सत्यमेव जयते

"Infrastructure Development in the North East – Leveraging Opportunities"

THE POWER SECTOR

Ministry of Power
Government of India
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Energy shortage and Peak deficit are decreasing in the NER…

		12-13	13-14*
Energy Reqmt.	BU	11.97	9.9*
Growth	%	5.1	8.7*
Availability	MU	11.12	9.3*
Av. Growth	%	*6.6*	*10.1**
Shortage	MU	848	641*
	%	7.1	6.4*
Peak demand	MW	2093	2254*
Growth	%	3.6	7.7*
Peak Met	MW	1959	2138*
Growth	%	4.4	9.1*
Deficit	MW	134	116*
	%	6.4	5.1*

*13-14: April to Dec / Also 13-14 comparison 12-13 for period April-Dec wherever.

- **In 13-14, April – December period, energy availability is higher by 10.1% and peak availability by 9.1% vs same period 12-13 as more power made available (179 MW).**
- **The central govt is doing its bit. Thus at 1600 MW (52%), the allocation from central stations is 109.3% of the generation capacity of combined state sector and private sector in the NER (1464MW). Sikkim :**
- **Trans TTC: Bihar-Purnea-sharif 400kv line has increased TTC to 720MW (400MW earlier). Further enhancement to 2100 MW by March 14 with commissioning of 400kv D/c quad Bongaigaon-Siliguri.**
- **By 2016-17 it is estimated that the peak load demand would be 3100 MW.**
- **By 2016-17 availability would be 7515 MW including 1967 MW to Assam with an investment of about Rs 52,000 crs. The CGS capacity contribution would be 3990 MW**

But the increasing availability of power needs to be put to productive use……

- NER has a low 2.36% (35%) of energy consumed in low-medium industrial load (MSME and small business) vs national average of 6.5% (2010-11).
- Given the fact that the agricultural energy is also 0.87% against AI of 17.72%, there is a huge gap in raising the productive sources in the state economies
- This is further reflected in the poor per capita consumption of only 292.2 kwh vs AI of 883.6kwh (2011-12). Sikkim off course has 880.1 kwh which is an exception
- SO WHILE WE PLAN FOR INDUSTRIAL GROWTH OF NER, I WOULD LIKE TO SEE WHAT IS THE STRATEGY TO INCREASE INDUSTRIAL POWER CONSUMPTION IN MW TERMS

Or else the huge potential would not yield the expected local economic benefits….

	Total potential (>25MW)	Under operation	Under development	Untapped
Hydro	62,604*	1911	5132	55561
Thermal	---	1832	1366	-
Total	62,604	3743 (**6.1%**)	6498 (**173.6%)/10%**	55,561 (**15 times)**

The lever in NER in power sector is Hydro capacity…

MW

State	Potential	Under operation	Under const.	Under Pre- const. stage	Total under devpt.	%	Bal. potn.
Sikkim	4,286	669	2322	2474.5	5465.5	100	-
Meghalaya	2,394	282	40	1269	1591	66.5	803
Tripura	15	0	0	0	0	0	15
Manipur	1,784	105	0	1566	1671	93.7	113
Assam	680	375	0	120	495	72.8	185
Nagaland	1,574	75	0	186	261	16.6	1313
Ar.P.	50,328	405	2710	41702.5 (84.1%)	44817.5	89.1	5510.5
Mizoram	2,196	0	60	2276	2336	100	-
Total	**63,257**	**1911**	**5132** (2.7 X)	**49594** (9.66X UC)	**56637**	**89.5**	**6620**
Investment (Rs. Cr.)	**5,08,431**	**9,555**	**35,924**	**3,96,752**			**66,200**

SO POWER GENERATION IS A 5 LAC CRORE INVESTMENT OPPORTUNITY

Within NER Leveraging opportunities in Arunachal would be the key going forward…..

	MW	%age
Identified capacity (above 25 MW)	50,064	100
Capacity developed (Ranganadi -NEEPCO)	405	0.80
Capacity under construction*	2710	5.41
Capacity allotted for development	**41,702.5**	**83.30**
Capacity yet to be allotted for development	5246.5	10.48

*Lower Subansiri (2000 MW-NHPC) ; Kameng (600 MW – NEEPCO) ; Pare (110 MW – NEEPCO)

ADEQUATE CAPACITY ALREADY ALLOTTED……

S.N.	Category	No. of Projects	MW
1	CEA concurred DPRs (> Rs.500 Cr. project cost)	15	16536
2	State concurred DPRs (< Rs.500 Cr. project cost)	6	337
3	DPRs under examination in CEA	7	3172
4	DPRs under examination in State (< Rs.500 Cr. project cost)	7	360
5	DPRs returned by CEA for resubmission after additional studies / information	8	3139
6	At Survey and Investigation stage by Developer	51	18158.5
	TOTAL	**94**	**41702.5**
	Investment (Rs. Cr.)		**3,33,620**

CII NEEDS TO TALK ABOUT RESOLVING LOWER SUBANSIRI PROJECT AND PUSH OTHER PROJECTS AS PART OF INDUSTRIAL AGENDA

The key is Funding: Equity/Debt requirements….

For 42 large projects

(Rs. in crore)

Installed capacity (MW)	Estimated cost	Tentative Equity	Tentative amount of State Equity*	Tentative amount of Developer Equity	Tentative amount of Debt
33,875	2,51,981.29	52,970.5	15,719.16	37,251.31	1,99,010.8

*As per information provided by State Government

The Ministry of Power, GoI is taking a number of steps to encourage hydro:

- Cost plus tariff extended beyond 2015 to 2022
- Merchant power facility of 40% not to be reduced for delays in implementation
- Examining HPO
- Institutional mechanisms: (i) EGOM on NER under FM (ii) Task force on NER; (iii) EGOM on Arunachal Pradesh under FM (iv) Empowered Committee under Member (E), Planning Commission (v) COS on NER, (vi) COS and IMG on strategic projects in Arunachal (vii) Secretary MoEF level committee for Border Infrastructure Development

Infrastructure Requirements (Road connectivity: 26 projects) for HE Projects in Ar. Pradesh are being vigorously pursued by MOP….

SIANG (6775 MW)

1. Akajan- Likabali – Bame – 100 km (BRO)
2. Bame-Along – 50 km (PWD)
3. Daporijo-Bame – 100 km (PWD)
4. Along-Tato-Mechuka-Hirong 180 km (BRO)
5. Bogibeel Rail cum road bridge across River Brahmaputra (NEF Railway)
6. Upgradation of existing **Along** airstrip (AAI)

DIBANG (8408 MW)

1. **Tezu-Roingwhich** will provide alternate route for projects in Dibang basin via Tezu (BRO)
2. **Alubari** Bridge (MORTH)
3. Dhola – Sadiya Bridge (MORTH)
4. NH 37 (from Dibrugarh – Tinsukia – Dhola (PWD)
5. Upgradation of Meka –Roing –Anini road (230 km) (BRO)
6. 14 bridges to be upgraded to 70 R (BRO)
7. Construction of Deopani RCC Bridge (BRO)
8. Ipplipani Bridge (5 km from Roing) required to be restored to 70 R (BRO)

Infrastructure Requirements for HE Projects in Ar. Pradesh

MOP IS REALLY ON TO MICRO LEVEL MONITORING

Lohit (4882 MW)

1. Digaru – Tezu – Hawai section (BRO)
2. Approach to Digaru bridge – 2.29 km (BRO)
3. Stretch Digaru – Tezu – Demwe (BRO)
4. Digaru-Tezu-Tohangam-47.1 km (BRO)
5. Tohangam-Hayuliang-76 km (BRO)
6. Demwe – Brahmakund – Arrowa – Hayuliang; (70 km) (BRO)
7. Hayuliang-Changwinti-Hawai -65 km (BRO except last 15km with State PWD)
8. Hawai- Walong (50 km) (GoAP)
9. Upgradation of existing Tezu airstrip (AAI)

Kameng (1195MW)

1. Nechipu to Seppa RD (MORTH)
2. Balipara-Charduar-Tawang (317.52 km) (PWD)
3. Bridge on Bichom river (PWD)

Rigourous follow up by MOP / PC /PMO / CS

- EGoM under FM
- Meetings with MoRTh / BRO: EPC, overlap, expediting approvals – 3 already held in last two months
- Now weekly follow up at AS, MOP level: (Every Friday)

94% MW CAPACITY FROM 45 PROJECTS OF GREATER THAN 100MW. HENCE NEED TO FOCUS ON THEM FIRST……… (16 ITEMS)

Projects	45
MW	38575
DPR completed	22
S&I pending	23
Concurred	15
TOR Applied	40
TOR obtained	31
EIA complete	20
EIA pending	25
EC approved	9
EC pending	5
EC not applied	6
FC approved	9
FC pending	21
FC not applied	15

Action Points: 5

1. MOP: Expedite DPRs
2. Developers to expedite:
   - Construction where EC/FC cleared:15
   - S&I Reports for DPR: 23
   - Filing ToR / EC/FC applications: 5/15
   - Completing EIA/EMP: 25; Filing EC: 6
3. MoEF to
   - issue ToR (9)
   - Approve EC/FC where complete: 5/21
   - Decide on available basin studies and expedite pending ones: 4/2
4. Focus on First User Right projects (6) Expedite construction and sanction concerning First in Basin projects (6)
   - Lower Subansiri (UC), Demwe Lower, Dibang

MOP / MoEF / State Govt working closely:
(i) FC: milestone based timelines; (ii) EAC/FAC overlap removed; (iii) First in basin expedited; (iv) Balance in ArP allotted (Siang-I: 9000MW)

Transmission needs are being taken care of and they themselves provide a great investment opportunity..: Rs 28,000 Crs

Rs. 4201 cr. - Transmission System associated with Pallatana GBPP (726 MW) & Bongaigaon TPS (750 MW)

NETCL: **2057 cr.**

- **400 KV D/C Pallatana-Silchar (492 Ckm) – Commissioned in Aug-12**
- **400 KV D/C Silchar-Bongaigaon (821 Ckm)**
  - **Silchar-Byrnihat (419 Ckm)& LILO at Byrnihat– Commissioned Feb-13**
  - Bynihat-Azara-Bongaigaon (402 ckm) : ROW and FC issues being resolved. Anticipated by Mar-14

POWERGRID Rs 2144 cr.

Completed: 400/132 KV Silchar Sub-station (2x200 MVA); 400 KV D/C Bongaigaon-Bongaigaon; 400 KV D/C Pallatana-surajmaninagar; 132 KV Silchar-Badarpur; 132 KV Silchar-Srikona

Balance under Progress

- 400 KV D/C Silchar-Purbakanchan Bari (256 Ckm): Mar-14
- 400 KV D/C Silchar-Imphal (332 Ckm): June, 2014
- 400 KV D/C Silchar-Melriat (286 Ckm): December, 2014.

Investment/ business opportunity in Trans sector…

Rs. 11130 cr. - Trans. System associated with Lower Subansiri HEP (2000 MW), Kameng HEP (600 MW) and NER surplus +/- 800 KV Biswanath Chariyali – Agra HVDC Link – 6000 MW

- Work stand still on account of local disturbances / agitation against big dams in Arunachal Pradesh.
- Evacuation Lines planned to be completed matching with generation project

Rs 4,929 crs Transmission system strengthening in Arunachal Pradesh and Sikkim – Funded through NLCPR (Central). EFC meeting held on 27-01-2014: 2,035 km – 132 kV lines/ 220 kV; 31 new 132 / 66/33 kV sub-stations, 83 new 33 / 11 kV, 2,204 km of 66 kV, 33 kV lines. **NEW OPPORTUNITY.**

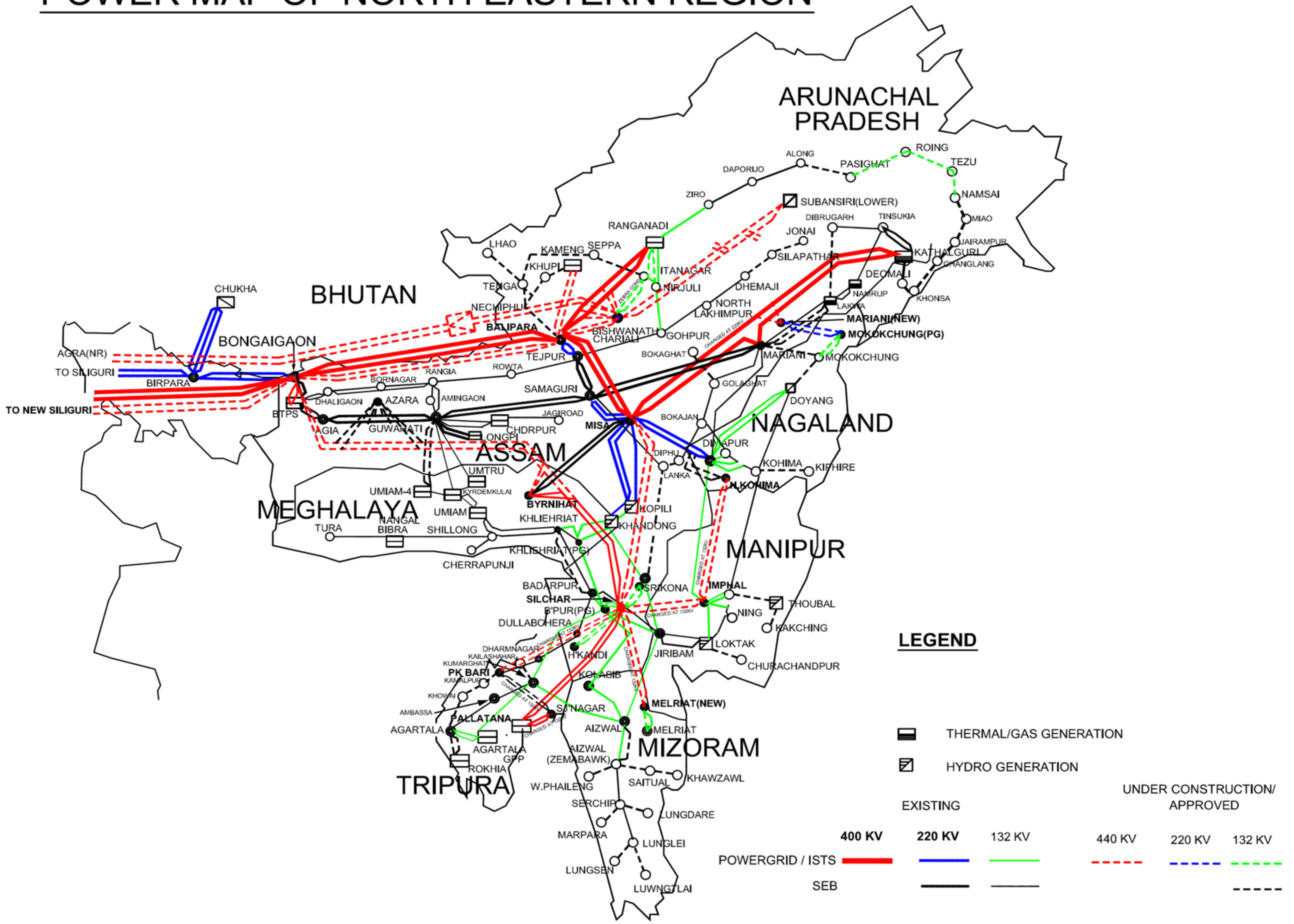
Rs 8100 Crs / USD 1500 Mn Transmission system strengthening in 6 States of NER (excluding Arunachal Pradesh) – Funded through World Bank in 3 tranches of 500 MUSD each

- **Vendors meet held in Guwahati on 23-09-2013. NEW OPPORTUNITY**
- Proposed that the scheme be implemented as 100 % central sector scheme with 50% funds to be met by World Bank
- Process of inclusion under 12th plan initiated.

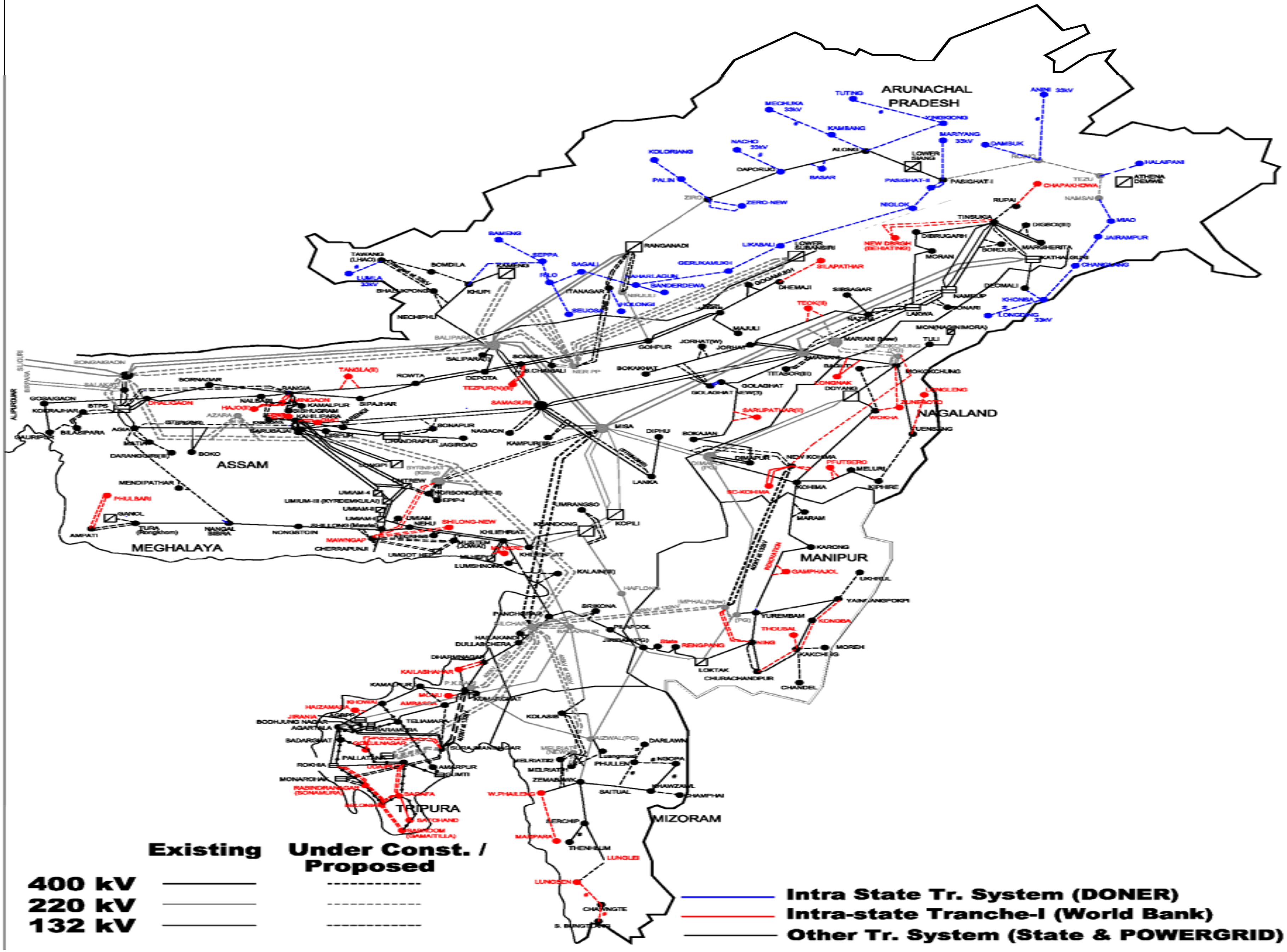
NEW TRANSMISSIONPROJECTS ARE ALSO ON WAY….

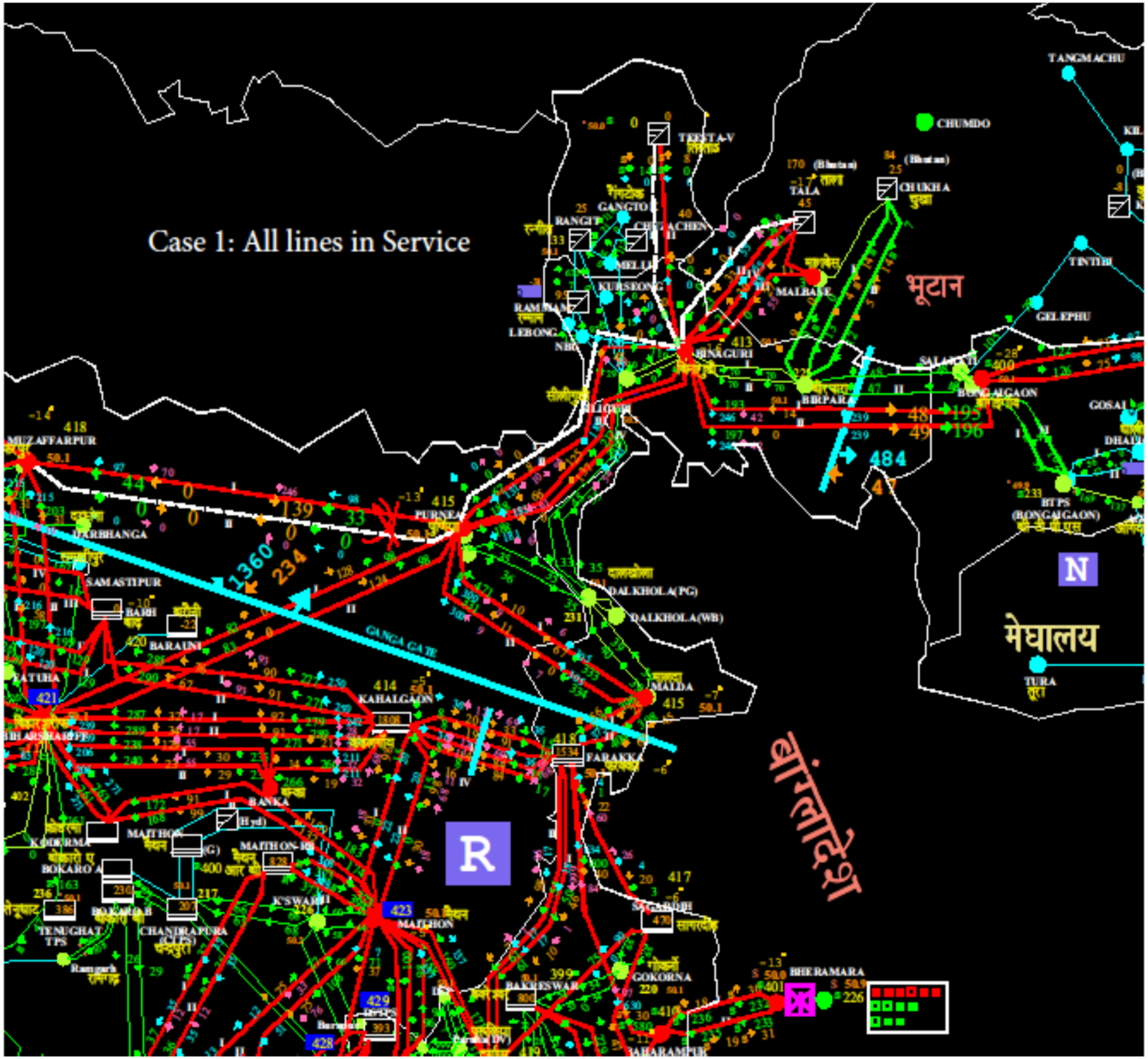
- Rs. 1900 Cr. Transmission evacuation plan for 7 IPPs totalling 2162 MW
- CEA has developed a basin-wise master Plan for evacuation of power from Hydro Projects in Arunachal Pradesh.
- Transmission system would be taken up for implementation after grant of LTA, submission of requisite Bank Guarantee and depending upon progress of hydro projects in Arunachal Pradesh.

POWER MAP OF NORTH EASTERN REGION



Comprehensive Strengthening Scheme : NER




Case 1: All lines in Service
भूटान
मेघालय
बांग्लादेश
GANGA GATE
R
N
TEESTA-V
GANGTOK
RANGIT
CHUKHA
TALA
MALBASE
BIRPARA
SALAKATI
BONGAIGAON
SILIGURI
PURNEA
MUZAFFARPUR
DARBHANGA
SAMASTIPUR
BARH
BARAUNI
DALKHOLA(PG)
DALKHOLA(WB)
MALDA
KAHALGAON
FARAKKA
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MAITHON
KODERMA
BOKARO A
BOKARO B
CHANDRAPURA
TENUGHAT TPS
SAGARDIGHI
GOKORNA
BHERAMARA
BAKRESWAR
BAHARAMPUR
TANGMACHU
CHUMDO
GELEPHU
TINTIBI
TURA
1360
234
484

MAJOR PRIVATE DEVELOPERS IN HYDRO SECTOR IN ARUNACHAL PRADESH

Sl. No.	Name of Project Developer	Name of HEPs with IC
1.	Reliance Power	Kalai-II (1200 MW), Siyom (100 0 MW) , Tato-II (700 MW)
2	Jindal Power	Etalin (4000 MW), Kamala (1600 MW)
3.	Jaiprakash	Siang Lower (1600 MW), Hirong (500 MW)
4.	Mountain Fall	Kalai-I (1400 MW), Hutong-II (1250 MW), Kameng (600 MW)
5.	KSK Energy	Subansiri Upper (2000 MW), Dibin (125 MW) , Kameng Dam (600 MW), Utung (100 MW)
6.	DS Construction	Naying (1000 MW)
7.	Costal Infrastructure	Niare (800 MW), Dengsar (552 MW), Nalo (360 MW)
8.	Navayuga Engineering	Oju-II (1000 MW), Oju-I (700 MW)

Meanwhile states need to focus on increasing Per-capita consumption and reducing AT&C losses.....

State	2010-11		2011-12			
	Per-capita consumption	AT&C losses	Per-capita consumption	% change	AT&C losses	% change
Sikkim	880.11	62.20	886.36	0.1	59.48	-4.4
Arunachal Pradesh	582.08	61.45	683.13	17.4	65.55	6.7
Assam	222.88	28.71	249.82	12.2	29.47	2.6
Manipur	242.3	40.17	235.86	-2.8	44.80	11.5
Meghalaya	654.08	51.63	657.57	0.5	44.85	-13.1
Mizoram	461.69	41.00	506.74	9.8	30.02	-26.8
Nagaland	264.81	49.34	257.18	2.6	22.32	-54.8
Tripura	221.8	34.48	253.82	14.5	33.76	-2.1
All India	**818.75**	**26.04**	**883.63**	**7.9**	**27.00**	**3.7**

GOI is helping in raising local demand through RGGVY…

State	Projects	Rs. Cr.	Released (Rs Crs.)	Un electrified villages			BPL household	
				Target	Achieved	Balance	Target	Achieved
Ar. Pr.	16	1032.24	**799.05**	2096	1935	161	46784	6528
Assam	23	2851.30	**2415.89**	8353	8113	240	1056023	212109
Manipur	9	439.12	**297.18**	882	616	266	29658	77711
Meghalaya	7	466.92	**406.37**	1866	1737	129	94887	14810
Mizoram	8	317.22	**283.66**	141	106	35	18886	12031
Nagaland	11	270.20	**230.78**	105	91	14	43196	29665
Sikkim	4	217.92	**172.89**	25	25	0	9832	2276
Tripura	4	199.08	**175.73**	148	144	4	115097	2066
Total	**82**	**5793.99**	**4781.55**	**13616**	**12767**	**849**	**1414363**	**357196**

For partially electrified villages the target was 21747, the achievement was 19325 and the balance villages are : 2422

In addition 11 projects amounting to Rs.745.97 cr. in Assam, Tripura and Mizoram have recently been sanctioned for the 12th Plan

Town areas are also being assisted to through the R-APDRP scheme….

Sl	State	Part-A		Part-B Distribution Strengthening		Total Cost (₹ Cr.)
		IT Town	Cost (₹ Cr.)	Town	Cost (₹ Cr.)	
1	Arunachal Pradesh	10	37.68	Nil	0.00	37.68
2	Assam	67	195.60	67	644.05	839.65
3	Manipur	13	31.55	13	398.87	430.42
4	Meghalaya	9	33.98	9	159.73	193.71
5	Mizoram	9	35.12	9	240.41	275.53
6	Nagaland	9	34.58	Nil	0.00	34.58
7	Sikkim	2	26.30	2	68.46	94.76
8	Tripura	16	35.18	16	165.09	200.27
Total NER		**135**	**429.99**	**116**	**1676.61**	**2106.60**

So, to tap the huge power potential there needs to be a …. 7 prong strategy…

1. Generation / Transmission capacity addition: Developer, MoEF, MoRTh, BRO, State Govt
2. State Government and MHA to Address Law and order concerns
3. Forest / Environment clearances to be expedited
4. Increase Demand rather than just export power
5. Monthly targets need to be pursued at highest level in state government along with Joint monitoring by SG /GoI / Industry / Business
6. State needs to reduce distribution losses and increase consumption in Industry and Agriculture instead of planning to merely self power
7. People need to be taken along: Need based Capacity Building and so local participation in the growth process

Therefore key to leveraging is: Increase Local consumption through industry and business by scaling up even today by 4 times to take advantage of the huge power potential…..

- **Or else, little advantage would percolate to local industry and commerce and or through them to the people**
- **With power export being the only source of revenue – the people would feel deprived of the benefits of production of more local power. Importantly they would feel little stake-holdership in development of the projects**
- **This should be sine–qua–non of leveraging growth of opportunities in NER through the power sector**

THANK YOU

THANK YOU

Per-capita consumption and AT&C losses

State	2011-12				2010-11			
	Per-capita consumption	% change	AT&C losses	% change	Per-capita consumption	% change	AT&C losses	% change
Sikkim	886.36	0.1	59.48	-4.4	880.11	3.5	62.20	4.9
Arunachal Pradesh	683.13	17.4	65.55	6.7	582.08	23.8	61.45	4.5
Assam	249.82	12.2	29.47	2.6	222.88	8.8	28.71	-48.9
Manipur	235.86	-2.8	44.80	11.5	242.3	0.8	40.17	-15.5
Meghalaya	657.57	0.5	44.85	-13.1	654.08	-3.2	51.63	5.9
Mizoram	506.74	9.8	30.02	-26.8	461.69	22.3	41.00	5.3
Nagaland	257.18	2.6	22.32	-54.8	264.81	21.1	49.34	-24.5
Tripura	253.82	14.5	33.76	-2.1	221.8	-34.0	34.48	18.2
All India	**883.63**	**7.9**	**27.00**	**3.7**	**818.75**	**5.1**	**26.04**	**-2.8**

ENVIRONMENT CLEARANCE ISSUES: Issue of Terms of Reference (ToR) and completion of Environment Impact Assessment (EIA) studies / Environment Management Plan (EMP) preparation

Basin	No. of Projects	Status of ToR				Status of EIA/EMP	
		Applied	Obtained	Pending	Not applied	Completed	Pending
Tawang	4	4	3	1	0	3	1
Kameng	8	8	5	3	0	4	4
Subansiri	7	6	4	2	1	0	7
Siang	10	8	8	0	2	8	2
Dibang	9	7	6	1	2	2	7
Lohit	7	7	5	2	0	3	4
Total	**45**	**40**	**31**	**9**	**5**	**20**	**25**

Action Points:

1. ToR application to be made by developer where pending
2. MoEF to issue ToR in 9 cases

STATUS OF ENVIRONMENT CLEARANCE vis-à-vis completion of EIA/EMP and STATUS OF STAGE-I FOREST CLEARANCE

Basin	No. of Projects	EIA / EMP Completed	Status of EC			Status of FC Stg-I		
			Approved	Pending	Not Applied for EC/PH pending	Approved	Pending	Not Applied
Tawang	4	3	3	0	0	1	2	1
Kameng	8	4	3	0	1	3	3	2
Subansiri	7	0	0	0	0	0	4	3
Siang	10	8	2	2	4	0	8	2
Dibang	9	2	0	1	1	1	2	6
Lohit	7	3	1	2	0	4	2	1
Total	**45**	**20**	**9**	**5**	**6**	**9**	**21**	**15**

Action Points:

1. Developer to expedite construction where EC / FC cleared
2. EC / FC application to be made by developer where pending
3. MoEF to issue EC / FC where pending
4. Focus on First User Right projects (6) : Siang Upper Stage -I and II
5. Focus on construction and sanction concerning First in Basin projects (6)
    - Lower Subansiri (Under construction), Demwe Lower , Dibang

Interventions Proposed

- Pursue with MOEF for expeditious Environment and Forest clearances
- Consider cancellation of allotment for undue delays in preparation of DPRs and implementation of the projects.
- Need for the developers to achieve milestone based progress on obtaining the statutory clearances and financial closure.
- State Govts to facilitate developers in obtaining the statutory clearances and public hearing etc.
- Need for allotment of HEPs to CPSUs either on their own or as Joint Venture partners.
- Focus on some of the bigger and strategically more important hydro projects.
- Completion of Basin-wise Cumulative Impact & Carrying Studies including downstream impacts
- Need for time bound completion of Infrastructure projects by MORTH/ BRO.

Targeted Capacity Addition during XIIth Plan… 5596 MW

	Project	2012-13	2013-14	2014-15	2015-16	2016-17
Arunachal Pradesh 1710 MW	Pare HEP			110		
	Kameng HEP					600
	Subansiri HEP					1000
Assam 850 MW	Bongaigaon TPS				500	250
	Namrup CCGT			100		
Meghalaya 82 MW	New Umtru HEP			40		
	Myntdu St-I HEP addl Unit	42				
Mizoram 60 MW	Tuirial HEP					60
Sikkim 2066 MW	Bhasmey HEP			51		
	Jorethang Loop HEP			96		
	Rangit-IV HEP			120		
	Teesta-VI HEP				500	
	Teesta-III HEP			1200		
	Chujachen HEP		99			
Tripura 828 MW	Tripura CCGT	363.3	363.3			
	Monarchak CCGT				101	
Total		**405**	**463**	**1717**	**1101**	**1910**