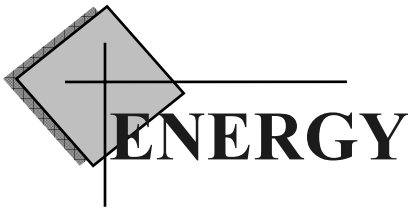


ENERGY

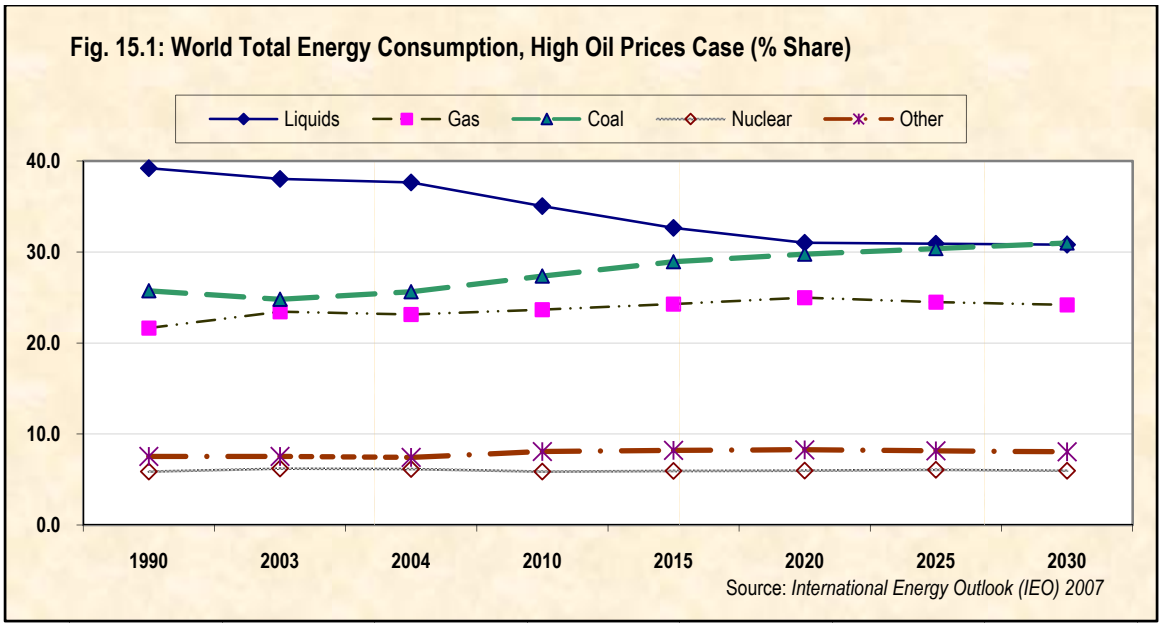
Energy is essential for the maintenance and development of the quality of human life as well as for economic activities. To maintain accelerated growth momentum, the economy needs reliable, uninterrupted and affordable supply of energy. The per-capita consumption of energy is viewed as an important indicator of economic development of any country. Countries with higher Human Development Index (HDI) have higher per capita energy consumption.

The world is facing a daunting task to meet the growing energy demand that is likely to double in the next twenty years. Pakistan is among those developing countries where the need to tackle the challenge is greatest. Its energy demand is projected to reach 129 million tones of oil equivalent (MTOE) in the next 15 years. Ensuring availability of usable and affordable energy is therefore, the bedrock of Pakistan's current and future developments. In recent years, the energy demand has increased sharply in Pakistan owing mainly to strong economic growth and the attendant rise in per capita income. The supply of energy, on the other hand, has remained far too short to match growing demand because the existing energy resources could not be sufficiently explored and exploited. Consequently, the energy supplies remained deficient to offset the growing demand of domestic, industrial, commercial and power generation needs. Despite being a high priority item on the economic agenda of the government, the growth of the energy sector remained slow due to a host of factors such as inadequate institutional framework, financial constraints, sky-rocketing oil prices, high risks, low interest of private sector, heavy costs and complex character of hydrocarbon development. To address the issue of demand-supply gap, the government is working on many fronts, including the import of electricity and gas from Iran, utilization of 185 billion reserves of coal, development of small hydro projects, promotion of efficient use of energy, and acceleration of current programmes of alternative energy development.

Energy Consumption Mix:

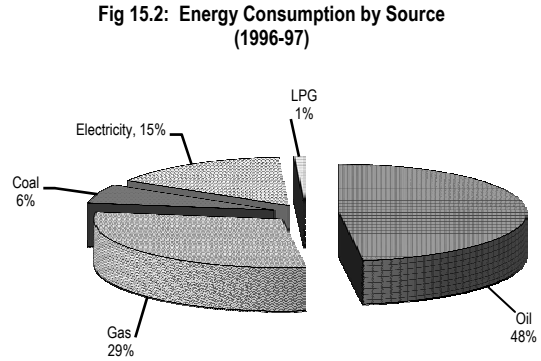
a. Global

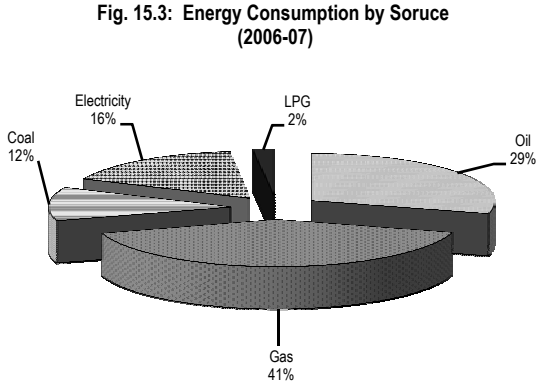
Total energy consumption mix is changing globally over the years. Oil has been losing its share; gas and coal has been gaining importance; while the share of nuclear energy has remained stagnant (See Figure 15.1). The *International Energy Outlook (IEO)* has projected a 50 percent increase in the demand for oil by 2030. Although growth in the energy consumption was 3 percent in 2004, the annual increase of only 1.6 percent would lead to a 50 percent growth in consumption by 2030. There is a growing demand for oil in Asia due to higher economic growth and it is expected that the oil consumption of the Asian region will exceed the North America by 2010; and by 2020 its demand will become nearly half of the world's total demand for oil. The rising demand for oil and its limited supply has created deep concern throughout the world as it is believed that nearly all the largest oil fields have already been discovered and are being exploited.



b. Pakistan

There has been a consistent change in the energy consumption mix in Pakistan since 1996-97. The major change in energy mix has taken place in the share of oil and gas consumption. The share of oil in energy consumption mix has dropped from 48 percent in 1996-97 to 29 percent in 2006-07 while the share of gas has risen from 29 percent to 41 percent in the same period (Figs. 15.2 & 15.3). This drastic change in energy consumption mix is partly attributed to increasing oil prices and partly to exploration of gas and coal.





Source: Hydrocarbon Development Institute of Pakistan (HDIP)

Pakistan Energy Directory:

15.1. Energy Consumption

During the last ten years (1997-98 to 2006-07), the consumption of petroleum products has increased at an average rate of 1.2 percent per annum, while the consumption of gas, electricity and coal have increased by 7.6 percent, 5.5 percent and 9.2 percent per annum, respectively. Table 15.1 shows that a structural shift is taking place in energy consumption since 1997-98 onwards. While the consumption of petroleum products is by and large exhibiting a declining trend, particularly since 2000-01, the consumption of gas, coal and electricity are showing a rising trend.

The consumption of petroleum products, gas, electricity and coal during the first nine months (July-March 2007-08) of the current fiscal year increased by 10.1 percent, 2.8 percent, 5.7 percent and 11.9 percent, respectively over the corresponding period of last year (See Table 15.1).

Table 15.1: Annual Energy Consumption

Fiscal Year	Petroleum Products		Gas		Electricity		Coal	
	Tones (000)	Change (%)	(mmcft)	Change (%)	(Gwh)	Change (%)	M.T* (000)	Change (%)
1997-98	16,624		607,890		44,572		3,158.7	
1998-99	16,647	0.1	635,891	4.6	43,296	-2.9	3,461.4	9.6
1999-00	17,768	6.7	712,101	12.0	45,586	5.3	3,167.9	-8.5
2000-01	17,648	-0.7	768,068	7.9	48,584	6.6	4,044.7	27.7
2001-02	16,960	-3.9	824,604	7.4	50,622	4.2	4,408.6	9.0
2002-03	16,452	-3.0	872,264	5.8	52,656	4.0	4,889.9	10.9
2003-04	13,421	-18.4	1,051,418	20.5	57,491	9.2	6,064.5	24.0
2004-05	14,671	9.3	1,161,043	10.4	61,327	6.7	7,893.8	30.2
2005-06	14,627	-0.3	1,223,385	5.4	67,603	10.2	7,714.0	-2.3
2006-07	16,847	15.2	1,221,994	-0.1	72,712	7.6	7,894.1	2.3
Avg. 10 years		**1.2**		**7.6**		**5.5**		**9.2**
July-March								
2006-07	12,114		929,516		52,246		5,414	
2007-08 (e)	13,342	10.1	955,625	2.8	55,208	5.7	6,059	11.9

e: estimated for coal *Source: Hydrocarbon Development Institute of Pakistan*
**Million Ton*

a). Petroleum Products

During the first nine months of the outgoing fiscal year 2007-08, the consumption of petroleum products increased by 10.1 percent. The consumption of petroleum products declined by 29.7 percent in industry, but registered an increase in household, agriculture, transport, and power sector by 2.5 percent, 29.9 percent, 19 percent and 10.4 percent, respectively (See Table-15.2). Overall, the consumption of petroleum products has been declining in the household sector for two decades, mainly due to accessibility of alternative cheaper fuels such as coal, natural gas and LPG as well as surge in their prices. On the other hand, consumption in the agriculture sector shows a massive increase due to higher demand in this sector and less availability of electricity in the last two years in particular. Similarly, consumption in the power sector increased due to non-availability of alternative sources of energy. The annual growth in the consumption of petroleum products by major sectors and their relative shares during 1997-98 to 2007-08 are provided in Tables 15.2 & 15.3, respectively.

Table 15. 2: Consumption of Petroleum Products (000 tones) (Percentage Change)

Year	House holds	Change (%)	Industry	Change (%)	Agriculture	Change (%)	Trans-port	Change (%)	Power	Change (%)	Other Govt.	Change (%)	Total
1997-98	499		2,081		245		7,364		6,054		381		16,624
1998-99	493	-1.2	2,140	2.8	249	1.6	7,864	6.8	5,526	-8.7	376	-1.3	16,648
1999-00	477	-3.2	2,116	-1.1	293	17.7	8,308	5.6	6,228	12.7	346	-8.0	17,768
2000-01	451	-5.5	1,924	-9.1	255	-13.0	8,158	-1.8	6,488	4.2	372	7.5	17,648
2001-02	335	-25.7	1,612	-16.2	226	-11.4	8,019	-1.7	6,305	-2.8	464	24.7	16,960
2002-03	283	-15.5	1,604	-0.5	197	-12.8	8,082	0.8	6,020	-4.5	266	-42.7	16,452
2003-04	231	-18.4	1,493	-6.9	184	-6.6	8,464	4.7	2,740	-54.5	309	16.2	13,421
2004-05	193	-16.5	1,542	3.3	142	-22.8	9,025	6.6	3,452	26.0	317	2.6	14,671
2005-06	129	-33.2	1,682	9.1	82	-42.3	8,157	-9.6	4,219	22.2	359	13.2	14,627
2006-07	106	-17.7	1,596	-5.1	97	18.3	7,982	-2.1	6,741	59.8	325	-9.1	16,847
July-March.													
2006-07	80		1,224		67		5,730		4,762		252		12,114
2007-08	82	2.5	861	-29.7	87	29.9	6,816	19	5,255	10.4	243	-3.6	13,342

Source: Hydrocarbon Development Institute of Pakistan

The transport sector is the largest user of petroleum products accounting for 51.1 percent of consumption, on average, followed by power sector (39.4 percent), industry (6.5 percent), agriculture (0.7 percent) and household (0.6 percent).

Table 15.3: Consumption of Petroleum Products (Percentage Share)

Year	Households	Industry	Agriculture	Transport	Power	Other Govt.
1997-98	3.0	12.5	1.5	44.3	36.4	2.3
1998-99	3.0	12.9	1.5	47.2	33.2	2.3
1999-00	2.7	11.9	1.6	46.8	35.1	1.9
2000-01	2.6	10.9	1.4	46.2	36.8	2.1
2001-02	2.0	9.5	1.3	47.3	37.2	2.7
2002-03	1.7	9.7	1.2	49.1	36.6	1.6
2003-04	1.7	11.1	1.4	63.1	20.4	2.3
2004-05	1.3	10.5	1.0	61.5	23.5	2.2
2005-06	0.9	11.5	0.6	55.8	28.8	2.4
2006-07	0.6	9.5	0.6	47.4	40.0	1.9
Avg. 10 years	**1.9**	**11.0**	**1.2**	**50.9**	**32.8**	**2.2**
July-March						
2006-07	0.7	10.1	0.6	47.3	39.3	2.1
2007-08	0.6	6.5	0.7	51.1	39.4	1.8

Source: Hydrocarbon Development Institute of Pakistan

b). Natural Gas

Natural gas has been gaining immense substance around the world due to its quality of being a cleaner fuel compared to coal and oil. Pakistan depends heavily on its natural gas reserves for different sectors of the economy. Because of its importance as an alternative and relatively cheaper fuel, the share of gas in total energy is on the rise.

Table 15.4 depicts the annual change in the consumption of gas by various users during 1997-98 to 2007-08. During July-March 2007-08, the consumption of gas in transport sector increased by 27.8 percent, while household consumption grew by 11.6 percent followed by fertilizer (3.5 percent). However, the consumption of gas declined in commercial sector (-7.1 percent), cement (-5.1 percent) and power sectors (-1.2 percent).

Table 15.4: Consumption of Gas (Billion cft) **(Percent change)**

Year	House hold	Change (%)	Comm-ercial	Change (%)	Cement	Change (%)	Ferti-lizer	Change (%)	Power	Change (%)	Indus-trial	Change (%)	Transport (CNG)[P] mmcft	Change (%)
1997-98	134		19		12		148		179		115		490	
1998-99	131	-2.2	21	10.5	8	-33.3	167	12.8	184	2.8	121	5.2	2,182	345.3
1999-00	139	6.1	22	4.8	9	12.5	177	6.0	227	23.4	135	11.6	2,426	11.2
2000-01	141	1.4	21	-4.5	7	-22.2	175	-1.1	281	23.8	139	3.0	4,423	82.3
2001-02	144	2.1	22	4.8	7	0.0	178	1.7	315	12.1	151	8.6	7,369	66.6
2002-03	154	6.9	23	4.5	3	-57.1	181	1.7	336	6.7	165	9.3	11,320	53.6
2003-04	155	0.6	24	4.3	8	166.7	185	2.2	470	39.9	193	17.0	15,858	40.1
2004-05	172	11.0	27	12.5	13	62.5	190	2.7	507	7.9	226	17.1	24,443	54.1
2005-06	171	-0.6	29	7.4	15	15.4	198	4.2	492	-3.0	279	23.5	38,885	59.1
2006-07	186	8.8	31	6.9	15	0.0	194	-2.0	434	-11.8	307	9.9	56,446	45.2
July-March														
2006-07	155		28		9		144		324		229		40,459	
2007-08	173	11.6	26	-7.1	9	-5.1	149	3.5	320	-1.2	227	-0.9	51,700	27.8

P: Provisional *Source: Hydrocarbon Development Institute of Pakistan*

The relative share of gas consumption by end users during the last ten years is documented in Table 15.5. At present, the power sector is the largest user of gas accounting for 33.5 percent share followed by the industrial sector (23.8 percent), household (18.1 percent), fertilizer (15.6 percent), transport (5.4 percent) and cement (0.9 percent).

Table 15.5: Consumption of Gas **(Percentage Share)**

Year	Households	Commercial	Cement	Fertilizer	Power	Industrial	Transport/ CNG
1997-98	22.0	3.1	2.0	24.3	29.4	18.9	0.1
1998-99	20.6	3.3	1.3	26.3	28.9	19.0	0.3
1999-00	19.5	3.1	1.3	24.9	31.9	19.0	0.3
2000-01	18.4	2.7	0.9	22.8	36.6	18.1	0.6
2001-02	17.5	2.7	0.8	21.6	38.2	18.3	0.9
2002-03	17.7	2.6	0.3	20.8	38.5	18.9	1.3
2003-04	14.7	2.3	0.8	17.6	44.7	18.4	1.5
2004-05	14.8	2.3	1.1	16.4	43.7	19.5	2.1
2005-06	14.0	2.4	1.2	16.2	40.2	22.8	3.2
2006-07	15.2	2.5	1.2	15.9	35.5	25.1	4.6
Avg 10 Year	**17.4**	**2.7**	**1.1**	**20.7**	**36.8**	**19.8**	**1.5**
July-March							
2006-07	16.7	3.0	1.0	15.5	34.9	24.6	4.4
2007-08	18.1	2.7	0.9	15.6	33.5	23.8	5.4

Source: Hydrocarbon Development Institute of Pakistan.

c). Electricity

Table 15.6 and Table 15.7 exhibit the consumption of electricity during the last ten years. The consumption of electricity during 1997-98 to 2006-07 has increased by an average rate of 5.5 percent per annum and 5.7 percent during the first nine months of the fiscal year 2007-08. Electricity consumption grew in all economic sectors during the last five years.

Table 15.6: Consumption of Electricity by Sectors **((Percentage Change)**

Year	House hold		Commercial		Industrial		Agriculture		Street Light		Other Govt.		Total
	GWH (000)	Change (%)	GWH (000)	Change (%)	GWH (000)	Change (%)	GWH (000)	Change (%)	Gwh	Change (%)	GWH (000)	Change (%)	
1997-98	18.8		2.3		12.3		6.9		387		3.9		44,572
1998-99	19.4	3.2	2.4	4.3	12	-2.4	5.6	-18.8	224	-42.1	3.6	-7.7	43,296
1999-00	21.4	10.3	2.5	4.2	13.2	10.0	4.5	-19.6	239	6.7	3.6	0.0	45,586
2000-01	22.8	6.5	2.8	12.0	14.3	8.3	4.9	8.9	213	-10.9	3.5	-2.8	48,584
2001-02	23.2	1.8	3	7.1	15.1	5.6	5.6	14.3	212	-0.5	3.5	0.0	50,622
2002-03	23.7	2.2	3.2	6.7	16.2	7.3	6	7.1	244	15.1	3.4	-2.9	52,656
2003-04	25.8	8.9	3.7	15.6	17.4	7.4	6.7	11.7	262	7.4	3.7	8.8	57,491
2004-05	27.6	7.0	4.1	10.8	18.6	6.9	7	4.5	305	16.4	3.8	2.7	61,327
2005-06	30.7	11.2	4.7	14.6	19.8	6.5	7.9	12.9	353	15.7	4	5.3	67,603
2006-07	33.3	8.5	5.4	14.9	21.1	6.6	8.2	3.8	387	9.6	4.4	10.0	72,712
July-March													
2006-07	23.5		3.8		15.5		6		284		3.1		52,246
2007-08	25.2	7.2	4.1	7.9	15.7	1.3	6.5	8.3	321	13	3.4	9.7	55,208

Source: Hydrocarbon Development Institute of Pakistan

A study of the sectoral consumption of electricity by economic groups identifies domestic sector as the largest consumer of electricity for the past many years. During the current fiscal year (July-March 2007-08), the consumption pattern remained more or less the same with the share of domestic consumption at 45.6 percent, industrial at 28.4 percent, agriculture at 11.8 percent, and commercial at 7.4 percent (See Table 15.7).

15.2. Supply of Energy

Primary energy refers to energy sources at the beginning of energy conversion chains. During the last ten years (1997-98 to 2006-07), the supply of crude oil has increased by an average rate of 6.9 percent per annum, while the supply of gas, petroleum products, coal and electricity has increased at an average rate of 10.2 percent, 1.4 percent, 9.3 percent and 5.8 percent per annum, respectively. The supply of crude oil, gas,

petroleum products, coal, and electricity during the first nine months (July-March 2007-08) of the current fiscal year increased by 6.5 percent, 2.7 percent, 7.4 percent, 13 percent and 4.4 percent, respectively over the corresponding period of last year (Table 15.8).

Table 15.7: The Share of Consumption of Electricity by End-Users

Year	Households	Commercial	Industrial	Agriculture	Street Light	Other Govt.
1997-98	42.2	5.2	27.6	15.5	0.9	8.7
1998-99	44.8	5.5	27.7	12.9	0.5	8.3
1999-00	46.9	5.5	29.0	9.9	0.5	7.9
2000-01	46.9	5.8	29.4	10.1	0.4	7.2
2001-02	45.8	5.9	29.8	11.1	0.4	6.9
2002-03	45.0	6.1	30.8	11.4	0.5	6.5
2003-04	44.9	6.4	30.3	11.7	0.5	6.4
2004-05	45.0	6.7	30.3	11.4	0.5	6.2
2005-06	45.4	7.0	29.3	11.7	0.5	5.9
2006-07	45.8	7.4	29.0	11.3	0.5	6.1
Avg 10 Year	**45.3**	**6.1**	**29.3**	**11.7**	**0.5**	**7.0**
July-March						
2006-07	45.0	7.3	29.7	11.5	0.5	5.9
2007-08	45.6	7.4	28.4	11.8	0.6	6.2

Source: Hydrocarbon Development Institute of Pakistan

Table 15.8: Composition of Energy Supplies

Year	Crude Oil		Gas		Petroleum Products		Coal		Electricity	
	Million Barrels	Change (%)	(bcf)*	Change (%)	(Mln. T.)	Change (%)	Mln.T)	Change (%)	(000Gwh)(a)	Change (%)
1997-98	50.4		700.0		17.0		4.1		62.1	
1998-99	52.6	4.4	744.9	6.4	17.2	1.2	4.4	7.3	65.4	5.3
1999-00	53.3	1.3	818.3	9.9	18.5	7.6	4.1	-6.8	65.7	0.5
2000-01	73.6	38.1	857.4	4.8	18.9	2.2	4	-2.4	68.1	3.7
2001-02	75.1	2.0	923.8	7.7	18.7	-1.1	4.4	10.0	72.4	6.3
2002-03	76.0	1.2	992.6	7.4	18.0	-3.7	4.9	11.4	75.7	4.6
2003-04	80.3	5.7	1,202.7	21.2	15.4	-14.4	6	22.4	80.9	6.9
2004-05	85.3	6.2	1,344.9	11.8	16.8	9.1	7.9	31.7	85.7	5.9
2005-06	87.5	2.6	1,400.0	4.1	17.0	1.2	7.7	-2.5	93.8	9.5
2006-07	85.4	-2.4	1,413.6	1.0	19.4	14.1	7.9	2.6	98.4	4.9
Avg. 10 Year	**6.9**		**10.2**		**1.4**		**9.3**		**5.8**	
Jul-March										
2006-07(e)	62.0		1,062.1		13.6		5.4		71.0	
2007-08(e)	66.0	6.5	1,090.6	2.7	14.6	7.4	6.1	13.0	74.1	4.2

*****: Billion cubic feet
a: Giga Watt hour
e: Estimated for coal and electricity

Source: Hydrocarbon Development Institute of Pakistan.

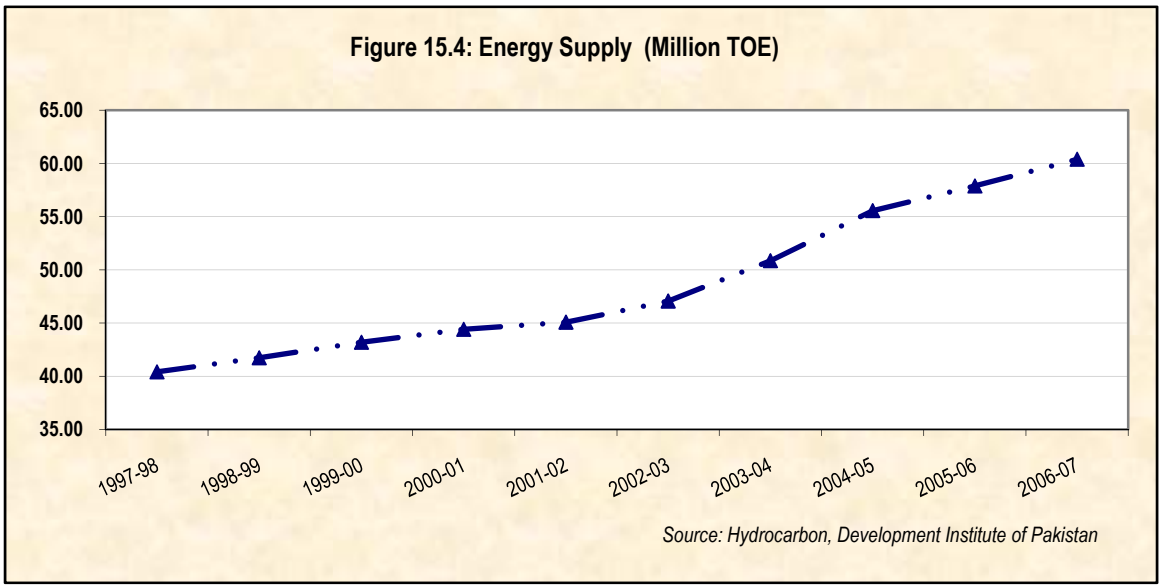
The supply of primary energy has increased by 49.5 percent in the last 10 years. The primary commercial energy supplies increased by 4.3 percent during 2006-07 to 60.4 million tones of oil equivalent (MTOE) from 57.9 MTOE in 2005-06. The slower growth during 2006-07 can be attributed to (i) lower consumption of oil (HOBC, Kerosene, LDO and Furnace Oil) (ii) negative growth (-2 percent and -21.3 percent) in the import of High Speed Diesel (HSD) and Low Sulphur Furnace Oil, respectively, a marginal increase (0.7 percent) in the import of High Sulphur Furnace Oil. The per capita availability of energy grew by 2.61 percent in

2006-07. The supply of energy however, grew strongly by 10.03 percent in the first nine months (July-March) of the current fiscal year and consequently, the per capita availability registered an increase of 7.7 percent -- the highest in the last ten years. The annual trends of primary energy supplies and their per capita availability; measured in TOE from 1997-98 to 2007-08 are given in Table 15.9 and Figs. 15.4 & 15.5.

Table 15.9: Primary Energy Supply and Per Capita Availability

Year	Energy Supply		Per Capita	
	Million TOE	Change (%)	Availability (TOE)	Change (%)
1997-98	40.40		0.31	
1998-99	41.72	3.26	0.31	2.62
1999-00	43.19	3.51	0.32	1.28
2000-01	44.40	2.82	0.32	0.63
2001-02	45.07	1.50	0.32	-1.25
2002-03	47.06	4.41	0.32	2.86
2003-04	50.85	8.06	0.34	5.25
2004-05	55.56	9.26	0.36	6.45
2005-06	57.88	4.18	0.37	2.48
2006-07	60.39	4.33	0.38	2.61
Jul-Mar				
2006-07	45.35		0.29	
2007-08	49.90	10.03	0.31	7.68

TOE- Tons of Oil Equivalent *Source: Hydrocarbon Development Institute of Pakistan.*



a). Crude Oil:

The balance recoverable reserves of crude oil in the country as on January 1st 2008 have been estimated at 339 million barrels. The average crude oil production during July- March 2007-08 was 70,166 barrels per day as against 66,485 barrels per day during the corresponding period of last year, showing an increase of 5.54 percent. During the period under review, 31,378 (44.72 percent) barrels per day were produced in Northern region and 38,787 (55.28 percent) barrels per day in Southern region, as against 28,507 (42.87 percent) barrels and 37,978 (57.12 percent) barrels produced per day, respectively in the same period last year. During July-March 2007-08, production of crude oil has increased by 10.1 percent from

Northern region whereas production increased in Southern region by 2.1 percent, in comparison to the production in the same period of last year, resulting in an increase of 5.54 percent oil production in the country. The company wise details of production of crude oil during July-March 2007-08 and corresponding period of the last fiscal year is given in Table 15.10.

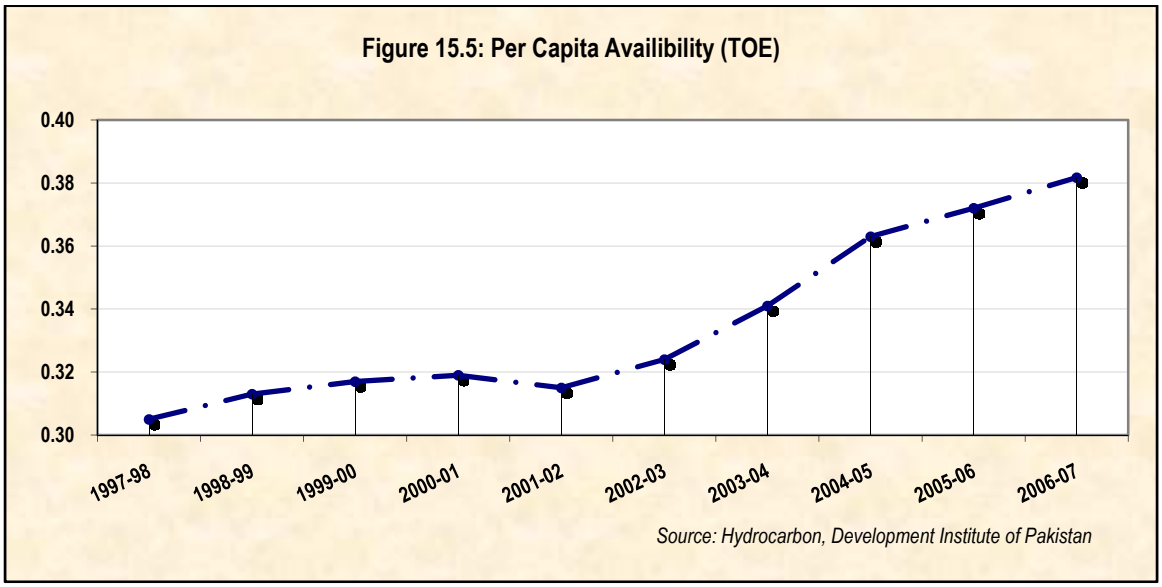


Table 15.10: Production of Crude Oil

Region	2006-07	July-March 2006-07	July-March 2007-08	Change (%)
Northern Region	**29,361.6**	**28,507.3**	**31,378.3**	**10.07**
Dewan	-	-	89.9	-
OGDCL	13,250.8	12,273.5	16,556.5	34.9
OPI	544.6	550.2	458.8	-16.6
POL	8,852.3	9,111.6	6,713.7	-26.3
PPL	4,865.9	4,892.2	5,071.4	3.66
MOL	1,848.0	1,679.9	2,487.9	48.1
Southern Region	**38,076.0**	**37,977.8**	**38,787.2**	**2.13**
OGDCL	23,081.3	22,623.8	24,571.5	8.6
BP (Pakistan)	11,028.7	11,377.1	9,558.3	-16.0
PPL	130.0	138.9	137.8	-0.77
BHP	2,005.6	2,039.2	2,537.3	24.43
OMV	84.2	91.9	90.8	-1.23
OPII	1,320.6	1,276.9	1,490.5	16.73
ENI	342.5	343.2	334.2	-2.6
Petronas	82.9	86.9	66.9	-23.0
Total:	**67,437.6**	**66,485.1**	**70,165.5**	**5.54**

Source: Ministry of Petroleum & Natural Resources

b) Drilling Activities

During July-March 2007-08, a total of 52 wells have been drilled, including 14 wells in the public sector and 38 in the private sector as against 45 in the same period last year, registering an increase of 15.6 percent. Total investment of US$ 836 million has been made in the outgoing fiscal year in the upstream sector. Table 15.11 provide the details of drilling activities of the public and private sector, engaged in the exploration and development of wells, with achievements during July-March 2007-08 and 2006-07.

Table 15.11: Drilling Activities (Achievements) (No. of Wells)

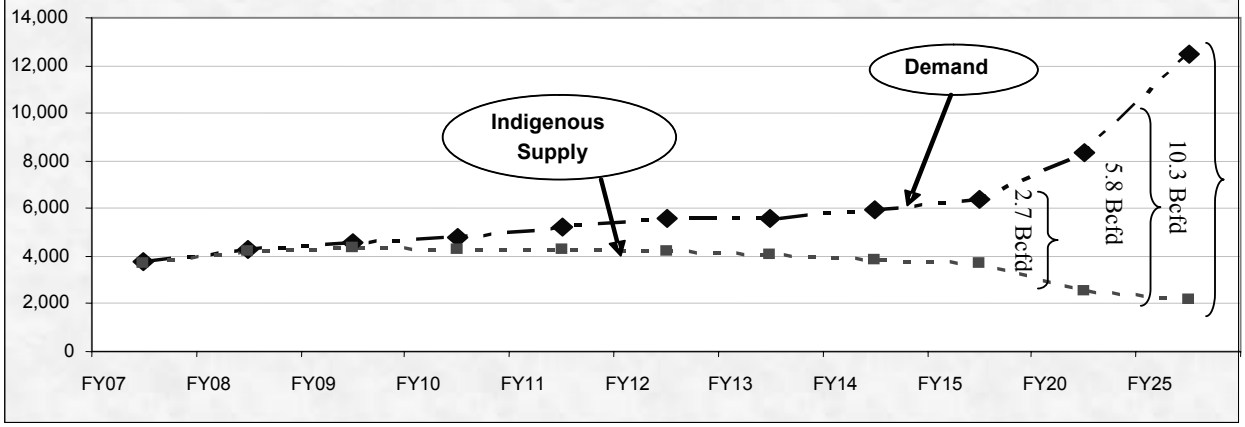
Sector	2006-07	July-March 2006-07	July-March 2007-08	Change (%)
Public Sector (OGDCL)	**41**	**18**	**14**	**-22.22**
i) Exploratory	19	9	5	-44.44
ii)Appraisal/Dev	22	9	9	0.00
Private Sector	**36**	**27**	**38**	**40.74**
iii) Exploratory	17	13	15	15.38
iv) Appraisal/Dev.	19	14	23	64.29
Total:	**77**	**45**	**52**	**15.60**

Source: Ministry of Petroleum & Natural Resources

c). Natural Gas:

Natural gas is a clean, safe, efficient and environment-friendly fuel. The Energy Security Action Plan of the Planning Commission estimated that Pakistan will be facing a shortfall in gas supplies rising from 1.4 Billion Cubic Feet (BCF) per day in 2012 to 2.7 BCF in 2015 and escalating to 10.3 BCF per day by the year 2025 (Figure 15.6). This forecast is based on expected annual GDP growth rate of 6.5 percent and average annual gas price delivered to the consumers at US$ 4 /Million British Thermal Units (MMBtu). In order to bridge the demand-supply gap, the government is working on many fronts, which includes Iran-Pakistan-India (IPI) gas pipeline project which has reached at fairly advanced stage.

Figure 15.6: Pakistan Natural Gas Supply- Demand Balance (MMcfd)



As on January 1st 2008, the balance recoverable natural gas reserves have been estimated at 31.266 trillion cubic feet. Consumption of natural gas from July 2007- March 2008 is anticipated to increase from 3,352 million cubic feet per day (mmcfd) (2006-07) to 3,474 mmcfd, while the average production of natural gas during July-March 2007-08 was 3,965.9 mmcfd as against 3,876.4 mmcfd during the corresponding period of last year, showing an increase of 2.31 percent. Natural gas is used in general industry to prepare consumer items, produce cement, fertilizer and generate electricity. Additionally, it is used in the transport sector in the form of CNG. Currently 27 private and public sector companies are engaged in oil and gas exploration & production activities. The company wise position reveals that the production of gas increased by 15.79 percent by BHP followed by 9 percent increase by OGDCL (See Table 15.12).

Table- 15.12: Production of Natural Gas (mmcfd)

Company	2006-07	July-March (2006-07)	July-March (2007-08)	Change (%)
BHP	305.3	310.8	359.9	15.79
ENI	384.9	389.1	378.7	-2.69
Dewan	-	-	19.2	-
MGCL	472.5	473.4	468.2	-1.10
OGDCL	849.8	834.1	909.4	9.03
OMV	535.0	539.7	520.8	-3.51
OPI	100.5	103.7	81.6	-21.27
POL	42.2	43.6	36.0	-17.34
PPL	830.3	828.6	832.8	0.5
Tullow	3.0	2.5	17.8	617.97
PEL	31.4	31.8	30.9	-2.84
BP	229.1	229.3	224.0	-2.28
Petronas	26.6	27.1	23.5	-13.11
MOL	62.4	62.9	63.2	0.53
Total:	**3,872.8**	**3,876.4**	**3,965.9**	**2.31**

Source: Ministry of Petroleum & Natural Resources

(i) Liquefied Petroleum Gas (LPG)

Liquefied Petroleum Gas (LPG) is a colourless, odourless and environment friendly mixture of inflammable hydrocarbons. Its contribution is about 0.5% of country's total energy supply mix. The use of LPG as a domestic fuel is being encouraged to slow the on-going deforestation in the areas where supply of natural gas is technically not viable. As a result of the government's investment-friendly policies, LPG supplies have been increasing at annual rate of 12.6 percent during the last few years with supply of 648,572 Metric Ton in 2006-07. Government has allowed the use of LPG in automotives under the safety framework being regulated by Oil & Gas Regulatory Authority (OGRA). The primary aim of the LPG Policy is to ensure enhanced availability of the product at competitive price. The LPG marketing companies have imported around 23,362 MT during July 2007-08.

(ii) Compressed Natural Gas (CNG)

The Government is promoting the use of Compressed Natural Gas (CNG) to reduce pollution caused by vehicles using motor gasoline and to improve the ambient air quality. A large number of vehicles have been and are still being converted to CNG mainly due to the fact that price of CNG is just 40 percent of the petrol price. There are about 2,068 established CNG stations in the country and approximately 1.7 million vehicles are using CNG. Pakistan has become the largest CNG consuming country among Natural Gas Vehicle (NGV) countries.

The government's policy of de-dieselization is in place to switch vehicles currently running on diesel to CNG by providing adequate incentives. The provincial governments are working on this policy to encourage the use of CNG, which will ultimately cut down the cost of diesel oil import. In its first phase the diesel engine in intra-city urban public transport is being phased out (which include buses, mini-buses and wagons) in Karachi, Hyderabad, Lahore, Faisalabad, Peshawar, Quetta and Islamabad/Rawalpindi. This program will have a major impact on air quality of urban areas and will improve health standards as well.

Salient Features of CNG Policy 2007

The main objectives of the CNG Policy 2007 are;

- *To encourage CNG as a substitute of liquid fuel to reduce import bill.*
- *To provide cheaper and environmental friendly fuel.*
- *To discourage mushrooming growth of CNG outlets, with the announcement that there should be at least one km distance between two CNG stations.*
- *Enforcing better industry discipline & safety culture in the CNG sector.*
- *Introducing CNG technology for import of natural gas.*
- *Using CNG for town gasification where supply of pipeline gas is not viable.*

(iii) Liquefied Natural Gas (LNG)

Augmenting gas supply through LNG import is an important element of the government's energy security strategy. The government is encouraging LNG import by the Private sector and announced its first-ever LNG policy in 2006. The Sui Southern Gas Company Limited (SSGC) has been mandated to facilitate the "Pakistan Mashal LNG Project" and will act as a project vehicle company for implementation of the project through private sector in the following two phases:

Phase I	3.5 Million Ton per annum	500 MMCFD	2010-11
Phase II	3.5 Million Ton per annum	500 MMCFD	2012-13

Besides Pakistan Mashal LNG Project, Pakistan Gas Port Limited (PGPL) is pursuing their LNG import project at their own cost and risk without any off-take commitment from the government. The PGPL has signed an Implementation Agreement with Port Qasim Authority for establishment of an off-shore LNG Import Terminal at Port Qasim, Karachi having a capacity of 3 million tones/annum (400 mmcfd).

15.3. Performance of Major Oil and Gas Companies

The operational performance of the three major oil and gas companies in the public sector is reviewed as follows;

a). Oil and Gas Development Company Limited (OGDCL):

During current fiscal year upto March 2008, the company's average oil and gas production remained at 41,128 barrels per day and 909 MMcft per day, respectively. This reflects an increase of 18 percent in oil and 10 percent in natural gas over the same period of last year. LPG production during July-March 2007-08 was 285 metric tones, showing a decline of 8 percent, while Sulphur production was 71 metric tones per day, showing an increase of 9 percent over the same period last year (See Table 15.13)

OGDCL had drilled 94,426 meters upto July-March, 2007-08 as compared to 79,412 meters in the same period last year. During the period under review, two gas and condensate fields named Moolan Exploratory Well No. 1 and Pasakhi East Well No.1 were discovered. Both wells are located in Hyderabad, Sindh. Moolan Well produced 64 BPD of condensate and 4.44 MMscfd of gas at Well head flowing pressure of 900 Psi at 32/64" choke size. Pasakhi East well produced 155 BPD of condensate and 10.7 MMscfd of gas at Well head flowing pressure of 2140 Psi at 32/64" choke size. OGDCL has drilled 14 wells (5 exploratory and 9 development) during July-March 2007-08, as against 18 wells (9 exploratory and 9 development) in the same period last year.

TABLE 15.13: Physical Performance of OGDCL

S. #	Name of Activity		July-March 2006-07	July-March 2007-08	Change (%)
1	i	Exploratory Wells	9	5	-44.4
	ii	Development/Appraisal Wells	9	9	0.0
2	**Production**				
	i	Oil (US Barrels)	9,559,822 (34,763)	11,310,177 (41,128)	18
	ii	Gas (MMcft)	227,367 (827)	250,070 (909)	10
	iii	LPG (Tonnes)	85,011 (309)	78,476 (285)	-8
	iv	Sulphur (Tonnes)	17,886 (65)	19,543 (71)	9
3		Drilling Meterage (Meter)	79,412	94,426	19

(Figures in bracket show daily average production) *Source: OGDCL*

b). Sui Northern Gas Pipelines Limited (SNGPL):

By end March, 2008, SNGPL, was supplying gas to 1,060 towns/villages of Punjab, NWFP and AJK/Federal areas. During the period under review, the Company connected 642 industrial, 2,817 commercial and 161,490 domestic consumers bringing the total number of consumers to 3,121,273 (5,126 industrial, 48,084 commercial and 3,068,063 domestic consumers). During July-March 2007-08, the Company carried out development work for extension of gas network to the tune of Rs. 1,552 million on transmission project, Rs. 3,357 million on distribution projects and Rs. 487 million on other projects (See Table 15.14). During next fiscal year 2008-09, the Company plans to invest Rs. 13,514 million on transmission, distribution and other projects.

c). Sui Southern Gas Company Limited: (SSGC)

By end March 2008, Sui Southern Gas Company Limited was supplying gas to 1,615 towns/villages of Sindh and Balochistan. During the period under review, SSGC provided new connections to 275 Industrial, 1,263 Commercial and 70,427 Domestic consumers bringing the total number of consumers to 2,011,106 (3,448 industrial, 22,192 commercial and 1,985,466 domestic consumers). During July-March 2007-08, the Company carried out development work for extension of gas net work to the tune of Rs. 435 million on transmission project, Rs. 2,230 million on distribution projects and Rs. 25 million on other projects under Khushal Pakistan programme with the collaboration of District Governments (See Table 15.14). During the next fiscal year the company plans to invest Rs. 7,500 million on transmission and distribution projects.

Table 15.14: Physical Performance of SNGPL & SSGPL

S. No	Name of Activity	July-March 2007-08 SNGPL	July-March 2007-08 SSGPL
1	**Sector-Wise Gas Consumption** (mmcf)		
	Power	103,293	88,614
	Fertilizer	33,531	19,589
	Cement	7,631	1,986
	CNG/Transport	39,380	12,229
	General Industry	133,095	93,904
	Commercial	17,838	7,541
	Domestic	119,743	53,090
	Total	**454,511**	**276,953**

Table 15.14: Physical Performance of SNGPL & SSGPL

S. No	Name of Activity	July-March 2007-08	July-March 2007-08
		SNGPL	SSGPL
2	**New Connections**		
	Domestic	161,490	70,427
	Industrial	642	275
	Commercial	2,817	1,263
	Total	**164,949**	**71,965**
3	**Addition in Distribution Network (KMs)**		
	Mains	3,514	1,327
	Services	720	265
	Total	**4,234**	**1,593**
4	**Investment in Gas Sector** (Rs. Million)		
	Transmission Projects	1,552	435
	Distribution Projects	3,357	2,230
	Others	487	25
	Total	**5,396**	**2,690**

Source: SNGPL, SSGPL

15.4. Power Sector:

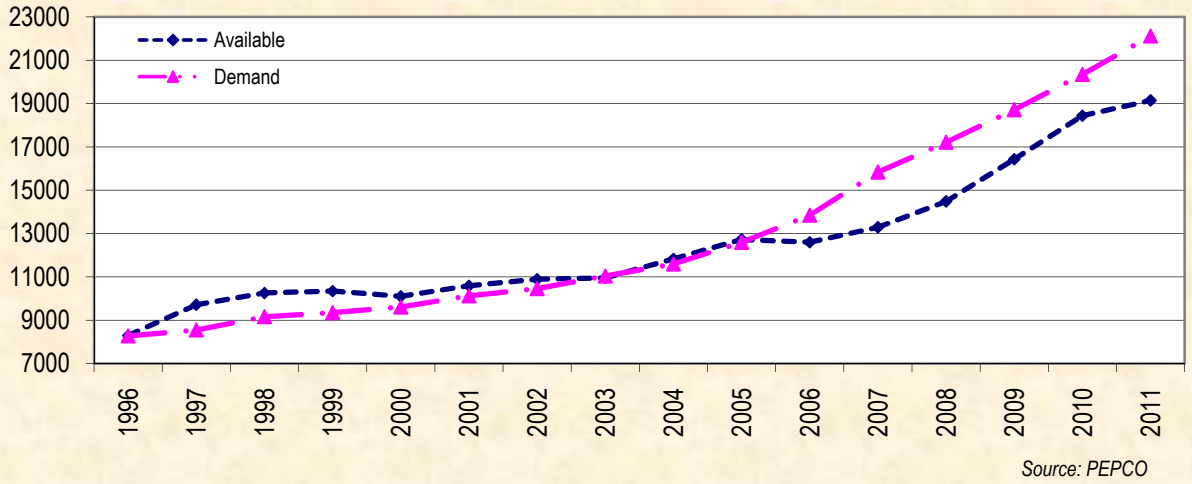
Pakistan's power generation capacity stood at 60MW at the time of independence with a per capita consumption of 4.5 units for its 31.5 million population. Power infrastructure development gained momentum in 1970 and within five years, the installed capacity rose from 636 MW in 1970 to 1,331 MW in 1975. In the year 1980, the system capacity touched 3,000 MW and thereafter it rapidly grew to over 8,000 MW in 1990-91.

At present, Pakistan's total installed generation capacity from Hydroelectric, Thermal, Independent Power Producers (IPPs), and Nuclear sources stands at 19,566 MW. The existing capacity of thermal power generation in Pakistan stands at 12,630 MW, which is almost two-third (64.6 percent) of country's total generation capacity. Although, the thermal power plants are relatively quicker to set up, they are relatively most expensive due to sky-rocketing oil prices. Hydel energy is the second largest source of electricity and accounts for 33.1 percent of total power generation in the country. Hydel power is both cheap and environment-friendly. Pakistan's total identified hydel generation potential is 46,000 MW (MTDF-2005-10), out of which only 14 percent (6,474 MW) has been exploited so far. In the long run, Hydel is one of the major economic energy supply options in Pakistan for increasing the energy security of the country.

Electricity consumption in Pakistan has been growing at an elevated pace due to higher economic growth, increasing urbanization, industrialization and rural electrification over the past few years. The demand for electricity is growing at an average rate of 9.5 percent per annum over the past four years. A stagnant power supply and growing demand has created severe power shortage in the country, ranging between 4,000 to 5,000 MW.

Going forward, the demand for electricity is projected to grow by 8.7 percent per annum (on the basis of average growth for the period 2003-07) while the supply of electricity, as envisaged by the Pakistan Electric Power Company (Pvt.) Limited (PEPCO), and assuming 75 utilization of installed capacity, still forecast demand surpassing the supply in the range of 2,000 MW to 3,000 MW (See Figure 15.7).

Fig. 15.7: Available Capacity and Computed Demand (in MW)



To overcome the growing shortage of electricity; gas, oil and coal-based power generation can help Pakistan to meet its requirements in the short-to-medium-term. Because of escalating oil prices and shortage of gas supply, coal-based electricity generation is the best option as Pakistan possesses 185 billion tones of coal reserves. The government has signed an agreement with Iran to import 1,100 MW electricity which would help partly in bridging the gap. The government has planned for transmission of an additional 2,200 MW within a period of 12 months by April 2009. These projects comprise 81 MW of hydel and 1,427 MW of thermal power in the public sector and 1,020 MW in the private sector. The government has also launched effective conservation measures which include distribution of 10 million energy saver bulbs to consumers. These measures are expected to save about 1,000 MW at peak hours. In the medium term, small hydro dam projects can make significant contribution to the national energy supply, while in the long run, hydel power generation and alternative renewable energy can solve these problems. As a first step, Alternative Energy Development Board (AEDB) has been established to facilitate development of renewable energy i.e. solar energy, wind energy, and bio-fuels. Table 15.15 shows the future power generation plan in Pakistan.

Table 15.15: Power Generation Plan

	Nuclear	Hydel	Coal	Renewable	Oil	Gas	Total	Cumulative
Existing (2005)	400	6,460	160	180	6,400	5,940	19,540	
Addition								
2010	-	1,260	900	700	160	4,860	7,880	**27,420**
2015	900	7,570	3,000	800	300	7,550	20,120	**47,540**
2020	1,500	4,700	4,200	1,470	300	12,560	24,730	**72,270**
2025	2,000	5,600	5,400	2,700	300	22,490	38,490	**110,760**
2030	4,000	7,070	6,250	3,850	300	30,360	51,830	**162,590**
Total	**8,800**	**32,660**	**19,910**	**9,700**	**7,760**	**83,760**	**162,590**	

Sources: Planning Commission of Pakistan

The total installed capacity of WAPDA stood at 11,363 MW during July-March 2007-08 which accounts for 59.6 percent of total capacity (See Table 15.16). Of this, hydel power accounts for 55.6 percent and thermal accounts for 44.4 percent. The total installed capacity of IPPs is 5,760 MW

(29.4 percent) followed by KESC's (1,690 MW) and nuclear power (462 MW). Of the total installed capacity, the share of public sector is about 70.6 percent while private sector accounts for 29.4 percent.

Table 15.16: Total Installed Generation Capacity (MW)

S.No	Power Company	Installed Capacity 2006-07	Share (%)	Installed Capacity 2007-08	Share (%)	Change
1	**WAPDA**	11,363	58.5	11,654	59.6	2.6
	Hydel	6,463	56.9*	6,474	55.6*	0.2
	Thermal	4,900	43.1*	5,180	44.4*	5.7
2	IPPs	5,859	30.1	5,760	29.4	-1.7
3	Nuclear	462	2.4	462	2.4	0
4	KESC	1,756	9	1,690	8.6	-3.8
	Total	**19,440**	**100**	**19,566**	**100**	**0.65**

* Share in WAPDA system *Source:* Hydrocarbon Development Institute of Pakistan

Supply Sources of Electricity:

15.4.1. WAPDA

WAPDA owns about 59.6 percent of the country's total power generation capacity and serves about 88 percent of all the electricity customers in the country, which amounts to 17.7 million customers. Out of total WAPDA capacity, the hydro power capacity accounts for 55.6 percent and thermal accounts for 44.4 percent.

a). Electricity Generation

The electricity generated by WAPDA during July-March 2007-08 was 64,569 Gwh, as against 63,020 Gwh during the corresponding period last year, thus registering an increase of 2.5 percent due to higher generation through thermal (7 percent). The composition of electricity generation shows that hydro potential has not been fully utilized. During fiscal year 2007-08, the hydro generation accounted for 33.5 percent of the total generation. The trend of hydro-thermal electricity generation for the last 10 years is given in Table 15.17.

Table 15.17: Electricity Generation by WAPDA (GWh)

Year	Hydro	Share (%)	Thermal	Share (%)	Total
1997-98	22,060	41.4	31,199	58.6	53,259
1998-99	22,448	41.8	31,235	58.2	53,683
1999-00	19,288	34.3	36,585	65.5	55,873
2000-01	17,259	29.5	41,196	70.5	58,455
2001-02	19,056	31.3	41,804	68.7	60,860
2002-03	22,350	34.9	41,690	65.1	64,040
2003-04	27,477	39.8	41,617	60.2	69,094
2004-05	25,671	34.9	47,849	65.0	73,520
2005-06	30,855	37.5	51,370	62.5	82,225
2006-07	31,942	36.4	55,895	63.6	87,837
July-March					
2006-07	22,863	36.3	40,157	63.7	63,020
2007-08	21,606	33.5	42,963	66.5	64,569

Includes purchase from IPPs and imports *Source: PEPCO*

b) Growth in Electricity Consumers

The number of consumers has increased due to rapid extension of electricity network to villages and other areas. As of March 2008, the number of consumers has increased to 17.73 million. See Table 15.18 for a snapshot of the rising trend in the number of consumers over the last ten years.

Table 15.18: Consumers by Economic Groups (Thousands)

Year	Domestic	Commercial	Industrial	Agriculture	Others	Total
1997-98	8,455	1,397	187	171	8	10,218
1998-99	8,912	1,517	190	173	8	10,800
1999-00	9,554	1,654	195	175	8	11,586
2000-01	10,045	1,737	196	180	8	12,166
2001-02	10,483	1,803	200	184	8	12,678
2002-03	11,044	1,867	206	192	9	13,318
2003-04	11,737	1,935	210	199	10	14,092
2004-05	12,490	1,983	212	201	10	14,896
2005-06	13,390	2,068	222	220	10	15,911
2006-07	14,354	2,152	233	236	11	16,987
July-March						
2006-07	14,069	2,132	230	233	11	16,675
2007-08	15,026	2,214	240	243	11	17,734

Source: Water and Power Development Authority

c) Power Transmission

The total length of transmission lines has increased to 49,676 circuit KMs by the end of June 2007. In order to ensure uninterrupted and stable power supply to the consumers as well as integrity of the grid supply system, the augmentation of the transmission network is a continuous process. In addition to the various on-going secondary transmission lines and grid-stations programme, new transmission lines/substations are being envisaged.

d) Village Electrification

The village electrification programme is an integral part of improving the lives of the people of Pakistan, particularly in rural areas. The number of electrified villages has increased from 117,456 on 30th June 2007 to 126,296 by the end of March 2008. The trend of village electrification during past 10 years is provided in Table 15.19.

Table 15.19: Village Electrification (In Number)

Year	Addition During the Year	Progressive Total	Growth (%)
1997	1,383	65,951	
1998	1,232	67,183	1.9
1999	1,109	68,292	1.7
2000	1,595	69,887	2.3
2001	1,674	71,561	2.4
2002	2,246	73,807	3.1
2003	7,193	81,000	9.7
2004	9,467	90,467	11.7
2005	12,764	103,231	14.1
2006	14,203	117,456	13.8
July-March			
2006-07	10,374	113,605	
2007-08	8,840	126,296	11.2

*Including FATA

Source: Water and Power Development Authority

e) Electricity Consumption by Economic Groups

The sectoral consumption of electricity by economic groups identifies the domestic sector as the largest consumer of electricity for the past many years. Even during July- March 2007-08, the consumption pattern almost remained the same with the share of domestic consumption at 43 percent, industrial at 26.1 percent and agricultural at 12.7 percent (See Table 15.20).

Table 15. 20: Electricity Consumption by Economic Groups (% Share)

Year	Domestic	Commercial	Industrial	Agriculture	Public Lighting	Bulk Supply	Traction	Supply to KESC
1997-98	41.5	4.5	26.0	17.5	1.37	6.07	0.04	2.9
1998-99	43.6	4.7	25.6	14.3	0.41	6.72	0.04	4.65
1999-00	46.3	4.9	26.3	11.0	0.37	6.54	0.04	4.5
2000-01	46.1	4.9	27.1	11.3	0.34	6.07	0.03	4.17
2001-02	45.5	5.1	28	12.3	0.33	5.89	0.03	2.94
2002-03	44.0	5.3	28.4	12.6	0.35	5.54	0.02	3.8
2003-04	44.0	5.6	28.1	12.9	0.37	5.43	0.02	3.58
2004-05	43.5	5.8	28.1	12.5	0.41	5.17	0.02	4.54
2005-06	43.3	6.0	26.6	12.6	0.45	4.86	0.02	6.15
2006-07	43.0	6.4	26.09	12	0.47	4.84	0.02	7.27
July-March								
2006-07	42.4	6.2	26.5	12.1	-	-	0.02	-
2007-08	43.0	6.5	26.1	12.7	0.5	5.1	0.02	6.0

Source: Water and Power Development Authority

f) Power Losses

The National Transmission & Dispatch Company (NTDC) and DISCOs (Distribution Companies) have invoked various technical and administrative measures to improve operational and managerial efficiency to reduce power losses. These measures have given positive signs resulting in reduction of power losses and increase in revenue. Other measures such as renovation, rehabilitation, capacitor installation and strengthening the consumer-end distribution supply network are part of a continuous process for controlling/reducing wastage power/energy. The transmission and distribution losses for the last ten years are given in Table 15.21.

TABLE 15.21: WAPDA Power Losses (In Percent)

Year	Auxiliary Consumption	T&D Losses*	Total
1997-98	2.0	24.0	26.0
1998-99	1.7	25.8	27.5
1999-00	2.2	24.6	26.8
2000-01	2.0	23.8	25.8
2001-02	2.2	23.6	25.8
2002-03	2.1	23.9	26.0
2003-04	2.0	23.5	25.5
2004-05	2.5	22.3	24.8
2005-06	2.2	21.9	24.1
2006-07	2.1	21.1	23.2
July-March			
2006-07	2.1	20.0	22.1
2007-08(e)	2.0	20.3	22.3

* T&D = Transmission and Distribution
(e): Auxiliary consumption estimated

Source: Water and Power Development Authority

15.4.2. Karachi Electric Supply Corporation Ltd (KESC)

During the current fiscal year upto March 2008, the installed capacity of KESC's various generating stations remained at 1,690 MW, against the maximum demand of 2,365 MW. KESC's own generation has increased by 5.1 percent from 5,867 Million Units (kWh) in July-March 2006-07 to 6,164 Million kWh in July-March 2007-08. This increase in generation is due to the better "Planned Maintenance Outages" undertaken in the winter of 2006-07. The maximum Supply-Demand gap of

675 MW was bridged by different sources including purchase of 1,315 Million KWh from "Independent Power Producers" and 3,415 Million kWh from WAPDA, KANUPP & PASMIC. Table 15.22 shows the details of KESC's operating results including purchase of electricity from different sources.

Table 15.22: KESC Operating Results (Units in Million kWh)

S. No	Description	July-March (2006-07)	July-March (2007-08)	Change (%)
1	**POWER PURCHASE**			
	KANUPP	75.0	303.9	305.0
	PASMIC	32.4	75.5	133.5
	TAPAL	514.4	604.0	17.4
	GULAHMED	578.5	660.5	14.2
	WAPDA	3,605.6	3,035.6	-15.8
	ANOUD POWER	40.5	18.7	-53.8
	DHA COGEN	-	33.3	-
	INTL. INDUS. LTD	-	21.0	-
	Total	**4,846.3**	**4,752.4**	**-1.9**
2	Units Available for Distribution	10,246.3	10,437.2	1.9
3	Unit Sold	6,079.7	7,221.1	18.8
4	Trans. & Dist. Losses	4,166.6	3,216.1	-22.8
5	Installed Capacity (MW)	1,756.0	1,690.0	-3.8
6	Peak Demand (MW)	2,222.0	2,365.0	6.4

Source: KESC

The total energy made available to KESC system, after taking into account the imports from various agencies, stood at 10,437 million kWh during July-March 2007-08 as against 10,246 Million kWh in the same period last year, thus registering a growth of 1.9 percent. The T&D losses have decreased from 41 percent to 31 percent during the same period. KESC has made considerable progress on its comprehensive rehabilitation programme for the restoration of its generating capacity. Besides "Annual Maintenance" of all the six units at Bin Qasim Power Station, critical equipment related to the improvement of "Condenser Performance" was installed at units 1 and 5. High Pressure Feed Water Heaters were restored/ replaced at units 3, 4, and 5. These measures will improve overall efficiency of the units and stations output. The increase of 5.1 percent overall generation of KESC was the result of the 11.5 percent rise in the generation of Bin Qasim Power Station.

KESC plans to bring two new generating plants as part of its capacity enhancement program. The first one is a Combined Cycle Power Plant at Korangi which is in the erection/commissioning phase, and would result in adding up of 220 MW of installed capacity to the existing generation. The second planned generation expansion is a 560 MW Combined Cycle Power Station at the existing Bin Qasim Power Station Site. Technical & Commercial evaluation of the project has been completed and the contract to the selected bidder will shortly be awarded.

15.4.3. Nuclear Power Energy

Pakistan Atomic Energy Commission (PAEC) is responsible for planning, construction and operation of nuclear power plants. Presently, two nuclear power plants; Karachi Nuclear Power Plant (K-1) and Chashma Nuclear Power Plant unit-1 (C-1) are in operation, while construction of a third plant, Chashma Nuclear Power Plant unit-2 (C-2), is in progress. K-1, a CANDU type plant, after completing its designed life of 30 years is operating at 90 MWe. K-1 generated 342 million kWh of electricity, while C-1, a PWR type plant with a gross capacity of 325 MWe, has generated 1,977 million kWh of electricity during July-March 2007-08. The construction of C-2 is progressing well and its commercial operation is planned in 2011.

The Government has chalked out a comprehensive plan to expand nuclear power generation capacity

to 8,800 MW by the year 2030. Studies are in progress at six new sites for installation of additional nuclear power plants. To minimize capital costs, PAEC is planning to build multiple units on the same site. For manufacturing of nuclear fuel of PWR type nuclear power plants, PAEC is establishing Pakistan Nuclear Power Fuel Complex (PNPFC). Negotiations are in progress with China National Nuclear Corporation (CNNC) for setting up two additional 325 MWe units at Chashma and for starting design studies of 1,000 MWe units at Karchi.

15.4.4. Coal

Pakistan has emerged as seventh in the list of top 20 countries of the world after the discovery of huge lignite coal resources in Sindh. Pakistan has been blessed with huge coal resources amounting to 185 billion tones which include 175 billion tones of Thar coal. At the time of Pakistan's independence, the share of coal in overall commercial energy consumption was about 60 percent, but this utilization gradually trimmed with the discovery of gas in 1952. Currently the share of coal in the overall energy mix is only 7.4 percent while in India, the share of coal is more than 50 percent in the total energy mix. Presently, about 53 percent of total coal production in the country is being utilized in brick kilns industry and the second major coal consumption industry is cement. Due to high furnace oil prices, about 80 percent of cement industry has switched over to coal from furnace oil, which has generated a demand for 2.5 - 3.0 million tones coal per annum.

A brief review about the consumption of coal in different sectors is given in the Table 15.23. The production of coal has remained stagnant (See Table 15.24) with no significant market demand has been created.

Table 15.23: Consumption of Coal (Percentage Share)

Year	Household	Power	Brick Kilns	Cement
1997-98	0.1	11.0	89.0	-
1998-99	0.0	12.0	88.0	-
1999-00	0.0	11.0	89.0	-
2000-01	0.0	5.1	70.2	24.7
2001-02	0.0	5.7	58.5	35.9
2002-03	0.0	4.2	53.3	42.5
2003-04	0.0	3.0	42.7	54.2
2004-05	-	2.3	49.5	48.2
2005-06	-	1.9	54.7	43.3
2006-07	0.0	2.1	41.5	56.4
Jul-March				
2006-07 (e)	0.0	1.8	55.7	42.5
2007-08 (e)	0.0	2.2	53.2	44.6

- not available
e: Estimated

Source: Ministry of Petroleum Natural Resource
Hydrocarbon Development Institute of Pakistan

Table 15.24: Production of Coal (000 tones)

Year	Imports	Production	Total
1997-98	960	3,159	4,119
1998-99	910	3,461	4,371
1999-00	957	3,168	4,125
2000-01	950	3,095	4,045
2001-02	1,081	3,328	4,409
2002-03	1,578	3,312	4,890
2003-04	2,789	3,275	6,064
2004-05	3,307	4,587	7,894
2005-06	2,843	4,871	7,714
2006-07	4,251	3,643	7,894
Jul-March			
2006-07 (e)	2,825	2,589	5,414
2007-08 (e)	3,500	2,559	6,059

e: Estimated

Source: Ministry of Petroleum Natural Resource
Hydrocarbon Development Institute of Pakistan

15.4.5. Private Power and Infrastructure Board (PPIB)

PPIB acts as a window facilitator to the private investors in the field of power generation. PPIB is currently processing 51 multiple fuel (oil, coal, gas and hydel) power projects having a cumulative capacity of 13,335 MW which are expected to be commissioned during 2008 to 2016. These include 20 hydel projects of 4,478 MW, 14 oil based projects of 2,919 MW capacity, 5 pipeline quality dual fuel/LNG projects of 1,050 MW capacity, 6 dedicated gas projects of 1,338 MW capacity and 6 coal based power projects having cumulative capacity of 3,550 MW. Out of these, Letters of Intent (LOIs) have been issued to 38 projects with a cumulative capacity of 10,433 MW; Letters of Support (LOSs) have been issued to 14 projects totaling 2,590 MW, while Implementation Agreements (IAs) have been signed with 12 projects of 2,337 MW. Besides these, two more projects based on imported coal of 2,000 MW are also being processed.

15.4.6. Alternative sources of Energy

To resolve the energy challenges, renewable energy resources can play an important role. More importantly, renewable energy can take electricity to remote rural areas, where power transmission becomes too expensive. The importance of alternative sources of energy e.g. wind, solar and bio-fuels, has risen due to rocketing oil prices, fast energy demand and geographic location of Pakistan. The coastline of 1,046 km provides ample opportunity for the installation of wind turbines. Similarly, two-third of Pakistan's area receives sufficient sunlight which provide incredible opportunity for solar power generation. Despite this bestowed potential, Pakistan's renewable generation capacity stands only at 180 MW.

The government has established the Alternative Energy Development Board (AEDB) to foster the development of renewable energy sources and has set a target of at least 5 percent renewable energy of the total electricity generating capacity of the country (9,700 MW) by the year 2030.

(i) Wind Energy

Wind energy is environment-friendly and cheaper than natural gas even. Pakistan has been blessed with an enormous potential of Wind Energy. The 1,046 Km coastline of Sindh has been identified as having wind power potential of 50,000 MW. The government has assigned AEDB to ensure installation of 700 MW wind power in coastal areas of Pakistan by the year 2010. AEDB has issued LOIs to 93 national and international investors for 50 MW wind power projects each and one LOI for 5 MW wind project. 33,976 acres of land (19,807 aces in Gharo and 14,169 acres in Jhimpir) has so far been provisionally allocated to 21 investors.

(ii) Solar Energy

Pakistan has so far not used its solar potential to save on conventional energy sources. The solar potential exists in central and southern parts of the country where it receives 2,142 kWh of solar irradiation/m²/year. The government has assigned AEDB to electrify 7,874 remote off-grid villages in Sindh and Balochistan using alternative technologies particularly solar energy under 'Roshan Pakistan Programme'. AEDB has electrified 1,762 remote off-grid homes in 31 villages in all the four provinces. Another 3,000 remote off-grid homes in District Tharparker, Sindh are in process of electrification using solar energy, out of which 700 homes have already been electrified. The entire 100 villages are expected be electrified by June 2008.

(iii) Bio-fuels

Bio-fuels (ethanol and bio diesel) are strong contenders for provision of efficient and sustainable energy. Pakistan has started work on both the bio-ethanol (sugar-ethanol) and the cellulose biomass- bacteria route. AEDB has initiated the projects for bio-fuels in Pakistan. A pilot project of using Ethanol as an alternative fuel for vehicles has been launched in cooperation with HDIP and PSO. Furthermore, pilot project for production of bio-diesel has been successfully implemented and using local agriculture bio-diesel has been produced and used for village electrification.

Government has also introduced "The National Policy for Power Co-Generation by sugar industries (the Co-Gen Policy). Co-Generation is a highly-efficiency energy system that produces both electricity (mechanical Power) and valuable heat from a single fuel source. Pakistan has a potential of generating more than 3,000 MW of electricity through co-generation from its existing sugar industry.

TABLE 14.1

COMMERCIAL ENERGY CONSUMPTION

Fiscal Year	1. Oil/Petroleum (tonnes)						
	Households	Industry	Agricul-ture(a)	Transport	Power	Other Govt.	Total
1991-92	613,706	1,369,525	281,539	5,619,552	2,775,418	323,228	10,982,968
1992-93	622,075	1,479,935	287,181	6,107,416	3,158,124	357,115	12,011,846
1993-94	589,851	1,653,516	307,795	6,414,582	3,902,308	357,529	13,225,581
1994-95	585,173	1,889,443	268,631	6,646,175	4,215,635	355,110	13,960,167
1995-96	596,031	2,416,278	250,031	7,135,631	4,785,856	417,254	15,601,081
1996-97	509,738	2,141,065	268,866	7,172,269	5,110,233	403,795	15,605,966
1997-98	498,949	2,081,172	244,977	7,364,767	6,053,784	380,756	16,624,405
1998-99	492,768	2,139,889	249,229	7,864,063	5,525,669	376,133	16,647,751
1999-00	477,305	2,115,860	293,034	8,307,977	6,227,595	346,050	17,767,821
2000-01	450,960	1,924,048	254,833	8,157,893	6,487,988	372,176	17,647,898
2001-02	334,501	1,611,995	225,742	8,018,777	6,305,419	463,654	16,960,088
2002-03	282,521	1,604,068	196,747	8,082,273	6,019,958	266,387	16,451,954
2003-04	231,459	1,493,080	183,506	8,464,042	2,739,763	309,263	13,421,113
2004-05	192,750	1,542,398	142,062	9,024,783	3,452,581	316,686	14,671,260
2005-06	128,651	1,681,517	81,896	8,156,831	4,218,982	338,807	14,626,684
2006-07	106,148	1,595,981	97,232	7,981,893	6,740,559	325,318	16,847,131
Jul-Mar							
2006-07	79,502	1,223,587	66,781	5,729,946	4,762,329	252,070	12,114,215
2007-08	81,897	860,565.00	86,784	6,815,634	5,254,657	242,766	13,342,303

(a): HSD consumption in agricultural sector is not available seprately and is included under transport sector. Agricultural sector represents LDO only. (Contd.)

source: Oil Company Advisory Committee

TABLE 14.1

COMMERCIAL ENERGY CONSUMPTION

Fiscal Year	2. Gas (mm cft)(b)							
	Households	Commercial	Cement	Fertilizer	Power	Transport Industry	Transport (CNG)	Total
1991-92	70,741	13,057	11,761	101,493	193,893	95,661	25	486,631
1992-93	75,783	14,326	11,914	119,628	186,853	102,991	31	511,526
1993-94	82,461	15,239	10,187	144,514	197,694	100,631	43	550,769
1994-95	97,045	16,064	6,730	141,697	181,107	104,098	47	546,788
1995-96	110,103	16,960	7,569	150,374	186,507	111,202	153	582,868
1996-97	115,488	18,403	8,718	150,483	193,984	110,365	358	597,799
1997-98	134,500	18,764	12,092	147,752	179,042	115,250	490	607,890
1998-99	131,656	21,466	7,988	167,474	183,694	121,431	2,182	635,891
1999-00	139,973	21,712	8,558	177,152	227,364	134,916	2,426	712,101
2000-01	140,899	20,618	6,977	175,393	281,255	138,503	4,423	768,068
2001-02	144,186	22,130	7,063	177,589	314,851	151,416	7,369	824,604
2002-03	153,508	22,776	3,445	180,611	335,636	164,968	11,320	872,264
2003-04	155,174	24,192	7,711	185,350	469,738	193,395	15,858	1,051,418
2004-05	172,103	27,191	13,383	190,409	507,398	226,116	24,443	1,161,043
2005-06	171,109	29,269	15,335	198,175	491,766	278,846	38,885	1,223,385
2006-07	185,533	31,375	14,686	193,682	433,672	306,600	56,446	1,221,994
Jul-Mar								
2006-07	154,606	28,229	9,087	144,092	323,970	229,073	40,459	929,516
2007-08	172,700	25,575	9350	148500	320375	227425	51700	955625

- Not available. (Contd.)

* : (CNG) Compressed Natural Gas.

TABLE 14.1

COMMERCIAL ENERGY CONSUMPTION

	3. Electricity (Gwh)								4. Coal (000 metric tonne)				
Fiscal Year	Traction	Household	Commercial	Industrial	Agricultural	Street Light	Other Govt.	Total	Household	Power	Brick Kilns	Cement	Total
1991-92	29	11,458	2,143	12,289	5,847	..	2,112	33,878	6.8	39.5	3,052.4	..	3,098.7
1992-93	27	13,170	2,333	13,043	5,635	297	1,987	36,493	3.2	46.7	3,216.6	..	3,266.6
1993-94	27	14,080	1,786	12,637	5,772	298	2,781	37,381	3.3	43.6	3,487.0	..	3,533.9
1994-95	22	15,585	2,623	12,528	6,251	324	2,116	39,448	3.2	40.7	2,998.9	..	3,042.8
1995-96	20	17,116	2,962	12,183	6,696	378	2,382	41,737	3.1	398.9	3,235.8	..	3,637.8
1996-97	18	17,757	2,241	11,982	7,086	390	3,440	42,914	9.7	351.9	3,191.3	..	3,552.9
1997-98	16	18,750	2,334	12,297	6,937	387	3,851	44,572	2.3	346.5	2,809.9	..	3,158.7
1998-99	15	19,394	2,409	12,061	5,620	224	3,573	43,296	1.3	415.3	3,044.8	..	3,461.4
1999-00	15	21,455	2,544	13,202	4,540	239	3,591	45,586	1.0	348.1	2,818.8	..	3,167.9
2000-01	13	22,765	2,774	14,349	4,924	213	3,547	48,585	1.0	205.8	2,837.9	1,000.0	4,044.7
2001-02	11	23,210	2,951	15,141	5,607	212	3,490	50,622	1.1	249.4	2,577.5	1,580.6	4,408.6
2002-03	10	23,624	3,218	16,181	6,016	244	3,363	52,656	1.1	203.6	2,607.0	2,078.2	4,889.9
2003-04	9	25,846	3,689	17,366	6,669	262	3,650	57,491	1.0	184.9	2,589.4	3,289.2	6,064.5
2004-05	12	27,601	4,080	18,591	6,988	305	3,750	61,327	..	180.0	3,906.7	3,807.2	7,893.8
2005-06	13	30,720	4,730	19,803	7,949	353	4,035	67,603	..	149.3	4,221.8	3,342.8	7,714.0
2006-07	12	33,335	5,363	21,066	8,176	387	4,373	72,712	1.0	164.4	3,277.5	4,451.2	7,894.1
Jul-Mar													
2006-07	9	23,537	3,777	15,495	6,010	284	3,134	52,246	0.8	95.2	3,018.0	2,300.0	5,414.0
2007-08(e)	7	25,168	4,101	15,713	6,477	321	3,421	55,208	0.9	132.6	3,225.5	2,700.0	6,059.0

.. not available.

e: estimated for coal

Source: Hydrocarbon Development Institute of Pakistan (HDIP)
Ministry of Petroleum and Natural Resources

TABLE 14.2

COMMERCIAL ENERGY SUPPLIES

	Oil		Gas	Petroleum Products		Coal		Electricity	
Fiscal Year	Crude Oil Imports '000 barrels)	Local Crude Extraction (000 barrels)	(mcf) +	Imports (000 tonnes)	Produc-tion (000 tonnes)	Imports (000 tonnes)	Produc-tion (000 tonnes)	Installed Capacity (MW)(a)	Generation (Gwh)(b)
1991-92	30,016	22,469	550,715	5,275	5,961	1,069	3,099	9,369	45,040
1992-93	29,407	21,895	583,545	6,612	5,694	994	3,266	10,586	48,750
1993-94	30,770	20,675	624,229	7,910	5,841	1,094	3,534	11,319	50,640
1994-95	28,386	19,858	628,211	8,737	5,434	1,096	3,043	12,100	53,545
1995-96	31,044	21,063	666,580	10,137	5,874	1,080	3,638	12,969	56,946
1996-97	28,588	21,270	697,763	10,398	5,495	840	3,553	14,818	59,125
1997-98	29,826	20,543	699,709	11,064	5,858	960	3,159	15,659	62,104
1998-99	32,855	19,986	744,942	10,926	5,925	910	3,461	15,663	65,402
1999-00	32,938	20,395	818,342	11,878	6,115	957	3,168	17,399	65,751
2000-01	52,505	21,084	857,433	10,029	8,337	950	3,095	17,488	68,117
2001-02	51,982	23,195	923,758	9,023	9,028	1,081	3,328	17,789	72,405
2002-03	52,512	23,458	992,589	8,437	9,084	1,578	3,312	17,787	75,682
2003-04	57,699	22,625	1,202,750	5,170	9,740	2,789	3,275	19,252	80,827
2004-05	61,161	24,119	1,344,953	5,676	10,474	3,307	4,587	19,379	85,629
2005-06	63,546	23,936	1,400,026	6,009	10,498	2,384	4,871	19,450	93,629
2006-07	60,694	24,615	1,413,581	8,330	10,314	4,251	3,643	19,420	98,384
Jul-Mar									
2006-07(e)	43,764	18,217	1,062,124	6,039	7,581	2,825	2,589	19,440	71,033
2007-08(e)	46,748	19,296	1,090,620	6,730	7,859	3,500	2,559	19,355	74,032

+ Million cubic feet

(a) MW: Mega Watt

(b) Gwh: Giga Watt Hour

.. : not available

e: estimated for coal and electricity

Source: Hydrocarbon Development Institute of Pakistan (HDIP)
Ministry of Petroleum and Natural Resources

TABLE 14.3

COMMERCIAL ENERGY SUPPLIES

	Electricity						
	Hydroelctric (Hydel)		Thermal		Nuclear		
Fiscal Year	Installed Capacity (MW) a	Generation (Gwh) b	Installed Capacity (MW) a	Generation (Gwh) b	Installed Capacity (MW) a	Generation (Gwh) b	Imported (Gwh)
1990-91	2,898	18,343	5,741	22,354	137	385	
1991-92	3,330	18,647	5,902	26,375	137	418	
1992-93	4,626	21,112	5,823	27,057	137	582	
1993-94	4,726	19,436	6,456	30,707	137	497	
1994-95	4,826	22,858	7,137	30,176	137	511	
1995-96	4,826	23,206	8,006	33,257	137	483	
1996-97	4,826	20,858	9,855	37,921	137	346	
1997-98	4,826	22,060	10,696	39,669	137	375	
1998-99	4,826	22,449	10,700	42,669	137	284	
1999-00	4,826	19,288	12,436	46,064	137	399	
2000-01	4,857	17,194	12,169	48,926	462	1,997	
2001-02	5,041	18,941	12,286	51,174	462	2,291	
2002-03	5,041	22,351	12,285	51,591	462	1,740	
2003-04	6,491	26,944	12,299	52,122	462	1,760	
2004-05	6,494	25,671	12,423	57,162	462	2,795	
2005-06	6,499	30,862	12,489	60,283	462	2,484	
2006-07	6,479	31,953	12,478	63,972	462	2,288	171
Jul-Mar							
2006-07(e)	6,499	22,875	12,479	46,383	462	1,775	
2007-08(e)	6,482	21,640	12,412	49,825	462	2,319	248

(a) MW: Mega Watt.
(b) Gwh: Giga Watt Hour.
e: import of electricity is estimated for the last three months

Source: Hydrocarbon Development Institute of Pakistan (HDIP).
Ministry of Petroleum and Natural Resources

TABLE 14.4

SCHEDULE OF ELECTRICITY TARIFFS

Tariff Category/ Particulars	Fixed/Min Charges (Rs/KwM)	Effective 10-5-2003 Energy Charges (Rs/Kwh)	F.A.S. (Rs/Kwh)	Additional Surcharge (Rs/Kwh)	F.A.S Subsidies Rs/kwh
GENERAL SUPPLY TARIFF A-1(including FATA)					
Upto 50 Units	-	0.61		0.73	
For Consumption > 50 units upto 1000 units		-	-	-	
For First 100 units	-	0.41	0.50	1.58	0.44
For next 200 units	-	0.58	0.50	2.29	0.44
(101-300)					
For next 700 units	-	1.51	0.50	3.55	0.44
(301-1000)					
Above 1000 units	-	1.88	0.38	4.42	0.32
Minimum Monthly Charges: a) Single Phase Connections Rs 45/-					
b) Three Phase Connection: Rs 100/-					
GENERAL SUPPLY TARRIF A-2(including FATA)					
For first 100 units	-	2.77	0	3.82	
Above 100 Units	-	3.01	0	3.92	
For peak load requirment above 20kv	220	1.09	0.19	2.83	
Minimum Monthly Charges: a) Single Phase Connections Rs 150/-					
b) Three Phase Connection: Rs 300/-					
INDUSTRIAL SUPPLY					
B-1 upto 40 kw	-	1.81	0.20	3.07	
There shall be minimum monthly charges of Rs 70/Kw for first 20 Kilowatts of load and Rs 90/Kw for rest load between 21 - 40 kw					
B-2 (>41-500 kw)	300	1.3	0.20	2.09	
B-2 TOD (Peak)	300	1.98	0.20	2.78	
B-2 TOD (Off Peak)	300	1.2	0.20	2.07	
B-3 (Normal) 11&33 kv not exceeding 5000 k	290	1.29	0.20	2.01	
B-3 TOD (Peak)	290	1.97	0.20	2.26	
B-3 TOD (off Peak)	290	1.15	0.20	1.60	
B-4 Normal 66/132/220 kv - All loads	280	1.24	0.20	1.86	
B-4 TOD (Peak)	280	1.87	0.20	2.20	
B-4 TOD (off Peak)	280	1.11	0.20	1.49	

Note: 1) The above figures cover some portion of the tariffs schedule. For full details, WAPDA may be consulted. (Contd.)

2) In addition to above, the "Surcharge" @ 10.4% of supply charges was also leviable

3) Supply charges include fixed charges, energy charges, FAS and low power factor penalty.

TABLE 14.4

SCHEDULE OF ELECTRICITY TARIFFS

Tariff Category/ Particulars	Effective 10-5-2003 Fixed/Min Charges (Rs/KwM)	Energy Charges (Rs/Kwh)	F.A.S. (Rs/Kwh)	Additional Surcharge (Rs/Kwh)	F.A.S Subsidies Rs/kwh
BULK SUPPLY TARIFFS					
C-1(a) 400 Volts upto 20kw		1.24	0.41	3.42	
C-1(b) 400 Volts above 20kw upto 500 kw	220	1.09	0.41	3.21	
C-2 (a) 11/33KV upto 5000 kw	216	1.06	0.41	2.96	
C-3 66 / 132 / 220 kv - All loads	214	1.04	0.41	2.90	
AGRICULTURAL TUBE-WELL TARIFF-D					
D-1 SCARP	-	1.26	0.50	3.13	0.37
D-2 (i) Punjab & Sindh	82	0.9	0.50	1.59	0.37
D-2 (ii) NWFP & Baluchistan	72	0.75	0.50	1.38	0.37
Districr Mainwali,Bhawalpur and Tharparkar.					
TEMPORARY SUPPLY TARIFFS					
E-1 (I) Domestic Supply		2.11	0.50	3.68	
E-1 (ii) Commercial Supply		3.79	0	4.74	
Minimum charges E-1(I) and E-1(ii) Rs.46/- per day but not less than Rs.200/-.					
E-2 (I) Industrial Supply		2.36	0.20	3.51	
E-2(II)a Bulk Supply at (400KV)		1.76	0.41	3.85	
E-2(II)b Bulk Supply at (11KV)		1.64	0.41	3.62	
E-2 (III) Bulk Supply to Other Consumers		1.85	0.41	3.67	
F-Seasonal Supply to industries	125% of "Supply and Additioan charges" cor. Industrial Tariff				
G-1 (I) Public Lighting Supply	Unit Charges as per Tariff A-1above				
G-1(ii) Other than above in G-1(i)		1.93	0.36	4.57	
RESIDENTIAL COLONIES OF INDUSTRIES					
H-1Residential Colonies with own transformer		1.45	0.50	4.02	
H-2 Residential Colonies (others)		1.46	0.50	4.04	
OTHERS					
I Railway Traction		1.02	0.46	3.50	
J-1 Cogeneration Tariff (Sale by WAPDA)		1.74	0.37	3.36	
J-2 (a) COG. Tariff (Purchase by WAPDA Dec.July		1.03			
J-2 (b) COG. Tariff (Purchase by WAPDA Aug-Nov		0.78			
SPECIAL CONTRACT TARIFF					
K-a AJ&K		1.10	0.42	2.53	
K-b KESC				3.80	
K-c Rawat Lab.		1.88	0.25	2.11	

Note: 1) The above figures cover some portion of the tariffs schedule. For full details, WAPDA may be consulted.
2) In addition to above, the "Surcharge" @ 10.4% of supply charges was also leviable Source: WAPDA.
3) Supply charges include fixed charges, energy charges, FAS and low power factor penalty.

TABLE 14.4

SCHEDULE OF ELECTRICITY TARIFFS

Tariff Category/ Particulars	Effective 19-8-2003				
	Fixed/Min Charges (Rs/KwM)	Energy Charges (Rs/Kwh)	F.A.S. (Rs/Kwh)	Additional Surcharge (Rs/Kwh)	F.A.S Subsidies Rs/kwh
GENERAL SUPPLY TARIFF A-1(including FATA)					
Upto 50 Units	-	0.61		0.73	
For Consumption > 50 units upto 1000 units		-	-	-	
For First 100 units	-	0.41	0.53	1.58	0.47
For next 200 units (101-300)	-	0.58	0.53	2.29	0.47
For next 700 units (301-1000)	-	1.51	0.53	3.55	0.47
Above 1000 units	-	1.88	0.41	4.42	0.35
Minimum Monthly Charges: a) Single Phase Connections Rs 45/-					
b) Three Phase Connection: Rs 100/-					
GENERAL SUPPLY TARRIF A-2(including FATA)					
For first 100 units	-	2.77	0.03	3.82	
Above 100 Units	-	3.01	0.03	3.92	
For peak load requirment above 20kv	220	1.09	0.22	2.83	
Minimum Monthly Charges: a) Single Phase Connections Rs 150/-					
b) Three Phase Connection: Rs 300/-					
INDUSTRIAL SUPPLY					
B-1 upto 40 kw	-	1.81	0.23	3.07	
There shall be minimum monthly charges of Rs 70/Kw for first 20 Kilowatts of load and Rs 90/Kw for rest load between 21 - 40 kw					
B-2 (>41-500 kw)	300	1.3	0.23	2.09	
B-2 TOD (Peak)	300	1.98	0.23	2.78	
B-2 TOD (Off Peak)	300	1.2	0.23	2.07	
B-3 (Normal) 11&33 kv not exceeding 5000 k	290	1.29	0.23	2.01	
B-3 TOD (Peak)	290	1.97	0.23	2.26	
B-3 TOD (off Peak)	290	1.15	0.23	1.60	
B-4 Normal 66/132/220 kv - All loads	280	1.24	0.23	1.86	
B-4 TOD (Peak)	280	1.87	0.23	2.20	
B-4 TOD (off Peak)	280	1.11	0.23	1.49	

Note: 1) The above figures cover some portion of the tariffs schedule. For full details, WAPDA may be consulted Contd.....
2) In addition to above, the "Surcharge" @ 10.4% of supply charges was also leviable
3) Supply charges include fixed charges, energy charges, FAS and low power factor penalty.

TABLE 14.4

SCHEDULE OF ELECTRICITY TARIFFS

Tariff Category/ Particulars	Effective 19-8-2003				
	Fixed/Min Charges (Rs/KwM)	Energy Charges (Rs/Kwh)	F.A.S. (Rs/Kwh)	Additional Surcharge (Rs/Kwh)	F.A.S Subsidies Rs/kwh
BULK SUPPLY TARIFFS					
C-1(a) 400 Volts upto 20kw		1.24	0.44	3.42	
C-1(b) 400 Volts above 20kw upto 500 kw	220	1.09	0.44	3.21	
C-2 (a) 11/33KV upto 5000 kw	216	1.06	0.44	2.96	
C-3 66 / 132 / 220 kv - All loads	214	1.04	0.44	2.90	
AGRICULTURAL TUBE-WELL TARIFF-D					
D-1 SCARP	-	1.26	0.53	3.13	0.40
D-2 (i) Punjab & Sindh	82	0.9	0.53	1.59	0.40
D-2 (ii) NWFP & Baluchistan	72	0.75	0.53	1.38	0.40
Districr Mainwali,Bhawalpur and Tharparkar.					
TEMPORARY SUPPLY TARIFFS					
E-1 (I) Domestic Supply		2.11	0.53	3.68	
E-1 (ii) Commercial Supply		3.79	0.03	4.74	
Minimum charges E-1(I) and E-1(ii) Rs.46/- per day but not less than Rs.200/-.					
E-2 (I) Industrial Supply		2.36	0.23	3.51	
E-2(II)a Bulk Supply at (400KV)		1.76	0.44	3.85	
E-2(II)b Bulk Supply at (11KV)		1.64	0.44	3.62	
E-2 (III) Bulk Supply to Other Consumers		1.85	0.44	3.67	
F-Seasonal Supply to industries	125% of "Supply and Additioan charges" cor. Industrial Tariff				
G-1 (I) Public Lighting Supply	Unit Charges as per Tariff A-1above				
G-1(ii) Other than above in G-1(i)		1.93	0.39	4.57	
RESIDENTIAL COLONIES OF INDUSTRIES					
H-1Residential Colonies with own transformer		1.45	0.53	4.02	
H-2 Residential Colonies (others)		1.46	0.53	4.04	
OTHERS					
I Railway Traction		1.02	0.49	3.50	
J-1 Cogeneration Tariff (Sale by WAPDA)		1.74	0.4	3.36	
J-2 (a) COG. Tariff (Purchase by WAPDA Dec.July		1.03			
J-2 (b) COG. Tariff (Purchase by WAPDA Aug-Nov		0.78			
SPECIAL CONTRACT TARIFF					
K-a AJ&K		1.10	0.45	2.53	
K-b KESC				3.80	
K-c Rawat Lab.		1.88	0.28	2.11	

Note: 1) The above figures cover some portion of the tariffs schedule. For full details, WAPD/ Source: WAPDA.
2) In addition to above, the "Surcharge" @ 10.4% of supply charges was also leviable
3) Supply charges include fixed charges, energy charges, FAS and low power factor penalty.

TABLE 14.4

SCHEDULE OF ELECTRICITY TARIFFS

Tariff Category/ Particulars	Effective 1-11-2003 Fixed/Min Charges (Rs/KwM)	Energy Charges (Rs/Kwh)	F.A.S. (Rs/Kwh)	Additional Surcharge (Rs/Kwh)	F.A.S Subsidies Rs/kwh
GENERAL SUPPLY TARIFF A-1(including FATA)					
Upto 50 Units	-	0.61		0.73	
For Consumption > 50 units upto 1000 units		-	-	-	
For First 100 units	-	0.41	0.49	1.68	0.43
For next 200 units	-	0.58	0.49	2.29	0.43
(101-300)					
For next 700 units	-	1.51	0.49	3.55	0.43
(301-1000)					
Above 1000 units	-	1.88	0.37	4.42	0.31
Minimum Monthly Charges: a) Single Phase Connections Rs 45/-					
b) Three Phase Connection: Rs 100/-					
GENERAL SUPPLY TARRIF A-2(including FATA)					
For first 100 units	-	2.7	0.0	3.82	
Above 100 Units	-	2.94	0.0	3.92	
For peak load requirment above 20kv	220	1.09	0.12	2.83	
Minimum Monthly Charges: a) Single Phase Connections Rs 150/-					
b) Three Phase Connection: Rs 300/-					
INDUSTRIAL SUPPLY					
B-1 upto 40 kw	-	1.81	0.13	3.07	
There shall be minimum monthly charges of Rs 70/Kw for first 20 Kilowatts of load and Rs 90/Kw for rest load between 21 - 40 kw					
B-2 (>41-500 kw)	300	1.30	0.13	2.09	
B-2 TOD (Peak)	300	1.98	0.13	2.87	
B-2 TOD (Off Peak)	300	1.20	0.13	2.07	
B-3 (Normal) 11&33 kv not exceeding 5000 k	290	1.29	0.13	2.01	
B-3 TOD (Peak)	290	1.97	0.13	2.26	
B-3 TOD (off Peak)	290	1.15	0.13	1.60	
B-4 Normal 66/132/220 kv - All loads	280	1.24	0.13	1.86	
B-4 TOD (Peak)	280	1.87	0.13	2.20	
B-4 TOD (off Peak)	280	1.11	0.13	1.49	

Note: 1) The above figures cover some portion of the tariffs schedule. For full details, WAPDA may be consulted Contd.....

2) In addition to above, the "Surcharge" @ 10.4% of supply charges was also leviable

3) Supply charges include fixed charges, energy charges, FAS and low power factor penalty.

TABLE 14.4

SCHEDULE OF ELECTRICITY TARIFFS

Tariff Category/ Particulars	Effective 1-11-2003				
	Fixed/Min Charges (Rs/KwM)	Energy Charges (Rs/Kwh)	F.A.S. (Rs/Kwh)	Additional Surcharge (Rs/Kwh)	F.A.S Subsidies Rs/kwh
BULK SUPPLY TARIFFS					
C-1(a) 400 Volts upto 20kw		1.24	0.34	3.42	
C-1(b) 400 Volts above 20kw upto 500 kw	220	1.09	0.34	3.21	
C-2 (a) 11/33KV upto 5000 kw	216	1.06	0.34	2.96	
C-3 66 / 132 / 220 kv - All loads	214	1.04	0.34	2.90	
AGRICULTURAL TUBE-WELL TARIFF-D					
D-1 SCARP	-	1.26	0.49	3.13	0.36
D-2 (i) Punjab & Sindh	82	0.9	0.49	1.59	0.36
D-2 (ii) NWFP & Baluchistan	72	0.75	0.49	1.38	0.36
Districr Mainwali,Bhawalpur and Tharparkar.					
TEMPORARY SUPPLY TARIFFS					
E-1 (I) Domestic Supply		2.11	0.49	3.68	
E-1 (ii) Commercial Supply		3.72	0	4.74	
Minimum charges E-1(I) and E-1(ii) Rs.46/- per day but not less than Rs.200/-.					
E-2 (I) Industrial Supply		2.36	0.13	3.51	
E-2(II)a Bulk Supply at (400KV)		1.76	0.34	3.85	
E-2(II)b Bulk Supply at (11KV)		1.64	0.34	3.62	
E-2 (III) Bulk Supply to Other Consumers		1.85	0.34	3.67	
F-Seasonal Supply to industries	125% of "Supply and Additioan charges" cor. Industrial Tariff				
G-1 (I) Public Lighting Supply	Unit Charges as per Tariff A-1above				
G-1(ii) Other than above in G-1(i)		1.93	0.39	4.57	
RESIDENTIAL COLONIES OF INDUSTRIES					
H-1Residential Colonies with own transformer		1.45	0.49	4.02	
H-2 Residential Colonies (others)		1.46	0.49	4.04	
OTHERS					
I Railway Traction		1.02	0.49	3.50	
J-1 Cogeneration Tariff (Sale by WAPDA)		1.74	0.40	3.36	
J-2 (a) COG. Tariff (Purchase by WAPDA Dec.July		1.03			
J-2 (b) COG. Tariff (Purchase by WAPDA Aug-Nov		0.78			
SPECIAL CONTRACT TARIFF					
K-a AJ&K		1.10	0.41	2.53	
K-b KESC				3.69	
K-c Rawat Lab.		1.88	0.28	2.11	

Note: 1) The above figures cover some portion of the tariffs schedule. For full details, WAPD/ Source: WAPDA.
2) In addition to above, the "Surcharge" @ 10.4% of supply charges was also leviable
3) Supply charges include fixed charges, energy charges, FAS and low power factor penalty.

TABLE 14.4

SCHEDULE OF ELECTRICITY TARIFFS

Tariff Category/ Particulars	Effective 1-07-2004 Fixed/Min Charges (Rs/KwM)	Energy Charges (Rs/Kwh)	F.A.S. Subsidized (Rs/Kwh)	Additional Surcharge (Rs/Kwh)	Surcharges @ 10.4% (Rs/Kwh)	Total Avg-Rate (Rs/Kwh)
GENERAL SUPPLY TARIFF A-1(including FATA)						
Upto 50 Units	-	0.61		0.73	0.06	1.40
For Consumption > 50 units upto 1000 units		0.00	0.00	0.00		
For First 100 units	-	0.41	0.43	1.48	0.09	2.41
For next 200 units	-	0.58	0.43	2.19	0.11	2.31
(101-300)						
For next 700 units	-	1.51	0.43	3.45	0.20	5.59
(301-1000)						
Above 1000 units	-	1.88	0.31	4.32	0.23	6.74
Minimum Monthly Charges: a) Single Phase Connections Rs 45/-						
b) Three Phase Connection: Rs 100/-						
GENERAL SUPPLY TARRIF A-2(including FATA)						
For first 100 units	-	2.70	0.00	3.82	0.28	6.80
Above 100 Units	-	2.94	0.00	3.67	0.31	6.92
For peak load requirment above 20kv	220	1.09	0.12	2.83	0.23	5.27
Minimum Monthly Charges: a) Single Phase Connections Rs 150/-						
b) Three Phase Connection: Rs 300/-						
INDUSTRIAL SUPPLY						
B-1 upto 40 kw	-	1.81	0.13	2.97	0.20	5.11
There shall be minimum monthly charges of Rs 70/Kw for first 20 Kilowatts of load and Rs 90/Kw for rest load between 21 - 40 kw						
B-2 (>41-500 kw)	300	1.30	0.13	1.99	0.26	4.76
B-2 TOD (Peak)	300	1.98	0.13	2.22	0.36	6.01
B-2 TOD (Off Peak)	300	1.20	0.13	2.07	0.24	4.57
B-3 (Normal) 11&33 kv not exceeding 5000 k	290	1.29	0.13	2.01	0.22	4.38
B-3 TOD (Peak)	290	1.97	0.13	2.68	0.28	4.61
B-3 TOD (off Peak)	290	1.15	0.13	1.60	0.19	3.62
B-4 Normal 66/132/220 kv - All loads	280	1.24	0.13	1.86	0.23	4.29
B-4 TOD (Peak)	280	1.87	0.13	1.69	0.27	4.57
B-4 TOD (off Peak)	280	1.11	0.13	1.49	0.19	3.50

Note: 1) The above figures cover some portion of the tariffs schedule. For full details, WAPDA may be consulted. Contd.

2) The above tariffs are inlusive of GOP subsidy in FAS and discount in addl. Surcharges

TABLE 14.4

SCHEDULE OF ELECTRICITY TARIFFS

Tariff Category/ Particulars	Effective 1-07-2004					
	Fixed/Min Charges (Rs/KwM)	Energy Charges (Rs/Kwh)	F.A.S. Subsidized (Rs/Kwh)	Additional Surcharge (Rs/Kwh)	Surcharges @ 10.4% (Rs/Kwh)	Total Avg-Rate (Rs/Kwh)
BULK SUPPLY TARIFFS						
C-1(a) 400 Volts upto 20kw		1.24	0.34	3.42	0.16	5.16
C-1(b) 400 Volts above 20kw upto 500 kw	220	1.09	0.34	3.21	0.20	5.29
C-2 (a) 11/33KV upto 5000 kw	216	1.06	0.34	2.96	0.20	5.09
C-3 66 / 132 / 220 kv - All loads	214	1.04	0.34	2.90	0.19	4.96
AGRICULTURAL TUBE-WELL TARIFF-D						
D-1 SCARP	-	1.26	0.36	3.13	0.17	4.92
D-2 (i) Punjab & Sindh	72	0.90	0.36	1.59	0.16	3.28
D-2 (ii) NWFP & Baluchistan	72	0.75	0.36	1.38	0.13	2.80
Districr Mainwali,Bhawalpur and Tharparkar.						
TEMPORARY SUPPLY TARIFFS						
E-1 (I) Domestic Supply		2.11	0.49	3.68	0.27	6.55
E-1 (ii) Commercial Supply		3.72	0.00	4.74	0.39	8.85
Minimum charges E-1(I) and E-1(ii) Rs.46/- per day but not less than Rs.200/-.						
E-2 (I) Industrial Supply		2.36	0.13	3.51	0.26	6.26
E-2(II)a Bulk Supply at (400KV)		1.76	0.34	3.85	0.22	6.17
E-2(II)b Bulk Supply at (11KV)		1.64	0.34	3.62	0.21	5.81
E-2 (III) Bulk Supply to Other Consumers		1.85	0.34	3.67	0.23	6.09
F-Seasonal Supply to industries	125% of "Supply and Additioan charges" cor. Industrial Tariff					
G-1 (I) Public Lighting Supply	Unit Charges as per Tariff A-1above					
G-1(ii) Other than above in G-1(i)		1.93	0.39	4.57	0.24	7.13
RESIDENTIAL COLONIES OF INDUSTRIES						
H-1Residential Colonies with own transformer		1.45	0.49	4.02	0.20	6.16
H-2 Residential Colonies (others)		1.46	0.49	4.04	0.20	6.19
OTHERS						
I Railway Traction		1.02	0.49	3.50	0.16	5.17
J-1 Cogeneration Tariff (Sale by WAPDA)		1.74	0.40	3.36	0.22	5.72
J-2 (a) COG. Tariff (Purchase by WAPDA Dec.July		1.03	0.00	0.00	0.00	1.03
J-2 (b) COG. Tariff (Purchase by WAPDA Aug-Nov		0.78	0.00	0.00	0.00	0.78
SPECIAL CONTRACT TARIFF						
K-a AJ&K		1.10	0.41	2.53	0.16	4.20
K-b KESC		0.00	0.00	3.69	0.00	6.69
K-c Rawat Lab.		1.88	0.28	2.11	0.22	4.49

Source: WAPDA.

Note: 1) The above figures cover some portion of the tariffs schedule. For full details, WAPDA may be consulted.
2) The above tariffs are inlusive of GOP subsidy in FAS and discount in addl. Surcharges

TABLE 14.4

SCHEDULE OF ELECTRICITY TARIFFS

Tariff Category/ Particulars	Effective 1-07-2005					
	Fixed/Min Charges (Rs/KwM)	Energy Charges (Rs/Kwh)	F.A.S. Subsidized (Rs/Kwh)	Additional Surcharge (Rs/Kwh)	Surcharges @ 10.4% (Rs/Kwh)	Total Avg-Rate (Rs/Kwh)
GENERAL SUPPLY TARIFF A-1(including FATA)						
Upto 50 Units	-	0.61	0.00	0.73	0.06	1.40
For Consumption Exceeding 50 units						
For First 100 units (1-100)	-	0.41	0.43	1.48	0.09	2.41
For next 200 units	-	0.58	0.43	2.19	0.11	2.31
(101-300)						
For next 700 units	-	1.51	0.43	3.45	0.20	5.59
(301-1000)						
Above 1000 units	-	1.88	0.31	4.32	0.23	6.74
Minimum Monthly Charges: a) Single Phase Connections Rs 45/-						
b) Three Phase Connection: Rs 100/-						
GENERAL SUPPLY TARRIF A-2(including FATA)						
For first 100 units	-	2.70	0.00	3.82	0.28	6.80
Above 100 Units	-	2.94	0.00	3.67	0.31	6.92
For peak load requirment above 20kv	220	1.09	0.12	2.83	0.23	5.27
Minimum Monthly Charges: a) Single Phase Connections Rs 150/-						
b) Three Phase Connection: Rs 300/-						
INDUSTRIAL SUPPLY						
B-1 upto 40 kw	-	1.81	0.13	2.97	0.20	5.11
There shall be minimum monthly charges of Rs 70/Kw for first 20 Kilowatts of load and Rs 90/Kw for rest load between 21 - 40 kw						
B-2 (>41-500 kw)	300	1.30	0.13	1.99	0.26	4.76
B-2 TOD (Peak)	300	1.98	0.13	2.22	0.36	6.01
B-2 TOD (Off Peak)	300	1.20	0.13	2.07	0.24	4.57
B-3 (Normal) 11&33 kv not exceeding 5000 k	290	1.29	0.13	2.01	0.22	4.38
B-3 TOD (Peak)	290	1.97	0.13	1.68	0.28	4.61
B-3 TOD (off Peak)	290	1.15	0.13	1.60	0.19	3.62
B-4 Normal 66/132/220 kv - All loads	280	1.24	0.13	1.86	0.23	4.29
B-4 TOD (Peak)	280	1.87	0.13	1.69	0.27	4.57
B-4 TOD (off Peak)	280	1.11	0.13	1.49	0.19	3.50

Note: 1) The above figures cover some portion of the tariffs schedule. For full details, WAPDA may be consulted. Contd.

2) The above tariffs are inlusive of GOP subsidy in FAS and discount in addl. Surcharges

TABLE 14.4

SCHEDULE OF ELECTRICITY TARIFFS

Tariff Category/ Particulars	Effective 1-07-2005					
	Fixed/Min Charges (Rs/KwM)	Energy Charges (Rs/Kwh)	F.A.S. Subsidized (Rs/Kwh)	Additional Surcharge (Rs/Kwh)	Surcharges @ 10.4% (Rs/Kwh)	Total Avg-Rate (Rs/Kwh)
BULK SUPPLY TARIFFS						
C-1(a) 400 Volts upto 20kw		1.24	0.34	3.42	0.16	5.16
C-1(b) 400 Volts above 20kw upto 500 kw	220	1.09	0.34	3.21	0.20	5.29
C-2 (a) 11/33KV upto 5000 kw	216	1.06	0.34	2.96	0.20	5.09
C-3 66 / 132 / 220 kv - All loads	214	1.04	0.34	2.90	0.19	4.96
AGRICULTURAL TUBE-WELL TARIFF-D						
D-1 SCARP	-	1.26	0.36	3.13	0.17	4.92
D-2 (i) Punjab & Sindh	72	0.90	0.36	1.59	0.16	3.28
D-2 (ii) NWFP & Baluchistan	72	0.90	0.36	0.84	0.16	2.53
Districr Mainwali,Bhawalpur and Tharparkar.						
D-2 Normal	72	0.75	0.36	1.38	0.13	2.80
D-2 (II) TOD NWFP (OFF-PEAK)	72	0.75	0.36	0.63	0.13	2.05
TEMPORARY SUPPLY TARIFFS						
E-1 (I) Domestic Supply		2.11	0.49	3.68	0.27	6.55
E-1 (ii) Commercial Supply		3.72	0.00	4.74	0.39	8.85
Minimum charges E-1(I) and E-1(ii) Rs.46/- per day but not less than Rs.200/-.						
E-2 (I) Industrial Supply		2.36	0.13	3.51	0.26	6.26
E-2(II)a Bulk Supply at (400KV)		1.76	0.34	3.85	0.22	6.17
E-2(II)b Bulk Supply at (11KV)		1.64	0.34	3.62	0.21	5.81
E-2 (III) Bulk Supply to Other Consumers		1.85	0.34	3.67	0.23	6.09
F-Seasonal Supply to industries	125% of "Supply and Additioan charges" cor. Industrial Tariff					
G-1 (I) Public Lighting Supply	Unit Charges as per Tariff A-1above					
G-1(ii) Other than above in G-1(i)		1.93	0.39	4.57	0.24	7.13
RESIDENTIAL COLONIES OF INDUSTRIES						
H-1Residential Colonies with own transformer		1.45	0.49	4.02	0.20	6.16
H-2 Residential Colonies (others)		1.46	0.49	4.04	0.20	6.19
OTHERS						
I Railway Traction		1.02	0.49	3.50	0.16	5.17
J-1 Cogeneration Tariff (Sale by WAPDA)		1.74	0.40	3.36	0.22	5.72
J-2 (a) COG. Tariff (Purchase by WAPDA Dec.July		1.03	0.00	0.00	0.00	1.03
J-2 (b) COG. Tariff (Purchase by WAPDA Aug-Nov		0.78	0.00	0.00	0.00	0.78
SPECIAL CONTRACT TARIFF						
K-a AJ&K		1.10	0.41	2.53	0.16	4.20
K-b KESC		0.00	0.00	3.69	0.00	6.69
K-c Rawat Lab.		1.88	0.28	2.11	0.22	4.49

Source: WAPDA.

Note: 1) The above figures cover some portion of the tariffs schedule. For full details, WAPDA may be consulted.
2) The above tariffs are inlusive of GOP subsidy in FAS and discount in addl. Surcharges

Table 14.4

SCHEDULE OF ELECTRICITY TARIFFS OF DISCO

TARIFF CATEGORY	Effective from 24-02-2007 Fixed Charges (Rs/KW)	Variable Charges (RS/KW)
A-1 GENERAL SUPPLY TARIFF- RESIDENTIAL		
Upto 50 Units per month		1.40
FOR CONSUMPTION EXCEEDING 50 UNITS		
1 - 100 Units per month		2.65
101 - 300 Units per month		3.64
301 - 1000 Units per month		6.15
Above 1000 Units per month		7.41
Time of Day (TOD) - Peak	365.00	6.00
Time of Day (TOD) - Off-Peak	365	3.55
Min. Charges: single & 3/ Phase	Rs 75/- & 150/-	
A-2 GENERAL SUPPLY TARIFF - COMMERCIAL		
a) For Sanctioned Load upto 20 KW		
i) For First 100 units		7.48
ii) Above 100 units		7.61
b) For Sanctioned Load exceding 20 KW	267.17	4.59
c) Time of Use - Peak	365.00	6.00
Time of Use -Off- Peak	365.00	3.55
Min. Charges/month: Single & 3 Phase	Rs 75/- & 350/-	
B- INDUSTRIAL SUPPLY TARIFFS		
B-1 upto 40 KW (400 Volts)		5.62
B-2 Load >40 to 500 KW at 400 Volts.	364.32	3.93
B-2 TOD (Peak)	364.32	5.01
B-2 TOD (Off-Peak)	364.32	3.89
B-3 11/33kV TOD -Peak	352.18	4.40
B-3 11/33kV TOD Off-Peak	352.18	3.31
B-4 66/132kV TOD-Peak	340.03	4.29
B-4 TOD (Off-Peak)	340.03	3.15
Min. Charges/monthB-1,B-2,B-3 &B-4		
C-SINGLE POINT BULK SUPPLY TARRIFS		
C-1 (a) 400/230 Volts Load upto 20 kW	267.17	5.68
C-1 (b) 400-V- Load 21-500kW	365.00	5.27
C-1 (c) TOD Opt. Peak	365.00	6.00
TOD Off-Peak	262.31	3.55
C-2(a) at 11/33-kV load upto 5000kW	355.00	4.96
C-2 (b) load upto 5000 kW -peak	355.00	5.95
Off-Peak	259.88	3.45
C-3 supply at 66kV & above	340.00	4.86
Time of Day (TOD) Peak	340.00	5.90
Time of Day (TOD) Off-Peak	340.00	3.40
D-AGRICUTURAL TUBEWELL TARIFFS		
D-19(a) - SCARP less than 20kW		5.41
D-2- Agri. T/Wells- Punjab & Sindh	87.44	3.28
D-2- Agri. T/Wells NWFP & Blochistan	87.44	2.87
D-1(b) TOD SCARP & Agri>20kW Peak	3.55	6.00
Off-Peak	3.55	3.55
E-TEMPORARY SUPPLY TARRIFS		
E-1(i) Residential Supply		
E-1(ii) Commercial Supply		
E-2 Industrial Supply		
Min. Charges per day E-1(i & ii)	Rs 50. Min. 500/-	
F- SEASONAL INDUSTRIAL SUPPLY	125% of Industrial Tarrif	
G- PUBLIC LIGHTINING		7.59
Minimum charges per month per Kw	Rs. 500	
H- Residential Colonies Attached to Industiral Premises		
I- Railway Traction		
J- Special Contracts		
J-1 AJ& K		
Time of use peak		
Off Peak		
J-2 Rawat Lab.		

Note: 1) The above figures cover some portion of the tariffs schedule. For full details, WAPDA may be consulted.

Table 14.4

SCHEDULE OF ELECTRICITY TARIFFS OF DISCO

TARIFF CATEGORY	EFFECTIVE FROM 01-03-2008								
	Fixed Charges Rs/KW	Variable Charges Rs/KWh							
		IESCO	LESCO	GEPCO	FESCO	MEPCO	QESCO	PESCO	HESCO
A-1 GENERAL SUPPLY TARIFF- RESIDENTIAL									
Upto 50 Units per month		1.40	1.40	1.40	1.40	1.40	1.40	1.40	1.40
FOR CONSUMPTION EXCEEDING 50 UNITS									
1 - 100 Units per month		3.08	3.08	3.08	3.08	3.08	3.08	3.08	3.08
101 - 300 Units per month		4.08	4.08	4.08	4.08	4.08	4.08	4.08	4.08
301 - 1000 Units per month		6.53	6.53	6.53	6.53	6.53	6.53	6.53	6.53
Above 1000 Units per month		7.79	7.79	7.79	7.79	7.79	7.79	7.79	7.79
Time of Day (TOD) - Peak	315	7.24	7.13	7.22	7.04	7.73	7.84	9.45	9.99
Time of Day (TOD) - Off-Peak	315	4.28	4.28	4.28	4.28	4.28	4.28	4.28	4.28
Min. Charges: single & 3/ Phase	Rs 75/- & 150/-								
A-2 GENERAL SUPPLY TARIFF - COMMERCIAL									
a) For Sanctioned Load upto 20 KW									
i) For First 100 units		7.86	7.86	7.86	7.86	7.86	7.86	7.86	7.86
ii) Above 100 units		7.99	7.99	7.99	7.99	7.99	7.99	7.99	7.99
b) For Sanctioned Load exceding 20 KW	365.00	4.97	4.97	4.97	4.97	4.97	4.97	4.97	4.97
c) Time of Use - Peak	315.00	7.24	7.13	7.22	7.04	7.73	7.84	9.45	9.99
Time of Use -Off- Peak	315.00	4.28	4.28	4.28	4.28	4.28	4.28	4.28	4.28
Min. Charges/month: Single & 3 Phase	Rs 75/- & 360/-								
B- INDUSTRIAL SUPPLY TARIFFS									
B-1 upto 40 KW (400 Volts)		6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00
B-2 Load >40 to 500 KW at 400 Volts.	315.00	4.63	4.63	4.63	4.63	4.63	4.63	4.63	4.63
B-2 TOD (Peak)	315.00	7.24	7.13	7.22	7.04	7.73	7.84	9.45	9.99
B-2 TOD (Off-Peak)	315.00	4.28	4.28	4.28	4.28	4.28	4.28	4.28	4.28
B-3 11/33kV TOD -Peak	305.00	6.99	6.88	6.97	6.79	7.48	7.59	9.2	9.59
B-3 11/33kV TOD Off-Peak	305.00	3.88	3.88	3.88	3.88	3.88	3.88	3.88	3.88
B-4 66/132kV TOD-Peak	295.00	6.74	6.63	6.72	6.54	7.23	7.34	8.95	9.19
B-4 TOD (Off-Peak)	395.00	3.63	3.63	3.63	3.63	3.63	3.63	3.63	3.63
Min. Charges/monthB-1,B-2,B-3 &B-4	Rs. 350, 2000, 50,000 & 500,000 respectively								
C-SINGLE POINT BULK SUPPLY TARRIFS									
C-1 (a) 400/230 Volts Load upto 20 kW		6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17
C-1 (b) 400-V- Load 21-500kW	315.00	5.68	5.68	5.68	5.68	5.68	5.68	5.68	5.68
C-1 (c) TOD Opt. Peak	315.00	7.24	7.13	7.22	7.04	7.73	7.84	9.45	9.99
TOD Off-Peak	315.00	4.28	4.28	4.28	4.28	4.28	4.28	4.28	4.28
C-2(a) at 11/33-kV load upto 5000kW	305.00	5.38	5.38	5.38	5.38	5.38	5.38	5.38	5.38
C-2 (b) load upto 5000 kW -peak	305.00	6.99	6.88	6.97	6.79	7.48	7.59	9.2	9.59
Off-Peak	305.00	3.88	3.88	3.88	3.88	3.88	3.88	3.88	3.88
C-3 supply at 66kV & above	295.00	5.28	5.28	5.28	5.28	5.28	5.28	5.28	5.28
Time of Day (TOD) Peak	295.00	6.74	6.63	6.72	6.54	7.23	7.34	8.95	9.19
Time of Day (TOD) Off-Peak	295.00	3.63	3.63	3.63	3.63	3.63	3.63	3.63	3.63
D-AGRICUTURAL TUBEWELL TARIFFS									
D-19(a) - SCARP less than 20kW		5.99	5.88	5.97	5.94	6.48	7.59	7.7	7.59
D-2- Agri. T/Wells- Punjab & Sindh	90.00	3.73	3.73	3.73	3.73	3.73	3.73	3.73	3.73
D-2- Agri. T/Wells NWFP & Blochistan	90.00	3.73	3.73	3.73	3.73	3.73	3.73	3.73	3.73
D-1(b) TOD SCARP & Agri>20kW Peak	305.00	7.24	7.13	7.22	7.04	7.73	7.84	9.45	9.99
Off-Peak	305.00	3.13	3.13	3.13	3.13	3.13	3.13	3.13	3.13
E-TEMPORARY SUPPLY TARRIFS									
E-1(i) Residential Supply		7.90	7.79	7.97	7.94	8.48	9.59	10.7	11.19
E-1(ii) Commercial Supply		8.10	7.99	8.17	8.19	8.88	9.79	11.2	12.59
E-2 Industrial Supply		6.11	6	6.47	6.94	6.98	7.09	6.7	8.59
Min. Charges per day E-1(i & ii)		Rs. 500, Min. 500/-							
F- SEASONAL INDUSTRIAL SUPPLY	125% of relvent industrial tarrif								
G- PUBLIC LIGHTINING		8.08	7.97	8.22	8.19	8.48	8.34	8.7	11.59
Minimum charges per month per Kw		500.00							
H- Residential Colonies Attached to Industiral Premises		7.27	7.16	7.47	7.44	7.73		7.8	10.59
I- Railway Traction			6.07			6.48			
J- Special Contracts									
J-1 AJ& K	355	2.59		2.59				2.59	
Time of use peak	295	7.24		7.22				9.45	
Off Peak	295	3.99		3.97				4.2	
J-2 Rawat Lab.		5.43							

Note: 1) The above figures cover some portion of the tariffs schedule. For full details, WAPDA may be consulted.

TABLE 14.5

OIL SALE PRICES

Rs/Ltrs

Date	01-07-2005	01-08-2005	16-08-2005	01-09-2005	16-09-2005	01-10-2005
Ex-Depot Sale Price						
Motor Gasoline	48.94	48.94	48.94	52.61	52.29	56.29
HOBC (Automotive 100 Octane)	54.33	54.33	54.33	58.40	58.40	62.77
Super (90 Octane) Blend of Motor Gasoline @ 60% and HOBC 40%)						
Kerosene	29.53	29.53	29.53	31.00	31.00	32.87
HSD	31.74	31.74	31.74	34.59	34.59	37.18
LDO	27.84	27.84	27.84	29.22	29.22	30.97
Aviation gasoline (100LL)						
JP-1:						
i) For sale to PIA Domestic Flight	31.27	30.48	32.10	33.75	34.88	34.07
ii) For sale to PIA foreign flights & foreign airline						
iii) For Cargo & Technical Landing Flights						
JP-4	31.54	31.51	33.53	35.31	36.9	35.93

Source: Hydrocarban Development Institute of Pakistan(HDIP)

TABLE 14.5

OIL SALE PRICES

Date	01-11-2005	16-11-2005	01-12-2005	16-12-2005	01-01-2006
Ex-Depot Sale Price					
Motor Gasoline	56.29	56.29	56.29	56.29	56.29
HOBC (Automotive 100 Octane)	62.77	62.77	62.77	62.77	62.77
Super (90 Octane) Blend of Motor Gasoline @ 60% and HOBC 40%)					
Kerosene	32.87	32.87	32.87	32.87	32.87
HSD	37.18	37.18	37.18	37.18	37.18
LDO	30.97	30.97	30.97	30.97	30.97
Aviation gasoline (100LL)					
JP-1:					
i) For sale to PIA Domestic Flight	31.59	28.34	28.78	29.89	32.15
ii) For sale to PIA foreign flights & foreign airline					
iii) For Cargo & Technical Landing Flights					
JP-4	33.87	31.44	31.33	32.36	33.37

Source: Hydrocarban Development Institute of Pakistan(HDIP)

TABLE 14.5

OIL SALE PRICES

Rs/Ltrs

Date	16-01-2006	01-02-2006	16-02-2006	01-03-2006	16-03-2006	01-04-2006
Ex-Depot Sale Price						
Motor Gasoline	56.29	56.29	56.29	56.29	56.29	56.29
HOBC (Automotive 100 Octane)	62.77	62.77	62.77	62.77	62.77	62.77
Super (90 Octane) Blend of Motor Gasoline @ 60% and HOBC 40%)						
Kerosene	32.87	32.87	32.87	32.87	32.87	32.87
HSD	37.18	37.18	37.18	37.18	37.18	37.18
LDO	30.97	30.97	30.97	30.97	30.97	30.97
Aviation gasoline (100LL)						
JP-1:						
i) For sale to PIA Domestic Flight	32.57	33.93	33.61	32.89	33.72	34.37
ii) For sale to PIA foreign flights & foreign airline						
iii) For Cargo & Technical Landing Flights						
JP-4	34.04	35.50	35.11	34.83	35.86	36.52

Source: Hydrocarban Development Institute of Pakistan(HDIP)

TABLE 14.5

OIL SALE PRICES

Rs/Ltrs

Date	16-04-2006	01-05-2006	16-05-2006	01-06-2006	16-06-2006	1-07-2006
Ex-Depot Sale Price						
Motor Gasoline	56.29	57.70	57.70	57.70	57.70	57.70
HOBC (Automotive 100 Octane)	62.77	64.88	64.88	64.88	64.88	64.88
Super (90 Octane) Blend of Motor Gasoline @ 60% and HOBC 40%)						
Kerosene	32.87	35.23	35.23	35.23	35.23	35.23
HSD	37.18	38.73	38.73	38.73	38.73	38.73
LDO	30.97	32.57	32.57	32.57	32.57	32.57
Aviation gasoline (100LL)						
JP-1:						
i) For sale to PIA Domestic Flight	35.86	39.22	38.73	37.51	38.66	37.98
ii) For sale to PIA foreign flights & foreign airline						
iii) For Cargo & Technical Landing Flights						
JP-4	37.75	40.33	40.35	39.22	40.24	40.09

Source: Hydrocarban Development Institute of Pakistan(HDIP)

TABLE 14.5

OIL SALE PRICES

Rs/Ltrs

Date	16-07-2006	01-08-2006	16-08-2006	01-09-2006	16-09-2006	01-10-2006
Ex-Depot Sale Price						
Motor Gasoline	57.70	57.70	57.70	57.70	57.70	57.70
HOBC (Automotive 100 Octane)	64.88	64.88	64.88	64.88	64.88	64.88
Super (90 Octane) Blend of Motor Gasoline @ 60% and HOBC 40%)						
Kerosene	35.23	35.23	35.23	35.23	35.23	35.23
HSD	38.73	38.73	38.73	38.73	38.73	38.73
LDO	32.57	32.57	32.57	32.57	32.57	32.57
Aviation gasoline (100LL)						
JP-1:						
i) For sale to PIA Domestic Flight	38.64	39.48	40.00	39.40	38.04	34.22
ii) For sale to PIA foreign flights & foreign airline						
iii) For Cargo & Technical Landing Flights						
JP-4	41.30	44.71	41.52	40.48	38.39	35.41

Source: Hydrocarban Development Institute of Pakistan(HDIP)

TABLE 14.5

OIL SALE PRICES

Rs/Ltrs

Date	16-10-2006	01-11-2006	16-11-2006	01-12-2006	16-12-2006	01-01-2007
Ex-Depot Sale Price						
Motor Gasoline	57.70	57.70	57.70	57.70	57.70	57.70
HOBC (Automotive 100 Octane)	64.88	64.88	64.88	64.88	64.88	64.88
Super (90 Octane) Blend of Motor Gasoline @ 60% and HOBC 40%)						
Kerosene	35.23	35.23	35.23	35.23	35.23	35.23
HSD	38.73	38.73	38.73	38.73	38.73	38.73
LDO	32.57	32.57	32.57	32.57	32.57	32.57
Aviation gasoline (100LL)						
JP-1:						
i) For sale to PIA Domestic Flight	33.49	33.05	32.66	33.25	35.20	34.32
ii) For sale to PIA foreign flights & foreign airline						
iii) For Cargo & Technical Landing Flights						
JP-4	35.03	34.86	34.82	35.34	37.09	36.49
JP-8						39.61

Source: Hydrocarban Development Institute of Pakistan(HDIP)

TABLE 14.5

OIL SALE PRICES

Rs/Ltrs

Date	16-01-2007	01-02-2007	16-02-2007	01-03-2007	16-03-2007	01-04-2007
Ex-Depot Sale Price						
Motor Gasoline	53.70	53.70	53.70	53.70	53.70	53.70
HOBC (Automotive 100 Octane)	64.88	64.88	64.88	64.88	64.88	64.88
Super (90 Octane) Blend of Motor Gasoline @ 60% and HOBC 40%)						
Kerosene	35.23	35.23	35.23	35.23	35.23	35.23
HSD	37.73	37.73	37.73	37.73	37.73	37.73
LDO	32.57	32.57	32.57	32.57	32.57	32.57
Aviation gasoline (100LL)						
JP-1:						
i) For sale to PIA Domestic Flight	31.52	30.57	31.66	31.75	33.22	33.53
ii) For sale to PIA foreign flights & foreign airline						
iii) For Cargo & Technical Landing Flights						
JP-4	33.93	33.30	35.02	35.63	37.87	38.11
JP-8	36.65	35.64	36.80	36.89	38.46	38.78

Source: Hydrocarban Development Institute of Pakistan(HDIP)

TABLE 14.5

OIL SALE PRICES

Rs/Ltrs

Date	1-05-2007	16-05-2007	01-06-2007	10-06-2007	16-06-2007	01-07-2007
Ex-Depot Sale Price						
Motor Gasoline	53.70	53.70	53.70	53.70	53.70	53.70
HOBC (Automotive 100 Octane)	64.88	64.88	64.88	64.88	64.88	64.88
Super (90 Octane) Blend of Motor Gasoline @ 60% and HOBC 40%)						
Kerosene	35.23	35.23	35.23	35.23	35.23	35.23
HSD	37.73	37.73	37.73	37.73	37.73	37.73
LDO	32.57	32.57	32.57	32.57	32.57	32.57
Aviation gasoline (100LL)						
JP-1:						
i) For sale to PIA Domestic Flight	36.48	36.58	37.03	36.96	36.90	38.07
ii) For sale to PIA foreign flights & foreign airline						
iii) For Cargo & Technical Landing Flights						
JP-4	40.89	41.29	42.23	41.91	40.86	41.30
JP-8	41.91	42.01	42.49	42.06	42.00	43.22

Source: Hydrocarban Development Institute of Pakistan(HDIP)

TABLE 14.5

OIL SALE PRICES

Rs/Ltrs

Date	16-07-2007	01-08-2007	16-08-2007	01-09-2007	16-09-2007	01-10-2007
Ex-Depot Sale Price						
Motor Gasoline	53.70	53.70	53.70	53.70	53.70	53.70
HOBC (Automotive 100 Octane)	64.88	64.88	64.88	64.88	64.88	64.88
Super (90 Octane) Blend of Motor Gasoline @ 60% and HOBC 40%)						
Kerosene	35.23	35.23	35.23	35.23	35.23	35.23
HSD	37.73	37.73	37.73	37.73	37.73	37.73
LDO	32.37	32.57	32.57	32.57	32.57	32.57
Aviation gasoline (100LL)						
JP-1:						
i) For sale to PIA Domestic Flight	38.67	39.34	38.36	37.38	39.19	40.96
ii) For sale to PIA foreign flights & foreign airline						
iii) For Cargo & Technical Landing Flights						
JP-4	42.44	42.32	41.15	40.50	41.94	43.83
JP-8	43.86	44.55	43.53	42.49	44.40	46.26

Source: Hydrocarban Development Institute of Pakistan(HDIP)

TABLE 14.5

OIL SALE PRICES

Rs/Ltrs

Date	16-10-2007	01-11-2007	16-11-2007	02-12-2007	16-12-2007	01-01-2008
Ex-Depot Sale Price						
Motor Gasoline	53.70	53.70	53.70	53.70	53.70	53.70
HOBC (Automotive 100 Octane)	64.88	64.88	64.88	64.88	64.88	64.88
Super (90 Octane) Blend of Motor Gasoline @ 60% and HOBC 40%)						
Kerosene	35.23	35.23	35.23	35.23	35.23	35.23
HSD	37.73	37.73	37.73	37.73	37.73	37.73
LDO	32.57	32.57	32.57	32.57	32.57	32.57
Aviation gasoline (100LL)						
JP-1:						
i) For sale to PIA Domestic Flight	41.12	44.13	49.68	50.89	47.89	48.85
ii) For sale to PIA foreign flights & foreign airline						
iii) For Cargo & Technical Landing Flights						
JP-4	44.21	46.89	51.42	52.69	50.61	51.73
JP-8	46.43	49.58	55.42	56.68	53.53	54.54

Source: Hydrocarban Development Institute of Pakistan(HDIP)

TABLE 14.5

OIL SALE PRICES

Rs/Ltrs

Date	17-01-2008	01-02-2008	17-02-2008	01-03-2008	17-03-2008	01-04-2008
Ex-Depot Sale Price						
Motor Gasoline	53.70	53.70	53.70	58.70	62.81	62.81
HOBC (Automotive 100 Octane)	64.88	64.88	64.88	64.88	74.77	74.77
Super (90 Octane) Blend of Motor Gasoline @ 60% and HOBC 40%)						
Kerosene	35.23	35.23	35.23	38.37	41.13	41.13
HSD	37.73	37.73	37.73	41.23	44.13	44.13
LDO	32.57	32.57	32.57	36.07	38.59	38.59
Aviation gasoline (100LL)						
JP-1:						
i) For sale to PIA Domestic Flight	49.98	47.39	48.83	52.77	56.45	59.47
ii) For sale to PIA foreign flights & foreign airline						
iii) For Cargo & Technical Landing Flights						
JP-4	53.07	51.06	52.06	55.46	57.79	59.17
JP-8	55.72	53.02	54.51	58.66	62.53	65.69

Source: Hydrocarban Development Institute of Pakistan(HDIP)

TABLE 14.6

GAS SALE PRICES

(Rs/mcft)

/ Category	01.3.2002	23.7.2002	20-8-2002	25.10.2002	1-7-2003	1-7-2004
DOMESTIC (Slab)						
i Upto 1.77 MCUFT / Month	66.86	66.86	66.86	67.95	69.31	73.95
ii 1.77 to 3.55	100.73	100.73	100.73	102.37	104.42	111.42
iii 3.55 to 7.1	161.16	161.16	161.16	163.78	167.06	178.25
iv 7.1 to 10.64	201.45	201.45	201.45	213.06	217.32	231.88
v 10.64 to 14.20 (MCFT/M)						
vi All over 14.20	217.85	217.85	217.85			
COMMERCIAL	186.98	186.98	186.98	190.02	193.82	204.88
General Industry	166.18	166.18	166.18	168.88	172.26	182.09
Cement	194.68	194.68	222.32	222.32	209.78	209.78
CNG Station	166.18	166.18	166.18	168.88	172.26	182.09
Pakistan Steel						
Captive Power						
FERTILIZER						
SNGPL'S SYSTEM						
(i)For Feed Stock						
Pak.Americal Fertilizer Ltd.PAFL	36.77	36.77	36.77	36.77	36.77	36.77
F.F.C Jorden	36.77	36.77	36.77	36.77	36.77	36.77
Dawood Hercules/ Pak Arab	59.59	59.59	62.57	62.57	67.26	73.99
Pak china/ Hazara	63.24	63.24	66.40	66.40	71.38	78.52
(ii)For Fuel Generation	166.18	166.18	166.18	168.88	172.26	182.09
Dawood and Pak Arab	166.18	166.18	166.18	166.18		
FOR MARI GAS CO. SYSTEM						
(i)For Feed Stock						
(a) Engro Chemical	13.09	13.09	13.09	13.09	66.31	72.94
FFC	58.74	61.68	61.68	61.68	66.31	72.94
(b) Pak Saudi	58.74	61.68	61.68	61.68	66.31	72.94
(ii)For Power Generation	166.18	166.18	166.18	166.88	172.26	182.09
POWER Stations						
SNGPL & SSGCL'S SYSTEM	166.18	166.18	166.18	168.88	172.26	182.09
Liberty Power Ltd.	202.98	202.98	190.8	190.8	235.77	234.33
GAS DIRECTLY SOLD TO						
WAPDA'S GUDDU POWER STATION						
SUI FIELD (917 BTU)	145.51	145.51	145.51			
KANDHKOT FIELD (866 BTU)	160.54	160.54	160.54	163.15	166.41	175.90
MARI FIELD (754 BTU)	156.14	156.14	156.14	158.68	161.85	171.08
SARA/SURI FIELD	156.14	156.14	156.14	158.68	161.85	171.08

(Contd.)

Billing/pricing system changed from Rs. Per thousand cubic feet to Rs. Per million btu w.e.f.1-1-2002

TABLE 14.6

(Rs/mcft)

/ Category	1.12.2004	2-2-2005	1-7-2005	1-1-2006	1-7-2006	1-2-2007	1-1-2008
DOMESTIC (Slab)							
i Upto 1.77 MCUFT / Month	73.95	73.95	73.95	80.98	85.03	78.38	78.38
ii 1.77 to 3.55	111.42	120.61	127.62	147.41	89.03	82.07	82.07
iii 3.55 to 7.1	178.25	192.96	204.17	235.84	162.07	149.4	149.4
iv 7.1 to 10.64	231.88	251.01	265.59	306.79	259.29	239.01	239.01
v 10.64 to 14.20 (MCFT/M)					337.30	310.92	310.92
vi All over 14.20							
COMMERCIAL	204.88	221.78	234.67	271.07	298.03	268.23	283.05
General Industry	182.09	197.11	208.56	240.91	264.87	238.38	251.55
Cement	209.78	227.09	240.28	277.55	305.15	305.15	335.67
CNG Station	182.09	197.11	208.56	240.91	264.87	238.38	291.36
Pakistan Steel	182.09		208.56				
Captive Power			208.56	240.91	264.87	238.38	251.55
FERTILIZER							
SNGPL'S SYSTEM							
(i)For Feed Stock							
Pak.Americal Fertilizer Ltd.PAFL	36.77	36.77	36.77	36.77	36.77	36.77	36.77
F.F.C Jorden	36.77	36.77	36.77	36.77	36.77	36.77	36.77
Dawood Hercules/ Pak Arab	73.99	73.99	83.24	83.24	91.52	91.52	91.52
Pak china/ Hazara	78.52	78.52	88.34	88.34	97.11	97.11	97.11
(ii)For Fuel Generation	182.09	197.11	208.56	240.91	264.87	238.38	251.55
Dawood and Pak Arab							
FOR MARI GAS CO. SYSTEM							
(i)For Feed Stock							
(a) Engro Chemical	72.94	72.94	82.06	82.06	90.22	90.22	90.22
FFC	72.94	72.94	82.06	82.06	90.22	90.22	90.22
(b) Pak Saudi		72.94	82.06				
(ii)For Power Generation	182.09	182.09	208.56		264.87	238.38	251.55
POWER Stations							
SNGPL & SSGCL'S SYSTEM	182.09	197.11	208.56		264.87	238.88	
Liberty Power Ltd.	235.76	262.03	303.25	303.25	467.52	445.98	443.06
GAS DIRECTLY SOLD TO							
WAPDA'S GUDDU POWER STATION							
SUI FIELD (917 BTU)							
KANDHKOT FIELD (866 BTU)	175.90	190.41	201.47	232.72	255.86	230.28	243.00
MARI FIELD (754 BTU)	171.08	185.19	195.95	226.34	248.85	223.96	236.34
SARA/SURI FIELD	171.08	185.19	195.95		248.85	223.96	236.34

Source : Hydrocabon Development Institute of Pakistan

Billing/pricing system changed from Rs. Per thousand cubic feet to Rs. Per million btu w.e.f.1-1-2002