



Energy Policy

By

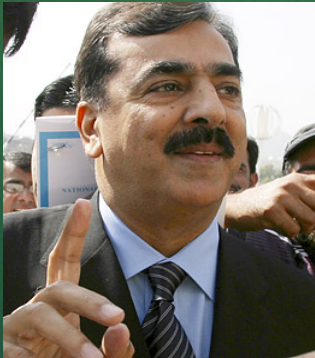
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PAKISTAN

Who's who in Pakistan's Government Today:

President: Asif Ali Zadari



**Prime Minister: Yousaf Raza
Gilani**

**Chairman of the Senate: Farooq
Hamid Naek**



A few facts about Pakistan

- Total Area: 796,095 sq km
- Population: 167,421,000
- Language: Urdu (National) English (official)
- Divided into 4 provinces: Sindh, Punjab, North West Frontier Province, and Balochistan.
- Capital City: Islamabad



A few facts... continued

Major Dams

Mangla Dams

Tarbela Dam

Warsak Dam

Currency:

Pak. Rupee.

Imports:

Industrial equipment, chemicals, vehicles, steel, iron ore, petroleum, tea etc.

Exports:

Cotton, textile goods, rice, leather items carpets, sports goods, handi-crafts, fish and fruits etc.

Government :

Parliamentary form

Employment

Total Labour force:	90.52 million
● Employed Labour Force:	43.22 million
● Agriculture Sector:	18.60 million
● Manufacturing & Mining sector:	5.96 million
● Construction:	2.52 million
● Trade:	6.39 million
● Transport:	2.48 million
● Others:	6.98 million

Pakistan - Geographical Location



Current Energy Policy and Measures

Energy Policies

- Presently seven policies related to energy sector are in place or being updated.
 - Liquefied Natural Gas (LNG) Policy-2006
 - Liquefied Petroleum Gas (LPG)-2006
 - Natural Gas Allocation & Management Police-2005
 - Petroleum Policy -2009
 - Policy for Power Generation Projects-2002
 - Pakistan Renewable Development Policy-2006
 - National Policy for Coal Development-2010(Inprogress)

Power Policy

OBJECTIVES OF THE POWER POLICY:

- ***To provide sufficient capacity for power generation** at the least cost, and to avoid capacity shortfalls
- ***To encourage and ensure exploitation of indigenous resources** , which include renewable energy resources ,human resources, participation and local engineering and manufacturing capabilities.
- ***To ensure that all stakeholders are looked after in process** , ie a win-win situation for all; and
- ***To be attuned to safeguarding the environment.**

Features of the Power Policy

- Proper feasibility study for a particular site-specific hydel or indigenous fuel-based/renewable resource-based project
- Hydel projects in the private sector will be implemented on build-on-operate-transfer (BOOT) basis. Thermal projects in the private sector, however will be established either on BOOT or build-on-operate (BOO) basis
- The GOP will guarantee that the terms and conditions of executed agreements i.e. the Implementation Agreement (IA), Power Purchase Agreement (PPA), Fuel Supply Agreement (FSA)/Gas Supply Agreement (GSA), Coal Supply Agreement (CSA) and Water Use License (WUL), including payment terms

Features of the Power Policy

- Power companies will be allowed to import plant and equipment not manufactured locally at concessionary rates. Companies will also be completely exempted from the payment of income tax.
- To promote indigenization the local engineering industry will be encouraged to form joint ventures with foreign companies in order to develop power projects with a cumulative capacity

Power Policies

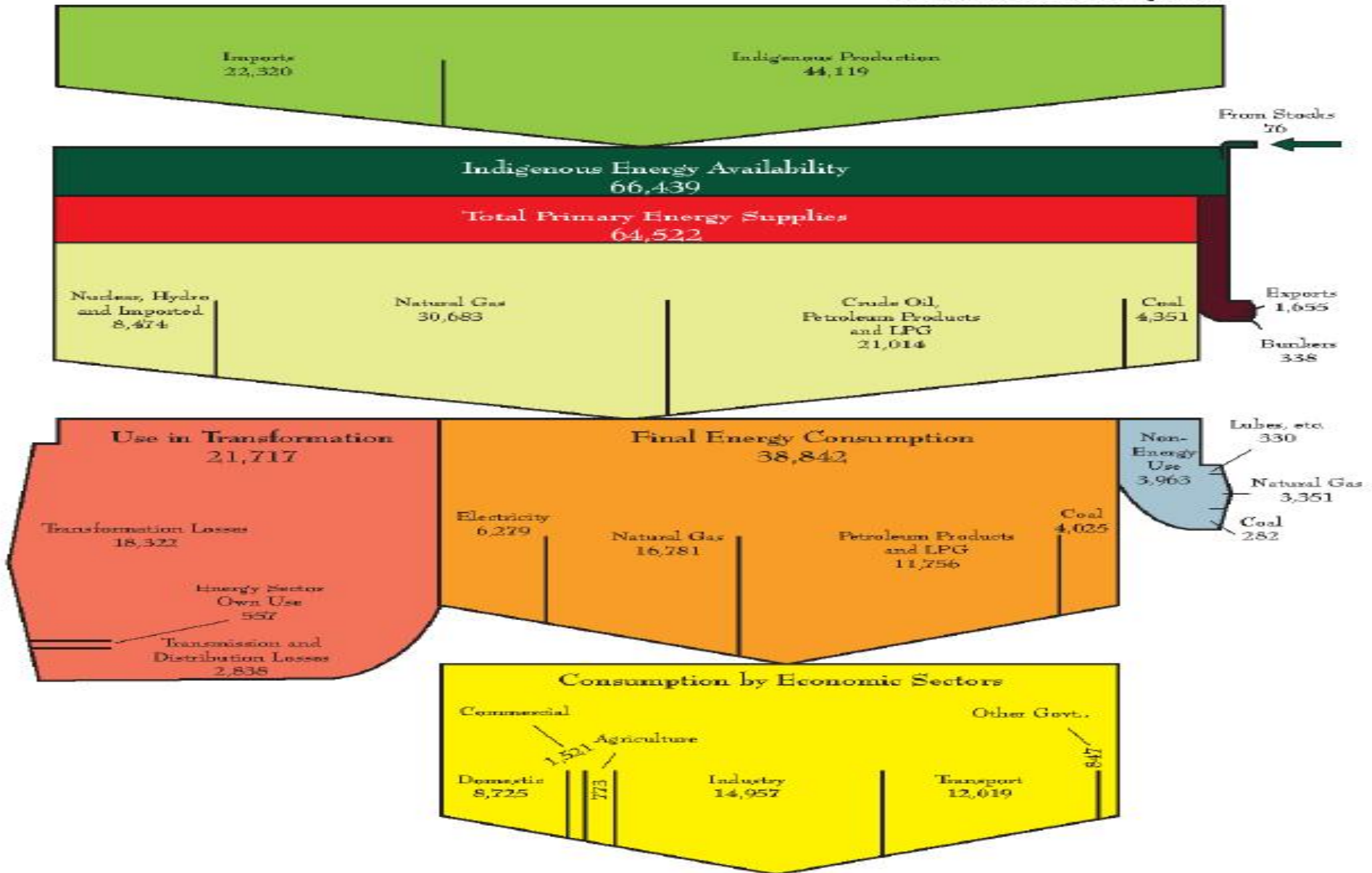
Measures:

Pakistan 's previous polices encouraged the thermal power generation which used furnace oil, but ignored the future high prices of the furnace oil which ultimately resulted in high cost of power, so overall result is high cost/ kWh.

Now our government is seriously thinking to prepare a policy which encourage power generation from renewable energy sources i.e., shift from thermal power generation to hydel power generation also gonernment of Pakistan is working for a policy attractive for investors.

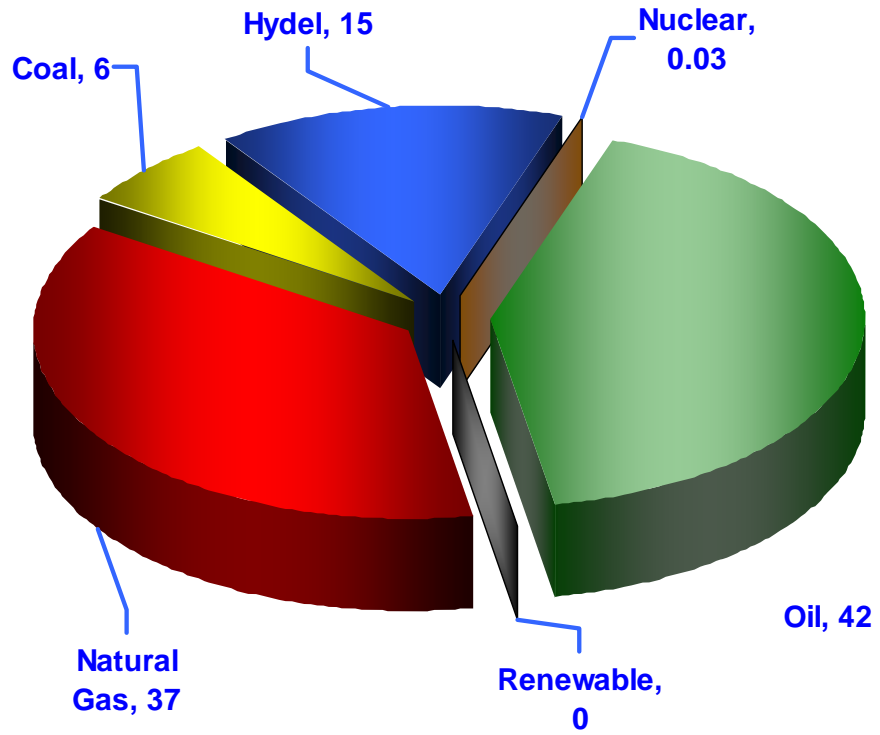
ENERGY FLOW CHART 2010-11

Thousand Tonnes of Oil Equivalent

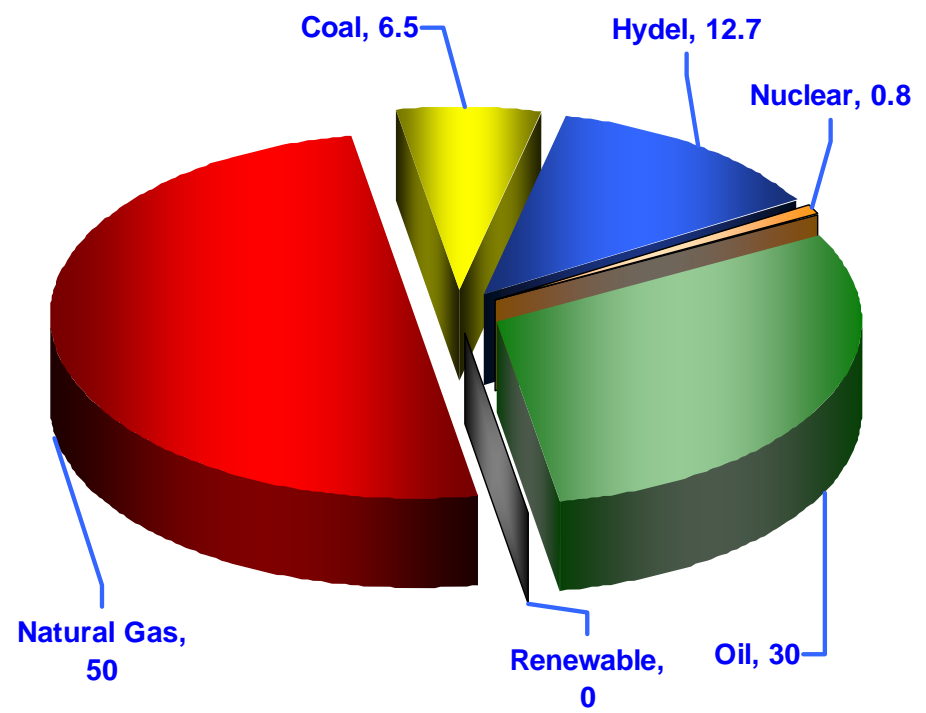


Pakistan Primary Energy Mix (%age)

1995
(36.34 MTOE)



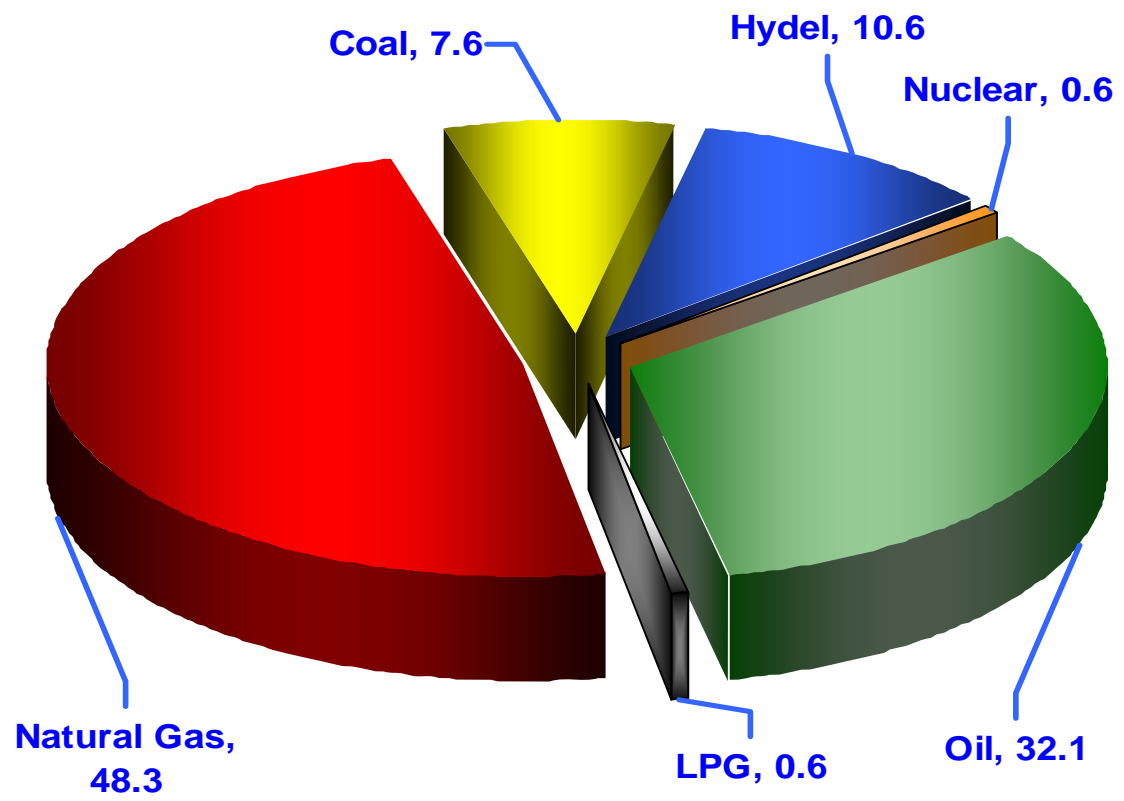
2004
(50.8 MTOE)



Source: Pakistan Energy Year book

Pakistan Primary Energy Mix (%age)

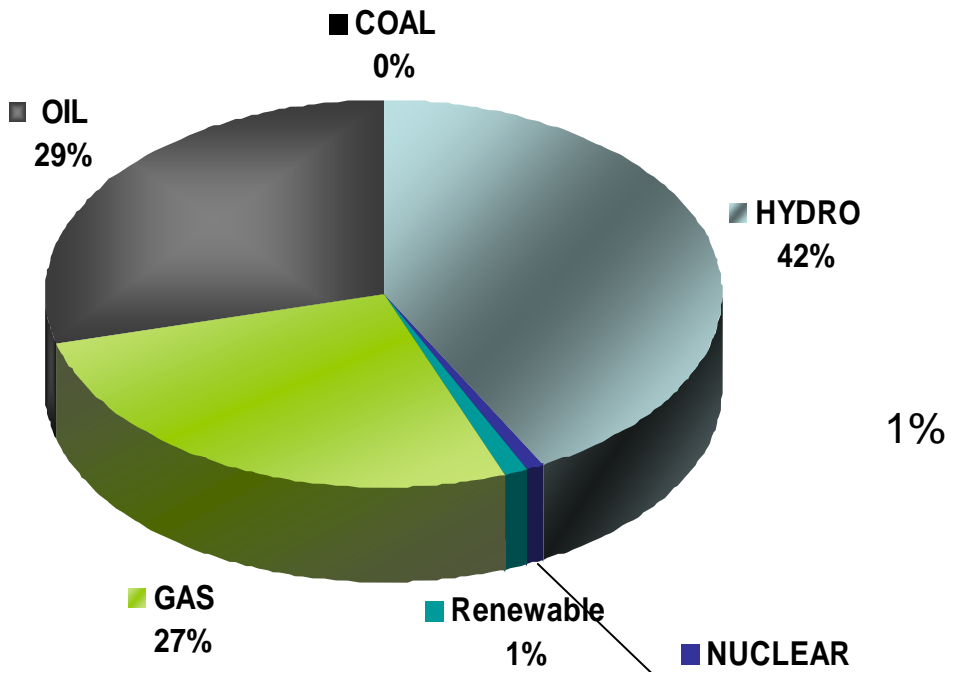
2009
(62.55 MTOE)



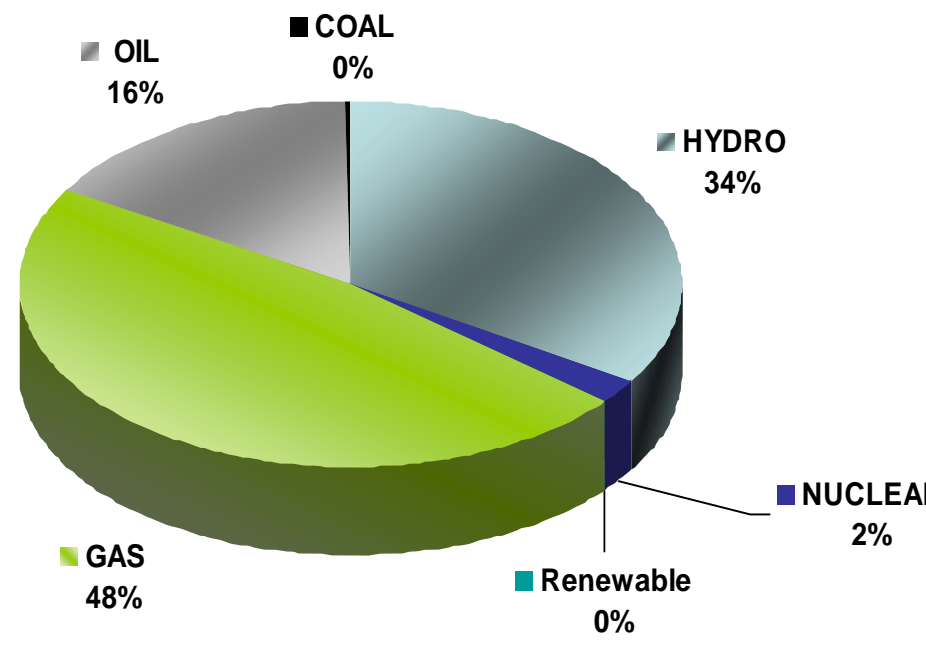
Source: Pakistan Energy Year book 2008-09

Energy Mix in Power Generation (%age)

1995-96

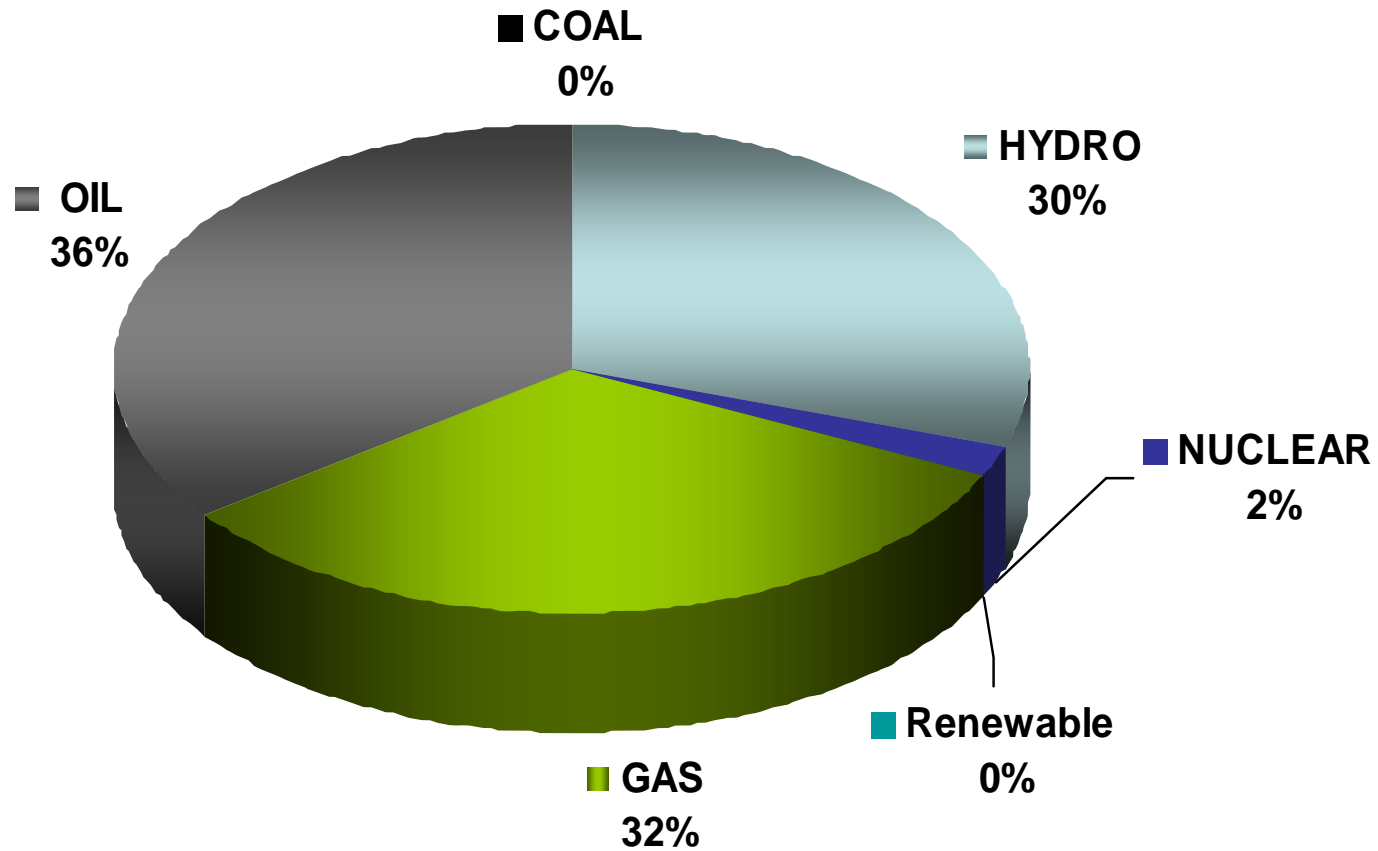


2004-05



Energy Mix in Power Generation (%age)

2009



PRIMARY ENERGY SUPPLIES BY SOURCE

Source	Unit: TOE						ACGR
	2005-06	2006-07	2007-08	2008-09	2009-10	2010-11	
Oil ^{1/}	16,411,834 28.77%	18,788,280 30.09%	19,206,447 30.5%	20,103,060 32.1%	19,806,374 31.4%	20,674,840 32.0%	4.7%
Gas	29,202,951 50.3%	29,324,316 48.4%	29,874,989 47.5%	30,255,885 48.3%	30,808,523 48.8%	30,683,357 47.6%	1.0%
LPG ^{2/}	400,430 0.7%	470,888 0.8%	418,952 0.7%	407,705 0.6%	395,563 0.6%	339,633 0.5%	-3.2%
Coal	4,049,654 7.0%	4,426,678 7.3%	5,783,844 9.2%	4,732,823 7.6%	4,621,639 7.3%	4,350,668 6.7%	1.4%
Hydro Electricity ^{3/}	7,366,452 12.6%	7,626,755 12.6%	6,851,955 10.9%	6,631,841 10.6%	6,705,533 10.6%	7,593,074 11.8%	0.6%
Nuclear Electricity ^{3/}	592,867 1.0%	546,159 0.9%	734,537 1.2%	386,165 0.6%	690,821 1.1%	816,370 1.3%	6.6%
Imported Electricity ^{4/}	34,775 0.1%	40,781 0.1%	47,550 0.1%	54,266 0.1%	59,597 0.1%	64,093 0.1%	13.0%
TOTAL:	58,058,983 100.0%	60,623,966 100.0%	62,918,268 100.0%	62,565,745 100.0%	63,087,952 100.0%	64,522,234 100.0%	2.1%
Annual growth rate	4.45%	4.42%	3.76%	-0.56%	0.83%	2.27%	

1/ Excluding petroleum products exports and bunkering

2/ Include imports and production from field plants.

3/ Converted @ 10,000 Btu/kWh to represent primary energy equivalent of hydro and nuclear electricity as if this was generated by using fossil fuel

4/ WAPDA imported electricity from Iran since Oct-2002.

Table: 1.2

FINAL ENERGY CONSUMPTION BY SOURCE

Source	Unit: TOE						ACGR
	2005-06	2006-07	2007-08	2008-09	2009-10	2010-11	
Oil ^{1/}	10,877,601 32.0%	10,573,330 29.4%	11,528,722 29.3%	10,842,614 29.0%	10,829,455 27.9%	11,252,938 29.0%	0.7%
Gas ^{2/}	13,325,251 39.3%	14,701,024 40.8%	15,881,990 40.3%	16,307,898 43.7%	17,024,933 43.9%	16,781,247 43.2%	4.7%
Coal ^{2/}	3,611,490 10.6%	4,149,041 11.5%	5,404,715 13.7%	3,893,001 10.4%	4,282,067 11.0%	4,025,380 10.4%	2.2%
Electricity ^{3/}	5,505,555 16.2%	5,921,635 16.4%	5,977,697 15.2%	5,731,032 15.3%	6,054,921 15.6%	6,278,947 16.2%	2.7%
LPG	625,792 1.8%	658,225 1.8%	619,944 1.6%	569,995 1.5%	576,637 1.5%	503,272 1.3%	-4.3%
TOTAL:	33,945,689	36,005,255	39,413,069	37,344,540	38,768,001	38,841,783	2.7%
Annual growth rate	5.74%	6.07%	9.46%	-5.25%	3.81%	0.19%	

1/ Excluding consumption for power generation.

2/ Excluding consumption for power generation and feedstock.

3/ @ 34.12 Btu/kWh being the actual energy content of electricity.

Power Generation Plan (2010-30)

M.W

Years	Nuclear	Hydel	Coal	Renewable	Oil	Gas	Total	Cumulative
2005	400	6460	160	180	6400	5940	19540	
Addition:								
2010-15	900	7570	3000	800	300	7550	20120	47540
2015-20	1500	4700	4200	1470	300	12560	24730	72270
2020-25	2000	5600	5400	2700	300	22490	38490	110760
2025-30	4000	7070	6250	3850	300	30360	51830	162590
Total:	8800	32660	19910	9700	7760	83760	162590	



ISSUE

- The energy sector has **various policy documents** for the oil, gas, power and renewable energy sectors drafted at different times:
 - There are shortcomings in structure/scope and no linkage across energy fuels.
 - Some critical aspects are missing, incomplete or outdated.
 - Stakeholders face ambiguity in policy, rules and procedures.

WAY FORWARD

- The **development of an energy policy document should be initiated** covering all pertinent aspects of the energy supply chain.
- **Active participation of all stakeholders** should be maintained for proper buy-in of the policy document during the development phase.
- **Detailed procedures, rules, etc. will emanate from the policy** and will be developed by the implementing agencies.

ISSUES AND WAY FORWARD

Crisis situation: Circular debt, weak financial position of energy companies, falling gas production, high dependence on oil/gas (over 80%), low exploitation of indigenous coal and hydel resources and unutilized power generation capacity owing to fuel supply constraints leading to **severe energy shortages**.

Non-technical T&D losses remain high (estimated to be around 10-12%) which include theft, non-payment of bills, defective meters and unmetered supply.

Pakistan's industry is energy intensive because of:

- High losses.
- Wastage throughout the supply chain.
- Lack of investment in replacing obsolete technology and infrastructure

ISSUES AND WAY FORWARD

- Implement a **national plan to improve tariff collections** (with necessary legislation for penalties):
 - **Out source high loss feeders** for tariff collection.
 - Introduce **pre-paid smart metering**.
 - Promulgate **anti-theft law**.
 - **Launch Public awareness campaign** - if bills are paid and smart meters are installed, load shedding will be reduced.
 - **Adjust electricity bills** of provinces/defense installations **at source** with federal govt.
 - Assign **priority of supplies to DISCOs** (with lower load shedding) in areas with improved collection and lower losses.

Power Crises

Transmission & Distribution Losses and Theft

DISCO	Transmission Losses (%)	Distribution Losses (%)
LESCO	6.6%	13.02
GEPCO		11
FESCO		10.8
IESCO		11.5
MEPCO		16.8
PESCO+TESCO		34.5
HESCO		31.8
QESCO		21.5
Total WAPDA		24
KESC	5.1%	29.0
Expected	Total: 7 – 8 %	

Areas with greater private industrial load

The high losses need to be reduced.

i) Up-gradation of transmission & distribution system; ii) improvement in recovery in Electricity consumption bills

Circular Debt in the Energy Sector

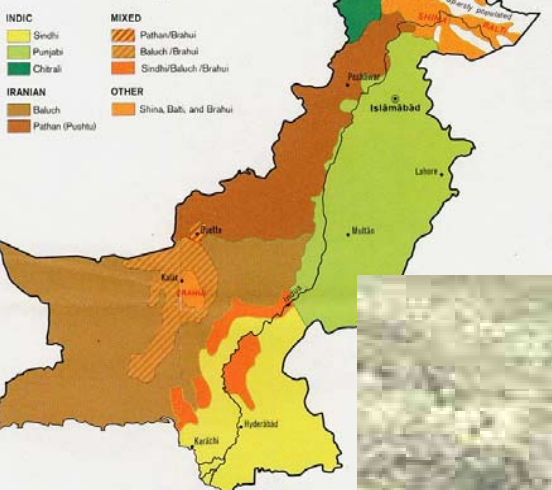
- Pakistan Electric Power Company (PEPCO) in-ability to pay IPPs.
- IPPs have to pay to Pakistan State Oil (PSO) for furnace oil on a regular basis.
- PSO have to make payments to refineries and product imports on regular basis.
- The situation becomes even more complex when the government increases the power tariff to narrow the deficit, however with this the pilferage/losses goes up

Due to non-payments to IPPs, GENCOs results in less generation and causes power crisis

Crisis in Pakistan



Ethnic Groups



Pakistan



Earth quake 2005





Flood in 2010





Terrorism 2009-2011



THANK YOU