

Indian Power Sector - Challenges and Opportunities

1. Evolution of Indian Power Sector

Since independence in 1947 Indian Power Sector progress has been rapid. From mere 1713 MW of installed capacity in 1950 the capacity at the end of March 2007 rose to 124569 excluding capacity of renewable energy. Total generation in April 2006-March 2007 was 659419 GWh in the utility sector. The per capita consumption of electricity increased from 15 KWh in 1950 to 619 in 2006-07.

2. Demand/Availability Position for the Year 2006-07

Region	Peak Demand (MW)	Availability	(+)(-) (%)	Energy Requirement (GWH)	Availability	(+) (-) (%)
Northern	32487	29661	-2826 -8.70%	209137	195987	-13150 -6.29%
Western	35143	29117	-6026 -17.15%	233486	205653	-27833 -11.92%
Southern	27441	25642	-1799 -6.56%	176037	169501	-6536 -3.71%
Eastern	11436	10962	-474 -4.14%	70547	68430	-2117 -3.00%
North Eastern	1549	1388	-161 -10.39%	8534	7760	-774 -9.07%
All India Aggregate peak	108056	96770	-11286 -10.44%	697741	647331	-50410 -7.22%

The summary of the energy requirement and expected peak demand from 2007-08 to 2011-12 are given below:

<i>Energy requirement at Power Station Bus bars (Utilities only) (in GWh) From 2007-08 to 2011-12</i>					
Region	2007-08	2008-09	2009-10	2010-11	2011-12
Northern Region	223928	239807	256859	275171	294841
Western Region	244481	256075	268307	281220	294860
Southern Region	189312	203606	219001	235582	253443
Eastern Region	77221	84601	92767	101805	111802

North Eastern Region	9326	10193	11141	12184	13329
ISLANDS					
Andaman & Nicobar	219	248	281	316	344
Lakshawadeep	28	31	34	37	40
All India	744515	794561	848390	906316	968659

17th EPS FORCAST

Peak Load at Power Stations Bus Bars (Utilities Only) (in MW) From 2007-08 to 2011-12

Region	2007-08	2008-09	2009-10	2010-11	2011-12
Northern Region	35145	38021	41131	44496	48137
Western Region	37264	39513	41898	44427	47108
Southern Region	29854	32192	34715	37434	40367
Eastern Region	12670	14037	15552	17230	19088
North Eastern Region	1710	1888	2083	2299	2537
ISLANDS					
Andaman & Nicobar	49	56	63	71	77
Lakshawadeep	8	9	10	11	11
All India	113059	121891	131413	141678	152746

PERCENTAGE OF THE POPULATION PROVIDED ELECTRICITY

PARTICULARS

2006-07 (as on 28-2-2007)

(I) Total No. villages	593732
(II) No. of villages Electrified	475117
(III) Percentage Electrified	80 %
(IV) Percentage of Rural population Benefited	84 %
(V) Pump sets Energized	15096480

Installed Generating Capacity (MW)

Generating Capacity (MW)	2002-03	2003-04	2004-05	2005-06	2006-07
Hydro	26767	28925	30818	32326	34654
Thermal	75114	76670	80626	82411	86015
Nuclear	2720	2720	2720	3360	3900
All Categories	104601	108315	114164	118097	124569
Generation (Gwh)	2002-03	2003-04	2004-05	2005-06	2006-07
Hydro	64014	73775	84495	101325	113315
Thermal	442237	466824	486075	497044	527499
Nuclear	19390	17737	16845	17249	18605
All Categories (Does not include wind & Others)	525641	558336	587415	615618	659419

A brief write up about natural fuel reserves and how long are these expected to last.

Primary fuel resources of the country are Hydro Power, Fossil Fuels-Coal, Lignite, Natural gas and Nuclear Power as per details shown below:

Hydro	:	84044 MW @ 60 % L.F 148700 MW of economically exploitable potential of installed capacity
Pumped Storage Hydro Projects.	:	94000 MW from 56 Nos. of identified
Coal Reserves	:	204.7 Billion Tonnes
Lignite Reserves	:	27.5 Billion Tonnes

Crude Oil	:	732 Million Tonnes
Natural Gas	:	660 Billion Cubic Meter
Uranium	:	6700 Tonnes
Thorium	:	363000 Tonnes

Future Projection of Capacity addition

Tentative 11th Five-Year Plan (2007-2012) addition will be 78601 MW comprising 16553 MW Hydro, 58668 MW Thermal and 3380 MW Nuclear.

Does your country import or export electricity? If so, where from or where to and the quantity during the last five years.

Yes, import from Bhutan. Installed capacity of two projects in operation in Bhutan is 406 MW (336+70) from which 270 MW surplus is exported to India.

Please provide a list of all the power stations in your country showing capacity and electricity generated

As per Annexure “A” attached. (Particulars are as on 31-03-2006)

Transmission and Distribution

What is the range of transmission voltage used through out your country?

State Grid	400 kV, 220 kV, 132 kV, and below HVDC only in Maharashtra 110 kV
Regional Grids	400kV, HVDC bi-pole, HVDC b-t-b 765kV operated at 400kV
Inter Regional	HVDC back-to-back, 400kV, 220kV
HVDC bi-pole lines	Rihand-Dadri Chandrapur-Padghe Talchar-Kolar
Inter-regional links with HVDC back-to-back	Vindhyachal (1989), Chandrapur Gazuwaka, Sasaram (2002)
765kV Operated at 400kV	Kishenpur-Moga, Anpara-Unnao

Tehri-Meerut

(Source: Transmission system development and operation in de-regulated environment- May 2006)

What is the length of installed network in circuit Kms. And how much is of high, medium and low voltage

The length of installed network in circuit Kms. as on 31st March 2006 is given below:

Voltage	Length in Circuit Kms.
132 KV	120000
220 KV	120000
400 KV	75722
HVDC bi-pole lines 5000 MW	10000
HVDC back-to-back 3000 MW	3000
765 KV 400 KV Op	1185 ckm

(Source: CEA website)

Investment Requirements during XI Plan (2006-07)

As per presentation made by the Secretary (Power), Govt. of India, at Asia Power Congress held on March 14, 2006 at Singapore, salient features are as under:

- USD 50 Billion for Generation
- Another USD 50 Billion for transmission, distribution and Rural Electrification
- Total USD 100 Billion

Improving Investment Climate

- At present 40,000 MW generation capacity is already under execution. Investment of USD 43 billion committed.
- Public sector investments have been stepped up; will need to be supplemented through private investments.
- 100 % FDI in all segments of power sector has been allowed
- Recently power trading also covered
- The Law does not distinguish between domestic and international investors

Private participation-Generation

- Encouraging response of investors

- Financial closures of 4400 MW Projects-investment of about USD 3.6 Billion
- Financial closures for 2200 MW is at advanced stage of finalization
- Additional about 10,000 MW appraised. Fuel supply availability critical for financial closure.

3. Ultra Mega Power Project

PFC has been designated as the nodal agency by the GoI for the development of seven UMPPs, each with a capacity of 4,000 MW with the objective to develop large capacity power projects in India. These projects will have the advantage of economies of scale on account of large capacity at single location, reduction in emissions on account of super critical technology and lower tariff on account of the above and tariff based international competitive bidding adopted for selection of developers.

The 'Letters of Intent' (LoI) for two UMPPs were handed over on 28th December, 2006 to the successful bidders namely, M/s. Globeleq Singapore Pte. Ltd (lead) & M/s. Lanco Infratech Ltd. for Sasan UMPP (M.P) and M/s. Tata Power Company Ltd. for Mundra UMPP (Gujarat).

Similar endeavour will be made by PFC for formation of a Shell company for Transmission and Hydro projects to be offered through competitive route as mandated by Government of India.

Annexure- A
Name , Capacities & Generation of Thermal, Nuclear & Hydro
Power Stations During 2005-06:

A1 Central Sector Thermal	Capacity (MW)	Generation (GWH)
N.T.P.C Ltd.,		
Badarpur TPS	720.0	5380.60
Singrauli STPS	2000.0	15503.10
Rihand STPS	2000.0	10585.66
Unchahar	840.0	7041.10
Dadri	840.0	6768.30
Tanda	440.0	3330.10
Korba STPS	2100.0	16001.20
Vindhyachal STPS	2260.0	18304.60
Ramagundam STPS	2600.0	19691.20
Simhadri STPS	1000.0	7741.40
Kahalgaon	840.0	6572.30
Talcher	470.0	3530.08
Talcher STPS	3000.0	21184.78
Farakka STPS	1600.0	11464.00

Sub - Total (Coal Based)	20710.0	153098.42
Faridabad CCGT	430.0	2952.80
Anta CCGT	413.0	2809.10
Auraiya CCGT	652.0	4281.40
Dadri CCGT	817.0	5394.40
Kawas CCGT	644.0	2884.20
Gandhar CCGT	648.0	4478.20
Kayam Kulam CCGT	350.0	358.50
Sub - Total (Gas Based)	3954.0	23158.60
Total NTPC (Coal + Gas)	24664.0	176257.02
Neyveli Lignite Corp.		
Neyveli St. I	600.0	3990.28
Neyveli St. II	1470.0	9173.54
Neyveli FSt Extn.	420.0	3082.33
Sub - Total	2490.0	16246.15
DVC		
Chandrapura	750.0	2034.09
Durgapur	350.0	1799.93
Bokaro 'A'	172.5	0.00
Bokaro 'B'	630.0	2665.86
Maithan GT	90.0	0.00
Mejia TPS	840.0	5884.07
Sub - Total	2862.5	12383.95
NEEPCO		
Kaithalguri CCGT	291.0	1723.11
Agartala GT	84.0	638.21
Sub - Total	375.0	2361.32
Total (Central)		207248.44
State Sector		
DELHI		
IP GT	180	1277.57
I.P.WHP	102	463.36
Pragati CCGT	330.4	2298.07
Sub - Total Gas	612.4	4039.00
I.P.Station	247.5	984.65
Rajghat	135	574.47
Sub - Total Coal	382.5	1559.12

HARYANA

Faridabad Extn	180.0	787.31
Panipat TPS	1360	8174.48
Sub - Total HPGC-Coal	1525.0	8961.79

J&K

Pampore GT	175.0	8.92
Sub Total Gas	175.0	8.92

PUNJAB

GNDTP(Bhatinda)	440.0	2359.19
GnDTP(Lehar Mohabbat)	420.0	3145.93
Ropar	1260.0	9329.31
Sub Total Coal	2120.0	14834.43

RAJASTHAN

Kota	1045.0	8297.75
Suratgarh	1250.0	9951.25
RRVUNL Sub- Total Coal	2295.0	18249.00
Ramgarh GT	76.0	435.95
Ramgarh ST	37.8	0.00
RRVUNL Sub- Total (Gas)	113.8	435.95

UTTAR PRADESH

Obra	1550.0	5572.93
Panki	220.0	954.04
Harduaganj 'B'	450.0	519.37
Parichha	220.0	763.18
Anpara	1630.0	11560.19
UPRVUNL Sub Total (Coal)	4070.0	19369.71

Gujrat

Dhuvaran	534.0	1459.63
Ukai	850.0	536.09
Gandhi Nagar	660.0	3703.60
Wanakbori	1260.0	8472.06
Sikka Rep.	240.0	1404.70
Kutch Lig	215.0	669.82
GEB Sub - Total	3759.0	21072.70

GSECL	210.0	1743.46
GSECL	210.0	1709.31
GSECL Sub - Total	420.0	3452.77

Utran GT	144.0	1077.44
Dhuvaran CCPP	105.9	707.33
GEB Sub - Total Gas	249.9	1784.77

Hazira CCCP	156.1	1182.21
GSE GL Sub -Total GTG	156.1	1182.21

Private Sector

Torrent Power AEC	60.0	485.00
Sabarmati	330.0	2703.14
Vatwa GT .	100.0	718.17
Sub - Total	490.0	3906.31
ESSAR GT. Imp.	515.0	1800.94
ESSAR GT. Sub - Total	515.0	1800.94
GIPCL GT	154.0	2321.14
Surat Lignite	250.0	1874.15
GIPCL Sub - Total	404.0	4195.29
GTE Corp Gas	655.0	4755.99
GTE Corp Sub Total Gas	655.0	4755.99

MADHYA PRADESH

Satpura	1142.5	7581.25
Amar Kantik	60.0	150.26
Amar Kantik Extn	240.0	952.57
Sanjay Gandhi	840.0	4856.34
MPGOCL Sub Total	2282.5	13540.42

CHATTISGARH

Korba II	200.0	1610.63
Korba III	240.0	1587.10
Korba West	840.0	5746.38
CSEB Sub Total	1280.0	8944.11

Maharashtra

Nasik	910	5753.17
Koradi	1100	6460.34
Khaperkheda-II	840	5703.99
Paras	62.5	479.72
Bhusawal	482.5	3381.68
Parli	690	5161.2

Chandrapur	2340	13987.27
MSEB Sub - Total	6425	40927.37
Uran GT	672	2430.23
Uran WHP	240	1318.35
Sub Total Gas	912	3748.58

BSES

Dahanu	500	4323.11
BSES Sub - Total	500	4323.11
Dabhol CCGT	740	0
Sub - Total Gas	740	0
Trombay	1150	7854.36
Trombay GT	180	1330.75
Tata Sub-Total	1330	9185.11

ANDHRA PRADESH

Kothagudem	1180	8212.97
Kathgodam New		
Vijaywada	1260	9755.14
Ramagundem 'B'	62.5	397.23
Nellore	30	7.4
Royal Seema	420	2369.09
APGENCO- Sub Total Thermal	2952.5	20741.83

Vijeswaram CCGT	272	1836.92
APGPC Sub Total Gas	272	1836.92
Peddapuram CCGT	220	842.31
BSES Sub Total Gas	220	842.31
Jegurupadu CCGT	455.4	1293.7
GVK Ind. Sub Total Gas	455.4	1293.7
Kondapalli CCGT	350	2116.12
Kondapalli Sub Total Gas	350	2116.12
LVS Power Diesel Set	36.8	0
LVS Power Sub Total	36.8	0
Godavari CCGT	208	1331.16
Spect Ind. Sub Total Gas	208	1331.16

KERALA

Bramhapuram DG	106.6	55.71
Kozhikode DG	128.8	93.34
KSEB DG	234.6	149.05
Cochin CCGT	174.0	37.15

<u>BSES (C) Sub Total (Gas)</u>	174.0	37.15
Kasargode Diesel	21.8	7.91
<u>RPG Sub Total (Diesel)</u>	21.8	7.91

TAMIL NADU

Ennore	450.0	600.53
Tuticorin	1050.0	7674.14
Mettur	840.0	6518.91
North Chennai	630.0	4001.21
TNEB Sub Total (Coal)	2970.0	18794.79
Basin Bridge GT	120.0	39.89
Nariman GT	10.0	0.00
Valuthur GT	94.0	697.42
Kuttalam GT	100.0	674.23
Kovil Kalappal	107.0	572.86
<u>TNEB Sub Total (Gas)</u>	431.0	1984.40

KARNATAKA

Raichur	1470.0	9173.48
KPCL Sub Total (Coal)	1470.0	9173.48
Yelhanka DG	127.8	96.70
VVNL Sub Total (DG)	127.8	96.70
Bellary DG	25.2	17.25
Bellary Sub Total (Diesel)	25.2	17.25
Tanir Bavi	220.0	241.49
GMR Energy Sub Total	220.0	241.49
Torangallu IMP	260.0	1382.95
Jindal Sub Total	260.0	1382.95
Belgaum DG	81.3	133.12
Tata PCL Sub Total	81.3	133.12
Neyveli TPS (Zero)	250.0	1450.45
Sub - Total	250.0	1450.45
P. Nallur CCGT	330.5	428.82
PPNPG Sub - Total	330.5	428.82
Samalapatti DG	105.7	332.50
Samalapatti Sub - Total	105.7	332.50
Basin Bridge DG	200.0	745.47
<u>Vasavi Sub - Total</u>	200.0	745.47

PONDICHERRY

Karaikal CCGT	32.5	256.71
<u>PPCL Sub - Total</u>	32.5	256.71

BIHAR

Barauni	320.0	120.86
Muzaffarpur	220.0	0.00
BSEB Sub Total (Coal)	540.0	120.86

JHARKHAND

Patratu	840.0	846.34
JSEB Sub Total Coal	840.0	846.34
Tenughat	420.0	1527.48
TVNL Sub - Total Coal	420.0	1527.48

ORISSA

IB Valley TPS	420.0	3094.78
OPGC Sub - Total Coal	420.0	3094.78
ICCL IMP	0.0	443.50
ICCL Sub Total	0.0	443.50
NALCO Import	0.0	470.30
NALCO Sub Total	0.0	470.30

WEST BENGAL

DPL	395.0	2175.90
DPL Sub Total	395.0	2175.90
Bandel	540.0	2158.55
Santaldih	480.0	1223.38
Kolaghat	1260.0	7352.70
Bakreshwar	630.0	4374.32
WBPDC Sub Total	2910.0	15108.95
Kasba GT	40.0	0.00
Siliguri GT	20.0	0.00
Haldia GT	40.0	0.00
WBPDC Sub Total	100	0
CESC		
Mulajore	120.0	0.00
New Cossipore	160.0	447.35
Titagarh	240.0	1830.73
Southern Repl	135.0	989.80
Budge Budge	500.0	4362.72
CESC Sub Total	1155.0	7630.60

ASSAM

Chandrapur	60.0	0.00
Bongaigaon	240.0	0.00
ASEB Sub - Total	300.0	0.00

Namrup GT	81.5	317.44
Namrup ST	30.0	76.80
Namrup WHP	30.0	56.60
Lakwa GT	120.0	360.08
Mobile Gas Turbines	21.0	0.00
ASES Sub - Total Gas	274.5	810.92
DLF CCGT	24.5	121.28
DLF Sub - Total	24.5	121.28

MANIPUR

Leimakhong DG	36.0	0.00
MPDC Sub - Total	36.0	0.00

TRIPURA

Baramura GT	21.0	169.38
Rokhia GT	69.0	251.18
Tripura Sub - Total Gas	90.0	420.56

MIZORAM

Bairabi D.G.	22.8	0.03
Mizoram Sub - Total	22.8	0.03

B I Central Sector - Nuclear

Nuclear Power Corporation

Rajasthan

RAPS	740.0	4305.98
------	-------	---------

Uttar Pardesh

Narora	440.0	2138.35
--------	-------	---------

Gujarat

Kakrapara	440.0	2366.94
-----------	-------	---------

Maharashtra

Tarapur	860.0	3714.63
---------	-------	---------

Karnataka

Kaiga APP	440.0	2859.58
-----------	-------	---------

Tamil Nadu

MAPP	390.0	1853.41
------	-------	---------

Total Nuclear	3310.0	18238.89
---------------	---------------	-----------------

C1 Central Sector-Hydro

B.B.M.B

Bhakra	1325.0	5721.68
--------	--------	---------

Ganguwal	83.6	580.42
----------	------	--------

Kotla	84.6	490.95
-------	------	--------

Dehar	990.0	3122.71
-------	-------	---------

Pong	396.0	1730.72
Total	2879.2	11646.48

National Hydro Electric Power Corporation Ltd.

Baira Siul	198.0	790.96
Chamera I	540.0	2338.17
Chameral II	300.0	1490.49
Salal	690.0	3480.86
Uri	480.0	2724.51
Loktak	105.0	586.15
Rangeet	60.0	352.05
Tanakpur	120.0	483.17
Total	2493.0	122246.36

Satluj Jal Vidyut Nigam Ltd. (SJVNL)

Nathpa Jhakri	1500.0	4053.73
Total	1500.0	4053.73

NHDC

Indira Sagar	1000.0	2572.97
Total	1000.0	2572.97

D.V.C.

Panchet	80.0	86.32
Maithon	60.0	85.19
Tillaya	4.0	3.25
Total	144.0	174.75

North Eastern Electric Power Corporation Ltd.

Khondong	50.0	197.58
Kopili	225.0	1102.33
Doyang	75.0	183.02
Ranganadi	405.0	1411.86
Total	755.0	2894.79

C2. STATE SECTOR - HYDRO

HARYANA

Western Yamuna Canal	62.4	259.06
----------------------	------	--------

HPGC HYDRO	62.4	259.06
-------------------	-------------	---------------

HIMACHAL PRADESH

STATE SECTOR

Giri Bata	60.0	193.35
-----------	------	--------

Sanjay Bhabha	120.0	574.29
Bassi	60.0	259.46
Binwa	6.0	33.58
Andhra	17.0	62.54
Thirot	4.5	3.93
Ghanvi	22.6	69.81
Largi	0.0	0.00
Gaj	10.5	51.29
Baner	12.0	43.59
HPSEB HYDRO	312.6	1291.84
PRIVATE SECTOR		
Baspa	300.0	1166.99
JHP Baspa HYDRO	300.0	1166.99
Malana	86.0	337.45
Malana HYDRO	86.0	337.45
JAMMU & KASHMIR		
Lower Jhelum	105.0	496.17
Upper Sindh	127.6	214.00
Gandharbal	15.0	31.49
Chenani	33.0	16.53
Mohara	9.0	0.96
Kargil	3.8	6.50
Sewa	9.0	12.13
Stakna	4.0	1.67
JKEB HYDRO	306.4	779.45
PUNJAB		
Shanan	110.0	508.95
Anandpur Sarib	134.0	721.77
Ranjit Sagar	600.0	2013.22
UBDC	91.0	531.18
Mukerian	207.0	1239.25
PSEB HYDRO	1142.0	5014.37
RAJASTHAN		
R.P.Sagar	172.0	314.46
Jawahar Sagar	99.0	228.58
Mahi Bajaj	140.0	218.49
Anoop garh	9.0	1.90
Surat garh	4.0	0.00
RMC Mangrol	6.0	0.00
RRVUNL HYDRO	430.0	763.43
UTTAR PRADESH		

Rihand	300.0	546.35
Obra	99.0	231.38
Matatilla	30.0	143.41
Ganga Canal	15.6	34.09
Khara	72.0	328.57
E.Y. Canal	6.0	1.63
UPHPC HYDRO	522.6	1285.43
UTTARANCHAL		
Ramganga	198.0	333.30
Khatima	41.4	165.04
Pathri	20.4	98.49
Chibro (Yamuna)	240.0	804.96
Khodri	120.0	378.83
Chilla	144.0	659.18
Maneri Bhali	90.0	455.21
Dhakrani	33.9	164.65
Dhalipur	51.0	236.13
Kulhal	30.0	160.92
Mohamad Pur	9.3	36.40
Uttaranchal SEB HYDRO	978.0	3493.11
WESTERN REGION		
GUJARAT		
Ukai	305.0	580.49
Kadana PSS	240.0	209.17
GEB HYDRO	545.0	789.66
MADHYA PRADESH		
Gandhi Sagar	115.0	148.01
Bargi	90.0	565.35
Pench	160.0	422.13
Rajghat MP	45.0	135.68
Bansagar I	315.0	996.57
Bansagar II	30.0	156.12
Bansagar III	60.0	89.19
Birsinghpur	20.0	55.69
MPGPCL HYDRO	835.0	2568.74
CHHATTISGARH		
Hasdeo Bango	120.0	358.28
Gangrel	5.0	8.72
CSEB HYDRO	125.0	367.00
MAHARASHTRA		
Koyna	1960.0	4463.06

Vaitarna	61.5	170.87
Tillari	60.0	182.95
Bhira Tail Race	80.0	98.76
Eldari	22.5	16.30
Veer	9.0	46.36
Bhatgarh	16.0	57.76
Paithon	12.0	24.92
Bhandhardhara	44.0	44.89
Pawana	10.0	13.51
Radhanagri	4.8	8.97
Kvasla(Panshet)	8	58.24
Kvasla(versa)	8	21.5
Bhatsa	15.0	85.14
Kanher	4.0	14.70
Ujjaini	12.0	44.04
Surya	6.0	22.62
Manikdoh	6.0	8.05
Dhom	2.0	10.55
Dimbe	5.0	10.58
Warna	16.0	60.90
Dudh Ganga	24.0	59.02
MSEB HYDRO	2385.8	5523.64
TAT A		
Bhira	150.0	479.79
Bhira PSS	150.0	701.46
Bhivpuri	72.0	427.83
Khopoli	72.0	414.47
Tata Hydro	444.0	2023.55
SOUTHERN REGION		
Andhara Pradesh		
Muchkund	114.9	628.14
Upper Sileru	240.0	472.96
Lower Sileru	460.0	1037.06
T.B.Dam	36	167.64
Hampi	36	57.60
Nagarjuna Sagar	810	1560.16
N' Sagar RBC	90.0	273.94
N' Sagar LBC	60.0	120.97
Donkarayi	25	114.71
Srisailam LB	770	1490.26
Srisailam LB	900.0	2232.90

Pochampad	27.0	111.82
Nizam Sagar	10.0	9.64
Penna Ahobilam	20.0	9.88
Singur	15.0	8.93
Small Hydro	15.0	24.96
APGEN. Hydro	3628.9	8321.57

KERALA

Kuttiadi	125.0	515.52
Idukki	780.0	2698.85
Sabarigiri	300.0	1468.53
Idamalayar	75	375.46
Kakkad	50.0	248.56
Sholayar	54.0	290.21
Sengulam	48.0	188.93
Narimanglam	45.0	244.90
Pallivasal	37.5	238.42
Poringal Kuttu	32.0	164.85
Poringal Kuttu LBC	16.0	105.19
Panniar	30.0	159.82
Kallada	15.0	64.16
Lower Periyar	180.0	631.39
Malankara	10.5	20.42
Chembukadavu	6.5	10.59
Urumi	6.2	12.81
Peppara	3.0	6.17
Madhupathy	2.0	4.53
KSEB Hydro	1815.7	7449.31

Private Sector

Maniyar	10	40.84
Kuthungal	21	48.4
KL Pvt Hydro	31	89.24

Karnataka

Jog	139.2	237.75
Sivasamundram	42	260.75
Shimsapura	17.2	93.27
Munirabad	27	83.28
KEB Hydro	225.4	675.05

KPCL Hydro

Sharavathy	1006.2	4865.65
Kadra	150	345.96
Kodasali	120	314.03
Kalinadi	835	2161.91
Kalinadi Supa	100	357.63
Lignamakki	55	275.69
Varahi	230	971.84
Bhadra L,R,RBC	39.2	76.03
Ghat Prabha	32	122.5
Mani Dam PH	9	20.64
Mallarpur	9	0
Geru Suppa	240	557.01
Almati Dam	290	598.62
KPCL Hydro	3135.4	10667.51
Shivpura	18	85.79
Shahpur	6.6	21.73
Harangi	9	0
Madhavamamtri	4.5	22.89
Bhoruka HYDRO	36.6	130.41
Narayanpur	11.6	55.9
Mysore PC Hydro	11.6	55.9

TAMIL NADU

Pykara	70.0	257.37
Pykara Dam	2	10.52
Moyar	36.0	175.44
Kundah	555.0	1972.31
Mettur Dam	40.0	90.93
Mettur Tunnel	200.0	639.44
Periyar	140.0	441.16
Kodayar	100.0	244.71
Sholayar	95.0	379.05
Aliyar	60.0	205.53
Sarkarpathy	30.0	115.10
Papanasam	28.0	125.74
Suruliyar	35.0	125.74
Servalar	20.0	53.95
Lower Mettur	120.0	341.22
Kadamparai	400.0	581.48

Vaigai	6.0	18.13
Lower Bhawani	8.0	63.02
Sathnur Dam	7.5	23.36
Parsen's Valley	30.0	53.39
Pykara ULT	150	189.36
TNEB HYDRO	2132.6	6110.47
EASTERN REGION		
Bihar		
Kosi	20.0	17.19
Sone West Canal	6.6	17.03
Sone East Canal	3.3	12.28
E.G. Canal	15	28.5
BSEB HYDRO	44.9	75.00
JHARKHAND		
Subernrekha	130	50.77
Chandil	0.0	0.00
JSEB HYDRO	130.0	50.77
ORISSA		
Balimela	360.0	1053.39
Hirakud	331.5	908.93
Rengali	250.0	677.88
Upper Kolab	320.0	624.39
Indravati	600.0	1762.99
OHPC HYDRO	1861.2	5027.58
WEST BENGAL		
Jaldhaka	35.0	170.12
Massanjore	4.0	0.00
Rammam II	50.0	196.74
Teesta Canal Falls	67.5	101.35
WBSEB HYDRO	156.5	468.21
SIKKIM		
Lower Lagyap	12.0	18.25
Upper Rongchu	8.0	2.11
Moyanchu	4.0	4.30
Small Hydro	8.0	9.10
Sikkim HYDRO	32.0	33.76
NORTH EASTERN REGION		
TRIPURA		
Gumti	15.0	63.43
Tripura HYDRO	15.0	63.43

NAGALAND		
LikimRO	24.0	0.00
Nagaland HYDRO	24.0	0.00
MEGHALAYA		
Kyredem Kulai	60.0	129.90
Umiam	114.0	320.66
Umtru	11.2	48.94
MEG.EB HYDRO	185.2	509.50
ARUNACHAL PRADESH		
Tago	4.5	0.00
Nuranang	6.0	0.00
Ar. Pr. HYDRO	10.5	0.00
ANDAMAN & NICOBAR		
Kalpong	5.3	6.67
A & N Adm HYDRO	5.3	6.67