

Date: _____

ENERGY CRISIS IN PAKISTAN.

Introduction: grappling with the crisis due to :

- Imported fossil fuel
- population growth
- political instability
- Limited renewable energy resource
- absurd energy policies.

Background of the problem: Since 1947 → focus only on water management

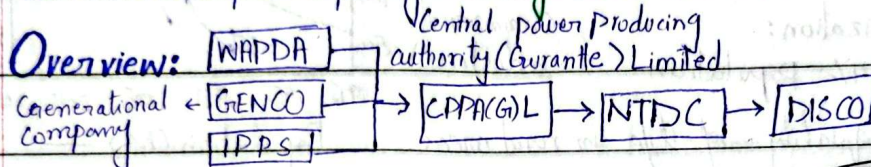
1960 Late ⇒ Energy concerns as demand grew 1967 ⇒ 1st ever energy

& power planning study 1994 ⇒ 1st ever electricity focused power policy

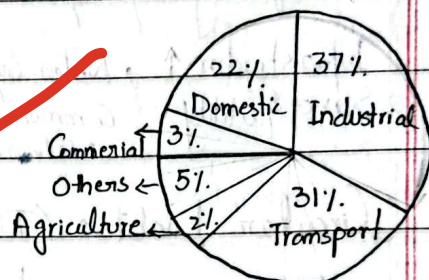
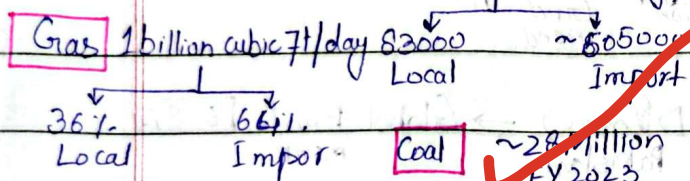
Until 2006 ⇒ Fossil fuel crisis

- Why
- ① Industrial Growth
 - ② Power Demand

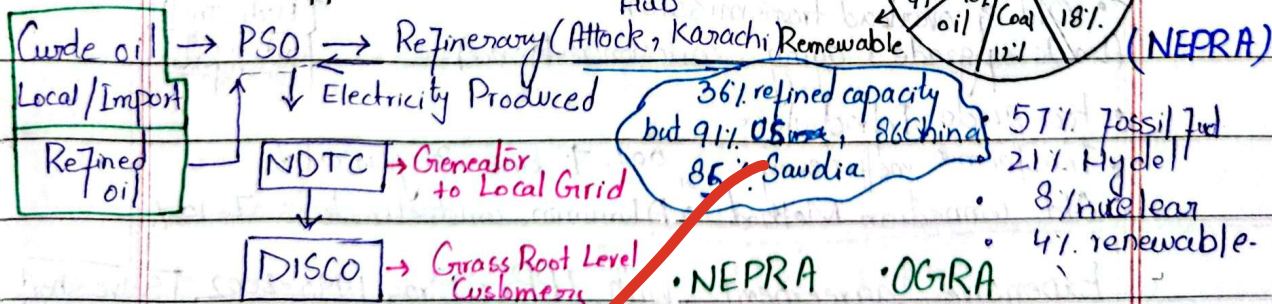
1st renewable power policy → Target Not achieved.



Fossil Fuel: Oil (588000 barrel/day)



Fossil Fuel Supplier:



Problems:

① Load-Shedding	
Summer 2023 Short fall 7000 MW	Urban = 4-5 hr Rural = 10-12
Summer 2022 10000 MW	Urban = 8 hr Rural = 16-18
Summers 2007-16 5000-8000 MW	Urban 8 hr Rural > 18 hr

② Expensive Power Generation	
Domestic unit Price 28-72	Commercial, Agriculture & industries 48-90 Rs
1-100 unit = 28 Rs	
100-300 = 44	
300-600 = 56	
> 600 = 72	

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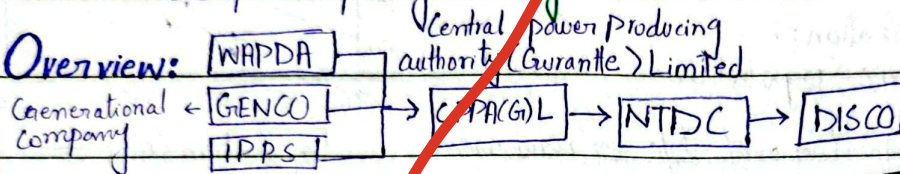
Until 2006 → Fossil fuel centric

Why

- ① Industrial Growth
- ② Power Demand

1st renewable power policy → Target Not achieved.

Overview:



Fossil Fuel: Oil (58800 barrel/day)

Gas 1 billion cubic ft/day 82000 Local ~505000 Import

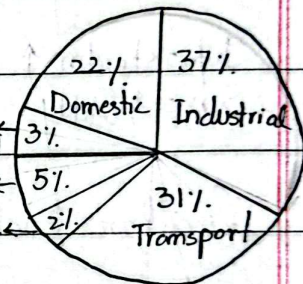
36% Local

64% Import

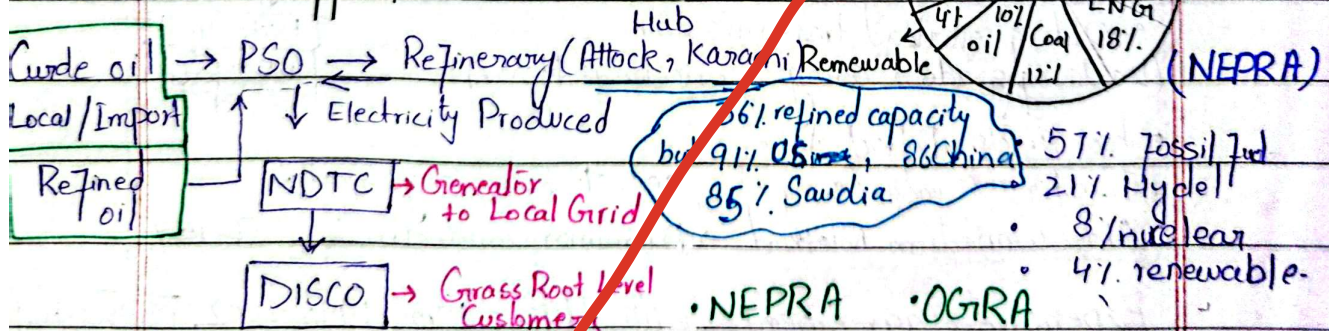
67% import

33% Local

Commercial
Others
Agriculture



Fossil Fuel Supplier:



Problems:

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- Imported fossil fuel
- IMF Loan condition
- Agreement with IPPs.

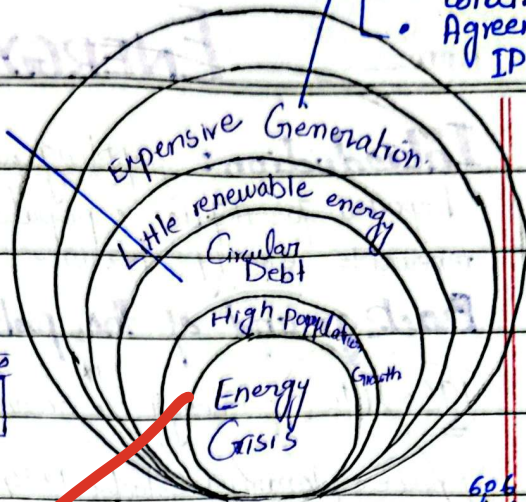
Causes:

Population Growth &

Urbanization:

2024	1951	Growth rate
247.5M	32.7M	2.57%
(World Bank)		MoIB

- T & D Losses
- Power Theft
- Poor Policy
- Old Method collection



Electricity access = 95% (EBSCO)

Growth rate ↑, Demand ↑ Consumption ↑ (residential, Commercial, Industrial)

Urbanization:

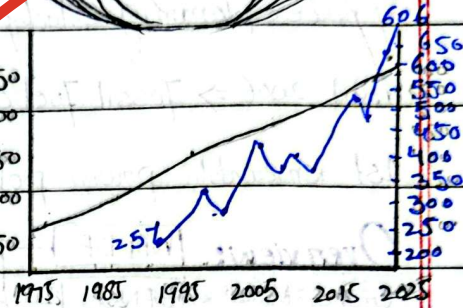
→ 36.44% population

→ Poor quality of life in rural areas

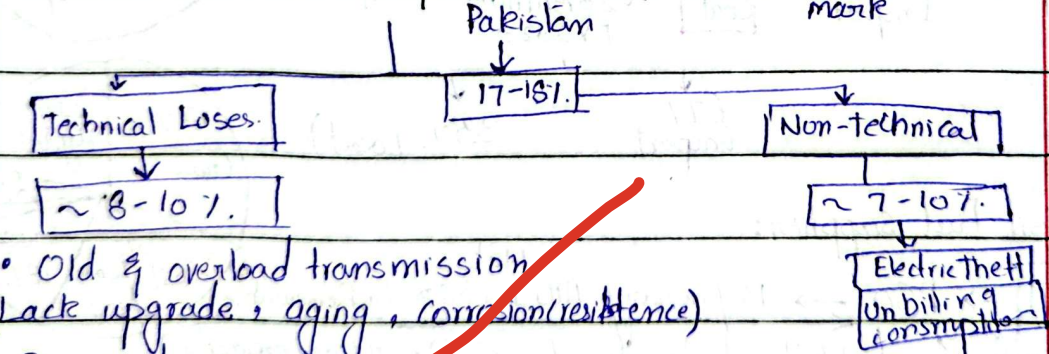
Infrastructure ↑
Service & utility

Water Supply ↑
Communication Network

Electric Grid need ↑



Circular Debts: (T & D Losses) → Global Bench mark 6-8%



• Old & overload transmission (Lack upgrade, aging, corrosion/resistance)

• Poor grade Infrastructure

• Transformer inefficiency

Old connection Method → 60% T line 30 years old. Aluminum conductor loses 7-10%.

Expensive agreement with IPPs: Eras. 1990-2002

2002-2008 (Mushraf era)

Post-2010: Coal & LNG, CPEC + Energy Crisis, 10000 MW Capacity held, Circular Debt ↑

Installed Capacity → 45000 MW → Actual Generation → Capacity 28-32K → Electricity Demand → 31000 MW

Circular Debt 2.6 trillion

IPP → 19000 MW → 20-25 Rs/unit

Hydel 3-5/unit

• Take-or-Pay Clause
• Dollar Indexation
• Capacity payment

MoIB

World Bank

8 billion / 2023

Date: _____

IMF Loan Conditions: Renegotiate in Oct 2022 & March 2023

Force d reduction of
Power Subsidies

Circular Debt
Management

Currency
Devaluation

Privatization
& IPPs

Effects:

add more arguments in these parts.

Industries: ^{Worst} Major

Electricity ↑ Load-Shedding ↑, Product Price ↑ (3 times)

Prize
Foreign Investment
Drop
(35%)

200 industries
Last
Close (3 years)

Not able to
compete
internationally

Bangladesh 33%
India < 29%
Vietnam < 28%

- Energy Instability
- Black out

Agriculture:

30% Tube
well

30% Production
Rice & Wheat ↓

40% Household Spend
10-15 Salary

200 industries
Close

Small Business
10-15 Cost ↑
Load-Shedding

Elect ↑ Product ↓ Price ↑ (FAO)

Public Anger & Protest:

2023 Electricity
riots

Bill Hike doubled
a month

K-Electric
15hr
Blackout
Protest

Health & Education Crisis

Hospital
Electricity
Health
Facilities ↑

Student in rural
area under 12+hr
outrage
(Unicef)

Political & Geopolitical Effects:

Protest

Circular
Debts

IMF
bailout

CPEC
Debt ↑

Solutions:

Renegotiate with IPPs: in 2020 with 1994 then 1999
solve 25-30% problem.

Reduce Capacity
Payment

Take-or-Pay
Pay-as you use

International
Fixed Dollar
rate

Local shift
to PKR

Extend
Debt
Tenure

Installed Local & Cheaper Projects:

Hydel (15000 MW)
Diamer Basha 4500 (2029)
Dasu (4500) (2027)
Mohammad Dam 4800 (2025)

Focus on Than
(2021)
Already
1 Project 1320 MW
4 320 MW

Solar would
10000 MW

Wind mill
4500 MW

No dependency
on HC
by 2030

Date: _____

Revamp/update transmission / Distribution Lines: Expensive but dire

↓
Line losses ↓

New & Advanced T Lines

Net metering

Use of technology

(Side Management) Governance:

Anti-theft
Complain

Early Market
Close (8pm)

Family
Planning
Complain

LED Solar
Street Lights

Incentives for
industries Shifts
to off-peak
Hours

Use urban Solid
Wastes (rubber, &
Plastic) to produce
electricity

Control Power Sector:

Performance Base
contracts with
DISCO

Third party
Monitoring
of power projects

Unified Ministry
energy creation

State as
regulator

↓
Privatize.