

**BEFORE THE NATIONAL GREEN TRIBUNAL  
PRINCIPAL BENCH  
NEW DELHI**

.....

**ORIGINAL APPLICATION NO. 161 OF 2014**

**IN THE MATTER OF:**

Bharat Jhunjunwala  
S/o Late Vishnu Dayal  
Lakshmoli, PO Maletha,  
Kirti Nagar, Dt Tehri,  
UKD 249161

.....Applicant

Versus

1. Union of India  
Ministry of Environment & Forests  
Through its Secretary  
Paryavaran Bhawan,  
CGO Complex,  
New Delhi - 110003
2. State of Uttarakhand  
Through its Chief Secretary  
Dehradun  
Uttarakhand
3. Jaiprakash Power Ventures Limited  
Through its Managing Director  
Sector-128, Village Sultanpur  
Noida, Uttar Pradesh-201304
4. Union of India  
Ministry of Power  
Through its Secretary  
Shram Shakti Bhawan  
Rafi Marg, New Delhi - 110001

.....Respondents

**COUNSEL FOR APPLICANT:**

Applicant in person.

**COUNSEL FOR RESPONDENTS:**

Ms. Panchajanya Batra Singh, Advocate for MoEF & CC i.e.  
Respondent No. 1.

Mr. U.K. Uniyal, AAG, Mr. Rajiv Nanda, Ms. Vishakha Poonia and  
Mr. Aditya Singh, Advocates for Respondent No. 2.

Mr. Pawan Upadhyay and Mr. Nishant Kumar, Advocates for Respondent No. 3.

Mr. Ardhendumauli Prasad, Advocate for Respondent No. 4.

## **JUDGMENT**

### **PRESENT:**

**Hon'ble Mr. Justice Swatanter Kumar (Chairperson)**

**Hon'ble Mr. Justice U.D. Salvi (Judicial Member)**

**Hon'ble Dr. D.K. Agrawal (Expert Member)**

**Hon'ble Professor A.R. Yousuf (Expert Member)**

**Hon'ble Mr. Ranjan Chatterjee (Expert Member)**

**Reserved on: 2<sup>nd</sup> September, 2015**

**Pronounced on: 24<sup>th</sup> September, 2015**

1. Whether the judgment is allowed to be published on the net?
2. Whether the judgment is allowed to be published in the NGT Reporter?

### **JUSTICE SWATANTER KUMAR, (CHAIRPERSON)**

The applicant, who is a former Professor of Economics at IIM Bangalore and is presently residing in Uttarakhand, states that he has written 3 books on hydro power and is involved in making efforts towards spreading awareness of the impacts of Hydro Electricity generation on the environment. It is also stated by him that he has been pursuing the cause of environment.

2. The applicant has approached the Tribunal under Section 14 (1) read with Section 15 of the National Green Tribunal Act, 2010 (for short 'Act of 2010') with a prayer that the Union of India, MoEF respondent no. 1, should be directed and ordered to remove the Vishnu Prayag Hydro Electric Project (for short 'the Project') located on the upper reaches of River Alakananda in Uttarakhand. He also prays for restitution of the environmental damage resulting from this project and order payment of compensation to affected parties in accordance

with the 'Polluter Pays Principle'. In the alternative, he prayed to commission a study of this project on various aspects including cost benefit analysis. Importantly he also prays:

“viii. The study may be required to assess the position under following alternative scenarios:

1. With project as present.
2. With implementation of mitigation measures.
3. With redesign of project.
4. With removal of project.”

3. The above prayer of the applicant is founded on the premise that the Project was granted Environmental Clearance on 30<sup>th</sup> November, 1995 and Forest Clearance on 06<sup>th</sup> April, 1998. The project was damaged in the floods that occurred in June, 2013. However, dam was restored and restarted its generation of electricity in April, 2014. The applicant has specifically stated that he does not challenge the Environmental Clearance or the Forest Clearance in the present application, but the various environmental impacts of the project which have come to light now, which were either not known or not appreciated in their perspective earlier are the primary issues being raised in the present application. According to the applicant, the only way of restitution of the environment is to remove the project and restore the environment and ecology of the area with a further direction to pay compensation.

4. The applicant contends that the new facts require relook at the efficacy of the project which has adverse and irretrievable negative environmental impacts, and are against the principle of Sustainable Development. The applicant while pointing out certain basic

infirmities and vital information to substantiate his plea has *inter alia*, but primarily, referred to the following-

- 1) Special Secretary, Energy, Government of Uttar Pradesh declared the project area as 'No Development Zone' vide his letter dated 23<sup>rd</sup> August, 1995. Besides such declaration, development activities are continuing upstream at GMR Alaknanda Project and downstream at Vishnugad Pipalkoti Project. Activities on these projects examined co-jointly with the Project would have serious adverse environmental impacts.
- 2) The Chief Conservator of Forest (Wildlife), Lucknow vide its letter dated 21<sup>st</sup> September, 1995 informed respondent no. 1 that a proposal of Rs. 340 lakhs was required for wildlife protection. This proposal makes only a passing reference to Terrestrial Biodiversity in terms of study and does not assess impact of the project on the same. The Environmental Management Plan (for short 'EMP'), submitted by the Project Proponent to respondent no. 1 for grant of Environmental Clearance in 1995 had suggested various steps that were required to be taken by the Project Proponent in relation to sediments and slope stability which have not been taken by the Project Proponent.
- 3) The project is at a distance of 40 Km from Nanda Devi Biosphere Reserve but it is nowhere stated whether it is from the border of the Reserve or from the center of the Reserve.
- 4) The EMP was deficient in many ways. It does not give correct information about the flora biodiversity and minimum lean season flow in the river. According to the applicant there was

even zero e-flow being released by the project leading to a threat to aquatic life. Respondent No. 1 Ministry of Environment and Forests (for short MoEF&CC) has recommended e-flow in the range of 20%-30% in March, 2013.

5) The Forest Clearance for diversion of 80 hectares of forest land to the impugned project was granted on 6<sup>th</sup> April, 1998 which provided that the Project Proponent should carry out compensatory afforestation on equivalent non forest land which would be declared as protected forest. No harm to the property was permitted, however, the same had not been fully complied with.

5. The Wadia Institute of Himalayan Geology had prepared a report on Geo-technical and seismotectonic feasibility of the project. However, finally it did not make any assessment of impact of events like floods in 2013 and landslides and flow of boulders.

6. The Chief Wildlife Warden of Uttaranchal also constituted a Committee which visited the site on 21<sup>st</sup>/23<sup>rd</sup> October, 2003 and the report indicated that the construction activity by the Project Proponent had resulted in initiation of the land slips and slides in and around the project area and that the eco-system of the area is fragile. The respondent no. 1 had undertaken an inspection of the project and found that CAT Plan has not yet been fully implemented; development activities are continuing up stream in violation of the commitment by the State Government, seismic arrays are not installed and multi-disciplinary committee meeting details are not available. Lastly, the

applicant with some emphasis challenged the ground of Environmental Clearance on cost benefit analysis. According to the applicant, the annual generation of electricity is about 2 billion units per year. The benefits to the society are assessed at 1.6 billion or Rs. 186 Crores per year at a social benefit of Rs. 0.95 per unit. This statistic show that there has been no proper cost benefit analysis and the project would be one of recurring disadvantage in this regard.

7. Contra to the submissions of the applicant, respondent no. 3 has contended that the original project report for Vishnuprayag Project was submitted to the Uttar Pradesh Government in the year 1965, proposing a construction of 61.3 m high dam. Government of India advised that the site was not suitable for dam of such height. Accordingly, revised project report was submitted in 1971 with a barrage proposal. The project got Environmental Clearance on all environmental aspects in the year 1978. Later, based on CEA observations the Project was again revised in 1982 duly utilizing the water from Bhuinder Ganga as well. As Department of Environment objected to the diversion of water from Bhuinder Ganga, the revised project proposal was withdrawn by Uttar Pradesh State Electricity Board in 1986. Thereafter, Government of Uttar Pradesh submitted a Project Report in 1987 with barrage proposal. Ministry of Energy announced policy decision of allowing private sector participation in power generation. MoU was signed between the Government of Uttar Pradesh and Jaiprakash Industries Ltd in 1992 for implementation of the project. The project in question was with the capacity of 400 mega watts and it was commissioned in the year 2006, ahead of the

scheduled date and since then has been generating 2000 million units of power every year out of which 12% goes to Government of Uttarakhand free of cost and the balance power is supplied to UPPCL at a competitive rate of Rs. 2.50 per Unit. It is averred by this respondent that as per study carried out by Central Electricity Authority during 1978-87, total hydro electric power potential in the country was assessed as 84044 MW i.e. about 14000 MW installed capacity from total of 845 identified hydroelectric schemes. There has been a decline from 37.30% at the end of 1947 to 17% presently of the total generation. This has necessitated the formulation of Hydropower Policy of 2008 by Government of India.

8. The project was constructed after due environmental impact assessment of the project which was done by M/S India Hydrology Services in 1995. The project was granted Environmental Clearance and has been in operation for a considerable time. According to the Project Proponent the project has a barrage as primary diversion structure and keeping the meagre storage behind the same in view, the project storage did not add any additional water to the floods of June 2013. Also, Barrage site is located in a favourable topographic configuration and there is no indication of direct avalanche hit from abutments, as revealed by presence of normal growth of trees. The construction of barrage did not pose any problem due to compact nature of rock. General trend of foliation planes in the rocks varies from  $N70^{\circ}W-S70^{\circ}E$  to  $E-W$  and amount of dip varies from  $30^{\circ} - 60^{\circ}$  in northerly or upstream direction. Maximum size of boulders during

high flood, which is not likely to be more than 1 meter in size, will pass through barrage with gates fully open during high floods.

9. According to the Project Proponent, landslides hazard have been restricted to three land slide zones of Lambagarh, Belakuche and Patalganga. It is expected that after proper engineering treatment, slopes even at these locations will get stabilized. Keeping in view various benefits from the forests, the sites for barrage, switchyard and quarries have been so selected that there will be no loss to any tree or plant of any rare or endangered variety.

10. In the EMP, it has been mentioned that Nanda Devi Biosphere Reserve is 40 Km away from the work site. It has been certified by the Regional Forest Officer, Badrinath forest range and Deputy Forest Conservator, Nanda Devi National Park part of Nanda Devi Biosphere Reserve (for short 'the Park'), Joshimath that the forest area required for the project is not a part of the Park. Adequate water is available to support present consumptive and non consumptive use on the downstream. Minimum 0.14 cumec water is being released as e-flow for maintenance of aquatic life. E-flow range of 20-30% given in the Inter-Ministerial group on issues relating to river Ganga is recommended. The Chief Wildlife Warden Uttaranchal constituted a committee to assess if the erosion problem around Joshimath had any connection with activities of the project and to suggest measures for their control, if any. The Committee visited the project area on 21<sup>st</sup>/23<sup>rd</sup> October 2003. Main recommendation of the Committee was that the preventive treatment of the erosion problem of the area in



question needs to be addressed through the revised Vishnu Pragyag CAT plan. It is averred by the Project Proponent that he has made entire payment as stipulated in CIATP to the forest department. It is the case of the Project Proponent that the cost benefit analysis has been prepared in respect of projects which have already been commissioned. The entire project construction activity was taken up with due care. Revised CAT plan was executed by the State forest department and compensatory afforestation has been completed in Hardoi district.

Thus, according to the Project Proponent all the pleas raised by the applicant are without any substance and in fact the averments made are misleading. The applicant has not raised any challenge to the grant of Environmental Clearance and therefore cannot be permitted to challenge the operationalization of the project in relation to EMP. The EMP was prepared and approved in 1995, and the applicant has challenged the functioning of the project after 8 years since its operation. The project has been completed at a cost of 16 crores. Issue in relation to construction of Hydro Electric Projects in Uttarakhand is pending before the Hon'ble Supreme Court of India in C.A No. 6736 of 2011 in the case of *Alakhnanda Hydro Project vs Anuj Joshi and Others*.

11. It is also stated by the Project Proponent that still, the applicant has without any jurisdiction picked up the present project alone, though the project has been performing satisfactorily. The Project Proponent has also taken up the stand that the application is barred by time. According to him, the project was conceived in 1965, all

clearances were granted by the concerned Government/Authorities and was commissioned in the year 2006. Therefore, the present application is not only barred by time but is even misconceived.

12. Respondent No. 2 has filed an independent reply contending that the applicant has tried to mislead the Tribunal. There have been no environmental issues in relation to the project since April, 2014. The Project was accorded approval upon due diligence. Chief Conservator of Forest (Wildlife) gave due importance to conservation of biodiversity in the area by giving a broad outline of the ways and means of protecting flora and fauna and by proposing a study. The issues with regard to terrestrial biodiversity were duly dealt with in the EMP. The project does not fall within the boundary of the Park but it is just at the boundary. The Project falls within 'No Fish Zone' (As per WII 2012 report). The project authorities are releasing 0.14 cumec water downstream of the barrage. There are a number of perennial feeder channels joining the river that caters to the ecological requirement of flora and fauna of the concerned area. The 17 species of fishes given in EMP are common fishes found in Alakananda river. The Project Proponent has paid Rs 12 lacs to Wadia Institute of Himalayan Geology who completed the study and submitted report on geo technical and seismotectonic feasibility. Treatment of landslides has been carried out by the Project Proponent. Number of check dams, various soil and moisture conservation work and other necessary precautions and steps to safeguard the slides have been taken. It is the case of Respondent No 2 that e-flow requirement is specific to the ecological conditions of a particular stretch of a river and the e-flow

recommended in the range of 29-47% at Rudraprayag cannot be assumed to be applicable to the project in question. Compensatory afforestation has already been done by Government of Uttar Pradesh in Hardoi district. The reference made by the applicant to 'Economics of Hydropower' is the view of the applicant and therefore cannot have any valid reference to the matters in issue. The requirement and standards for removal of dams in USA cannot be applied to climatic, ecological and socio-economic conditions of the Himalayan region. At this stage, removal of the project will lead to tremendous and irretrievable damage to the environment, as the tunnels cannot be refilled. Various studies have been carried out in relation to various aspects of the project and the Project Proponent has taken adequate measures in furtherance thereto. The findings of the Expert Committee given in April 2014 relates in general to the construction of Hydro Power projects in Uttarakhand. They have been submitted and are under consideration before the Hon'ble Supreme Court of India.

13. MoEF, respondent no. 1 has stated that vide letters dated 15<sup>th</sup> October, 1996, 19<sup>th</sup> March, 1997 and 18<sup>th</sup> February, 1998 prior approval was accorded under Forest (Conservation) Act, 1980 for diversion of 80 hectares of forest land to the Project Proponent for 30 years for construction of the project in district Chamoli, Uttarakhand. Environmental Clearance was accorded on 30<sup>th</sup> November, 1995. Compliance to the conditions contained in these permissions is being monitored periodically. The Ministry is also formulating the revised guidelines for preparation of cost benefit analysis. In furtherance to the order of the Hon'ble Supreme Court of India dated 13<sup>th</sup> August

2013 in SLP Civil Appeal No. 6736 of 2013 (SLP (C) No 362 of 2012) it has been directed to constitute an Expert Committee which was constituted on 15<sup>th</sup> October, 2013 and the Expert Body has submitted its report to MoEF on 16<sup>th</sup> April, 2014. Two members representing CWC and CEA submitted separate reports with divergent views to the Hon'ble Supreme Court of India and the Hon'ble Supreme Court of India vide order dated 7<sup>th</sup> May, 2014 directed MoEF to examine both reports. The matter has been referred to the consortium of 7 IITs by MoEF which submitted an opinion report. The Tribunal on 24<sup>th</sup> April, 2014 in the case of *Vimal Bhai v Jaypee Associates & Ors.*, OA No. 322 of 2013 had directed MoEF to inform the Tribunal after due inspection whether any muck has been put by Project Proponent on river bed and if so, its extent and remedial measures required. MoEF had submitted the report after inspecting the site on 17<sup>th</sup> May 2014 which is as follows:-

“As mentioned in earlier site inspection report which was conducted on 08<sup>th</sup> December, 2013. After devastation of Vishnu Prayag Region on the 16<sup>th</sup>-17<sup>th</sup> June, 2013 the dam site was filled with huge amount of silt, boulders (small & big), pebbles, trees etc. i.e. called as River Bed Material (RBM). The total quantity of RBM which is necessarily required to be handled for the above purpose works out to about 4 lac cubic meter. In addition, another about 1 lac cubic meter of RBM is likely to be available from the deposited RBM in the original river course near Lambagarh as informed by project authorities. Use of RBM as informed by project authorities is as follows at present:

1. Small amount of RBM for the reconstruction of the project site (15, 000 cubic meters) and its approach road from steel bridge i.e., around 1.5 Km of stretch (50, 000 cubic meter).
2. About 4, 00, 000 cubic meter of RBM in restoration works near Lambagarh Village where river has changed its course due to floods in June 2013 and washed away National Highway and project land

where Project services were located and part of Lambagarh Village.

3. About 30, 000 cubic meter of RBM is also being used by BRO (Border Road Organisation) for the construction of washed NH-58 near the project site and for reclaiming of the left eroded side of the barrage.

During the current site inspection conducted on 17<sup>th</sup> May, 2014 it has been noticed that the major RBM are removed or in process of removing from the River Bed area. Detail RBM utilised in different location/area is given below and copy of map which has been duly signed by District Magistrate, SDM and Dy. Conservator of Forests, Nanda Devi National Park, Joshimath is also enclosed:

1. For repair of barrage and appurtenant work: 0.15 lac cum
2. For restoration of NH-58 as required by BRO: 1.76 lac cum
3. (A) Flood material utilized in Lambagarh village: 1.07 lac cum  
(B) Flood material utilized D/S of barrage (CH 200 meter to CH 900 meter): 0.89 lac cum  
(C) Flood material utilized in barrage complex: 0.08 lac cum  
(D) Flood material utilized in D/S of barrage (CH 900 meter to CH 1800 meter): 0.88 lac cum  
Total = 4.83 lac cum
4. Utilization of additional quantity of available RBM from Lambagarh village: 1.0 lac cum

In addition to above RBM utilization, project authority has also used/is using RBM for the construction of retaining wall/sausage-gabion walls as required specially in left as well as right side of River Alakananda. They are in process to restoring the natural course of river in the village Lambagarh which got diverted on the right side by putting/debugging the boulders and pebbles.

Overall, no such RBM has been put in downstream (D/S) of the barrage by the project authorities to restrict the natural flow of River Alakananda. RBM present on the downstream of the barrage may have come after the June, 2013 disaster or by displacement during the process of making retaining wall/sausage-gabion walls etc.”

14. From the above pleaded case of the respective parties, it is evident that the applicant has raised challenge to the continuation of the project on the following grounds:

- 1) Cost benefit analysis is opposed to the continuation of the project.
- 2) The project falls within the Nanda Devi Biosphere Reserve or buffer zone thereof.
- 3) The running of the project would have adverse environmental impacts upon the environment and ecology of the area which is an eco-sensitive area. It is not possible to take any mitigative steps.
- 4) The wildlife connectivity to the river has been completely hampered.
- 5) The restricted e-flow is adversely affecting the downstream and is causing damage.

15. We can proceed to discuss all the above challenges by the applicant cumulatively. The EMP submitted in April, 1995 dealt with all the precautionary and other appropriate measures required to be taken by the Project Proponent in order to ensure that there were no irreparable environmental and/or ecological damages. The three landslide zones at Lambagarh, Belakuche and Patalganga have been identified for stabilization to offset the direct impact of the landslides on the project. The implementation of monitoring plan will ensure maximum utilization of resources. The implementation of the project was not to alter the existing land use pattern of the region and about

80 hectares of land has been earmarked for compensatory afforestation in Andharra village. There is no dislocation and displacement of population. It was also stated that the Nanda Devi Biosphere Reserve is 40 km away from the work site. It was certified by Regional Forest Officer, Badrinath forest range and Deputy Forest Conservator, the Park, Joshimath that the forest area required for the project is not a part of the Park. In the report of Wadia Institute of Himalayan Geology of 2003, it was recommended that the local seismicity behavior of micro earthquakes recorded during the study period suggested no immediate threat to the project. Thus, it was suggested that it was important that the structures in the project area be made to withstand the accelerations which may be produced by such an earthquake. During the inspection, it was brought to the notice of the Committee and the local community representatives that the active and positive participation in the revised Vishnuprayag Catchment Treatment Project will go a long way in bringing the overall development in all villages of catchment and impact area of Vishuprayag Hydroelectric Project. They noticed that construction activities by the project at entrance point of water and at different adit points have also resulted in destruction of groundwater and initiation of the landslips and slides in and around the project area and this area includes Joshimath town also. One of the main reasons for sinking and landslides of Joshimath township area is the hydrological conditions in which the surface as well as sub-surface run-off is causing slumping of the land mass. Considering these aspects, the Committee suggested that an integrated and comprehensive eco-

restoration program should be undertaken by the treatment of the area in question and Joshimath Township should not be neglected. The landslide affected areas should be treated in an integrated manner, using bio-engineering approach. A better understanding between the Project Proponent and local stake-holders is needed to remove apprehensions of the local people about adverse impacts of the project. The prevention of erosion program of the area in question needs to be addressed through a revised program. On 22<sup>nd</sup> May, 2009, Government of India, MoEF, submitted the Monitoring Report, where it was noticed that some of the conditions imposed had been complied with fully, while, some others were partly complied. It was stated that the restriction in relation to no development activity in upper catchment area had not been complied with. In its conclusion, it was noticed that the project has been completed and is in operation. Most of the conditions had been complied with and minor violations were detected for which the Project Proponent was directed to comply with.

16. The applicant has only placed general studies on record to show that hydro projects in eco sensitive area are not a safe option. All these studies are generic, and are not project centric. We are quite in agreement with the respondents that the studies carried out in US by itself cannot be made applicable to the project in hand. These studies are of some consequence when the project is conceptualized. The project before us had been completed in the year 2006 and immediately thereafter had become operational and has been operating successfully now for all these years. No study or definite



material has been placed before the Tribunal which would show that the project causes an imminent threat to the environment and ecology. There is nothing on record to show that there have been some adverse impacts upon the areas in question since operation of the project.

17. The EMP had fully dealt with the Water Availability, Quality and Use Management Plan. It noticed that consumptive use of water is minimal and non-consumptive use of water is much greater than the consumptive use. A major water use will be the generation of hydro power. It is planned to release a minimum of 0.15 cumec of water during lean season, which was to be augmented by the micro watersheds and tributaries of Alakananda downstream of barrage. To determine the effect of the project operation on water availability continuous check on parameters was ensured. The report also dealt with wildlife and aquatic ecology. Having examined the various aspects and concerns of environment and ecology, in relation to the project in question, it is evident that most of the contentions raised by the applicant are without any substance. They are founded more on apprehensions and studies which do not have direct bearing in relation to the project in question. The matters which required further deliberation are with regard to the location of the project from Nanda Devi Biosphere Reserve, effect of cost benefit analysis, approach or connectivity of the wildlife to the water bodies and restricted e-flow. As per the EMP the project is stated to be 40 km away from Nanda Devi Biosphere Reserve. The applicant had submitted an RTI application to the office of the Deputy Conservator of Forest, the Park,

Joshimath stating an enquiry about the location of the project. Vide reply dated 24<sup>th</sup> August, 2014 the department had answered the query that the barrage of the project is located within the buffer zone range of the Nanda Devi Biosphere Reserve.

18. In the reply filed on behalf of respondent No. 2, it has been stated that the project does not fall within the boundary of the Park. However, the project barrage is located near village Lambagarh that is located just at the boundary of the reserve. It is further stated that the reserve is not a legal entity and is only a management unit proposed by the UNESCO. Thus, it is clear that the project is more than 40 km away from the reserve; however, the barrage is located just near the boundary of the reserve. Undisputedly, the Nanda Devi Biosphere Reserve is an important high altitude Himalayan protected area identified by UNESCO and is one of the least disturbed protected areas of the world. It is also a well-known fact that the Nanda Devi Biosphere Reserve has been divided into three zones viz. core zones (national parks), buffer zone and transition zone for management and conservation. There are two core zones, i.e., the Park (NDNP-Core Zone 1) and Valley of Flowers National Park (VoFNP-Core Zone 2) and both of them are internationally recognized for their unique and pristine natural landscapes, biodiversity and scenic beauty. Both the core zones are declared as UNESCO's world heritage sites. The buffer zone surrounds the core zones from all sides, whereas the transition zone mainly lies in the southern parts of the buffer zone. The core, buffer and transition zones are managed in such a manner that pressure of human activities gradually decreases from transition to

core zone. Consequently, there is very low pressure in the core zones, followed by relatively high pressure in buffer zone and higher pressure in transition zone. A wealth of information on various aspects of Biosphere Reserve and National Park is available in public domain and therefore, the stand of the applicant that disputed facts emerge from EMP of the project and his RTI query are of no help to him for the simple reason that he claims to be a vigilant public spirited person, who is expected to be fully aware of these facts. It would have been appropriate for the applicant to disclose the relevant information before he could make a serious prayer for demolition of the project before the Tribunal. There is no material variation in the pleadings of the parties and the documents placed on record, however, this cannot be an aspect which would call for remedying of the hydro project. This aspect can be examined and if any further mitigating measures are needed they can be taken so that the project continues to function without any damage to the ecology.

19. The applicant has also placed on record Assessment of Cumulative Impacts of Hydroelectric Projects on Aquatic and Terrestrial Biodiversity in Alakananda and Bhagirathi Basins, Uttarakhand by Wildlife Institute of India. This report shows the criteria for impact indicators, including terrestrial biodiversity, aquatic biodiversity, their evaluation and the mitigating factors. The recommendations made in this report provide regulatory options that are available to the authorities. This does not deal with the impacts of the project in hand as well as the regulatory measures that should be taken in regard to this project. In reply of respondent no. 3, it has

been stated that the revised Catchment Area Treatment (CAT) Plan prepared by various department with the approval of the MoEF is operative for a period of 10 years at a revised outlay of Rs. 400 lakhs. This amount has already been paid by the said respondent and the recommendations have been fully carried out.

20. In regard to e-flow of the river, the stated percentage of 29% to 47% is at Rudraprayag location, which is in the downstream and quite far from the project site. The E-flow requirement is specific to the ecological conditions of a particular stretch of a river and it depends on the local environment, ecological condition, aquatic life, topography of the stretch, climatic condition, river slope, river velocity etc. and it is only possible to maintain the e-flow at 0.14 cumec at the project site.

21. It is interesting to note that the applicant is seeking decommissioning of the project on account of the fact that major devastation took place in Uttarakhand due to unprecedented rainfall and floods in June 2013. During the tragedy unprecedented flood passed through not only the project in question but the entire Uttarakhand. It is reported that in the Mandakini sub-basin, the maximum 24 hours of rainfall (148 mm, having a return period of 500 years) occurred on 16 June, 2013 but the flood peaked on 17 June, 2013 due to the addition of Glacial Lake Outburst (GLOF). Due to the GLOF event, the flood peaked up to 3688 cumecs next day against a lesser 24-hour rainfall of 115 mm which is even slightly more than the projected 1000 year return period flood (3661cumecs). It is important to note here that normally any dam/barrage is designed to handle a

peak flood of 100 years return period and including free board, it is taken as 500 years return period. In a situation, where the peak flow to be handled is for 500 years return period, a flow event of 1 in 1000 years occurs and the structure has been able to handle it, of course with failure of slopes on either bank due to rise in water level, one should consider it to be a better thing to occur. Of course, what might be needed is, provisioning of additional safety measures apart from restoration of damaged protective measures as more important things rather than arguing for decommissioning of the structure.

22. In order to appropriately deal with the contention of the applicant that it was impossible to take any mitigation measures and the dam should be decommissioned like in USA where large number of dams have been decommissioned, it would be worth observing that dam decommissioning in itself is a full-fledged project that requires specific scientific inputs apart from consideration on financial implications. It may not be factually incorrect to say that a number of dams have been decommissioned in USA but what is more important is to know the reasons for such decommissioning. It is not necessary for us to deal with each and every project that has been decommissioned in USA for two reasons. Firstly, it is sufficient to say that such decommissioning was on account of completion of effective life span by the projects in some cases and on account of restoration of aquatic ecology, in other cases. Also, these plants did not have provisions for fish-pass and e-flow as environmental considerations. Secondly, the ecological and hydrological conditions of both the

countries are markedly different. This would be quite clearly demonstrated by the following table that deals with some of the dams.

### **List of Dams Decommissioned in USA**

S. No.	Name of Dam	Commissioning Date & project description	Decommissioning Date	Reason for Decommissioning	Age of dam in years approx.
1.	Dewey No. 1, Denver, Colorado	Built around 1900, 15-feet high and 3600- feet long.	December 2014	Outliving its original purpose.	114
2.	Ceresco Dam, Kalamazoo River, Michigan	Originally built around 1906 for hydropower purposes, 23-feet high and 350-feet long concrete dam.	June 5, 2014.	Restore a natural flow regime and sediment transport; and improve habitat for fishing and paddling.	108
3.	Rockford Dam, Shell Rock River, Iowa.	Built around 1872, 8 feet height by 170 feet length originally provided water power for a grain mill.	2014	The structure had fallen into disrepair and needed to be removed. This project opened up 60 miles of seasonal habitat for mussels and several native fish like smallmouth bass, walleye, and rock bass.	142
4.	Washburn Mill Pond Dam, Salmon River, Maine	Built in the late 1800's	March 2014	Was removed to reconnect 20 miles of stream for the benefit of Atlantic Salmon and Eastern Brook Trout. This removal also improved fishing, reduced maintenance costs, and improved public safety.	214
5.	Elwha and Glines Canyon dam	Built in 1910 & 1926, 65 m dam height, 28 MW hydroelectric project	2012	Restore the river and fish runs	86
6.	Condit dam	Built in 1913, 38 m dam height, 14 MW	2009	No longer economically viable with rising environmental costs	96
7.	Barr Slope Reservoir	Constructed in 1908 for water supply, 27-foot tall, 320 foot long.	2009	Removed because of safety concerns.	101
8.	Hemlock Dam, Trout Creek, WA.	Originally built in 1935 for power generation, the 25-foot high.	2009	To eliminate safety concerns at this high hazard structure and to restore migratory fish habitat. The removal of the dam restored 15 river miles and improved habitat for steelhead trout.	74
9.	Maple Gulch Diversion Dam, Evans Creek, OR.	Dam was built in the early 1900s. This 13-foot concrete dam to supply water for a schoolhouse. and fish passage.	2002	The dam, which was no longer serving its original purpose, was removed to restore natural sediment flow	102
10.	Oriente dam	Built in 1947, 13 m dam height	2001	Flood damage	54
11.	Newport No 11	Built in 1957, 6m high, 1.8 MW Hydroelectric Project.	2000	Partially collapsed	43

23. Another important fact is revealed from the Guidelines for Dam Decommissioning Projects framed recently in July 2015, by the Committee on Dam Decommissioning of the United States Society on Dams (USSD) which takes into account various research studies, provides following summarized points for consideration:

24. Dam removal or decommissioning, as described in the Guidelines, can range from a partial breach of the dam to full removal of the dam and appurtenant facilities. The guidelines illustrates as follows:

#### 1. FACTORS TO CONSIDER FOR DECOMMISSIONING A DAM

The decision to decommission a dam should be based on a careful evaluation of a wide range of potential structural and non-structural alternatives:

- Rehabilitation
- Replacement
- Removal
- Reservoir re-operation
- No action

The primary factors in a decision to pursue decommissioning depend in part upon the type of dam ownership (whether public, private, or abandoned) and may also include the following:

- Public safety requirements to avoid potential dam failure.
- Fish passage requirements for migration of protected species.

- River restoration requirements for improved water quality, aquatic habitat, and sediment transport.
- Potential public benefits for fisheries, recreation, navigation, and aesthetics.
- Economic considerations to avoid the high costs of operation, maintenance and repair due to dam obsolescence.
- Funding availability and source for project financing.
- Potential owner benefits from the reduced risk and liability and from improved public relations.
- Potential environmental impacts associated with project alternatives.

## 2. PROJECT PLANNING AND DECISION MAKING

- Identification of a problem with an existing project i.e., public safety, fish passage, etc.
- A clear statement of the purpose and need for the proposed action
- A list of specific project objectives should be developed to expand on the purposes of the project and to help develop an appropriate range of project alternatives.
- Evaluating project alternatives against the project objectives to aid decision makers in preparing their findings.
- Involvement of applicable Federal, State, and local government agencies, stakeholders, nongovernmental organizations, Native American tribes, local watershed councils, and private citizens.



Finally, coming to the cost of decommissioning of dams, there is some evidence that dam removals are getting costlier with the passage of time. Prior to 1999, removal costs were typically less than 10% of the cost of building an equivalent hydroelectric scheme of the same installed generation capacity. Since 1999 the cost of dam removals has increased, typically costing 20-40% of new construction costs. The case study of Elwha Dam (built in 1910) and Glines Canyon storage dam (built in 1926) reveals that these projects produced a combined total of 28MW of electricity. But since they isolated spawning areas in the headwaters of the Elwha River for several threatened fish species and outlived their design life, they were proposed to be removed with a total of US \$308M. The experience showed that the works were adversely affected by high sediment loads in the first few years after dam removal. In fact, the cost of removing the dams and works to stabilise silt in the Elwha reservoirs represents a minority of the overall cost. Excluding purchase of the hydro schemes, the estimated cost of the Elwha removal project is 181% of cost of building equivalent new hydroelectric power plants.

25. In view of the above discussion, we find absolutely no substance in the contention of the appellant that it is not possible to take additional or more effective mitigative steps and the hydro project needs to be demolished. This argument suffers from an inbuilt contradiction and even greater consequences. For the sake of an argument, even if we assume that there is some merit in any of the contentions raised on behalf of the applicant, even then, directing

demolition would cause much more environmental degradation, generate huge debris, C&D waste which the valley itself may not be able to handle. There will be huge economic loss and it would also result in serious deficiency in power generation. Such an approach would entirely be opposed to the principle of Sustainable Development, particularly, when taking of some regulatory or mitigative steps, if suggested, would protect the environment, ecology, aquatic and river bio-diversity with due regard to economic factors.

26. The application is also opposed on the ground of limitation and on the ground that it is mala fide. This application is based upon few factors, one disclosure of facts by the department in response to RTI query raised by the applicant on 30<sup>th</sup> January, 2013, the floods and natural calamity of June, 2013, repairing and restoration of the plant and the recommencement of operations in the beginning of 2014. The application has been filed within six months of such operations. As such, the petition cannot be held to be barred by time, particularly, in view of the fact that the applicant had prayed for remedial and protective steps to be taken by the Project Proponent. Besides the above reasons, another reason for which we would decline the substantive prayers of the applicant is that he has failed to disclose all reports and complete information which normally a person of his

interest and academia would be expected to know. The applicant has not been able to establish clearly before the Tribunal that undoubtedly there are risks and adverse environmental and ecological impacts on the eco-sensitive area or that the project can be termed as a hazardous project, substantiating his plea for decommissioning of the project.

27. Thus, while we find no merit in this application of the applicant to grant the prayed relief of decommissioning of the dam, however, we constitute the following Committee to suggest if any further mitigative and regulatory steps are required to be taken by the Project Proponent in the interest of environment, ecology and aquatic biodiversity.

1. Chief Wildlife Warden, Uttarakhand.
2. Principal Scientist, WII, Dehradun.
3. Director, MoEF (Involved in Hydro-Power Projects).
4. Principal Scientist, Wadia Institute of Himalayan Geology.

This Committee would spell out the precautionary and mitigative measures if any, required to be taken by the Project Proponent, particularly keeping in view the fact that the barrage is closer to the boundary of the Nanda Devi Biosphere Reserve.

The Committee shall also make suggestions in regard to maintenance of e-flow in the river, providing unobstructed river access to the wildlife and for stabilisation of slope points.

28. The precautionary and mitigative suggestions so issued by the Committee shall be treated as directions which should be carried out by the Project Proponent within three months of the issuance of such directions.

29. The application is disposed of with the above directions and no order as to costs.



**Justice Swatanter Kumar  
Chairperson**

**Justice U.D. Salvi  
Judicial Member**

**Dr. D.K. Agrawal  
Expert Member**

**Professor A.R. Yousuf  
Expert Member**

**Mr. Ranjan Chatterjee  
Expert Member**

**New Delhi**

24<sup>th</sup> September, 2015