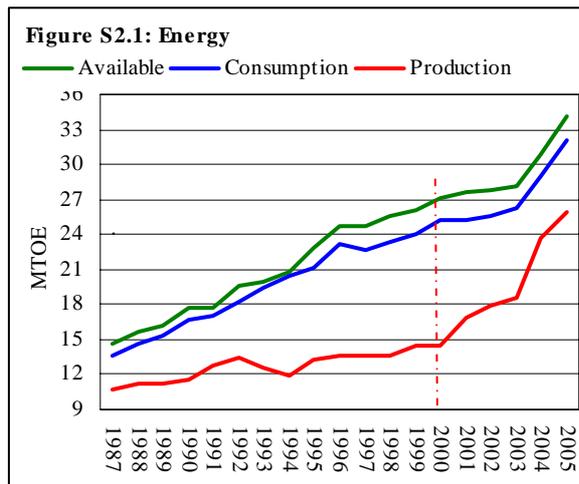


Special Section 2

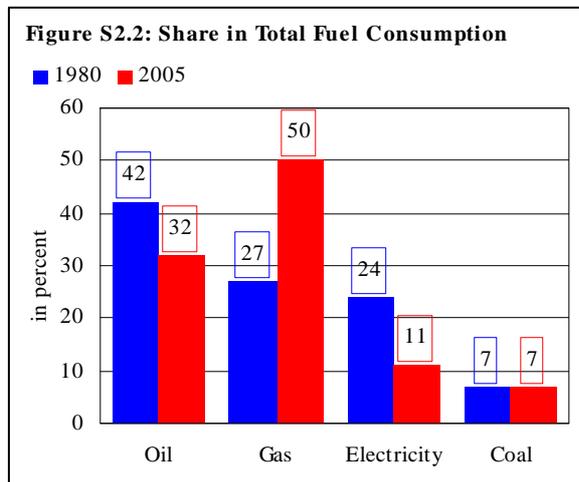
Dynamics of Energy Consumption

Pakistan has been facing severe imbalances in energy demand and supply for the last couple of decades. During early 1980s domestic supply of energy was fulfilling almost 86 percent of total domestic energy demand; a gap of 14 percent was being filled by imports. However, the demand – supply gap started increasing since then and reached to almost 47 percent by the year 2000 (see **Figure S2.1**).



The domestic supply position of energy, nevertheless, improved after 2000 and the gap shrank to 18 percent in 2005; this was mainly due to steady expansion in the supply of natural gas. Currently, the total supply of energy from all sources is about 34 MTOE (million ton oil equivalent) and total consumption is 32 MTOE.¹

Traditionally, oil has been the largest source of energy, but its share in total consumption has declined from 42 percent of the total consumption in 1980 to 32 percent in 2005 (see **Figure S2.2**). The share of electricity has also declined significantly in the total fuel consumption in the economy. Correspondingly, natural gas has become the most popular source of energy, almost doubling its share in fuel



¹ Total supply includes domestic production and imports excluding exports and feed stocks; the difference between total supply and consumption is line losses.

consumption during this period.

It is important to note that the pattern of energy consumption has changed over time in favour of natural gas primarily due to its enhanced availability² and upward changes in relative prices of other fuel sources, especially oil. **Figure S2.3** shows that the domestic oil price has been increasing faster relative to the gas price since early 1990s. The relative prices index of oil is 1:1.8; i.e per unit cost of oil was 1.8 times higher than that of gas during 2005.³ Resultantly, there has been a continuing shift from oil consumption to gas consumption.

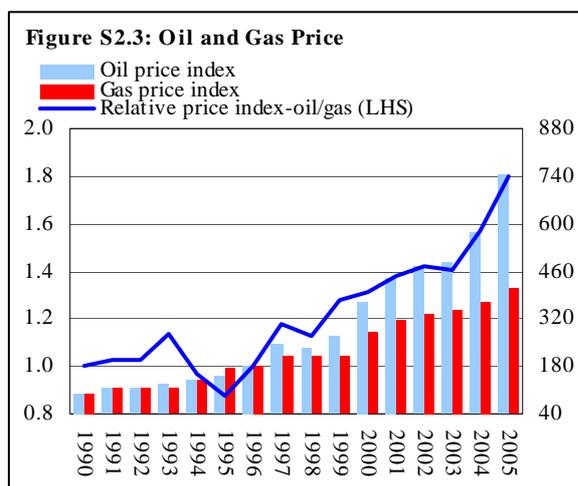


Table S2.1: Energy Distribution by Fuel Type (percent)

	1980's				1990's				2000's			
	Oil	Gas	Elect	Coal	Oil	Gas	Elect	Coal	Oil	Gas	Elect	Coal
Household	35.5	25.5	38.4	0.5	39.3	39.1	21.6	0.0	5.8	62.4	31.8	0.0
Agriculture	29.9	0.0	70.1	0.0	38.8	0.0	61.2	0.0	32.9	0.0	67.1	0.0
Industry	12.9	53.6	19.9	13.6	30.5	54.0	6.2	9.3	28.8	56.2	5.4	9.6
Services:	86.2	5.7	8.1	0.0	92.5	4.9	2.6	0.0	88.2	9.2	2.6	0.0
Transport	100.0	0.0	0.0	0.0	99.9	0.0	0.0	0.0	96.8	3.2	0.0	0.0
Commerce	3.0	40.2	56.9	0.0	7.8	61.0	31.2	0.0	0.0	71.3	28.7	0.0
Others/Govt.	66.1	0.0	33.3	0.6	65.2	0.0	34.8	0.0	51.9	0.0	48.1	0.0

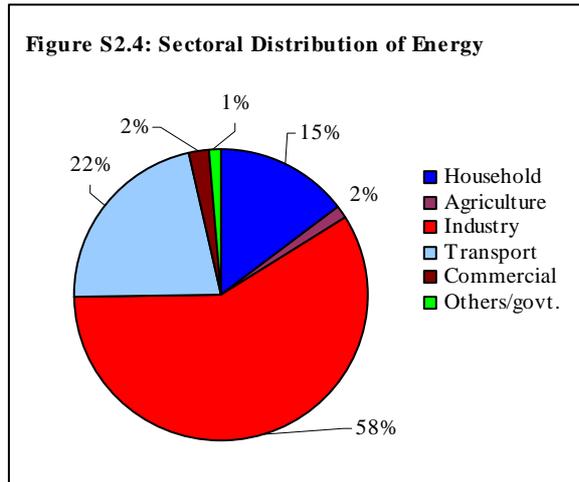
Besides changes in the overall energy mix in the economy, the composition of energy basket of different consumer groups has also changed over time. **Table S2.1** shows the share of different fuels in total usage of energy by consumers. The household sector that consumes 15 percent of the total energy consumption was deriving 35.5 percent of its energy needs from oil, 25.5 percent from gas and 38.4 percent from electricity in 1980s. This composition changed radically in the next two decades; the share of gas increased to 62.4 percent in total household energy consumption during 2000s and consequently the shares of oil and electricity

² During the period 1996-04, 50 new reserves of natural gas were discovered, ever high since 1950.

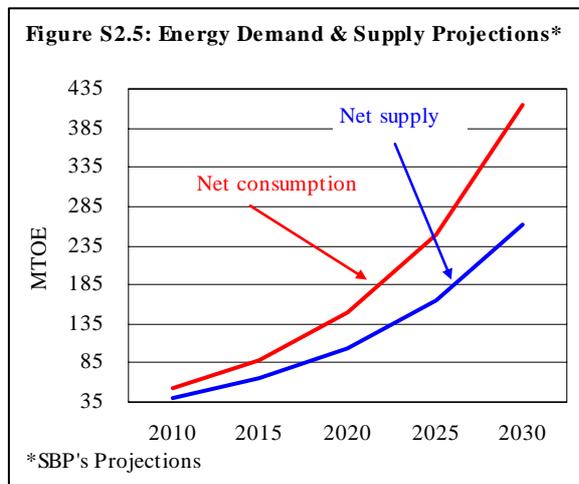
³ 1990 is the base year.

declined. The industrial and services sectors also altered their consumption mix of energy by reducing substantially the usage of electricity and increasing the gas consumption; however, unlike household sector, they increased their oil consumption as well.

Although there are significant changes in intra-sector pattern of energy consumption, the inter-sectoral distribution of energy has not changed much. The industrial sector is still the largest consumer of energy with 58 percent share followed by transport sector with a share of 22 percent (see **Figure S2.4**).



Going forward, if the current growth trend in the energy supply and demand continues then it is estimated that energy consumption in Pakistan would be about 150 MTOE and the net supply from indigenous sources would be 103 MTOE by the year 2020 (see **Figure S2.5**). Thus the country would be facing a shortage of 31 percent of energy in the foreseeable future which will seriously affect the balance of payment position of the country and would make it difficult for the economy to continue moving on the present growth trajectory.



Thus it is very important to take concerted efforts for capacity building to increase the supply of energy from diversified sources; particularly the most neglected sources of energy, i.e. coal, need more attention of the policy makers.