the 7 closed DSs. The Committee inspected 6 DSs (3 closed and 3 operational) to physically verify their status of compliance. DS Dart Bagla is on forest land and is still being used as the muck from the power channel is being deposited there. It is on the left bank of the Neri Khad and is about 2 ha. in area. Adequate toe walls have been provided on the river bank to prevent any overflow of muck into the stream. DS Balh is also operational as the muck from the reservoir excavation is being dumped there. Concrete retaining walls have been provided. A large portion of the muck collected here shall be re-used for flooring of the reservoir. DS Khaddar is located on private land and is closed. It is in the process of being re-claimed. Stone grid work has commenced. Project authorities were advised to apply a layer of top soil and start planting (of binding bushes and shrubs) in this monsoons with the assistance of the Forest Deptt. Chakror DS is about 3 bighas in size and is also on acquired private land and is closed. It is below

a PWD road and a nallah goes through its middle. The project has prepared detailed drawings for

training the nallah, but the pace of the work has to be speeded up since the monsoons are just around the corner, and if the channelisation is not complete by then the entire dumped muck shall be washed down to the Beas. Mangdol DS is closed and is also located on private land. It is fully protected by retaining walls and the grid is in place. Plantation shall be taken up in the monsoons. DS Tullah, which is next to the power house is on forest land and is closed. It is particularly sensitive as it is right on the banks of the Beas. It has good toe walls, but our inspection showed that its height is excessive and it might subside in heavy rains. The Project authorities were advised to level it to reduce its height and moderate its gradient. Natural growth of vegetation has already started appearing on its right side and it can be further planted up in the monsoons. The overall position of the dumping sites was found to be satisfactory.

The only major issue in this project is some confusion as to whether some of the project components such as the power channel are located on diverted forest land or on land not approved for diversion. This problem exists in Mohals Raktal, Sanhali, Gulana, Chullah, Kundini and Kunsal, and involves an area of 5.2647 ha. According to the CF Mandi ground measurements show that the power channel is outside the diverted area and hence constitutes a violation for which he has raised a damage bill for Rs. 5.36 crore. The project authorities, however, contend that the problem lies with the revenue records: the dimensions and distances given in the revenue papers (musabi, lattha) are at variance with the actual measurements on the ground. Since they have gone by the revenue papers they cannot be faulted, they contend. A joint demarcation carried out by the Tehsildar Jogindernagar in Mohals Kundini and Kunsal in 2008 and 2010 appears to support the claims of the project: he has reported that wrong measurements appear to have been made during Settlement of the area, and the matter has been referred to the Settlement Officer, Kangra for correction of revenue entries. The matter has also now been taken up by the project with the Deputy Commissioner Mandi for a complete redemarcation in all the affected mohals. The Committee is of the view that till the entire issue is cleared the project cannot be held to be guilty of any violation and hence the damage bill should be held in abeyance.

The position of other conditions is also satisfactory. There were no labour camps noticed on forest land and there was no evidence of fuel wood being collected from the forests by the labour. There is, however, a lack of clarity about compliance of the condition regarding Release of 15% of water during all times. The project authorities contended that this condition was not applicable

to them since [a] they are only utilizing the tail waters of the UHL-II project whose responsibility it

is to ensure the required release, and [b] the trench weirs on the Rana and Neri khads would not capture all the waters in these khads and excess waters would continue to flow down the khads. Hence, they do not propose to install any device to measure the 15% discharge. The Committee disagrees with these claims. In the first place, even the tail waters of the UHL-II were earlier flowing down a water course; by diverting these waters into the HRT the project would render this water course completely dry; in order to prevent this it is essential that they ensure release of 15% discharge at this point. Secondly, the trench weirs on the Rana and Neri khads may not capture all the waters during the rainy season, but it is almost certain that they would capture 100% of the flow in the lean season. The Pollution Control Board was not able to throw any light on this issue, possibly because they might have accepted the claims of the project. **The Committee recommends strongly, therefore, that the PCB should immediately examine this matter and decide whether the project should, or should not, be required to maintain the minimum discharge at all three points, and install the necessary measuring and monitoring instrumentation.**

1.61 RAMPUR HEP (412 MW) RAMPUR.

This project was visited on 14th June 2010. Based on the tail race waters of the Nathpa Jhakri HEP, RHEP was given forest clearance on 23.3.2005 and environmental clearance on 31.3.2006. Total forest area of 70.3036 ha. has been diverted for the project, and 1087 trees have been felled as per the number approved. Approved CAT Plan is of Rs. 23.37 crore, against which the user agency has deposited Rs. 17.08 crore as per the decision of the state govt. allowing the projects to deposit the CAT funds in instalments as per the phasing of the construction period. The expenditure upto 31.1.2010 has been Rs. 6.70 crore only, primarily because of locking up of funds in CAMPA till last year. The approved APO for current year is Rs. 335.59 lakhs. The Forest Deptt. is being able to push up the expenditure in this year because the project management has agreed to undertake and execute works amounting to Rs. 1.48 crore, thus supplementing the efforts of the department. As regards CA an area of 141 ha. has to be planted at a cost of Rs. 88.28 lakh. The entire amount has been deposited but the expenditure so far has been nil; however the approval budget for the current year is Rs. 10.24 lakhs and the work shall be carried out during the coming monsoon.

There have been only two reported minor violations involving dumping in forest areas, and in both cases damage reports have been issued by the department and the project has paid the fine also, except for Rs. 1.00 lakh, which they have assured to clear within a week. There are 4 approved

Dumping Sites (DS) covering an area of 14.51 ha. and with a total capacity of 35.66 lakh cu. m. The

project expects to generate approx. 30.00 lakh cu.m. of muck of which it shall utilize 3.00 lakh cu.m. as aggregate for tunnel lining. All 4 DS were inspected (they are all in use) and it was found that generally they are well protected with walls on the river side. It was noticed, however, that at many places the height of the walls needed to be raised and gaps plugged. It was also observed that whereas the DPR of the project provided for plum concrete walls, the walls actually being constructed were either crate wire or gabion, which are less strong. The project needs to adhere to the DPR/EMP specs. The General Manager Sh. Pathak agreed to do the needful immediately. Partial reclamation work has started in DS-II where the project has adopted an ingenious method (called Geo Green Erosion Blanket) of applying top soil and then overlaying it with coir matting which is nailed to the ground. Thereafter planting is carried out. The coir not only holds the soil but also retains moisture for much longer periods than even soil does. About 2225 sq. metre of area has been treated by this method and dedonia and silver oaks and willows were planted last November. The success of this strategy is very visible: the slope is completely stabilized and the plants have taken off very well- the whole slope now looks green and pleasant. The project intends to replicate this experiment in the other DSs also as and when they become available for reclamation. On the obverse side, however, at two locations- near the intake structure where muck from the diversion tunnel is being dumped, and at Kunni Adit- we observed dumping being done without any protective work whatsoever, and the muck is slipping into the river. Project officials accompanying us were directed to immediately start construction of toe walls, and to suspend all activity at these sites till then. The state PCB, however, whose responsibility it is to prevent this should monitor compliance of these instructions regularly.

The main issue which needs to be sorted out in this project is the condition regarding release of minimum discharge. The relevant condition in the environmental clearance states that 27.2 cusecs (it should actually read cumecs) of water should be released at the dam site during the lean season. The CF Central of the Northern Regional Office has reported that the project "has assured comply" with this condition. However, it is obvious that neither the CF Central nor the state PCB have seriously tried to understand or ensure compliance of this stipulation, but have accepted the assurance in a very routine manner. In the first place the project has no dam (it instead utilizes tail race waters of the Nathpa Jhakri HEP), so the stipulated location of the release of waters has not been thought out clearly. During discussions with the GM and his team it emerged that the NJP

peak production level of 1500 MW shall be releasing 405 cumecs in its tail race. The RHEP shall

draw 383 cumecs from this for its own designed generation of 412 MW, leaving a surplus of 22 cumecs to flow into the river at the intake point: this is 5.30 cumecs less than what it is required to release. Even worse, for most of the 365 days NJPC shall not be operating at its full 1500 MW capacity, and when it goes in for peaking(which requires storing water for a few hours and stopping any generation during this period)- during these periods NJPC shall either not release any water in its tail race, or release far less than the optimum 405 cumecs- in either case there is no way that RHEP can ensure release of 37.30 cumecs of water at its intake point. **This is a built in permanent violation that seems to have escaped the notice of the regulators. It is therefore strongly recommended that the MOEF and the state Environment Deptt/ PCB re-examine this stipulation and devise a way of ensuring that the required water flows downstream of the project intake at all times.**

[7] SORANG HEP (100MW), KINNAUR.

This project was inspected on 15.6.2010. Slated for completion in November 2011, **work is at an advanced stage.** Its forest clearance was given on 1.11.2006 and the environmental clearance on 9.9.2006. 14.48 ha. of forest land has been diverted for the project, while final approval for another 4.69 ha. for the transmission line is awaited. (Of this, 9.91 ha. of forest land shall be returned to the Forest Deptt. on completion of the construction phase- this would essentially consist of reclaimed DSS, the project road, land used temporarily for job facilities etc.). 184 trees have been felled, which is the number approved. The CAT Plan has been approved for Rs. 647.02 lakhs: the user agency has deposited Rs. 603.97 lakhs and also given material worth Rs. 8.45 lakhs in kind to the forest deptt. The remaining Rs.34.60 lakhs also has to be given in kind over the next two years; DFO (Wild Life) Sarahan has been asked to supply the list of required items to the project authorities at the earliest. CA for the project has been approved at Rs.19.43 lakhs for covering 22 ha. The entire amount has been deposited. However, the expenditure on both these components by the forest deptt. has been nil so far since almost the entire has been locked up in CAMPA. But in the current year an APO of Rs.22.00 lakhs has been approved and the Deptt. should ensure that the funds are released to the DFO at the earliest. In addition the project developers themselves will be taking up soil conservation works costing Rs. 1.00 crore under the CAT Plan this year. It is a matter of concern that although the project shall be commissioned within the next 18 months, no CAT or CA works have been carried out so far. The Deptt. should attempt to rectify this by releasing maximum funds from the CAMPA. *

The DFO has reported, only one violation by the project involving dumping of debris on forest land near the intake site for which a damage report of Rs.2.17 lakhs has been issued to them, and they have promised to make payment of the same within two weeks of the date of inspection. The project appears to be compliant with all conditions. There are no labour camps in forest areas- in fact at the moment the total labour force employed is approx. 80 of whom 75% are local people. The remaining 20 or so are housed in two sheds at the intake site where proper sanitation arrangements have been made. No fire wood is used for their mess as diesel fired stoves have been provided.

A total area of 5.41 ha. has been provided for 5 approved dumping sites. Approx. 2.50 lakh cu.m. of muck shall be generated of which 40% shall be re-used as aggregate for lining of the HRT. The company has reported that it has provided Rs. 4.80 crore for protective structures for the DSs. Of which it has already spent Rs.2.90 crore. Our inspection of all five DSs showed that whereas the project has made sincere efforts to manage the DSs, there is still scope for the following improvements to avoid spillage:

- * The project road (Traffic tunnel to Intake site) needs to be provided protection structures, especially above the road, to stabilize it and to prevent landslides.

- * DS I at the Intake site is critical since it is right on the bank of the Sorang stream. Toe walls on the river banks (both banks) were seen to be broken at many places and need to be immediately strengthened. Secondly, the muck above the road has piled upto a height of 25-30 feet without any benching or multi tier walling- the whole dump at this point appears unstable. Terracing/ walling at least three levels needs to be taken up immediately.

- * The toe walls at the DS-V near Chota Kamba need to be increased in height to avoid overflow of the muck. (This dump has now been closed, and the project authorities have proposed to start its reclamation this monsoon. They have been advised to study the Geo Green Erosion Blanket technique adopted so successfully by the Rampur HEP.).

- * Part of the muck from the Traffic Tunnel has been simply dumped below the tunnel exit without any structure to prevent its sliding down the mountain. Retaining walls should be provided immediately or the muck removed to the dumping sites.

As with other projects visited by the Committee, the issue of release of 15% water flow in the stream at all times appears to be based more on trust than fail proof technology. The discharge of the

Sorang stream is 30 cu. m. normally, which reduces to 6 cu. m. during the lean season, as per the

hydrology established by the project. The discharge required by the project's power house to run both the 50 MW turbines is 18.30 cu.m.- a single turbine would require 9 MW, which is more than the discharge during lean season. There would always be an effort by the project authorities to divert waters to its turbines during the lean season rather than release it into the nallah (a 15% release could reduce the availability for the power house during the lean season to 5.10 cu.m. which would not be enough to run even one turbine at 50% capacity). We were informed by the GM of the project that their weir design has a provision for diverting water into the nallah rather than to the intake tunnel, and they would use this to ensure the minimum flow during the lean season. **This may be so, but the design should be such that the release does not depend upon a decision of the project authorities, but is independent of their control.** No officer of the PCB was there to guide the Committee on the technical aspects of this issue (inspite of intimation of the visit). The Secretary, PCB should personally look into this matter.

[3] KARCHAM WANGTOO(1000 MW), KINNAUR.

The project was visited on 16.6.2010. This is a major project located in upper Sutlej valley with limited working space and extremely difficult working conditions, factors which are relevant for assessing its environmental footprint. The total forest area diverted (including transmission line) is huge: 496.61ha. Trees involved are 1287 for the main project and 3924 trees and 5229 saplings for the transmission line. 837 trees have actually been felled for the main project whereas no felling has taken place so far in respect of the TL. The Forest Deptt, is making efforts to minimize the trees involved in the latter by appropriate location of towers and by increasing their heights wherever technically feasible.

The project is **fully compliant** in making the required payments: against an approved CAT Plan of Rs.31.94 crore it has deposited Rs. 26.39 crore as per the phasing and the balance Rs. 5.56 crore shall be deposited during the current financial year. The user agency has deposited the full amount for CA- Rs. 2.67 crore for the main project and Rs. 1.73 crore for the transmission line. The expenditure on both counts however has been very slow: Rs. 7.17 crore under CAT Plan and nil under CA. This is an **area of concern** which the Deptt. has to address. There is, fortunately, a potential hike in the approved APO for the current year which is Rs. 638.72 lakhs.

Temporary labour camps have been established on diverted forest land (current labour strength is about 11000, but the number shall go down drastically by this time next year when the construction phase shall be over). One of the conditions of forest clearance is that no labour camps

shall be set up in forest land, but to my mind this is an unrealistic stipulation since there is practically no other land available in this valley except forest land- there is very little private land and people are obviously not willing to part with it; all other govt. land is forest land. The company therefore has no option but to establish labour camps on diverted forest land. In any case these areas shall be handed back to the forest deptt. on conclusion of construction phase, and therefore this should not be considered a violation. The camps are very well organized with all facilities like messing, toilets, health services etc. provided, as our inspection of the largest camp at Sholtu showed. There is no burden on the forests insofar as fuel for cooking is concerned: LPG and kerosene are provided in the kitchens- according to figures provided to the committee, in the last four years a total of 25382 LPG cylinders have been purchased at a cost of Rs. 85.82 lakhs, 458702 litres of kerosene have been provided at a cost of Rs. 43.68 lakhs. In addition 2157 quintals of fire wood has been purchased from the state Forest Corporation valued at Rs. 10.11 lakhs. The company has spent a total of Rs.1.39 crores during this period to provide fuel for the labour kitchens. There are two minor conditions which have not yet been complied with, both concerning the reservoir to be created by the dam at Karcham, i.e. declaring the reservoir as a Reserve Forest under the Indian Forest Act, and creating a green belt around the reservoir. The first was to have been done by the Forest Deptt. and the second jointly. Neither has been done yet because both were under the impression that these actions were to be taken only after the actual creation/ filling of the reservoir, which is still about eight months away. However, since the precise area, location and FRJ. of the reservoir are known, the CF Rampur was advised to process the case for declaration of Reserve forest within one month. Creation of the green belt is a more knotty problem since most of the valley walls around the reservoir are extremely rocky and not fit for any planting. We surveyed the area and found that there are some suitable patches, however. The DFO Kinnaur was advised to do a detailed survey along with revenue staff to ascertain the status and ownership of these patches and prepare an estimate and submit the same to the project so that establishment of nurseries for raising the required planting material could be taken in hand this year itself: the actual planting could be done in the monsoon of 2011. 18.32 ha. of forest land was diverted for use as a quarry, but the project has no need for mining this. The area should be returned to the forest deptt.

The biggest environmental issue which this project is addressing; however, is the disposal of the muck and debris generated. The sheer volume of muck generated is humungous: 90.10 lakh

cu. m. It shall utilize 52.00 lakh cu. m. in its own activities, but that still leaves 37.75 lakh cu. m.

which has to be dumped in the approved dumps. The total forest area diverted for dumping sites (DS) is 34.25 ha. 47 DS were approved but the company has utilized only 36 sites; the land of the remaining 11 sites should be returned to the forest deptt. as per condition no. 20 of the clearance. Owing to the extremely narrow, gorge-like width of the valley, all the DS are located on the (mainly) right bank of the Sutlej, and almost the entire 8 km. distance between Wangtu and Karcham has been used for dumping, between the road and the river. This makes the operation even more critical, because any laxity in intention or design or execution would result in spillage of lakhs of cum. of debris into the river. The Committee surveyed this entire stretch and also examined in detail the condition of a number of DSs—DS 33, 34, R, Q; the DSs at Tapri and below the dam. The project authorities appear to be doing a sincere and good job in providing protection walls, and since now 99% of the dumping is over, they are planning the strategy to start reclaiming these sites, as provided in the conditions of clearance. There is, however, some scope for improvement. In general, therefore, the Committee would make the following recommendations for the guidance of the project managers:

* The lowermost toe walls, which are impacted by the flow of the waters, should be of RCC.

* Wherever the height of the accumulated muck is more than 10-15 feet, benching and terracing should invariably be resorted to so as to break up the steep gradient and provide support at intermediate levels.

* It was noticed that in a large number of DSs grid work has been done- this is a good first step towards reclamation, but the exercise should not end here. This should be followed up by application of topsoil mixed with manure and then planting of bushes and shrubs in the first year, followed up by tree species in the second year.

* Since the natural soil quality here is very poor and highly susceptible to erosion, the laying of jute or coir matting should form an indispensable part of the reclamation process.

A couple of instances of unauthorized dumping on non-diverted forest land were also brought to our notice by the CF Rampur. The Deptt. has taken action by issuing damage reports and filing a case in the court of CJM Kalpa. This does not, however, result in any improvement to the environment since the dumped muck is still lying there and likely to slide into the river at any time. The project authorities are agreeable to, and should be allowed to, reclaim these sites at their cost.

This is the only project we have visited in which a verifiable design provision has been made for ensuring the discharge of water from the dam. Two 800 mm dia pipes have been build into the face of

the dam itself at a height below the intake chamber level which will ensure a constant discharge of 6.80 cumecs downstream of the dam. There is, however, a slight problem here: the dam is supposed to release 15% water which works out to 11.37 cumecs, considerably more than what the two pipes will discharge. It appears that when the dam was being designed, the legal requirement was for a 10% discharge: the two pipes were designed accordingly. The 15% requirement came into force later, when the dam was already constructed and hence this requirement could not be incorporated. The shortfall would to some extent be made up by the additional discharge from the spillway, but the spillway would not be operating all the time. This is an issue which the state PCB needs to examine in greater depth.

In conclusion, the committee is of the view that the project is predominantly compliant and is doing a fair job given the difficult working environment.

[9] TIDONG-I (100MW), KINNAUR.

This project, situated in the remote Charang khad 10 kms. beyond Thangl, was visited on 17.6.2010. Its environmental clearance was received on 7.9.2007 and forest clearance on 18.6.2008. The total forest land approved for diversion is 39.05 ha., not including the land for the transmission line, which case is yet to be finalized. The total number of trees to be felled/ removed is 1261, of which as many as 807 fall in the alignment of the road to the surge-shaft. 751 trees belong to the Chilgoza species which is now almost an endangered species in this district, the only area in the state where this tree is found.

The project is compliant in making timely and full payment of the various amounts required to be deposited under various clearances. It has deposited the entire amounts for CAT Plan, CA, NPV, Cost of trees, and reclamation of dumping sites totaling Rs. 14.78 crore. Since this money was deposited in CAMPA it was not actually available for spending till last year hence no expenditure has been incurred either under CAT plan or CA heads. The forest deptt. has made no provision for expenditure in the current year also. This is surprising and not acceptable as funds from CAMPA have now started flowing to the state and Rs. 36.00 crore has been released to the state forest deptt. The Principal CCF should review this matter and provide at least Rs. 25.00 lakhs for CA and Rs. 50.00 lakhs under CAT Plan in the current year keeping in view the fact that the project is slated for completion in 2013.

Our physical inspection of the whole project site starting from the intake to the power house has revealed that there is major problem of muck dumping in this project. The unscientific manner

in which excavation and cutting is being done on the surge shaft road as well as the road to Adit-I, and the callous manner in which the resultant debris is being dumped in the forest areas, is taking a huge toll of trees, and will ultimately lead to soil erosion on a large scale. (It is surprising that this has not been noted, let alone acted upon, by either the Regional Office of MOEF or the state PCB during their inspections). According to the project estimates the total quantity of muck to be generated will be 4.14 lakh cu.m. Of this 1.43 lakh cu.m. is expected to be utilized and 2.70 lakh cu.m to be dumped in 4 DSs. Of this 3 DSs have been developed so far and are in use, while the fourth DS (near the power house) shall be developed later. Our inspection of the three DSs revealed that none of them have adequate protection structures- they all need to have proper RCC toe walls of sufficient height and also have to be developed in benches with inter mediate retaining walls. The debris from the **cutting of road from intake to Adit I has also been rolled down to the stream bed indiscriminately**, and even where a dumping site has been developed(DS-2) the protection provided is very skeletal and totally incapable of preventing spillage into the stream.

The much bigger problem which we observed, however, is the unscientific construction of the two roads and the indiscriminate rolling down of huge quantities of debris leading to damage to/ uprooting of **hundreds of trees outside the diverted areas**. The road to Adit-I has been completed, and 1.8 km. of the 6.2 km. surge shaft road has been carved out. **In the process 590 additional trees not approved for felling have been irretrievably damaged**. The DFO Kinnaur has taken cognizance of this gross violation and has raised six damage reports against the company levying a penalty of ₹3.30 lakhs(which has been paid), and has also registered an F.I.R. on 7.1.2010 against the management in the court of the CJM Kinnaur under relevant provisions of the Indian Forest Act. He has also stopped any further construction of the surge shaft road on 2.12.2009. This last has been done primarily because an assessment carried out by his staff has resulted in the enumeration of an additional 4815 trees which are likely to be damaged if construction of the surge shaft road continues. **Of this number as many as 2803 are Chilgoza trees which, as already noted, are highly endangered.**

The issue confronting the project and the state govt. here is one of massive environmental implications. The damage already caused by road cutting, and the even more damage likely to be caused in the future, is environmentally unsustainable and unacceptable. To recapitulate, the project has approval to fell 1261 trees (in itself a very large number). **It has already illegally destroyed 590 more trees and in the assessment of the deptt. will inevitably destroy another 4815 trees; in other**

words it shall destroy 5405 more trees than what has been approved- 400% more than the sanctioned number! This makes a mockery of the original DPR of the project or the FCA application. It also raises the question whether they deliberately understated the number of trees in their application in order to get FCA approval- had the govt. or the forest deptt. been aware that the number of trees involved was 6666 rather than 1261 it may not have given approval for the project at all.

I have not the slightest doubt that this kind of terrain- hardly any top soil, loose soil cover, extremely steep slopes-cannot sustain the loss of tree cover on such a massive scale. Even if the assessment of the forest deptt. is reduced by fifty percent it is still unsustainable. In the normal course the committee would have recommended that the approval for the project should be reviewed with a view to canceling it; however, this may not be practical considering the work already done on it and the investment already made (about Rs. 50.00 crore according to the GM of the project). Therefore, the committee instead recommends that [a] Approval for the surge shaft road (and the forest land and trees diverted for it) should be withdrawn as the damage it is causing and will cause is just too massive; and [b] the company should be directed to install a rope-way instead for accessing the surge shaft and HRT. This is already being done by some hydel projects in the state and is technically feasible. It will probably delay the project commissioning by a few months and push up costs, but this is a small price to pay for preserving what remains of this pristine and fragile environment. And in any case the project developers are themselves responsible for this situation by not preparing a proper DPR and by adopting environmentally hostile road cutting practices.

[10] SAWRA KUDDU (111 MW), ROHRU, SHIMLA.

This project is being executed by the HP Power Corporation, a state govt. undertaking, and was inspected on 2.7.2010. A total of 53.80 ha. of forest land has been diverted for this project and some private land has also been acquired. A total of 852 trees were approved for felling, and according to the DFO Rohru these trees have been handed over to the HPFC for felling. However, according to the Divisional Manager of the HPFC the Corporation has been handed over only 763 trees out of which 742 have been felled and removed and 21 are still standing as there is no functional need to remove them. 89 trees are not accounted for and the CF Shimla should carry out an enquiry to reconcile the numbers. (The project, however, has made full payment for all 852 trees to the Forest Deptt.). Compensatory plantation was required to be carried out over 108 ha. at a cost

Of Rs. 72.00 lakhs. The entire amount has been deposited by the company and the Forest Deptt. has

carried out plantation over the full 108 ha. in 11 beats in 2007-08. The CAT Plan was approved for Rs. 7.31 crores, against which the company has deposited Rs. 2.39 crores as per the phasing approved. The expenditure so far, however, has been only Rs. 3.50 lakhs owing to the funds being locked up in central CAMPA till last year. The approved APO for the current year, however, is Rs. 152.21 lakhs and half of this has also been released to the CF Shimla.

Our inspection of the project indicated that the terrain and the working conditions are not difficult, and therefore achieving environmental compliance is not as much of a challenge for the engineers here as it is for many other projects we have visited. Dumping of muck is not really an issue here; the number of approved Dumping Sites (DS) is 7 with a capacity of 9.70 lakh cu.m. The project expects to generate 12.00 lakh cu.m. of muck: about 3.00 lakh cu.m. shall be utilized for developing a play-ground for the local college(work on this is almost complete) and some more shall be used for making aggregate; the approved capacity, therefore, is more than adequate. We physically inspected 4 of these DS; two of these DS Rajkot and Hiuna have been closed and we were told that the reclamation and planting work would be done this monsoon. DS Mungra Dal has adequate protection but DS Katinda requires further raising of the toe walls and benching which the GM agreed to do immediately. There are 9 kms. of roads constructed by the project but since most of this is on the flood plain of the Pabbar river itself there is no problem here of the debris and loose soil rolling down into the river. There are a total of 6 labour camps and a labour strength of about 600 in the project, out of which 294 are local villagers who do not reside in the camps. For the remaining 300 or so labour the company has made arrangements for provision of LPG for cooking: from January this year, according to figures supplied by the GM, a total of 376 LPG cylinders have been supplied for the labour camps. There is no evidence of wood being extracted from the forests for the purpose.

We noted the following issues that require action by the management to achieve complete compliance of the environmental/ forest compliance:

- [a] The four foot high RCC pillars that were required to demarcate the diverted forest land have not been installed in all the places. This should be got done latest by 30.9.2010.
- [b] Since the entire reservoir area is in the possession of the project authorities the required Rim plantation should be carried out with the assistance of the Forest Deptt. in the coming monsoon.
- [c] There is no proper or environmentally sound disposal of solid waste from the labour camps: the

Waste is periodically collected, transported to and dumped in the nearby khads! The project should (

and were advised to) **put in place a three-tier system for disposal of solid waste- the bio-degradable matter should be used to set up vermi- composting pits (which could then provide organic manure for the plantations); the non-plastic, non-degradable matter should be burnt in proper incinerators; the plastic waste should be separately segregated and given to the PWD for use in metalling as per the latest policy of the state govt.**

[d] As in the other projects, here also we noticed a lack of clarity in the development of a mechanism for ensuring the release of 15% flow of water downstream of the dam. The project authorities have yet to incorporate a specific design for this in the dam structure, but during discussions with the committee indicated that this could perhaps be some kind of valve which could be opened to release the water, and shut when water was required to be stored for peaking purposes. According to us, such a mechanism would not be compliant with the condition that requires the 15% flow at all times. **What is needed is a mechanism built into the structure of the dam itself (such as the pipes in the Karcham Wangtoo project) below the spillway level that cannot be controlled by the project managers, and that would ensure a regular and uninterrupted flow of water.** The Environmental Engineer of the PCB who was accompanying the Committee was advised on the spot to pursue this matter with the project authorities.

[14] CHAMERA-III (231 MW) BHARMOUR, CHAMBA.

This project was visited on 13.7.2010. It is located on the right bank of the Ravi river and the project area falls in two forest divisions of Chamba and Bharmour. A total of 98.90 ha. of forest land has been diverted in two instalments and the clearances have been accorded on 19.9.2005 and 9.7.2009 respectively. **Compensatory afforestation was required to be carried out over 110 ha. in Chamba division and over 82 ha. in Bharmour division for which the entire amount has been deposited by the user agency. CA has been completed over the full 110 ha. in Chamba; in Bharmour afforestation has been done over 28 ha. and the Forest Deptt. proposes to cover an additional 20 ha. in the current year. 496 trees were enumerated for felling in Bharmour but all of them are still standing. Similarly, in Chamba division 954 trees were marked for removal and were handed over to the Forest Corporation for removal, but only 72 have actually been felled. It was stated by the project authorities that though they have made payment for all the trees they are asking for felling of only those that are inevitable, and most of them would be retained. This sense of responsibility**

towards the environment is really appreciable and one that needs to be emulated by the other projects.

The CAT Plan of the project was approved for an amount of Rs. 29.81 crores out of which the user agency has deposited Rs. 28.58 crores including equipment of Rs. 19.29 lakhs given in kind to the forest deptt. Only an amount of Rs. 1.22 crores remains to be deposited which the project authorities have assured to remit as per the phasing. The actual expenditure till 31.3.2010 has been Rs. 4.41 crore, and the APO for the current year has been approved for 2.33 crore. The progress may not look good on paper but is more than satisfactory considering that as per the approved phasing the whole amount is to be utilized by 2016-2017.

The project has been issued 17 Damage Reports in the last two years, imposing a penalty of Rs. 5.63 crores for illegal dumping of muck. The project authorities have contested these DRs. During discussions with them and the officers of the Forest Deptt. it emerged that the penalty was imposed because the project was found to have dumped muck in the approved dumping sites(DS) in excess of the stated capacity of these DSs. And the penalty was calculated on the basis of the excess cu.m.s. The version of the GM of the project was that they had carried out dumping only in the approved DSs; as regards their capacity he pointed out that at the stage of clearances the capacities are worked out only visually and on a tentative basis, and quite often they can accommodate much more muck than the stated capacities. The project should be fined only if the "excess" dumping leads to spillage of the muck. We found a lot of logic in this contention, especially as the Forest officers could not categorically state that spillage had indeed taken place in these particular instances. The CF Chamba was therefore asked to inquire into the matter afresh and in the meantime not enforce the recovery of the damages amount from the project.

The Committee examined in detail the status of muck disposal in the project. According to the DPR the project shall generate 24.63 lakh cu.m. of muck; of this 8.67 lakh cu.m. shall be reused as aggregate and a volume of 15.95 lakh cu.m. is required to be dumped in 19 approved dumping sites covering an area of 26 ha. The capacity of the approved DSs is 19.22 cu.m., and till June 2010 a total of 8.74 lakh cu.m. muck has been dumped in them. Owing to the tremendous lack of space in this gorge like terrain all the DSs are spread out along the course of the river, and this makes it absolutely imperative that strong retaining structures are provided to them to prevent spillage/ washing away of the muck by the river, especially during high floods. We inspected a large number of DSs and found that generally adequate protection has been provided to these DSs, with some

exceptions. Good toe walls have been provided in DSs 4,5,6,7 and 8. Good grid work has been provided in DSs 5,6,7, A-5, but it was found to be incomplete in 3. The company was advised to start geo- textile **netting work** in those DSs where the grid work is in place and where lifting of muck for aggregate making is completed- if they can expedite this then some plantation can also be carried out during this year itself. The DS 13, Addl DS-5 and Addl.DS A-1, however, were found to be in very bad shape: their toe-walls were broken and muck was found to be spilling into the river- the GM was advised to immediately replace the toe walls with RCC structures. DS-10 has been closed for dumping and has been largely stabilized- planting can be started on it the moment lifting of muck is finished here.

As regards release of 15% water downstream of the project we were informed by the project authorities that the design of the dam provides for insertion of a 600 mm. dia pipe into the dam face to ensure the discharge of 2.85 cumecs of water at all times. The PCB to ensure this at the relevant stage of construction. The location and dimensions of the reservoir are now known so the CF Chamba should **now start the process of implementation of two other conditions of forest clearance viz. the plantation along the rim of the reservoir** (for which Rs. 15 lakhs have been provided in the DPR), and the notification of the reservoir area as a Reserved Forest under the Indian Forest Act. The project was found to be compliant with other conditions relating to non- utilization of forest land for other purposes, non-location of labour camps in forest areas, provision of LPG for labour messing purposes etc.

The third TOR of the Court for this Committee- namely, whether it is advisable for the govt. to sanction hydel projects above a height of 7000 feet- requires a more detailed examination by experts in the fields of hydrology, geology, forestry, environment, zoology etc. This Committee is strongly of the view that the govt's present practice of indiscriminately allotting hydel projects all over the state without any consideration to their impact on the larger environment- which mere EIAs and EMPs cannot address- is short-sighted, unplanned and could result in serious depletion of the state's natural resources in the long run. This is not, however, an issue of altitude alone, as vulnerable areas in dire need of protection exist at even lower altitudes. Protection has to be provided, for example, to dense forests(which, according to successive reports of the Forest Survey of India itself, have been declining in HP year after year), protected wild-life areas, critical catchments of river systems, critical wild-life habitats outside Protected Areas, permanent glaciers,

alpine pastures and so on by declaring them as eco-sensitive zones under the Environment Protection Act. Only this would ensure that these vulnerable but vital natural buffers remain inviolate. Currently no area in the state- not even National Parks and Sanctuaries- are exempt from hydel exploitation, but this has to change, and change fast given the speed at which the hydel tentacles are crawling up the valleys and side valleys of the state. **This requires the setting up of an interdisciplinary body of experts in which the MOEF- which accords the final clearances-should also be associated. However, pending that, there are some recommendations which this Committee would like to make which need to be adopted immediately so that the environment of the state can be somewhat protected in the interim. These are listed out below:**

RECOMMENDATIONS.

[1] During our visits to the major river basins of the state- Sutlej, Beas and Ravi- we found that the main valleys have already been saturated with hydel projects every few kilometers and now projects are being allotted in ever increasing numbers in the side valleys of the tributaries. The effects of such large scale felling of trees, dumping of muck and diversion of waters over the entire river basins (not just a few isolated spots) has never been studied by the govt. before allotting these projects. **Individual EIAs and EMPs for individual projects do not address the larger concerns for , where environmental impacts are concerned, the whole is larger than the sum of the parts.** Unlike the pure manufacturing process where the incremental cost of production is always a declining figure, in matters of environment costs (such as in generation of hydel power) the incremental environmental cost is always an increasing figure as environmental impacts accumulate: in other words, the environmental cost of producing the second megawatt of power is more than that of producing the first megawatt. **The Committee therefore recommends that the state govt. should carry out basin-wide EIAs for all the river basins of the state, and till these are finalized no more hydel projects should be allotted or, where allotted, their clearances should be withheld.** [This is precisely what has been ordered by the Forest Advisory Committee of the MOEF in respect of more than 100 proposed hydel projects in the Ganga basin of Uttarakhand, as per a Times of India report on 17.6.2010.].

[2] Hydel projects have been/ are being allotted along rivers and their tributaries in a cascading manner, that is, one project after another in a series along the entire length of the river.

Since these are all Run of the River projects the waters are being repeatedly diverted from the river bed into HRTs(Head Race Tunnels), rendering the river itself dry for huge stretches (the 15% mandatory discharge from the dam is generally not being followed in most cases as mentioned in my report, or, where complied with, the discharge is so small that it makes no material difference). A typical ROR project consists of a Dam or Weir which impounds the waters which are then diverted away from the river into a HRT for a few kilometers, then dropped into a Powerhouse via a pressure shaft or penstock to turn the turbines, and then released back into the river through a tail race tunnel.

Where this process appears to be becoming an environmental hazard in HP is that practically no linear distance is being left between the tail race of one project and the intake of the next. This would eventually result in entire rivers drying up, their waters diverted into tunnels and serving no purpose other than the generation of power- certainly not what Nature had intended. This emerging environmental disaster-in-the-making is established by the survey of the Ravi valley carried out by us. The approximate length of the Ravi river between Chamba and Bajoli (upstream in Bharmour) is 70 kms. There are 4 HEPs sanctioned along this stretch- starting from the top these are: Bajoli-Holi (at clearances stage), Kuther(at clearances stage), Chamera III (under execution) and Chamera II (commissioned). When all these projects are commissioned there shall be only 500 m. of open river left between Bajoli- Holi and Kuther, 500 m. between Kuther and Chameralll, and 2kms. between Chamera III and Chamera II. In other words, in this entire 70 km. stretch, only 2kms. of the river shall flow in its original bed and 67 kms. shall disappear underground. This cannot be anything but an unmitigated disaster, for a river is not just a flowing mass of water- it is an entire eco-system, sustaining human, animal and rich aquatic life within it and along its banks, creating green belts of vegetation on both sides, re-charging underground aquifers, feeding surface streams, creating micro-climates along its path. And yet, the state or central governments have not carried out any EIAs of such a cascading pattern from independent experts before allowing this cascade of projects. A survey of the other river valleys would, we have no doubt, establish that precisely the same pattern is being repeated in them. The Committee therefore strongly recommends that some minimum riparian distance must be maintained between the tail race

... the project and the intake of the next in order to enable the river to recharge itself and to continue to sustain life along its length. Until some expert body gives its advice this distance should be kept at 5 kms. Projects which have not yet received clearances and which do not conform to this requirement should be put on hold until such time that this entire issue is fully examined and a proper policy framed.

01.07.2010



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10/07/2010