Hydro Power Development In India- Is It at Cross-Road?

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Plan-wise growth and share of Hydro Power			
	Installed Capacity at the end of Plan(MW)		
Plan Period	**Hydro**	**Total (including Renewable)**	**Hydro as % of Total**
1st Plan (1951-56)	1061	2886	36.78
2nd Plan (1956-61)	1917	4653	41.19
3rd Plan (1961-66)	4124	9027	45.68
Three Annual Plans (1966-69)	5907	12957	45.58
4th Plan (1969-74)	6966	16664	41.8
5th Plan (1974-79)	10833	26680	40.6
Annual Plan (1979-80)	11384	28448	40.01
6th Plan (1980-85)	14460	42585	39.6
7th Plan (1985-90)	18307	63636	28.77
Two Annual Plans (1990-92)	19194	69065	27.79
8th Plan (1992-97)	21658	85795	25.24
9th Plan (1997-02)	26269	105046	25
10th Plan (2002-07)	34654	132329	26.19
11thPlan(2007-12) as est. by Planning Commission previously, 11 th Plan as on 31.03.2012	42891 38990	194703 199627	22.03 19.53

In September 2008 while presenting the planning for 12th Plan CEA made a mention that in 11th Plan about 4750MW of projects out of 15627MW which have started in 10th Plan is running behind schedule and requires to be expedited but nothing fruitful seems to have happened and quite a few of these projects have slipped to 12th Plan now!

Let Us take A Close Look Of last 3 Years of 10th Plan And All Five years of 11th Plan And Try To Find out What Happened!

Generation Capacity Growth In Government and Private Sector

Year		2004-05		2005-06		2006-07		2007-08		2008-09		2009-10		2010-11		2011-12	
		Prog	Achiv	Prog	Achiv	Prog	Achiv	Prog	Achiv	Prog	Achiv	Prog	Achiv	Prog	Achiv	Prog	Achiv till Feb 12
	Govt	2488	2864	2076	928	10099	3115	9667	5870	5867	1602	7169	4094	12564	6321	7671	4921
Thermal	Pvt	173	70	1383	660	1676	892	3037	750	3437	882.5	5833	6163	6191	4929.5	6965	7130
	Govt	2585	1015	2886	1340	3484	1906	2751	2423	1097	969	553	39	1005	498	910	181
Hydro	Pvt	0	0	0	0	400	400	0	0	0	0	292	0	461	192	1170	1100
	Govt	5073	3879	4962	2268	13583	5021	12418	8293	6964	2571	7722	4133	13569	6819	8581	5102
Total	Pvt	173	70	1383	660	2076	1292	3037	750	3437	882.5	6125	6163	6652	5121.5	8135	8230

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Status of Allotment and Concurrence by CEA of Hydro power Since 2002-03 Till December 2011

		NER	NR	E R	Other R	Total
State/Central Sector projects Approved/Accorded Concurrence by CEA	No	7	20	3	4	**34**
	MW	6536	7013	800	663	**15012**
Private Sector Projects approved/Accorded Concurrence by CEA	No	5	4	4	0	**13**
	MW	5470	819	2120	0	**8409**
State/Central Sector Projects Concurred by CEA but yet to be taken up	No	6	8	2	4	**20**
	MW	6426	2897	640	1563	**11526**
Private Sector projects Concurred by CEA but yet to be taken up	No	5	3	2	0	**10**
	MW	4420	720	318	0	**5458**
Hydro Projects Allotted by Different State Governments to Private Developers	No	94	34	15	0	**143**
	MW	32727	5737	2113	0	**40576.5**

Table provide a break up of status of large number of hydro projects in the anvil.

It appears like a Blitzkrieg unleashed in the field of hydro development

A Blitzkrieg is fought and won by Modern War machine, Advance Strategic Planning and Technology to implement.

The old dame “hydropower” has no such modern armament available at its disposal not even a modern planning tool especially in India

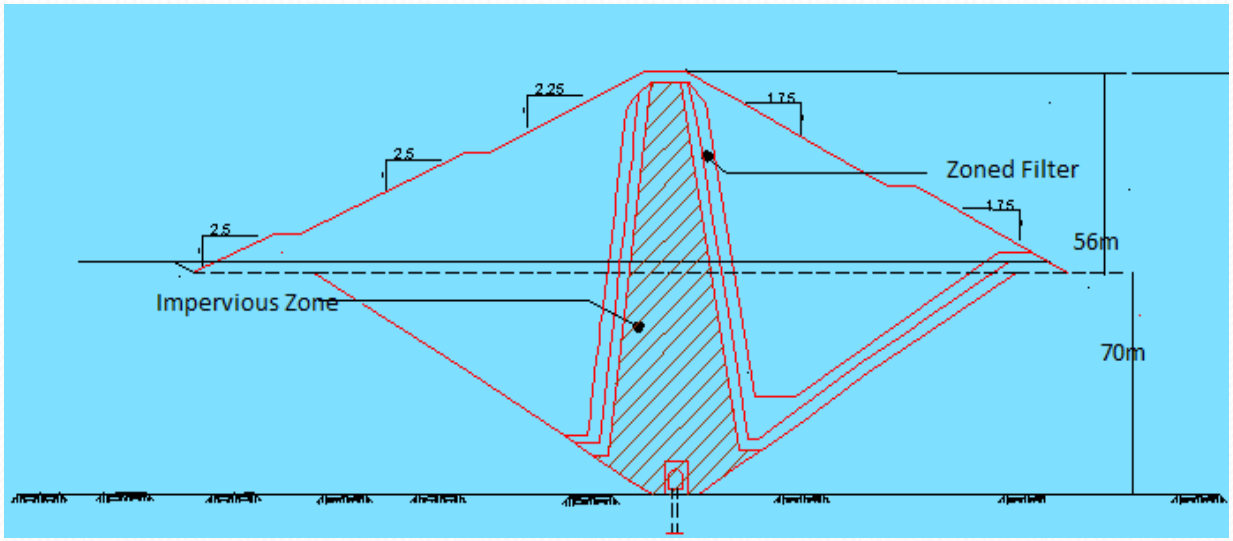
Consistent and continuous shortfall in Hydro project implementation, indicates absence of Scientific Planning Process for implementation of such complex projects

Sr. No	Plans	Target Capacity Addition (MW)				Actual capacity Addition (MW)				% ACHIVED
		Central	State	Private	Total	Central	State	Private	Total	
1	5th Plan(1974-79)				4654				3812	82
2	6th Plan(1980-85)				4768				2873	60
3	7th Plan(1985-90)				5541				3828	69
4	8th Plan(1992-97)	3260	5850	162	9282	1464	795	168	2427	26
5	9th Plan(1997-02)	3455	5815	550	9820	540	3912	86	4538	46
6	10th Plan(2002-07)	8742	4481	1170	14383	4495	2691	700	7886	55
7	11th Plan(2007-12)	8634	3482	3491	15627	2922	2654	2461	8237 a	53
	"a" as estimated by Planning Commission previously, "b" as end of March 2012						4336		4336 b	27.7

- Lack of understanding the complexities, myopic approach of commercial development is turning the attempt of large scale hydropower development in a disaster
- Without proper and scientific understanding of social, environmental, ecological issues and absence of reliable data on fluvial and hydrological process of rivers and geological study of the area, is turning hydropower a foe instead of friend of sustainable development of the area.
- Unfortunately hydropower is most affected as it is with visible commercial bias.

Source/Year	World in Gwh		India in Gwh	
	2000	2009	2004	2009
Coal	10,167,000	13,806,000	486,031	648,480
Nuclear	2,600,000	2,700,000	16,838	18,654
Hydropower	2,700,000	3,300,000	84,497	106,656
Wind & Solar	32,855	294,150	NA RES 3811MW	NA 15521MW
Total	15,499,855	20,100,150	587,366	773,790

Dhauliganga H E Project



CFRD Dam with Plastic Concrete Cut-off

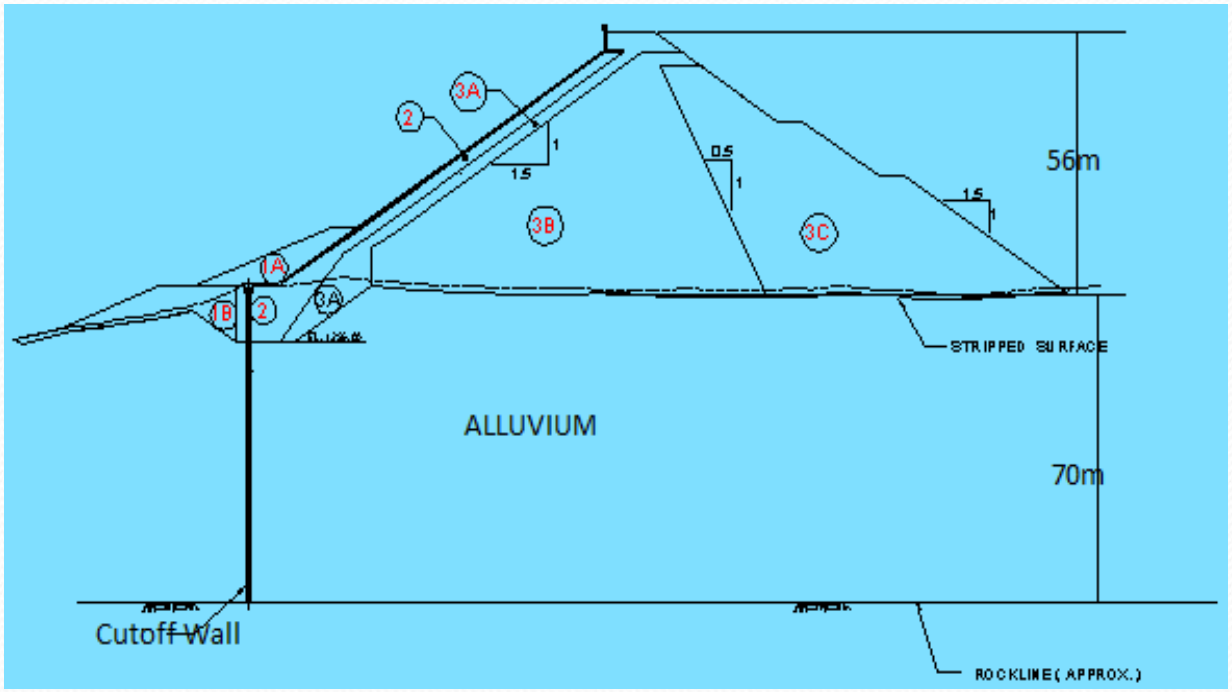


Photo of Dhauliganga CFRD

India is at a cross road of its HYDROPOWER development

What road should we chose?

Business as usual following old practice of developing each hydropower projects as a separate, independent entity and may be with little additional study of problem areas over and above, which we are doing till now??

or

Respond to today's necessity of Holistic approach of river basin development covering all issues and conflicts related to development of hydropower.

Jan A Veltrop honorary President of ICOLD wrote

- Not surprisingly, dams have become the focus of one of the most intensely debated issues of our times regarding sustainable economic development, essentially because adverse environmental and social impacts are no longer acceptable.
- Mankind faces a number of critical challenges to its own survival, such as unprecedented increase of population with a universal desire for improving living standard and quality of life as well as recognition of the need for conserving life- supporting function of nature.
- Our challenge is to balance the need for increasing water and energy supplies with the inevitable adverse effects on the environment

River perform many important functions without being controlled by us

- They drain off surplus water from river basins.
- Through erosion and transport of sediment and nutrients they maintain an ever changing equilibrium in the river basin and its delta.
- Water and suspended materials are transported long distances and distributed by rivers
- They provide environments for unique aquatic communities in the river and on the adjacent floodplain
- They produces natural cleansing, the water for domestic, agricultural and industrial purposes, riverine transportation and provide an environment for human settlement and cultivation.

BASIN MANAGEMENT

- The goal of basin management is to manage water development systems together with the associated lakes, riverbeds, banks, groundwater as a complete entity in relation to human interests.
- Authorities at all levels namely national water agencies, river commissions, stakeholders including people each have their own role and responsibilities in the implementation of sustainable river basin management.

Basin wise Planning

Basin wise planning should balance all users, social and environmental needs for water resources for the present and future. Some important areas are

- Participation in Decision-making: Local empowered body, stakeholders and public participation in decision-making will strengthen river basin management
- Demand-Resources Management: An essential part of sustainable river basin management must be to control the demand for resources.
- Compliance and Enforcement: Methodologies for monitoring and assessment of commitments by entities including private must be developed
- Concept such as Integrated Water Resources Management (IWRM) and Integrated River basin management (IRBM) are two approaches that be followed in order to reach a sustainable use, development and conservancy of water ecosystem including the well being of people around it.

Equitable Benefit Sharing and Stakeholder Participation

- Many or almost all primary beneficiary of dams or water utilising projects often lives far away from the dam sites but people living in the project affected areas sustain all negative impacts of the project.
- R & R practice has evolved enormously over the years as can be summarized

i) Forced resettlement (until the '60s)

ii) Do no harm ('70s)

iii)Resettlement as development opportunity ('80s & '90s)

iv) Project as development opportunity ('90s)

v) Sharing the project's economic rent (emerging trend)

Study By World Bank Group 2002

Study describes five main type of mechanism associated with the existence of an economic rent and related to monetary benefits:

- Redistribution of part of dam's revenue to local or regional authorities in the form of royalties tied to power generation or water charges;
- Establishment of development funds financed from power sales;
- Part of full ownership of the project by project-affected populations (equity sharing);
- Levying property Tax by local authorities; and
- Granting preferential electricity rates and fees for other water related services to local companies and project affected populations

CONCLUSION

- To go back to the drawing board, concentrate on basic study of engineering, technology, science, environment and society for such projects with River basin as a unit.
- River Basin Planning and Integrated management be the cornerstone of hydropower Development
- To handle this complex planning process, much active involvement of Government and its agencies in area of study, analysis, planning and engineering for these projects are required. Government is also to take major share of risk.
- A PPP model with participation of private developers in the construction stages and subsequent operation stage can be more viable alternative with Government handling the major risks.
- Orient the projects towards people's shareholding.
- An intensive applied research in the field of hydro power engineering for developing frontier technology and basin management is need of the day

Additional Slides

Integrated River Basin Planning

1. Understanding the condition of the basin
2. Identifying the national, regional and sub-national goals and objectives for water and related resources development
3. Developing specific water and natural resources policies, procedures, goals and objectives
4. Analysing the various water sector requirement
5. Undertaking bottom up planning at the sub-basin or catchment level
6. Obtaining broad input from relevant groups and people in the basin

contd.

Integrated River Basin Planning contd.

7. Incorporating the best portfolio of proposal that balance economic, environmental and social issues
8. Developing investment plan on a sub-basin and whole basin basis
9. Developing and implementing a monitoring plan to ensure that the contents and approaches expressed in the basin plan is adhered to.

Public Participation and Empowerment

1. During the project planning stakeholders should have the opportunity to express their concerns and thereby help to shape the plan in workshops and meetings to be held at key decision points
2. During project design and construction, public views are still important in sustaining support for the overall projects
3. The construction itself could introduce new concern about how it might affect nearby residents. Therefore a series of public construction awareness meeting could be conducted with the people around regarding the impact and probable remedies