

Changing Dynamics for the Global Seaborne Thermal Coal Markets

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IEEFA.org

17th March 2015

AGENDA

Changing Dynamics for Seaborne Thermal Coal Markets

1. Key factors affecting global seaborne thermal demand

- Energy Efficiency
- Increasing diversity of electricity system supply
- Failure of nuclear to deliver on expectations
- Export producer currency devaluations – a lower price, increasing demand?
- Global regulatory progress on carbon

2. Four key import markets

- China (2013 peak?) vs India and Japan (2015 peak) vs Korea (growth)

3. A long cyclical downturn or structural decline?

- Global coal company share prices

4. Renewables are deflationary



1. Key factors affecting global demand

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1. Key factors affecting global demand

- Energy Efficiency

Globally, Statoil expects an improvement in energy efficiency of some 35% from today's level (IEEFA note: 1.5-2.0% pa).

2014 Statoil Energy Perspectives

China improved energy use per unit of GDP by 4.8% in 2014, beating its target of 3.9% and the previous year's 3.7% drop; exceeding its 12th FYP target of a 16% improvement over 2010-2015.

Reuters, 22 Jan'2015



1. Key factors affecting global demand

- Energy Efficiency
- Increasing electricity system supply diversity

1.2 Global Renewable Energy

Renewable Energy	GW 2012	GW pa growth	Share of growth	GW 2025	Share of total
Wind	279	41	32.7%	814	25%
Solar	94	44	35.1%	668	21%
Hydro	1,085	32	25.2%	1,498	47%
Biomass/EfW	108	11	8.6%	223	7%
Total	1,566	126		3,203	100%



Source: Frost & Sullivan's Annual Renewable Energy Outlook 2014
<http://ww2.frost.com/news/press-releases/photovoltaic-wind-and-hydro-star-top-renewables-finds-frost-sullivan/>

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- Export producer currency devaluations – a lower US\$ price follows cost curve down

1.4 Export producer currency devaluations

Currency moves vs USD
12 months to January 2015

	Jan'14	Jan'15	Chg	2014 Global Share
Russian ruble	0.284	0.142	-50%	11%
Columbian Peso	2000	2460	-19%	8%
AUD	0.875	0.777	-11%	19%
Indonesian Rupiah	12100	12800	-5%	41%
	11.12	11.65	-5%	7%

USD per 1 RUB

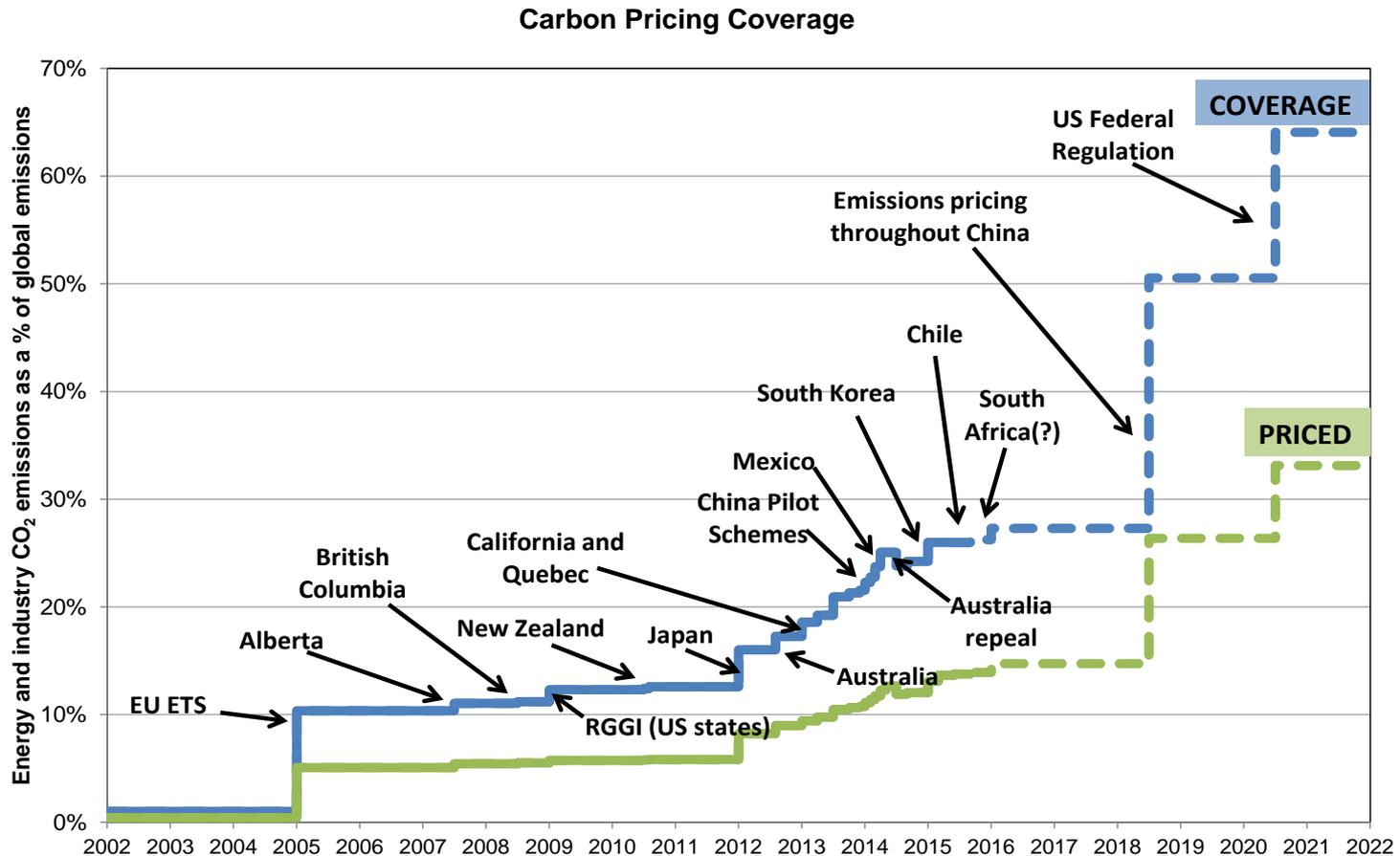
16 Mar 2010 00:00 UTC - 15 Mar 2015 18:08 UTC
RUB/USD close:0.01621 low:0.01436 high:0.03664



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1.5 Global regulatory progress on carbon



Source: www.onclimatechange.org

China-US Climate Agreement of Nov'2014 a global milestone.

2. Seaborne Coal – Four Markets

Focus on 4 countries:

1. China
2. India
3. Japan
4. Korea

Traded Thermal Coal	2013	
Global demand	Mt	Share
China	264	25%
India	139	13%
Japan	142	13%
South Korea	95	9%
Taiwan	61	6%
Russia	31	3%
Europe	167	16%
Other	175	16%
World Total Demand	1,073	100%



2.1 China's electricity sector transformation



2.1 China's Electricity Sector

China's thermal coal's share of electricity generation:

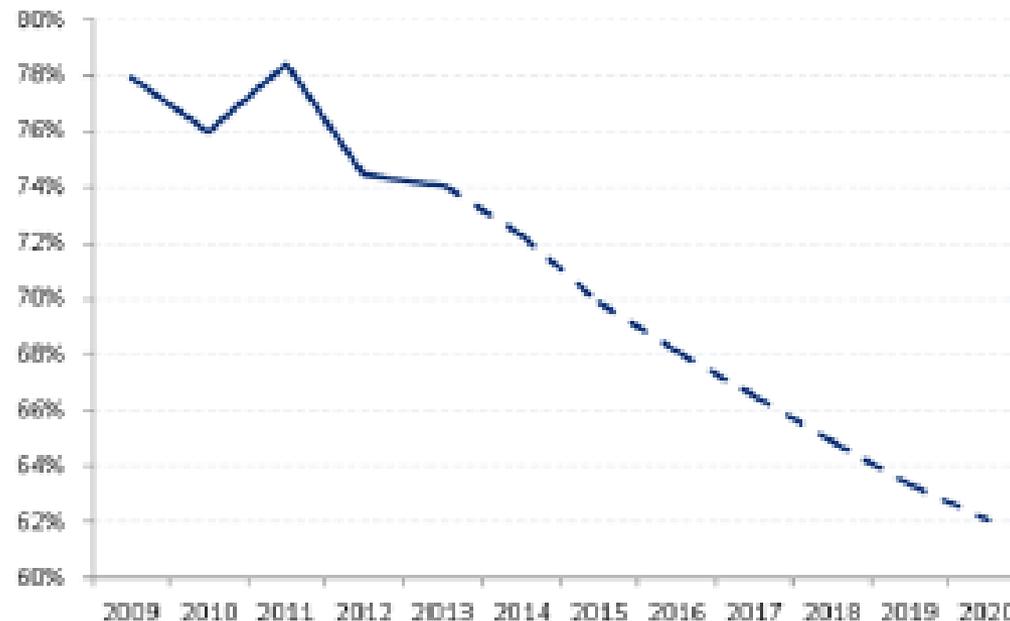
2012 78.8%
2014 73.3%
2020 60.0%

Installed Capacity (GW)	End 2010		2020	
	GW	%	GW	%
Thermal (coal)	683	69.4%	840	47.6%
Thermal (gas)	26	2.7%	82	4.6%
Biomass / CHP	4	0.4%	17	1.0%
Hydro	216	21.9%	396	22.4%
Nuclear	11	1.1%	60	3.4%
Wind - Onshore	43	4.3%	219	12.4%
Wind - Offshore	-	0.0%	10	0.6%
Energy From Waste	1	0.1%	10	0.6%
Solar	1	0.1%	133	7.5%
Total Generation Capacity	984		1,767	
CAGR in power demand for 2008-2010	11.4%			
CAGR in power demand for 2011-2020			5.1%	
CAGR in power capacity for 2010-2020			6.0%	
GDP Growth for 2011-2020			6.9%	



2.1 China's Electricity Sector Transformation

Coal's share of China's electricity generation mix is set for a steep decline



Source: Citi Commodities, Tony Yuen, June 2014;
“Energy Markets in Transformation”

2.2 India

India's Energy Minister Goyal stated November 2014:

1. *"I'm very confident of achieving these targets and am very confident that India's current account deficit will not be burdened with the amount of money we lose for imports of coal. Possibly in the next two or three years we should be able to stop imports of thermal coal."*
2. *Plans for the transformation of the entire Indian electricity system with 100GW of renewable energy installs by 2019. This involves a plan to treble wind installs to 6-8GW and lifting solar installs tenfold to 10GW annually, plus US\$50bn national grid upgrade.*
3. *Plans to double India's domestic coal production to 1Bn tpa by 2019, requiring a massive investment in rail infrastructure, coal handling and preparation plants plus major new mine development.*



2.3 Japan

Japan's thermal coal demand outlook: down 4% pa

1. **Energy efficiency** – 12% decline in electricity demand from 2010-2013 despite 1% pa GDP growth (a 5% pa reduction in electricity intensity)
2. **Nuclear restart** - Rate of restarts for the 42GW of idle nuclear capacity – up to US\$100bn of assets sitting idle.
3. **Solar surge** – Japan installed 7GW in 2013 and 10GW in 2014; part of a 70GW pipeline of approved projects. Offshore wind plan post 2020.
4. **LNG vs coal vs oil** – relative price moves, Japanese LNG pricing has almost halved in US\$ terms over 2014. Japan has signed over 1000Bcf/year of new US LNG supply contracts due online by 2020.

2.4 Korea

Korea's thermal coal outlook: 4% pa growth to 2020

1. **Energy efficiency** – *In contrast to Japan, electricity demand has grown 5.3% pa from 2000-2013, higher than the average 4.4% pa real GDP growth (a 1% pa expansion in electricity intensity).*
2. **Nuclear resistance**- *Post Fukushima, public opposition to nuclear is limiting the growth in the existing 21GW of nuclear capacity (27% of mix).*
3. **Renewables** – *Again in contrast to Japan, Korea has made no material progress in renewable energy installations. Hanwha Solar is now a top 10 global solar industry supplier. Offshore wind plan from 2020.*
4. **LNG vs coal** – *Korea's US\$16/t coal tax in June 2014 and the Jan'2015 commencement of the National ETS at US\$8/t combine with the collapse of US\$ LNG prices over 2014 to improve LNG's relative competitiveness.*

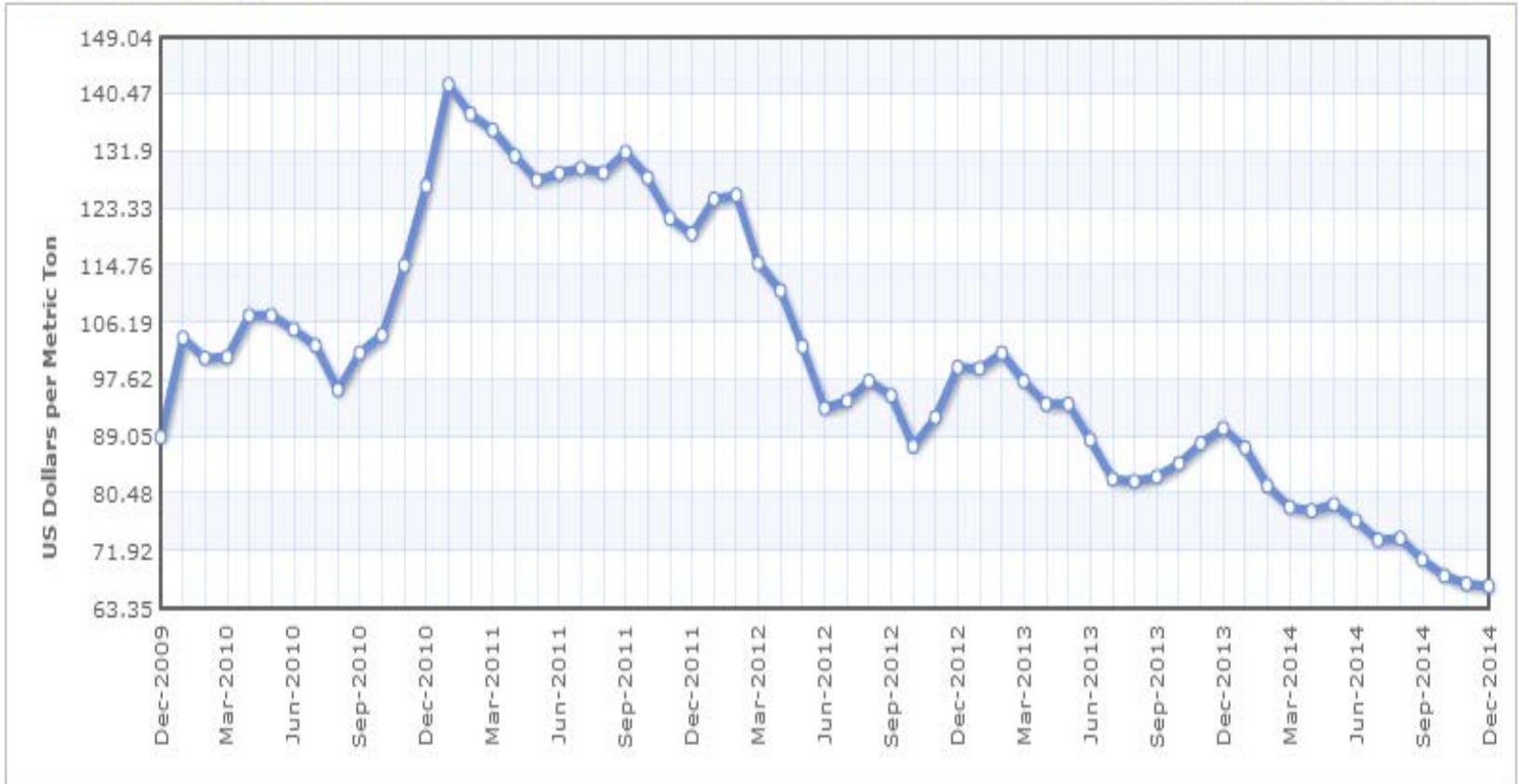
3. A long cyclical downturn or structural decline?

The Equity markets are factoring in structural decline as an increasingly likely probability.

Thermal Coal Export Price Collapse

Range 6m 1y 5y 10y 15y 20y 25y 30y

Dec 2009 - Dec 2014: -22.380 (-25.11 %)



Australia: Whitehaven, Yancoal, Cockatoo Coal



Yahoo finance

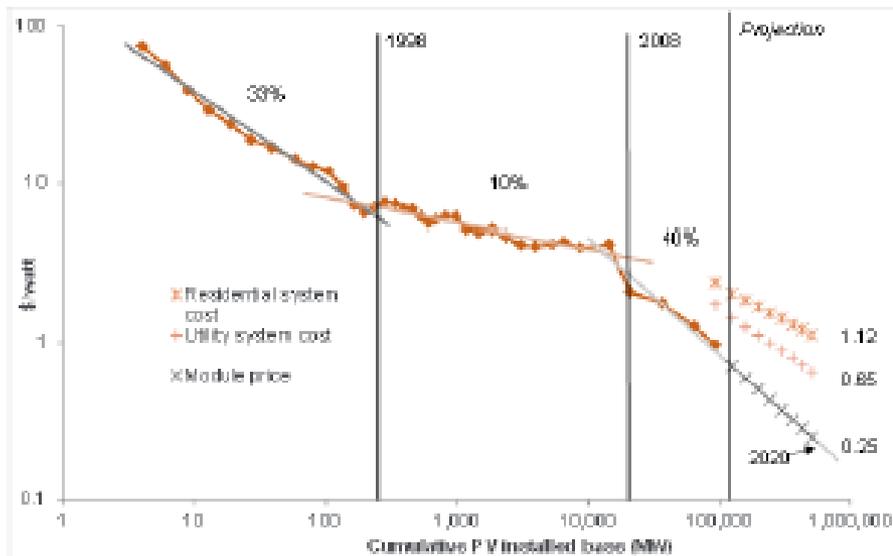
Bandanna Energy in administration,
Cockatoo Coal suspended.

USA: Peabody, Arch Coal, Alpha Natural Resources

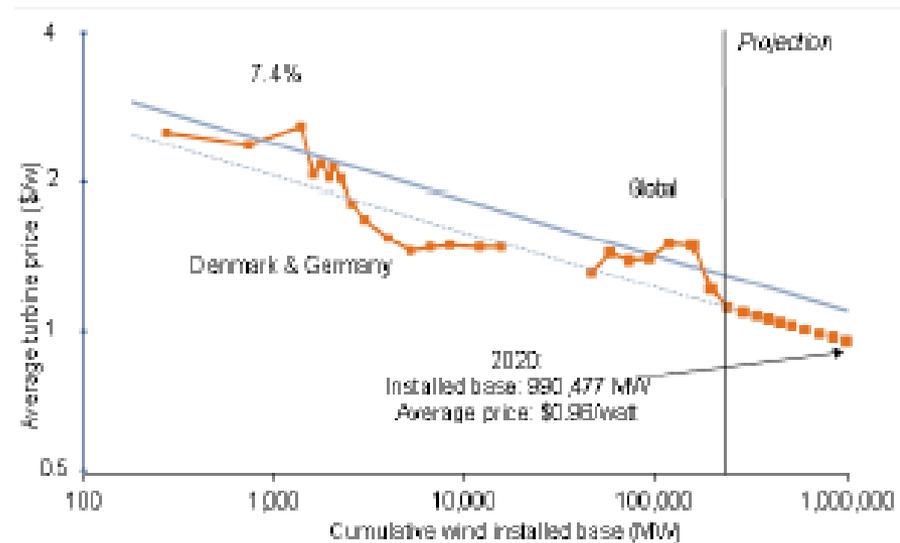


4. Renewable Energy is deflationary

Solar exhibits potentially rapid learning rates



Learning rates of Wind



IEA's new solar roadmap has solar halving by 2030.

Source: Citi Commodities, Tony Yuen, June 2014; "Energy Markets in Transformation"



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