Presentation
To
Secretary
Ministry of Dovelopment of North Eastern Region

11 January 2007

overview
of
Power Sector

INSTALLED CAPACITY OF NER
As on 31.12.2006 including C.S. Shares
State-wise/ Type-wise (in MW)

States	Hydro	Thermal	Renewable Energy Sources	Total
Assam	333.0	797.7	0.2	1130.9
Ar.Pradesh	116.5	36.9	26.0	179.4
Meghalaya	258.6	28.1	1.5	288.2
Tripura	78.0	165.3	1.1	244.5
Manipur	82.5	71.4	4.0	157.9
Nagaland	78.5	21.0	3.2	102.7
Mizoram	38.0	67.9	10.0	116.8
Central Unallocated	128.0	55.9	0.0	183.9
Total(NER)	1113.1	1244.2	46.9	2404.2
Sikkim	40.0	67.0	9.1	116.1
Total (NER+Sikkim)	1153.1	1311.2	56.0	2520.3

INSTALLED CAPACITY OF NER
As on 31.12.2006 including C.S. Shares
State-wise/ Sector-wise (in MW)

States	Central Sector	State sector	Private Sector	Total
Assam	509.0	597.3	24.6	1130.9
Ar.Pradesh	119.0	60.2	0.2	179.4
Meghalaya	99.0	189.2	0.0	288.2
Tripura	148.4	95.0	1.1	244.5
Manipur	107.0	50.9	0.0	157.9
Nagaland	72.0	30.7	0.0	102.7
Mizoram	50.0	66.6	0.2	116.8
Central Unallocated	183.9	0.0	0.0	183.9
Total(NER)	1235.0	1143.1	26.1	2404.2
Sikkim	70.0	46.1	0.0	116.1
Total (NER+Sikkim)	1305.0	1189.2	26.1	2520.3

ACTUAL POWER SUPPLY POSITION AS ON 31.12.2006 (April – December 2006)

State	Peak Shortage(-)/Surplus(+)				Energy Shortage(-)/Surplus(+)			
	Peak Demand	Peak Met	MW	%	ER	Availa-bility	MU	%
Assam	771	688	- 83.0	-10.8	3278	3046	-232	-7.1
Ar.Pradesh	77	76	- 1.0	-1.3	188	181	-7.0	-3.7
Meghalaya	343	198	- 145.0	-42.3	1054	839	-215	-20.4
Tripura	169	142	- 27.0	-16.0	639	581	-58	-9.1
Manipur	106	101	- 5.0	-4.7	363	347	-16.0	-4.4
Nagaland	79	79	0.0	0.0	264	254	-10.0	-3.8
Mizoram	70	68	- 2.0	-2.9	171	163	-8.0	-4.7
Total(NER)	1407	1166	- 241.0	-17.1	5957	5411	-546.0	-9.2
Sikkim	40	40	0.0	0.0	156	153	-3.0	-1.9

PER CAPITA CONSUMPTION (kwh/year)

STATE	2002-03	2003-04	2004-05
ASSAM	159.97	160.08	162.82
MANIPUR	206.37	218.37	257.72
MEGHALAYA	335.86	416.02	521.38
NAGALAND	139.11	155.91	181.22
TRIPURA	227.26	263.65	351.14
ARUN. PRDESH	132.45	224.64	379.65
MIZORAM	299.85	300.76	438.71
TOTAL NER	180.29	192.33	229.49
SIKKIM	246.87	765.68	985.06
ALL INDIA	566.7	592.0	612.5

T & D LOSSES (%)

STATE	2002-03	2003-04	2004-05
ASSAM	38.3	39.31	51.76
MANIPUR	63.66	65.18	70.61
MEGHALAYA	21.92	16.73	28.35
NAGALAND	56.71	55.00	48.26
TRIPURA	40.64	46.44	59.54
ARUN. PRDESH	38.95	47.54	42.96
MIZORAM	46.91	55.54	66.14
NER	38.28	38.64	50.74
Sikkim	54.85	54.99	50.49
All India	32.54	32.53	31.25

STATUS OF VILLAGE ELECTRIFICATION

STATES	Total Inhabited Villages (As per 2001 census)	Villages Electrified as on 28-10-2006		Villages yet to be Electrified as on 28.10.2006		Pump-sets Energized as on 28-10-2006
		Nos.	%	Nos.	%	Nos.
ASSAM	25124	15657	62.3	9467	37.7	3675
MANIPUR	2315	1940	83.8	375	16.2	45
MEGHALAYA	5782	3428	59.3	2354	40.7	65
NAGALAND	1278	862	67.4	416	32.6	194
TRIPURA	858	491	57.2	367	42.8	3273
ARUNACHAL PRADESH	3863	1875	48.5	1988	51.5	-
MIZORAM	707	570	80.6	137	19.4	-
Sikkim	450	425	94.4	25	5.6	-
TOTAL	40377	25248	62.5	15129	37.5	7252

DEMAND FORECAST
17TH EPS Data

Name of State/Region	2011-12	
	Peak Demand (MW)	Energy Requirements (MU)
Assam	1443	7585
Manipur	203	932
Meghalaya	428	2101
Nagaland	152	698
Tripura	282	1229
Mizoram	115	398
Ar. Pradesh	116	386
N-Eastern Region	2537	13329
Sikkim	83	320
Total (NER+Sikkim)	2620	13649
CAGR	8.4%	

Target and Actual Capacity addition during 10th plan

S. No.	State/Central Sector	Generation Capacity addition (MW)			
		Target	Achievement		
			From 2002-03 to 31.10.2006	Expected from 1.1.2007 to 31.03.2007	Total
1	Assam	138.00	-	100.00	100.00
2	Manipur	18.00	18.00	-	18.00
3	Meghalaya	132.00	-	-	-
4	Mizoram	102.92	22.92	-	22.92
5	Tripura	42.00	63.00	-	63.00
6	Arunachal Pradesh	-	-	-	-
7	Nagaland	-	-	-	-
A	State Sector	432.92	103.92	100.00	203.92
B	Central Sector	585.00	25.00	-	25.00
C	Total NER	1017.92	128.92	100.00	228.92

Details of capacity addition, slippages during 10th plan

Type	Target	Likely achievement	Likely to slip
Hydro	349.00	125.00	224.00
Thermal	668.92	82.92 (*)	586.00
Total	1017.92	207.92	810.00

(*) Achievement does include Rokhiya Unt-8 (21 MW) which is outside the target of 10th Plan

Actual Capacity addition during 10th plan (As on 31.12.2006)

Plant Name	State	Fuel Type	Sector	Capacity (MW)
KOPILI -II	Meghalaya	Hydro	Central	25
MANIPUR DG	Manipur	DESIEL	State	18
BAIRABI (T)	Mizoram	HFO	State	22.92
BARMURA GT	Tripura	GAS	State	21
ROKHIA U7 & 8	Tripura	GAS	State	42
TOTAL				**128.92**

Project-wise reasons for slippage from 10th plan

Sl. No.	Name of Project	State	Capacity (MW)	Reasons for slippage
1	Myntdu -Hydro	Meghalaya	84	Delay in award of work od dam & HRT
2	Byrnihat-HFO	Meghalaya	24	Dropped by the Project Authorities
3	Mendipathar-HFO	Meghalaya	24	Dropped by the Project Authorities
4	Bairabi- Hydro	Mizoram	80	Shortage of Funds,
5	Tuirial –Hydro (NEEPCO)		60	Inadequate S&I, Law & Order problems, Increase in cost due to design changes, Delay in placement of order. Slipped to 2008-09
6	Monarchak Gas NEEPCO	Tripura	500	Project was dropped in lieu of 750 MW ONGC Project.
7	Lahwa WH	Assam	38	Due to non finalization of power sharing agreement among the beneficiary state.
	Total		810	

Target and Actual Capacity addition during 10th plan in Sikkim

Teesta Unit –V (510 MW) of NHPC was targeted in Central Sector in Sikkim

Slipped to 2007-08 due to bad geology encountered in HRT and lower surge gallery.

CAPACITY ADDITION PLANNED DURING 11TH PLAN (MW)

States	XI Plan		Total (MW)
	Hydro	Thermal	
Assam		787	787
Manipur			
Meghalaya	124		124
Mizoram			
Arunachal Pradesh	2600		2600
Nagaland		23	23
Tripura		750	750
Total(NER)	2724	1560	4284
Sikkim	1331	-	1331
Total(NER+ Sikkim)	4055	1560	5615

SECTOR-WISE CAPACITY ADDITION PLANNED DURING 11TH PLAN (MW)

Sector	Hydro	Thermal	Total
Central Sector	3110.0	1500.0	4610.0
State Sector	124.0	60	184
Private Sector	821.0		821.0
TOTAL	4055	1560	5615

ADEQUACY OF CAPACITY ADDITION DURING 11TH PLAN

- Capacity addition during 11th plan predominantly hydro.
- Hydro availability is low during non-monsoon months.
- Tripura gas (750 MW) is likely to sell power to PTC.
- Allocation from coal/ gas based projects in NER needs to be made for NE States to meet their demand during non-monsoon period.
- NER states to tie up power from Tripura Gas Project with PTC and also give comfort of payment security.
- Assam and Tripura have already given their given their requests to PTC

LIST OF HYDRO PROJECTS FOR LIKELY BENEFITS DURING 11TH PLAN IN NORTH EASTERN REGION & SIKKIM

Sl.No.	PLANT NAME	STATE	AGENCY	Sector	Ultimate Capacity (MW)	Benefits 11th Plan (MW)
	HYDRO					
1	TEESTA III	SIKKIM	Teesta Urja	P	1200	600
2	SADAMANDER	SIKKIM	GATI	P	71	71
3	CHUJACHEN	SIKKIM	GATI	P	99	99
4	BHASMEY	SIKKIM	GATI	P	32	51
5	TEESTA V	SIKKIM	NHPC	C	510	510
6	KAMENG	AR.PR.	NEEPCO	C	600	600
7	SUBANSIRI LOWER	AR.PR.	NHPC	C	2000	2000
8	MYNTDU St-I	MEGHALAYA	MeSEB	S	84	84
9	NEW UMTRU	MEGHALAYA	MeSEB	S	40	40
	SUB TOTAL (HYDRO)					4055

LIST OF THERMAL PROJECTS FOR LIKELY BENEFITS DURING 11TH PLAN IN NORTH EASTERN REGION

Sl.No.	PLANT NAME	STATE	AGENCY	Sector	Ultimate Capacity (MW)	Benefits 11th Plan (MW)
	THERMAL					
1	**BONGAIGAON EXT**	ASSAM	NTPC.	C	750	750
2	**TRIPURA GAS**	TRIPURA	ONGC.	C	750	750
3	**LAKWA WH**	ASSAM	ASGENCO	S	37.2	37.2
4	**Dimapur DG**	Nagaland	Elect. Deptt.	S	23	23
	SUB TOTAL (THERMAL)					1560
	TOTAL					**5615**

CAGR of Demand & Generation XI Plan

	NE States	Sikkim
Generation 2006-07 (MU)	8646	392
Generation 2011-12 (MU)	25232	5585
CAGR %	23.89	80.63
Demand 2006-07 (MU)	8534	234
Demand 2011-12 (MU)	13329	320
CAGR %	9.33	6.46

DEVELOPMENT OF TRANSMISSION SYSTEM IN NER

Due to low magnitude of demand levels in most of the states, the growth and development of state transmission systems has been primarily at 132kV and 66kV levels.

DEVELOPMENT OF TRANSMISSION SYSTEM IN NER

•Per unit cost of regional transmission in NER has been much higher as compared to other parts of the country.

- **Inherently low PLF of hydro power stations**
- **Higher cost of building transmission lines in NER due to uneven terrain & area specific factors.**
- **Higher cost due to law and order problems.**
- **Under utilization of transmission system leading to higher per unit charges.**

DEVELOPMENT OF TRANSMISSION SYSTEM IN NER

- For meeting power requirements for the states of NER, the component of allocation from these projects within NER would be utilized locally for which adequate transmission system with in NER – both inter-state as well as intra-state – would be required.
- Inadequate development of sub-transmission and distribution system facilities in the States of NER has been adversely affecting the reliability of power supply to the consumers .
- The transmission, sub-transmission and distribution systems of states require strengthening/up-gradation

DISTRIBUTION SYSTEM IN NER

- The North East Region is lagging behind in the development of the power sector specially distribution system as compared to other regions.
- The implementation of APDRP and RGGVY programmes is rather slow and should get priority.
- The electricity distribution projects need to be supported with low cost funds along with substantial portion of subsidy or grants.

THANK YOU

GENERAL RECOMMENDATIONS

GENERAL RECOMMENDATIONS

- Infrastructural facilities like construction of roads, communication system, bridges be taken up on priority basis. Proper road connectivity with major cities and efficient & reliable communication system should also be provided by the state for the power projects. Dedicated communication system to be developed from project sites.

- While building power projects by CPSUs, local manpower should be inducted to the extant possible in all the development activities. Training should also be provided to local manpower before starting works on any project to make them worthy of jobs in CPSUs.

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GENERAL RECOMMENDATIONS

- Emphasis has to be given to training and skill development of the North East people to utilize their talent and bringing them in the mainstream of development work. Training of the Engineering manpower of North Eastern states to be taken up on priority through NPTI Guwahati and other institutions like CPRI/ NHPC and PGCIL.

- Tourism Industry needs to be developed in the region. This will help in generating employment and revenue for the states. Construction of guest houses, low cost hotels, amusement parks, etc. at hydro and thermal project sites will give a boost to tourism as also help partially in reducing cost of project

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GENERAL RECOMMENDATIONS

- A standing Review Committee shall be set up which will monitor the progress of all the projects funded by Central Agencies, Planning Commission, MNES, DONER, NEC, etc.
- Funds for incomplete State Sector projects such as Dimapur DG in Nagaland be tied up through a Special package.

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OVER VIEW OF ENERGY SECTOR

PRIMARY COMMERCIAL ENERGY RESERVES

SN	Energy Resources	As on date	NE Region	India
1	Coal (BT)	1-01-2005	0.91	247.85
2	Lignite (BT)	1-01-2003	NIL	35.64
3	Crude Oil (MT)	1-04-2004	168.23	733.70
4	Natural Gas (BCM)	1-04-2004	169.93	854.00
5	Hydro Power (TWH)	-	239.30	600.00

COAL RESERVES (IN MT)

SN	State	Proved	Indicated	Inferred	Total
1	Arunachal Pradesh	31	40	19	90
2	Assam	279	27	34	340
3	Meghalya	117	41	301	459
4	Nagaland	4	1	15	20
	Total	431	109	369	909

PROBLEMS/BOTTLENECKS

COAL SECTOR

- Adverse geo-mining conditions of underground mines.
- Power shortage, extensiveness of mines, highly steep gradient, highly gassiness of seams and heavy rainfall are being faced in general.
- Since the area is highly hilly covered under thick forest, availability of sizeable property for opencast mining with large production and its sustainability is not there.
- Due to hilly terrain and thick forest, exploration is difficult and time consuming.

PROBLEMS/BOTTLENECKS

HYDROCARBON SECTOR

- The problems currently faced by Oil India Ltd. in the main oil producing areas of Assam are poor infrastructure especially road and power, insurgent activity related problems and disruption of operations due to frequent Bundhs etc.
- ONGC has not been able to explore areas falling in the border areas of Assam and Nagaland due to inter-state disputes and consequent sensitive ground conditions.

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PROBLEMS/BOTTLENECKS

HYDROCARBON SECTOR

- Exploration as well as production activities have been hampered in view of prevailing environmental security conditions in certain sectors of the region.
- Bharat Petroleum Corp. Ltd. (BPCL) has not been able to achieve its full capacity utilization due to inadequate availability of railway rakes.

RECOMMENDATIONS

COAL SECTOR

- Coal India should be charged with rehabilitating the private mining industry in Meghalaya in consultation with the State Government and private land owners.
- Speedy clearance by the MOE&F will be necessary in order to start new projects to meet the coal requirements of the industries.

RECOMMENDATIONS

HYDROCARBON SECTOR

- ONGC should significantly step up their investments in oil and gas exploration in the region.
- Oil India Ltd. will have to intensify exploration in the Frontier areas. These areas of exploration are logistically difficult, geologically complex and the operations are highly cost intensive
- To saturate the capacity of the existing refineries, additional crude is required to be produced.

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RECOMMENDATIONS

HYDROCARBON SECTOR

- Efforts should be made to discover and produce more gas in the North-East. Adequate priority must be given to sites and structures that hold out promise of gas.
- In order to expedite the creation of roads and other necessary infrastructure for exploration in remote areas, oil companies should be permitted to undertake these works entirely at their own cost.

RECOMMENDATIONS

HYDROCARBON SECTOR

- Development of suitable infrastructure to pump excess product through pipelines/railways is required.
- Export of product to nearby countries should be explored. Use of river routes/barges for economical product transportation to be explored.
- Continued subsidy on crude/product price so that Assam refineries remain competitive. Extension of natural gas network to these refineries to optimize energy utilization.

RECOMMENDATIONS

HYDROCARBON SECTOR

- Low pressure gas shall be compressed and integrated with the main gas grid. Compression cost involved for same shall be reimbursed to the producer.
- The existing (40% or more) subsidy on gas price for NER should be continued so that tariff of gas Power Plants remains competitive in NER particularly in Assam.