

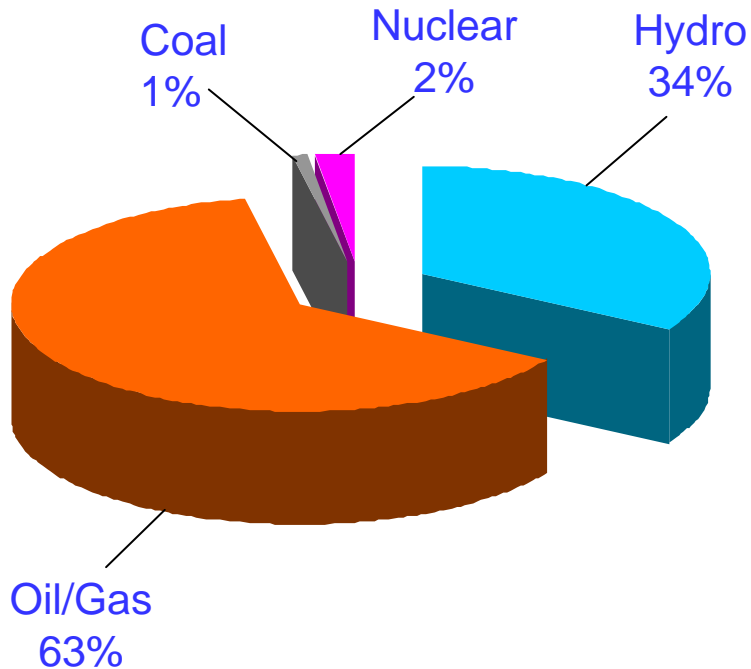
Nuclear Power Program of Pakistan

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Pakistan Atomic Energy Commission

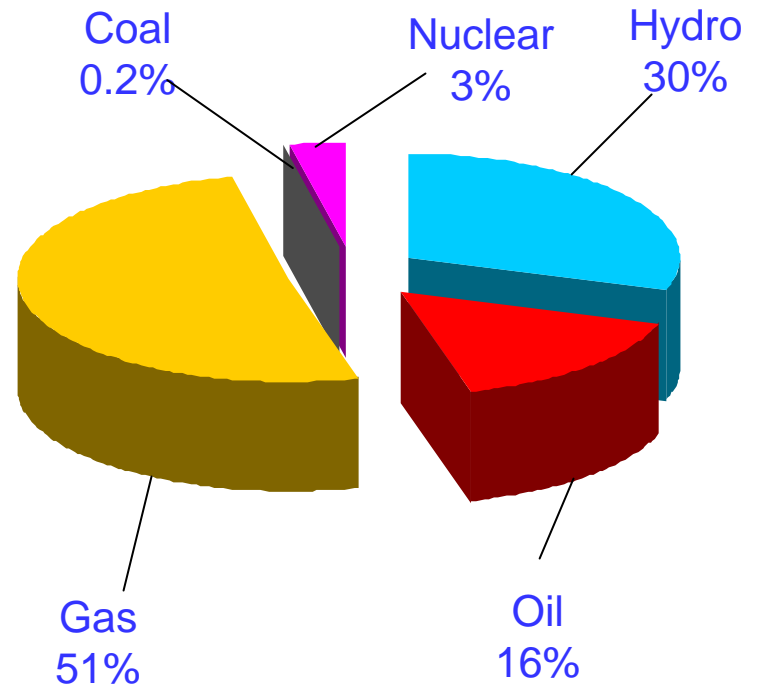
WNA Symposium, London
6-8 September 2006

Power Sector of Pakistan (2004-05)

Installed Capacity
(19,342 MW)

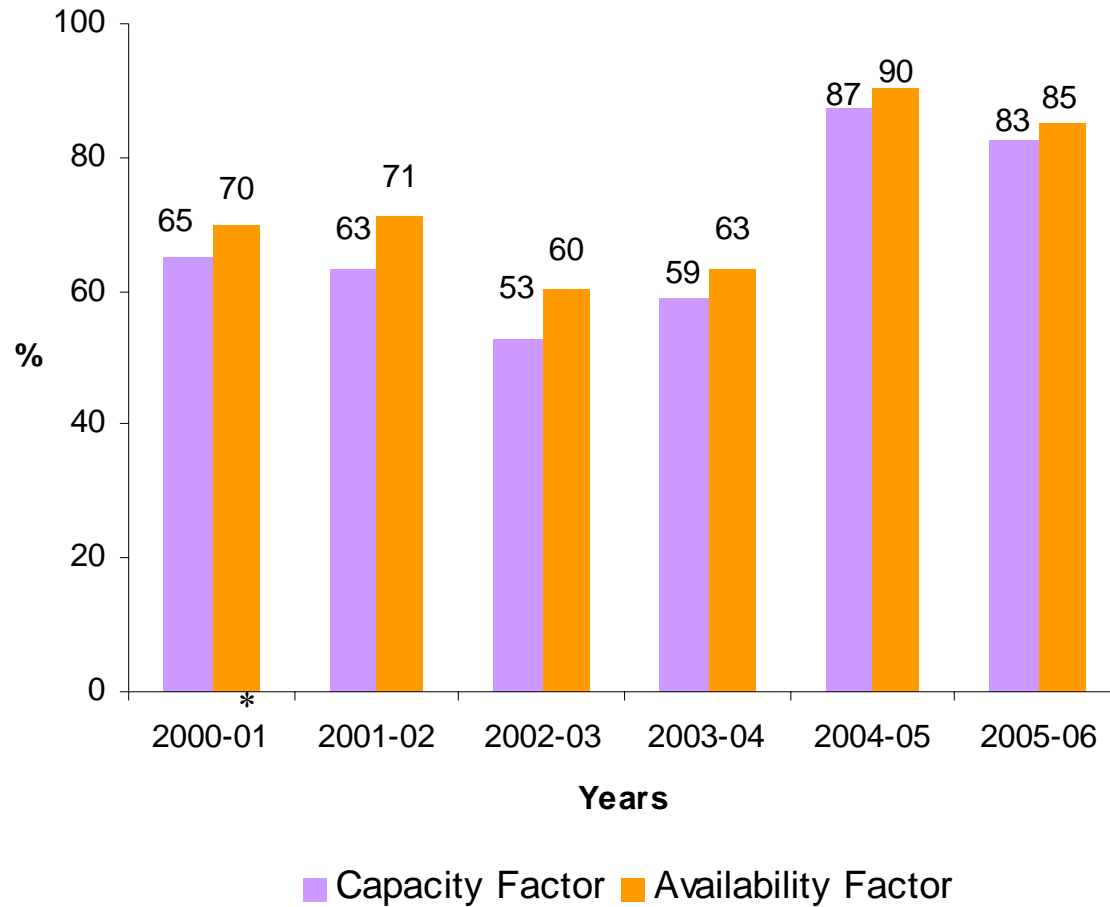


Electricity Generation
(85,629 TWh)



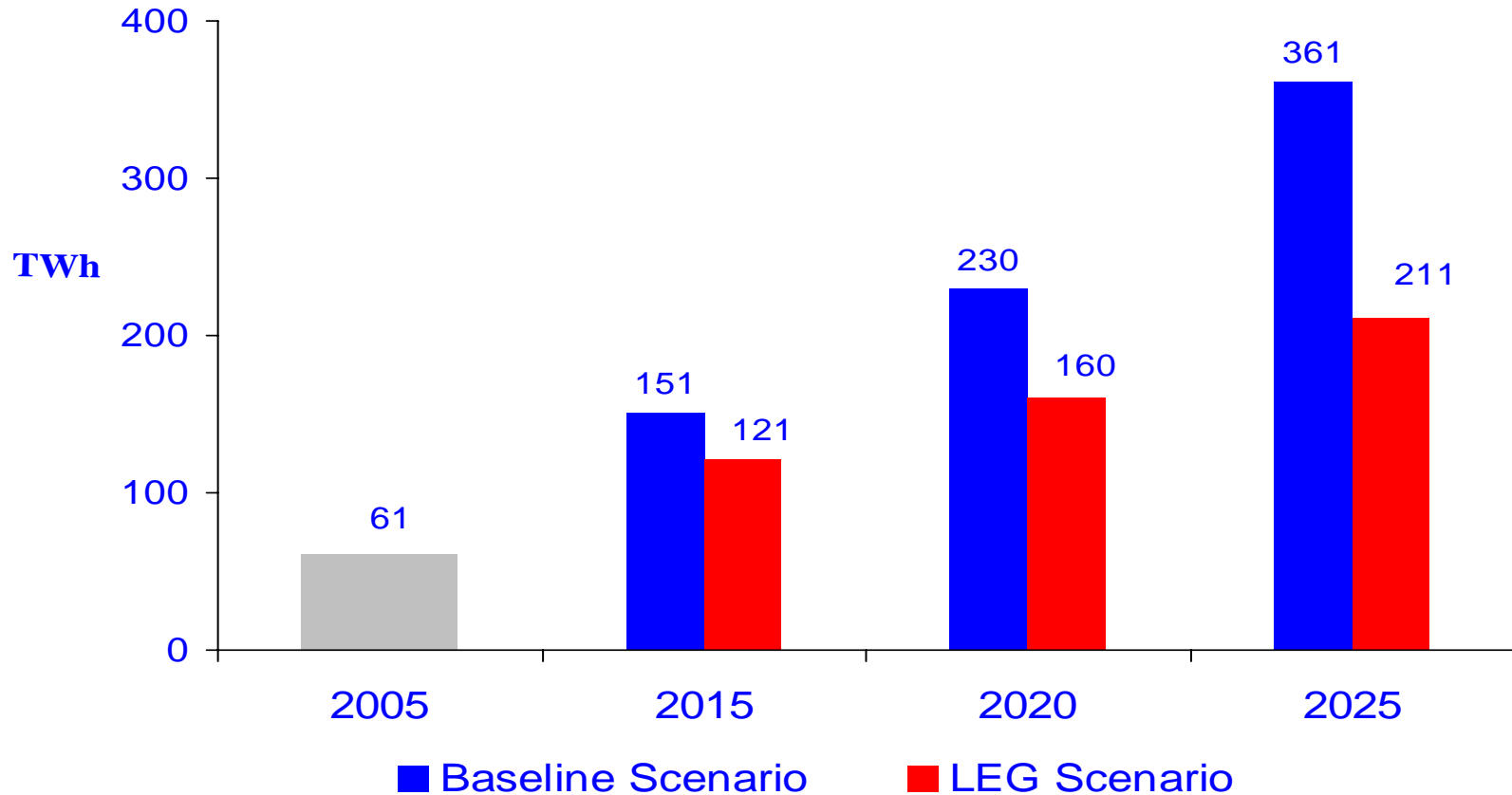
Share of Nuclear Power in Primary Energy Supply = 1.2%

Operational Performance of CHASNUPP Unit-1



* September 15, 2000 to June 30, 2001

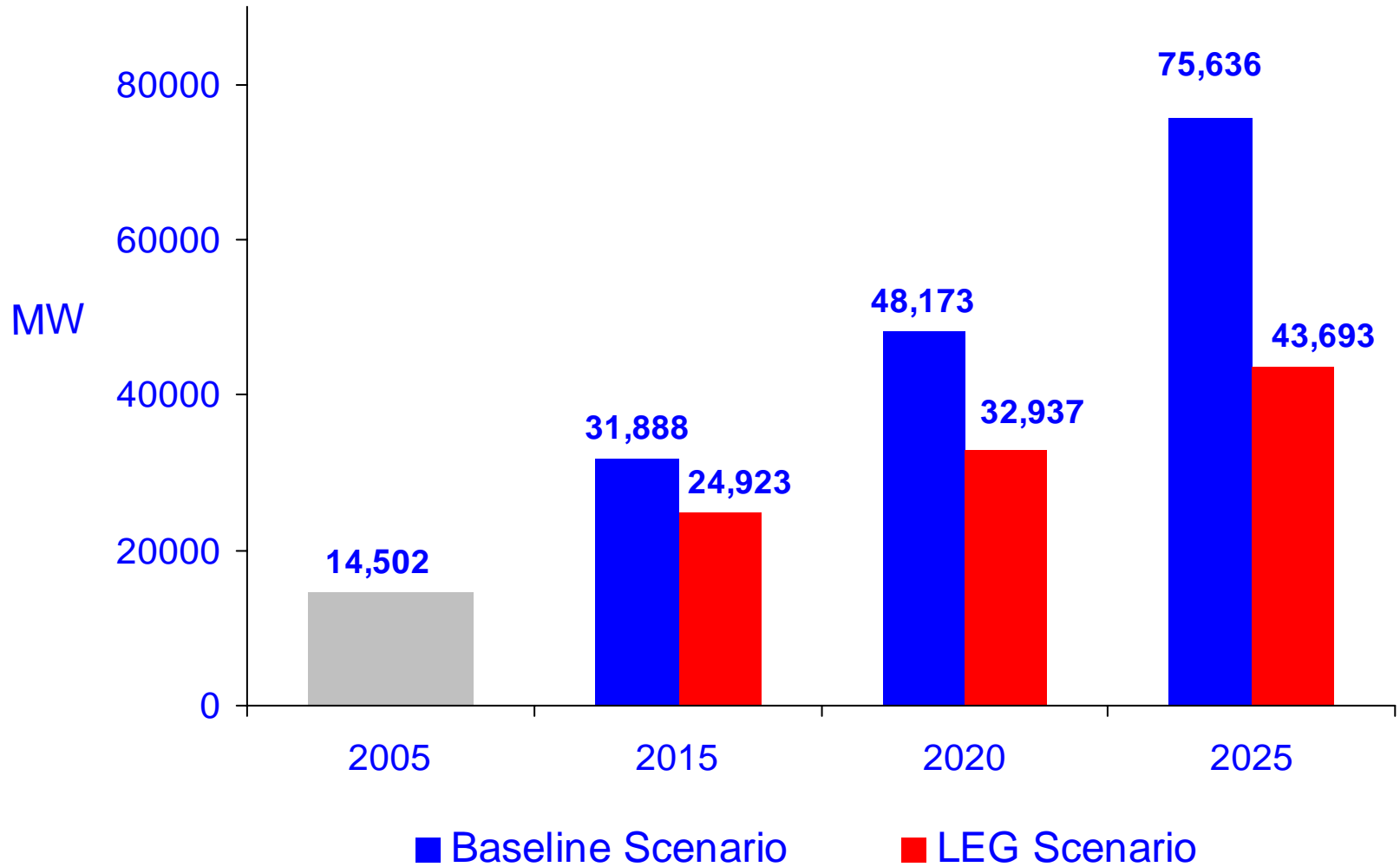
Grid Electricity Demand



Average Annual Economic Growth :

- Baseline Scenario = 8.3%
- Low Economic Growth (LEG) Scenario = 6.1%

Peak Demand

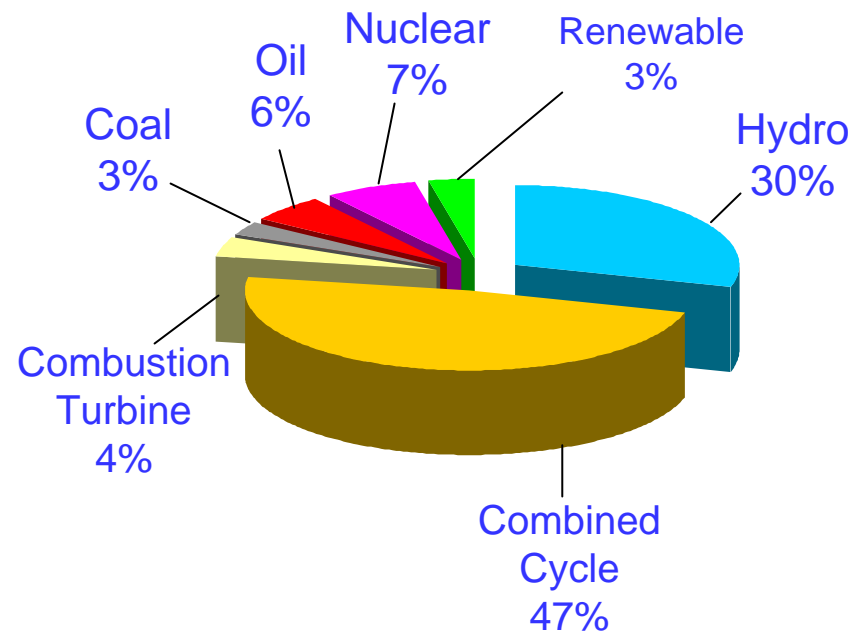
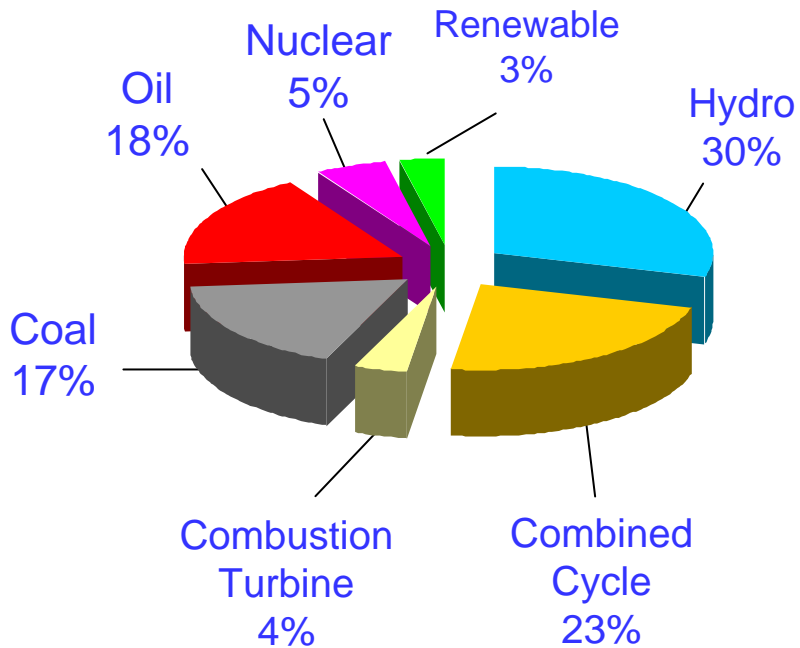


Installed Capacity (2025)

Capacity : 82,000 MW

Scenario : **Baseline**

Scenario : **FIE**

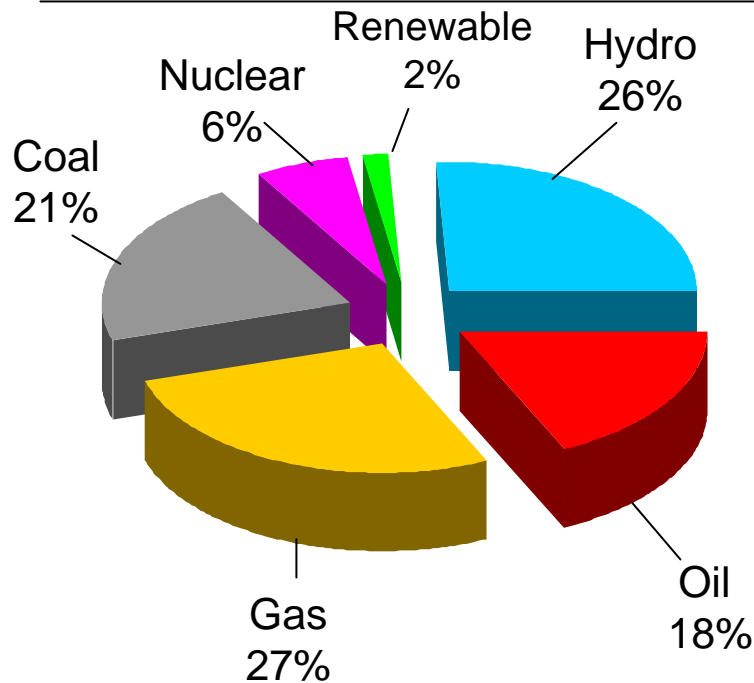


This capacity mix is based on fossil fuel prices of year 2003-04. Prevailing high fossil fuel prices enhance the comparative advantage of NPPs.

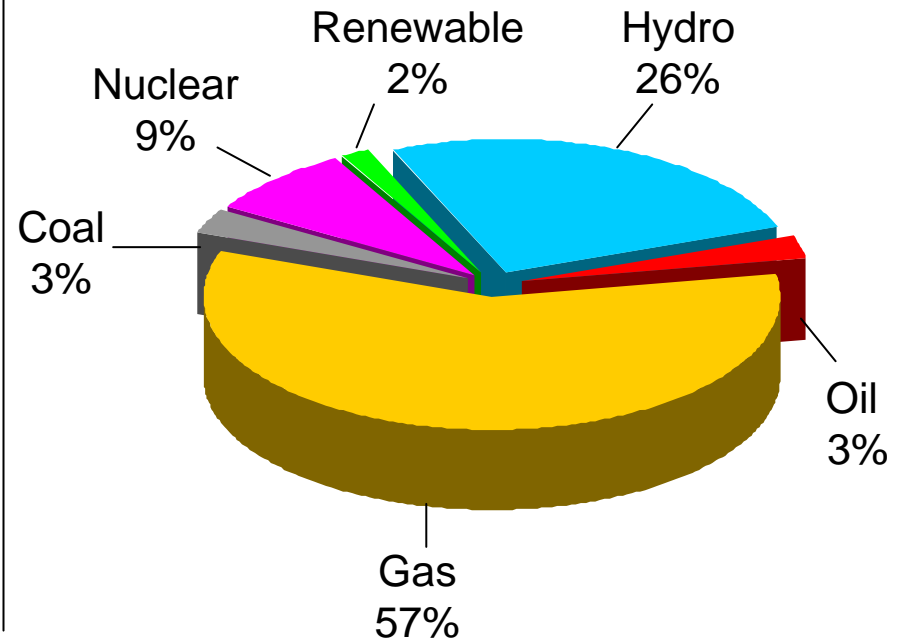
Electricity Generation Mix (2025)

Electricity Generation = 439 TWh

Scenario: **Baseline**

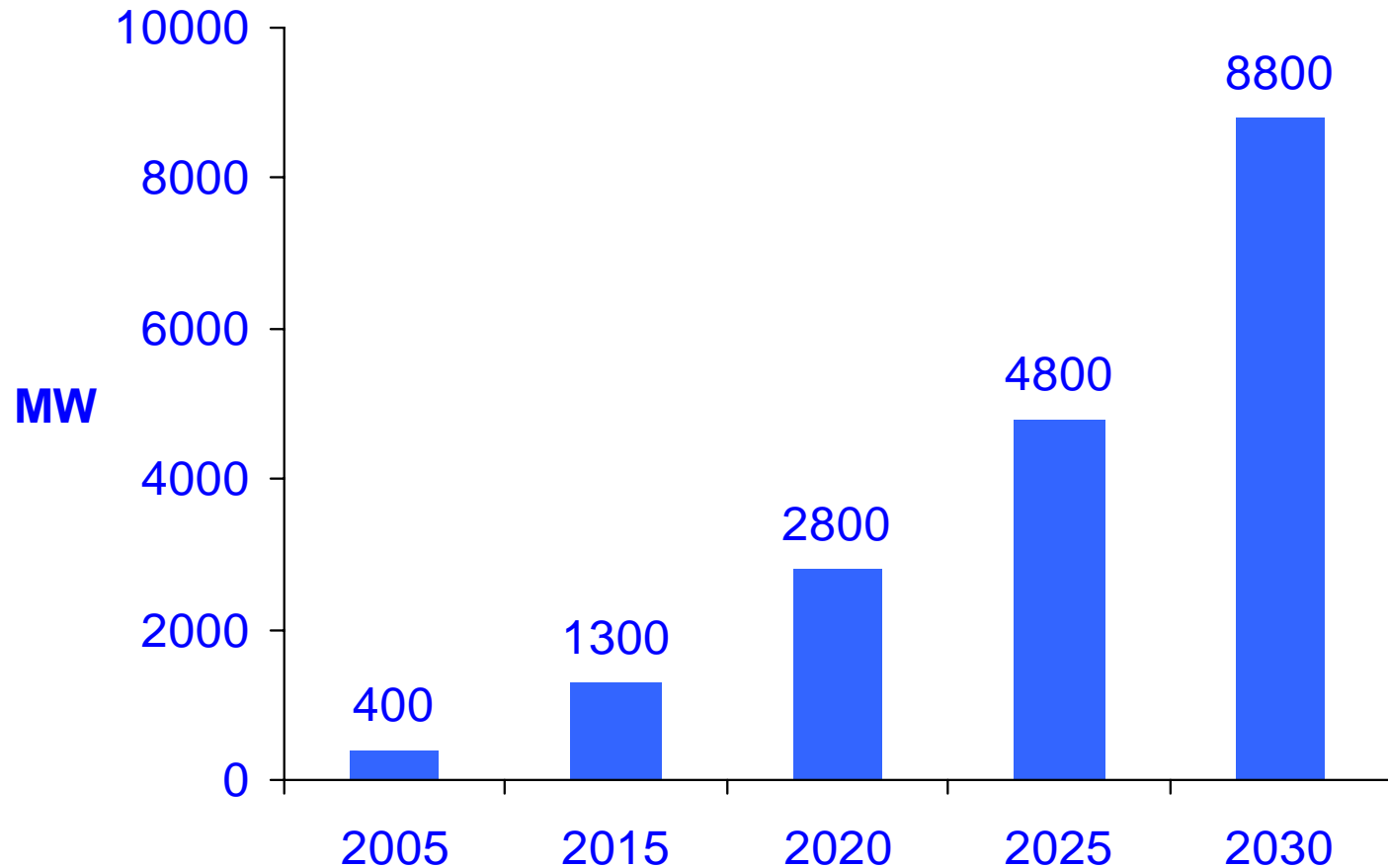


Scenario: **FIE**



Favourable International Environment (FIE) will help to reduce use of oil & coal.

Nuclear Power Program of Pakistan



Source : Medium Term Development Framework (2005)

Investment and Financing for the Nuclear Power Program

Investments

Investment Requirements: \approx \$ 17 Billion
(Beyond CHASNUPP-2)

Financing Plan

Plant	Govt Financing	Supplier's Credit	Revenue from NPPs operation
CHASNUPP-1 (NPP2)	✓	✗	✗
CHASNUPP-2 (NPP3)	✓	✓	✗
NPP4 - NPP7	✓	✓	✓
NPP8 - NPP12	✗	✓	✓

Fuel Requirements and Local Capability

Fuel Requirements

Annual Fuel Requirement (as U_3O_8)

- Present: 100 tonnes
- 2025 : 1,000 tonnes
- 2030 : 1,880 tonnes

Local Capability

- 1960's : Beginning of Exploration
- 1970's : Fuel Fabrication for KANUPP
- 1980's : Enrichment Capability

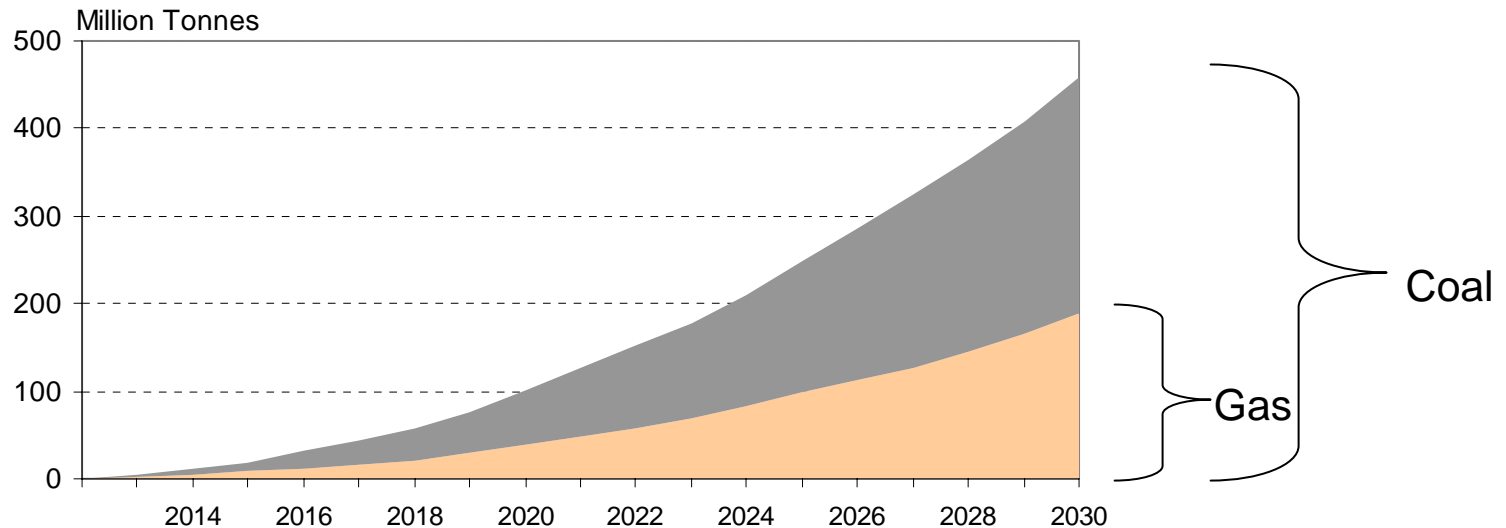
Nuclear Waste Policy

- Low and intermediate nuclear level wastes are disposed of according to national regulatory requirements and guidelines.
- Spent fuel is being stored at the plant sites
- Interim fuel storage facility for KANUPP is being built.
- A waste disposal fund is being accumulated from the revenue of CHASNUPP Unit-1 to meet the future liability of waste disposal. PAEC plans to continue this policy for future NPPs also.

Environmental Advantage

Nuclear Power Program of Pakistan will avoid:

- 22-52 million tonnes of CO₂ per annum in 2030 depending on equivalent generation by natural gas or indigenous coal.
- 190-460 million tonnes of CO₂ during 2013-2030.



In addition to above indicated CO₂ savings, CHASNUPP Units 1 & 2 will have a cumulative CO₂ avoidance of 28-60 million tonnes during this period.

Need for International Cooperation

- The nuclear power program will help in global efforts to reduce carbon emissions
- The entire Nuclear Power Program of Pakistan is (and will be) under IAEA Safeguards.
- Pakistan has offered a concept of “Nuclear Parks” where foreign firms can build and operate nuclear power plants.

So the world community maybe expected to cooperate for the fully safeguarded nuclear power program of Pakistan, to help reduce global carbon emissions.