

# Energy

# 13

Energy sector issues and developments continued to severely constrain Pakistan's economy in 2009-10. Against a backdrop of a sharp increase in the international price of oil through calendar 2009, which put enormous upward pressure on the cost structure in the power generation (and transport) sector, in particular, large domestic supply shortages of electricity and gas occurred. Lower accumulation of water reserves in dams compounded the severity. The cumulative effect of the energy crisis on the economy is estimated at upward of 2 percent of GDP during 2009-10 alone.

Developments outlined above engendered a negative feedback loop in the electricity sector, giving rise to the inter-corporate "circular" debt issue in the entire energy supply chain. The lower availability of hydel resources for generation, and a higher than normal shortage of gas, skewed the "fuel mix" of the electricity generation sector towards fuel oil. Since this occurred at a time of a doubling of the international oil price, the effect on the cost structure of the utilities was amplified greatly. With no change allowed in the electricity tariff between 2003 and 2007, the compounded effect on the viability of the energy sector has been devastating. Some idea of the "viability gap" that had built up in the electricity generation sector can be had from the fact that, prior to the most recent tariff increase, the gap between average generation cost and recovery was close to 30 percent.

Despite hefty increases in end-user electricity tariffs over the past two years, a significant gap still exists between generation cost and recovery, due in large part to the adverse developments outlined above. This "imbalance" between cost of generation and distribution, and the final tariff, is the root cause of the circular debt issue, with each downstream player in the energy chain being forced to delay payments to upstream entities (for fuel supplies). The net effect is a declining effective utilization of available generation capacity in the system.

The cumulative effect has been that the growth rate of Pakistan's primary energy supply, which began decelerating in 2007-08, has turned negative in 2008-09 and 2009-10 (July-March). Final energy consumption is estimated to have declined by 5.3 percent during calendar 2009.

## **Pakistan's Energy Sector**

### **13.1 Supply of Energy**

Primary energy supply and per capita availability of energy witnessed a decline of 0.64 percent and 3.09 percent respectively during July-March 2009-10 over the same period last year (see Table 13.1). This decrease in the primary energy supply and per capita availability during the first nine months of the current fiscal year is higher than its fall in the full year of 2008-09 when primary energy supply and per capita availability narrowed down by 0.58 percent and 2.27 percent respectively. The fall in energy supply during current period can be attributed to inter corporate circular debt problem.

**Table 13.1: Primary Energy Supply and Per Capita Availability**

Year	Energy Supply		Per Capita	
	Million TOE	Change (%)	Availability (TOE)	Change (%)
1998-99	41.72		0.31	
1999-00	43.19	3.51	0.32	1.28
2000-01	44.40	2.82	0.32	0.63
2001-02	45.07	1.50	0.32	-1.25
2002-03	47.06	4.41	0.32	2.86
2003-04	50.85	8.06	0.34	5.25
2004-05	55.58	9.26	0.36	6.45
2005-06	58.06	4.18	0.37	2.48
2006-07	60.62	4.33	0.38	2.61
2007-08	62.92	3.78	0.39	2.86
2008-09	62.55	-0.58	0.38	-2.27
<b>Jul-Mar</b>				
2008-09	47.1		0.29	
2009-10 E	46.8	-0.64	0.28	-3.09

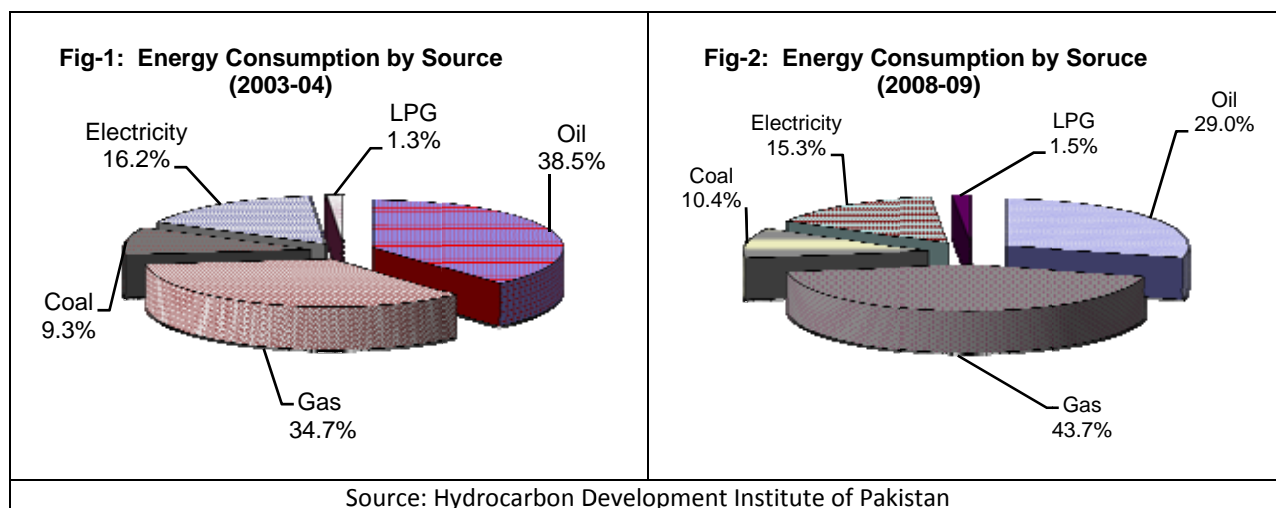
TOE- Tons of Oil Equivalent

Source: Hydrocarbon Development Institute of Pakistan.

E : estimated

### 13.2 Energy Consumption

During 2008-09, Pakistan's final energy consumption of about 37.3 million tons of oil equivalent are met by mix of gas, oil, electricity, coal and LPG sources with the different levels of shares. As, the share of gas consumption stood at 43.7 percent in total energy mix of country during 2008-09 followed by oil 29.0 percent, electricity 15.3 percent, coal 10.4 percent and LPG 1.5 percent. Furthermore, this energy consumption mix has witnessed significant changes since 2003-04 (See Fig 1 and Fig 2). As a result, the major consumption sources of gas witnessed an increased of 9.0 percentage points during 2008-09 compared to 2003-04 while oil consumption share declined by 9.5 percentage points during the period under review. These changes in consumption of gas and oil mainly owed to shift from imported expensive fuel to relatively cheaper source of gas. Furthermore, the share of coal consumption increased due to its higher production during the period under review. The shifting of energy consumption towards indigenous resources saves the considerable amount of foreign reserve during the period.



During the last ten years (1999-00 to 2008-09), the consumption of petroleum products has increased by an average rate of 0.5 percent per annum. The consumption of gas, electricity and coal has increased at an average rate of 6.8 percent, 5.0 percent and 12.5 percent per annum (see Table 13.2). This long term trend suggests that composition of annual energy consumption is shifting from petroleum products to other energy sources.

Energy consumption in all sources has witnessed a negative growth rate during 2008-09 mainly on the back of lower economic activity and circular debt problem during the period.

Whereas, due to revival in the macroeconomic activity, the energy consumption in petroleum products, gas and coal has witnessed a positive growth rates of 8.1 percent, 3.0 percent and 10.0 percent respectively during July-March 2009-10 over the corresponding period last year. While the decline of 1.7 percent in energy consumption of electricity is mainly owed to circular debt problem during July-March 2009-10.

Fiscal Year	Petroleum Products		Gas		Electricity		Coal	
	Tonnes (000)	Change (%)	(mmcft)	Change (%)	(Gwh)	Change (%)	M.T* (000)	Change (%)
07-08	18,080	7.3	1,275,212	4.4	73,400	0.9	10,111	28.1
08-09	17,911	-0.9	1,269,433	-0.5	70,371	-4.1	8,390	-17.0
<b>Avg. 10 years</b>		<b>0.5</b>		<b>6.8</b>		<b>5.0</b>		<b>12.5</b>
<b>Jul-Mar</b>								
08-09	12,892		931,700		55,614		4,822	
09-10 (e)	13,937	8.1	959,475	3.0	54,653	-1.7	5,304	10.0

*e: Electricity consumption for AJ&K is estimated on the basis of actual six months data*

*\*Million Tonnes* *Source: Hydrocarbon Development Institute of Pakistan*

### 13.3. Component Wise Performance of Energy

#### 13.3-a Petroleum Product

The petroleum products energy supplies during July-March 2009-10 increased to 16.3 million tonnes from 14.2 million tonnes in same period last year thereby witnessing the 14.6 percent growth during the period. Due to increased petroleum products energy supplied, the overall consumption of petroleum products exhibits an increase of 8.1 percent during July-March 2009-10 against the same period last year (see table 13.3).

Year	House holds	Change (%)	Industry	Change (%)	Agriculture	Change (%)	Transport	Change (%)	Power	Change (%)	Other Govt.	Change (%)	Total
2007-08	121	14.1	1,071	-32.9	109	12.7	9,384	17.6	7,084	5.1	311	-4.5	18,080
2008-09	97	-19.5	969	-9.5	70	-36.2	8,837	-5.8	7,570	6.9	367	18.2	17,911
<b>Jul-Mar</b>													
2008-09	75		718		50		6,309		5,497		245		12,892
2009-10	68	-9.1	750	4.4	44	-11.2	6,580	4.3	6,271	14.1	223	-8.9	13,937

*Source: Hydrocarbon Development Institute of Pakistan*

The power, industry and transport sectors consumed the higher quantity of petroleum products during the period under consideration. Improvement of domestic demand led the increase in the consumption of petroleum products by transport and industry. While the power sector consumption of petroleum

products is based on circular debt faced by refineries forcing them to consume higher amount of final petroleum products.

### 13.3-b Natural Gas

The supply of gas has exhibited an increase of 1.6 percent during July-March 2009-10. The increase in supply owes to higher production of 1.6 percent in natural gas during the period under review. Due to this increase in availability of natural gas, the overall consumption of gas remained higher during the period. Furthermore, the sector wise consumption of gas suggests that the household, commercial, fertilizer and transport sector witnessed positive growth in consumption of gas during 2008-09.

More recently, with the exception of cement and power sectors, many major sectors have witnessed positive growth rates during July-March FY10 (see Table 13.4). The consumption of gas by industry has witnessed a significant increase of 5.3 percent during July-March 2009-10 especially after the declined of 1.1 percent during 2008-09. The increase in industrial consumption owes to rise in domestic demand for manufacturing production during the period.

The maximum decline of 72.7 percent has been witnessed in cement sector's gas consumption on the back of contraction in its external demand during the period along with the switch over to coal for production. Decline in power sector's gas consumption is based on the inter corporate circular debt reason. On the other hand, gas consumption in the transport sector increase due to shift from imported fuel oil to relatively cheaper source of gas during July-March 2009-10.

Year	House hold	Change (%)	Commercial	Change (%)	Cement	Change (%)	Fertilizer	Change (%)	Power	Change (%)	Industrial	Change (%)	Transport (CNG) <sup>P</sup> mmcft	Change (%)
07-08	204.0	9.7	33.9	9.4	12.7	-13.3	200.1	3.1	429.8	-1.0	322.6	5.2	72,018.0	27.6
08-09	214.1	4.9	35.5	4.8	7.3	-42.6	201.1	0.5	404.1	-6.0	319.0	-1.1	88,236.0	22.5
<b>Jul-Mar</b>														
08-09	171.9		26.4		6.1		149.6		278.3		233.8		65,725.0	
09-10 (p)	184.5	7.4	28.6	8.3	1.7	-72.7	162.5	8.6	264.8	-4.8	246.1	5.3	71,225.0	8.4

P: Provisional

Source: Hydrocarbon Development Institute of Pakistan

### 13.3-c Electricity

For reasons discussed earlier, the overall electricity consumption has followed a declining trend since 2008-09. As overall electricity consumption in the country has witnessed a negative growth of 1.7 percent during July-March 2009-10 over the same period last year (see Table 13.5).

Year	Traction	House hold		Commercial		Industrial		Agriculture		Street Light		Other Govt.		Total
		GWH (000)	Change (%)	GWH (000)	Change (%)	GWH (000)	Change (%)	GWH (000)	Change (%)	Gwh	Change (%)	GWH (000)	Change (%)	
07-08	8.0	33.7	1.2	5.6	3.7	20.7	-1.9	8.5	3.7	415.0	7.2	4.5	2.3	73,400
08-09	5.0	32.3	-4.2	5.3	-6.2	19.3	-6.6	8.8	3.5	430.0	3.6	4.3	-5.0	70,371
<b>July-March</b>														
08-09	4.0	23.6		3.8		14.6		6.5		307.0		6.8		55,614
09-10 (e)	2.0	24.9	5.2	4.1	7.9	14.7	1.1	7.2	11.2	364.0	18.6	3.3	-50.7	54,653

Source: Hydrocarbon Development Institute of Pakistan

e: Electricity consumption for AJK is estimated on the basis of actual six months data

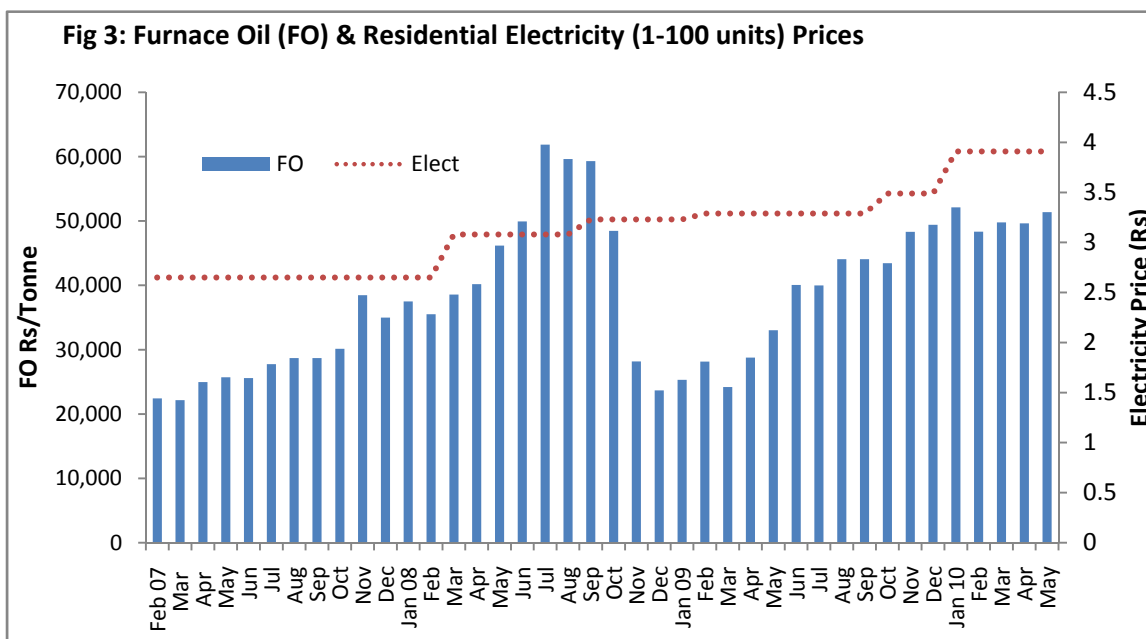
### Box-1: Circular Debt Situation and Steps Taken

The circular debt problem plaguing the power sector stems from a disparity between cost and tariffs of Energy. The inability to increase the consumers' energy tariff prior to fiscal year 2007-08 even though generation cost kept increasing gave rise to substantial cost-tariff differential. This situation was further complicated by the increase in the international price of oil during 2008 (see Fig 3), a major input in the generation of electricity. As the subsidy element (difference between cost and tariff) grew, large amounts of circular debt were created whereby power producing companies were unable to receive payments from distribution companies, in-turn the power producers could not make payments to the fuel suppliers.

Currently the government is regularly revising the power tariffs in line of international oil prices changes to recover the cost of power. As evident from the rising furnace oil prices thereby increasing the electricity prices (see Fig 3)

#### Circular Debt Resolution

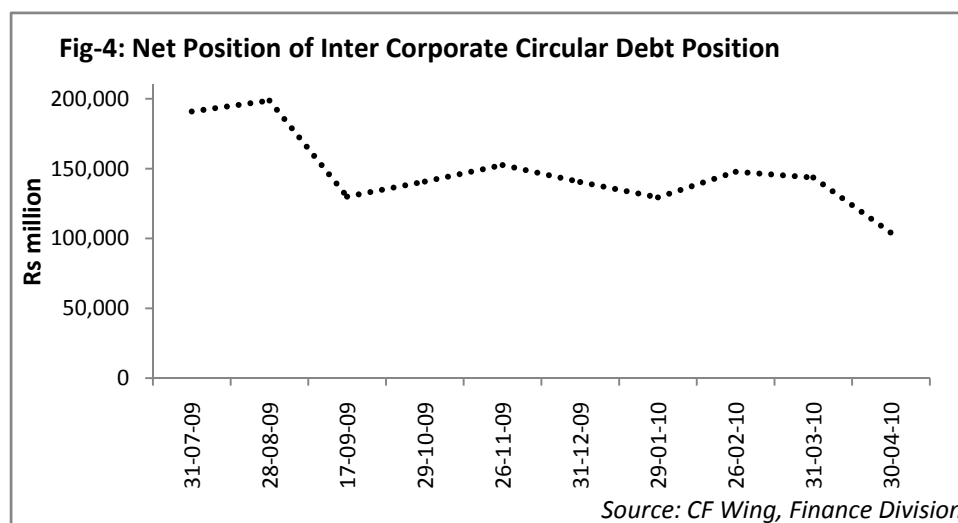
On 01-06-2009	Rs 214 billion
On 30-06-2009	Rs 216 billion
On 18-05-2010	Rs 120 billion



- ➔ Assumption of Rs. 301.0 billion by Power Holding Company will to be complete soon. Markup payments of loan are being made regularly. Rs. 40.0 billion paid.
- ➔ Power tariff differential claim (subsidy) paid to power sector companies. Rs. 95.0 billion.
- ➔ Government has picked up entire past liability of FATA of Rs 85.0 billion.
- ➔ Government of Pakistan picked up PEPCO's receivables on account of FATA's current dues. Rs. 16.7 billion.
- ➔ Office of Government Adjuster has been activated to improve recoveries from provinces.
- ➔ PEPCO is being persuaded to pro-actively recover the dues from defaulting private consumers.
- ➔ Power tariff are being reviewed regularly to recover the cost of power.
- ➔ Measures are being taken to restructure the sector in order to improve its efficiency.

- ➔ Energy Summit has been convened on 19-20 April, 2010 to resolve Power Sector issues.
- ➔ An amount of Rs. 116.0 billion will be provided to the system under a plan submitted by Finance Division. Out of which Rs. 66.0 billion will be disbursed by Federal Government. Rest by the Provincial Governments.

In addition, the net position of overall circular debt is witnessing a declining trend during July-April 2009-10 (see Fig-4). As the end-month net position of overall circular debt declined from Rs. 190,953 million in July 2009 to Rs. 103,939 million in the month of April 2010.



The company wise receivables, payables and net position of overall circular debt as on 30<sup>th</sup> April 2010 is presented in the table below.

INTER CORPORATE CIRCULAR DEBT AS ON 30TH APRIL 2010				(Rs. in million)
RECEIVABLES	Principal	PAYABLES	Principal	Net Position of Entities
PSO				
PEPCO	36,496	PARCO	31,383	
HUBCO	39,027	PRL	12,340	
KAPCO	21,844	NRL	9,525	
OGDCL	194	ARL	17,485	
PIA	1,120	Bosicor	4,794	
Others	1,300			
Price Differential Claim	6,440	Other	469	
<b>Total</b>	<b>106,421</b>	<b>Total</b>	<b>75,996</b>	<b>30,425</b>
SSGCL				
KESC	17,510	OGDCL	14,221	
PEPCO (JPCL)	5,974	GHPL	6,162	
PEPCO (QUETTA)	21	PPL	6,828	
SNGPL	1,673			
Pakistan Steel	1,067			
GDS	-			
<b>Total</b>	<b>26,245</b>	<b>Total</b>	<b>27,211</b>	<b>-966</b>
SNGPL				
PEPCO	5,212	OGDCL	10,320	

Liberty Power	-	PPL	6,508	
Government of Pakistan	1,863	GHPL	1,993	
GDS	3,064	SSGCL	1,585	
Govt. Consumers	1,741			
Total	11,880	Total	20,406	-8,526
PEPCO				
KESC	42,249	Gas	24,073	
FATA	4,898	OIL	31,996	
Provincial/Fed.Govt.Deptt.&AJK	35,591	IPPs	120,255	
Govt. of Balochistan/GOB Share	12,273	WAPDA Hydel	45,903	
Private	94,414			
Others	1,580	Others	8,488	
Total	191,005	Total	230,715	-39,710
OGDCL				
SNGPL	14,972	PSO	78	
SSGCL	16,233	ENAR	3	
PSO	36	GHPL	71	
ARL	20,108			
NRL	9,055			
PRL	7,253			
PARCO	2,710			
ENAR	160			
PEPCO	26			
UPL	3,395			
BOSICOR Pak.Ltd	5,338			
KESC(Pirkoh Gas Co.)	607			
Total	79,891	Total	151	79,740
PARCO				
PRL	-	NRL	-	
NRL	-	PRL	-	
PSO	29,857	OGDCL	-	
Others	-			
Total	29,857	Total	-	29,857
KESC				
Federal Government	-	NTDC/PEPCO	13,700	
Federal Auton.Bodies	-	KANUPP	2,160	
Sindh/Bal.Govt.Deptt.& Others	2,010	TAPAL	2,190	
City Distt.Govt.Karachi (CDGK)	3,130	Gul Ahmed Energy	2,980	
KW & SB	9,660	SSGCL	12,570	
		PSO/Other Fed/Prov. Dues	4,810	
Total	14,800	Total	38,410	-23,610
GHPL				
SSGCL	6,716			
SNGPL	2,492			
ARL	465			
PRL	89			
NRL	52			

ENAR	-			
PARCO	683			
Bosicor	0			
OGDCL	70			
Gas Fon	-			
Total	10,567	Total	-	10,567
PPL				
PEPCO	9,711			
SSGCL	7,540			
SNGPL	8,603			
PRL	77			
Total	25,931	Total	-	25,931
KW&SB				
Federal Ministries	8,044	KESC	7,814	
Total	8,044	Total	7,814	231
GRAND TOTAL	504,642		400,703	103,939

*Source: CF Wing, Finance Division*

### 13.3-d Coal

Pakistan has coal resources estimated at over 185 billion tonnes, including 175 billion tonnes identified at Thar coalfields in Sindh province. Pakistan's coal generally ranks from lignite to sub-bituminous. After witnessing a decline of 17.0 percent in 2008-09, the total production of coal has increased by 10.0 percent during July-March 2009-10 over the corresponding period last year (see Table 13.6). This improvement owes to increased import of coal during the period as indigenous production of coal witnessed a decline 6.5 percent during the period under review. As a result, share of coal imports in overall availability of coal, increased from 62.2 percent in July-March 2008-09 to 67.9 percent during current fiscal year. About 58.9 percent of total coal in the country has been consumed by the brick kilns industry whereas 39.6 percent consumed by cement industry during the period of July-March 2009-10. The coal consumption shares of brick kilns and power sectors decreased by 2.4 percent and 35.8 percent respectively during July-March 2009-10 against the same period last year. Due to price differential between coal and furnace oil, almost the whole cement industry has been switched over to coal from furnace oil. Operational coal mines decreased production by 15 percent from 4.12 million tonnes in 2007-08 to 3.49 million tonnes in 2008-09.

**Table 13.6: Production of Coal (000 tonnes)**

Year	Imports	Production	Total
2000-01	950	3,095	4,045
2001-02	1,081	3,328	4,409
2002-03	1,578	3,312	4,890
2003-04	2,789	3,275	6,064
2004-05	3,307	4,587	7,894
2005-06	2,843	4,871	7,714
2006-07	4,251	3,643	7,894
2007-08	5,987	4,124	10,111
2008-09	4,652	3,738	8,390
<b>July-March</b>			
2008-09	3,000	1,822	4,822
2009-10 (e)	3,600	1,704	5,304

*e: Estimated*

*Source: M/o Petroleum Natural Resource, Hydrocarbon Development Institute of Pakistan*



## 13.4. Energy Production

### 13.4-a Crude Oil

The balance recoverable reserves of crude oil in the country as on January 1<sup>st</sup> 2010 have been estimated at 303.63 million barrels. The average crude oil production during July-March 2009-10 was 65,246 barrels per day as against 66,531 barrels per day during the corresponding period of last year, showing a decrease of 1.9 percent. During the period under review, 27,659 (42 percent) barrels per day were produced in northern region and 37,586 (58 percent) barrels per day in southern region, as against 26,888 (40 percent) barrels and 39,643 (60 percent) barrels produced per day respectively in the same period last year. During July-March 2009-10, production crude oil has increased by 2.9 percent from northern region whereas productions decrease in southern region by 5.2 percent as compared to same period's overall 1.9 percent oil production decreased in the country. The company wise detail of production of crude oil during July-March. 2009-10 and corresponding period of the last fiscal year is as given in Table 13.7.

**Table 13.7: Production of Crude Oil (BPOD)**

Region	2008-09	July-March	July-March	Change (%)
		2008-09	2009-10	
<b>Northern Region</b>	<b>26,517.94</b>	<b>26,888.20</b>	<b>27,659.17</b>	<b>2.9</b>
Dewan	179.32	197.64	102.02	-48.4
OGDCL	15,520.98	15,351.43	15,095.14	-1.7
OPII	410.78	401.01	532.93	32.9
POL	3,584.53	3,839.05	4,079.64	6.3
PPL	4,559.24	4,672.11	4,635.96	-0.8
MOL	2,263.09	2,426.96	3,212.47	32.4
<b>Southern Region</b>	<b>39,326.70</b>	<b>39,643.29</b>	<b>37,586.52</b>	<b>-5.2</b>
OGDCL	24,963.92	25,393.15	21,683.20	-14.6
BP (Pakistan)	10,385.48	9,654.17	12,001.83	24.3
PPL	137.48	146.74	411.86	180.7
BHP	2,716.24	2,720.06	2,949.74	8.4
OMV	66.93	64.25	70.05	9.0
ENI	384.49	386.00	340.87	-11.7
OPII	637.59	1240.36	-	-100.0
MGCL	-	-	2.28	
Petronas	34.56	38.56	126.68	228.5
<b>Total:</b>	<b>65,844.64</b>	<b>66,531.49</b>	<b>65,245.69</b>	<b>-1.9</b>

*Source: Ministry of Petroleum & Natural Resources*

### 13.4-b Natural Gas

The importance of natural gas to the country has been increasing rapidly. As on January 1<sup>st</sup> 2010, the balance recoverable natural gas reserves have been estimated at 28.33 trillion cubic feet. The average production of natural gas during July-March 2009-10 was 4,048.76 million cubic feet per day (mmcf) as against 3,986.53 (mmcf) during the corresponding period of last year, showing an increase of 1.56 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. Currently 28 private and public sector companies are engaged in oil and gas exploration & production activities. Company wise total natural gas production is presented in Table 13.8.

**Table 13.8: Production of Natural Gas (mmcf)**

Region	2008-09	July-March	July-March	Change (%)
		2008-09	2009-10	
BHP	446.65	435.36	524.11	20.39
ENI	420.33	416.6	434.11	4.20
Dewan	38.14	40.45	16.12	-60.15
MGCL	464.95	469.07	494.32	5.38
OGDCL	933.01	920.11	872.1	-5.22
OMV	473.11	467.61	439.13	-6.09
OPII	29.8	54.14	7.54	-86.07
POL	24.58	25.81	24.55	-4.88
PPL	810.35	812.17	794.99	-2.12
Tullow	9.24	12.69	1.61	-87.31
PEL	30.43	30.66	28.19	-8.06
BP	244.98	222.99	246.53	10.56
Petronas	13.99	15.4	16.26	5.58
MOL	62.3	63.45	149.2	135.15
<b>Total:</b>	<b>4,001.86</b>	<b>3,986.53</b>	<b>4,048.76</b>	<b>1.56</b>

*Source: Ministry of Petroleum & Natural Resources*

**(i) Liquefied Petroleum Gas (LPG):**

Liquefied Petroleum Gas (LPG) contributes about 0.7 percent of the country's total energy supply mix. The main objective to enhance the use of LPG is to stop deforestation in the areas where the supply of natural gas is technically not viable. As a result of government's investor friendly policies, LPG supplies have gradually increased. The corner stone of LPG Policy is to ensure enhanced availability of LPG at a competitive price to the end consumer. LPG marketing companies have imported around 62,920.3 MT of LPG during July-March, 2009-10.

**(ii) Compressed Natural Gas (CNG):**

In an effort to reduce dependency on other fuels as well as to improve the environment, the use of CNG in vehicles is being encouraged. Due to existing price differential between CNG & Petrol, vehicles are being converted to CNG and approximately 2.0 million vehicles are using CNG in the country. The number of CNG Stations is ever increasing with an increase in the vehicle conversion rate resultantly there are about 3,116 established CNG Stations operational in the country. With an investment of over Rs.70 Billion, Pakistan at present is the largest CNG user country in the world. In addition, the Government has recently approved the project of "Private-Public Partnership Based Environment Friendly Public Transport System for Major Urban Centers of Pakistan" which is being actively pursued with the provincial governments leading to gradual phase out of diesel operated intra-city urban transport to achieve import substitution.

**(iii) Liquefied Natural Gas(LNG):**

The Government is encouraging LNG import by the private sector. Accordingly, Pakistan Mashal LNG Project (PMLP) was conceived to cater for the energy need of the country as envisioned in the 25 year National Energy Security Plan and identified in the Energy Gap Coverage Strategy.

PMLP is to be set-up on an integrated basis whereby a private sector project developer will manage the

entire supply chain including procurement and shipping of 3.5 million tonnes per annum LNG, construction and operation of an onshore LNG receiving terminal, and delivery of 500 MMCFD re-gasified LNG to the SSGC's system in Karachi. Mashal (Phase-I) will be based on Floating Storage and Regasification Unit (FSRU).

#### 14.4-c Drilling Activities

During July-March 2009-10, altogether 50 wells have been drilled, including 16 wells in the public sector and 34 in the private sector as against 60 in the same period last year registering a decrease of 16.67 percent. Total investment of \$ 888.80 million has so far been made in the current financial year in the upstream petroleum sector. Table 13.9 provide the details of drilling activities of the public and private sector companies, engaged in the exploration and development of wells, with achievement during July-March 2009-10 and corresponding period last year.

Sector	2008-09	July-March	July-March	Change (%)
		2008-09	2009-10	
<b>Public Sector (OGDCL)</b>	<b>30</b>	<b>20</b>	<b>16</b>	-20.00
i) Exploratory	12	7	8	14.29
ii) Appraisal/Dev	18	13	8	-38.46
<b>Private Sector</b>	<b>56</b>	<b>40</b>	<b>34</b>	-15.00
iii) Exploratory	15	10	10	0.00
iv) Appraisal/Dev.	41	30	24	-20.00
<b>Total:</b>	<b>86</b>	<b>60</b>	<b>50</b>	-16.67

Source: Ministry of Petroleum & Natural Resources

#### 13.5 Power Sector

Total installed generation capacity witnessed an increase of 2.1 percent during 2009-10 against the 1.0 percent growth in corresponding period last year (see Table 13.10). With the share of 31.6 percent in total installed capacity during 2009-10, private sector witnessed the prominent growth of 7.1 percent in its installed capacity during the period under review. On the other hand, installed capacity of WAPDA declined by 0.5 percent during July-March 2009-10. Furthermore, the installed capacity of KESC stood at 1,955 MW during the period under review.

S.No	Power Company	Installed Capacity 2008-09	Share (%)	Installed Capacity 2009-10	Share (%)	Change
<b>1</b>	<b>WAPDA</b>	11,454	57.9	11,399	56.5	-0.5
	Hydel	6,555	57.2*	6,555	57.5*	0.0
	Thermal	4,899	42.8*	4,844	42.5*	-1.1
<b>2</b>	IPPs	5,954	30.1	6,374	31.6	7.1
<b>3</b>	Nuclear	462	2.3	462	2.3	0.0
<b>4</b>	KESC	1,910.0	9.7	1,955.0	9.7	2.4
	<b>Total</b>	<b>19,780</b>	<b>100.0</b>	<b>20,190</b>	<b>100.0</b>	<b>2.1</b>

\* : Share in WAPDA system

Source: Hydrocarbon Development Institute of Pakistan & PEPCO

### **13.5-a Oil & Gas Regulatory Authority (OGRA)**

OGRA has been mandated to fix prices of petroleum products in March, 2006. Furthermore, the consumer prices are being notified by OGRA on monthly basis from February, 2009. Briefly, under the said price formula the ex-depot sale prices are being computed as:

Ex-refinery import parity price, computed per approved formula and subsequent modifications made from time to time **Plus** Inland Freight Equalization Margin (IFEM) as determined by OGRA **Plus** 4.0 percent distribution margin and 5.0 percent dealer commission subject to minimum of USD 45 and maximum of USD 80 of Arab Light crude oil per barrel **Plus** petroleum levy, as notified by Ministry of Petroleum & National Resources (MPNR) from time to time **Plus** General sales tax at the rate of 16 .0 percent of depot price on the amount included all above elements payable under the Sales Tax law.

The Federal Government has fixed petroleum levy (PL) from July, 2009. The PL rates on various products are as follows: HSD Rs.8.0/ liter, MS Rs.10.0/liter, HOBC Rs.14.0/liter, KERO Rs.6.0/liter and LDO Rs. 3.0/liter.

The local prices have been linked with the developments in the international oil market. Accordingly, local ex-depot prices vary in line with the international prices. Moreover, cost of gas is linked with international prices of crude/fuel oil per Gas Pricing Agreements (GPAs) executed between the gas producer companies and Government of Pakistan.

### **13.5-b National Electric Power Regulatory Authority (NEPRA)**

The National Electric Power Regulatory Authority is exclusively responsible for regulating the provision of electric power services.

During the period July -March 2009-10, NEPRA has processed ten applications for the grant of generation licenses, including thermal and hydel power plants with a cumulative capacity of 311.4 MW. In addition to these thermal and hydel power projects, cases/applications of five wind energy projects with a cumulative capacity of 200 MW for grant of generation licenses were also processed.

To encourage the hydel and coal based power projects in the country, the authority has allowed 17 percent IRR to hydel and indigenous coal and 16 percent to imported coal power projects as against the 15 percent IRR for oil and gas based thermal power projects.

Furthermore, during the period July-March 2009-10, NEPRA issued twenty seven tariff determinations and 169 tariff adjustments in respect of generation and distribution companies.

During the period under review, NEPRA has processed the tariff petition in respect of 80 MW Co-generation power project based on bagasse & imported coal.

### **Supply Sources of Electricity:**

#### **13.5-c WAPDA**

The installed capacity of PEPCO system is 18,233 MW as of March 2010 with hydro 6,555 MW and thermal 11,678 MW. The hydropower capacity accounts for 35.95 percent and thermal 64.05 percent. Out of 11,678 MW of thermal power, 4,844 MW is owned by Ex-WAPDA GENCOs, 135 MW by rental, 325 by PAEC and rest by IPPs. There is 55-MW of isolated generation capacity in Pasni & Panjgoor areas.

### i). Electricity Generation

Electricity generation from the hydro and thermal source has witnessed an increase of 5.6 percent growth during the current fiscal year July-March 2009-10 compared to 5.0 percent decline in July-March 2008-09. Moreover, after growing negatively since 2007-08, the electricity generation has started to grow positively during current fiscal year 2009-10.

The composition of electricity generation suggests the stagnation in shares of hydro and thermal sources in the electricity generation with share of thermal remained larger than of the hydro source (see Table 13.11).

**Table 13.11: Electricity Generation by WAPDA (GWh)**

Year	Hydro	Share (%)	Thermal	Share (%)	Total
2006-07	31,942	36	55,895	64	87,837
2007-08	28,667	33	57,602	67	86,269
2008-09	27,763	33	56,614	67	84,377
<b>July-March</b>					
2008-09	20,665	34	40,653	66	61,318
2009-10	21,101	33	43,646	67	64,747

*Total generation includes purchase from IPPs and imports*

*Source: PEPCO*

### ii). Power Transmission

The length of transmission lines was 5078 ckM for 500-kV and 7325 ckM for 220-kV level at the end of June 2009. Whereas, the length of transmission line was 4748 ckM for 500-kV & 7318-ckM for 220-kV level at the end of June 2008. In order to ensure uninterrupted and stable power supply to the consumers as well as integrity of the grid supply system, the augmentation of the transmission network is a continuous process. In addition to the various on-going secondary transmission lines and grid-stations program, new transmission lines/substations are being envisaged.

### iii). Growth in Consumers

The number of consumers has been increasing due to expansion of electric network to villages and other areas. The growth in number of consumers increased by 4.5 percent during July-March 2009-10 against the 4.2 percent rise in same period last year. Moreover, the longer term analysis of group wise consumers exhibits that the share of domestic consumer remained the highest with more than 80.0 percent of total number of consumers in the respective years (see Table 13.12).

**Table 13.12: Consumers by Economic Groups (Thousands)**

Year	Domestic	Commercial	Industrial	Agriculture	Others	Total
2006-07	14,354	2,152	233	236	11	16,987
2007-08	15,226	2,229	242	245	11	17,955
2008-09	15,482	2,257	250	255	11	18,255
<b>July-March</b>						
2008-09	15,687	2,271	250	255	12	18,475
2009-10	16,416	2,342	260	269	13	19,300

*Source: PEPCO*

**iv). Village Electrification**

The village electrification program is an integral part of the total power sector development program. As a result, the village electrification growth rate during July-March 2009-10 increased by 10.0 percent (see Table 13.13) over the 5.7 percent rise during same period last year. Furthermore, the number of electrified villages has increased from 137,765 by 30<sup>th</sup> June 2009 to 147,038 by the end of March 2010.

**Table 13.13: Village Electrification (In Number)**

Year	Addition During the Year	Progressive Total	Growth (%)
2006-07	14,203	117,456	14
2007-08	10,441	127,897	9
2008-09	9,868	137,765	8
<b>July-March</b>			
2008-09	5,566	133,463	
2009-10	9,273	147,038	10

Source: PEPCO

**v). Electricity Consumption by Economic Group**

The consumption of electricity by economic group identifies domestic sector as largest user of electricity in Pakistan. More recently, the consumption share of industrial and domestic groups witnessed a decline of 5.1 percent and 0.1 percent during July-March 2009-10 over the same period last year (see Table 13.14). While, the significant increase in the consumption shares has been witnessed in the groups of Public Lighting, Supply to KESC and Agriculture during the period under review.

**Table 13.14: Electricity Consumption by Economic Groups (% Share)**

Year	Domestic	Comm- mercial	Industrial	Agri- culture	Public Lighting	Bulk Supply	Traction	Supply to KESC
2006-07	43.00	6.36	26.09	12.00	0.47	4.84	0.02	7.27
2007-08	43.21	6.55	26.00	12.59	0.51	5.01	0.01	6.12
2008-09	42.56	6.44	24.56	13.32	0.53	4.90	0.01	7.68
<b>July-March</b>								
2008-09	42.20	6.40	25.20	13.30	0.50	4.90	0.01	7.50
2009-10	42.15	6.45	23.92	14.03	0.57	4.92	0.01	7.94

Source: PEPCO

**vi). Power Losses**

Transmission and distribution (T&D) losses as percent of net system energy has remained more or less stagnant between 21 percent to 25 percent from 2000-01 to 2008-09. Furthermore, during July-March 2009-10, T&D losses has witnessed an increase of 1.0 percent over the corresponding period last year Table 13.15. Keeping in view of these losses, the NTDC and DISCOs have invoked various technical and administrative measures to improve operational and managerial efficiency to reduce power losses. Other measures such as renovation, rehabilitation,

**Table 13.15: WAPDA T&D Losses as % of Net System Energy**

Year	T&D Losses (%)*
2000-01	24.3
2002-03	24.4
2005-06	22.4
2007-08	21.3
2008-09	21.1
<b>July-March</b>	
2008-09	19.4
2009-10	19.6

\* T&amp;D = Transmission and Distribution

Source: PEPCO

capacitor installation and strengthening the distribution system network are a continuous process for controlling wastage of power.

#### vii) Power Development Program

To improve the supply conditions of power in the country, PEPCO is working on various power generation projects having different expected dates of completion starting from current fiscal year 2009-10 to year 2017-18 with total generation capacity of 17,301 MW (see Table 13.16).

Within this period, the power projects having the capacity of 4,166 MW are expected to be commissioned in the fiscal years of 2009-10 and 2010-11.

#### 14.5-d Karachi Electric Supply Company Limited (KESC)

During the current fiscal year July-March 2009-10, the installed capacity of KESC's various generating stations remained at 1,955 MW, against the peak demand of 2,459 MW. During July-March 2009-10, KESC's own generation stood at 5,504 Million units (kWh) against 5,837 Million units (kWh) during same period last year thereby showing a decline of 5.7 percent during the period. Total units available to the KESC's system exhibit an increase of 5.6 percent during July-March 2009-10 against the same period last year (see Table 13.17).

**Table 13.16: Future generation Projects PEPCO System**

Year	Annual Capacity Planned (MW)
2009-10	1,200
2010-11	2,966
2011-12	1,357
2012-13	2,140
2013-14	1,426
2014-15	1,060
2015-16	1,959
2016-17	2,597
2017-18	2,596
<b>Total</b>	<b>17,301</b>

Source: PEPCO

**Table 13.17: KESC Operating Results (Units in Million kWh)**

S. No	Description	July-March	July-March	Change
		(2009-09)	(2009-10)	(%)
<b>1</b>	<b><u>POWER PURCHASE</u></b>			
	KANUPP	286.1	413.2	44.4
	PASMIC	85.0	71.9	-15.4
	TAPAL	441.6	410.3	-7.1
	GULAHMED	316.3	384.4	21.5
	WAPDA	3,585.6	4,044.2	12.8
	ANOUD POWER	12.2	18.9	55.2
	DHA COGEN	68.0	111.1	63.3
	INTL. INDUS. LTD	99.8	93.9	-5.9
	AGGREKO (PROV.)	60.7	246.4	306.0
	ENGRO		45.0	
	<b>Total</b>	<b>4,955.3</b>	<b>5,839.2</b>	<b>17.8</b>
<b>2</b>	<b><u>Units Available for Distribution</u></b>	<b>10,348.9</b>	<b>10,929.8</b>	<b>5.6</b>
<b>3</b>	<b><u>Unit Sold</u></b>	<b>6,793.1</b>	<b>7,163.3</b>	<b>5.5</b>
<b>4</b>	<b><u>Trans. &amp; Dist. Losses</u></b>	<b>3,555.8</b>	<b>3,766.4</b>	<b>5.9</b>
<b>5</b>	<b><u>Installed Capacity (MW)</u></b>	<b>1,910.0</b>	<b>1,955.0</b>	<b>2.4</b>
<b>6</b>	<b><u>Peak Demand</u></b>	<b>2,352.0</b>	<b>2,459.0</b>	<b>4.5</b>

Source: KESC

Moreover, the transmission and distribution losses of KESC posted an increase of 5.9 percent during the first nine months of the current fiscal year. Power purchase by the KESC increased by 17.8 percent during the period. The share of domestic consumer in the KESC's units' sale to Karachi consumers remained at 41.90 percent during the July-March 2009-10 followed by Industrial (34.70 percent) and Commercial (10.80 percent).

### 13.5-e Nuclear Energy

Pakistan Atomic Energy Commission (PAEC) is responsible for planning, construction and operation of nuclear power plants. Presently, two nuclear power plants; Karachi Nuclear Power Plant (K-1) and Chashma Nuclear Power Plant unit-1 (C-1) are in operation, while construction of a third plant, Chashma Nuclear Power Plant Unit-2 (C-2), is in progress.

K-1, a CANDU type plant, has been in commercial operation since 1971. K-1, after completing its designed life of 30-years is operating on extended life of 15 years. K-1 generated 456.94 million kWh of electricity during the period of July-March 2009-10, raising its lifetime generation to 12.82 billion kWh. C-1, a Pressurized Water Reactor (PWR) type plant with a gross capacity of 325 MWe, has been in commercial operation since September 2000. C-1 generated 2063.94 million kWh of electricity during July-March 2009-10, raising its lifetime generation to 19.46 billion kWh. The construction and installation activities of C-2 are in progress as per schedule. The C-2 is expected to be operational by 2011.

Pakistan Atomic Energy has been assigned the task of installing 8,800 MW nuclear power capacity by the year 2030 with increasing share of indigenization. In this respect, technical facilities have already been established and human resource development institutes are being upgraded and expanded.

### 13.5-f Private Power and Infrastructure Board (PPIB)

PPIB is currently processing forty four (44) multiple fuel (Oil, Coal, Gas and Hydel) power generation projects with a cumulative capacity of 10,845 MW (see table 13.18) which are expected to be commissioned from year 2010 to 2017.

Furthermore, the following IPPs have been established in 2009-10 and other projects are under construction and will soon be delivering much needed megawatts to the national grid to minimize the demand-supply gap:

- 216 MW Engro Power Project
- 214 MW Atlas Power Limited

### 13.5-g Alternate Source of Energy

Alternative Energy Development Board (AEDB) processes all alternative and renewable energy projects in the Public Sector and the Private Sector projects in the power sector.

<b>Year</b>	<b>(MW)</b>
Projects already commissioned	586
2010	2,806
2011-12	672
2013	501
2014	612
2015	2,292
2016	888
2017	2,488
<b>Total</b>	<b>10,845</b>



**(i) Mega Wind Power Projects**

AEDB issued 4 Letters of Intent (LOI) for wind power projects, 3 for 50 MW and one for 2.4 MW. AEDB is currently facilitating twenty (20) projects having a capacity of 50 MW each, which are at different stages of development. One IPP has signed a contract with international turbine manufacturer for the supply of equipment for their project. One company has installed 06 MW in the first phase of their 50 MW project. Feasibility studies for 50 MW wind power projects each have been completed by 2 IPPs taking the total to 14 completed feasibility studies.

**(ii) Biodiesel**

AEDB through a consultative process identified the barriers to biodiesel feedstock cultivation in Pakistan, and is taking actions to remove these barriers. Experimental cultivation of biodiesel feedstock on scientific basis has also been started. The cultivation has now risen from around 2 acres in 2005 to more than 650 acres in 2009. Pakistan's first ever commercial biodiesel production facility has been setup in Karachi by the private sector. This biodiesel refinery has a capacity of producing 18,000 tons of Biodiesel per annum.

**(iii) Biomass/Waste-To-Energy**

AEDB has signed a contract with a foreign firm for carrying out a feasibility study for generating up to 10 MW of electricity from Municipal Solid Waste in Karachi. The study is currently underway and would lead to establish a 10 MW Waste-to-Energy power plant in Karachi. AEDB has initiated a project for carrying out detailed studies for biomass / waste-to-energy projects in 20 cities of Pakistan. Companies have been shortlisted for issuance of RFPs on basis of Expressions of Interest (EOI) submitted by them.

**(iv) Small/Mini/Micro Hydro**

AEDB is actively working to install 103 micro hydro power plants at Chitral and other places in Gilgit Baltistan. The total cost of the project is US\$ 19.5 million out of which US \$ 1.0 million is for Productive Use of Renewable Energy (PURE).

Eight micro/mini/small hydel power projects have been initiated under the Renewable Energy Development Sector Investment Program of Asian Development Bank (ADB). The cost of these eight projects is estimated at US \$ 139.5 million. Furthermore, Government of Punjab issued LOIs to 10 private investors for establishment of small hydel power project with a cumulative capacity of 142 MW at different location of Punjab.

**(v) Solar**

More than thirty two vendors are currently importing solar water heaters and marketing them all over the country. Some local manufacturers are also playing an important role in promotion of this technology.

AEDB recently launched a Consumer Confidence Building Program for the promotion of Solar Water Heaters in the country. The program was designed to create awareness of solar water heating technology and to build the consumer confidence on the product through a number of incentives to buyers that includes money back guarantee. AEDB is also working for the deployment of 20,000 solar water heaters in Gilgit Baltistan.

TABLE 13.1

## COMMERCIAL ENERGY CONSUMPTION

Fiscal Year	1. Oil/Petroleum (tonnes)						Total
	Households	Industry	Agriculture (a)	Transport	Power	Other Govt.	
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	358,807	14,626,684
2006-07	106,148	1,595,981	97,232	7,981,893	6,740,559	325,318	16,847,131
2007-08	120,961	1,071,191	109,351	9,384,482	7,083,933	310,501	18,080,419
2008-09	97,332	969,193	69,793	8,837,197	7,570,418	367,266	17,911,199
<u>Jul-Mar</u>							
2008-09	75,318	718,053	50,076	6,306,840	5,496,505	244,845	12,891,637
2009-10 P	68,499	749,538	44,455	6,580,480	6,271,286	223,139	13,937,397

(a) : HSD consumption in agricultural sector is not available separately and is included under (Contd.)

transport sector. Agricultural sector represents LDO only

Source : Oil Company Advisory Committee

TABLE 13.1

## COMMERCIAL ENERGY CONSUMPTION

Fiscal Year	2. Gas (mm cft)							Total
	Households	Commercial	Cement	Fertilizer	Power	Industry	Transport (CNG) @	
1991-92	70,741	13,057	11,761	101,493	193,893	95,661	25	486,631
1992-93	75,783	14,326	11,914	119,628	186,853	102,991	31	511,526
1993-94	82,461	15,239	10,187	144,514	197,694	100,631	43	550,769
1994-95	97,045	16,064	6,730	141,697	181,107	104,098	47	546,788
1995-96	110,103	16,960	7,569	150,374	186,507	111,202	153	582,868
1996-97	115,488	18,403	8,718	150,483	193,984	110,365	358	597,799
1997-98	134,500	18,764	12,092	147,752	179,042	115,250	490	607,890
1998-99	131,656	21,466	7,988	167,474	183,694	121,431	2,182	635,891
1999-00	139,973	21,712	8,558	177,152	227,364	134,916	2,426	712,101
2000-01	140,899	20,618	6,977	175,393	281,255	138,503	4,423	768,068
2001-02	144,186	22,130	7,063	177,589	314,851	151,416	7,369	824,604
2002-03	153,508	22,776	3,445	180,611	335,636	164,968	11,320	872,264
2003-04	155,174	24,192	7,711	185,350	469,738	193,395	15,858	1,051,418
2004-05	172,103	27,191	13,383	190,409	507,398	226,116	24,443	1,161,043
2005-06	171,109	29,269	15,335	198,175	491,766	278,846	38,885	1,223,385
2006-07	185,533	31,375	14,686	193,682	433,672	306,600	56,446	1,221,994
2007-08	204,035	33,905	12,736	200,063	429,892	322,563	72,018	1,275,212
2008-09	214,113	35,536	7,305	201,100	404,140	319,003	88,236	1,269,433
<u>Jul-Mar</u>								
2008-09	171,875	26,400	6,050	149,600	276,300	233,750	65,725	931,700
2009-10 P	184,525	28,600	1,650	162,525	264,825	246,125	71,225	959,475

- : Not available.

P : Provisional

(Contd.)

@ : (CNG) Compressed Natural Gas

TABLE 13.1

## COMMERCIAL ENERGY CONSUMPTION

Fiscal Year	3. Electricity (Gwh)								4. Coal (000 metric tonne)				
	Traction	Household	Commercial	Industrial	Agricultural	Street Light	Other Govt.	Total	Household	Power	Brick Kilns	Cement	Total
1991-92	29	11,458	2,143	12,289	5,847	..	2,112	33,878	6.8	39.5	3,052.4	..	3,098.7
1992-93	27	13,170	2,333	13,043	5,635	297	1,987	36,493	3.2	46.7	3,216.6	..	3,266.6
1993-94	27	14,080	1,786	12,637	5,772	298	2,781	37,381	3.3	43.6	3,487.0	..	3,533.9
1994-95	22	15,585	2,623	12,528	6,251	324	2,116	39,448	3.2	40.7	2,998.9	..	3,042.8
1995-96	20	17,116	2,962	12,183	6,696	378	2,382	41,737	3.1	398.9	3,235.8	..	3,637.8
1996-97	18	17,757	2,241	11,982	7,086	390	3,440	42,914	9.7	351.9	3,191.3	..	3,552.9
1997-98	16	18,750	2,334	12,297	6,937	387	3,851	44,572	2.3	346.5	2,809.9	..	3,158.7
1998-99	15	19,394	2,409	12,061	5,620	224	3,573	43,296	1.3	415.3	3,044.8	..	3,461.4
1999-00	15	21,455	2,544	13,202	4,540	239	3,591	45,586	1.0	348.1	2,818.8	..	3,167.9
2000-01	13	22,765	2,774	14,349	4,924	213	3,547	48,585	1.0	205.8	2,837.9	1,000.0	4,044.7
2001-02	11	23,210	2,951	15,141	5,607	212	3,490	50,622	1.1	249.4	2,577.5	1,580.6	4,408.6
2002-03	10	23,624	3,218	16,181	6,016	244	3,363	52,656	1.1	203.6	2,607.0	2,078.2	4,889.9
2003-04	9	25,846	3,689	17,366	6,669	262	3,650	57,491	1.0	184.9	2,589.4	3,289.2	6,064.5
2004-05	12	27,601	4,080	18,591	6,988	305	3,750	61,327	..	180.0	3,906.7	3,807.2	7,893.8
2005-06	13	30,720	4,730	19,803	7,949	353	4,035	67,603	..	149.3	4,221.8	3,342.8	7,714.0
2006-07	12	33,335	5,363	21,066	8,176	387	4,373	72,712	1.0	164.4	3,277.5	4,451.2	7,894.1
2007-08	8	33,704	5,572	20,729	8,472	415	4,500	73,400	1.0	162.0	3,760.7	6,186.9	10,110.6
2008-09	5	32,282	5,252	19,330	8,795	430	4,277	70,371	0.8	112.5	3,274.8	5,001.8	8,389.9
<u>Jul-Mar</u>													
2008-09	4	23,643	3,829	14,563	6,501	307	6,767	55,614	0.8	110.0	2,911.6	1,800.0	4,822.4
2009-10 e	2	24,868	4,133	14,726	7,227	364	3,333	54,653	..	77.7	3,126.5	2,100.0	5,304.2

.. : not available

e : Electricity consumption for AJK is estimated on the basis of actual six months data

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

TABLE 13.2

## COMMERCIAL ENERGY SUPPLIES

Fiscal Year	Oil		Gas (mcf) +	Petroleum Products		Coal		Electricity	
	Crude Oil Imports ('000 barrels)	Local Crude Extraction ('000 barrels)		Imports ('000 tonnes)	Production ('000 tonnes)	Imports ('000 tonnes)	Production ('000 tonnes)	Installed Capacity (MW)(a)	Generation (Gwh)(b)
1991-92	30,016	22,469	550,715	5,275	5,961	1,069	3,099	9,369	45,440
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	15,658	62,104
1998-99	32,855	19,986	744,942	10,926	5,925	910	3,461	15,662	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	17,498	68,117
2001-02	51,982	23,195	923,758	9,023	9,028	1,081	3,328	17,799	72,405
2002-03	52,512	23,458	992,589	8,437	9,084	1,578	3,312	17,798	75,682
2003-04	57,699	22,625	1,202,750	5,170	9,740	2,789	3,275	19,257	80,900
2004-05	61,161	24,119	1,344,953	5,676	10,474	3,307	4,587	19,384	85,738
2005-06	63,546	23,936	1,400,026	6,009	10,498	2,843	4,871	19,450	93,774
2006-07	60,694	24,615	1,413,581	8,330	10,314	4,251	3,643	19,420	98,384
2007-08	64,912	25,603	1,454,194	9,025	10,754	5,987	4,124	19,420	95,860
2008-09	62,115	24,033	1,460,679	9,974	9,828	4,652	3,738	19,786	91,843
<u>Jul-Mar</u>									
2008-09	44,151	18,230	1,092,309	7,094	7,138	3,000 e	1,822 p	19,575	60,793 p
2009-10 (e)	38,840	17,877	1,109,360	8,619	7,685	3,600 e	1,704 p	19,650	65,582 p

+ : Million cubic feet

e : estimated

Source: Hydrocarbon Development Institute of Pakistan (HDIP)

(a) : MW: Mega Watt

p : Provisional

Ministry of Petroleum and Natural Resources

(b) : Gwh: Giga Watt Hour

TABLE 13.3

## COMMERCIAL ENERGY SUPPLIES

Fiscal Year	Electricity						
	Hydroelectric (Hydel)		Thermal		Nuclear		Imported (Gwh)
	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	4,867	17,194	12,169	48,926	462	1,997	
2001-02	5,051	18,941	12,286	51,174	462	2,291	
2002-03	5,051	22,351	12,285	51,591	462	1,740	0.36
2003-04	6,496	26,944	12,299	52,122	462	1,760	73
2004-05	6,499	25,671	12,423	57,162	462	2,795	109
2005-06	6,499	30,862	12,489	60,283	462	2,484	146
2006-07	6,479	31,953	12,478	63,972	462	2,288	171
2007-08	6,480	28,707	12,478	63,877	462	3,077	199
2008-09	6,481	27,784	12,843	62,214	462	1,618	227
<u>Jul-Mar</u>							
2008-09	6,481	20,526	12,632 p	39,154	462	918	195
2009-10 (e)	6,481	23,535	12,707 p	39,342 p	462	2,521	185

(a) : MW: Mega Watt

p : Provisional

Source: Hydrocarbon Development Institute of Pakistan (HDIP)

(b) : Gwh: Giga Watt Hour

Ministry of Petroleum and Natural Resources

e : electricity generation estimates based on six months actual data

TABLE 13.4  
SCHEDULE OF ELECTRICITY TARIFFS OF DISCO

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

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

TABLE 13.4  
SCHEDULE OF ELECTRICITY TARIFFS OF DISCO

TARIFF CATEGORY	EFFECTIVE FROM 01-03-2008								
	Fixed Charges Rs/KW	Variable Charges Rs/KWh							
		IESCO	LESCO	GEPCO	FESCO	MEPCO	QESCO	PESCO	HESCO
<b>A-1 GENERAL SUPPLY TARIFF- RESIDENTIAL</b>									
Upto 50 Units per month		1.40	1.40	1.40	1.40	1.40	1.40	1.40	1.40
<b>FOR CONSUMPTION EXCEEDING 50 UNITS</b>									
1 - 100 Units per month		3.08	3.08	3.08	3.08	3.08	3.08	3.08	3.08
101 - 300 Units per month		4.08	4.08	4.08	4.08	4.08	4.08	4.08	4.08
301 - 1000 Units per month		6.53	6.53	6.53	6.53	6.53	6.53	6.53	6.53
Above 1000 Units per month		7.79	7.79	7.79	7.79	7.79	7.79	7.79	7.79
Time of Day (TOD) - Peak	315	7.24	7.13	7.22	7.04	7.73	7.84	9.45	9.99
Time of Day (TOD) - Off-Peak	315	4.28	4.28	4.28	4.28	4.28	4.28	4.28	4.28
Min. Charges: single & 3/ Phase	Rs 75/- & 150/-								
<b>A-2 GENERAL SUPPLY TARIFF - COMMERCIAL</b>									
<b>a) For Sanctioned Load upto 20 KW</b>									
i) For First 100 units		7.86	7.86	7.86	7.86	7.86	7.86	7.86	7.86
ii) Above 100 units		7.99	7.99	7.99	7.99	7.99	7.99	7.99	7.99
b) For Sanctioned Load exceeding 20 KW	365	4.97	4.97	4.97	4.97	4.97	4.97	4.97	4.97
c) Time of Use - Peak	315	7.24	7.13	7.22	7.04	7.73	7.84	9.45	9.99
Time of Use -Off- Peak	315	4.28	4.28	4.28	4.28	4.28	4.28	4.28	4.28
Min. Charges/month: Single & 3 Phase	Rs 75/- & 360/-								
<b>B- INDUSTRIAL SUPPLY TARIFFS</b>									
B-1 upto 40 KW (400 Volts)		6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00
B-2 Load >40 to 500 KW at 400 Volts.	315	4.63	4.63	4.63	4.63	4.63	4.63	4.63	4.63
B-2 TOD (Peak)	315	7.24	7.13	7.22	7.04	7.73	7.84	9.45	9.99
B-2 TOD (Off-Peak)	315	4.28	4.28	4.28	4.28	4.28	4.28	4.28	4.28
B-3 11/33kV TOD -Peak	305	6.99	6.88	6.97	6.79	7.48	7.59	9.20	9.59
B-3 11/33kV TOD Off-Peak	305	3.88	3.88	3.88	3.88	3.88	3.88	3.88	3.88
B-4 66/132kV TOD-Peak	295	6.74	6.63	6.72	6.54	7.23	7.34	8.95	9.19
B-4 TOD (Off-Peak)	395	3.63	3.63	3.63	3.63	3.63	3.63	3.63	3.63
Min. Charges/month B-1, B-2, B-3 & B-4	Rs. 350, 2000, 50,000 & 500,000 respectively								
<b>C-SINGLE POINT BULK SUPPLY TARIFFS</b>									
C-1 (a) 400/230 Volts Load upto 20 kW		6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17
C-1 (b) 400-V- Load 21-500kW	315	5.68	5.68	5.68	5.68	5.68	5.68	5.68	5.68
C-1 (c) TOD Opt. Peak	315	7.24	7.13	7.22	7.04	7.73	7.84	9.45	9.99
TOD Off-Peak	315	4.28	4.28	4.28	4.28	4.28	4.28	4.28	4.28
C-2(a) at 11/33-kV load upto 5000kW	305	5.38	5.38	5.38	5.38	5.38	5.38	5.38	5.38
C-2 (b) load upto 5000 kW -peak	305	6.99	6.88	6.97	6.79	7.48	7.59	9.20	9.59
Off-Peak	305	3.88	3.88	3.88	3.88	3.88	3.88	3.88	3.88
C-3 supply at 66kV & above	295	5.28	5.28	5.28	5.28	5.28	5.28	5.28	5.28
Time of Day (TOD) Peak	295	6.74	6.63	6.72	6.54	7.23	7.34	8.95	9.19
Time of Day (TOD) Off-Peak	295	3.63	3.63	3.63	3.63	3.63	3.63	3.63	3.63
<b>D-AGRICULTURAL TUBE WELL TARIFFS</b>									
D-19(a) - SCARP less than 20kW		5.99	5.88	5.97	5.94	6.48	7.59	7.70	7.59
D-2- Agri. T/Wells- Punjab & Sindh	90	3.73	3.73	3.73	3.73	3.73	3.73	3.73	3.73
D-2- Agri. T/Wells NWFP & Blochistan	90	3.73	3.73	3.73	3.73	3.73	3.73	3.73	3.73
D-1(b) TOD SCARP & Agri>20kW Peak	305	7.24	7.13	7.22	7.04	7.73	7.84	9.45	9.99
Off-Peak	305	3.13	3.13	3.13	3.13	3.13	3.13	3.13	3.13
<b>E-TEMPORARY SUPPLY TARIFFS</b>									
E-1(i) Residential Supply		7.90	7.79	7.97	7.94	8.48	9.59	10.70	11.19
E-1(ii) Commercial Supply		8.10	7.99	8.17	8.19	8.88	9.79	11.20	12.59
E-2 Industrial Supply		6.11	6.00	6.47	6.94	6.98	7.09	6.70	8.59
Min. Charges per day E-1 (i & ii)	Rs. 500, Min. 500/-								
<b>F- SEASONAL INDUSTRIAL SUPPLY</b>									
125% of relevant industrial tariff									
<b>G- PUBLIC LIGHTENING</b>									
Minimum charges per month per Kw		8.08	7.97	8.22	8.19	8.48	8.34	8.70	11.59
<b>H- Residential Colonies Attached to Industrial Premises</b>									
		7.27	7.16	7.47	7.44	7.73		7.80	10.59
<b>I- Railway Traction</b>									
			6.07			6.48			
<b>J- Special Contracts</b>									
J-1 AJ& K	355	2.59		2.59				2.59	
Time of use peak	295	7.24		7.22				9.45	
Off Peak	295	3.99		3.97				4.20	
J-2 Rawat Lab.		5.43							

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

TABLE 13.4  
SCHEDULE OF ELECTRICITY TARIFFS

Tariff Category	Effective from Feb, 2009 (FOR ALL DISCOs)	
	Fixed Charges (Rs/Kwh)	Variable Charges (Rs/Kwh)
<b>A-1 General Supply Tariff - Domestic</b>		
A-1(a) For Sanctioned Load upto 5 KW		Schedule-II
i. Upto 50 Units		1.40
For Consumption Exceeding 50 Units		
ii. 1 - 100 Units		3.29
iii. 101-300 Units		4.96
iv. 301 - 700 Units		8.03
v. Above 700 Units		10.00
A-1(b) For Sanctioned Load exceeding 5 KW		
Time of Use (TOU) - Peak		9.21
Time of Use (TOU) - Off Peak		5.62
<i>Minimum Monthly Charges for: S/ Phase Rs. 75/- &amp; 3/Phase Rs. 150/-</i>		
<b>A-2 GENERAL SUPPLY TARIFF - COMMERCIAL</b>		
A-2(a) For Sanctioned Load upto 5 KW	315	9.81
A-2(b) For Sanctioned Load exceeding 5 KW	315	6.12
A-2(c) Time of Use - Peak	315	8.65
Time of use - Off Peak		5.28
<i>Minimum Monthly Charges for: S/ Phase Rs. 175/- &amp; 3/Phase Rs. 350/-</i>		
<b>B- INDUSTRIAL SUPPLY TARIFFS</b>		
B-1 Upto 5 KW (400/230 Volts)		7.38
B-2(a) Load 6 - 500 KW (at 400 volts)	315	5.71
B-2(b) 6 - 500 KW TOU Peak	315	8.65
B-2(b) 6 - 500 KW TOU Off Peak	315	5.28
B-3 For All Loads upto 5000 KW (at 11/33kv) - Peak	305	8.34
B-3 For All Loads upto 5000 KW (at 11/33kv) - Off Peak	305	4.79
B-4 For All Loads (at 66, 132 kv & above) - Peak	295	8.04
B-4 For All Loads (at 66, 132 kv & above) - Off Peak	295	4.49
<i>Fixed Min. Charges/month for B-1 Rs. 350/-, B-2 Rs. 2000/-, B-3 Rs. 50,000/- &amp; B-4 Rs. 500,000/-</i>		
<b>C-BULK SUPPLY TARIFFS</b>		
C-1(a) For supply at 400/230 volts, load upto 5 KW	-	7.46
C-1(b) Load above 5 KW & upto 500 KW	315	6.88
C-1(c) load > 5 & upto 500 KW Peak	315	8.51
C-1(c) load > 5 & upto 500 KW Off Peak	315	5.20
C-2(a) 11/33 kV upto load 5000 KW	305	6.52
C-2(b) 11/33 kV upto load 5000 KW Peak	305	8.21
C-2(b) 11/33 kV upto load 5000 KW Off Peak	305	4.72
C-3(a) 66 kV & above, loads > 5000 KW	295	6.40
C-3(b) 66 kV & above, loads > 5000 KW Peak	295	7.91
C-3(b) 66 kV & above, loads > 5000 KW Off Peak	295	4.42
<b>D-AGRICULTURE TUBE WELL TARIFFS</b>		
D-1(a) Scarp less than 5 KW		6.37
D-2 Agricultural Tube Wells	90	4.00
D-1(b) TOU for SCARP & Agri. - Peak	315	7.61
TOU for SCARP & Agri. - Off Peak	315	3.42
<b>E- TEMPORARY SUPPLY TARIFFS</b>		
E-1(i) Residential Supply	-	10.00
E-1(ii) Commercial Supply	-	10.50
E-2 Industrial Supply	-	7.50
<i>Minimum Monthly charges for E1 (i &amp; ii) Rs. 50/day subject to a minimum of Rs. 500/-</i>		
<b>OTHERS TARIFFS</b>		
F - SEASONAL SUPPLY TARIFF		
G - PUBLIC LIGHTING TARIFF		9.62
<i>Minimum Monthly Charges Rs. 500/- per KW month of lamp capacity installed</i>		
H-RESIDENTIAL COLONIES OF INDUSTRIES		8.65
I - RAILWAYS Traction		7.50
<b>K - SPECIAL CONTRACTS</b>		
K(1) AJ&K	295	3.17
K(1) AJ&K TOU - Peak	295	8.72
K(1) AJ&K TOU - Off Peak	295	4.82
Rawat Lab		6.58



TABLE 13.4  
SCHEDULE OF ELECTRICITY TARIFFS

Tariff Category	Effective from 1st Oct, 2009 (FOR ALL DISCOs)	
	Fixed Charges (Rs/Kwh)	Variable Charges (Rs/Kwh)
<b>A-1 GENERAL SUPPLY TARIFF - RESIDENTIAL</b>		
i. Upto 50 Units		Schedule-II 1.40
For Consumption Exceeding 50 Units		
ii. 1 - 100 Units		3.49
iii. 101-300 Units		5.26
iv. 301 - 700 Units		8.51
v. Above 700 Units		10.00
A-1(b) Time of Day (TOD) - Peak		9.76
A-1(b) Time of Day (TOD) - Off - Peak		5.96
<i>Minimum Monthly Charges for: S/ Phase Rs. 75/- &amp; 3/Phase Rs. 150/- per connection per month</i>		
<b>A-2 GENERAL SUPPLY TARIFF - COMMERCIAL</b>		
A-2(a) For Sanctioned Load upto 5 KW		10.40
A-2(b) Normal	315	6.49
A-2(c) Time of Use - Peak	315	9.17
A-2(c) Time of use - Off Peak	315	5.60
<i>Minimum Monthly Charges for: S/ Phase Rs. 175/- &amp; 3/Phase Rs. 350/- per connection per month</i>		
<b>B- INDUSTRIAL SUPPLY TARIFFS</b>		
B-1 Upto 5 KW (400/230 Volts)		7.50
B-2(a) Load 6 - 500 KW (at 400 volts)	315	6.05
B-2(b) TOU Peak	315	9.17
B-2(b) TOU Off Peak	315	5.60
B-3 For All Loads upto 5000 KW (at 11/33kv) TOU - Peak	305	8.84
B-3 For All Loads upto 5000 KW (at 11/33kv) TOU - Off Peak	305	5.08
B-4 For All Loads (at 66, 132 kv & above) TOU - Peak	295	8.52
B-4 For All Loads (at 66, 132 kv & above) TOU - Off Peak	295	4.76
<i>Fixed Min. Charges/month for B-1 Rs. 350/-, B-2 Rs. 2000/-, B-3 Rs. 50,000/- &amp; B-4 Rs. 500,000/-</i>		
<b>C-SINGLE POINT FOR PURCHASE IN BULK BY A DISTRIBUTION LICENSEE</b>		
C-1(a) At 400/230 volts, load upto 5 KW	-	7.91
C-1(b) At 400 Volts - load 5 - 500 KW	315	7.29
C-1(c) TOU Opt. Peak	315	9.02
C-1(c) TOU Opt. Off - Peak	315	5.51
C-2(a) At 11/33 kV load incl. 5000 KW	305	6.91
C-2(b) At 11/33 kV load incl. 5000 KW - Peak	305	8.70
C-2(b) At 11/33 kV load incl. 5000 KW - Off - Peak	305	5.00
C-3(a) At 66 kV & above and S/load > 5000	295	6.78
C-3(b) At 66 kV & above and S/load > 5000 - Peak	295	8.38
C-3(b) At 66 kV & above and S/load > 5000 - Off - Peak	295	4.69
<b>D-AGRICULTURE SUPPLY TARIFFS</b>		
D-1(a) Scarp less than 5 KW		6.75
D-2 Agricultural Tube Wells	90	4.00
D-1(b) TOU for SCARP & Agri. > 5 KW- Peak	315	7.61
TOU for SCARP & Agri. > 5KW - Off Peak	315	3.42
<b>E- TEMPORARY SUPPLY TARIFFS</b>		
E-1(i) Residential Supply	-	10.00
E-1(ii) Commercial Supply	-	10.50
E-2 Industrial Supply	-	7.50
<i>Minimum Monthly charges for E1 (i &amp; ii) Rs. 50/day subject to a minimum of Rs. 500/-</i>		
<b>OTHERS TARIFFS</b>		
F - SEASONAL SUPPLY TARIFF	125% of the relevant industrial supply	
G - PUBLIC LIGHTING TARIFF		10.20
<i>Minimum Monthly Charges Rs. 500/- per KW month of lamp capacity installed</i>		
H-RESIDENTIAL COLONIES OF INDUSTRIES		9.17
I - RAILWAYS Traction		7.50
<b>K - SPECIAL CONTRACT TARIFFS</b>		
K(1) AJ&K	295	3.36
K(1) AJ&K TOU - Peak	295	9.24
K(1) AJ&K TOU - Off Peak	295	5.11
Rawat Lab		6.97

TABLE 13.4  
SCHEDULE OF ELECTRICITY TARIFFS

Tariff Category	Effective from 1st Jan, 2010 (FOR ALL DISCOs)	
	Fixed Charges (Rs/Kwh)	Variable Charges (Rs/Kwh)
<b>A-1 GENERAL SUPPLY TARIFF - RESIDENTIAL</b>		
		Schedule-II
A-1(a) For Sanctioned Load upto 5 KW		
i. Upto 50 Units		1.66
For Consumption Exceeding 50 Units		
ii. 1 - 100 Units		3.91
iii. 101-300 Units		5.89
iv. 301 - 700 Units		9.52
v. Above 700 Units		11.87
A-1(b) For load > 5 KW TOU - Peak		10.93
A-1(b) For load > 5 KW TOU - Off Peak		6.67
<i>Minimum Monthly Charges for: S/ Phase Rs. 75/- &amp; 3/Phase Rs. 150/- per connection per month</i>		
<b>A-2 GENERAL SUPPLY TARIFF - COMMERCIAL</b>		
A-2(a) For Sanctioned Load upto 5 KW		11.65
A-2(b) for load > 5 KW	315	7.27
A-2(c) For load > 5 KW TOU - Peak	315	10.27
A-2(c) For load > 5 KW TOU - Off Peak	315	6.27
<i>Minimum Monthly Charges for: S/ Phase Rs. 175/- &amp; 3/Phase Rs. 350/- per connection per month</i>		
<b>B- INDUSTRIAL SUPPLY TARIFFS</b>		
B-1 Upto 5 KW (400/230 Volts)		8.76
B-2(a) Load 6 - 500 KW (at 400 volts)	315	6.78
B-2(b) TOU Peak	315	10.27
B-2(b) TOU Off Peak	315	6.27
B-3 All Loads upto 5000 KW (at 11/33kv) TOU- Peak	305	9.90
B-3 All Loads upto 5000 KW (at 11/33kv) TOU - Off Peak	305	5.69
B-4 All Loads (at 66, 132 kv & above) TOU - Peak	295	9.55
B-4 All Loads (at 66, 132 kv & above) TOU - Off Peak	295	5.33
<i>Fixed Min. Charges/month for B-1 Rs. 350/-, B-2 Rs. 2000/-, B-3 Rs. 50,000/- &amp; B-4 Rs. 500,000/-</i>		
<b>C-SINGLE POINT FOR PURCHASE IN BULK BY A DISTRIBUTION LICENSEE</b>		
For supply at 400/230 volts		
C-1(a) For load upto 5 KW	-	8.86
C-1(b) For Load 5 & upto 500 KW	315	8.17
C-1(c) load > 5 KW & upto 500 KW TOU Opt. Peak	315	10.10
C-1(c) For load > 5 KW TOU Opt. Off - Peak	315	6.17
C-2(a) For Supply at 11/33 KV load upto & incl. 5000 KW	305	7.74
C-2(b) At 11/33 kV load incl. 5000 KW Peak	305	9.75
C-2(b) At 11/33 kV load incl. 5000 KW Off - Peak	305	5.60
C-3(a) For supply at 66 kV & above and S/load > 5000 KW	295	7.60
C-3(b) At 66 kV & above and S/load > 5000 Peak	295	9.39
C-3(b) At 66 kV & above S/load > 5000 Off - Peak	295	5.25
<b>D-AGRICULTURE SUPPLY TARRIFS</b>		
D-1(a) Scarp less than 5 KW		7.56
D-2 Agricultural Tube Wells	90	4.75
D-1(b) TOU SCARP & Agri. > 5 KW - Peak	200	9.03
D-1(b) TOU SCARP & Agri. > 5 Off - Peak	200	4.06
<b>E- TEMPORARY SUPPLY TARIFFS</b>		
E-1(i) Residential Supply	-	10.00
E-1(ii) Commercial Supply	-	10.50
E-2 Industrial Supply	-	7.50
<i>Minimum Monthly charges for E1 (i &amp; ii) Rs. 50/day subject to a minimum of Rs. 500/-</i>		
<b>OTHERS TARIFFS</b>		
F - SEASONAL SUPPLY TARIFF	125% of the relevant industrial supply	
G - PUBLIC LIGHTING TARIFF		11.42
<i>Minimum Monthly Charges Rs. 500/- per KW month of lamp capacity installed</i>		
H-RESIDENTIAL COLONIES OF INDUSTRIES		10.27
I - RAILWAYS Traction		8.90
<b>K - SPECIAL CONTRACT TARIFFS</b>		
K(1) AJ&K	295	3.76
K(1) AJ&K TOU - Peak	295	10.35
K(1) AJ&K TOU - Off Peak	295	5.72
Rawat Lab		7.81

TABLE 13.5  
OIL SALE PRICES

Date	16-01-2007	01-02-2007	16-02-2007	01-03-2007	16-03-2007	01-04-2007
Rs/Ltrs						
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: Hydrocarbon Development Institute of Pakistan (HDIP)

TABLE 13.5  
OIL SALE PRICES

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

Source: Hydrocarbon Development Institute of Pakistan (HDIP)

TABLE 13.5  
OIL SALE PRICES

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

Source: Hydrocarbon Development Institute of Pakistan (HDIP)

TABLE 13.5  
OIL SALE PRICES

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

Source: Hydrocarbon Development Institute of Pakistan (HDIP)

TABLE 13.5  
OIL SALE PRICES

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

Source: Hydrocarbon Development Institute of Pakistan (HDIP)

TABLE 13.5  
OIL SALE PRICES

Date	18-04-2008	01-05-2008	16-05-2008	01-06-2008	21-06-2008	Rs/Ltrs 29-06-2008
Ex-Depot Sale Price						
Motor Gasoline	65.81	68.81	68.81	68.81	68.81	75.23
HOBC (Automotive 100 Octane)	77.77	80.77	80.77	80.77	80.77	88.85
Super (90 Octane) Blend of Motor Gasoline @ 60% and HOBC 40%)						
Kerosene	41.44	41.44	41.44	41.44	41.44	49.73
HSD	47.13	50.13	50.13	50.13	50.13	55.14
LDO	41.59	44.59	44.59	44.59	44.59	49.05
Aviation gasoline (100LL)						
JP-1:						
i) For sale to PIA Domestic Flight	62.31	67.33	72.25	84.90	80.07	81.40
ii) For sale to PIA foreign flights & foreign airline						
iii) For Cargo & Technical Landing Flights						
JP-4	61.32	65.70	70.02	80.05	73.59	76.13
JP-8	65.69	73.95	79.11	92.39	83.29	84.62

Source: Hydrocarbon Development Institute of Pakistan (HDIP)

TABLE 13.5  
OIL SALE PRICES

Date	01-07-2008	21-07-2008	01-08-2008	16-08-2008	01-09-2008	16-09-2008	Rs/Ltrs
Ex-Depot Sale Price							
Motor Gasoline	75.69	86.66	86.66	86.66	86.66	81.66	81.66
HOBC (Automotive 100 Octane)	88.85	96.08	96.08	96.08	96.08	96.08	96.08
Super (90 Octane) Blend of Motor Gasoline @ 60% and HOBC 40%)							
Kerosene	49.73	58.37	58.37	58.37	58.37	61.87	61.87
HSD	55.14	64.64	64.64	64.64	64.64	68.14	68.14
LDO	49.05	56.50	56.50	56.50	56.50	60.00	60.00
Aviation gasoline (100LL)							
JP-1:							
i) For sale to PIA Domestic Flight	82.10	90.36	86.11	77.07	75.34	71.44	71.44
ii) For sale to PIA foreign flights & foreign airline							
iii) For Cargo & Technical Landing Flights							
JP-4	76.79	83.75	79.45	72.59	72.13	68.56	68.56
JP-8	85.35	93.6	89.34	80.31	78.57	74.66	74.66

Source: Hydrocarbon Development Institute of Pakistan (HDIP)

TABLE 13.5  
OIL SALE PRICES

Date	01-10-2008	16-10-2008	01-11-2008	16-11-2008	01-12-2008	16-12-2008	Rs/Ltrs
Ex-Depot Sale Price							
Motor Gasoline	81.66	81.66	76.66	66.66	57.66	57.66	57.66
HOBC (Automotive 100 Octane)	96.08	96.08	96.08	81.08	72.08	72.08	72.08
Super (90 Octane) Blend of Motor Gasoline @ 60% and HOBC 40%)							
Kerosene	61.87	61.87	61.87	56.87	51.87	51.87	51.87
HSD	68.14	68.14	68.14	61.14	57.14	57.14	57.14
LDO	60.00	60.00	60.00	53.00	48.00	48.00	48.00
Aviation gasoline (100LL)							
JP-1:							
i) For sale to PIA Domestic Flight	69.01	59.75	50.90	48.57	42.54	36.40	36.40
ii) For sale to PIA foreign flights & foreign airline							
iii) For Cargo & Technical Landing Flights							
JP-4	64.36	55.26	42.66	37.67	33.55	30.73	30.73
JP-8	72.22	62.96	54.10	51.77	45.75	39.61	39.61

Source: Hydrocarbon Development Institute of Pakistan (HDIP)

TABLE 13.5  
OIL SALE PRICES

Date	01-01-2009	01-02-2009	01-03-2009	01-04-2009	01-05-2009	22-05-2009
Rs/Ltrs						
Ex-Depot Sale Price						
Motor Gasoline	57.66	57.66	57.66	57.66	57.66	56.21
HOBC (Automotive 100 Octane)	72.08	72.08	72.08	72.08	72.08	70.28
Super (90 Octane) Blend of Motor Gasoline @ 60% and HOBC 40%)						
Kerosene	51.87	51.87	51.87	51.87	51.87	51.87
HSD	57.14	57.14	57.14	57.14	57.14	55.71
LDO	48.00	48.00	48.00	48.00	48.00	48.00
Aviation gasoline (100LL)						
JP-1:						
i) For sale to PIA Domestic Flight	35.89	35.62	31.24	31.83	36.17	36.17
ii) For sale to PIA foreign flights & foreign airline						
iii) For Cargo & Technical Landing Flights						
JP-4	31.40	33.54	32.60	33.50	37.06	37.06
JP-8	39.09	38.84	34.45	35.04	39.38	39.38

Source: Hydrocarbon Development Institute of Pakistan (HDIP)

TABLE 13.5  
OIL SALE PRICES

Date	01-06-2009	01-07-2009	08-07-2009	09-07-2009	01-08-2009	01-09-2009
Rs/Ltrs						
Ex-Depot Sale Price						
Motor Gasoline	57.66	57.66	57.66	57.66	57.66	56.21
HOBC (Automotive 100 Octane)	72.08	72.08	72.08	72.08	72.08	70.28
Super (90 Octane) Blend of Motor Gasoline @ 60% and HOBC 40%)						
Kerosene	51.87	51.87	51.87	51.87	51.87	51.87
HSD	57.14	57.14	57.14	57.14	57.14	55.71
LDO	48.00	48.00	48.00	48.00	48.00	48.00
Aviation gasoline (100LL)						
JP-1:						
i) For sale to PIA Domestic Flight	35.89	35.62	31.24	31.83	36.17	36.17
ii) For sale to PIA foreign flights & foreign airline						
iii) For Cargo & Technical Landing Flights						
JP-4	31.40	33.54	32.60	33.50	37.06	37.06
JP-8	39.09	38.84	34.45	35.04	39.38	39.38

Source: Hydrocarbon Development Institute of Pakistan (HDIP)

TABLE 13.5  
OIL SALE PRICES

	Rs/Ltrs		
Date	01-10-2009	01-11-2009	01-12-2009
Ex-Depot Sale Price			
Motor Gasoline	61.63	61.63	66.00
HOBC (Automotive 100 Octane)	75.59	75.59	80.52
Super (90 Octane) Blend of Motor Gasoline @ 60% and HOBC 40%)			
Kerosene	57.87	57.87	62.63
HSD	64.79	64.79	70.52
LDO	54.97	54.97	60.22
Aviation gasoline (100LL)			
JP-1:			
i) For sale to PIA Domestic Flight	46.03	48.37	52.26
ii) For sale to PIA foreign flights & foreign airline			
iii) For Cargo & Technical Landing Flights			
JP-4	44.24	45.68	50.02
JP-8	45.75	48.09	51.97

Source: Hydrocarbon Development Institute of Pakistan (HDIP)



TABLE 13.6  
GAS SALE PRICES

Category	(Rs/mcft)							
	20-08-2002	25-10-2002	21-03-2002	20-08-2008	1-7-2003	1-7-2004	1.12.2004	2-2-2005
<b>DOMESTIC (Slab)</b>								
i Upto 1.77 M cu.ft./ Month	66.86	67.95	67.95	67.95	69.31	73.95	73.95	73.95
ii Upto 1.77 to 3.55 M cu.ft./ Month	100.73	102.37	102.37	102.37	104.42	111.42	111.42	120.61
iii Upto 3.55 to 7.1 M cu.ft./ Month	161.16	163.78	163.78	163.78	167.06	178.25	178.25	192.96
iv Upto 7.1 to 10.64 M cu.ft./ Month	201.45	213.06	213.06	213.06	217.32	231.88	231.88	251.01
v Upto 10.64 to 14.20 M cu.ft./ Month								
vi Upto 4.20 to 17.75 M cu.ft./ Month	217.85							
vii All over 17.75								
<b>COMMERCIAL</b>	186.98	190.02	190.02	190.02	193.82	204.88	204.88	221.78
General Industry	166.18	168.88	168.88	168.88	172.26	182.09	182.09	197.11
Cement	222.32	222.32	222.32	222.32	209.78	209.78	209.78	227.09
CNG Station	166.18	168.88	168.88	168.88	172.26	182.09	182.09	197.11
Pakistan Steel							182.09	
Captive Power								
Independent Power Projects								
<b>FERTILIZER</b>								
<u>SNGPL'S SYSTEM</u>								
i For Feed Stock								
Pak-America Fertilizer Ltd. PAFL	36.77	36.77	36.77	36.77	36.77	36.77	36.77	36.77
F.F.C Jordan	36.77	36.77	36.77	36.77	36.77	36.77	36.77	36.77
Dawood Hercules/ Pak Arab	62.57	62.57	62.57	62.57	67.26	73.99	73.99	73.99
Pak china/ Hazara	66.40	66.40	66.40	66.40	71.38	78.52	78.52	78.52
ii For Fuel Generation	166.18	168.88	168.88	168.88	172.26	182.09	182.09	197.11
Dawood and Pak Arab	168.88	168.88	168.88					
<u>FOR MARI GAS CO. SYSTEM</u>								
i For Feed Stock								
(a) Engro Chemical	13.09	13.09	61.68	61.68	66.31	72.94	72.94	72.94
FFC	61.68	61.68	61.68	61.68	66.31	72.94	72.94	72.94
(b) Pak Saudi	61.68	61.68	61.68	61.68	66.31	72.94		72.94
ii For Power Generation	166.18	166.88	168.88	168.88	172.26	182.09	182.09	182.09
<b>POWER Stations</b>								
SNGPL & SSGCL'S SYSTEM	166.18	168.88	168.88	168.88	172.26	182.09	182.09	197.11
Liberty Power Ltd.	190.80	190.80	190.80	222.89	235.77	234.33	235.76	262.03
<b>GAS DIRECTLY SOLD TO</b>								
<u>WAPDA'S GUDDU POWER STATION</u>								
SUI FIELD (917 BTU)	145.51							
KANDHKOT FIELD (866 BTU)	160.54	163.15	163.15	163.15	166.41	175.90	175.90	190.41
MARI FIELD (754 BTU)	156.14	158.68	158.68	158.68	161.85	171.08	171.08	185.19
SARA/SURI FIELD	156.14	158.68	158.68	158.68	161.85	171.08	171.08	185.19

(Contd.)

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

TABLE 13.6  
GAS SALE PRICES

	(Rs/mcft)						
Category	1-7-2005	1-1-2006	1-7-2006	1-2-2007	1-1-2008	30-6-2008	01-01-2009
<b>DOMESTIC (Slab)</b>							
i Upto 1.77 M cu.ft./ Month	73.95	80.98	85.03	78.38	78.38	78.38	82.30
ii Upto 1.77 to 3.55 M cu.ft./ Month	127.62	147.41	89.03	82.07	82.07	82.07	86.17
iii Upto 3.55 to 7.1 M cu.ft./ Month	204.17	235.84	162.07	149.40	149.40	149.40	156.87
iv Upto 7.1 to 10.64 M cu.ft./ Month	265.59	306.79	259.29	239.01	239.01	313.10	332.12
v Upto 10.64 to 14.20 M cu.ft./ Month			337.30	310.92	310.92	407.31	432.06
vi Upto 4.20 to 17.75 M cu.ft./ Month						529.50	561.67
vii All over 17.75							730.17
COMMERCIAL	234.67	271.07	298.03	268.23	283.05	370.80	393.33
General Industry	208.56	240.91	264.87	238.38	251.55	329.54	339.43
Cement	240.28	277.55	305.15	305.15	335.67	428.89	454.95
CNG Station	208.56	240.91	264.87	238.38	291.36	388.32	427.15
Pakistan Steel	208.56						
Captive Power	208.56	240.91	264.87	238.38	251.55	422.60	339.43
Independent Power Projects							295.03
<b>FERTILIZER</b>							
i For Feed Stock							
(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 Jordan	36.77	36.77	36.77	36.77	36.77	36.77	102.01
Dawood Hercules/ Pak Arab	83.24	83.24	91.52	91.52	91.52	91.52	96.14
ii For Fuel Generation	88.34	88.34	97.11	97.11	97.11	97.11	102.01
(ii)For Fuel Generation	208.56	240.91	264.87	238.38	251.55	329.54	339.43
Dawood and Pak Arab							
i For Feed Stock							
(i)For Feed Stock							
(a) Engro Chemical	82.06	82.06	90.22	90.22	90.22	90.22	94.78
FFC	82.06	82.06	90.22	90.22	90.22	90.22	94.78
ii For Power Generation	82.06						
(ii)For Power Generation	208.56		264.87	238.38	251.55	329.54	339.43
<b>POWER Stations</b>							
SNGPL & SSGCL'S SYSTEM	208.56		264.87	238.38	251.55	329.54	349.56
Liberty Power Ltd.	303.25	303.25	467.52	445.98	443.06	443.06	848.10
<b>GAS DIRECTLY SOLD TO</b>							
<b><u>WAPDA'S GUDDU POWER STATION</u></b>							
<b>SUI FIELD (917 BTU)</b>							
KANDHKOT FIELD (866 BTU)	201.47	232.72	255.86	230.28	243.00	318.34	337.68
MARI FIELD (754 BTU)	195.95	226.34	248.85	223.96	236.34	309.61	328.42
SARA/SURI FIELD	195.95		248.85	223.96	236.34	309.61	

Source : Hydrocarbon 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