Current Status of Coal in India

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Introduction: KAPSARC’s mission and structure
An independent non-profit research center focused on energy economics & policy

Advance understanding of energy economics and act as a catalyst for dialogue, charting a path to better welfare for societies, locally and globally.

Strategic Objectives

Develop sustainable economic frameworks that lead to:

- Lower societal costs of energy supply
- Higher value created from energy consumption
- Better alignment between energy policy objectives and outcomes
Research Programs and Focus Areas

Allocating Energy Resources in an Economy
Energy Flows and Market Impacts
Spillover Effects of Energy Policy Choices
Energy Productivity
Transportation; Modes, Fuels and Technologies
Energy Transitions

Geographic Focus

- **KSA & GCC**
  - Major research focus
  - Seek to be leaders

- **China & India**
  - Major research focus
  - Seek to partner

- **North America & Europe**
  - Selective research projects
  - Included in global studies as required

- **Rest of World**
  - Selective research projects
  - Included in global studies as required
Discussion Papers
A KAPSARC research paper

Workshop Briefs
A short, 7-10 page, non-attributional, summary of a KAPSARC Energy Workshop

Tools and Datasets
Databases (such as policy dB, weather … etc.) or “tools” such as models (e.g. CGE model source code or models for collective decision-making processes)
Current Status of Coal in India
Role of Coal

- Coal continues to be a major source of energy for India.
- Fossil fuels are the major drivers of the economy.
- Biomass still used significantly in rural areas.
Coal Usage Across Sectors

- Power sector consumes the most. Policy issues that affect power sector from generation, transmission, transport and fuel mix will impact coal demand growth.

- Cement, while a large consumer, tends to switch to alternatives such as pet coke when coal prices are high. They use cheaper alternatives to reduce operation costs.

- Steel and sponge iron do not have alternatives to their coal requirements.
Fuel Mix in Power Sector

- Biased toward coal, given domestic coal resources available.
- Renewables have been growing strongly over the past few years. Recent policy focus due to this confidence.
- Gas is constrained by availability and nuclear suffers due to fuel availability and long build times.

Utilities Installed Capacity (GW, %)

- Coal, 186.242, 62%
- Hydro & Renewables, 85.632, 28%
- Nuclear, 5.78, 2%
- Gas, 24.508, 8%
- Diesel, 0.918, 0%

Source: CEA, May 2016
World Coal Markets: The Changing Global Landscape for Coal

- Coal-based power plants compete on price and scale.

(Source: Central Electricity Authority- Rate of Sale of Power 2013-14), KAPSARC Analysis) 1 US$ = 67.87 INR*
Coal-based Generation Grows, while PLF declines

- Financially strapped State Electricity Boards not able to procure electricity to meet demand.
• **Strong domestic production, import growth muted**
Imports have declined as domestic production increased and mine stockpiles grew.
Future of Coal in India
• Declining coal quality and the need for emission controls. Impetus for imports
Cement

• Cement plants are located near demand centers and limestone mines. Higher CV fuels can be transported further inland. Hence, imports of pet coke and coal from overseas. Location of cement plants on the western and southern regions means low CV domestic coal is expensive to transport.

• Ports on the western and southern regions facilitate in imports.

• Economic growth will mean higher cement production and coal requirement.
Power

- Power plants widely distributed across the country. Need to be near load centers and coal mines.

- Predominantly subcritical power plants. Only recently have super critical power plants been commissioned. Ultra Supercritical is still in single digits

- Domestic coal quality often responsible for technology choices.
Old sub critical power plants need to be replaced with super critical plants.

Poor quality coal meant that value could be better captured by pit-head based power plants.
Policy Implications
Policy Implications

- Coal washeries being set up to wash poor quality coal. Progress has been slow due to commercial reasons.

- Renovation and modernization of sub critical units still seen as a cost effective mechanism to maintain boiler fleet.

- Debt recast and electrification push should see states becoming more prudent, financially.

- Moves to reform the coal market should see a jump in supply.

- Push for coal production expected to increase supply, however, quality concerns mean imported coal will have a market.

- Rationalisation of coal linkages and supply will see more efficient movement of coal.

- Use of NTPC for solar bundling/counter party risk will support coal generation.

- Renewables push is ironically triggering more coal based generation.
Conclusions

- Cheap coal remains critical to Indian economic growth
- Recent higher production hasn’t been absorbed
- Changes in power sector, the biggest consumer of coal, will impact growth
- Policy changes in boiler fleet, mining and transportation will enable India to use coal more effectively
Thank You