ENERGY

The *International Energy Outlook 2006*, projected strong growth in energy demand globally over the next 27-years on the back of equally strong world economic growth. World economic growth will averaging 3.8 percent per annum during the same period. Much of the growth in world energy demand will come from non-OECD Asia, which includes China and South Asian countries; demand in the region will nearly triple over the projection period. Total primary energy consumption in the non-OECD countries will grow at an average annual rate of 3.0 percent between 2003 and 2030. In contrast, for the Organization for Economic Cooperation and Development (OECD)—countries energy use will grow at a much slower pace of 1.0 percent per year over the same period.

Pakistan's economy has been growing at an average rate of over 7.6 percent per annum over the last three years and the government is making efforts to sustain the momentum going forward. Knowing well that there exists strong relationship between economic growth and energy demand government is making efforts to address the challenges of rising energy demand. These include, import of piped natural gas from Iran and Turkmenistan, import of LNG; increase in oil and gas exploration in the country; utilizing 175 billion tones of Thar coal reserves; setting up of new nuclear power plants; exploiting the affordable alternate energy resources and overhauling existing power generation plants to enhance their generation capacity. In addition to increasing supply, there is a need to promote efficient use of energy resources as well.

At present Pakistan meets its energy requirement of over 75 percent from domestic resources. As Fig-15.1 shows, around 50.4 percent of its energy need is met by the indigenous gas, 28.4 percent by domestic and imported oil and 12.7 percent by hydro electricity. Coal and nuclear contribution to energy use is limited to 7.0 percent and 1.0 percent, respectively. While the widening of energy supply and demand gap remains a challenge for Pakistan, it also provides viable investment opportunities for both local and international investors.

Energy Consumption: An update

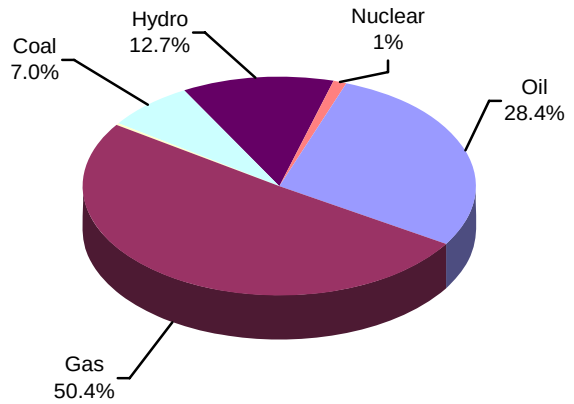
Energy sector in Pakistan comprises electricity, gas, petroleum and coal. The primary commercial energy supplies increased by 4.3 percent by to 57.9 million tones of oil equivalent (MTOE) during 2005-06 as compared to 55.5 (MTOE) in 2004-05. The supply of energy increased by 9.2 percent and 8 percent in 2004-05 and 2003-04 respectively. The slower growth of primary energy supplies during 2005-06, can be attributed to: (i) lower consumption of High Speed Diesel (HSD) in transport sector, and (ii) sharp reduction in coal imports by Pakistan Steel. The decline in primary energy supplies has been compensated by sizeable increase of 20.2 percent in hydel generation during 2005-06. The share of natural gas in primary energy supplies during 2005-06 reached 50.4 percent followed by oil (28.4 percent), hydro electricity (12.7 percent), coal (7.0 percent), nuclear electricity (1.0 percent) and LPG (0.4 percent) (Fig-15.1).

To address the issue of bridging the gap between demand and supply the government is working on many fronts. It is in this perspective that the proposed Iran-Pakistan-India (IPI) gas pipeline project has reached at fairly advanced stage. The proposed gas pipeline project will take Iranian gas across Pakistan to India which will spur industrial, commercial and domestic economic activities in all the three counties. The Government has approved the gas sharing formula with other stakeholders. Pakistan and India will share equally when Iran starts delivering 2.1 billion cub feet of gas per day in the first phase. In the second phase, the total gas

delivery will be enhanced to 5.3 billion cubic feet per day (BCFD) which Pakistan and India will share 2.1 BCFD and 3.2 BCFD, respectively. The IPI gas pipeline project is expected to start delivery by 2009-10. Termed as a peace pipeline, the IPI project aims at helping the two energy-starved South Asian countries meet their growing energy demand. Pakistan will also earn up to $700 million a year as transit fee from India. Strategically Pakistan is well placed in Asia to play the role of an energy corridor between the energy rich and the energy deficient countries.

The consumption of oil decreased by 0.3 percent during 2005-06 over the corresponding period last year. This was mainly due to lower consumption of oil in transport, agriculture and domestic sectors by 10 percent, 42 percent and 33 percent, respectively. Consumption of furnace oil in cement industry also dropped by 17 percent in 2004-05. Despite the slight decrease in oil consumption Pakistan remains dependent on costly oil imports. The crude oil and petroleum products import for the first nine month of the year 2006-07 amounted to about 6.1 million tonnes and 5.9 million tonnes, with values of US$ 2.64 billion and US$ 2.59 billion, respectively. The total oil import bill for the year 2006-07 (July-March) was US$ 5.23 billion.

Fig-15.1: Primary Energy Supplies by Source (2005-06)



Source: HDIP

The growth in consumption of natural gas at 5.4 percent outpaced the growth of production at 4.1 percent during 2005-06. The industry-wise break down of higher consumption was a follows: general industry (141 MMCFD); transport sector (40 MMCFD); fertilizer industry (22 MMCFD); commercial sector (6 MMCFD) and cement industry (5 MMCFD). However, consumption of gas decreased in power sector by (43 MMCFD) and in domestic sector by (3 MMCFD) despite an increase in number of domestic consumers by 6.5 percent over 2004-05. CNG sector continued to show high growth rate of 59 percent and gas consumption increasing from 67 to 107 MMCFD.

I . Energy Consumption

During the last ten years (1996-97 to 2005-06), the consumption of petroleum products has decreased by an average rate of 0.4 percent per annum. The consumption of gas, electricity and coal on the other hand, has increased at an average rate of 7.8 percent, 5.1 percent and 8.8 percent per annum, respectively. The annual trend of energy consumption for the period 1996-97 to 2005-06 is given in Table 15.1. It is important to note that a structural change is taking place in energy consumption pattern in Pakistan since 2000-01. While consumption of petroleum products is declining except in 2004-05, the consumption of other components of energy is rising. The average consumption of petroleum products has in fact, registered a decline of 2.8 percent per annum since 2000-01, due to lower consumption of oil in the household and agriculture sectors. On the other hand, since 2000-01 consumption of gas, electricity and coal have grown at average rates of 9.6 percent, 6.8 percent and 16.7 percent, respectively.

The consumption of petroleum products and coal, during July-March 2006-07 of the current fiscal year witnessed significant increases by 19.2 percent and 24.6 percent, respectively. This is most likely due to higher demand of oil in agriculture and power sectors, non-availability of alternative fuel and the mixing of indigenous coal with imported coal. Further, the consumption of coal has also increased due to higher consumption in bricks kilns industry. These trends reflect the high agriculture growth and boom in infrastructure development like housing and buildings.

The acceleration in growth of all components of energy during 2006-07, is also driven by 8.8 percent growth in large-scale manufacturing and 7.0 percent growth in real GDP 2006-07. Higher consumption of energy especially oil, in agriculture sector reflects higher growth in this

sector, despite heavy fluctuation in its prices ranging between US $ 50 to US $ 80 per barrel in international oil markets. The fluctuating prices have not affected the rising level of economic activities and expansion of middle class in the country.

Table 15.1: Annual Energy Consumption

Fiscal Year	Petroleum Products		Gas		Electricity		Coal	
	(000 tones)	% Change	(mmcft)	% Change	(Gwh)	% Change	(000 M.T)	% Change
1996-97	15,606	0.0	597,799	2.6	42,914	3.4	3,553	-2.3
1997-98	16,624	6.5	607,890	1.7	44,572	3.9	3,159	-11.1
1998-99	16,647	0.1	635,891	4.6	43,296	-2.9	3,461	9.6
1999-00	17,768	6.7	712,101	12.0	45,586	5.3	3,168	-8.5
2000-01	17,648	-0.7	768,068	7.9	48,584	6.6	3,095	-2.3
2001-02	16,960	-3.9	824,604	7.4	50,622	4.2	3,492	12.8
2002-03	16,452	-3.0	872,264	5.8	52,656	4.0	3,768	7.9
2003-04	13,421	-18.4	1,051,418	20.5	57,491	9.2	5,284	40.2
2004-05	14,671	9.3	1,161,043	10.4	61,327	6.7	6,622	25.3
2005-06	14,627	-0.3	1,223,385	5.4	67,603	10.2	7,714	16.5
Avg. 10 years		**-0.4**		**7.8**		**5.1**		**8.8**
Jul-Mar								
2005-06	10,164		922,112		49,416		4,345	
2006-07	12,114	19.2	929,516	0.8	52,246	5.7	5,414	24.6

Source: Hydrocarbon Development Institute of Pakistan

a. Petroleum Products

During the first nine months of the current fiscal year (2006-07), the consumption of petroleum products in households sector, industry, transport and other government sector, exhibited sharp declines of 20.2 percent, 2.5 percent, 4.2 percent and 2.7 percent, respectively. The declines were mainly due to the availability of alternative and relatively cheaper fuels (natural gas and LPG), decrease in the consumption of furnace oil in industry, massive increase of CNG and natural gas in transport and low demand for JP-8 by defence. On the other hand, consumption in agriculture and power sectors showed marked increases of 11.7 percent and 89.9 percent, respectively due to higher demand in agriculture sector and non-availability of alternative source of energy to power sector. The annual growth in the consumption of petroleum products by major sectors and their relative shares between1996-97 to 2006-07 are given in Tables 15.2 & 15.3, respectively. Between1996-2006, the transport sector was the largest user of petroleum products accounting for 50.7 percent of consumption on average followed by the power sector (32.1 percent), industry (11.4 percent), other government (2.3 percent), households (2.2 percent) and agriculture (1.3 percent) (Table 15.3).

Table 15.2: Consumption of Petroleum Products (000 tones) (Percentage Change)

Year	House holds	% Change	Industry	% Change	Agricultur	% Change	Trans-por	% Change	Power	% Change	Other Govt.	% Change	Total
1996-97	510	-14.4	2,141	-11.4	269	7.6	7,172	0.5	5,110	6.8	404	-3.2	15,606
1997-98	499	-2.2	2,081	-2.8	245	-8.9	7,364	2.7	6,054	18.5	381	-5.7	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	17.8	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	1,681	9.1	82	-42.3	8,157	-9.6	4,219	22.2	358	13.0	14,627
Jul-Mar													
2005-06	99		1,256		60		5,981		2,508		259		10,164
2006-07	79	-20.2	1,224	-2.5	67	11.7	57,30	-4.2	4,762	89.9	252	-2.7	12,114

Source: Hydrocarbon Development Institute of Pakistan

Table 15.3: Consumption of Petroleum Products (Percentage Share)

Year	Households	Industry	Agriculture	Transport	Power	Other Govt.
1996-97	3.3	13.7	1.7	45.9	32.7	2.6
1997-98	3.0	12.5	1.5	44.3	36.4	2.3
1998-99	2.9	12.9	1.5	47.2	33.2	2.3
1999-00	2.7	11.9	1.6	46.8	35.0	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	36.5	1.6
2003-04	1.7	11.12	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	2.5
Avg10 years	**2.2**	**11.4**	**1.3**	**50.7**	**32.1**	**2.3**
Jul-Mar						
2005-06	1.0	12.4	0.6	58.8	24.8	2.5
2006-07	0.7	10.1	0.5	47.3	39.3	2.1

Source: Hydrocarbon Development Institute of Pakistan

b. Consumption of Gas

Pakistan has a well-developed and integrated infrastructure of transporting, distributing and utilization of natural gas. Table 15.4 gives the annual change in the consumption of gas by various users between 1996-97—2006-07. Commercial, cement, fertilizer, industrial and transport sectors have registered a sharp rise in the consumption of gas during 2005-06. The consumption of gas in transport sector increased by 49.4 percent during July-March 2006-07, while the industrial consumption grew by 29.4 percent followed by the commercial sector (27.3 percent) and household sector (4.7). However, the consumption of gas declined in cement, fertilizer and power sector by 10 percent, 2.7 percent and 16.9 percent respectively. (see Table 15.4). The relative shares of gas consumption by various users during the last ten years are documented in Table 15.5. The Power sector has emerged as the largest consumer of gas (36.4 percent), followed by fertilizer (21.6 percent), industries (19.1 percent) households (17.8 percent), commercial (2.7 percent), cement (1.1 percent) and transport sector (CNG) (1.0 percent). It may be noted that the share of the transport sector in gas consumption has been rising continuously since 1998-99. The transport sector is also gradually reducing its dependency on imported fuel oil because of its ever-escalating prices and availability of cheaper fuel in the shape of CNG.

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 mmcft	% Change
1996-97	115	4.5	18	5.9	9	12.5	150	0.0	194	4.3	110	-0.9	358	
1997-98	134	16.5	19	5.6	12	33.3	148	-1.3	179	-7.7	115	4.5	490	36.9
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	4.6	9	12.8	177	6.0	227	23.3	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	1.1	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	15,858	40.1
2004-05	172	11	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
Jul-Mar														
2005-06	148		22		10		148		390		177		27,077	
2006-07	155	4.7	28	27.3	9	-10.0	144	-2.7	324	-16.9	229	29.4	40,459	49.4

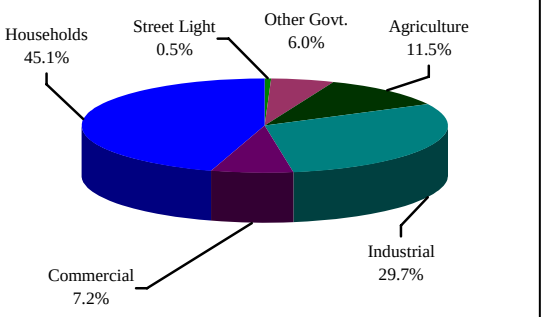
Source: Hydrocarbon Development Institute of Pakistan

Table 15.5: Consumption of Gas (Percentage Share)

Year	Households	Commercial	Cement	Fertilizer	Power	Industrial	Transport CNG
1996-97	19.3	3.1	1.5	25.2	32.4	18.4	0.1
1997-98	22.1	3.1	2.0	24.3	29.4	18.9	0.1
1998-99	20.7	3.4	1.3	26.3	28.9	19.1	0.3
1999-00	19.6	3.0	1.2	24.8	32.2	18.9	0.3
2000-01	18.2	2.7	0.9	22.6	37.0	17.8	0.6
2001-02	17.5	2.7	0.9	21.6	38.2	18.5	0.9
2002-03	17.6	2.6	0.4	20.7	38.5	18.9	1.3
2003-04	14.8	2.3	0.7	17.6	44.7	18.4	1.5
2004-05	14.8	2.3	1.2	16.4	43.7	19.5	2.1
2005-06	13.9	2.4	1.2	16.2	40.2	22.8	3.2
AVG	**17.8**	**2..7**	**1.1**	**21.6**	**36.4**	**19.1**	**1.0**
Jul-Mar							
2005-06	16.0	2.4	1.1	16.1	42.3	19.2	2.9
2006-07	16.6	3.0	1.0	15.5	34.8	24.6	4.4

Source: Hydrocarbon Development Institute of Pakistan.

Fig15.2: Consumption of Electricity - Sectoral Share (2006-07)



Source: HDIP

c. Electricity Consumption

Tables 15.6 and 15.7 show the position of electricity consumption in Pakistan from 1996-97 to 2005-06. On average, the household sector has been the largest consumer of electricity, accounting for 44.8 percent of total electricity consumption, followed by industrial (29.4 percent), agriculture (12.2 percent), other government sector (7.2 percent), commercial sector (5.9 percent), and street lights (0.6 percent). A substantial increase in the consumption of electricity has also been witnessed during the first 9 months of the current fiscal year (Fig-15.2).

Table 15.6: Consumption of Electricity by Sectors (000 GWH) (Percentage Change)

Year	House hold		Commercial		Industrial		Agriculture		Street Light (Total)		Other Govt.	
	Gwh	%Change	Gwh	%Change	Gwh	%Change	Gwh	%Change	Gwh	%Change	Gwh	%Change
1996-97	17.8	4.1	2.2	0	11.9	-1.7	7.0	4.5	390	3.2	3.4	3.0
1997-98	18.8	5.6	2.3	4.5	12.3	3.4	6.9	-1.4	387	-0.8	3.9	14.7
1998-99	19.4	3.2	2.4	4.3	12.0	-2.4	5.6	-18.8	224	-42.1	3.6	-7.7
1999-00	21.4	10.3	2.5	5.2	13.2	10.0	4.5	-19.9	239	6.7	3.6	0
2000-01	22.8	6.5	2.8	12	14.3	8.3	4.9	8.9	213	-10.9	3.5	-2.8
2001-02	23.2	1.8	3.0	7.1	15.1	5.6	5.6	14.3	212	-0.5	3.5	0.0
2002-03	23.7	2.2	3.2	6.7	16.2	7.3	6.0	7.1	244	15.1	3.4	-2.9
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
2004-05	27.6	6.8	4.1	10.6	18.6	7.1	7.0	4.8	305	16.4	3.8	2.7
2005-06	30.7	11.2	4.7	14.6	19.8	6.5	7.9	12.9	353	15.7	4.0	5.3
Jul-Mar												
2005-06	22.1		3.4		14.7		5.9		261		3.0	
2006-07	23.5	6.3	3.8	11.8	15.5	5.4	6.0	1.7	284	8.8	3.1	3.3

Source: Hydrocarbon Development Institute of Pakistan

Table 15.7: Consumption of Electricity (Percentage Share)

Year	Households	Commercial	Industrial	Agriculture	Street Light	Other Govt.
1996-97	41.4	5.2	27.9	16.5	0.9	8.0
1997-98	42.1	5.2	27.6	15.5	0.9	8.7
1998-99	44.8	5.5	27.9	12.9	0.5	8.3
1999-2000	47.1	5.6	28.9	9.9	0.5	7.9
2000-01	46.9	5.7	29.5	10.1	0.4	7.3
2001-02	45.9	5.8	29.9	11.1	0.4	6.9
2002-03	44.9	6.1	30.7	11.4	0.5	6.4
2003-04	45.0	6.4	30.2	11.6	0.5	6.4
2004-05	45.0	6.0	31.3	14.4	0.5	6.1
2005-06	45.4	7.0	29.3	11.8	0.5	6.0
AVG	**44.8**	**5.9**	**29.4**	**12.2**	**0.6**	**7.2**
Jul-Mar						
2005-06	44.8	6.9	29.7	12.1	0.5	6.0
2006-07	45.1	7.2	29.7	11.5	0.5	6.0

Source: Hydrocarbon Development Institute of Pakistan

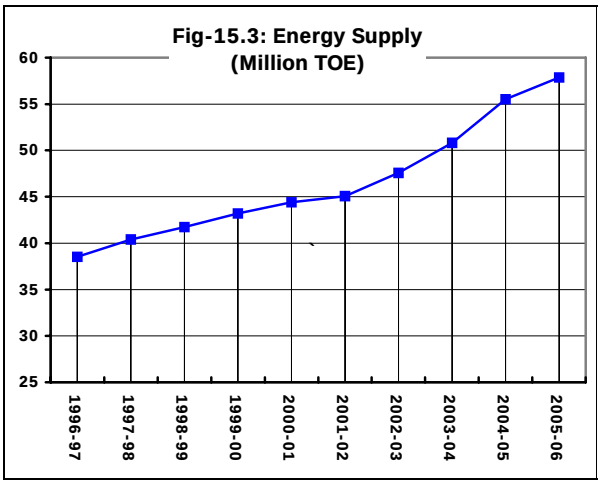
II. Primary Energy Supply

Primary energy refers to the energy sources at the beginning of the energy conversion chains. The total primary energy supplies in Pakistan amounted to 57.9 million tons of oil equivalent (MTOE) in 2005-06. The annual trends of primary energy supplies and their per capita availability, measured in tonnes of oil equivalent (TOE) from 1996-97 to 2006-07 are given in Table (15.8 and Fig-15.3 & Fig-15.4). The supply of primary energy has increased by 50.2 percent in the last 10 years. The per capita availability rose from 0.295 TOE in 1996-97 to 0.372 TOE in 2005-06 –an increase of 26.1 percent in the last 10 years. The energy supplies during the first 9 months of the current fiscal year increased to 45.35 million TOE from 42.44 million TOE in the same period last year or an increase of 6.8 percent. The per capita availability has also increased by almost the same ratio. This increase in primary energy supplies is mainly due to appropriate and timely measures taken by the government to provide an investment-friendly environment for the energy sector to attract more local and foreign investors. The flow of foreign investment in the energy sector has remained buoyant and is projected to further accelerate in the near future. The supply of primary energy by various sources of energy as well as their rates of increases, are illustrated in Table 15.9.

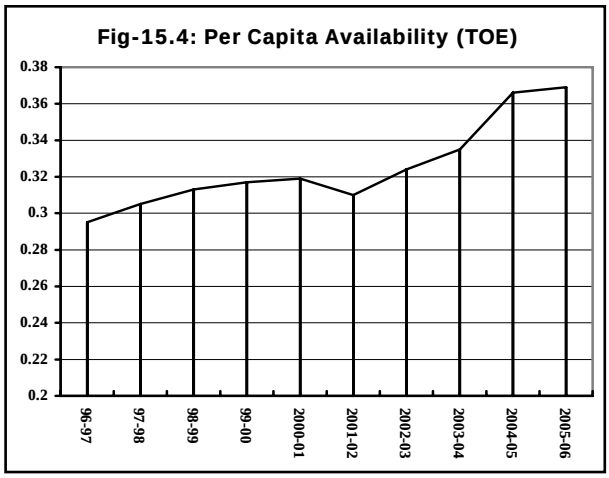
Table 15.8: Primary Energy Supply and Per Capita Availability

Year	Energy Supply		Per Capita	
	Million TOE	%Change	Availability (TOE)	% Change
1996-97	38.515	-0.6	0.295	(3.0)
1997-98	40.403	4.9	0.305	3.3
1998-99	41.721	3.3	0.313	2.7
1999-00	43.185	3.5	0.317	1.2
2000-01	44.404	2.8	0.319	0.6
2001-02	45.068	1.5	0.315	-0.1
2002-03	47.056	4.4	0.324	2.7
2003-04	50.831	8.0	0.341	5.3
2004-05	55.533	9.3	0.363	6.7
2005-06	57.855	4.2	0.372	2.2
Jul-Mar				-
2005-06	42.449		0.274	
2006-07	45.350	6.8	0.288	6.6

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



Source: HDIP



Source: HDIP

Table 15.9: 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
1996-97	49.9	-4.3	697.8	4.7	15.9	-0.6	4.4	-6.4	59.1	3.9
1997-98	50.4	1.2	700	0.3	16.9	6.3	4.1	-6.8	62.1	5.1
1998-99	52.6	4.5	744.9	6.4	16.8	-0.6	4.4	7.3	65.4	5.3
1999-00	53.3	1.3	818.3	9.9	17.9	6.5	4.1	-6.8	65.7	0.5
2000-01	73.6	38	857.4	4.8	18.4	4.5	4.0	-2.4	68.1	3.7
2001-02	75.1	2.0	923.8	7.7	18.0	-1.6	4.4	10.0	72.4	6.3
2002-03	76.0	1.2	992.6	7.5	17.5	-3.8	4.9	11.4	75.7	4.5
2003-04	80.3	5.7	1,202.7	21.2	14.9	-14.9	6.0	22.4	80.8	6.8
2004-05	85.3	6.2	1,344.9	11.8	16.1	8.1	7.9	31.7	85.6	5.9
2006-07	87.5	2.6	1,400.0	4.1	16.5	2.5	7.7	-2.5	93.6	9.3
Jul-Mar										
2005-06	66.7		1,048.2		--		4.2		66.1	
2006-07	62.0	-7.0	1,062.1	1.3	13.6	--	5.4	28.6	71.0	7.4

*****: Billion cubic feet
a: Giga Watt hour
e: Estimated
- : Not Available

Source: Hydrocarbon Development Institute of Pakistan.

a) Crude Oil

The balance recoverable reserves of crude oil as on January 1st 2007 have been estimated at 317.82 million barrels in the country. The average crude oil production during July- March 2006-07 was 66,485 barrels per day as against 65,385 barrels per day during the corresponding period of last year, showing an increase of 1.68 percent. During the period under review, 28,507(42.88 percent) barrels per day were produced in northern region and 37,978 (57.12 percent) barrels per day in southern region, as against 29,151 (44.58 percent) barrels and 36,234(55.42 percent) barrels produced per day respectively in the same period last year. During July-March 2006-07, production of crude oil has decline by 2.21 percent from northern region and the production efficiency has increased in southern region by 4.81 percent, as compared to same period last year. The company wise detail of production of cured oil during July-March 2006-07 and corresponding period of the last fiscal year is given in Table 15.10.

Table 15.10: Production of Crude Oil

Region	2005-06	July-March 2005-06	July-March 2006-07	% Change
Northern Region	**29,073.51**	**29,150.93**	**28,507.30**	**-2.21**
OGDCL	11,081.62	11,155.03	12,273.52	10.03
OPI	639.28	663.16	550.15	-17.04
POL	13,077.80	12,984.92	9,111.55	-29.83
PPL	3,437.89	3,558.97	4,892.20	37.46
MOL	836.90	788.84	1,679.89	112.96
Southern Region	**6,503.56**	**36,234.22**	**37,977.82**	**4.81**
OGDCL	20,429.06	20,240.42	22,623.81	11.78
BP (Pakistan)	12,674.97	12,640.15	11,377.12	-9.99
PPL	136.88	146.29	138.85	-5.09
BHP	1,796.87	1,744.61	2,039.16	16.88
OMV	96.60	98.54	91.93	-6.71
OPI	947.89	927.70	1,276.87	37.64
ENI	317.03	327.62	343.23	4.77
Petronas	104.26	108.90	86.86	-20.24
Total:	**65,577.07**	**65,385.16**	**66,485.13**	**1.68**

Source: Ministry of Petroleum & Natural Resources

b) Natural Gas

The importance of natural gas to the county has been increasing rapidly. As on January 1st 2007, the balance recoverable natural gas reserves have been estimated at 31.81 trillion cubic feet. The average production of natural gas during July-March 2006-07 was 3,876.38 million cubic feet per day (mmcfd) as against 3,825.51 (mmcfd) during the corresponding period of last year, showing an increase of 1.33 percent. Natural gas is used in general industry to prepare consumer items, to produce cement and to generate electricity. In the form of CNG, it is used in transport sector and most importantly to manufacture fertilizer to boost the agricultural sector. Many private and public companies are currently engaged in oil and gas exploration & production activities including BHP, OPI, PEL, MOL and OGDCL. The company wise position reveals that a sizable increase in the production of natural gas was contributed by BHP (18 percent), ENI (5.5 percent), OPI (25 percent), PEL (49 percent) and MOL (32.4 percent). Company wise total natural gas production is shown in Table 15.11.

Table- 15.11: Production of Natural Gas (mmcfd)

Company	2005-06	July-March 2005-06	July-March 2006-07	% change
BHP	272.19	263.90	310.82	17.78
ENI	368.52	368.94	389.14	5.47
MGCL	468.62	467.05	473.39	1.36
OGDCL	846.86	849.17	834.07	-1.78
OMV	547.55	544.66	539.73	-0.90
OPI	86.07	82.85	103.65	25.11
POL	56.19	55.45	43.57	-21.44
PPL	841.93	846.44	828.61	-2.11
TULLOW	5.00	4.89	2.48	-49.18
PEL	24.34	21.34	31.75	48.79
BP(Pakistan)	240.55	241.34	299.26	-5.01
Petronas	30.92	31.99	27.06	-15.42
MOL	47.44	47.48	62.85	32.37
Total:	**3,836.15**	**3,825.51**	**3,876.38**	**1.33**

Source: Ministry of Petroleum & Natural Resources

c. Drilling Activities

During July-March 2006-07, altogether 46 wells have been drilled, including 19 wells in the public sector and 27 in the private sector as against 41 in the same period last year registering an increase of 12.2 percent. Total investment of US$ 700.88 million has so far been made in the current financial year in the upstream petroleum sector. Table 15.12 gives the detail of drilling activities of the public and private sector companies, engaged in the exploration and development of wells, with achievement during July-March 2006-07 and corresponding period last year.

Table 15.12: Drilling Activities (Achievements) (No. of Wells)

Sector	2005-06	July-March 2005-06	July-March 2006-07	% Change
Public Sector (OGDCL)	**30**	**18**	**19**	**5.5**
i) Exploratory	23	14	14	0.00
ii)Appraisal/Dev	7	4	5	25.0
Private Sector	**34**	**23**	**27**	**17.39**
iii) Exploratory	10	5	13	160.00
iv) Appraisal/Dev	24	18	14	-22.22
Total:	**64**	**41**	**46**	**12.19**

Source: Ministry of Petroleum & Natural Resources

d) Liquefied Petroleum Gas (LPG)

Use of LPG as domestic fuel is being encouraged to slow the ongoing deforestation in the areas where supply of natural gas is technically not feasible. As a result of the government's investment-friendly policies, production of LPG has reached 1,650 M.T per day in 2006-07 from 540 MT per day in 2000- almost four fold increase in the last six years. LPG is also being increasingly used in cars, pickups, rickshaws and even motorcycles in area where CNG is not available due to the absence of natural gas distribution network. The supply of LPG was streamlined with its distribution at affordable prices, promoting healthy competition and ensuring safety standards across LPG supply chain. The custom duty at 5 percent imposed on the import of LPG has been waived to further enhance availability of LPG. The LPG marketing companies have planned to import approximately 43,000 M.T during 2006-07.

e) Compressed Natural Gas (CNG)

The Government is promoting the use of Compressed Natural Gas (CNG) aggressively to reduce pollution caused by vehicles using motor gasoline and to improve the ambient air quality. A growing number of vehicles have been converted to CNG power by the private sector to take advantage of the relatively low price of CNG fuel. Some 1,414 CNG stations (as on April 2007) are operational in 85 cities and towns of the country and about 1.35 million vehicles are using CNG as against one million vehicles during same period last year showing an increase of 35 percent. On average 29,167 vehicles are being converted to CNG every month. With these developments, Pakistan has become the leading country in Asia and the third largest user of CNG in the world after Argentina and Brazil. An investment of Rs. 60 billion has been made in the CNG sector during July-March 2006-07 as compared Rs. 20 billion invested upto end March 2006, registering a growth of 200 percent in investment. Similarly CNG industry has created 60,000 new jobs.

In view of short supply of indigenous oil/liquid fuels, there is a scope for development of alternate fuels, especially natural gas that is locally available at low price along with a widespread infrastructure for transmission and distribution network. Research, development and demonstration efforts led to a successful implementation and commercialization of CNG in Pakistan as an environment-friendly, cheap and safe road transport fuel.

Pakistan imported nearly 4.1 million tones of diesel oil at a cost of US$ 2.2 billion during 2005-06. Since the air pollution caused by diesel oil is more severe than CNG, there is a need for replacing diesel oil to the extent possible with CNG. The technology/economics of converting diesel engines to CNG, however, are not very attractive due to high conversion cost, little differential in the price of diesel oil and CNG, and several engineering and management problems related to conversion of bus fleets. In order to address these problems, the Provincial Governments are working on a programme with the support of Federal Government to gradually phase out diesel buses and induct intra-city CNG buses in major cities of Pakistan. The programme will also include infrastructure development and manufacturing of CNG buses. Government policy is to promote a market driven industrial development of the CNG industry rather than through administrative directives. This programm will have a major impact on air quality of the urban areas, which will improve health standards.

f. 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 during 2005-06. The government plans to establish an offshore LNG import terminal at Port Qasim which will be a major step towards increased availability of liquefied natural gas in the country through import. In this regard, an agreement has been signed between Port Qasim Authority and Pakistan Gas Port Limited. The use of LNG and its demand worldwide has increased by nearly 40 percent between 2002 and 2005 because it is cleaner and less carbon intensive than oil or coal. LNG also has many advantages for storage and distribution over natural gas. Pakistan has the world's second largest pipeline network of the natural gas after the United States. Liquefied natural gas technology has revolutionized the energy sector, and demonstrated its worth as a more commercially viable option.

Performance of major oil and gas companies

The operational performance of the three major oil and gas companies in the public sector is reviewed in the following paragraphs.

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

OGDCL is the first Pakistani exploration and production company to list its shares on the London Stock Exchange through the issuance of GDR. The successful listing was a result of a well developed business and strategic plan; a debt-free and robust balance sheet and healthy cash reserves.

During July-March 2006-07, company's average oil and gas production remained at 34,893 barrels per day and 834 mmcfd per day respectively. This reflects an increase of 11 percent in oil and 7.1 percent in natural gas as against the same period last year. The LPG and sulphur production reached 310 metric ton per day and 65 metric ton per day showing an increase of 7.6 percent in LPG production and 16.0 percent in sulphur as against same period last year.

The company has discovered four new gas and oil producing fields during July -March 2006-07. For example, the Mela oil and gas mix field located in NWFP is producing 4,100 barrel per day of crude and 12 mmcfd of natural gas. The other three fields are situated in Sindh. Unar-1 is a mix field, producing 150 barrel per day of oil and 13.7 mmcfd of gas. While Pasaki and Nim West-1 produced 1,800 barrels of oil and 6.26 mmcfd of natural gas respectively. These discoveries when fully developed will help the country save millions of dollar in foreign exchange. OGDCL has drilled 19 wells (14 exploratory/appraisal and 5 development) during July- March 2006-07, as against 18 wells (14 exploratory/appraisal and 4 development) in the same period last year. The physical performance of the OGDCL is given in Table-15-13

TABLE 15.13: PHYSICAL PERFORMANCE OF OGDCL

S. No		Name of Activity		July-March 2005-06	July-March 2006-07	% Change
1.	i	Exploratory Wells		14	14	-
	ii	Development Wells		4	5	25
2.	**Production**		**Unit**			
	i	Oil	US Barrels	8,602,700 (31,397)	9,560,816 (34,893)	11
	ii	Gas	MMcft	213,570 (779)	228,531 (834)	7
	iii	LPG	Tonnes	78,907 (288)	85,040 (310)	8
	iv	Sulphur	Tonnes	15,414 (56)	17,882 (65)	16

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

b. Sui Northern Gas Pipelines Limited (SNGPL):

Sui Northern is supplying gas to 897 towns/villages of Punjab and NWFP. During the period July- March 2006-07, the company connected 469 industrial 2,503 commercial and 163,704 domestic consumers bringing the total number of consumers to 2,839,237. These include 4242 industrial, 46,422 commercial and 2,788,573 domestic consumers. During July-March 2006-07, the company carried out development work for extension of gas network to the tune of Rs. 1077 million on transmission project, Rs. 3,906 million on distribution projects and Rs. 252 million on other projects under Khushal Pakistan programme. During next fiscal year 2007-08, the Company has plans to invest Rs. 11,376 on transmission and distribution projects.

c. Sui Southern Gas Company Limited: (SSGC)

By end March 2007 Sui Southern Gas Company Limited had expanded its network to 1,351 towns/villages of Sindh and Baluchistan. During the period July-March 2006-07, SSGC provided new connections to 221 Industrial, 1,232 Commercial and 67,373 Domestic consumers bringing the total number of consumers to 1,929,237. These include 3,199 industrial, 21,170 commercial and 1,904,868 domestic consumers. During July-March 2006-07, Sui Southern Gas Company Limited carried out development work for extension of gas net work to the tune of Rs. 4,433 million on transmission project, Rs. 3,137 million on distribution projects and Rs. 680 million on other projects under Khushal Pakistan programme with the collaboration of district governments. During the next fiscal year the company plans to invest Rs. 10,384 million on transmission and distribution projects.

III. Power Sector

Historically Pakistan faced electricity deficit from 1990 to 1997. The demand and supply of electricity was balanced in 1997. From 1997, the generation capacity increased and it was expected that the demand and supply position of electricity will remain in equilibrium up to 2009. However, as existing peak demand approached 6.6 percent growth per annum during 2001 to 2007 the supply shortage occurred much earlier than 2009. Brisk pace of economic activity, rising levels of income of the people, the double-digit growth of large scale manufacturing, higher agricultural production and village electrification programme have all resulted in higher demand of power in Pakistan. The Government has prepared plans to respond to this challenge. As a first step the government has encouraged the private sector power projects to meet this additional demand. The following table shows the future power generation plan in Pakistan (Table.15.14).

Table No.15.14 : POWER GENERATION PLAN

	Nuclear	Hydel	Coal	Renewable	Oil	Gas	Total	Cumulative
Existing (2005)	400	6460	160	180	6400	5940	19540	
Addition	-	-	-	-				
2010	-	1260	900	700	160	4860	7880	27420
2015	900	7570	3000	800	300	7550	20120	47540
2020	1500	4700	4200	1470	300	12560	24730	72270
2025	2000	5600	5400	2700	300	22490	38490	110760
2030	4000	7070	6250	3850	300	30360	51830	162590
Total	8800	32660	19910	9700	7760	83760	162590	

Sources: Planning Commission of Pakistan

a) Electricity Generation

The total installed capacity of electricity generation witnessed no change during July-March 2006-07, remaining at 19,440 MW. The Water and Power Development Authority (WAPDA), Karachi Electric Supply Corporation (KESC), Karachi Nuclear Power Plant (KANUPP) and Chashma Nuclear Power Plant are the four main public sector organizations involved in power generation, transmission and distribution of electricity in the country. In addition, the Independent power projects (IPPs) are also involved in power generation. The total installed capacity of WAPDA stood at 11,363 MW during July-March 2006-07 which accounts for 58 percent of total installed capacity. Of this, hydel power accounts for 56.9 percent or 6,463 MW and thermal accounts for 43.1 percent or 4,900 MW. The total installed capacity of IPPs is 5,859 MW (30.1 percent), KESC's is 1,756 MW (9.0 percent) and nuclear power is 462 MW (2.4 percent) of the total installed capacity. The details are given in Table 15.15.

Table 15.15: Total Installed Generation Capacity (MW)

Name of Power Company	Installed Capacity 2005-06	% Share	Installed Capacity 2006-07	% Share	% Change
WAPDA	11363	58.2	11363	58.5	0.0
Hydel	6463	57.7*	6463	56.9*	0.0
Thermal	4900	42.3*	4900	43.1*	0.0
IPPs	5858	30.3	5859	30.1	0.0
Nuclear	462	2.4	462	2.4	0.0
KESC	1756	9.1	1756	9.0	0.0
Total	**19439**	**100**	**19440**	**100**	0.0

* Share in WAPDA system

Source: Hydrocarbon Development Institute of Pakistan

b) WAPDA

The electricity generated by WAPDA during July-March 2006-07 was 63,020 Gwh, as against 58,928 Gwh during the corresponding period last year, thus registering an increase of 6.9 percent due to higher generation through thermal by 12.8 percent. The hydropower electricity generation accounts for 36 percent and the remaining 64 percent come from thermal. The detail is given in Table 15.16.

Table 15.16: Electricity Generation by WAPDA (GWh)

Year	Hydro	Percentage share	Thermal	Percentage share	Total
1996-97	20,858	41.1	29,924	58.9	50,782
1997-98	22,060	41.4	31,199	58.6	53,259
1998-99	22,448	41.8	31,235	58.2	53,683
1999-2000	19,287	34.3	36,585	65.7	55,872
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	22,348	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	37.53	51370	62.47	82225
July-March					
2005-06	23,316	39.6	35,612	60.4	58,928
2006-07	22,863	36.27	40,157	63.73	63,020

Includes purchase from IPPs. *Source: Water and Power Development Authority*

i) Growth in Electricity Consumers

The number of electricity consumers has increased over the years due to rapid extension of electric supply to villages and fast urbanization. The number of consumers has increased to 16.7 million till March 2007, up from 15.9 million in 2005-06, showing an increase of 5 percent over the last year and a growth of about 70 percent since 1996-97. The trend of increase in a number of consumers during last 10-years since 1996-97 is given in Table 15.17.

Table 15.17: Consumers by Economic Groups (Thousands)

Year	Domestic	Commercial	Industrial	Agriculture	Others	Total
1996-97	8155	1365	184	167	7	9878
1997-98	8455	1397	187	171	8	10218
1998-99	8912	1517	190	173	8	10800
1999-00	9554	1654	195	175	8	11586
2000-01	10045	1737	196	180	8	12166
2001-02	10483	1803	200	184	8	12678
2002-03	11044	1867	206	192	9	13318
2003-04	11737	1935	210	199	10	14092
2004-05	12490	1983	212	201	10	14896
2005-06	13390	2068	222	220	10	15911
July-March						
2005-06	13144	2044	219	214	10	15632
2006-07	14069	2132	230	233	11	16675

Source: Water and Power development Authority

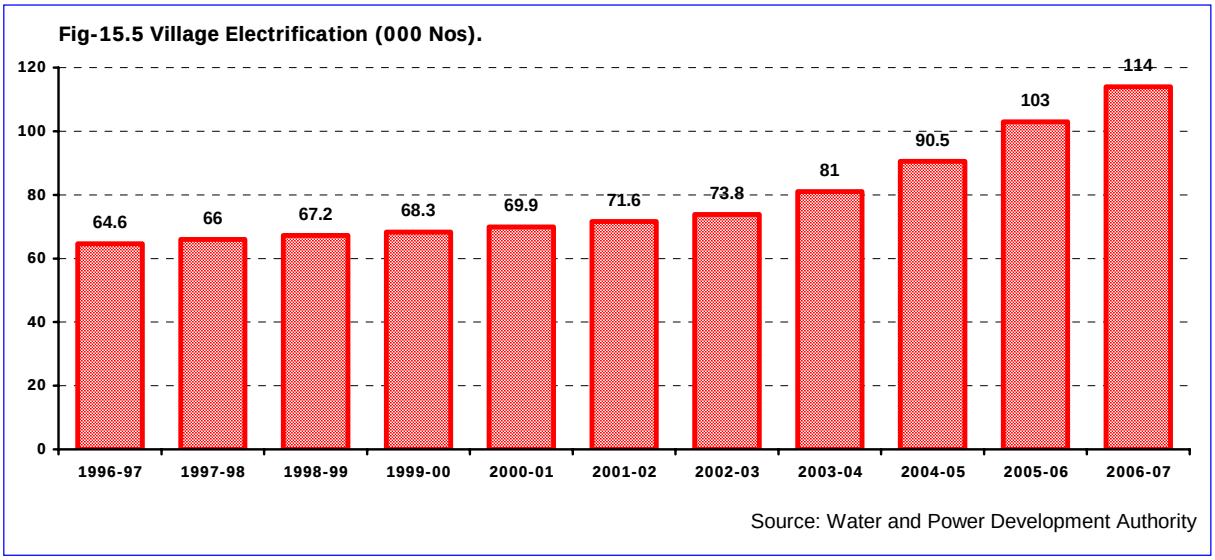
Village Electrification

In order to increase the productive capacity and socio-economic standard of the population living in the far-flung areas of the country, the government plans to electrify all the villages in the country by 2007. Nearly 7000 villages from Balochistan and 900 villages of Sindh provinces will be provided with electricity through renewable energy sources. The number of electrified villages had increased to 113,605 by the end of March 2007. The trend of village electrification during past 10 years is provided in table 15.18 & Fig-15.5. It is important to note that village electrification has increased at an average rate of 12.3 percent per annum, over the last four years as against 2.5 percent in the last seven years, prior to 2003-04. Furthermore, it took seven years (1996/97- 2002/03) to provide electricity to 11,680 villages but in just four years (2003/04-2006/07) 39,798 villages have been provided electricity.

Table 15.18: Village Electrification (Number)

Year	Target	Realization *	Progressive Total	% Growth
1996-97	4,000	2,441	64,568	3.9
1997-98	4,000	1,383	65,951	2.1
1998-99	4,000	1,232	67,183	1.9
1999-2000	1,852	1,109	68,292	1.6
2000-01	-	1,595	69,887	2.3
2001-02	-	1,674	71,561	2.4
2002-03	-	2,246	73,807	3.1
2003-04	-	7,193	81,000	9.7
2004-05	-	9,467	90,467	11.7
2005-06	-	12,764	103,231	13.5
July-March)	-			
2005-06		9,128	99,595	13.5
2006-07		10,374	113,605	14.1

*Including FATA *Source: Water and Power Development Authority*



iii) Electricity Consumption by Economic Groups

The sectoral consumption of electricity by economic groups identifies the domestic sector as the largest consumer of electricity. During the current financial year July- March 2006-07, the sector wise consumption remained at 42.4 percent for domestic consumers, 26.5 percent for industrial consumers, 12.1 percent for agriculture consumers and 6.2 percent for commercial consumers. The consumption trend for the past 10 years is given in Table 15.19 & Fig .15.6

Table 15.19: Electricity Consumption by Economic Groups (% Share)

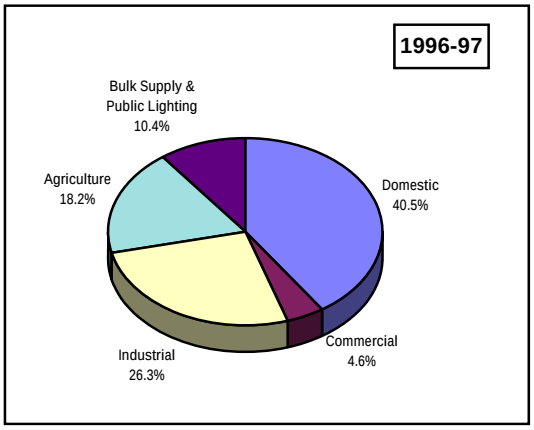
Year	Domestic	Commercial	Industrial	Agriculture	Bulk Supply & Public Lighting	Traction
1996-97	40.5	4.6	26.3	18.2	10.4	0.05
1997-98	41.5	4.5	26.0	17.5	10.3	0.04
1998-99	43.6	4.7	25.6	14.3	11.8	0.04
1999-2000	46.3	4.9	26.3	11.0	11.3	0.04
2000-01	46.1	4.9	27.1	11.3	10.6	0.03

Table 15.19: Electricity Consumption by Economic Groups (% Share)

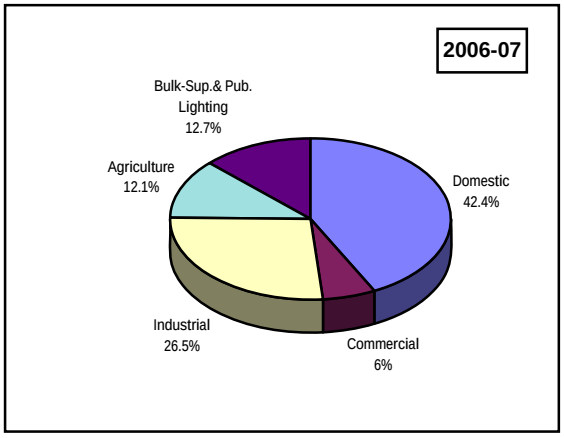
Year	Domestic	Commercial	Industrial	Agriculture	Bulk Supply & Public Lighting	Traction
2001-02	45.5	5.1	28.0	12.3	9.2	0.03
2002-03	44.0	5.3	28.4	12.6	9.7	0.02
2003-04	44.0	5.6	28.1	12.9	9.4	0.02
2004-05	43.5	5.8	28.1	12.5	10.1	0.02
2005-06	43.3	6.0	26.6	12.6	4.9	0.02
July-March						
2005-06	42.7	5.7	27.1	13.0	11.3	0.02
2006-07	42.4	6.2	26.5	12.1	12.7	0.02

Source: Water and Power Development Authority

Fig-15.6: Electricity Consumption by Economic Groups (% Share) WAPDA



Source: WAPDA



Source: WAPDA

iv) Power Losses

The National Transmission & Dispatch Company (NTDC) and DISCOs (Distribution Companies) have taken several technical and administrative measures to improve operational and managerial efficiency and reduce power losses. These measures have resulted in reduction in power losses and an increase in revenue. Other measures such as renovation, rehabilitation, capacitor installation and strengthening consumer-end distribution supply network will continue to control wastage of power/energy. The system losses of the WAPDA are on a declining trend. During 2006-07, the power losses incurred by WAPDA were 22.1 percent as against 22.8 percent in 2005-06. The transmission and distribution losses for last ten years up to July-March 2006 are given in Table 15.20.

v. Power Development Programme.

In order to enhance and strengthen its power generation capacity, WAPDA has under-taken feasibility studies/construction work for a number of hydro/thermal power projects under the VISION 2025 Programme. Work on Allai Khawr (21 MW), Khan Khawar (72 MW) and Dubair Khawar (130 MW) hydropower projects is in full swing. Implementation of Neelum-Jhelum (969 MW) hydropower project will commence shortly. Feasibility studies of a number of the hydropower projects are underway include Bunji (5400 MW) and Kohala (600 MW). After the completion of these projects, the installed capacity is expected to increase from 17431 MW to about 42000 MW by the end of Financial Year 2016.

TABLE 15.20: WAPDA Power Losses (Percent)

Year	Auxiliary Consumption	T&D Losses*	Total
1995-96	2.9	21.5	24.4
1996-97	2.4	21.7	24.1
1997-98	2.0	23.9	25.9
1998-99	1.7	25.8	27.5
1999-2000	2.1	24.6	26.7
2000-01	2.0	23.8	25.8
2001-02	2.2	23.6	25.8
2002-03	2.1	23.8	25.9
2003-04	2.0	23.5	25.5
2004-05	2.5	22.3	24.8
2005-06	2.2	21.9	22.1
(July-March)			
2005-06	1.8	21.0	22.8
2006-07	2.1	20.0	22.1

* T&D = Transmission and Distribution *Source: Water and Power Development Authority*

c. Karachi Electric Supply Corporation Ltd (KESC).

The installed capacity of KESC's various generating stations remained at 1,756 MW as against the maximum demand of 2,222 MW during July-March 2006-07. KESC's own generation has declined by 12.6 percent from 6,711 million kWh in 2005-06 to 5,867 million kWh in July-March 2006-07 due to the major overhauling of some of its power plants. The gap of 466 MW between demand and supply was bridged from different sources including 1,093 million kWh from two IPPs, 3,753 million kWh from WAPDA, KANUPP, PASMIC and Anoud Power. The total energy made available to KESC system, after taking into account the imports from various agencies (excluding auxiliary consumption), stood at 10,246 million kWh during July-March 2006-07 as against 9,981 million kWh in the same period last year, thus registering a growth of 2.7 percent. The T&D losses have increased from 33.5 percent during July-March 2005-06 to 34.1 percent in first nine months of the current financial year. KESC has undertaken a comprehensive rehabilitation program, for the restoration of its generating capacity. Under this program, major overhauling of three large units was scheduled, of which two have been completed and the third is presently under shutdown and will be completed by end May 2007. Thus additional 200 MW will be available thereafter. In addition to restoration of lost capacity, KESC plans to bring new generating plants, in two phases. Phase I, for which KESC has already entered into a contract for installation of 220 MW Combined Cycle Power Plant at Korangi. In Phase II, KESC will install a Combined Cycle Power Plant of approximately 560 MW at Bin Qasim Station. On the transmission and distribution side KESC will continue to implement network expansion and rehabilitation of existing network with a comprehensive loss reduction program. To streamline the transmission and distribution system the KESC will establish 11 new 132 kV Grid Stations. These will be commissioned along with their allied transmission lines during the year 2007-08 with a total increase of 880 MVA (Mega Volt Ampere) transformation capacity at 132/11 kV voltage level.

d. Nuclear Power Energy

Pakistan Atomic Energy Commission (PAEC) is responsible for implementation of nuclear power programme. At present, two nuclear power plants; Karachi Nuclear Power Plant (KANUPP) and Chashma Nuclear Power Plant (CHASNUPP) unit-1 are in operation, while a third plant, CHASNUPP unit-2, is under construction. KANUPP has completed its designed life of 30-years is now operating on extended life. It generated 93 million kWh of electricity during the period July-March 2006-07, rising the lifetime generation to 11.39 billion kWh. CHASNUPP -1 having a gross capacity of 325 MW generated 1,682 million kWh of electricity during July-March 2006-07, rising the lifetime generation to 13.18 billion kWh. The construction work of CHASNUPP-2 is ahead of planned schedule. It is expected that plant will be

commissioned in 2011. Government has set a target of 8,800 MW nuclear power capacity by the year 2030 with increasing share of indigenisation. To meet this target, PAEC has restructured its power sector to gradually assume greater technical responsibility in the construction of future nuclear power plants. Enhancement in indigenisation in nuclear power programme, will not only provide cheap, reliable and clean electricity, but will also help in the growth of local engineering and construction industry and creation of additional employment opportunities.

e. Alternative Energy

Presently power shortage is a worldwide phenomenon due to the accelerating levels of economic activity. According to the International Energy Agency, which acts as energy policy advisor to 26 developed countries, the world can only meet its energy needs till 2030-35 through traditional sources. Realizing the gravity of the situation many countries are taking steps to develop alternate source of energy to meet their future requirements. Similarly, Pakistan is also seeking to develop generation capacity through alternate energy including the wind and solar technologies. The goal is to ensure that at least 7 percent of total power generation capacity is met through wind & solar energy by year 2030. Installation of 700 MW wind power by year 2010 and 9700 MW wind power by year 2030 is being planned. It will electrify 7874 remote off-grid villages in Sindh and Balochistan provinces utilizing alternative energy technologies. The Alternative Energy Development Board (AEDB) has issued letter of interest (LOIs) to eighty-two national and international companies for generation of 700 MW power through wind energy by year 2010 and 9700 MW by year 2030. The AEDB has initiated the first phase of the Roshan Pakistan Program in which 400 villages in Sindh and Balochistan would be electrified within next two years. The government has planned to formulate medium-term wind energy development plan 2011-2020. The board has been working on different development projects since 2003. The brief description of renewable energy projects for 2003-06 is given in Box 15.1.

BOX 15.1

- Roshan Pakistan: National Rural electrification programe through alternative/renewable Energy Technologies
- Solar Homes Project in Each province.
- Development of Supply Chain Mechanism for Pedal Generators, Hand Generators and LED Lanterns.
- Pilot Project of Production Plant of Bio-Diesel
- Research on Development of 1 kW Fuel Cell Electric Vehicle in Pakistan using Existing Fuel Cell
- Solar Water Pumping & Desalination
- Solar Thermal Power Plant Technologies (Demonstration Units)
- Electrification of Villages through Micro Wind Turbines
- Pilot Project for Development and Installation of 02 Micro Hydro Kaplan Turbines
- Pilot project for Emerging Alternative Energy technologies Demonstration in Pakistan

f. Private Power & Infrastructure Board

Pursuant to the Government's strategy to attract private investment in the power sector, the government had drafted power policies with the objectives of removing financial burden from the exchequer; improving systems efficiency; and rationalizing prices and social subsidies. The Government has already announced Policy for Power Generation Projects 2002 (Power Policy 2002), which emphasized on provision of sufficient capacity for power generation at the least cost

through exploitation of indigenous resources like hydro, coal, gas and human resources. It is important to note that although the Power Policy 2002 provided attractive incentives for private investors, the Government of Pakistan's obligations were not reduced to a great extent. As per new Security Agreements negotiated under the Power Policy 2002, the Government's guarantee for fuel supplier's obligation has been withdrawn which was there under 1994 Policy. Besides, plant availability has been increased from 86 percent to 90 percent and the basis for capacity payments (CP) has been changed. The CP will now be made on declared 'hourly' available capacities of the plants. In response to attractive incentives offered by the Government through the Power Policy 2002, private investors have offered investment for various projects. Consequently, a number of proposals from international investors for establishment of multi-fuel power projects at various locations of the country have been received by the Private Power & Infrastructure Board (PPIB). The PPIB is currently processing forty nine projects with a combined generation capacity of 12000 MW and estimated cost of over US $ 11 billion. Out of these projects, Letters of Interest (LOI) for 28 projects with capacity of 7630 MW and estimated cost of US $ 7.43 billions have been issued so far by the PPIB. These include ten gas based / dual fired projects, nine hydro projects, five coal based projects and four projects based on oil. Further, the PPIB is processing various projects on fast track basis, including 405 MW capacity expansion of existing IPPs, 1250 MW of capacity creation through new IPPs, and 600 MW through projects proposed by the leading business houses. Through these initiatives, it is expected that a total of 2,255 MW will be available by first quarter of 2009.

Due to investor-friendly polices of the government, the economy of Pakistan is at a historical boom and the industrial growth has remained robust. Due to this unprecedented growth, the immediate power requirement has also increased manifolds. The rapid growth of the economy has resulted in sharp increase in the demand for electricity over the last couple of years, which has necessitated increase in the generation capacity. Since fossil fuel prices have been rising over the past few years there is need to shift away from fuel based electricity generation to greater reliance on hydel power. The Government is giving priority to exploiting the abundant hydel potential of the country of about 40,000 MW, of which only 15 percent has been utilized so far. The PPIB has awarded Letter of interest (LOIs) to nine hydel projects with a cumulative capacity of 2,062 MW under the 2002 Power Policy, which are envisaged to bring a direct investment of around US $ 8 billion in the country and create many job opportunities. To diversify the energy resources it is important to increase the proportion of coal based power projects in the country. In addition, the rising prices of oil in the international market as well as the depletion of natural gas resources warrant an emphasis on the coal based power generation. The option of imported coal based power projects has also been given serious considerations. Consequently, the PPIB has initiated two 1000-1200 MW imported coal based Integrated Power Projects near Karachi. The two imported coal based projects, substituting the costly fuel oil based projects, would result in potential foreign exchange savings of more than US $ 500 million annually for fuel. The projects will also bring a direct investment of more than US$ 2.5 billion in the country.

g. National Electric Power Regulatory Authority (NEPRA)

NEPRA is responsible for granting licenses, tariff determination, prescribing performance standards and addressing the complaints of electric power consumers. NEPRA gives due consideration to the financial strength of the sponsors as well as their professional ability to execute the project while granting licenses. A set procedure is followed to determine the appropriate level of expenses and rate of return allowed to a utility. The process also involves public hearings, if deemed necessary before a final determination is made. During the period July-March 2006-07, NEPRA granted licence to 13 different Independent Power Project (IPPs) and Small Power Producers (SPPs) for generation**.** NEPRA is also processing an application by the Karachi Electric Supply Corporation (KESC) for the grant of Special Purpose Transmission License (SPTL). Applications of three Small Power Producers (SPPs) were also under process for the modification of the Generation License during this period.

IV. Coal

Thar coalfield in the Sindh province has coal resources estimated at 175 billion tonnes. Due to high cost of imported energy government has decided to enhance the share of coal in the over all energy mix from 5 percent to 19 percent by 2030. Energy Security Action Plan has set a target of generating 20,000 MW power from coal by 2030 and 50 percent by 2050. The total national coal production from operational coalmines increased by 6.5 percent from 4.6 millions ton in 2005-06 to 4.9 million ton in 2006-07. Over 80 percent of coal was consumed by the brick kiln industry thus reducing the supply available for power generation. Approximately 80 percent of cement industry has also switched over to indigenous coal from furnace oil that has saved considerable foreign exchange being spent on the import of furnace oil. The conversion of cement industry from furnace oil to coal has generated a demand for 2.5 - 3.0 million tons coal per annum. To ascertain commercial viability of mining coal from Thar, German consultant M/s Rheinbraun Engineering has completed a mining feasibility on a specific block in Thar coalfield. The same block has been assigned to an international firm for commissioning of integrated coal mining and 1000 MW power generation project. Moreover, a local group has been assigned a block in Thar coalfield for conducting feasibility study for integrated coal mining and commissioning two 250 MW coal fired power-generating plants. Government has also decided to establish a coal mining company for harnessing Thar coal resource.

As a part of promotional activities to increase share of coal, the Government of Sindh has leased out a coal block to M/s Fatteh Group of Hyderabad to commission a coal-based power plant of 250 MW in Lakhra coalfield. Government has signed an agreement with Chinese company M/s China National Chemical Engineering Group Corporation (CNCEC) to conduct feasibility study on a coal block in Sonda Jerrick coalfields in Sindh province for integrated mining project of one million ton and a 250 MW coal based power plant.

TABLE 14.1

COMMERCIAL ENERGY CONSUMPTION

Fiscal Year	1. Oil/Petroleum (tonnes)						
	Households	Industry	Agricul-ture(a)	Transport	Power	Other Govt.	Total
1990-91	944,256	1,147,698	265,229	4,841,362	2,434,136	328,592	9,961,273
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
Jul-Mar							
2005-06	98,849	1,256,357	60,399	5,981,552	2,507,882	258,808	10,164,288
2006-07	79,502	1,223,587	66,781	5,729,946	4,762,329	252,070	12,114,215

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

(Contd.)

TABLE 14.1

COMMERCIAL ENERGY CONSUMPTION

(Contd.)

Fiscal Year	2. Gas (mm cft)(b)							
	Households	Commercial	Cement	Fertilizer	Power	Transport Industry	Transport (CNG)	Total
1990-91	66,797	12,317	13,020	107,954	176,409	88,841	-	465,338
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

TABLE 14.1

COMMERCIAL ENERGY CONSUMPTION

(..Contd.)

	3. Electricity (Gwh)								4. Coal (000 metric tonne)				
Fiscal Year	Trac-tion	House-hold	Commer-cial	Indus trial	Agricul-tural	Street Light	Other Govt.	Total	House-hold	Power	Brick Kilns	Cement	Total
1990-91	33	10,409	2,072	11,229	5,620	..	2,171	31,534	3.8	24.6	3,025.5	..	3,053.9
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	50.0	3,094.7
2001-02	11	23,210	2,951	15,141	5,607	212	3,490	50,622	1.1	249.4	2,577.5	664.0	3,491.6
2002-03	10	23,624	3,218	16,181	6,016	244	3,363	52,656	1.1	203.6	2,607.0	957.0	3,768.7
2003-04	9	25,846	3,689	17,366	6,669	262	3,650	57,491	1.0	184.9	2,589.4	2,508.0	5,283.5
2004-05	12	27,601	4,080	18,591	6,988	305	3,750	61,327	..	180.0	3,906.7	2,535.2	6,621.8
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
Jul-Mar													
2005-06	11	22,127	3,411	14,659	5,971	261	2,976	49,416	..	92.0	2,008.0	2,100.0	4,200.0
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

.. not available. Source: Hydrocarbon Development Institute of Pakistan (HDIP)

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)	Production (000 tonnes)	Imports (000 tonnes)	Production (000 tonnes)	Installed Capacity (MW)(a)	Generation (Gwh)(b)
1990-91	28,178	23,485	518,483	4,310	6,036	917	3,054	8,356	41,042
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
Jul-Mar									
2005-06	48,813	17,916	1,048,190	..	..	1,700	2,500	19,440	66,110
2006-07	43,764	18,217	1,062,124	6,039	7,581	2,825	2,589	19,440	71,033

+ Million cubic feet

Source: Hydrocarbon Development Institute of Pakistan (HDIP)

(a) MW: Mega Watt

(b) Gwh: Giga Watt Hour

.. : not available

TABLE 14.3

COMMERCIAL ENERGY SUPPLIES

Fiscal Year	Electricity					
	Hydroelctric (Hydel)		Thermal		Nuclear	
	Installed Capacity (MW) a	Generation (Gwh) b	Installed Capacity (MW) a	Generation (Gwh) b	Installed Capacity (MW) a	Generation (Gwh) b
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	30,854	12,489	60,283	462	2,484
Jul-Mar						
2005-06	6,499	23,324	12,479	40,963	462	1,823
2006-07	6,499	22,875	12,479	46,383	462	1,775

(a) MW: Mega Watt.

(b) Gwh: Giga Watt Hour.

Source: Hydrocarbon Development Institute of Pakistan (HDIP).

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 (101-300)	-	0.58	0.50	2.29	0.44
For next 700 units (301-1000)	-	1.51	0.50	3.55	0.44
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	-	0.58	0.53	2.29	0.47
(101-300)					
For next 700 units	-	1.51	0.53	3.55	0.47
(301-1000)					
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, WAPDA 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 (101-300)	-	0.58	0.49	2.29	0.43
For next 700 units (301-1000)	-	1.51	0.49	3.55	0.43
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, WAPDA 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

TARIFF CATEGORY	Effective from 24-02-2007	
	Fixed Charges Rs/KW	Variable Charges Rs/KWh
A-1 GENERAL SUPPLY TARIFF- RESIDENTIAL		
Upto 50 UNITS		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		7.41
Time of Day (TOD) - Peak	365	6.00
Time of Day (TOD) - Off-Peak	365	3.55
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
INDUSTRIAL SUPPLY TARIFFS		
B-1 upto 40 KW (230/400 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 TOD (Peak)	352.18	4.40
B-3 TOD (Off-Peak)	352.18	3.31
B-4 TOD (Peak)	340.03	4.29
B-4 TOD (Off-Peak)	340.03	3.15
BULK SUPPLY TARIFFS		
C-1 (a) 400-Volts Load upto 20 KW		5.68
C-1 (b) 400-V Load above 20 KW	267.17	5.27
Time of Day (TOD) Peak	365.00	6.00
Time of Day (TOD) Off-Peak	365.00	3.55
C-2 at 11/33-KV	262.31	4.96
Time of Day (TOD) Peak	355.00	5.95
Time of Day (TOD) Off-Peak	355.00	3.45
C-3 all loads	259.88	4.86
Time of Day (TOD) Peak	340.00	5.90
Time of Day (TOD) Off-Peak	340.00	3.40
AGRICUTURAL TUBEWELL TARIFFS		
D-1 - Scarp		5.41
D-2(I)- Punjab / Sindh (Normal)	87.44	3.28
D-2(II)- NWFP/Blochistan (Normal), Distts. Mianwali, Bhawalpur & Tharparkar.	87.44	2.87
Time of Day (TOD) Peak	355.00	6.00
Time of Day (TOD) Off-Peak	355.00	3.55
PUBLIC LIGHTING TARIFF		
G		7.59
RESIDENTIAL COLONIES OF INDUSTRIES		
H		6.78
RAILWAY TRACTION		
I		5.69
SPECIAL CONTRACT TARIFFS		
K(a) - AJ&K	355	1.90
Time of Day (TOD) Peak	355	6.00
Time of Day (TOD) Off-Peak	355	3.55
K(c) - Rawat Lab.		4.94

Source: WAPDA

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	1-1-2004	6-1-2004	1-2-2004	16-2-2004	1-3-2004	15-3-2004	1-4-2004	16-4-2004	1-5-2004	16-5-2004
Ex-Depot Sale Price										
Motor Gasoline										
Premium Motor Gasoline	33.78	35.48	35.33	34.47	34.80	34.75	34.57	35.37	36.92	36.92
HOBC (Automotive 100 Octane)	37.67	39.42	39.42	38.43	38.74	38.97	38.32	39.39	40.87	40.87
Super (90 Octane) Blend of Motor Gasoline @ 60% and HOBC 40%)										
Kerosene	22.38	23.22	23.55	22.18	22.41	21.98	21.98	23.00	24.00	24.00
HSD	22.78	23.85	23.85	23.77	23.77	23.77	23.44	24.02	24.37	24.37
LDO	18.63	19.62	20.29	19.84	19.91	19.75	19.45	20.03	21.05	21.05
Aviation gasoline (100LL)										
JP-1:										
i) For sale to PIA Domestic Flight	15.96	16.72	17.02	15.31	15.70	15.41	15.88	16.17	18.23	19.72
ii) For sale to PIA foreign flights & foreign airline										
iii) For Cargo & Technical Landing Flights										
JP-4	19.68	20.91	21.00	19.15	16.69	19.75	19.94	20.37	21.82	23.03

Source: Hydrocarban Development Institute of Pakistan(HDIP)

TABLE 14.5

OIL SALE PRICES

Rs/Ltrs

Date	1-6-2004	16-6-2004	1-7-2004	16-7-2004	1-8-2004	16-8-2004	1-9-2004	16-9-2004	1-10-2004	16-10-2004
Ex-Depot Sale Price										
Motor Gasoline	36.92	36.92	36.92	36.92	36.92	36.92	36.92	36.92	36.92	36.92
HOBC (Automotive 100 Octane)	40.87	40.87	40.87	40.87	40.87	40.87	40.87	40.87	40.87	40.87
Super (90 Octane) Blend of Motor Gasoline @ 60% and HOBC 40%)										
Kerosene	24.00	24.00	24.00	24.00	24.00	24.00	24.00	24.00	24.00	24.00
HSD	24.37	24.37	24.37	24.37	24.37	24.37	24.37	24.37	24.37	24.37
LDO	21.05	21.05	21.05	21.05	21.05	21.05	21.05	21.50	12.05	21.05
Aviation gasoline (100LL)										
JP-1:										
i) For sale to PIA Domestic Flight	19.65	18.47	18.40	19.60	20.85	22.20	23.29	22.76	24.86	26.06
ii) For sale to PIA foreign flights & foreign airline										
iii) For Cargo & Technical Landing Flights										
JP-4	23.41	22.26	21.80	22.47	23.64	25.53	26.54	25.62	27.39	28.90

Source: Hydrocarban Development Institute of Pakistan(HDIP)

TABLE 14.5

OIL SALE PRICES

Rs/Ltrs

Date	1-11-2004	16-11-2004	1-12-2004	16-12-2004	1-1-2005	16-1-2005	2-2-2005	16-2-2005
Ex-Depot Sale Price								
Motor Gasoline	36.92	36.92	36.92	39.50	40.39	40.39	42.39	42.39
Premium Motor Gasoline								
HOBC (Automotive 100 Octane)	40.87	40.87	40.87	43.73	44.59	44.59	47.32	47.32
Super (90 Octane) Blend of Motor Gasoline @ 60% and HOBC 40%)								
Kerosene	24.00	24.00	24.00	25.50	26.04	26.04	27.04	27.04
HSD	24.37	24.37	24.37	25.96	26.21	26.21	27.16	27.16
LDO	21.50	21.05	21.05	22.41	22.92	22.92	24.33	24.33
Aviation gasoline (100LL)								
JP-1:								
i) For sale to PIA Domestic Flight	27.55	25.36	24.24	21.84	21.68	20.88	23.21	23.18
ii) For sale to PIA foreign flights & foreign airline								
iii) For Cargo & Technical Landing Flights								
JP-4	29.83	27.84	27.06	25.21	24.71	23.65	25.98	26.29

Source: Hydrocarban Development Institute of Pakistan(HDIP)

TABLE 14.5

OIL SALE PRICES

Rs/Ltrs

Date	1-3-2005	16-3-2005	1-4-2005	16-04-2005	01-05-2005	17-05-2005	01-06-2005	16-06-2005
Ex-Depot Sale Price								
Motor Gasoline	43.96	45.53	45.53	45.53	45.53	45.53	45.53	45.53
HOBC (Automotive 100 Octane)	48.94	50.52	50.52	50.52	50.52	50.52	50.52	50.52
Super (90 Octane) Blend of Motor Gasoline @ 60% and HOBC 40%)								
Kerosene	27.98	27.98	27.98	27.98	27.98	27.98	27.98	27.98
HSD	28.21	29.06	29.06	29.06	29.06	29.06	29.06	29.06
LDO	25.37	26.39	26.39	26.39	26.39	26.39	26.39	26.39
Aviation gasoline (100LL)								
JP-1:								
i) For sale to PIA Domestic Flight	24.77	28.16	29.83	31.82	31.03	29.15	27.19	29.36
ii) For sale to PIA foreign flights & foreign airline								
iii) For Cargo & Technical Landing Flights								
JP-4	27.89	30.39	31.81	32.89	31.76	29.97	28.61	29.87

Source: Hydrocarban Development Institute of Pakistan(HDIP)

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 14.6

GAS SALE PRICES

(Rs/mcft)

/ Category	01.3.2002	23.7.2002	20-8-2002	25.10.2002	1-7-2003	1.1.2004	1-7-2004
DOMESTIC (Slab)							
Upto 1.77 MCUFT / Month	..	..	..	..	..	..	..
I Upto 3.55	66.86	66.86	66.86	67.95	69.31	69.31	73.95
II 3.55 to 7.1	100.73	100.73	100.73	102.37	104.42	104.42	111.42
III 7.1 to 10.64	161.16	161.16	161.16	163.78	167.06	167.06	178.25
IV 10.64 to 14.20 (MCFT/M)	201.45	201.45	201.45	213.06	217.32	217.32	231.88
V All over 14.20	217.85	217.85	217.85				
COMMERCIAL	186.98	186.98	186.98	190.02	193.82	193.82	204.88
General	166.18	166.18	166.18	168.88	172.26	172.26	182.09
Captive Power							
Cement	194.68	194.68	222.32	222.32	209.78	209.78	209.78
CNG Station	166.18	166.18	166.18	168.88	172.26	172.26	182.09
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
Dadoud/ Pak Arab	59.59	59.59	62.57	62.57	67.26	67.26	73.99
Pak china/ Hazara	63.24	63.24	66.40	66.40	71.38	71.38	78.52
(ii)For Fuel Generation	166.18	166.18	166.88	168.88	172.26	172.26	182.09
FOR MARI GAS CO. SYSTEM							
(i)For Feed Stock							
FFC Engro Chemical	13.09	13.09	13.09	13.09	66.31	66.31	72.94
Pak Saudi	58.74	61.68	61.68	61.68	66.31	66.31	72.94
(ii)For Power Generation	166.18	166.18	166.18	168.88	172.26	172.26	182.09
SNGPL & SSGCL'S SYSTEM	166.18	166.18	166.18	168.88	172.26	172.26	182.09
Liberty Power Ltd.	202.98	202.98	190.8	190.8	235.77	225.78	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	166.41	175.90
MARI FIELD (754 BTU)	156.14	156.14	156.14	158.68	161.85	161.85	171.08
SARA/SURI FIELD	156.14	156.14	156.14	158.68	161.85	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	1.1.2005	2-2-2005	1-7-2005	1-1-2006	1-7-2006	1-2-2007
DOMESTIC (Slab)						
Upto 1.77 MCUFT / Month	..	..	..	..	85.03	78.38
I Upto 3.55	73.95	73.95	73.95	80.98	89.03	82.07
II 3.55 to 7.1	111.42	120.61	127.92	147.41	162.07	149.4
III 7.1 to 10.64	178.25	192.96	204.17	235.84	259.29	239.01
IV 10.64 to 14.20 (MCFT/M)	231.88	251.01	265.59	306.79	337.30	310.92
V All over 14.20						
COMMERCIAL	204.88	221.78	234.67	271.07	298.03	268.23
General	182.09	197.11	208.56	240.91	264.87	238.38
Captive Power		179.11	208.56	240.91	264.87	238.38
Cement	209.78	227.09	240.28	277.55	305.15	305.15
CNG Station	182.09	197.11	208.56	240.91	264.87	264.87
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
Dadoud/ Pak Arab	73.99	73.99	83.24	83.24	91.52	91.52
Pak china/ Hazara	78.52	78.52	88.34	88.34	97.11	97.11
(ii)For Fuel Generation	182.09	197.11	208.56	240.91	264.87	238.38
FOR MARI GAS CO. SYSTEM						
(i)For Feed Stock						
FFC Engro Chemical	72.94	72.94	82.06	82.06	90.22	90.22
Pak Saudi						
(ii)For Power Generation	182.09	182.09	208.56	240.91	264.87	238.38
SNGPL & SSGCL'S SYSTEM	182.09	197.11	208.56	240.91	264.87	238.88
Liberty Power Ltd.	262.03	262.03	303.25	413.46	467.52	445.98
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
MARI FIELD (754 BTU)	171.08	185.19	195.95	226.34	248.85	223.96
SARA/SURI FIELD	171.08	185.19	195.95	226.34	248.85	223.96

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