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	/ BSt <sup>1</sup>		
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	% /		
	/ MBtu		
	Btu/\$		

<sup>1</sup> Million Short ton

%

(PPP<sup>1</sup>)

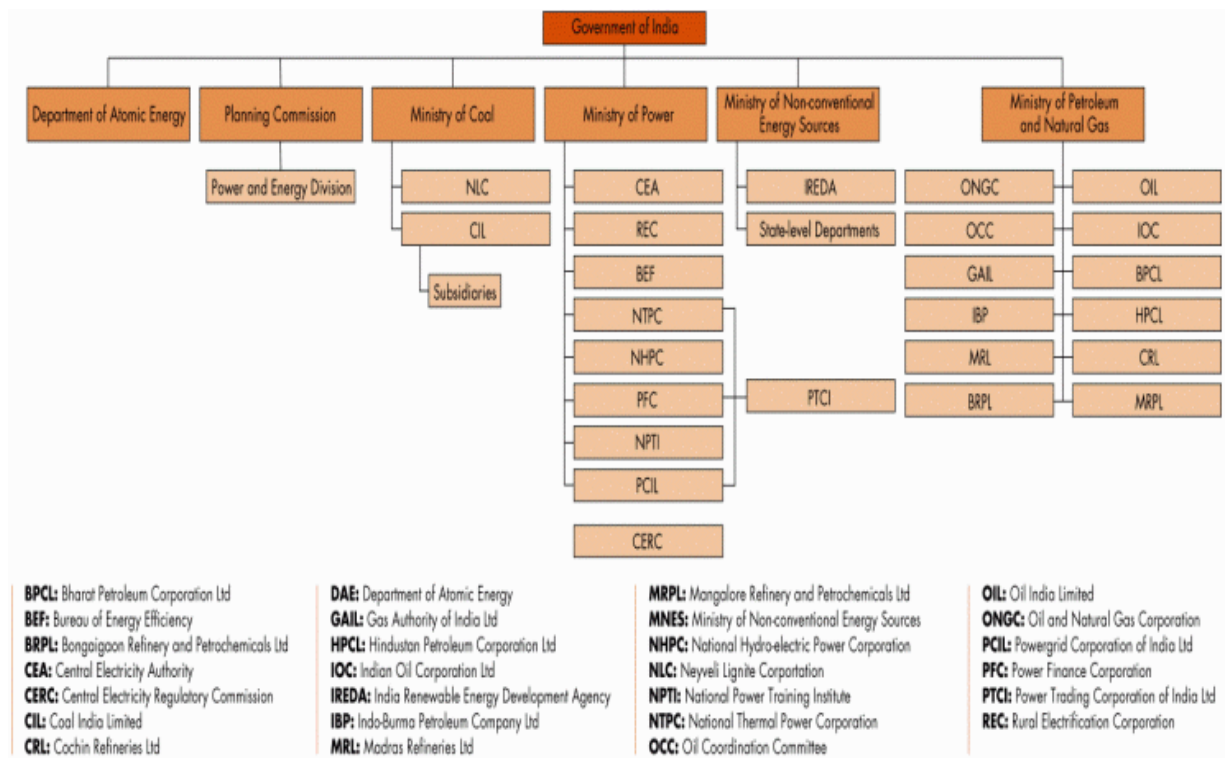
Mtoe

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Mtoe



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<sup>1</sup> Purchasing Power Parity

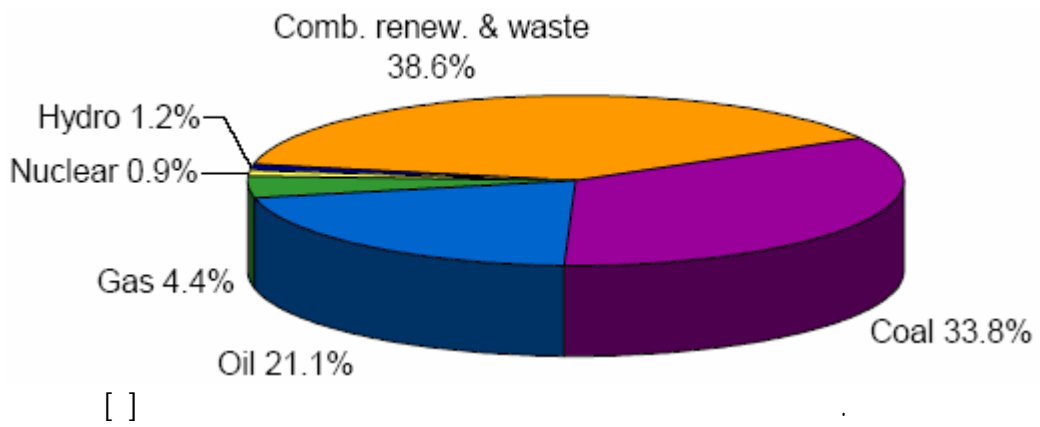
GDP

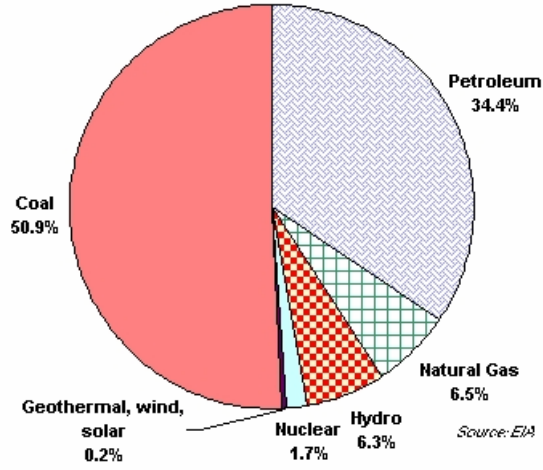
Btu

( [ ] Btu/\$ )  
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( Mt)

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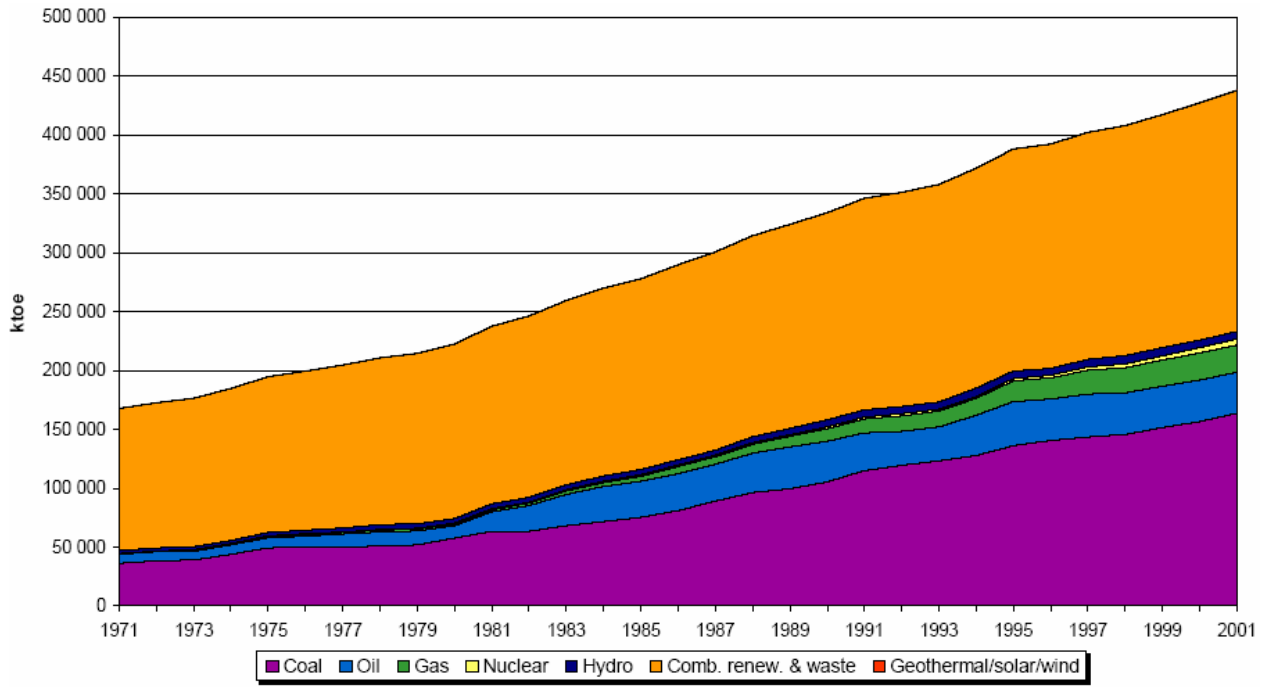
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<sup>1</sup> per capita

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MW

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Mwe

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GW

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Mwe PV<sup>1</sup> /

PV

PV / Mwe

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Mwe

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Source	Approx. Potential
Biomass energy	17,000
Solar energy	20,000
Wind energy	20,000
Small hydropower	10,000
Ocean energy	50,000

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<sup>1</sup> Photovoltaic

[ ]

	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
Net Generation	275.5	300.3	315.9	339.3	366.1	395.8	412.7	441.2	470.7	503.7	512.0	533.3
hydroelectric	70.9	72.0	69.2	69.8	81.9	72.0	68.4	73.9	82.2	79.9	73.7	77.4
nuclear	5.6	5.2	6.0	5.9	4.7	6.5	7.4	10.5	10.6	11.5	14.1	18.2
geo/solar/wind/biomass	0.0	0.0	0.0	0.1	0.2	0.1	0.8	1.0	1.1	1.4	1.6	1.8
conventional thermal	198.9	223.1	240.7	263.6	279.3	317.2	336.1	355.8	376.8	410.8	422.6	435.8
Net Consumption	257.1	280.6	295.1	316.9	341.9	369.7	385.4	411.7	439.1	469.4	477.5	497.2
Imports	1.0	1.4	1.4	1.4	1.6	1.7	1.7	1.6	1.5	1.4	1.5	1.5
Exports	0.1	0.1	0.2	0.1	0.1	0.1	0.1	0.1	0.2	0.3	0.2	0.3

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	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
Hydroelectric	18.31	18.76	19.20	19.58	20.38	20.84	20.99	21.10	21.89	22.44	24.50	25.14
Nuclear	1.57	1.57	1.79	2.01	2.01	2.23	2.23	2.23	2.23	2.23	2.23	2.86
Geothermal												
Solar												
Wind	0.02	0.03	0.03	0.04	0.05	0.12	0.55	0.82	0.93	1.02	1.08	1.27
Biomass												
Conventional Thermal	51.86	54.35	57.35	60.75	65.04	69.19	71.89	73.40	75.19	77.77	80.35	82.51
<b>Total Capacity</b>	<b>71.75</b>	<b>74.70</b>	<b>78.37</b>	<b>82.38</b>	<b>87.48</b>	<b>92.38</b>	<b>95.66</b>	<b>97.55</b>	<b>100.23</b>	<b>103.45</b>	<b>108.15</b>	<b>111.78</b>

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(IPPs<sup>1</sup>)

<sup>1</sup> Independent Power Projects



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	Supply					
	1953-54	1960-61	1970-71	1980-81	1990-91	2001-02*
Coal	23.62	35.64	36.48	56.96	94.68	133.89
Lignite	-	0.01	0.81	1.23	3.34	6.52
Crude Oil	0.19	0.46	7.01	10.79	33.92	32.03
Natural gas	-	-	0.60	1.41	11.73	26.72
Hydro Power	0.24	0.67	2.17	4.00	6.16	6.37
Nuclear Power	-	-	0.63	0.78	1.60	5.15
Wind Power	-	-	-	-	-	0.14
Total	24.05	36.78	47.67	75.19	151.43	210.82
Net Imports	2.20	6.04	12.66	24.63	31.69	87.85
Commercial Energy Supply	26.25	42.82	60.33	99.82	183.12	298.67
Primary Non-Commercial Energy Supply	64.13	74.38	86.72	108.48	122.07	139.02
Total Primary Energy Supply	90.38	117.20	147.05	208.30	305.19	437.69

\* Provisional

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Primary Fuel	Unit	Demand (in Original Units)		Demand (MTOE)	
		2006-07	2011-12	2006-07	2011-12
Coal	mt	460.50	620.00	190.00	254.93
Lignite	mt	57.79	81.54	15.51	22.05
Oil	mt	134.50	172.47	144.58	185.40
Natural gas	BCM	47.45	64.00	42.70	57.60
Hydro Power	BKwh	148.08	215.66	12.73	18.54
Nuclear Power	BKwh	23.15	54.74	6.04	14.16
Wind Power	BKwh	4.00	11.62	0.35	1.00
Total Commercial Energy				411.91	553.68
Non-Commercial Energy				151.30	170.25
Total Energy Demand				563.21	723.93

mt : Million Tonnes; BCM : Billion Cubic Meter; BKwh : Billion kilo watt hour

% %

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	Units	Production					
		1960-61	1970-71	1980-81	1990-91	2001-02*	2006-07**
Coal	mt	55.67	72.95	114.01	211.73	325.65	405.00
Lignite	mt	0.05	3.39	4.80	14.07	24.30	55.96
Crude Oil	mt	0.45	6.82	10.51	33.02	32.03	33.97
Natural Gas	BCM	-	1.44	2.35	1.79	29.69	37.62
Hydro Power	Bkwh	7.84	25.25	46.54	71.66	82.80	103.49
Nuclear Power	Bkwh	-	2.42	3.00	6.14	16.92	19.30
Wind Power	Bkwh	-	-	-	0.03	1.70	4.00

\* Anticipated, \*\* Projections for the terminal year of the Tenth Plan

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Organi- sation	2002-03	2003-04	2004-05	2005-06	2006-07	Total
ONGC	25.90	25.99	26.38	26.19	25.56	130.02
OIL	3.50	3.60	3.75	3.85	4.00	18.70
Pvt./JVC	3.68	3.63	4.50	4.44	4.41	20.66
Total	33.08	33.22	34.63	34.48	33.97	169.38

LNG

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Year	Forecasted Demand
2001-2002	151
2006-2007	231
2011-2012	313
2024-2025	391

Source: Hydrocarbon Vision 2025

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<sup>1</sup> Billion Cubic Meter



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Organisation	2002-03	2003-04	2004-05	2005-06	2006-07	Total (BCM)
ONGC	65.5	63.37	62.22	58.83	57.03	112.10
OIL	6.01	6.41	6.61	7.69	7.80	12.61
Pvt./JVC	15.05	20.76	35.01	35.47	38.25	52.77
Total	86.56	90.54	103.84	101.99	103.08	177.48

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/									(Billion \$)
/	/	/	/	/	/	/	/	/	(quaBtu)
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/	/	/	/	/	/	/	/	/	( )
/									(Mst <sup>1</sup> )
/									(GW)
/									(Bkwh)
/	/	/	/	/	/	/	/	/	(quaBtu)
/									(MMt <sup>2</sup> )

(IT<sup>3</sup>)

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<sup>1</sup> Million Short Ton

<sup>2</sup> Million Metric Ton

<sup>3</sup> Information Technology

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(PAFC)

BHEL<sup>1</sup>

(PEMFC)

(DMFC)

(SOFC)

(MCFC)

(TERI<sup>2</sup>) TATA

(CGCRI<sup>4</sup>)

(CECRI<sup>3</sup>)

<sup>1</sup> Bharat Heavy Electricals Ltd

<sup>2</sup> Tata Energy Research Institute

<sup>3</sup> Central Electro Chemical Research Institute

<sup>4</sup> Central Glass & Ceramic Research Institute

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TERI<sup>1</sup>

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Bharat Heavy Electricals Ltd (BHEL)

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<sup>1</sup> The Energy and Resources Institute

<sup>2</sup> Stack



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	<p style="text-align: center;">Banars Hindu University ❖</p> <p style="text-align: center;">PEMFC (CER – SSF<sup>1</sup>) ❖</p> <p style="text-align: center;">PEMFC</p> <p style="text-align: center;">PEMFC PEMFC</p> <p style="text-align: center;">PEMFC CER–SSF . Antarctica</p> <p style="text-align: center;">Gas Authority of India Ltd (GAIL) ❖</p> <p style="text-align: center;">GAIL</p> <p style="text-align: center;">Indian Institute of Science, Solid State and Structural Chemistry Unit ❖</p> <p style="text-align: center;">PEMFC DMFC<sup>2</sup></p> <p style="text-align: center;">International Advanced Research Centre for powder Metallurgy and New Materials ❖</p> <p style="text-align: center;">(ARCI)</p> <p style="text-align: center;">Mahindra &amp; Mahindra ❖</p> <p style="text-align: center;">Structural Chemistry Unit, Indian Institute of Science’s NED Energy Ltd ❖</p> <p style="text-align: center;">PEM DMFC Solid State</p> <p style="text-align: center;">Reva Electric Car Company (RECC) ❖</p> <p style="text-align: center;">Reva</p> <p style="text-align: center;">Scooters India Ltd ❖</p>	
<p><sup>1</sup> Centre for Energy Research - SPIC Science Foundation</p> <p><sup>2</sup> Direct Methanol Fuel Cell</p>		

(TERI) ❖

PEMFC MCFC  
 MCFC

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<sup>1</sup> Workshop

<sup>2</sup> Ministry of Non-conventional Energy Sources

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UNDP

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UNDP

<sup>1</sup> United Nations Development Programme

<sup>2</sup> Global Environment Facility

<sup>3</sup> Green House Gas

FCB<sup>1</sup> ( )

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<sup>1</sup> Fuel Cell Bus