

**Development and Water Resources in Indian Himalayan Region: An Invitation to Disaster-  
A Study of Hydroelectric Power Developmental Projects in Himachal Pradesh****Mohinder Kumar Slariya****Associate Professor, Department of Sociology, Govt. PG College, Chamba, Himachal  
Pradesh University, Shimla-176310****Abstract**

*Dams have had serious impacts on the lives, livelihood, culture and spiritual existence of indigenous people. Moreover, the physical environmental conditions of area have led towards drastic changes and drastic changes in the existing climatic conditions have been observed over the period of time. People have been suffering disproportionately in this process of development since the inception of these developmental initiatives due to neglect and ignorance to secure justice with nature as well as with human being who are either living in the vicinity or in the area.*

*Initially, development means fulfillment of basic needs for survival, but today development means construction of multi-story buildings, industries and construction of dams. Today, everybody talks about development but nobody is giving attention towards the environmental degradation which is further creating a natural imbalance. Development in Indian Himalayan Region (IHR) is essential, but at what cost? The developmental initiatives by creating natural imbalance and disturbing fanatic bio-diversity including human being in IHR is neither desirable nor justifiable.*

*Present paper is an attempt to understand the status of water resources in Indian Himalayan Region (IHR) and highlights an amount of disturbance in physical environment because of the construction of power projects in Himachal Pradesh. The state is blessed with five perennial major rivers, giving meaning to the lives of millions of people directly or indirectly. Moreover, at present state is proceeding toward "Hydroelectric State" which is undoubtedly a noble idea but the cost attached to it must be taken care of.*

*The paper is an analytical attempt of the researcher to understand the cost of construction of dams in terms of natural as human. The disturbances in natural setting are creating disturbances in physical environment on the one hand and disturbances in the lives of flora as well fauna including human beings on the other, are inviting disasters. These disturbances have been studied by using secondary data and observations recorded by the researcher during data collection.*

**Keywords:** *Dams, Hammered physical environment, Disaster, Livelihood, Sustainability*

**Status of water Resources in IHR:**

Since the inception of human civilization, man has been involved in the process of making his life more comfortable. In this process of giving meaning to his life and make it more comfortable, he altered nature according to his need. Earlier, this was need based but with the passes of time it start converting the *need to luxury* and the pace of it has changed drastically and at present, thinkers are compelled to think and suggest the policy makers to *re-think* and *re-introspect* which are being initiated in the name of development. In the existing literature the concept of development has broadly been defined *as the process of desired change*<sup>1</sup>. The question remained unanswered if the existing definition of development is correct then *desired* by whom? Is it desired by policy makers or desired by the human being who are living in the vicinity of these developmental mills or is it desirable for the natural environment which has been provided by the *Mother Nature*<sup>2</sup>. Mostly developmental activities are based on nature and hydro-electric power generation is not an exception. India being a developing country needs this modern invention to run its' developmental mills and is of paramount significance to achieve the targeted growth of 10 % in coming decade. For this reason IHR is heavily targeted and *Mission-2012*<sup>3</sup> was launched with a target of huge electricity generation of more than 50,000 MW, as a result of which most states of IHR have been targeted to make *electricity states* including Himachal Pradesh.

At large, India has about 81% of generating capacity in South Asia, only 56% of its population has access to electricity; over 579 million live without this modern convenience. The per capita electricity consumption in India is 17.85% of world average. Energy starved India is increasingly depending upon the estimated 207,149 MW hydro-electric potential of Himalayan Rivers from J&K to Arunachal Pradesh<sup>4</sup>.

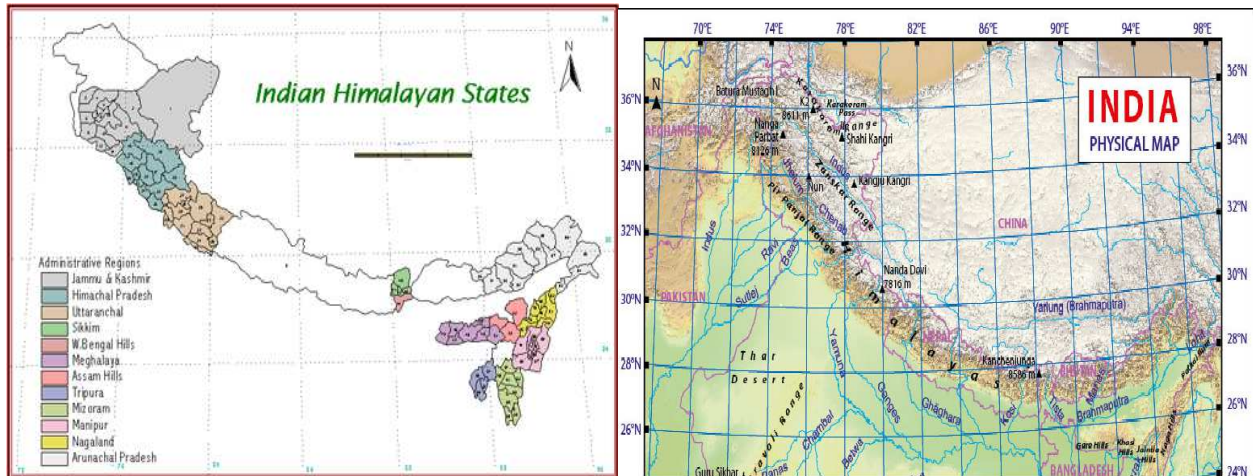
The IHR is spread in 10 states, 95 districts, contributing 16.2 % area, shares boundary with 7 countries and house for perennial rivers like Indus, Ravi, Beas, Chenab, Sutlej, Kali, Kosi and Brahmaputra. The region is responsible for providing water to a large part of the Indian subcontinent and contains varied flora and fauna. IHR is having hundreds of lakes and three main river basins i.e. The Indus, the Ganga and the Brahmaputra. These rivers have popular perennial rivers like; Ravi, Satluj, Beas, Chenab, Yamuna, Ganga, Kosi, Tista, Manas, Brahmaputra and Lohit etc. There are 31 rivers in Barahamputra basin; 67 rivers in Ganga basin and 19 rivers in Indus basin and having more than 1000 rivulets, streams and tributaries giving meaning to the lives of lakhs of people in the downstream as well as up-stream.

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This region has been heavily targeted for hydro-electric power development because of availability of perennial sources of water in form of rivers. At present this region has been estimated to produce electricity more than 1.10 lakh MW.

**Figure 1: Showing IHR’s states and Rivers originating from the Region:**



The Himalayas is the world's highest mountain range comprising all top ten of the world's highest peaks. In fact, the Himalayas includes 14 peaks more than 8,000 meters high and some 200 more than 6000 meters. IHR is a house for two major river systems i.e. Indus and Brahmaputra water system and having origin of major rivers of this system. With the increase in demand of electricity this area has been heavily targeted and at present it is under pressure. The eyes of whole world is on perennial rivers of IHR and proves the fact narrated by the King of Bhutan in a conference, *what oil to Arabs, water is to us*. Water is going to be the most important resource in coming time because to date no scientific invention or no laboratory where water can be produced, it is to be produced by the *Mother Nature* and we must act like a good son and must use it distributive justice and in a sustainable manner. Following is the current status of availability of water and it’s use for hydro-electric power generation:

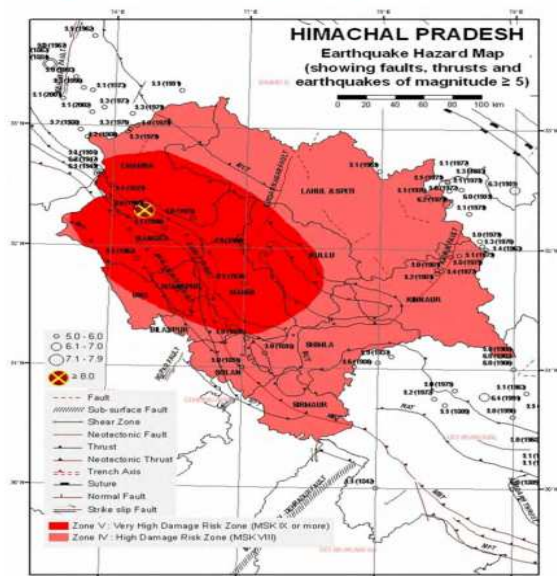
**Table 1: Showing Status of Hydro Power in Indian Himalayan Region (in MW)**

Indian Himalayan State	Status	Capacity in MW
Himachal Pradesh	Projects Under Operation	6370.12
	Projects Under execution/allotted	5744.10
	Projects Under the process of Allotment	5615.50
	Projects to be re advertised	1481.00
	Abandoned Projects	0435.00
	Projects Under investigation	0046.50
	Himurja Projects proposed/under execution)	0723.40
	<b>Total</b>	<b>20415.00</b>
	Jhelum River Basin (total=6)	0252.60

<b>Jammu &amp; Kashmir</b>	<b>Existing Projects</b>	Chenab Basin (total=5)	0483.80
		Ravi Basin (total=1)	0009.00
		Indus Basin (total=8)	0013.03
		Central Sector	1560.00
	<b>Under Construction</b>	State Sector	<b>0453.61</b>
	Central Sector	0449.00	
	<b>Total</b>	<b>3221.31</b>	
<b>Uttarakhand</b>	Power Projects under operation	3164.75	
	Power Projects under Construction	5509.40	
	Projects under Development	17540.93	
	<b>Total</b>	<b>26214.68</b>	
<b>Sikkim</b>	Upper part of Sikkim (total=9 projects)	2823.00	
	Lower part of Sikkim (total= 11 projects)	1402.00	
	<b>Total</b>	<b>4225.00</b>	
<b>Arunachal Pradesh</b>	Central (total=4)	05870.00	
	State (total=8)	14785.00	
	Private (total=74)	27512.00	
	<b>Total (total=86 projects)</b>	<b>48167.00</b>	
<b>Nagaland</b>	State	0075.00	
<b>Manipur</b>	To be implemented by NHPC (total=7)	0037.75	
	Under capital Subsidy Programme (total=3)	0800.00	
	Under State Sector (total=3)	0560.84	
	Under Centre Sector (total=2)	1590.00	
	Mini/micro Projects (Total=5)	3900.00	
	<b>Total (total=20 projects)</b>	<b>6888.59</b>	
<b>Mizoram</b>	Centre Sector (total=3)	<b>0876.00</b>	
<b>Tripura</b>	State/centre (total=2)	<b>0184.00</b>	
<b>Meghalaya</b>	State (total=1)	<b>0090.00</b>	
	<b>Grand total</b>	<b>110281.25</b>	

Source: author's compilation from different sources

The Earthquake Hazard Map of BMTPC, 2006 shows that Himachal Pradesh falls in one of the highest risk zone areas of the state (Zone IV & V).



Earthquake Hazard Map of Himachal Pradesh  
(Source: BMTPC Atlas of India)

**Vulnerability in Himachal Pradesh:** Sample GIS based assessment suggested more than 60% of total state population fall in very high vulnerable zone (highlighted with red colour) and this area is one of the 38 high vulnerable zones of the country. According to another assessment, 109 tehsils and sub tehsils have been identified highly vulnerable and can be divided in two highly vulnerable zones viz. *Kullu-Mandi-Sundernagar Corridor* and *Palampur-Dharamshala Kangra-Dehra Corridor*. The area of both corridors and the areas surrounding of *Chamba, Nurpur, Hamirpur and Bilaspur* have

also been identified as highly vulnerable zones (seismic Zone-IV and V).

Even though the intensity of past seismicity is more in districts like Chamba (33.63), Lahaul & Spiti (17.91), Kinnaur (16.82) and less in Kangra (7.05), Kullu (3.44), Hamirpur (0.36).

**Vulnerability Zones:** Vulnerability and risk zones wise whole state can be divided in three zones i.e. Zone-A, Zone- B, Zone-C. Chamba city includes in Zone-A, as depicted in the figure which is highly vulnerable from disaster point of view. Changing climatic conditions make it more vulnerable and needs to be addressed immediately with effective mechanism. More than 150 power projects (table:1) in one basin cannot be justified in Zone-A which is highly seismic.



**Pressure on Rivers in Himachal Pradesh:**

Himachal Pradesh is blessed with five perennial rivers i.e. Satluj, Beas, Ravi, Chenab and Yamuna originating from glaciers and at present have been targeted heavily for the hydro-based power generation. In Himachal Pradesh alone about 415 projects (Over 300 small and 115 medium and large) are planned, under execution or operational. To expedite capacity addition, Environment Protection Rules have been diluted or shelved affecting the livelihoods of estimated 128,000 households.

The hydro-electric power potential in Himachal Pradesh is estimated at 20,386 MW, which is 24.27% of India’s total potential. Of this, 6,045 MW [29.65%] has been harnessed so far, 2720.5 MW [13.34%] is under execution. Techno-economic feasibility studies are complete for 3,011 MW and in the process of completion for 3,671.5 MW. Survey has been completed for 4187 MW. Him Urja, a new agency administers micro-hydel projects (table: 2).

**Table 2: Showing Pressure of Hydro-power generation in Himachal Pradesh**

Basin	Currently operational (in MW)	Under Execution (in MW)	TEFR Ready (in MW)	TEFR not Ready (in MW)	Survey completed (in MW)	Total (in MW)
Yamuna	0211.52	0110.00	0231.00	0000.00	0039.00	0591.52
Satluj	3150.25	1280.50	1402.00	2227.50	1360.50	9420.25
Beas	1634.50	1330.00	0736.00	0856.50	0025.00	4582.00
Ravi	1043.50	0000.00	0642.50	0348.00	0260.00	2294.00
Chenab	0005.30	0000.00	0000.00	0240.00	2503.00	2748.30
<b>Total</b>	<b>6045.07</b>	<b>2720.50</b>	<b>3011.50</b>	<b>3671.50</b>	<b>4187.50</b>	<b>19636.07*</b>

*\*small/mini/micro projects of Himurja (750MW) are not included*

*Source: author’s compilation from HP State Electricity Board*

The Satluj basin is targeted for heaviest exploitation with 9420 MW projects spread over 37 locations. Beas basin comes next with 4,582 MW, spread over 26 locations. Ravi and Chenab basins in chamba district, account for 5042 MW spread over 46 locations together. Yamuna basin straddles two states (Himachal and Uttaranchal) and accounts for 591.5MW spread over 12 locations. Power project in 33 locations are currently producing 6045.07 MW in the state on five perennial river basins and projects on 12 locations with installation capacity of 2720.50 MW is under execution and targeted to be completed within next couple of years (table: 3).

**Table 3: Showing Status of Basin-wise Power Projects (No. of locations) in Himachal Pradesh**

Basin	Currently operational (in MW)	Under Execution (in MW)	TEFR Ready (in MW)	TEFR not Ready (in MW)	Survey completed (in MW)	Total (in MW)
Yamuna	4	1	6	0	1	12
Satluj	9	5	2	8	13	37
Beas	8	6	8	3	1	26
Ravi	7	0	7	4	2	20
Chenab	5	0	0	1	14	20
<b>Total</b>	<b>33</b>	<b>12</b>	<b>23</b>	<b>16</b>	<b>31</b>	<b>115</b>

*Author's compilation from [www.hpseb.com](http://www.hpseb.com) and Himurja (2007 data)*

There are 115 power projects in the state in the categories of large, medium and large project. Out of 115 projects, 23.5% (27) are large [over 200 MW], 37.4% (43) are medium sized [50-200MW] and 45 are of under 50MW capacity. Satluj, Beas and Ravi basins account for 72.17% medium, large and small/mini/micro projects. Power projects in these basins are considerably affecting the physical as well as socio-economic environment of the state. It is also stated that these three basin covers maximum geographical area of the state and also having maximum population.

**Table 4: Showing Disturbances in Physical Environment because of Construction of some Projects in Himachal Pradesh**

Name of the Power Project	Name of the River	Installation capacity in MW	Head Race Tunnel in Km	Tail race tunnel in Km	Total Diversion in Km
Nathpa-Jhakri	Satluj	1500	27.394	0.982	28.376
Rampur	Satluj	0415	15.088	---	15.088
Baspa-II	Baspa (Satluj)	0300	07.095	0.475	07.570
Luhri	Satluj	0775	38.138	0.454	38.592
Dehar	Beas	0990	06.065	---	06.065
Parvati-II	Parvati (Beas)	0800	31.052	0.240	31.292
Parvati-III	Parvati (Beas)	0520	07.098	2.007	09.105
Chamera-I	Ravi	0540	06.400	2.004	08.404

Chamera-II	Ravi	0300	07.083	3.046	10.129
Chamera-III	Ravi	0231	15.093	---	15.093
Baira-suil	Baira-suil (Ravi)	0198	07.063	---	07.063
	<b>Total</b>	<b>6569</b>	<b>167.569</b>	<b>9.208</b>	<b>176.777</b>

*Author's compilation from different sources*

Table: 4 is the description of the some major power projects installed by different executors in three major river basins of the state i.e. Ravi, Satluj and Beas. To assess disturbances in physical environment in these basin, major projects producing 6569 MW electricity have been taken. These projects have been installed by making more than 176 kms diversions in form of HRTs and TRTs, out of which 167.5 kms diversion is because of the construction of TRTs and more than 9 kms because of TRTs. The most important fact is these diversions are in most seismic active zone-IV and V of western Himalayas and as asserted by *Dr. Watson rocks in this region are in formation stage and disturbances in physical environment is not desirable in this region.*

### **Hydro- Power Projects: An Invitation to Disasters**

The Ravi River, a trans-boundary river of India and Pakistan, is an integral part of the Indus River Basin. It rises from glacier fields named as Bara Bhangal, in Kangra district in Himachal Pradesh, India [elevation 14,000 feet (4,300 m)]. Flowing between Peer Panjal and Dhaula Dhar ranges of Mid-Himalayas, it drains a total catchment area of 14, 442 kms<sup>2</sup> (5,576mile<sup>2</sup>) in India covering 720 kms (450 miles). This perennial river is catering the socio-ecological needs of the people living on both sides since ages and has been evidence to many kingdoms and have also seen many socio-political changes.

After catering socio-ecological needs of the people since ages, in early 80s this basin has been targeted for hydro-based planned development by the state as well as central government. Ravi basin got first hydro-based developmental projects in early 80s named as Baira-suil Hydel electric Power Project, which was first power project of Govt. of India enterprises i.e. NHPC (National Hydel-electric Power Corporation Ltd). Prior to this professional execution of power project, King of erstwhile state of Chamba Raja Bhuri Singh developed a small power project on Saal tributary of Ravi near Chamba in 1908, which was the second power project in Asia. After then a series of power projects has been initiated by the Government.

### **Present Status of Ravi River:**

As depicted in table:1, in Ravi basin there are 159 power projects of different magnitude are there which are of Small/medium/micro categories in Chamba district of Himachal Pradesh which is based on the information available on <http://himurja.nic.in/mousigned.html>. There are more than 40 samll rivulets in ravi basin which makes ravi a preninial river, but the construction of 159 projects on these rivulets have a detrimental impacts on the physical environment as well as on the other aspects of life of the people.

### **Table 5: Showing No. of Power Projects in Ravi Basin in Chamba District of Himachal Pradesh**

Sr. No.	Category of Project	No. of Projects*	Installation Capacity (in MW)
1.	Project Allotted	117	372.55
2.	Other Projects	010	027.50
3.	Application filled	032	003.20
	<b>Total</b>	<b>159</b>	<b>403.25</b>

\* *power projects of small/mini/micro categories and projects of medium and large category excluded*

As it is evident from the above table: 5, Ravi basin there are power projects in three categories and 117 projects are allotted of more than 372 MW for execution and there are 10 projects in other projects categories (more than 27 MW) and application for more than 3 MW for 32 projects have been filled by the different executors. These projects are expected to executed in the small rivulets and nallas of ravi basin in chamba and kangra districts of Himachal Pradesh and these projects are affecting disproportionately the local people as the small rivulets are meeting daily needs of the people by irrigating their land, running traditional water mills, fishing, sand and stone and other ecosystem services since ages. With the coming-up of these projects the area is expected to affected very badly just for the production of mere 400 MW electricity as this basis has already contributed a lot in form of Baira-suil, Chamera-I, II and III, Bharmour, Holi-Bajoli power projects and these projects had already disturbed a lot the natural setting, flora and fanatic bio-diversity to greater extent (table 3 & 4).

It is mention-worthy here that more than 160 projects of mini/micro/small categories are in different stage of their execution and are being executed in 39 small/medium and large rivulets in Ravi basin. These rivulets makes ravi a perennial river and rearing thousands of people by meeting eco-system needs of the area since ages. With the coming-up these power projects eco-system services are being affected and people have to come on the road for justice. More importantly, the Ravi catchment area falls in the most geologically weak area i.e. zone-A (as depicted in above figure). The geological composition of this area comprises of rocks and other components, which are in formation stage. It falls in Seismic Zone V that has high possibility of earthquakes. In 2005 a number of mild earthquake jolts of 3.7 to 4.8 Richter Scale has been experienced in Chamba. The earthquake of 1995 measuring 5.4 Richter scale immediately after the commissioning of Chamera-I in 1994 was the first retaliation of the nature with its epicenter at Kiani village, which is situated at the endpoint of 19-kilometer (Ravi side) reservoir of the Chamera-I.

Hydro-based developmental activities have been started in late 1980s with the installation of first power project named as Baira-suil power project of 192 MW and it was owned by NHPC, then after three more projects have been installed by NHPC i.e. Chamera-I, II and III in the radius of 60 kms. Table: 3 is presenting present status of Ravi because of construction of some power projects:

**Table 7: Showing the Present Status of Ravi after the Installation of Power Projects\***

Name of the Project	River/ tributary	Year of Commissioning	Installation Capacity (in MW)	Diversion for HRTs (in kms)	Diversion for TRTs (in kms)	Total diversion (in kms)
Baira-suil	Baira-suil	1984	0198	07.063	---	07.063
Chamera-I	Ravi	1994	0540	06.400	2.004	08.404



Chamera-II	Ravi	2003	0300	07.083	3.046	10.129
Chamera-III	Ravi	2012	0231	15.093	---	15.093
		<b>Total</b>	<b>1269</b>	<b>35.639</b>	<b>5.050</b>	<b>40.689</b>

*\*Author's compilation from different sources*

As it is evident from the table, during the period of 1984-2012, four power projects have been installed to produce 1269 MW power by NHPC. These power projects have created total 40.689 km diversion/re-routing of natural ravi and other streams by creating head race tunnel (tunnel being used to carry water to the turbine in power house) and tail race tunnel (tunnel pick and throw water back to the main stream from where it diverted to HRTs after producing electricity). Tunnels of both types having dia of 6.4 meter to 10 meter is enough to estimate how much muck have been dig out and throw in the natural setting and affecting the natural environment. Such construction have affected up-stream as well as low-stream area by drying river in the low-stream and by creating reservoirs in up-stream. Impact of these four power projects on physical environment of the ravi basin is apparent from table: 8

**Table 9: Showing Hammered Physical Environment because of the Installation of Power Projects in Ravi River in Chamba District of Himachal Pradesh\***

	Name of the Project	Dry Patches**			Distance in Km
		HRT	TRT	Total	
Dry patches of Ravi after diversion of water to HRTs	Chamera-I	HRT to TRT (Khairi to Chauhra)			14.400
	Chamera-II	HRT to TRT (Karian to Bagga)			16.200
	Chamera-III	HRT to TRT (Dharwala to Bakog)			20.300
		<b>Total</b>			<b>50.900</b>
		Present Status of Ravi	Name of Project	HRT	TRT
Diversions because of construction of chamera series of dam	Ravi in Tunnel	Chamera-I	6.400	2.004	8.404
		Chamera-II	7.083	3.046	10.129
		Chamera-III	15.093	--	15.093
		<b>Total</b>	<b>28.576</b>	<b>5.050</b>	<b>33.626</b>
	Ravi in Reservoirs	Chamera-I	29.000		32.006
Chamera-II		03.006			

*\*author's compilation from different sources*

*\*\* on these dry patches ravi seen occasionally, when water is over flow and ravi is not seen on these patches in summer and in dry season, meaning thereby ravi dances to the tune of NHPC in these patches*

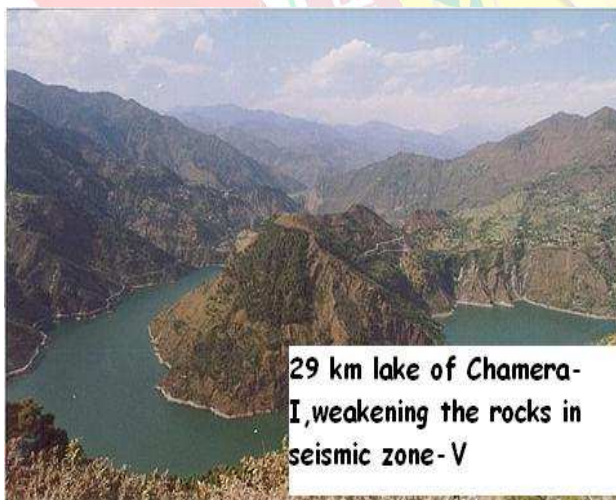
The installation of power projects are largely responsible for the climatic changes, unseasonal rain, recently cloudburst in *Sarol* and *Rajpura* village, just one kilometer away from the top head of the Chamera-I reservoir, dry Ravi, large water body of 32.6 kilometer, underground blasting

which has dried all vegetative cover and natural sources of water, above all tunnelization of Ravi (40.689 Km) are some areas of major concern which are disturbing the people of the area. The dry patches of perennial Ravi river (50.900 kms) because of the construction of three projects i.e. Chamera-I, II and III {from TRT of Chamera-I (Khairi) to HRT of Chamera-III (Kharamukh/Dakog)} have a detrimental impacts on the eco-system services which are being imparted to the native of these areas since ages by the nature. In these dry patches there is no water which further aggravate the problem by increasing temperature in these area and making life of the people more miserable as it was not so before the installation of the dams. The dry patches and non-availability of water in the down-stream, is violation of the order issued by Hon'ble High court of Himachal Pradesh *regarding 15% availability of water in the downstream of any dam to sustain aquatic life and to meet out the eco-service needs of the people who are living in the downstream.*

People feel concerned about the environmental hazards in form of earthquakes, in the most geologically weak region, they think that trespass in nature to this extent may be resulted into havoc consequences anytime.

#### **Hammered Physical Environment:**

Physical environment comprises of land, water and air, which further can be categorized in four interdependent spheres i.e. atmosphere, lithosphere, hydrosphere and biosphere. The impacts of the installation of power projects on these spheres is because of carving and construction activities, tunnelization (40.689 km) in form of Head Race Tunnels (TRTs), Tail Race Tunnels (TRTs), edits, shrug shafts, underground power houses, pressure shaft and allied construction related activities.



Reservoirization of Ravi (40.689 kms) in Himachal and if the length of Thein Dam is added then it would come out  $40.689+42=82.689$  kms just in the stretch of 110 kms from Madhopur to Dhakog (dam site of Chamera-III) in geologically weak zone are not desirable. As accepted by NHPC, the area of Baira Suil, Chamera-I, II and III are geologically weak and whole area falls in Seismic Zone-V. After the installation of power projects in this region the possibility of earthquake has increased manifold. According

to the *World Commission on Dams*, the possibility of Earthquakes measuring 3 to 3.5 Richter Scale in the reservoir is a routine phenomenon. After 1995 this area has experienced many minor jolts of earthquakes.

Along with earthquakes, the whole area has also experienced the newly erupted *phenomena of cloudburst*. The cloudburst is happening almost every year and is responsible for the loss of life and property in form of fertile soil, trees and other forest commodities. So, it is submitted with

conviction that such types of developmental activities are not desirable as well as viable especially in Seismic Zone V.

**Final Comments:** The age-old Ravi which has been sustaining the livelihood of thousands of people since ages and has been giving meaning to the lives of thousands of people in the catchment area, but today Ravi is being brutally looted in the name of development. Today Ravi seen occasionally at the patch of 15 km from TRT Karian to Udaipur village in the remaining track, it has been diverted from its natural route and confined in the reservoir and tunnels. The eco-system services which are being provided by Ravi since ages, has been totally affected with the coming-up of power projects. With the installation of power projects round 1269 MW, if the situation is like this, then what would be the socio-environmental condition when more 150 projects of different magnitudes execute in this basin?

It is undoubtedly a matter of great concern for policy makers, executors, and all concerns, we have to think again on the power generation policies with a thought that whatever we are developing, and at WHAT cost? If the cost is more than benefits, if the cost is not local people oriented, if the cost is not at the cost of aspiration of people who are living there since ages, then researcher argue that this is not the best way to bring prosperity and development in the region.

Any development, which is not bringing desired change in the lives of people of area in particular and of whole region/country in general, then policy makers must re-think and re-consider proposed developmental initiatives in any part of the world including Ravi basin in Himachal Pradesh. It is because of the fact that ultimately, Who own rivers? Who own natural resources? And who is getting benefits out of such developments? Rivers/natural resources are being own by the people of area where any developmental initiative is being initiated, is blessed by the nature to the people of that vary area. If lives of people who are living there is not changed because of such developments then the policy makers must re-think.

Undoubtedly, national interest is there, it is also a fact electricity can be generated only in the hills where water is available and particularly states in IHR is a place where it is available in abundance, but what is maximum limit, what is carrying capacity of *Mother Earth* as well as hills of that vary area? So, we must have to re-think on these issues and should take a lesson from Kedarnath tragedy which occurred recently (June, 2013) otherwise the cost would be so high and cannot meet out of the profit which is being earned by the executors.

Most important fact is that *profit* is being earned by the executors but *cost* is to be paid by the local people, local people who are unfortunately or fortunately living in the vicinity of these developmental mills would be the *real bearer of the cost*, they will lose their property, everything which belongs to them and even their lives, not the executors. Executor can lose the machineries, production, profit but not what native are losing. So, it is high time to think again, before it is too late and we must manage our water resources effectively, because everything can be generated but water cannot!

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