



Special Paper

ARUNACHAL PRADESH AS AN EMERGING POWER HOUSE

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The modern economic development involves large-scale use of power. Though the industrial sector is a major consumer of energy, the transport sector, agricultural sector and the household sector are also consuming major portion of energy. Regarding the set up of an industry the state needs first some infrastructural facilities. Power is one of the most urgent infrastructural facilities. Power stands at the root of all kinds of development.

Looking at the enormous hydro-electric potentials of Arunachal Pradesh, the power may be developed as industry and a substantial revenue can be earned by selling the power to other states of the country. If once, these hydro potentials are fully harnessed, it must turn the fate of the territory and serve the larger interest of the country. At the same time, the fund spent by the government to function the diesel generators will be saved and the pollution created by them will be stopped.

So far Arunachal economy is concerned, the consumption of commercial energy is a recent phenomenon. The consumption of commercial energy under industrial sector is at its lowest ebb. By and large, the industrial units are considerably small, where the use of manual labour is prominent. In some of the small scale industrial units and medium scale ones, the commercial energy is consumed. But such consumption accounts for insignificant quantity. During recent years, the use of commercial energy is noticed to have picked up. But the magnitude of the consumption of commercial energy under agricultural sector may be termed still insignificant.

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Due to its geographical location and its hilly terrain, Arunachal Pradesh has an immense hydel potential to use the power of water to produce electricity in comparison to the other states of the country. The state is of turbulent perennial rivers and major streams, which possess enormous hydro-electric generation potential. The Central Water and Power Commission (C.W & P.C) had estimated in 1965, the hydel potential of the country to be about 84,000 M.W., of which Arunachal Pradesh alone accounts for about 27,000 M.W. i.e., more than 32 per cent of the total potentials of the country, that can be brought to use from the various tributaries of the Brahmaputra like Kameng, Ranganadi, Subansiri, Siang, Lohit and other rivers through the installation of hydel power projects. In addition to water resource, the state has oil, natural gas and coal resources that can be used in the production of electricity.

All the previous development regarding electricity generation went a long way for creating supply of commercial energy. Today, all the administrative centres, other centres, police and military installations and almost all the towns declared by 2001 Census are lighted either through diesel sets or hydels.

Electricity in the state was introduced during the IIInd plan period when 6 diesel sets were commissioned with an installed capacity of 250 KW at five district head quarters and at one sub-divisional head quarters. By 1973, installed capacity increased to 3160 KW, out of which 710 KW came from micro hydel while the rest came from diesel sets. The installed capacity of micro hydel sets increased to 23.65 MW and that of diesel generating sets increased to 15.80 MW by 1993-1994. Again there are so many problems created by the diesel sets as shown below.

PROBLEMS CREATED BY DIESEL SETS

The diesel power generators create many practical and financial problems.

1. The continuous rise in price of diesel is alarming us that the electricity is beyond the capacity to purchase by the general consumer. The subsidy already given by the government in the production of electricity by the diesel generators is going to be increased day by day.
2. The transportation of diesel set in different remote places is very difficult and costly and also the non-availability of major and minor spare parts of diesel sets creates problem.
3. The smoke expelled by the diesel set pollutes the surrounding area.

In view of the above problems, most of the diesel sets are led to operate maximum for five to six hours in the evening to provide power for domestic consumption only along with a few strategic street lights.

PRESENT STATUS

But presently, there is a vast gap between the availability and the requirement of power. As per 2001 Census, out of 2,12,615 households, only 116,275 households (54.7%) are having electricity facility and out of 3649 numbers of villages (as per 1991 Census), only 2339 numbers have been electrified accounting 64% of total villages till the end of March 2003. At present, the total un-exploited hydel potential of the state is estimated to be 49,000 MW. Even if a part of the available hydro potential is harnessed, the state will not only be self sufficient in meeting its own power requirement but at the same time it can earn revenue by supplying power to the other neighbouring states of the country. During 2002-03, 35 numbers of micro/mini hydel projects with an installed capacity of 32.48 MW and diesel sets with an installed capacity of 27.12 MW are the main sources of power supply in the state though the actual power requirement is 95 M.W. So the state is highly deficient in power generation.

Priority has been accorded by the state government in annual plans not only to meet increasing power demand within the State but also to bridge the gap of demand and supply in the region as a whole. But due to inadequate State's financial resources, the government is unable to materialize its ambition of financing large hydel projects. Therefore, the government is encouraging participation of private sector companies in hydro power development. At present the projects already functioning or under survey and investigation in Arunachal Pradesh are shown in Table 1:

TABLE 1
HYDRO ELECTRIC PROJECT UNDER SURVEY & INVESTIGATION
IN ARUNACHAL PRADESH

S l No	Name of project	Installed Capacity in (MW)	Location	Scheduled date Of submission Of DPR
1. CWC				
•	Sisiri Multipurpose Project	222	Dibang Valley District.	June 2001
•	Deopani Multipurpose Project:	20	Dibang Valley Distt.	March 2001
•	Nyukchrongchu HEP :	75	Tawang Distt.	March 2001
•	Water Resources Development		Tawang/West Kameng	June 2001
•	Project (Kameng/Tawang Basin):	150	Districts	June 2003

TOTAL under (CWC) :		467 MW		
2. <u>NEEPCO</u>				
•	Ranganadi Stage-II	100	L/Subansiri Distt.	Inv.in progress
•	Dikrong HEP	100	P/Pare Distt.	-do-
•	Papumpare project	100	L/Subansiri Distt.	-do-
•	Pakke Project	105	Papumpare Distt.	-do-
•	Kameng HEP	600	W/Kameng Distt.	-do-
TOTAL under NEEPCO:		1005 MW		
3. <u>NHPC</u>				
•	Subansiri Dam Project:			
•	a) Lower:	2800	L/Subansiri Distt.	March 2001
	b) Middle:	2000	L/Subansiri Distt	April 2002
	c) Upper :	2500	L/Subansiri Distt.	June 2002
•	Siang Dam Project:-			
	a) Lower:	1700	East Siang	June 2002
	b) Middle:	700	West Siang	June 2002
	c) Upper:	11000	Upper Siang	Dec. 2002
Total under NHPC:		20700 MW		
4. <u>BRAHMAPUTRA BOARD</u>				
	Lohit Dam Project	3000	Lohit Distt.	March 2002
	Kameng Dam Project:	1100	W/Kameng Distt.	March 2002
	Noa-Dihing Dam Project:	75	Changlang Distt.	March 2006
	Dibang Dam Project:	2500	Dibang Valley Distt.	March 2007
TOTAL under B.Board:		6675 MW		
GRAND TOTAL :		28847MW		

Source: Deptt. of Power, Govt. of Arunachal Pradesh, Itanagar.

Thus, total supply of electricity under CWC is more or less 467 MW and the project of the Kameng and Tawang Basin is likely to be functioned at full capacity. The investigation in progress under NEPCO is going on different projects and total installed capacity of NEPCO will be 1005 MW. All the projects will be functioning with full capacity within a very short period of time. Therefore, total installed capacity under CWC, NEEPCO, NHPC and Brahmaputra Board will be 28847 MW which will be surplus to the demand of Arunachal Pradesh within the specified time.

The National Hydro Power Corporation (NHPC) has undertaken survey and investigation works of Siang and Subansiri basin mega hydro power project with an estimated installed capacity of 20700 M.W.

In spite of having high potentiality of hydro power, to fulfil the present requirement of the power the state has to import of state's share from central sector and to purchase from Assam state Electricity Board (ASEB). But, in near future Arunachal Pradesh is expected to be made a Power Surplus State so much that after fulfilling the home demand it would earn much revenue by exporting power to rest of the country. The hydro-power potentialities of the major five rivers are shown Table 2.

TABLE 2

Major river basins & their potentials

Name of the River/Basin	Probable Hydro Potentials (MW)			Name of Districts
	ROR	Storage	Total	
Kameng	3799	847	4646	W&E/Kameng
Subansiri	1014	5050	1519	U&L/Subansiri/Kurung Kumey
Siang	3557	11700	1525	W&E/Siang U/Siang
Dibang	5946	1282	7228	U & L/Dibang Valley
Lohit	3594	3075	6669	Lohit
Total Potentials	2703	21954	4899	

Source: Deptt. of Power, Govt. of Arunachal Pradesh, Itanagar.

Therefore, Arunachal Pradesh, having untapped estimated hydro power potential of 49,000 MW, may emerge as Power House of India when this potential is fully harnessed. The state government has taken some power policies in order to become self sufficient in Power as discussed below.

Power Policy of the State Government

1. The State Government will encourage Private Sector participation (both Indian & Foreign) in the development of hydro electric/gas based power projects in the State.

2. The Private Sector companies can opt to execute such projects on Build, Own and Operate (BOO) or Build, Own and Transfer (BOT) basis. In both the cases, project financing shall be done by the Private Sector Companies. 12% power generated would be supplied to the State Government free as water royalty. The State Government, further reserve the right to purchase the power over and above the 12% free shares, if required by the State Government.

3. Land required for the project shall be acquired by the State Government, and given on lease to the private party for which premium and ground rent would be charged. The company can offer equity to the Government of Arunachal Pradesh in lieu of the payment of the cost of the land.

4. The State Government will assist the private party in obtaining all the statutory approvals required for the implementation of the project (s).

5. Issues regarding operation and maintenance of transmission lines belonging to the private party, evacuation of power outside the State, purchased by the State Government of the power generated in the project (s), above the free share (State's share of 12%), payments of taxes & duties etc. will be settled between the State Government and the private party on a mutually agreed basis.

6. Where the State Government has to purchase power generated in the Private Sector, it will enter into Power Purchase Agreement with the private party. Similarly, lease agreement will be signed between the two parties.

7. In all such cases, where the State Government will purchase power from the private developer, the State Government will give a guarantee, that all necessary payment for the purchase of the power will be made.

8. The Central Government, in turn will give a sovereign/counter guarantee to the private investor which will cover the state guarantee.

9. All other terms and conditions and matters not covered above will be in accordance with the policy guidance issued by the Central Government from time to time.

On the basis of the above power policy of the State Government of Arunachal Pradesh, the State is approaching as an emerging Power House very soon. The power sector will herald a golden era for Arunachal Pradesh once its hydel potential is harnessed to make it the power house of the country, said Raghunath Prasad Singh, general manager (E) of 405 MW Ranganadi Hydro Electric Plant (RHEP), the largest in the North Eastern region. He pointed out that besides economic development, such projects give a new thrust to the socio-economic development by constructing roads, schools, hospital etc. Again, the big dams minimize the impact of flood, a chronic problem of this region.

Power not only improves the domestic lives of the people but also serves as a first need for setting up of industries. Industries based on forest products should be set up on a priority basis throughout the hill region so as to engage the jhumias in the industrial work. The tendency to preserve forests will grow if the forest products will have a ready market. In fact the setting up of such industries will revolutionize the economy in the tribal areas and will have a negative impact upon the jhuming practice. The forest-based industries such as paper pulp, plywood, vineer, matches, saw mills, wooden railway slippers, etc. may be set up If once Arunachal Pradesh gets herself industrialized at least 25%, it would greatly help to achieve economic rehabilitation of the jhumias. When they will realize the potential value of bamboos, timber species, etc., which they will sell to the industrial authorities, they will automatically try to conserve these resources which will be a permanent source of income for them. The industrialization programme is a necessary and unavoidable part of overall planning for development of the region. Without an industrialization programme agricultural improvement programme cannot succeed. Industrialization programme would provide employment to surplus farm hands. This will reduce the excessive pressure of growing population on land. Again, industrialization programme would indirectly help soil conservation programme of the hill regions.

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