Coal Market Development and Global Energy Policy

by

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The views expressed are those of the author and do not necessarily reflect the views of UNCTAD.
Item 3C. Recent Developments and new Challenges in Commodity markets: Energy

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Resources and primary energy supply
Supply security for non-renewable fuels

World energy demand by fuel

source: IEA World Energy Outlook 2013 (New Policies Scenario)
Growth in total primary energy supply, 2000 to 2012

source: EURACOAL, Coal industry across Europe 2013; BP 2013
Coal production, trade and prices
Coal trade: growing faster, moving East

Global thermal seaborne trade

1131 Mt (2018)
(+244 Mt 2012-18)

source: IEA Medium-Term Coal Market Report 2013
Major coal producing and importing countries, 2012

source: EURACOAL, Coal industry across Europe 2013; IEA 2013
Top coal exporting countries, 2012

Source: EURACOAL, Coal industry across Europe 2013; IEA 2013
IEA WEO2013 – Coal Market Outlook

FOB cash costs for seaborne steam coal exports, 2012

source: IEA World Energy Outlook 2013
IEA WEO 2013 – coal market outlook
Quarterly indices for IEA crude oil and steam coal prices*


**) Port of Qinhuangdao is a major coal terminal in northeast China

source: IEA World Energy Outlook 2013
Steam coal prices and freight rates
monthly averages 2012/2013

European carbon permit prices 2013-2016
Forward market 2013 in €/t CO₂

Gas and coal variable generation costs in Europe

source: IEA Medium-Term Coal Market Report 2013
Debunking myths: US shale gas and coal price

Incremental thermal coal exports 2012 vs. 2011


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Coal and US gas are the only cheap fossil fuels

Evolution of fossil fuel prices

source: Laszlo Varro, IEA 2013

*) NCG = NetConnect Germany
IEA WEO 2013 – Power sector outlook
Electricity generating costs for coal and gas by selected region and for 2008 – 2012 fuel prices

Variable cost range, 2008-2012:
- Coal-fired generation
- Gas-fired generation
- 2012 average

source: IEA World Energy Outlook 2013
Coal is cheaper and easier to ship than gas

Typical cost breakdown for 5000 km transport

The role of coal in the power sector
IEA WEO2013 – Coal market outlook
Incremental world coal demand, historical and by scenario

source: IEA World Energy Outlook 2013
IEA WEO2013 – Power sector outlook
Share of coal-fired power generation by technology and average efficiency in selected regions in the New Policies Scenario

source: IEA World Energy Outlook 2013
The role of coal in Africa and Asia
Primary energy demand growth moves to South Asia

**Primary energy demand, 2035 (Mtoe)**

- United States: 2,240
- Brazil: 480
- Europe: 1,710
- Middle East: 1,050
- Africa: 1,030
- Eurasia: 1,370
- China: 4,060
- India: 1,540
- Japan: 440
- Southeast Asia: 1,000

**Share of global growth 2012-2035**

- Non-OECD Asia: 65%
- OECD: 4%
- Latin America: 8%
- Africa: 8%
- Middle East: 10%
- Eurasia: 5%

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*China is the main driver of increasing energy demand in the current decade, but India takes over in the 2020s as the principal source of growth*

*source: IEA World Energy Outlook 2013*
Electrification worldwide
Number of people without access to electricity (in million)

*) Rest of Asia: all countries in the Asian region with the exception of India and the five Central Asian States of the Caspian region (Azerbaijan, Iran, Kazakhstan, Russia, Turkmenistan)

- 1.3 billion people globally do not have access to electricity
- Over 95% of those without electricity are in developing Asia or sub-Saharan Africa
- 3.4 million homes in South Africa do not have electricity

source: IEA World Energy Outlook 2011
A success model fuelled by coal

Over the past three decades:

• China lifted over 660 million people out of poverty

• China’s steel production multiplied by 18

• China’s cement production multiplied by almost 14

• China’s connected 99% of its population to the grid

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<th>Poverty measures for $1.25 a day in 2005 PPP (number of people, in millions, below $1.25 a day)</th>
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<td>World</td>
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<td>World excluding China</td>
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</tbody>
</table>

Source: World Steel Association, IEA

China’s coal consumption grew by 400%

Source: WCA, "The Public Image of Coal: inconvenient facts and political correctness"
Who is the real obstacle for coal plant investment?

World Bank President Jim Yong Kim: "We do everything we can not to invest in coal - everything we possibly can."

World Bank fears devastating 4.0 degree warming
Coal and Climate Change
Energy-related CO₂ emissions
Cumulative energy-related CO₂ emissions

Non-OECD countries account for a rising share of emissions, although 2035 per capita levels are only half of OECD

source: IEA World Energy Outlook 2013 (New Policies Scenario)
IEA WEO 2013 – Power sector outlook
CO₂ emissions intensity in the power sector and electricity generation by region in the New Policies Scenario

source: IEA World Energy Outlook 2013
Comparative climate actions

Initiatives needed to cut 2 Gt of CO$_2$ emissions

- Run the EU ETS for 53 years
- Run the Kyoto Protocol 3 times
- Multiply the world’s current solar power capacity by 195
- Increase the efficiency of all coal power plants from 34% to 40%

source: WCA, "The Public Image of Coal: inconvenient facts and political correctness"