

Save Himalayas, Soil, Water and Pure Air

Contents

Preface		
S. No.	Article	Page No.
1.	Tehri Dam And High Dams In Himalaya	3
2.	High Dams in Himalaya	9
3.	Are Big Dams Necessary?	26
4.	Reservoirs of Sorrow, The Karma of Dams –Shekhar Singh	30
5.	Chipko Revisited –Sonali Bisht	35
6.	The Trouble With Tehri –Bharat Dogra	38
7.	Tehri Dam Faces Quake Risks	40
8.	‘The Life of the Tehri Reservoir, Can’t be more than 20 years’	43
9.	Hazards of Tehri Dam –Bharat Dogra	50
10.	Review of Tehri Dam Project –Sunderlal Bahuguna	52
11.	Lord of The Hills –Sharad Gupta	60
12.	Citizens Condemn Bahuguna’s Arrest	66
13.	Listen to Bahuguna	68
14.	Save Bahuguna’s Life	70
15.	An Open Letter To Members of Parliament –Sunderlal Bahuguna	72
15.	Pingalwara Diary	79

Preface

I acknowledge Shri Sunderlal Bahuguna a great teacher who has taught me the significance of the forests and their indispensability to all living beings. Though I already knew the dangers involved in deforestation, yet I seldom felt so deeply concerned until I was made aware through his writings of the serious repercussions accruing of felling trees mercilessly. He delineates his view in suave and lucid genre and convinces his readers and listeners of the enormity of depleting nature.

The leader of the Chipko movement of the Himalayan villagers, Sunderlal Bahuguna, is impetuously spear-heading the cause of ecology and environment and fostering awareness of environmental health among the people. He reiterates that the first product of a tree is not timber which hardly amounted to 0.3% of its total potential. The first products of the tree are soil, water and oxygen which rightly claim more than 99% of the price-tag put on the good and service.

Dr. Inderjit Kaur,
President

All India Pingalwara Charitable Society (Regd.)
Amritsar.

Tehri Dam And High Dams In Himalaya

**Sunderlal Bahuguna, Save Himalaya Movement,
Ganga Himalaya Kuti, Tehri, Pin 249001 (Himalaya)
India.**

Leaders of the Asian countries will not believe but the March 1994 issue of Geographical Magazine under the head 'Hydrology' has published the following news item.

“The French Government is to demolish two dams in the upper Loire watershed to allow the way for migratory salmon. It has also cancelled two further flood control dams, Serre da la Fare and Le Vensdre”. In Asia and specially in countries getting water from the perennial snowfed rivers of Himalaya at least 22 large dams have either been constructed or are planned highest of which is 293 metres (Bajargai on Kabul in Afghanistan) see Appendix-I. Some of the high dams proposed are over Manas (India) 275 metres, over Karnali (Nepal) at Chisapani 270 metres and 260.5 metre high Tehri dam on Bhagirathi (India) is under construction. In India alone, besides Bhakra and Pong in H.P., which had been constructed in sixties, 36 storage dams for hydro-power generation in the Brahmaputra, Ganges and Indus basins are under planning, construction or operation. (See Appendix-II).

After the construction of Hoover dam in U.S.A. in 1935 and Tennessy Valley Authority, which converted the desert of Arajona into fertile land and made U.S. the top military power, madness to build high dams spread all over the world. Since declaration of electricity key to economic prosperity by U.S.S. R. and philosophy of equating development with economic growth evolved in the industrialized countries and popularized by U.S., poor countries started competing with each other in the construction of large dams. The partition of India and the river water accord between the two countries resulted in the construction of Mangla and Tarabela in Pakistan and Bhakra in India. Nehru eulogized high dams by declaring “Bhakra as the temple of modern India.” Thereafter Pong dam was constructed in Himalayan foot hills and a series of dams including Tehri were planned in the Himalayan region.

Investigation on Tehri high dam, which was first to be located at Dobra 12 kms. upstream to Tehri was completed by mid-sixties but later the engineers thought it would be projectable to build a high dam at the present site below the confluence of Bhagirathi and Bhilangna. The installed capacity of the dam was to be 600 M.W. (1972) irrigation to 2.7 lakh ha, and cost 197.9 crores in 1977; but later the project was revised. It was to generate 2400 MW. electricity and its cost in 1989 was 3,000 crores, which now is estimated

to be 6,500 crores but due to the constraint of funds only the stage-I with 1000 MW. has been taken up. Its cost till March 1994 was Rs. 3334.50 crores. The benefits from irrigation are said to be same but in order to prove the utility of the project later 300 cusec. (162 million gallons) of water per day was to be given to the metropolitan city of Delhi and 200 cuses (100 million gallons) to some other towns of Western U.P.

Since the planning Commission first sanctioned Tehri dam in 1972, peoples' movement against it started and work could not be started till 1978, when Tehri town was converted into Armed Police Camp and about 100 agitators including a large number of women were sent to far off jails. A petition committee of the parliament was constituted in 1978 but could not submit its report before dissolution of parliament in 1980. Later, in 1980 Mrs. Indira Gandhi, Prime Minister asked the Department of Science & Technology to "have another look in depth" at the project. The expert group submitted its final report in August 1986 and the Ministry of Forests and Environment recommended the abandonment of the project despite the fact that Rs. 206 crores had already been spent on it.¹

"The recommendation was before Rajiv Gandhi when Gorbachev came with an offer of aid. There had to be a project to absorb that aid, a project gigantic enough to benefit the Soviet might. Tehri was ideal."²

It was with the Soviet aid of Rs. 2000 crores with Soviet machines and engineers, Tehri project got a new lease of life. It became a joint project of U.P. and Central Govt. and Tehri Hydro Development Corporation was formed to implement.

As soon as the river was diverted into the diversion tunnel and site clearance for the dam started, people's movement became active in December 1989. The agitators took hold of the site and stopped the machines at work. A Ministry of environment's Environmental Appraisal committee for river valley projects was examining the project and in 1990 it came out with an unanimous resort: "Taking into consideration the geological and social impacts accompanying the project the cost and benefits expected; and after a careful examination of the information and data available; the committee has come to the unanimous conclusion that the Tehri Project, as proposed should not be taken up as it does not merit environmental clearance".³

Thus the scientific committee confirmed the objections raised by the peoples' movement but by this time the number of gainers by the project has increased and so they could build pressure to resume it. Bureaucracy, which had once okayed the project at the instance of the politicians was strongly behind the powerful lobby of "Civil Engineers, contractors

and politicians, who got their due share. Tehri looked like the mine of gold".⁴ The apprehensions of Indira Gandhi were confirmed. In her note to the Department of Science and Technology on March 18, 1980 to review the project she wrote: "It seems that larger areas of very fertile land are being submerged without any commensurate gains.....It is true that these decisions have been taken over period of time but there is great local distress and a feeling that contractors and other such groups will be the main gainers".

The affected people of Tehri whose number went on increasing from 92 villages and Tehri town residents to 125 villages and Tehri town with the progress of work on the dam, were mainly concerned with their future, the debate in the official circle focussed on the seismic hazards. The official reply to this was that the Soviet technology was fool-proof as they have built 300 metre high Nurek dam in a seismic zone. Tehri dam had been designed to withstand a maximum earthquake of the Magnitude of 7.00 on the Richter Scale, with the epicenter 27 km, from the dam site. Those who talked about the possibility of an earthquake of 8.5 on the Richter Scale, they were laughed at. But on October 20th 1991 an earthquake of 6.6 on the Richter Scale with epicenter about 80 kms. from the dam site rocked Uttarkashi region and devastated the area on both banks of the river. This put

a question mark on the Tehri dam. Verbally the political leaders admitted this, but the construction work on the dam site continued. This forced the people to launch direct action. They captured the dam site stopped the gigantic earthmovers there. After 75 days the protesters were lodged into the jail. I went on an indefinite fast, which continued for 45 days. It was discussed in the Parliament. Blasting on the dam site was stopped and review promised. The points raised by the peoples' movement in connection with the review of all aspects of the dam submitted to the Prime Minister in a memo. (See Appendix III).

The review was never none, nor the peoples' grievances listened. Even a request to listen to the independent scientists, other than the government paid and so called independent expert, who wanted to be a party against Tehri-Bandh Virodhi Sangharha Samiti in the Supreme Court, was turned down saying that this will create furore in the press. Work on Tehri dam has been started after two years. The earthmovers, bulldozers and trucks are on the move. The people of Tehri are waiting for the Doomsday. Heavy blasting at dam site at midnight to create a sense of insecurity is being done. The fate of the people is in the hands of big construction companies with political linkages and the administration at their disposal to threaten the people.

High Dams in Himalaya

As economic growth is the new religion of human kind and the governments with all their resources are spreading this new religion, Himalaya is no more the Devatma (the Divine Soul); nor its rivers the holy mothers to be worshipped. Nature in this new religion is regarded as a commodity and the value Himalayan rivers is judged by megawatts of electricity these can generate and water these can supply to quench never satisfying thirst of industries, commercial agriculture and expanding cities. The governments look towards these rivers as a source of revenue, the investors an opportunity to earn interest and the corporations a scope of earning. Thus, exploitation of water resources will accelerate in the near future. A number of high dam projects are waiting investors. Kalabagh (Pakistan), Parvati (H.P. India), Kishau Lakhwar, Tehri Stage II and Koteshwar (U.P. India), Pancheshwar (India-Nepal) and Karnali (Nepal), Dhiang and Subarnshri (Arunachal Pradesh, India) are in the priority list.

As we have seen in the case of Tehri, scientific truth is concealed and nobody will care about the seismic threat to these projects. “The Majority of high dams constructed, being built and planned in the Himalayan region are located in the proximity of or not far from active faults or thrusts. An active

fault is the one on which movements and earthquakes have occurred in geologically recent times and can reoccur in the near future. There is a compelling reason for the choice of these sites. Sites ideal for dams are products of neotectonic movements and therefore, candidates for likely tectonic movements and occurrence of earthquakes in the future. These sites are therefore, vulnerable to both earthquake and landslide hazards”.⁵

In case of Tehri dam failure the quantum of devastation will be unimaginable. The reservoir will be emptied in 22 minutes, within 63 minutes Rishikesh will be under 260 metre water, in next 20 minutes Hardwar under 232 metre water and after flooding Bijnor, Meerut and Hapur, Bulandshahar will be under 8.5 metre water within 12 hours.

Even if the structure withstands the shock, there is every possibility of fragile slopes coming down to the reservoir even in the normal condition. Himalaya is Young Mountain and instability of slopes is known. In case of Terhi Dam “On the left bank of river Bhagirathi, where village Kangsali, Jalwalgaon and Khola (part of) are located... is area of instability risk where slope stability would be further deteriorated in the event of reservoir filling and later fluctuations. As the problems here are of high magnitude and the

area is extensive, credibility of conventional remedial preventive measures cannot be assured.”⁶

The devastating earthquake of Japan (Jan. 95) has shaken peoples’ faith in technology. The Calamity came as more than merely a geological jolt to the advanced Asian nation... The comprehensive package of measures adopted by the long quake prone country of islands, including, innovative technological inputs and citizens’ training turned out to be less than equal to the challenge.⁷

Rock slides frequently occur in the upper catchments of Himalayan Rivers. Artificial dams are formed and bursting of these dams cause devastation downstream. There have been such incidents in the past. Folklores of Uttarkashi describe the sliding of Dhaini hillock near Jhala, which created a ten km. lake and submerged 240 temples of Dharali. “In 1840 a landslide triggered by an earthquake from Nanga Parbat impounded a 30m long 150m deep lake. Breaching of this on 1841 brought catastrophic flood in the Sindhu river as a wall of water mud and debris surged out of the Tarabela Gorge on the River Indus and destroyed a Sikh army encamped upstream of the down of Attack”. Sharma gives the list of nine such events including Gohna in Alaknanda in 1953, Tista in 1969 and Chenab in 1970. In August 1968 a huge rock

slide occurred in the Burhigandaki River at Lamusi, damming the river for 29 hours. The Alaknanda blockade of 1970 and Bhagirathi blockade of 1978 are recent. Alaknanda deposited huge amount of silt in Ganga canal even beyond Hardwar and Dabrani (Bhagirathi) blockade/raised the river bed by 6 metres at Tehri 100 kms. downstream. Kulkheni tragedy in Nepal is the latest which damaged the power station and killed thousands.

Glacial lake outburst flood is another problem in Himalaya. It is “the most devastating flood producing phenomenon, which occurs in this region from time to time. It is caused by sudden outburst of lakes, dammed by glacier ice in moraines, producing flows of water greater than normal rain derived peak flows Hydro-electric projects and roads are totally destroyed or damaged, rock filled dams may be breached and large reservoirs are rapidly filled sediment.”¹⁰

Besides geological activity, landslides become active due to human intervention, specially the use of explosives for blasting the hill sides during road construction. A number of such spots have been identified between Rishikesh and Tehri where road was widened to bring heavy machines for the dam. These landslides destroy all vegetation, water channels, agriculture lands and choke streams.

Siltation of the reservoirs is a grave problem in India, while formulating the project it is underestimated, whereas the actual siltation is sometimes four times more than the assumed as in the case of Kalagarh in U.P.

Sediment yields of some of the Himalayan Rivers are too high.

Karnali at Chisapani	67 ton/h/yr
Narayani at Narayan Ghat	56 ton/h/yr
Tanur Tribeni	82 ton/h/yr
Tessta Anderson bridge	125/ ton/ h/ yr ¹¹

In case of Tehri the life of the dam was assumed to be over 100 years on the basis of 8 ha/m per 100 sq. km. per year. Actual silt load measurement carried out since then shows that the figure is as high as 22, which reduces the life of the dam to less than 40 years.¹²

These all are technical issues and the dam-builders are too clever to justify their project. But these should be eye-opener to those, who have seen the performance of high dams hitherto in Himalaya and elsewhere. The social and ecological consequences of high dams will be more disasterous. These dams destroy the hill communities as the best lands are flooded and thousands uprooted can never be rehabilitated. 13,500 outseen families of Pong dam in H.P. are still homeless. Tehri will flood 70 sq. kms.

valley land, whereas it will be 200 sq. kms. in the case of Chisapani. People living peacefully and getting at least 25 per cent from the river and the forests nearby are forced into market economy. Ultimately their lives become miserable. Rehabilitation as an alternative to displacement is the outcome of those minds, who comfortably sit in their offices or studies. They never realize that human beings have an emotional attachment to the land and their surroundings. There can be no compensation to the field or house, which were built by my mother's sweat, when she carried the soil or stones on her head. Displacement, due to natural calamities is compulsion, but when it is for a dam, air-stripes, big factory, five star hotel or golf course etc. It is planned invasion on peaceful citizens. Those who want to defend themselves against this are made impotent by the use of fear and greed and as such instead of challenging, they surrender. This is the worse form of human torture. In Tehri dam struggle, 16 agitators were killed in a plotted bus accident on March 20, 1992. The demand for a judicial enquiry was turned down.

When water is dammed, its quality deteriorates. Snowfed Himalayan Rivers is the sources of pure and fresh water. Ganga water has the quality to remain fresh for many years. This pure water, which is used

for preparing medicines in Rishikesh and Hardwar, will become the source of many diseases. According to a recent study conducted by the environment cell of K.G. Medical College, Lucknow, more cases of kidney stone, fever, tooth-ache, asthma, chest pain, redness of eye, pain in joints, liver troubles were found in those using Yamuna dam water at Dak-Pather and compared to those using underground or running water in the neighbouring localities.¹³ In case of Tehri dam water quality test was never got done by an independent agency like NEERI, but by the consultant of the project.

Who gains from big dams? The rich, the industries, big farmers and city dwellers. Pro-Tehri dam lobby became more powerful since the dam builders offered water to Delhi city. It is said there is acute water-scarcity in Delhi, where per capita average consumption of water is 250 litres, but in posh colonies of Ashoka Road, where ministers live, it is over 450 litres, in Jor Bagh it is 430 litres. Hotel Le Meridien has an average daily consumption of 1,000 kiloliters daily.¹⁴ In villages around Tehri where potable water is carried by the women it is 10 litres a day. Similarly irrigation water is needed to convert wheat fields of western U.P. already saturated with irrigation into sugarcane fields; whereas there is only 12 per cent

irrigation in Tehri Garwal and other hilly region. But Tehri dam is a prestigious development project of the country. When a national leader from western U.P. rebuked me by saying that we were obstructing the development of the country. I humbly requested, "Let us be made partner in that development." He asked me, "How?" I replied, "It is very simple, let five per cent land levy be levied up on the beneficiaries". He stared at me and said, "How can it be? That is sugarcane growing land". Thus these dams transfer the resources of a poor region to the rich region, because with the might of votes they can suppress the natural right of the hill people to survive from the resource of their region which nature had provided. Since water has been declared a national resource, this is legalized robbery.

When a river is dammed and water diverted to other areas, there is ecological disaster downstream. The movement of fish is obstructed, the river becomes a dirty nullah. The chance of its being flushed once a year during the monsoon is lost. The flood plain farmers are robbed of the fertile soil and the underground aquifers are never recharged. Saline sea-water penetrates. The poorest have to pay for the prosperity of the richest few and the future generations will suffer for the satisfaction of the greed of these few. Centralized

power is mostly used for industries which produce aluminum, steel, cement, paper and chemicals. More than 75% of these is used by 20 per cent richest people all over the world.

The dam-builders are sowing seeds of discontent in an area where people had been going in search of peace. Thought the two weapons of fear and greed which every establishment uses to further the interests of an exploiter minority succeed for a short time, but ultimately truth triumphs. There is conflict between the national interests and local aspirations. Nation needs water from Himalaya and the people in Himalaya want to get rid of the miserable life by using the natural resources of land, water and forests. The problem has become more complicated as the policy makers see water resources in isolation. Land use deforestation and mining directly affect the water resources. Water-resources in Himalaya are dwindling as the hill slopes have been fleeced by mining and tree felling. Glaciers are receding. Rains have become erratic and due to deforestation and agriculture in the steep slopes there is a ratio of 1 to 1000 in lean and peak season flow of most of the Himalayan rivers. Water resources managers find it easy to store monsoon flow behind a dam. But dam is the temporary solution of the permanent problem of water and energy. At least

4% water is lost in evaporation. The sites for building dams are limited and once all the dams are built, there is no scope for future development. Thus dams will remain as monuments of human greed and stupidity.

Save Himalaya movement has suggested a practical solution to resolve the conflict. (See Appendix IV). Instead of temporary and risky engineering structures, permanent dams should be created in Himalaya. Dense tree cover and no intervention in the hill catchments of the rivers will increase the water holding capacity of the slopes and ultimately regulate the flow of the rivers. In Bhutan, where there are still dense forests, the ratio between the lean and peak season flow of Chukha River was 1:7.¹⁵ For this an integrated policy for the development of Himalaya should be evolved in which first priority should be given to heal up the wounds of Himalaya created by deforestation and mining . Water should be declared as the main products of the hill forests as forests are the mothers of the rivers.

Land use capability of all land including private and forest lands be assessed and people should be encouraged to grow food, fodder and fibre trees, shrubs and grasses. In food trees priority should be given to multipurpose species like walnut and chestnut, wild apricot for oil and bird-cherry for honey. These trees

will give sustained yield in the shape of food, fodder and fibre to the local people and perform ecological function of conserving soil and water for the nation.

Trees do not grow due to the lack of moisture. For this purpose besides conserving water on the hill tops in ponds, a massive programme of lifting water from the perennial rivers be launched. This will be possible if cheap electricity is available. Power generation from run of the river schemes should received top priority. Though the capacity of these schemes will be less, but these will be permanent, not short-lived like big dams. There are favourable conditions in Himalaya for this. For local consumption, especially to lessen the burden and drudgery of hill folks mini and micro H\ hydel schemes will produce enough power. Electricity generated from the big rivers may be exported. As this is the only source of income of these regions, a royalty of 20% be levied (12% is too little), which should be distributed among village Panchayats of the catchment area 6%. Block Panchayats and Zila Panchayat 2% each and rest 10% to the state or national government as the case may be. This will create a feeling of responsibility among the people at grass root level to conserve the water. The justification for this is that in the production process the four components land, labour, capital and enterprise should get an equal

and fair share of the produce. At present the people are kept away from decision making and in a way alienated in their homes. China has set an example by generating 15,000 Mw. Hydro-power from about 48,000 Mini, micro and small Hydel projects. Thus the key to success lies in making people co-share in the benefits, not in alienating them and getting the projects implemented by big corporations for far off cities. The anti-people and undemocratic process adopted by big dam builders should end to save the Himalayan water resources. Investment in tree farming, which need only 1/100 of water as compared to sugarcane, is besides being economically profitable, is investment in capital formation. Soil and water are the two basic capitals of human kind.

References

1. Planning Commission Notes.
2. K. Govindan Kutty: Seshan- an Intimate Story 1995 (pp. 127).
3. D.R. Bhumbla; Environmental Appraisal of the Tehri Dam Project. February 15, 1990.
4. Govindan Kutty: Seshan—An Intimate Story (pp 126).
5. Prof. K.S. Valdiya: High Dams in the Himalaya, 1993 (pp 5, 6).
6. P.C. Nawani, Sr. Geologist G.S.I. Letter address to

- Dr. B. Chakravorty, Add. Genral Manager (R&D), THDC, Tehri, published in Bhagirathi Ki Pukar.
7. Japan's Jolt—The Hindustan Times New Delhi, January 1995.
 8. Valdiya: High Dams in the Himalaya (pp.20)
 9. C.K. Sharma: The problem of sedimental load in the Development of water resources in Nepal in Mountain Research and Development Vol. 7: No 3, 1987 (p.p. 316-317)
 10. The State of Worls Mountains- A Global Report 1992 (pp. 110-111)
 11. J. Bandyopadhyay and D. Gyawali: Himalayan water resources in Mountain Reseach and Development Vol. 14, no. 1, 1994 (pp.11)
 12. Jayal, N.D. : Clearance of Tehri Dam Repletes with Infermities A Potential Diaster.
 13. Dr. G.K. Singh; K.G. Medical College, Lucknow, Study report of water quality in U.P. Hills (1995).
 14. Indian Express, New Delhi- 23-6-94.
 15. Personal discussion with Shri N.B. Khare, C.M.D. Chukha Project on Dec. 1982 in Chukha).

APPENDIX—I

S.No.	River	Dam Location	Approximate		Power (MW)
			Height (m)	Potential	
1.	Kabul	Ama	281	1,200	1,200
2.	Kabul	Barzargai	293	2,000	2,000
3.	Jhelum	Kohala	—	2,000	2,000
4.	Indus	Dhok Miila	—	12,00	12,00
5.	Indus	Kalabagh	87	1,125	1,125
6.	Jhelum	Mangla	116	1,140	1,140
7.	Indus	Tarbela	142	2,500	2,500
8.	Sutlej	Bhakhra	226	1,050	1,050
9.	Beas	Pong	133	1,200	1,200
10.	Parvati	Parvati	167	1,900	1,900
11.	Bhagirathi	Tehri	260	2,200	2,200
12.	Bhagirathi	Koteswar	104	—	—
13.	Bhagirathi	Kothbhel	210	2,200	2,200

14.	Alakhnanda	Utyasu	246	1,000
15.	Mahakali	Pancheshwar	232	2,000
16.	Karnali	Chisapani	270	10,800
17.	Kosi	Barahashetea	230	3,600
18.	Manas	—	275	2,800
19.	Sunkosh	—	240	1,500
20.	Debang	—	150	—
21.	Subansiri	—	120	6,000
22.	Barak	Tipaimukh	161	1,500

Source J. Bandyopadhyay and D. Gyawali on Himalayan Water Resources

23

APPENDIX—II

Major storage dams for hydro-power generation in the Brahmaputra, Ganges and Indus basins in India under planning construction or operation).

No.	Project Name	River	Installed
			Capacity (MW)
1.	Khandong	Kopili	150
2.	Kopili	Kopili	150
3.	Kopili Extn.	Kopili	100
4.	Loktak	Loktak	105
5.	Doyang	Doyang	75
6.	Rongni	Rongni	95
7.	Teesra Falls	Teesra	68
8.	Ranganadi	Ranganadi	405
9.	Sabanisiri	Sabansiri	4,800
10.	Lower Kopili	Kopili	100
11.	Loktak D/S	Loktak	90
12.	Tapanmukhi	Barak	1,500
13.	Kynshi	Kynshi	240
14.	Dhaleshwari	Dhaleshwari	120
15.	Tuipai	Tuipai	200
16.	Tizu Zunla	Tizu	800

24

17.	Ramganga	Ramganga	198
18.	Lakhwar-Vyasi	Yamuna	300
19.	Tehri St. I	Bhagirathi	1,000
20.	Chami Maingao	Yamuna	126
21.	Chatra	Tons	225
22.	Gori Ganga	Gori Ganga	260
23.	Kanaprayag	Alakhnanda	160
24.	Kishau	Tons	600
25.	Kotibhel	Bhagirathi	1,000
26.	Utyasu	Alaknanda	1,000
27.	Bhakra	Sutlej	1,200
28.	Dehar	Sutlej	660
29.	Pong	Beas	240
30.	Chamera	Ravi	840
31.	Thein	Ravi	600
32.	Kimhai	Chenab	750
33.	Basapa	Basapa	210
34.	Koklam	Sutlej	800
35.	Parvathi	Parvathi	2050

Are Big Dams Necessary?

The sanctioning of Hydel projects has become so highly politicized that it may be an exercise in futility to ask the Government whether this is the best way of spending the thousands of crores or rupees that need to be earmarked for them. In March last year, the Prime Minister announced that the Centre would fund the construction of the Thein dam on the Ravi when he visited Husseiniwala in Punjab. Three days ago, Dr. Farooq Abdullah announced that the Centre would fund the construction of the Dul-Hasti and Uri Hydel projects in Kashmir, during Prime Minister's visit to that State. It is not our intention to question the timing of such announcements. There is, in any case, a great deal to be said in favour of making them with a great deal of fanfare in Punjab and Kashmir. For, in both States, there is a considerable amount of disaffection with the Centre. That does need to be questioned, however, is whether large hydro-electric projects are the best way of using critically scarce resources. The justification for such projects is obvious. They promise to supply at one go the two most critically needed inputs in the Indian economy—water for agriculture and power for its growing industries. But the experience of three decades of Hydel projects has

shown that the promise which they hold out is often belied. A report of the Estimate Committee of the sixth Lok Sabha had shown that Hydel projects were taking, on an average, 21 years to build and costing 5.62 times what they had originally been expected to. The benefits from such projects have, therefore, been severely eroded, firstly by the high cost overruns and secondly by the enormous delays in their construction. The current projections for the Thein dam bear this out. The Centre has allocated less than Rs. 500 crore for the project in the seventh plan. But the latest estimate of its cost has already exceeded Rs. 1,200 crore. It does not need much arithmetic to show that the project is not likely to be completed much before 2000 AD and to cost less than Rs. 2,000 crore.

Had there been no other way to meet the people's need for water and power, we would have confined ourselves to exhorting the Government to gear up its project implementation in the future. But there are cheaper and much faster ways to meet both these needs. What is more, while Hydel projects do a considerable harm to the environment and inflict great hardship on the people who have to be displaced to make way for the reservoirs, these alternative methods actually improve the eco-system.

Hydel projects are designed to meet peak power demands while thermal projects take up the base load. But the need for peak power can be met as well by tapping power from the sun. Against a capital cost of approximately three crore rupees per Megawatt of installed capacity for Hydel power, the capital cost of a solar-thermal power plant which generates steam by tapping the sunrays is in the neighbourhood of rupees four crore. What makes such plants attractive is the fact that they can be set up in 12 months instead of 12 years. Thus for 11 years, while the hydel plant would still be under construction, a solar power plant can supply electricity which increases the GNP and create a pool of savings to finance future investment. If this is taken into account, the comparable cost of solar power in relation to Hydel power is actually negative because during the 11 years, mentioned above, the total additional savings it will generate will comfortably exceed the capital cost.

In the same way, Mr. B.B. Vohra, now Chairman of the Advisory Board on Energy and others have pointed out that major and medium irrigation works are frightfully expensive ways of providing water to the farmer, for the average cost of such irrigation came to 26,000 rupees per hectare during

the sixth Plan and is likely to go up to Rs. 40,000 in the seventh. If even a small part of this money were to be spent on afforestation slopes in the catchment areas, it will reduce the run-off of rain water, increase seepage into ground water reservoirs and permit farmers to sink more tubewells and draw more water than they do today. Apart from the fact that a tubewell can be commissioned in as little as 10 or 12 days, a determined programme of re-afforestation will avert the greatest single threat that hangs over India today. This is the threat of desertification of the entire indo gangetic plain. There are numerous other benefits to be had from the strategy outlined above. But the most important of them all is that it will not displace and pauperize thousands of villagers. On the contrary, the re-afforestation programme alone can create as much as 200 man-days of work per hectare per year in the case of quick growing trees on the lower slopes and perhaps a third of this in the higher reaches of the Himalayas.

The Hindustan Times, December 14, 1986

Reservoirs of Sorrow The Karma Of Dams

Shekhar Singh

In his article titled 'Reservoirs for the future: The dharma of dams' (IE, October 23), C.V.I. Varma eloquently describes the growing need for water and power in India and concludes that is the duty (or dharma) of dams to meet these growing needs. Though I have no quarrel with his facts, I would like to question his conclusions on the basis of the actual performance (karma) of large dams in India.

In a recent report written by some of us for the World Commission on Dams (WCD), 'Large Dams: India's Experience', an exhaustive look at the facts and figures available established that until 1978, most dams were not assessed for their environmental and social impacts. Even when they began to be assessed, alternatives to the dam were never assessed and mostly not even considered. Also, that the current system of granting environmental clearances is subject to all sorts of political and administrative pressures, resulting in clearances being granted to projects without assessing their impacts or even when they are non-viable. What is worse, the concerned ministry has little ability to ensure that the parameters and conditions of clearances are adhered to. In fact, they are disregarded and flouted, as a rule.

Perhaps the best indicator of how lightly the nation has taken the environmental and social damage that large dams cause is the absence of data on these aspects. We do not know what the environmental impacts of most dams were. In most cases we do not know whether any of the safeguards prescribed actually worked. We do not even know the total number of people displaced or the area of forests submerged by large dams.

In the WCD report an attempt is made to gather together all available information and by extrapolation, get some understanding of the magnitude of the impacts. Accordingly, the amount of forests submerged by large dams, between 1980 and 2000, works out to be between 9.1 million hectares (our calculation) and 4.5 million hectares (based on the Central Water Commission data) and this, when we are already well below the stipulated 33 per cent forest cover.

Similarly, the data provided by the Central Power and Irrigation Board of the Government of India for 19 dams shows that in all but one of these dams (Machkund), the rate of siltation of the reservoir is higher than anticipated. This has serious repercussions on the life, the safety and the economic viability of the dam. The excess rate of siltation ranges from 115 per cent in Kangsabati to 809 per cent in Maithon, with 10 of the 19 having an actual rate that is over 200 per cent of the anticipated rate. In an alternate data set, of the

CWC, for 13 of these projects, the variation is between 649 per cent (Beas unit II) to 88 per cent (Panchet). Eight of these 13 show observed rates of over 200 per cent.

Even this level of data is not available for the numerous other well-known adverse environmental impacts of large dams, including impacts upstream and on the catchment; on biodiversity, species and ecosystems; on human health; on water quality; on reservoir induced seismicity; on micro climate; on water availability downstream; on salt water ingress and on water logging and salinity.

Dam failure and emergency releases of water pose a threat to downstream populations. Again, though no comprehensive data are available, the havoc wreaked downstream by, for example, the Bhakhra Dam (in late 1970s and again in 1988) and the Rihand Dam in 1997, is well known. Dr. Y.K. Murthy, a former chairman of the Central Water and Power Commission, has concluded that, of the 131 dams studied by him, 36 manifested distress, in 20 the spillways were inadequate and in 25 the freeboards were inadequate, all compromising the safety of the dam. In 90 of the dams studied there was no emergency reservoir operations plan.

Perhaps the most heart-rending aspect of large dams is the displacement of human populations. Again, no comprehensive data are available. A study by the

CWC, of 54 projects, showed a per-dam submergence of 24,555 ha. The same study showed a per hectare displacement of 1.1 person. If one were to extrapolate these figures to the 4291 large dams built in India, the total displacement figure would be 11,59,02055 or 11.5 crore in the last 100 years or so. Our own calculations, based on a study of 213 dams, show that the average submergence per dam was 8748 ha and the average displacement per hectare (based on data of 83 dams) was 1.51 per hectare. Extrapolating from these, the total figure of displacement comes to 5,66,81878 or 5.6 crores. Perhaps even this is an exaggeration, but what it does establish is that those displaced by large dams number not in the hundreds or the thousands but in crores. Further, data available for 34 dams shows that tribals formed 47 per cent of those displaced, despite the fact that their national share of population is only a little over eight per cent.

So, clearly, the major costs of large dams are borne by the poor and the weak. But who are the major beneficiaries? The irrigation benefits go to those downstream and among them, disproportionately to the large farmers. Similarly, the peaking power that dams provide goes primarily to meet the peak demand of the urban rich and the industry. What does the nation gain as a whole? According to the WCD study, large dams, after 1990, show no economic benefits over costs and only have a distributional function, where

“the benefits are reaped by farmers and others in the command areas and the costs are borne by the society at large, the tax payers and the projects-affected people. There is possibly no net gain to society from major and medium irrigation projects”. Even if hydroelectric generation is taken into consideration, “the gains from power are unlikely to compensate for losses from irrigation unless hydropower generation is extremely large”. And this is when only a small proportion of the environmental and social costs are being internalized.

So, we have a situation today where thousands of dams have been built, with little or no environmental assessments and safeguards and huge adverse social impacts. Millions of hectares of forests have been destroyed, huge areas have become water logged, the incidence of water related diseases has increased, lakhs of people have been thrown out of their homes, mainly tribal, the poor and the weak. And all this to create structures that, even without acknowledging most of the environmental and social costs, add not a rupee worth of value to the Indian economy. All they do is re-distribute the existing resources so that the poor are further deprived and the relatively well-off get the benefits. If this is development, then let me awake in another world.

(The Indian Express, October 25, 2000)

Chipko Revisited

(Review/Sonali Bisht)

By successfully bringing commercial forestry to a standstill, Chipko marks the end of an epoch for the people and landscape of the Indian Himalayas. However, the past decades have witnessed a rapid expansion in the scale of commercial penetration in Utrarakhand. This intensification of resource exploitation has been matched step by step with a sustained opposition.

The Chipko movement of the 1970s was a landmark. It made the country stop and rethink about the path of progress it had adopted. It knocked the wind out of the development versus environment debate and it paved the way for a consensus in favour of ‘ecologically sound growth.’

While at the time, the Chipko struggle fired the imagination of the media, the real issues got lost in the cacophony of indignation. Though its repercussions provided a fashionable topic for editorials, precious little was said about the powerless people who had resolved to hug their trees and be axed with them.

According to the author, the media equated the movement “to the modern discourses of feminism, environmentalism and the revival of Gandhism. It glossed over the local roots of Chipko, its embeddedness in the specific historical and cultural experience of the Uttarakhand peasantry.”

For them, Ramachandra Guha points out, Chipko was not a consciously environmental movement. It was a battle for survival; for the preservation of a way of life—the only way of life possible given the demanding ecology of the Himalayas. Nor was Chipko the first voice of protest.

The Unquiet Woods is a historical-sociological analysis of the chipko movement and traces the origin and idiom of peasant resistance in Uttarakhand. It, thus, lends the Chipko movement a context. As Guha exposes the roots of the Chipko phenomenon, his study also draws comparisons with movements in defence of forest rights in early capitalist Europe.

As Guha explains, the ecological dimension dominates mountains-cape all over the world. The topography makes extensive agriculture impossible and it is limited by the fragility of the soils. Coupled with this is the difficulty of transporting any surplus to markets. As a result, the primary economic activity of these regions is usually a mix of subsistence agriculture and animal husbandry. Forests play a crucial role in both.

In Uttarakhand, this dependence was even more pronounced. The forests provided both fodder and fertilizer; they were the prime source of medicinal herbs and even food in times of scarcity. “The dependence of the hill peasant on forest resources was institutionalized through a variety of special and cultural mechanisms. Through religion, folklore and tradition the village

communities had drawn a protective ring around the forests. Across the region...there existed a highly sophisticated system of conservancy that took various forms,”

Guha’s analysis, the takeover of the forests by the state and the introduction of commercial forestry were the two most important interrelated consequences of colonial rule. And the ecological degeneration of the Uttarakhand followed the loss of the village community’s traditional rights over the surrounding forest. The increase in this commercial exploitation in post-independence India began to be felt with a continuous fall in the productivity of the land and the inability to sustain as much livestock as before. The results were tragic: the menfolk left in search of jobs leaving the women tend to the fields.

As Guha rightly contends, the Chipko movement should not be seen in isolation. It has a history behind it and has been succeeded by agitations directed at issues affecting the hill people, including demands for statehood.

In conclusion, Dr. Guha’s book is a path finding work on the Chipko movement and its people. It assumes all the more importance in view of the developmental cross-roads on which the nation stands. But whether the policymakers and the nation can tell the trees from the woods will be judged by generations to come.

(The Economic Times, December 9, 1989)

The Trouble with Tehri

Bharat Dogra, New Delhi

Sir: The controversial Tehri Dam is once again in the news and a large number of concerned citizens are worried about the deteriorating health of Mr. Sunderlal Bahuguna, who has been on a protest fast since May 9. There are several reasons for showing the concern about this project, the foremost, without doubt, the issue of safety.

There is, of course, no certainty about what will happen during the lifespan of this project, but several experts, including those speaking or writing in officially constituted committees, have given the opinion that there is a very real possibility of an earthquake of a magnitude greater than 8 on the Richter scale occurring in this area; the dam will give way in case of such an earthquake and truly frightening floods will wipe out downstream towns like Rishikesh and Haridwar, not to mention numerous other settlements.

It must be pointed out here that floods caused by dam failure should not be confused with ordinary floods—the destructive power of devastating waves let loose by a collapsing dam is many times greater. The tragedy that can be unleashed in the worst case scenario will be much worse than in the case of the

wiping out of Morvi town due to the failure of Machu dam. The Tehri dam, incidentally will be much higher than Machu.

Is it necessary to take such a grave risk? Can we not find safer ways of meeting our irrigation and power needs?

-Indian Express, June 9, 1995

‘Tehri Dam Faces Quake Risks’

A leading seismologist has warned that the location of the proposed Tehri Dam falls in a ‘seismic gap’ a section of the Himalayan Arc that is ripe for major earthquake, reports PTI.

A detailed scientific report by Dr. Vinod Gaur, director, National Geophysical Research Institute (NGRI), Hyderabad, has said that the risk is “high” because it is in a seismic gap and in a region of the Himalayas “Capable of producing a major earth-quake every 300 years or so.”

Gaur’s report which is based on the “most plausible seismotectonic models of this part of the Himalayas” containing an explicit warning of earthquake risk for the dam and suggestions for safeguarding it.

The report which was prepared two years ago had so far not been made public.

The Himalayan mountain belt has been moulded in a dramatic way by persistent crumpling and stacking of the Indian continental scene ever since it collided with Asian Plate 40 million years ago.

The continuing convergence of these two plates at about five centimetres per year has been straining the plate boundary. The stream is released now and then in the form of earthquakes.

According to the report eight major earthquakes of magnitude 7.5 and larger on the Richter scale that occurred in the last 100 years had ruptured sections of the 2,400 kms. long Himalayan arc thereby expanding the stored energy in those sections.

But there are three “seismic gaps,” or sections, in the Himalayan Arc where no major earthquake had occurred for a long time while strains have been accumulating.

The report said that a fault, barely six km. from the dam site, has been geologically mapped but there is some doubt whether the fault is active or inactive.

It said that in case the thrust is active, it ‘would focus an enormously high energy density’ in the vicinity of the dam in the event of an earthquake.

The report cautioned that the benefits accruing from the dam must be weighed against the worst scenario described on as follows:

“The creation of a large reservoir in a region which may already be critically stressed might invite rock failure. And if a dislocation should occur near the dam, the 260 metre thick sheet of water at an elevation of 550 metres above sea level would turn into a veritable agent of widespread devastation downstream.”

The report also said: “the dynamic water level

in the reservoir will promote crumbling of the already denuded valley slopes and destabilize fertile terraces causing it to silt up rapidly thereby offsetting the anticipated benefits.”

Referring to the probability of a major earthquake during the dam's 100 year lifetime the report said: “assuming that the entire under thrusting of the Indian Plate is straining the lesser Himalayan block.”

If this prediction is correct, a major earthquake can occur in the Tehri region anytime.

The report said that the earthquake would most likely occur on the Northern boundary of the lesser Himalayas at a depth of a 10 to 15 kms.

It said that a 7.5 magnitude earthquake would produce in Tehri region a horizontal and vertical ground acceleration of 189 times the acceleration due to gravity. The report said that the dam must therefore be designed to withstand twice the acceleration due to gravity.

It said that allowance must also be made in the design “to safeguard the dam against possible tidal action which may be set by large scale landslides diving into the reservoir in the wake of an earthquake.”

Patriot, June 8, 1987

**The Life of the
Tehri Reservoir
Can't be more than 20 years**

Ever since the Tehri Dam was proposed in 1972, there has been fierce opposition to it because its construction will result in Tehri town and 25 villages being submerged, 70,000 persons being displaced and 1,600 hectares of cultivated land, 1,000 hectares of forest land and 2,000 hectares of pasture land being lost forever. And it will cost the State exchequer Rs 1,065,86 crore. Without any visible benefit to the people. V.D. Saklani, lawyer and freedom fighter, who leads the Tehri Bandh Virodhi Sangharsh Smiti, tells JAGDISH BHAT, Why the dam should not be built.

From the moment the Tehri Dam was proposed, it sparked off a controversy, with the people of Tehri town opposing it tooth and nail. When the project was initially mooted in 1972, it was estimated to cost Rs 197 crore and intended to be completed in a decade; 11 years later, in 1983, the cost of the proposed 260.5 metre high rockfilled dam had risen to Rs 1,065,86 crore. Today, the deadline for the completion of the dam is 1994, provided there is a regular flow of funds.

The Uttar Pradesh government has already washed its hands off the project because of the cost factor and the Centre is giving just enough money to

keep the project alive. As an executive of a private company working at the project site puts it, it is “oxygen to keep the patient alive”.

Plagued by paucity of funds, the dam is unlikely to materialize unless at least Rs 200 crore is pumped into it annually. Countries such as Canada, Japan and Russia have already been approached for funds.

Meanwhile, the Tehri Bandh Virodhi Sangharsh Samiti, led by veteran freedom fighter and lawyer V. D. Saklani, is activating itself. Frail and in his 70s, Saklani recently talked at length about his opposition to the Tehri Dam. Excerpts from an interview: Why do you oppose the dam?

There are several reasons. First, Tehri town and 25 villages will be completely submerged; 70,000 person will be displaced from their homes and 1,600 hectares of cultivated fertile and flat land in Tehri Garhwal will be lost forever. Beside, 1,000 hectares of forest land and 2,000 hectares of uncultivated pasture land will also be sunk in the dam's lake.

Is this too great a price to pay for the benefits that will accrue from the dam?

All talk of benefits from the dam is based on the theory that the life of the reservoir will be 100 years. This is a blatant lie. The life of the Tehri reservoir cannot be more than 15 to 20 years. This is being observed in other rivers, too.

How do you put the life of the dam to 15 to 20 years?

The siltation rate given by the dam authorities is manipulated and false. The sedimentation load at Tehri must be more than the average observed in Himalayan rivers. Even if you take the useful life of the reservoir to be 100 years it is an unpardonable sin to submerge such valuable land once and for all what is 100 years in the life of the nation?

Is this the only reason for your opposing the dam?

No, we also contend that the dam will fail. Why? The dam is likely to fail because of overtopping caused by waves created by massive hill slides into the reservoir; seepage from the abutting hillsides of the dam structure or from the foundations; natural earthquakes triggered off on any of the active thrusts, faults, tear faults and weak zones in the vicinity of the dam region or on other Himalayan thrust and faults; a reservoir-induced earthquake with its epicenter in the reservoir basin and local movement taking place on any thrust, faults or weak zones in the reservoir.

Do you have anything to back such claims?

In a 1963 analysis in the US. Of 214 dam failures, 41 per cent were attributed to seepage. In his report, "Earthquake risks to Tehri". Dr. V.K. Gaur, Director, Geophysical Research Institute, Hyderabad,

says that the Tehri Dam site happens to lie in a region of high seismic potential.

Have there been any such failures in our country?

Several dams have failed in India. The total sudden failure of the Kadam Dam (1958), the Panchet Dam (1949)—Which also destroyed the Khadakvasla Dam downstream—the Nanak Sagar Dam (1967), the Chilkahole Dam (1972), the Dantwala Dam (1973), the Aran Dam (1978), the Hinglow Dam (1978), were due to seepage or overtopping. The disaster at Koyna Dam (1967) was due to a reservoir-induced earthquake and Manchu II (1979) was due to overtopping.

Yet, several big dams are being planned.

The loss of life and property caused by these failures cannot be easily forgotten, but the nationwide complacency caused by the sustained propaganda of the powerful dam building lobby—that there can be nothing like big dams for rapid progress is responsible for such ventures.

Have you gone to the Supreme Court for a stay against the construction of the dam?

Yes.

On what grounds have you challenged the construction of the Tehri Dam?

The grounds on which we have challenged the Tehri Dam are: It will render the lives and property of

the people on the reservoir rim slopes above submergence level, very insecure; all habitation in places such as Uttarkashi town and others which are situated on the banks of the Bhagirathi, upstream of Dharasu, will be inundated and lost: it will create grave hazards to the lives and property in human habitations in places such as Muniki Reti, Rishikesh, Hardwar etc., which are situated on the banks of the river downstream of the dam; it will jeopardise the right to life guaranteed to the people by the Constitution and cause mindless destruction of the environment.

Surely the dam authorities must have taken all this into consideration before the project was initiated.

The dam authorities have relied upon two experts—J.B. Cook and Leopald Muller. The latter is of the definite opinion that a dam in such a valley is susceptible to transverse cracking and as such, he cannot vouch for its stability.

What about J.B. Cook?

Cook was on the board of consultants for Tehri Dam. He said the dam should be made at layout 9, but the dam authorities have shifted the dam site. There are also other areas where Cook's original plan has been changed.

Do you think it is possible to abandon the project after spending about Rs 210 crore of the taxpayers'

money?

Most of the expenditure incurred on the project can be beneficially utilized if it is still converted into a hydel project by the run-of-the river at its minimum flow. Further, quite a bit of the expenses have been on establishment and equipment. Also think in terms of the Rs 2,000 crore that will be saved if the dam is not built for this is what the project will finally cost.

Why was the dam not opposed in its initial stages?

In 1978, the people formed the Tehri Bandh Virodhi Sangharsh Samiti. While the samiti was conversing with the Centre to drop the project, the Uttar Pradesh government gave contracts for excavation of the right bank tunnels. People staged *dharnas* at the tunnel site and stopped the work, but the U.P Government came down with a heavy hand on the protestors. They were jailed and work was started under heavy police deployment.

Several petitions were also sent to the government that work be stayed till the final report on the environmental impact of the dam was submitted. But work continued and now the claim that Rs 200 crore has been spent on the dam project is being used as a tump card to silence critics.

Are you saying that the project is yet to get an environment clearance?

Yes. It is common knowledge that the dam will have an adverse effect on marine life, both upstream and downstream of the dam. Also the Botanical Survey of India conducted studies on the vegetation of the Tehri Dam area and is of the opinion that 12 rare species of economic and medicinal importance will be lost forever if the dam is built.

Besides, the priceless gift of the Ganga is the silt which it brings from the catchment areas and deposition the fertile Gangetic basin. This will all be lost in the dam reservoir as has happened in the case of the Aswan Dam in Egypt. This will cause an increase in the use of fertilisers which in turn will ring the death knell of the land. In the US alone, 28 crore acres of cultivable land has been rendered barren and another 76 crore acres are fast becoming barren because of excessive use of fertilisers.

You have not touched on the religious aspect.

I was coming to that. The Bhagirathi has been held sacrosanct by millions of our countrymen. It is the holiest of the holy and purest of the pure. Thousands of people make a pilgrimage every year to Gangotri and Gaumukh, the source of the Ganga, to get spiritual and physical benefits. No other river in the world is held in like reverence by the people. If the sacred waters of the Bhagirathi deteriorate, it will cause sorrow to millions of people.

(The Indian Express, August 31, 1986)

Hazards Of Tehri Dam

Bharat Dogra

The work on the controversial Tehri Dam project (TDP) has reached a crucial stage with the start of the construction of the Cofferdam. The movement opposing the construction of this dam is fighting against terrible odds. The venerable leader of this movement, Mr. Sundarlal Bahuguna has been on an indefinite fast since May 10. His wife, Vimla and some other activists who tried to stop the construction work have also been arrested. A very heavy police force is keeping vigil at the dam construction site.

By now it is well known that the most comprehensive review of this project, under-taken by the Environment Appraisal Committee (EAC) of the Ministry of Environment and Forests in 1990, has clearly recommended that this project should be given up. The recommendation of this committee was not accepted. At the time of his previous last Mr. Bahuguna had been given assurances at the highest level regarding a truly independent review of this project. These assurances have also not been honoured.

In the absence of such an officially appointed independent review, it is important to draw attention to some additional expert opinion which has become available since the EAC submitted its report in 1990 and also to the dubious process through which official clearance for the TDP was obtained despite the very clear view to the contrary expressed in the EAC

report.

A lot of controversy has centered around the value assigned to peak ground acceleration (PGA) and effective peak ground acceleration (EPGA), engineering concerns which are of critical importance to understand the ability of a dam project to withstand an earthquake.

Some of these technical questions were debated at length at a workshop on “Earthquake Hazard and Large Dams, in the Himalaya” held in New Delhi in 1993. Summarizing this discussion Prof Vinod Gaur has written: “Another important point repeatedly affirmed at the workshop was that now-where in the world would a 50th percentile estimate of ground motion be accepted for approving the construction of a large dam in a highly seismic area such as the Himalaya.”

The case for a review is further strengthened by the fact that the observed siltation rate for this project has been found to be much higher compared to the estimates rate and so it is likely that the life-span of the project (and its benefits) will be much smaller than the officially estimated life span of 100 years.

Apart from reviewing this project, it is also important that the overall arrangements for collecting data necessary for properly evaluating and designing such project, should be substantially improved. In the case of the TDP the lack of adequate data has been time and again admitted even at an official level.

(The Tribune, June 14, 1995)

APPENDIX-III

Review of Tehri Dam Project

Until now, the stress has been only on the technical issues whether the Dam can withstand an earthquake of 8.5 magnitude on the Richter scale. It has been said that the design has been thoroughly revised and the Dam will be safe. It is doubtful whether a Dam which was designed for an earthquake of 7.2 on the Richter scale (as was said by Mr. Dovodov, the leader of the Russian geologists in the evidence before the Bhumla committee) can withstand an earthquake of a higher magnitudes. The Russian structures are often mentioned to support this bit it should be examined which are such structures in the USSR and what are the geological conditions of those hills, in this context. It should be seen as to how the revised design has been fitted into the base of the dam which was fixed as early as 1978, when the work on the diversion tunnel started.

So far as the impact of the Uttarkashi earthquake is concerned, it should not be seen in the narrow sense as to what has happened at the Dam site, because the epicentre of the earthquake was near Menari Dam which is more than 80 kms. From Tehri. The propaganda carried on by the Dam builders that there has been no damage to the Dam is ridiculous because no dam exists as yet. But the dam site is so fragile that

there are wide cracks at least on the right bank stop between Top Terrace and the diversion tunnel head. Those cracks were often filled but when during the 76 days Dharna the dam builders could not enter the site to hide this, the crevice has widened. These spots can be shown to anybody who would care to enquire into it.

Even if it is assumed that the structure of the dam is strong enough all the surrounding hills which are fragile cannot be prevented from falling down into the reservoir. This had happened in the case of the Vijont dam in Italy in 1963.

Another aspect of this problem is the creation of several cracks which have developed in the earthquake hit zone of Bhagirathi catchment, especially above Pata and Sangrali villages near Uttarkashi/Saur and Thandi Kamad villages of Jalkur Valley and Maid-Marawari and Newalgaon village and Bhatgaon village of Balganga Valley. These particular areas are known because these are near habitats but the area of Bhagirathi catchment is more than 7000 Sq. kms. and a vast area is far away from habitats. There is a need to make a detailed on-the-spot study of the higher ridges where such cracks are apprehended. The past history of big landslides in this catchment right from Gomukh glacier bears the evidence of huge landslide occurrences and devastation created by these landslides. There is no historical record of one such mishap which

as blocked the river about 30 kms. Downstream of Gangotri near Jhala. Here Dhaini hillock fell down into the river bed and created a 10 km. lake from Jhala to Jangla where Bhagirathi flows very slowly and gives the evidence of the formation of the lake. This information is contained in a folk-song and was confirmed by the excavation of an old Shiva temple in Dharali village. The folk-song mentions the existence of 240 temples in that area in the past. The landslides of Sera which blocked Jalkur in 1939, Loharinag in 1959 and Dabrani in 1978 which blocked Bhagirathi occurred during this century. It is apprehended that when the recent cracks are billed with water during the monsoon there will be occurrence of landslides on a vast scale. This will shorten the life of the reservoir.

Economic Aspects: One of the arguments advanced in favour of the continuance of the Tehri dam project in spite of all the hazards is that an amount of Rs. 650 crores has already been spent on this project. It is essential to examine this expenditure in the light of this CAG Report of 1986-87. A fresh and upto date special audit of the Project by the CAG must be ordered in order to find out the propriety of expenditure incurred on different items. It is strange that during the first 10 years of project work, in which, besides construction, some rehabilitation was also done, a sum of rupees 300 crores was spent but, within the last three years, since the project was handed over to the Tehri

Hydro Development Corporation, a larger amount than that was spent. Most expenditure were incurred in maintaining a large establishment at Delhi, renovation and air-conditioning of the offices at Rishikesh and benefits given to the high officers besides huge amounts spent on propaganda and publicity. This is one of the glaring examples of misuse of public money. There are many cases of corruption of which only two are being enquired by CBI where an amount of Rs. 3 crores is involved. Corruption has been socialized by encouraging fake buildings to get compensation and giving many more times the compensation amounts to those who could grease the palms of the officers. Even after this extravagance, if the project is replaced with the run of the river scheme, most of the expenditure incurred so far can be utilized.

The money that has been spent on the construction of Tehri town and the buildings, roads and purchase of machinery is intact. Even the divergence tunnels may be utilized. The money paid at compensation is no loss because all the people expect those who took excessive payments for their property by bribing the officers, are prepared to return the money. In fact, the present value of lands acquired in Athoor area for instance, is 200 times more than the compensation paid to the farmers.

The economic aspects of the project should be examined from a different angle also. The local people

who are losing the best flat land of Bhagirathi and Bhilangana valleys asked a question as to how they are going to be benefitted by the Tehri Dam Project which is being eulogized as the symbol of country's progress, Tehri Garhwal is the poorest district of India according to the first Inter-State and Inter-District Income Differential Report produced by the of NCAER in 1956. In the hills there is one hectare of land for 17.6 persons and out of it the flats and irrigated land is very little. Area under irrigation in the district is only 12% of the total cultivated area. The people enjoy free irrigation and fodder and fuel from the community forests. Though per capita holding are very small, for one hectare of cultivated land, 11 hectares of forests and community land is available. We are pushing these innocent people who had been self-sufficient farmers for centuries, into the cruel hands of the market economy, where their very survival is at stake. The hill men and women enjoyed peace and security in their environment but now they feel themselves insecure, in the foothills where 10% of the total out sees of the Tehri Dam Project had already been settled 13 years ago. The Bhumla committee which visited their settlement has given a pathetic description of their said plight.

The claims of the project authorities to supply irrigation water to the command area and drinking water to Delhi heed to be reexamined in the light of Report No. NA-4-753-9/3, dated 18-10-91 of the

Soviet Ministry of Environment submitted to the Govt. of India. The Minister for Water Resources did not respond to our queries about the contents of this report.

The Bhumla Committee has at length dealt with the adverse effects of the project on the proposed command area—at least 20,000 hectares to be affected by water-logging; depriving the farmers of the fertile soil which the Ganges brought and which will be trapped in the reservoir after the construction of the Dam and throwing out of employment thousands of the small Patta peasants who depended for their survival on the flood plain land over which they cultivated vegetables after the receding of the floods. There will be no flushing of the Ganga between Narora and Allahabad where it resembles a dirty Nala. All efforts made by Clean Ganga Project will be nullified if the monsoon water is not allowed to flow in the river.

This project will create regional imbalances as after the submergence of the valleys which are the hearts of the hills and export of the water, there will be no chance for the hill villagers who had been, after independence, expecting that the water of low-flowing rivers will be lifted to the tops and they will get an opportunity to regreen the naked slopes. This indeed is the only way to alleviate their poverty, check soil-erosion, manufacture new soil for the plains and stabilize the flow of the river.

Cultural aspects: The cultural aspect has been totally ignored so far. For the people of India, Bhagirathi has a special spiritual significance, as the river reminds them of the high ideals of penance and selfless service with which the story of its origin is connected. Bhagirathi binds the whole country into one unit. Thousands of pilgrims which visit Uttarakhand and the holy shrines there will be shocked to see the holy river impounded into a lake and the places of this inspiration disappear. All the places connected with the great Vedantic saint Swami Ramatirth Padiyargaon Kutiya, Bamrogi Cave, Malideval Kutiya and Simlasu Kothi will be under water. There can be no substitute for this loss because the future generations will be deprived of the inspiration which these places gave too many and which created great people like Sri Lal Bahadur Shastri and Swami Ramanand Tirth, the two great servants of the people.

There are many more points which need to be considered because the affected people in the submergence area and even in the command area for which a disaster-management plan was to be prepared, were never given a chance to put forward their point of view. The first attempt they had made was through a petition submitted to Lok Sabha in 1977-78, but the Lok Sabha was dissolved before the completion of its term.

The reports of the Roy Committee and Bhumla

Committee may serve as the basis for a review of the Tehri Dam Project. The evidence of scientists recorded by the Bhumla Committee in this respect should be minutely examined. Independent opinion regarding seismic activity in future earthquakes, can only be of those seismologists of this county and other countries who have not in any way been connected with the formulation and clearance of the Terhi Dam Project either in the capacity of consultant or Chairman or member of any committee constituted for these purposes.

Now the composition of the Review Committee should be such that besides, the scientists and experts of different disciplines—seismologists, sociologists, economists, ecologists, spiritual leaders and members of Parliament should also be included. We hope that such a committee will reach unanimous decision and will protect this unique heritage of Humankind which is being ravaged for short-time economic gains, simple because the concept of economic growth believes in the religion of economics and the ritual of technology.

Note: *Personally presented by Sunder Lal Bahuguna on 7.5.92 to Prime Minister of India, Sri P.V. Narsimah Rao).*

Lord of The Hills

Gandhian environmentalist Sunder Lal Bahuguna intensifies his fight against the Tehri Dam.

Sharad Gupta

A mere two minute conversation in 1940 changed the life of 13-years-old Sunder Lal Bahuguna. He not only joined the non-violent movement launched by Mahatma Gandhi but adopted Gandhian philosophy for the rest of his life.

His was an innocuous questions; “What do you want to do after completing studies?” “I wish to serve the *Riyasat*,” pat came the reply. Pointing towards the poor who did not even have cloths, he was again asked, “Who will serve them?” “Who else but me,” he answered. The interviewer persisted, “How can you have two gods simultaneously? Do you wish to trade your conscience for a few silver coins?” “No, never I will become a disciple of Gandhiji with you,” young Sunder Lal told Dev Suman, a devoted freedom fighter from his province.

It was thus that Bahuguna, the author of the historic Chipko movement, came to tread the Gandhian non-violent path. “Dev Suman is still my inspiration,” he says. Suman had observed *upavas* (fast unto death) in Tehri jail in 1944 and his trial was conducted very secretly by the government. An enthusiastic Bahuguna somehow managed to smuggle out Suman’s statement

before the court and got it published in a Delhi-based Hindi daily. The government, taken aback by the audacity of the boy, arrested him and lodged in prison. Suman passed away on 84th day of his fast. Bahuguna recalls with moist eyes. But by that time the seeds of non-violence were deeply rooted in him.

At a time when violence has pervaded every sphere of life. Bahuguna is almost an anachronism – clad in a *khadi-dhoti* and by-now familiar head band serving a *maun vrat* and fast unto death to protest the construction of the gigantic Tehri dam. It is a strange sight, but neither stares nor scorn succeeds in deviating him from his path. “Those swimming against the stream get nothing but ridicule, neglect isolation and insult. I’m a small worker...even Bertrand Russel felt the same when he was sent to jail for observing satyagraha in front of England’s atomic bomb factory,” Bahuguna says.

Born in the tiny village of Marora-comprising only 10 houses—in Tehri Garhwal on January 9, 1927 Bahuguna grew up loving nature. His father, Amba Dutt Bahuguna, also a nature-lover, named two of his children Ganga, the river on the banks of which they lived. “When my father, a small farmer, called Ganga both my elder sister and I used to respond. Later my maternal uncles rechristened me Sunder Lal,” He recalls.

He did his initial studies at a government primary school about two miles from his native village. When a young Bahuguna got tired walking all the way to the school, his elder sister used to take him on her back. “Like all hill women all my sisters and my mother were very hard-working,” he says.

He was sent to Uttarkashi, 40 km from his village, for further studies. “I was called back after my father’s death. I was only eight then and had to pass my Matric from Pratap High School in Tehri—five km from our village.” He says

Besides the love for environment, Bahuguna also imbibed a fascination for books and magazines from his father. Patriotic literature didn’t take long reaching him. He had read some issues of *Chaand* and *Hindu Punch* even during his childhood. Tehri then was a Riyasat under British rule and state atrocities were common. “We were anguished but did not know how to give vent to our feelings. But after meeting Dev Suman, I organized the students,” he reminisces. The trip to jail at the age of 13 came soon. He came out of jail on a stretcher five months later when the police realized the ailing boy had better be hospitalized. After independence, he devoted his life to social service. “I was studying at Lahore University with honours in Political Science, History and English. When the country attained freedom from British rule,

I proceeded to take a degree in social service”, he says with a smile. The foremost task before him was to fight against untouchability, which was so prevalent in Tehri that sweepers and other lower-caste members were not allowed to enter hotels, houses or use community wells.

From 1949 to 1957, Bahuguna worked with considerable success for the removal of untouchability in the hills of Uttar Pradesh. He also worked to end slavery and set up the Silyara Ashram on the bank of Bhagirathi. The motto here was peaceful co-existence of the rich and the poor. He would have retired from active life and devoted time to spiritual learning, but for the Chinese invasion. On Acharya Vinoba Bhave’s instructions, Bahuguna went to frontier villages and handed out some warm, home-grown psychotherapy sessions which helped the people maintain patience and courage. Nehru was to compliment Bahuguna’s work by calling him a ‘defence major’

A major influence in Bahuguna’s life has been his mother, Puma Devi. She used to toil throughout the day, like all other hill women and would wish for death when overcome with extreme fatigue. This was why he decided to work for the welfare of hill women. He organized them to lead an anti-liquor movement (from 1965-1971) through picketing and peaceful dharnas. However, all his work put together did not provide

him true recognition, which came his way only after Chipko, the anti-tree felling agitation.

To prevent frequent landslides and floods in the plains, Bahuguna organized a small team of committed volunteers who would stop tree-felling by the timber mafia. “It was basically the non-violent mode of protest-picketing and dharnas—that helped Chipko become a success,” says Bahuguna. Nine years later, the awards started flowing in. from 1978 onwards, Bahuguna launched an agitation against Tehri Dam and proceeded on indefinite hunger strike there. He was convinced the dam would destroy the Garhwal Kumaon Himalays and create a perpetual flood threat in western UP.

“Though the Government has been presenting the Tehri project as a plan for development, it is, indeed , a scheme for destruction,” says Bahuguna. In fact, he has researched so much on the subject that he was awarded a doctorate degree in Science by Roorkee University. But the Government is unmoved despite adverse reports from two scientists’ committees and numerous other experts on hydrology and dam construction.

“Besides the environmental hazard, the dam would also pose a health hazard as stagnant dam water is known to cause several diseases,” he says. The river-already reduced to a big nullah-would completely dry

up, especially between Hardwar and Allahabad, he claims.

The amazing fact about his long hunger strikes have been that his health was never affected seriously. In 1992, when he abandoned a 45-day-long fast on Prime Minister, Narasimha Rao's assurance that the Tehri project would be reviewed comprehensively, he was back on his feet immediately. Last Saturday, doctors were again surprised to see the ageing environmentalist walk down to the ambulance without help to depose before district judge in Lucknow after 11 day fast.

"The source of my energy is a controlled and regulated life," says Bahuguna, who subsisted on salt and lime water during his fast. The 69 year man practices yoga daily and has a unshakeable belief in naturopathy. "If you give me intravenous fluids during my fast, I will die," he warned the doctors, adding that then they would be responsible for his death.

This Spartan outlook has made the Chipko crusader a unique figure known worldwide. He says only Gandhian philosophy can provide solutions to the three major problems facing the world—the threat of war and internal security; pollution and depletion of resources, hunger and poverty. And if the people are forgetting Gandhiji's ideals, he won't mind going it all alone. *Ekla Chalo re* will be my theme song he says.

Citizens Condemn Bahuguna's Arrest

Bombay,— Eminent citizens under the banner of the Bombay Natural History Society came together on Friday to condemn the arrest of Mr. Sunderlal Bahuguna for undertaking a fast unto death in protest against the construction of the Tehri dam.

The former chief secretary to the Government of India, Mr. B. G. Deshmukh, who is now the chairman of BNHS, the noted environmentalist, Mr. Bittu Sehgal, the social activist, Ms. Madhu Mehta, representatives of the Narmada Bachao Andolan, members of the Lion's Club among others in a memorandum to the Prime Minister called for the constitution of committee for the review of the Tehri Project.

The petition noted that Mr. Bahuguna withdrew his fast three years ago on the personal assurance of the Prime Minister that the project would be reviewed in totality. It was observed that the Government of India not only did not initiate a review but also continued with the project. The petition noted that the Government has now gone further and got the frail fasting Gandhian arrested for organizing a fast unto death.

Mr. Deshmukh told Indian express that the submission of the petition was only the first step and another meeting to be organized in three weeks will

decide the future course of action.

Memorandum read: The participants read the memorandum presented to the Prime Minister, Mr. Narasimha Rao, after he addressed the UNESCO meeting in Paris recently. Three representatives of international organizations had on that occasion challenged the PM's contention that India still stood by Gandhian values. They had demanded that the Government of India adhere to Mahatma Gandhi's moral code when solving the problems of those affected by the Tehri Dam.

The opponents of the Tehri dam say that it will submerge the entire Tehri town and 23 villages nearby. Seventy two other villages will be partially submerged and 5200 hectares of land, of which 1600 hectares is under cultivation will be lost to the reservoir. In addition 85,600 persons will be displaced.

If it goes through, Tehri dam could be the fifth largest dam in the world with a height of 260.5 meters impounding 3.22 million cubic m of water. The reservoir would extend upto 45 km in the Bhagirathi valley and 25 km in the Bhilangana valley with a water spread area of 42.5 square km.

Environmentalists point out that the dam is located in an area prone to earthquakes. Should a quake of an intensity equal to 8 or more on the Richter scale occur, the dam would collapse leading to a catastrophe far outweighing the benefits.

Listen to Bahuguna

It is a reflection of the Government's insensitivity to people's concerns that Mr. Sundarlal Bahuguna's fast since May 9 to protest against the Tehri Dam went unnoticed till some of his well-wishers in the Capital decided to gherao Mr. Kamal Nath at a World Environment Day (June 5) function. The fast is intended to remind the Government of its own promise, given by none other than the Prime Minister three years ago, that all aspects of the project would be reviewed. Having not kept its word and then compounding the mistake by letting construction work continue, the Government should now at least have the courtesy to send positive signals to the fasting leader. But so far it has only succeeded in erecting a wall to mistrust by not allowing the Narmada Bachao Andolan leader, Ms. Medha Patkar, to visit Mr. Bahuguna. If this decision smacks of authoritarianism, then the assault on the tribal rights activist, Mr. B.D. Sharma, by CISF Jawans only confirms the Anti-Tehri Dam movement's contention that the Government's doors are shut.

In view of Mr. Bahuguna's stature and the greater cause he represent, the Prime Minister must intervene to initiate a dialogue with the leaders of the Anti-Tehri Dam agitation. As a conciliatory move, the Government must not go back on Mr. Kamal

Nath's June 5 commitment that besides conducting an emergency review of the project's safety aspects, it will reassess the environmental impact and present all the documents in a White Paper shortly. The Government would do well to recall the warning sounded by its own Environmental Appraisal Committee (River Valley Projects); "...If the Tehri Dam collapses, it would cause a flood wave which would wipe out Rishikesh and possibly Haridwar." Mr. Bahuguna is simply articulating the same fear.

Indian Express, June 9, 1995

Save Bahuguna's Life

It is not the first time that the Chipko movement leader, Mr. Sundarlal Bahuguna, has undertaken a fast unto death to prevent-as he sees it-a future environmental disaster of Himalayan proportions from being enacted in the Tehri foothills. But while on the previous occasion the Government had at least responded by offering assurances for an impartial review of the Tehri dam project, it has acted in a far more obdurate manner in the current instance. In fact, the main provocation for the septuagenarian environmentalist's fast, now in its 35th day, is that the Government has been in no mood to implement its earlier assurances on the same count. Rather than addressing the relevant issues, the authorities have resorted to strong-arm methods to quell the agitation. Some of the anti-dam agitationists led by Bharatiya Jan Andolan president B.D. Sharma were brutally assaulted, while Mr. Bahuguna was airlifted to the AIIMS in New Delhi with the apparent aim of force-feeding him under medical supervision. Even though the Allahabad High Court has issued directions against force-feeding him, the authorities seem in no mood to address the real issues.

The points that Mr. Bahuguna has sought to raise through the fast are the dam is being built in a seismically sensitive zone, geologically the terrain of the region is unstable and the rate of siltation being very high due to large-scale denudation, the life of the dam could not go beyond 20 years. Thus, it is not

just its economic viability that is in question, but the large-scale death and destruction that it could bring to many cities and towns downstream in the event of a failure. The protesters have also argued that the dam in its present design could not withstand an earthquake measuring eight on the Richter Scale. But measures to strengthen the dam enough to withstand a quake of that order would raise the costs several fold, putting its economic viability into question still further. Apparently, what complicates the situation is that huge sums have already been sunk into the project. What is particularly questionable is the way in which funds were invested even without getting the project cleared at a number of levels. The point that Mr. Bahuguna is making through his fast is that mistakes could not be justified by forcing a *fait accompli* on people who would be directly affected by it. If the concerned authorities are as sure of their ground as they claim to be, they should have no objection to redeem the earlier promise of an impartial review of the project. That should settle the controversy once for all—and in the more immediate context save Mr. Bahuguna's life which is in grave danger in view of the ongoing fast.

“The future India hangs not in the political but in the physical balance..... the shape of things to come a couple of hundred years hence will depend on how we conserve our soil..... how, in short, we protect OUR FORESTS.”

An Open Letter to Members of Parliament

Dear Members of Parliament,

I send this appeal to you from Tehri miles away from Delhi where we have been sitting on Dharna to stop the construction of ambitious Tehri Dam Project. We began our peaceful movement on the auspicious day of Vaisakhi so that the yagyan being done to save the nation from the probable disaster and for the protection of right to life of the marginalized people may succeed.

We had made such efforts twice in December 89 and January 90 and from December 91 to April 1992. At first time we suspended our dharna thinking that the Government will take decision on this ill-conceived project after getting report of Environment Ministry's expert committee. But in spite of the Unanimous adverse report of the committee, clearance was given to the construction neglecting this report. Second time after my 45 days prayerful fast through which we demanded the review of the Parliament and other experts. We hoped that the review would be made and we would be given a hearing. But after earthquake of Uttarkashi in 1991 and in spite of the warning of the scientists of an earthquake of higher magnitude

in near future in the Himalaya, instead of converting this project into a safe run of the river project, the construction of coffer Dam has been started.

During last three years we approached the top government leaders, leaders of different political parties, U.P. Chief Minister and Administrators but no solid decision was taken. Under these circumstances there was no other way left, but to sit on Dharna to attract the attention of the government.

The question can be raised that our action of stopping the construction of dam is anti-development. It might had been regarded as development project in sixties when there was an enthusiasm about Dam projects and when Tehri Dam project was conceived. But during last 35 years adverse social, economic, cultural and ecological impacts of high dams have been perceived. The era of demolition, not the construction of big dams, has begun. The two dams on Loire river in France are being demolished because these were disrupting the free movement of the salmon fish. The problem of silt deposition, water logging and salinization and the inundating of fertile valleys, dense forests and the problem of uprooting of thousands of people have put a question mark on the utility of big dams. It centralized the vital resource like water, which results in the degradation of water quality and creates

regional imbalances.

Tehri dam is not affecting only one lakh local people but the poor people downstream who survive on vegetable cultivation in the flood Plain of Ganga when flood water recedes in the Gangetic plain and who earn livelihood by catching fish will lose their jobs. The farmers of western U.P. will be deprived of the fertile soil from the Himalaya. Recharge of ground water will cease. The sword of Damocles remains hanging over the heads of the people living downstream in cities like Deoprayag, Rishikesh, Hardwar, Bijnor, Meerut and Buland Shahar in case the dam bursts in the event of occurrence of an earthquake. Moreover, the siltation will shorten the life of the reservoir to 40 years. What will happen to irrigation and electricity generation after that? This dam is the temporary solution of a permanent problem.

As an alternative to this dam we suggested a run of the river scheme which would have been cheaper with a short gestation period. The fast flowing perennial rivers of the Himalayas have great potential for such projects. The advocacy of big dams, whose cost is escalating and even after spending 8.5 billion rupees is futile, power generation is a far off dream. This alternative was never considered. China achieved remarkable success by constructing 48204 small hydro-

projects with an installed capacity for 15055 M.W. This is a lesson for us to learn. Enumerable problems crop up when we construct a dam in a densely populated deforested and intensively cultivated country. The vital resource like water should be utilized where it falls. Appropriate technologies for this should be evolved.

It is true that the perennial Himalayan rivers emerging from the glaciers should benefit the whole nation, but it is the extreme of callousness to deprive the people of Himalaya of this natural resources after uprooting them. There is a conflict between the national interest and the local expectations for the utilization of the natural resources of water, land and forest in the tribal and hill areas. The only solution to this problem is to use these resources in such a way that national interest and local expectations are harmonized. The maximum area of the river catchment should be under permanent tree cover. This is possible by three farming for food, fodder and fiber. It will build permanent local economy along with the manufacture of soil and water for the nation. This will regulate the irregular flow of the rivers in which there is great difference between lean and peak season flow due to the denudation of the forests. These will be the permanent dams benefitting everybody. As a solution to the problem of Tehri dam specially the safety aspect and displacement which

is the most horrible form of human torture. I had suggested to the Prime Minister to constitute a review committee of members of Parliament, scientists and experts and spiritual leaders. I was encouraged to give this suggestion from the discussion which took place on 19th March 1992 during my long fast. This can be the only way to solve the difficult problems in a democracy. I have still with me the letters of some members of the Parliament in which they had made an appeal to give up fast for the service of the country. This encouraged me to remind you of this problem which is associated with our right to life. I beg your active participation in resolving this problem so that I may continue to experiments of Ahimsa (non-violence) in this area which affects defence, source of cultural inspiration, economy and ecology of this nation.

On the second day of our dharna some labourers from the construction company came to me and told that they had come from far away Cuddappa district of Andhra Pradesh and they would starve to death due to the stoppage of work. After hearing their sad plight their problem is disturbing me, what has compelled them to come to thousands of miles away from their families and surroundings? Several people from the hills have also gone away in search of work. It has ended the family life. A disintegrated personality is

developing in the children which is a great danger to peace and security of the society. Big projects and big industries never provide adequate employment to the local people. In an agricultural country like India where population pressure has reached to the climax, this can be done through small industries and equitable distribution of land. The father of the nation had given clear instruction in the connection and his disciple Vinobha Bhave had highlighted the problem of the landless. Having the experience of living as a common man, I can say that with confidence that they showed the right path inspite of the great pomp and show of big projects and all the attractions and mechanical farming. This is an opportunity to set a step on this path when we are celebrating 125th birth anniversary of Mahatma Gandhi and birth centenary of Vinobha Bhave.

I couldn't send personal letters to you because we are sitting here under a tarpaul in the scorching heat amid the dust and noise of vehicles running around. Besides this we are in a state of uncertainty. The dam builders are continuously creating pressure on the administration to put behind the bars a person, who is putting obstacle in the construction of a development project and hence, an anti-development. On the twenty sixth day, we are not in the prison because the

administration might be awaiting signals from the higher authorities. The contractors of this project are able to carry message from the top ruling authorities to the district level. Taking decision on their own, which should be regarded as the proof of their administrative ability is not possible, as they fear to be the victims of the wrath of the higher authorities. This is eating up our democratic system from within.

I am not raising the question of corruption rampant in this project, because it is said that 'corruption is everywhere'. You have discussed over several scandals in the parliament. It's only reaction is seen in the minds of the people that the roots of the corruption are in the top and it has become etiquette. Upto what extent this etiquette perverted our society and administration, is a subject of great concern
9.5.95

Humbly yours.
(Sunder Lal Bahuguna)
Anti Tehri Dam Dharna Place, Tehri, 249001.

PINGALWARA DIARY

(UPTO OCTOBER, 2016)

Services rendered by Pingalwara Institution for the service of the suffering humanity are:-

1. Homes for the Homeless

There are 1764 patients in different branches of Pingalwara now a days:—

(a) Head Office, Mata Mehtab Kaur Ward, Bhai Piara Singh Ward	374 Patients
(e) Manawala Complex	854 Patients
(b) Pandori Warraich Branch, Amritsar	82 Patients
(c) Jalandhar Branch	39 Patients
(d) Sangrur Branch	228 Patients
(f) Chandigarh (Palsora) Branch	94 Patients
(g) Goindwal Branch	93 Patients
	<hr/> Total 1764 Patients

2. Treatment facilities

(a) **Dispensary & Laboratory:-** Pingalwara has a dispensary and a laboratory for the treatment of patients. It has an annual expenditure of about Rs.90 lakhs. Medicines are also distributed free of cost to the poor and needy people.

(b) **Medical Care Staff:-** Experienced medical staff like Nurses, Pharmacists and Laboratory

Technicians are available for the care of the Pingalwara residents.

(c) **Blood-Donation Camps:-** A Blood Donation Camp is organized on Bhagat Ji's Death Anniversary every year. The blood is used for Pingalwara residents and road accident victims.

(d) **Ambulances:-** Ambulances with basic Medical aid are available for victims of road accidents on G.T. Road, round the clock and provide facilities for taking Pingalwara patients to the hospital.

(e) **Artificial Limb Centre:-** There is an Artificial Limb Centre at Manawala Complex, dedicated to the memory of Bhagat Ji which provides free of cost Artificial Limbs to Polio-ffected and amputee cases. 8137 needy people have benefitted till October 2016.

(f) **Physiotherapy Centre:-** A Physiotherapy Centre equipped with State-of-to-art equipment is functioning in the Manawala Complex since June 2005. On an average 80 patients are treated everyday.

(g) **Operation Theatres:-** There is a well equipped Operation Theatre in Bhai Piara Singh Ward Amritsar for general surgery and A Micro Surgery Operation Theatre in Manawala Complex where Cochlear Implants and major operations are carried out.

(h) Dental, Eye, Ear & Ultrasound Centres:- These Centres have been set up to provide these services to Pingalwara residents, sewadars and their families.

3. Education

Pingalwara Society is running five Educational Institutions for the poor and needy children.

- (a) **Bhagat Puran Singh Adarsh School, Manawala Complex:-** This school provides free education to 728 students from the poor and deprived sections of the society. They are provided with free books and uniforms. Children being brought up by Pingalwara Society are also studying in this school.
- (b) **Bhagat Puran Singh Adarsh School, Buttar Kalan (Qadian):-** This school is dedicated to the sweet memory of Bhagatji. 452 students are getting free education under the able guidance of well qualified teachers. The school also provides financial help to students who have finished their school studies and are aspiring for higher studies.
- (c) **Bhagat Puran Singh School for Special Education, Manawala Complex:-** This school is providing Special Education to 217 Special children.
- (d) **Bhagat Puran Singh School for the Deaf:-** Bhagat Puran Singh School for Deaf Children is functional at the Manawala Complex since May 2005. The

school is equipped with state-of-the-art training aid and has 152 children on its rolls.

- (e) **Bhagat Puran Singh School for Special Education, Chandigarh (Palsora):-** his school caters to the needs of Special adults of the branch.
- (f) **Vocational Centre:-** This Centre is providing free training in embroidery, stitching, craft work, making washing powder, candle making, ainting, etc. Young girls from the villages of surroundings areas are the main beneficiaries.
- (g) **Computer Training:-** Computers are available in all the schools for academic and vocational training.
- (h) **Hostel facilities:-** There are separate hostels for boys and girls in Manawala Complex. Many girls are pursuing higher studies in different colleges.

4. Rehabilitation

- (a) **Marriages:-** After being educated, boys and girls at Pingalwara are married to suitable partners. 40 girls and 4 boys have been married off till date.

5. Environment Related Activities

- (a) **Tree Plantation:-** Bhagat Puran Singh Ji was deeply concerned about the degradation of the environment. A vigorous campaign of tree plantation is started every year on Bhagat Ji's Death Anniver-

sary. Each year 15,000 to 22,000 trees are planted in various schools, colleges, hospitals, cremation grounds and other public places. These include Amaltas, Kachnar, Behra, Champa, Arjun, Sukhchain, Chandni, Zetropa, Kari-patta were distributed to different institutions.

- (b) **Nursery:-** Pingalwara has its own Nursery where saplings of various plants and trees are prepared. Every year, the aim of nursery is to grow more than 54 different kinds of saplings every year.

6. Social Improvement Related Activities

- (a) **Awareness:-** Pingalwara has played an important role in spreading awareness about the evils in the society. This has been done by printing literature on religious, social and environmental issues at the uran Printing Press Amritsar and is being distributed free of cost. It has an annual expenditure of printing and publicity is about 1 crores 50 lakhs rupees.
- (b) **Puran Printing Press:-** The Printing Press has been updated with an Offset Press.
- (c) **Museum and Documentaries:-** A Museum, and a number of documentaries have been prepared on Pingalwara activities as well as on zero budget natural farming. The C.D.s are freely available from Pingalwara.

A feature film produced by Pingalwara Society Amritsar EH JANAM TUMHARE LEKHE (Punjabi) on Rev. Bhagat Puran Singh Ji, founder Pingalwara and his struggle not only for selfless services of wounded humanity but for Environment Crisis also, will prove a beacon for the generations yet to come after us.

7. **Help to the victims of Natural Calamities:** Pingalwara makes an effort to provide succour to the victims of natural calamities like floods, earthquakes and famines. Aid was sent for the earth-quake victims in Iran, Tsunami disaster victims, Leh landslide and flood affected areas.

8. **Cremation of unclaimed dead-bodies:** Pingalwara cremates unclaimed dead bodies with full honour.

9. Dairy Farm

120 cows and buffalos at Manawala Complex provide fresh milk to the Pingalwara residents.

10. Old Age Homes

Old age homes at Sangrur and Manawala Complex of Pingalwara caters to the needs of elderly people.

11. Projects Completed and Under Construction

Since 1997 ambitious projects of Sangrur, Palsora at Chandigarh and Manawala Complex have been completed. In the year 2009 new buildings—Administrative Block, Puran Printing Press, Deaf School, T.B. Ward at Manawala Complex and at Head Office and

a New Administrative Block have also been completed.

In the year 2013, a new modern Bhagat Puran Singh School for Special Education in Manawala Complex of Pingalwara and a new Block for Pingalwara patients in Pandori Warraich Branch is under construction and is fast coming up.

Other Details:

- a) All India Pingalwara Charitable Society is a Registered Society, registered by Registrar of Companies vide letter No. 130 of 1956-1957 as amended vide No. A-28/4540 dated 07-07-1998.
- b) All donations to Pingalwara are exempted under Section 80G of Income Tax-II Amritsar letter No. CIT-II/ASR/ITO (Tech.) 2011-12/4730 dated 11/12 January, 2012.
- c) PAN Number of the All India Pingalwara Charitable Society is AAATA 2237R
- d) FCRA (Foreign Contribution Regulation Act) 1976 Registration No. of Pingalwara is 115210002

Wahe Guru Ji Ka Khalsa

Wahe Guru Ji Ki Fateh

Dr. Inderjit Kaur,

President,

All India Pingalwara Charitable Society (Regd.),

Tehsilpura, G.T. Road, Amritsar. (Punjab).

DETAILS OF BANKS FOR SENDING DONATION THROUGH ONLINE/CHEQUE/DRAFT					
Cheques & Bank Drafts may be sent in favour of :					
All India Pingalwara Charitable Society (Regd.) Amritsar.					
PAN CARD NO. AAATA2237R					
S. No.	Name of Account	A/C No.	Name of the Bank	IFS Code For Inland Remittance	Swift Code For Foreign Inward Remittance
FOR FOREIGN DONORS					
1.	All India Pingalwara Charitable Society (Regd.) Amritsar.	01562010002890	Oriental Bank of Commerce Sharifpura Amritsar.	ORBC0100156	ORBCINBBASR
FOR INLAND DONORS					
2.	All India Pingalwara Charitable Society (Regd.) Amritsar.	01562010003720	Oriental Bank of Commerce Sharifpura Amritsar.	ORBC0100156
3.	All India Pingalwara Charitable Society (Regd.) Amritsar.	10978255668	State Bank of India Town Hall, Amritsar	SBIN0000609	SBINHHB274
4.	All India Pingalwara Charitable Society (Regd.) Amritsar.	630510100026147	Bank of India City Centre Amritsar	BKID0006305	BKIDINBBASR

5.	All India Pingalwara Charitable Society (Regd.) Amritsar.	685010100009799	Axis Bank Ltd. City Centre, Amritsar	UTIB0000685	AXISINBB179
6.	All India Pingalwara Charitable Society (Regd.) Amritsar.	0018002100097336	Punjab National Bank Hall Bazar, Amritsar.	PUNB0001800	PUNBINBBAHB
7.	All India Pingalwara Charitable Society (Regd.) Amritsar.	006601012522	ICICI Bank Ltd. Lawrence Road, Amritsar	ICIC0000066	ICICINBBFEX
8.	All India Pingalwara Charitable Society (Regd.) Amritsar.	01151000246510	HDFC Bank Ltd. Mall Road, Amritsar	HDFC0000115	HDFCINBB
9.	All India Pingalwara Charitable Society (Regd.) Amritsar.	13131000082013	HDFC Bank Ltd. Ghanta Ghar Golden Temple Amritsar	HDFC0001313	HDFCINBB
10.	All India Pingalwara Charitable Society (Regd.) Amritsar.	00011000096048	Punjab & Sind Bank Hall Bazar, Amritsar	PSIB000A001	PSIBINBB017
11.	All India Pingalwara Charitable Society (Regd.) Amritsar.	01010100015572	Bank of Baroda Town Hall, Amritsar	BARBOAMRITS	BARBINBBAMR

- * Preserve natural resources.
- * Service of the poor and destitutes is the service of God.
- * Plant trees to save environment.
- * Wear Khadi clothes to lessen unemployment.
- * Simple living and high thinking is a bliss.
- * Use less of diesel and petrol.
- * Exercise restraint in your living habits.
- * Don't forget to plant trees. They are the sign of prosperity of a nation.

—Bhagat Puran Singh

K.M. Munshi writes that Matsya Purana says: "One who sinks a well lives in heaven for as many years as there are drops of water in it. But to dig ten such wells equals in merit the digging of one pond; digging of ten such ponds was equal to making a lake; making of ten lakes was as meritorious as begetting a virtuous son but begetting ten such virtuous son had the same sanctity as that of planting a single tree."