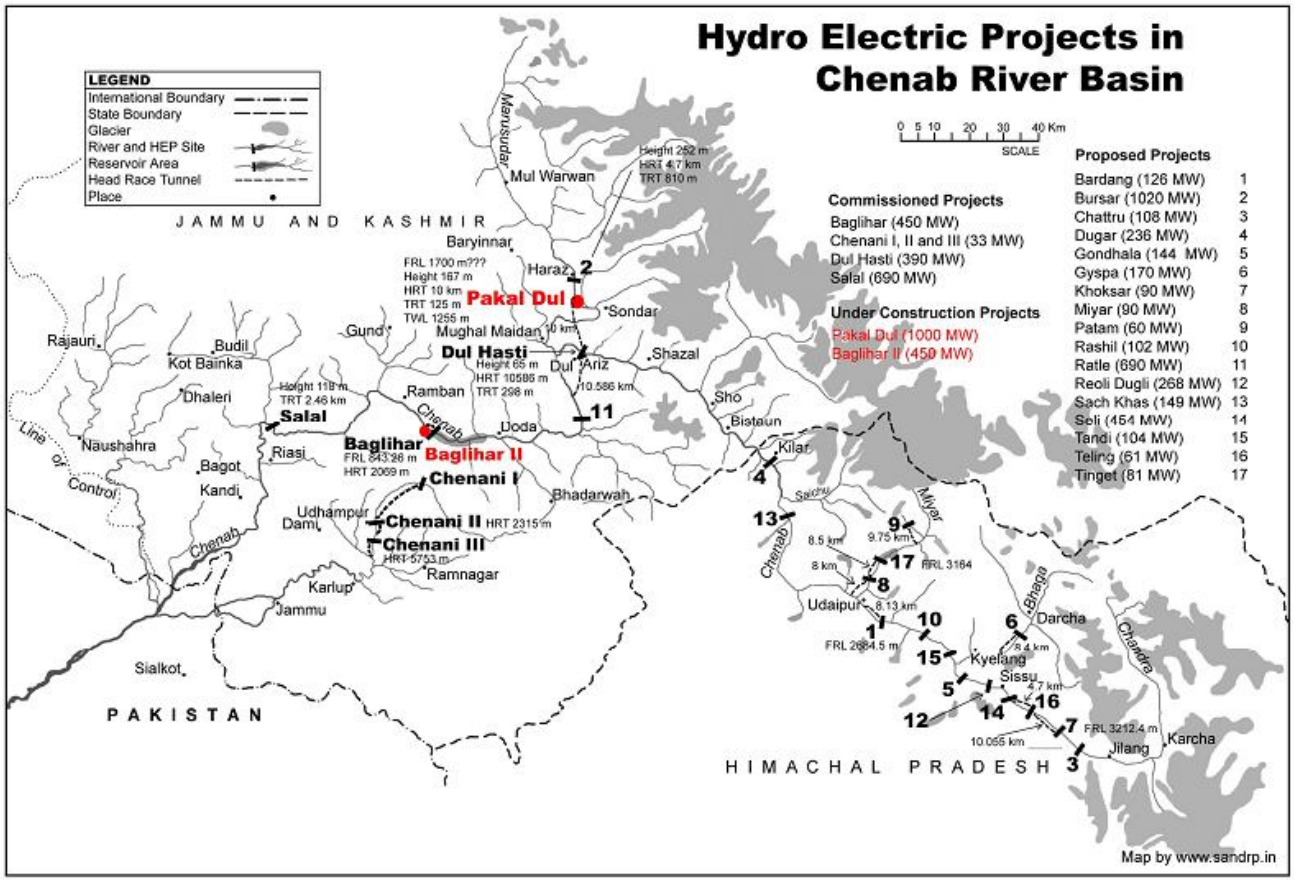
Dams on Chenab River: How many are too many?

Chenab (Chand Aab), Chandrabhaga, or the Moon River flows for 130 kilometres in Himachal Pradesh, which holds a tiny proportion of the basins catchment area: 7500 sq kms of its total 61000 sq kms. **In this tiny area, Himachal Pradesh is constructing, implementing and planning 49 hydroelectric projects on Chenab.** While other rivers like Sutlej, Beas and Ravi as well as smaller streams and tributaries in Himachal are almost completely dammed or in the process of being finished off, Chenab was the last comparatively free flowing, healthy rivers of the State.

Above: Tandi, where Rivers Chandra and Bhaga meet to form the Chandrabhaga, or Chenab. (Photo Courtesy: Kishore Thakural)

As things stand now, if all these projects are implemented, less than 10% of the river can be seen flowing at all. Dams are being constructed bumper to bumper in a very tight sequence, where water from one hydro project meets not the river, but reservoir of the next hydro project in line. This conversion of a living river into a series of puddles, alternating with dry stretches, bypassed by the tunnels has a profound impact on ecology, biodiversity, hydrology, sociology and water availability of the region.



Himachal is already facing all these impacts in the Sutlej basin where scores of projects are being implemented and where Luhri project, funded by the World Bank, will destroy the last remaining 50 kilometres free flowing stretch of the river. In the neighbouring state of Uttarakhand which is facing a fate similar to Himachal, such cascades on Alaknanda and Bhagirathi Rivers led to wide protests in the entire country. IIT Roorkie and Wildlife Institute of India were commissioned to conduct studies on the Cumulative Impacts of hydropower dams on Alaknanda and Bhagirathi Basins and the Prime Minister and Environment Minister stressed the importance of such studies.

But no one seems to be bothered about Chenab. Himachal Pradesh Government, on the other hand, is aggressively saying that condition of Cumulative Impact Assessment for projects in Chenab put by the MoEF should be lifted as "it's unilateral and contrary to the state's interests". Chief Minister Shri. Prem Kumar Dhumal, in a letter to Environment Minister Jayanti Natarajan says, "As many as 28 hydroelectric projects of combined generation capacity of 5,800 MW are at an advanced stage of obtaining (Environment Ministry) clearances. All these projects are located on the Chenab. Such a condition would result in delaying the execution of the projects".[1] It seems as if the Chief Minister thinks that interest of the state lies only in execution of hydropower projects and nothing else. Services obtained from a River like water availability, groundwater recharge, fishing, irrigation through smaller streams, climate regulation, tourism and protection of lands, forests, mountains or biodiversity are not in the interest of the state and worthless.

Table 1: Partial list of large Hydro projects plnned/under implemntation in Chenab basin in Himachal Pradesh

Sr No	HEP	Cap in MW	District	Tributary	Length of HRT	Distance from U/s project	Distance from D/s Project	Developer
1.	Gyspa	300	Lahaul and Spiti	Bhaga	14.96 kms			Himachal Pradesh Power Corporation Limited
2.	Chattru	120	Lahaul and Spiti	Chandra	10.48	Not applicable		DCM SriRam
3.	Shangling	44	Lahaul and Spiti	Chandra				Reliance Power
4.	Miyar	120	Lahaul and Spiti	Chandrabhaga				Moser Baer
5.	Tandi	104	Lahaul and Spiti		7.4			ABG Shipyard
6.	Rashil	130						ABG Shipyard
7.	Seli	400	Lahaul and Spiti				Zero	Moser Baer
8.	Reoli Dugli	420	Lahaul and SPiti		11 kms	Zero		Moser Baer
9.	Teling	94						Reliance Power
10	Bardang	126	Lahaul and Spiti					ABG Shipyard
11	Patam	60	Lahaul and Spiti		9.75 +			
12	Tinget	81						
13	Purthi	300	Lahaul and Spiti					Reliance Power
14	Sach Khas	260	Chamba	Chenab	3.5 Kms		9 kms	
15	Dugar	380	Chamba	Chenab	8.5 Kms	9 kms	3 kms	Tata Power SN Group, Norway
16	Gondhala	144	Lahual and Spiti	Chenab				
17	Khoksar	90	Lahual and Spiti	Chenab				
	TOTAL	**3173**						

Even as the entire world is making efforts to ameliorate impacts of hydropower dams, when there is burgeoning literature pointing to the impacts of hydrological fluctuations on ecology, when USA has actually decommissioned more than 1000 dams, majority of them hydropower projects, for their impacts on ecology, the Power Secretary of Himachal Pradesh, said before a meeting of Expert Appraisal Committee (EAC) of the MoEF on Cumulative Impact Assessment study of Chenab that **"so far there is no conclusive study indicating that the Hydropower projects have detrimental effects on the river health"**[2]**.** This is a completely wrong and unscientific statement demonstrating clear bias of the state government for hydel projects, most of them by private players. And the Expert Appraisal Committee, whose primary task is to look at environmental impacts of all major Hydro projects of the country and sanction projects based on the severity of these impacts, did not object to this statement!

[1] http://thehimachalnews.com/himachal-asks-for-environment-waivers-on-chenab-river-projects/
[2] Statement by Shri. Deepak Sanan, 55th Meeting of the Expert Appraisal Committee of the MoEF

Women's Protest March against 300 MW Gyspa Project in Lahaul Spiti. 2010

Dams on Chenab in Himachal In the ecologically and socially fragile, highly seismic District of Lahaul and Spiti, **more than 20** projects are sanctioned or are under construction. Interestingly, most of these projects are being developed by powerful private players like Tata Power, Reliance, DCM Sri Ram, Moser Baer and L & T.

Impacts Many of these projects are being opposed by locals. Lahaul and Spiti region is a secluded region with a population density of less than 2 people/ sq kms at places[3]. The region is dotted with Buddhist Monasteries, is famed for its peas and potatoes, swift and scenic rivers and thriving population of trout fish. 300 MW Gyspa Project has been facing stiff local opposition because of its submergence and displacement of more than 100 families. The region has very few places fit for yearlong inhabitation and cultivation making rehabilitation is very difficult task for close knit communities. In addition to dams on Chenab, dams on Spiti River, tributary of Sutlej also fall in Lahual & Spiti region, adding to the unimaginable stress on the vulnerable and highly seismic region. Nealry all projects fall in seismic zones IV or V.

Cumulative Impact Assessment? The MoEF sanctioned TORs for conducting Cumulative Impact Assessment (CIA) of Chenab In February 2012. Very surprisingly, this critical task has been entrusted to the Directorate of Energy, Government of Himachal Pradesh. Can there be an agency with a greater conflict of interest than the Directorate of Energy to conduct this study? Can we expect this department, which has been hell bent on damming all flowing rivers, streams and nallahs in Himachal, to conduct this study in an unbiased manner? Even as the Directorate put out request for proposal for contractors to conduct this study, it did not mention that the consultant has to be an independent agency with credible track record. This was specifically instructed by the EAC. This seems to be just a beginning of a biased study, heavily favouring hydro projects.

The MoEF on its part, seems to have meekly accepted Himachal Pradesh Chief Minister's demand of delinking Environmental Clearances with Cumulative Impact Assessment Study without any questions asked. EAC and MoEF have been according clearances and TORs to projects on Chenab with great efficiency**. In the last 2 Meetings in Sept-Oct 2012, the EAC approved TORs and revised capacities for as many 6 Projects in Chenab in Himachal, without even mentioning that recommendations of the Cumulative Impacts Assessment Study will have to be adhered to.** As it is, we do not have a single

[3] http://www.himdhara.org/2012/03/14/leave-the-chenab-alone-lahaul-residents-activists-appeal/

example of a project being dropped or modified significantly after Environmental Clearance has been granted. The EAC even finds changing E-flows release condition impossible after granting a clearance. So no independent action can be expected after this delinking.

Delinking environmental clearances from CIA study defeats the entire purpose of undertaking an objective CIA. If the assessment of cumulative impacts is not going to inform the decisions, heights, capacities and lengths of Head Race Tunnels for the project keeping in mind various aspects of impacts and carrying capacity, what is the use of the cumulative impact assessment? EAC and MoEF should immediately stop considering any projects in the basin for consideration before a credible, independent CIA is completed and assessed in participation with the Chenab valley residents and others concerned.

In addition to this, private project proponents are 'revising' (another term for increasing) capacities of hydel projects by leaps and bounds. The reason given is increased water availability as indicated in Central Water Commission's revised hydrological studies. Urgent studies are needed to understand why water availability in these regions is increasing sharply. One of the most probable reasons is increased glacial melt due to Climate Change. This needs to analysed further as it has many far reaching implications on water security and disaster management. This can lead to increased danger of extreme climate events like the devastating floods in Leh in 2010 which took a toll of over 115 lives. Impacts of such extreme climate events will be compounded by the scores of hydel projects. Local communities are also raising these issues in most of the public hearings, without getting satisfactory responses.

An indicative list of Capacity revision of Projects in Chenab

Sr. No.	Name	Initial Capacity	Revised Capacity
1.	Miyar	90	120
2.	Gyspa	170	300
3.	Dugar	236	380
4.	Sach Khas	149	260
5.	Seli	320	400
6.	Reoli Dugli	268	420
7.	Chhatru	100	120
8.	Rashil	102	130
9.	Telling	61	94
10.	Ratle (J&K)	690	850

Hydel projects on Chenab in Jammu and Kashmir As Chenab descends from Himachal and enters Jammu and Kashmir, it is dammed by even bigger projects operating, under construction or planned. Table 2 below lists hydropower projects of close to 9000 MW in Chenab basin in Jammu and Kashmir, this is not the full list. According to the Central Electricity Authority[4], Projects totalling 4200 MW are planned in the 12th Five Year Plan while additional Projects for 2075 MW have been identified. Some projects are under consideration for forest and environmental clearance like 1200 MW Bursar project in Kishtwar district, which requires area 1665 hecatres of land, including 1077 hectares of Forest, affecting more than 500 families in over 14 villages (Option 2 requires 4593 Ha of land!), and the 1200 MW Sawalkote Dam will require 1099 ha land, including 600 hectares forest. Some of these dams are submerging parts of the Kishtwar High Altitude National Park. Here again, projects are planned bumper to bumper, no environmental mitigation measures like fish passes or ladders are included and social impacts appear to be huge, adding to the overall cumulative impacts.

Despite of this, no cumulative impact assessment study by a credible independent agency is being undertaken for Chenab basin in Himachal Pradesh and Jammu and Kashmir.

Cumulative Impact Assessment of the entire Chenab Basin Chenab presently has more than 70 major hydel projects in various stages of planning, construction and operation with a combined capacity of over 13000 MW and this is an under estimate in absence of full exact figures. This very high density of projects

[4] The 30th meeting of the Standing Committee on Power System Planning of Northern Region, Central Electricity Authority, December 2011

magnifies their impacts on all aspects: downstream hydrology, muck generation and disposal, cumulative impacts of submergence, resettlement, cumulative impacts of loss of forest land an habitats, impacts on fish like famous Chenab Trout by series of high dams, impacts on region's seismicity, silt discharge of the river, impact of blasting and tunnelling, transport and road construction, construction and management of workers camps and colonies, ambient air quality, disaster risk, impact on local water sources and groundwater, cumulative impacts on region's waters security, fragile cultural fabric, etc.

Cumulative impacts of cascading mega hydro projects of all the above issues are unequivocally huge, irreversible and negative. Most of the power generated in the basin will be going out of the basin, so will be the benefits of increased revenues, profits, employment and contracts. In Chenab basin there is the additional issue of limitations imposed by the Indus water treaty of 1960 with Pakistan.

Table 2. Partial List of large Hydropower Projects on Chenab in Jammu and Kashmir

Sr. No.	Project	Capacity	River
1.	Kirthai I	250	Chenab
2.	Kirthai II	990	Chenab
3.	Bursar	1200/1500	Marusudar
4.	Pakal Dul	1000	Marusudar
5.	Dul hasti (operating)	390	Chenab
6.	Ratle (GVK)	850	Chenab
7.	Baglihar I (operating)	450	Chenab
8.	Baglihar II	450	Chenab
9.	Sawalkote	1200	Chenab
10.	Salal (operating)	690	Chenab
11	Chainani I, II, III	33	Tributary
12	Kiru	600	Chenab
13	Kwar	520	Chenab
TOTAL		**8623/ 8923**	

Although India has been aggressively pushing for cascade hydropower projects in rivers like Lohit, Siang, Kameng, Tawang, Subansiri, Bichome, Teesta and Dibang in North East; Alaknanda, Bhagirathi, Kali in Uttarakhand; Sutlej, Ravi, Beas, Yamuna and Chenab in Himachal, all our CIA studies or basin studies till date (if done at all), have been routinely poor and biased.[5] In rare cases where consultants have showed the courage and integrity of recommending dropping projects, their reports have been ridiculed and 'saviour' committees have been appointed to look into these reports again to make 'all ills go away', like the B.K. Chaturvedi Committee which is now looking at WII Study which recommended dropping 24 projects planned in the Upper Ganga. The MoEF decided to dump the recommendation of the Teesta Cumulative Impact Study when it said that no projects should be built upstream of Chungthang.

It is high time that India takes impacts of cascading mega projects seriously. These rivers are not merely power producing channels, they have been providing and continue to provide millions of other services to the local communities and our ecology. Departments and agencies cannot simply push ahead their own big dam agenda at the cost of the environment and communities, in the absence of unbiased scientific studies and good sense.

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[5] http://www.sandrp.in/hydropower/Pathetic_Cumulative_Impact_Assessment_of_Ganga_Hydro_projects.pdf
http://sandrp.in/rivers/Lohit_Basin_Study_by_WAPCOS_A_mockery_of_e-flows_and_cumulative_impacts.pdf