

# The Outlook for International Coal Trade

Presented to: US Department of State Foreign Service  
Officers' Coal and Power Training Course

*Arlington, VA  
July 15, 2013*

**Ellen Ewart**

*Head of Global Coal Market Research, Wood Mackenzie*



# Agenda

1

**Coal industry basics**

2

**Coal's role as a global energy commodity**

3

**Coal in the international market**

4

**Key issues and challenges for coal trade in the future**

# Coal is not a homogeneous material, and its quality parameters influence its end use and market value

## Coalification Scale



High Moisture Content

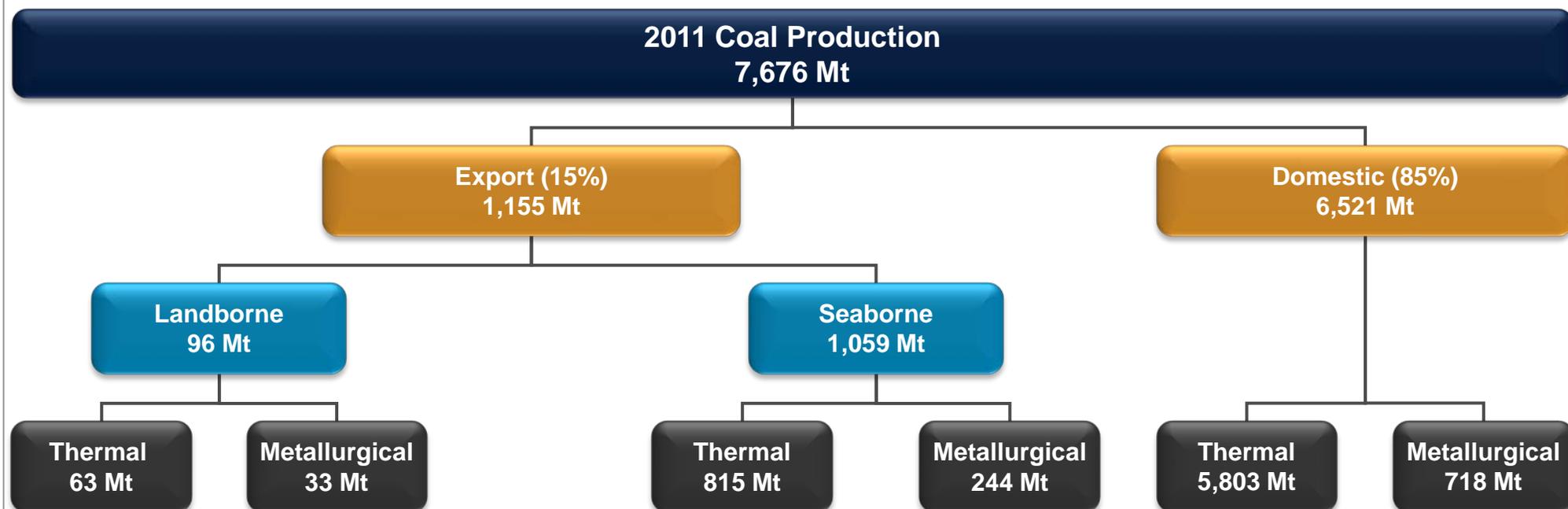


High Carbon/  
Energy Content

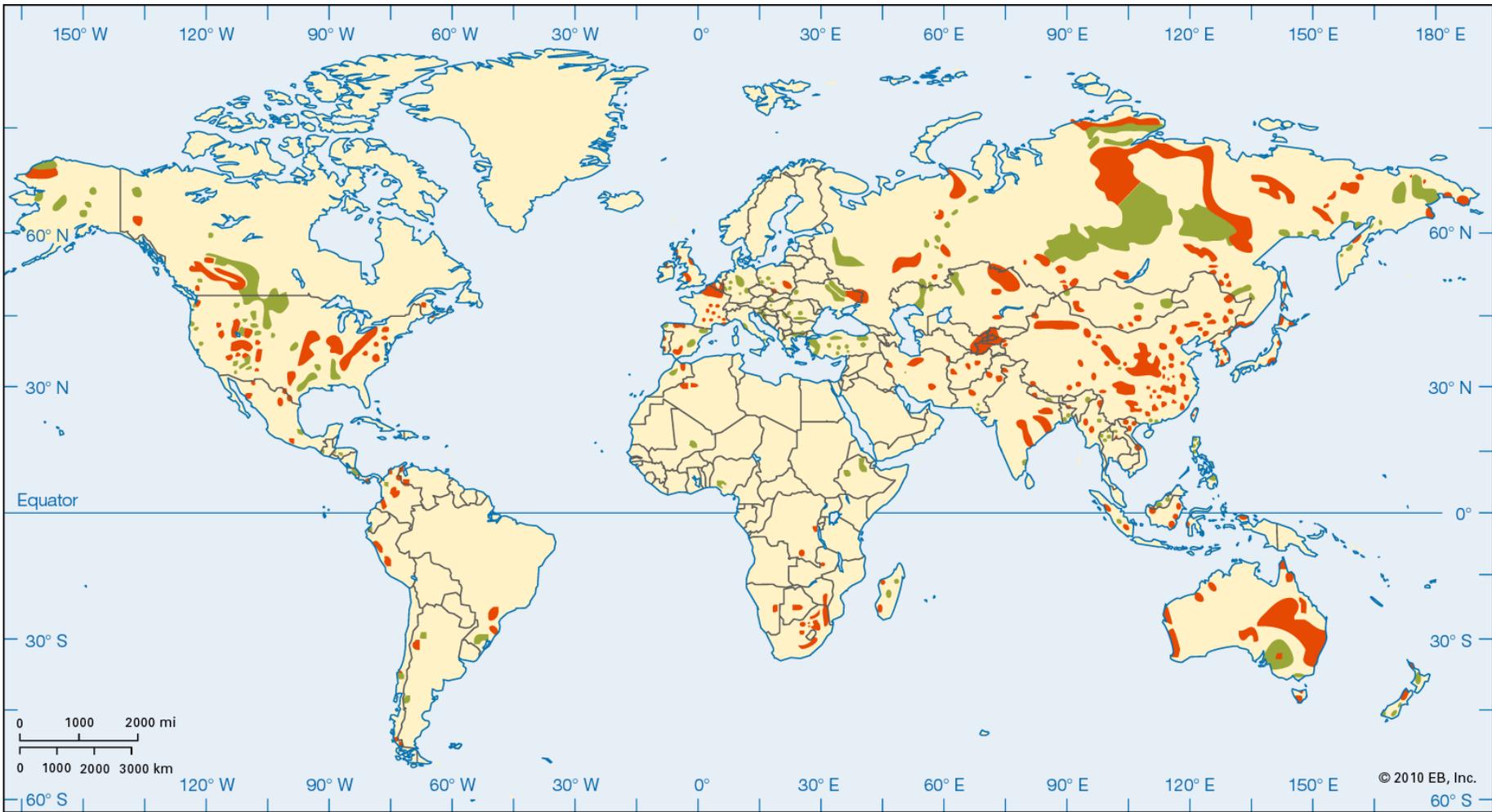
Power	Cement	Other Industrial	Steel-making	Residential	Comments
✓				✓	Limited industrial and power applications in some regions as well as home heating
✓					High moisture content makes transportation costly; typically used in local power plants
✓	✓	✓			Historically used in country of origin but increasingly exported due to favorable quality
✓	✓	✓	✓		Broad thermal and metallurgical use, but not all bituminous coals have coking properties
✓		✓	✓		Easier to ignite than anthracite
✓		✓	✓	✓	Used for home heating, specialty industry, and power generation (particularly in China)

Source: Wood Mackenzie

# The global coal industry in perspective



Source: US EIA, Wood Mackenzie



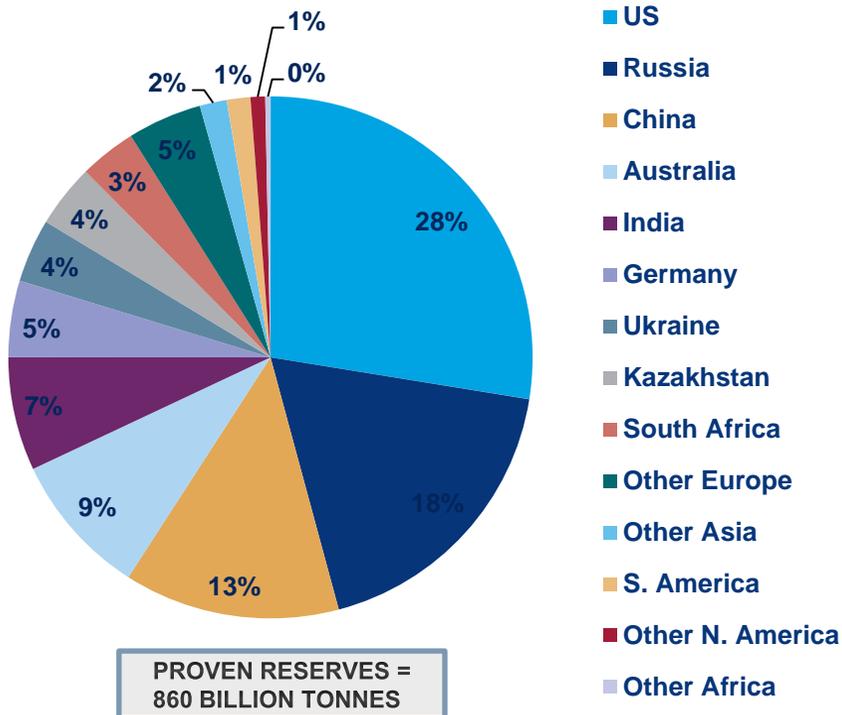
### Major Coal Deposits of the World

 Anthracite and Bituminous Coal       Lignite

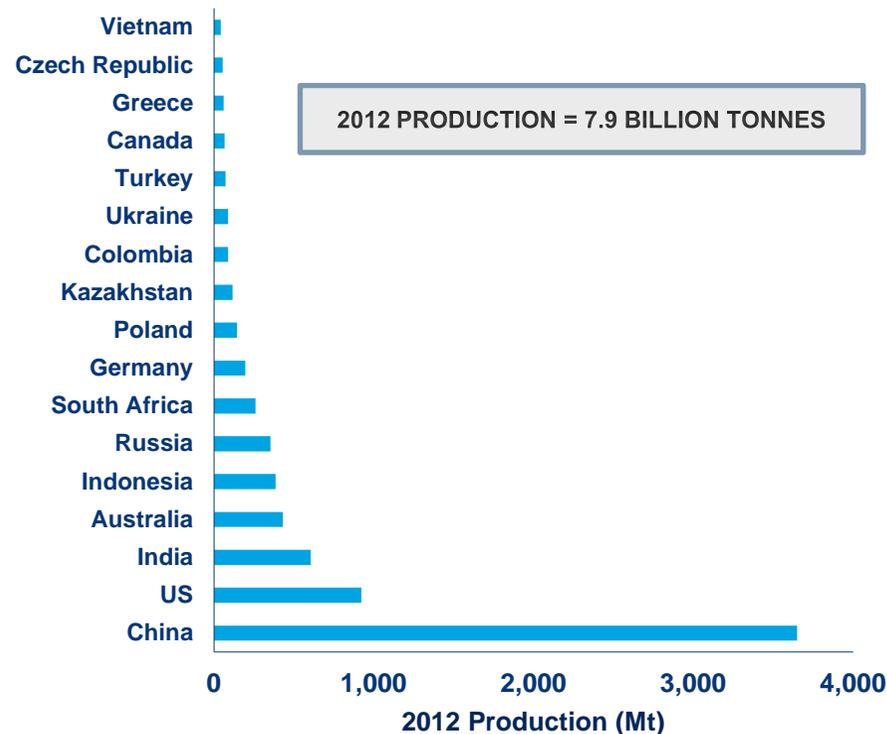
# Not surprisingly, the largest reserve holders are the largest producers...with a few notable exceptions

China contains 13% of the world's proven reserves...

...but accounts for 46% of the production

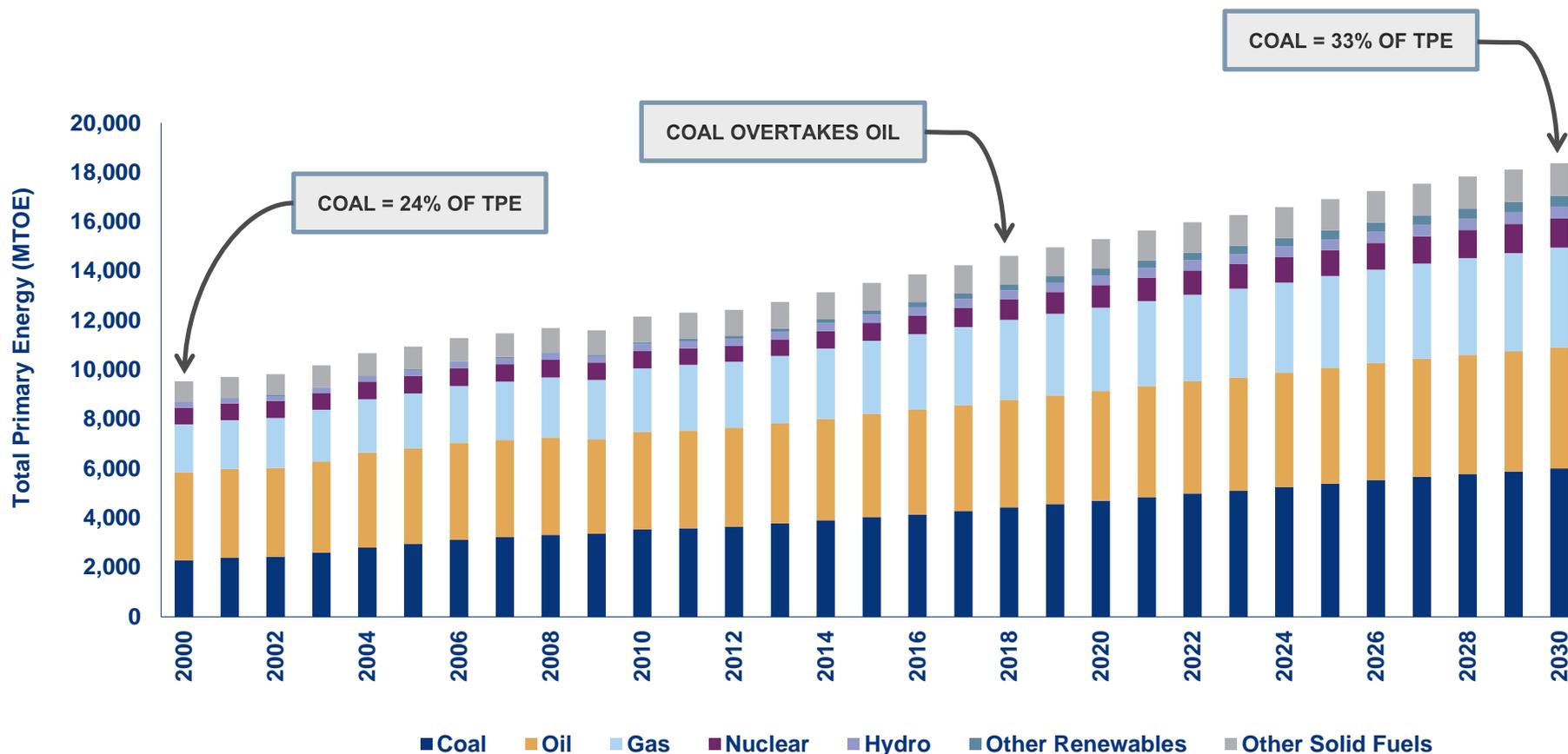


Source: BP Statistical Report 2013



Source: BP Statistical Report 2013

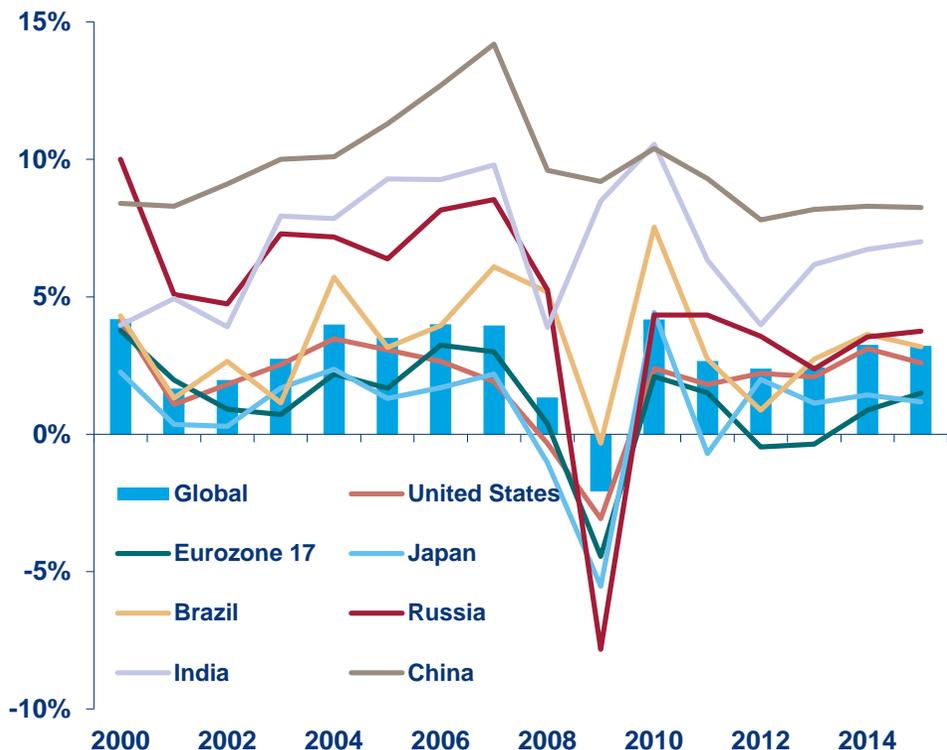
# Contrary to common perception, coal's share of the global energy mix is on the rise



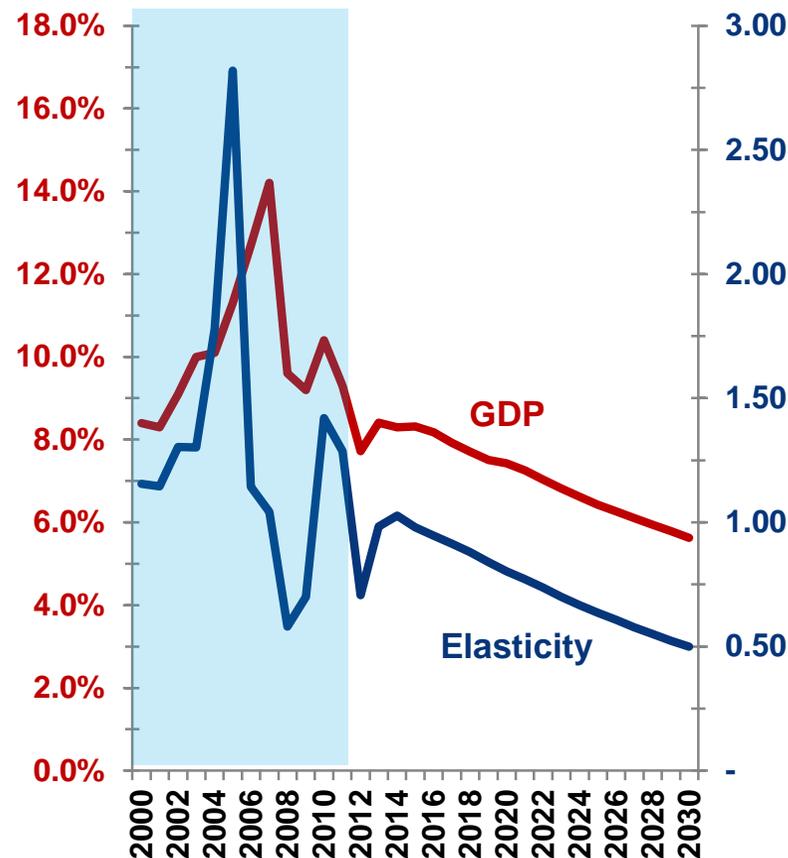
Source: Wood Mackenzie Energy Markets Service

# Economic growth drives growth in energy demand, albeit at different rates depending on a country's stage of development

## China and India are the primary economic growth engines



## In China, we expect aggressive efficiency gains

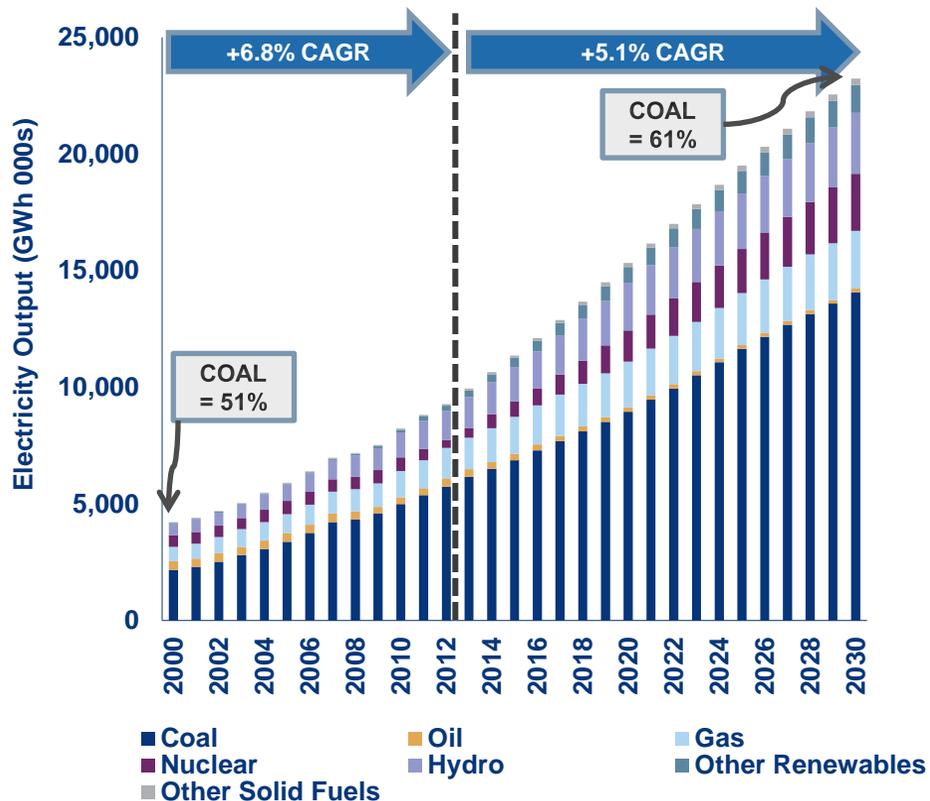


Source: Wood Mackenzie Macroeconomics

Source: Wood Mackenzie Energy Markets Service

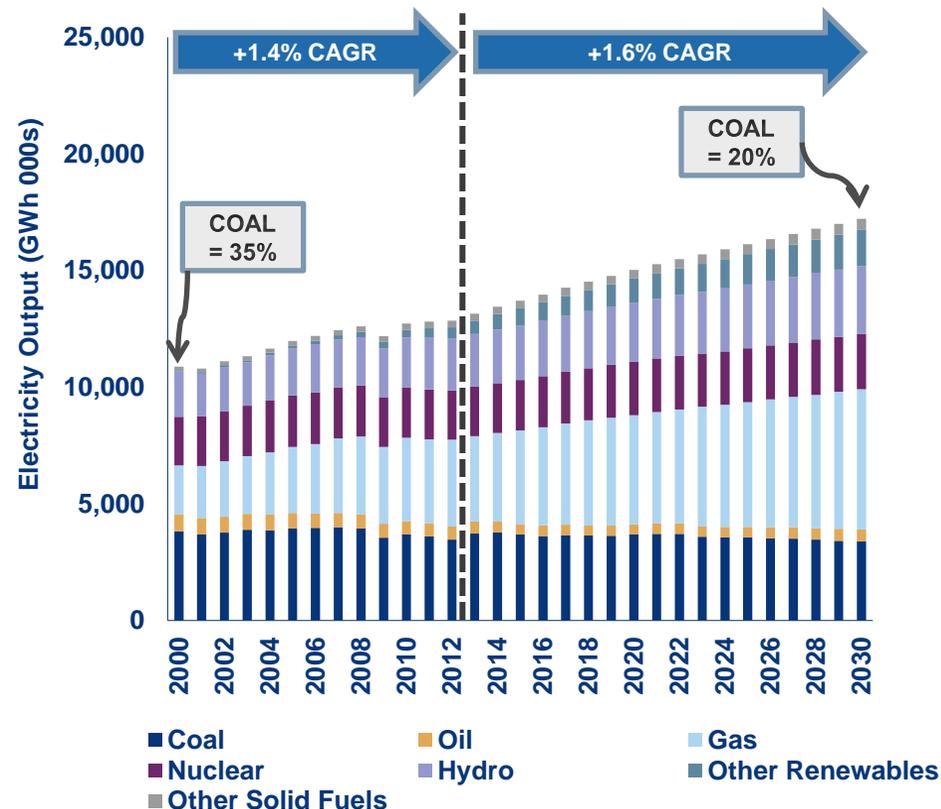
# The power sector represents the largest market for coal...with the strongest growth occurring in emerging Asian economies

## China and India drive growth in Asia...



Source: Wood Mackenzie Energy Markets Service

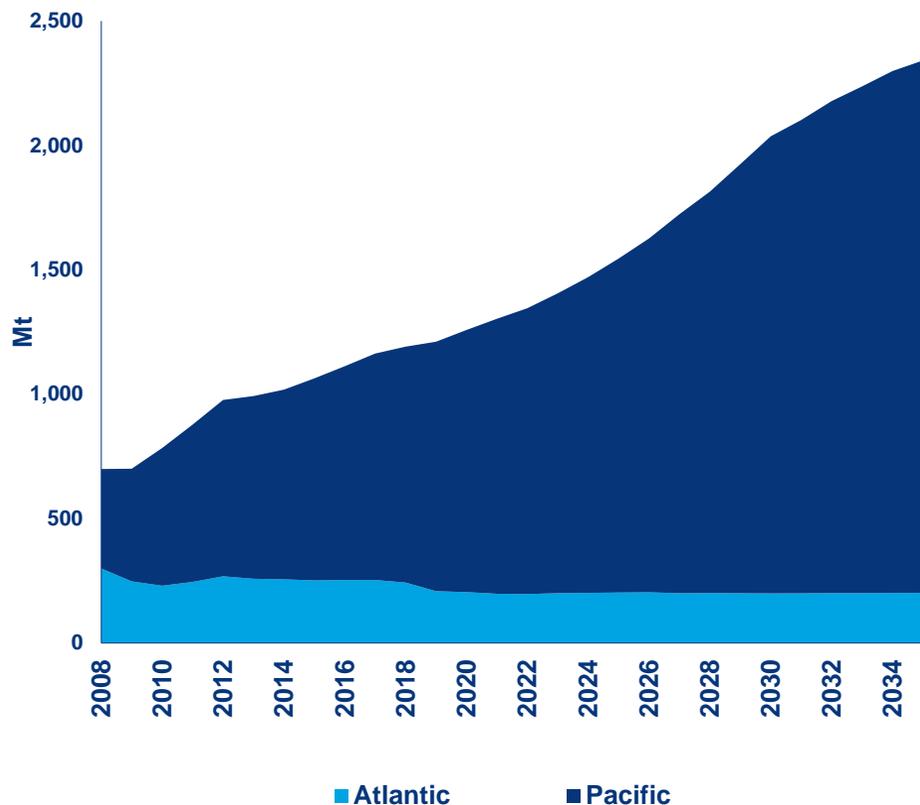
## ...while coal is increasingly displaced by gas in the ROW



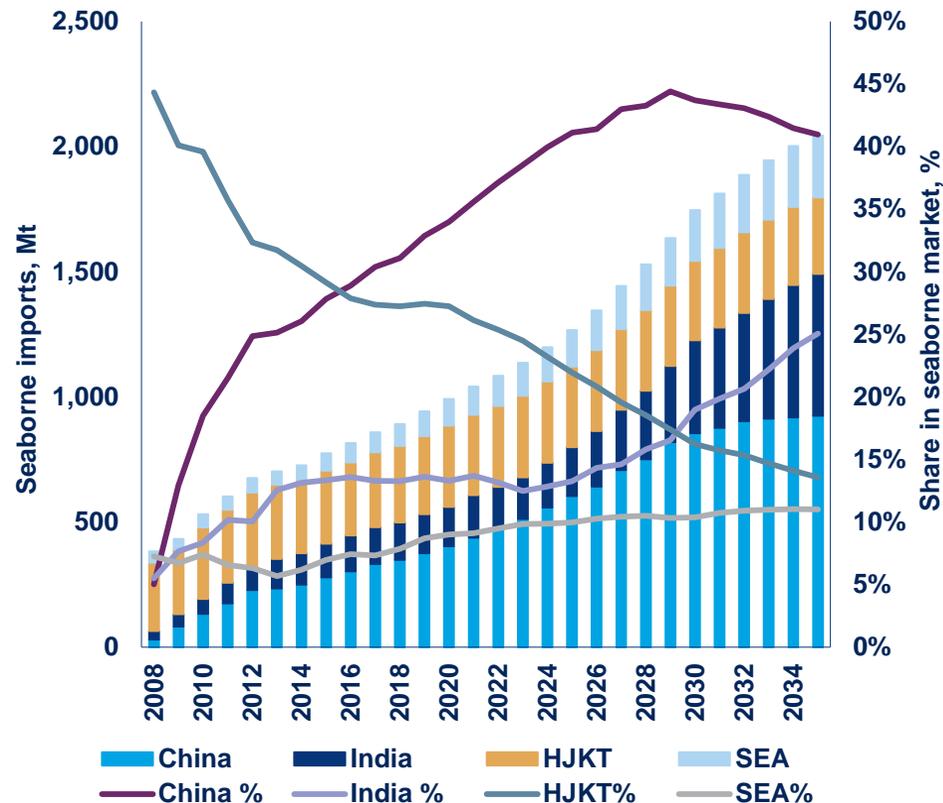
Source: Wood Mackenzie Energy Markets Service

# Correspondingly, thermal coal import demand growth is concentrated in Asia

Atlantic Basin seaborne coal demand will stagnate...



...while Chinese and Indian demand explodes

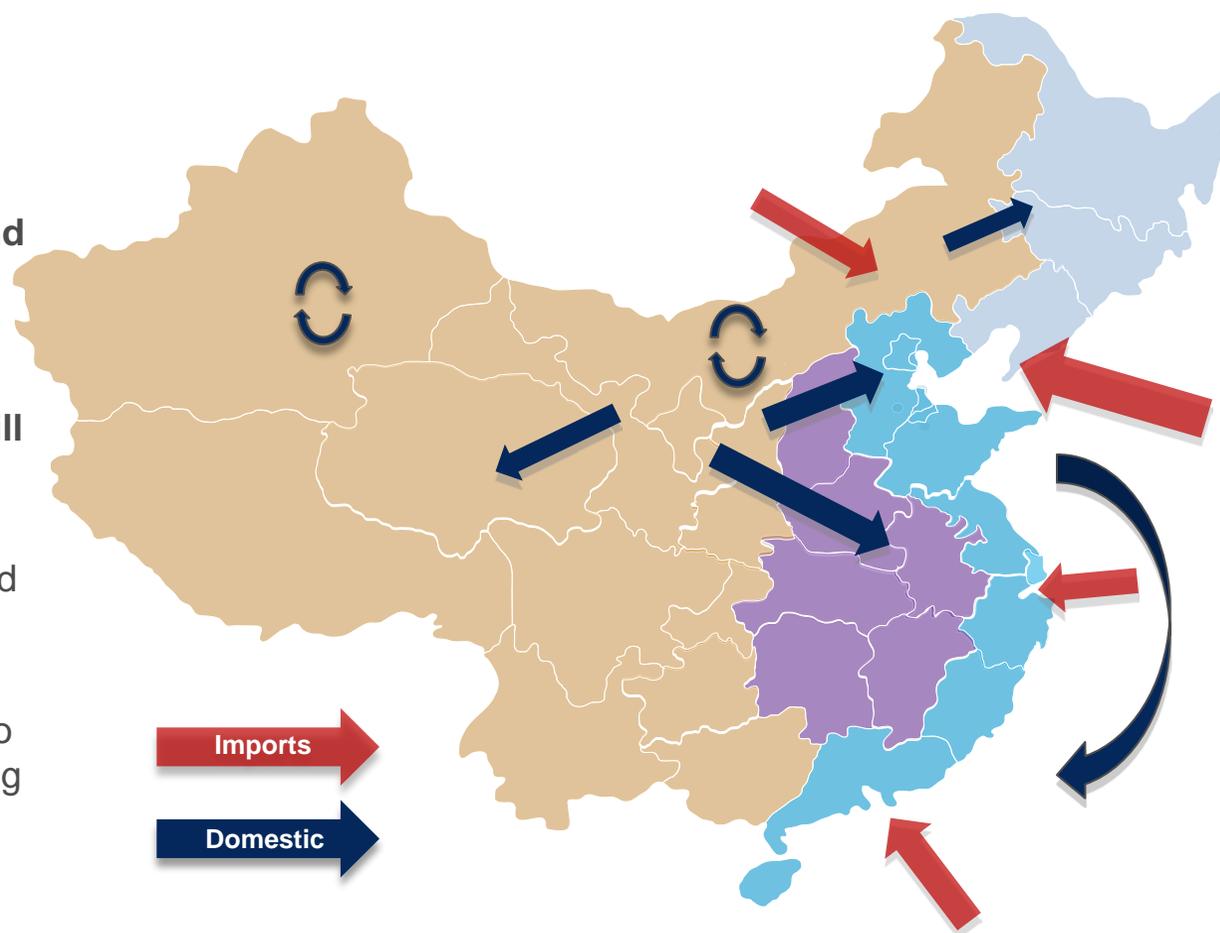


Source: Wood Mackenzie Coal Market Service

## China's need for imported coal stems from dislocations in the domestic market, and flows are becoming increasingly complex

### Thermal coal trade flows

- › Growing coal demand in western and central provinces will consume increasing amounts of domestic production
- › High transportation costs to coastal and southern markets likely to improve 'netbacks' to producing regions from internal markets
- › A bi-furcation of the Chinese market will unfold with a 'cap' on domestic production
  - Imports will increasingly be required for coastal demand.
  - Multiple arbitrage points are developing to influence decisions to use domestic or imports considering quality and price



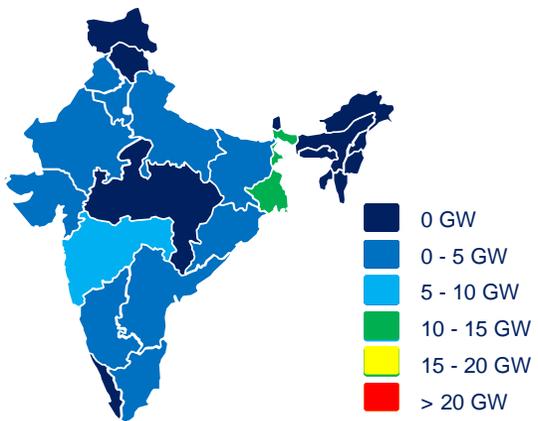
Source: Wood Mackenzie Coal Market Service China

# India's coal reserves are also far from growing coastal markets, and are of generally poor quality, leading to more imports for power generation

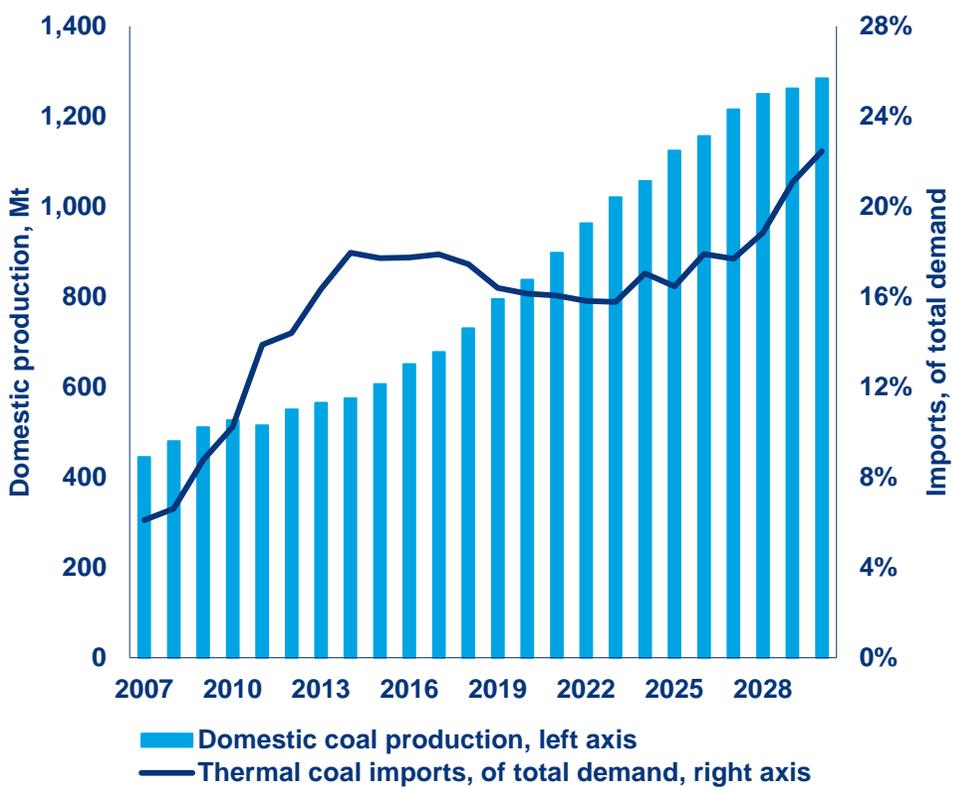
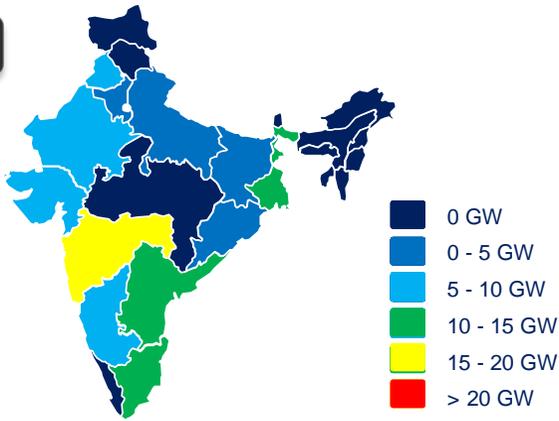
India will build more power plants designed for import coal

Import share will increase despite growth in domestic output

2012

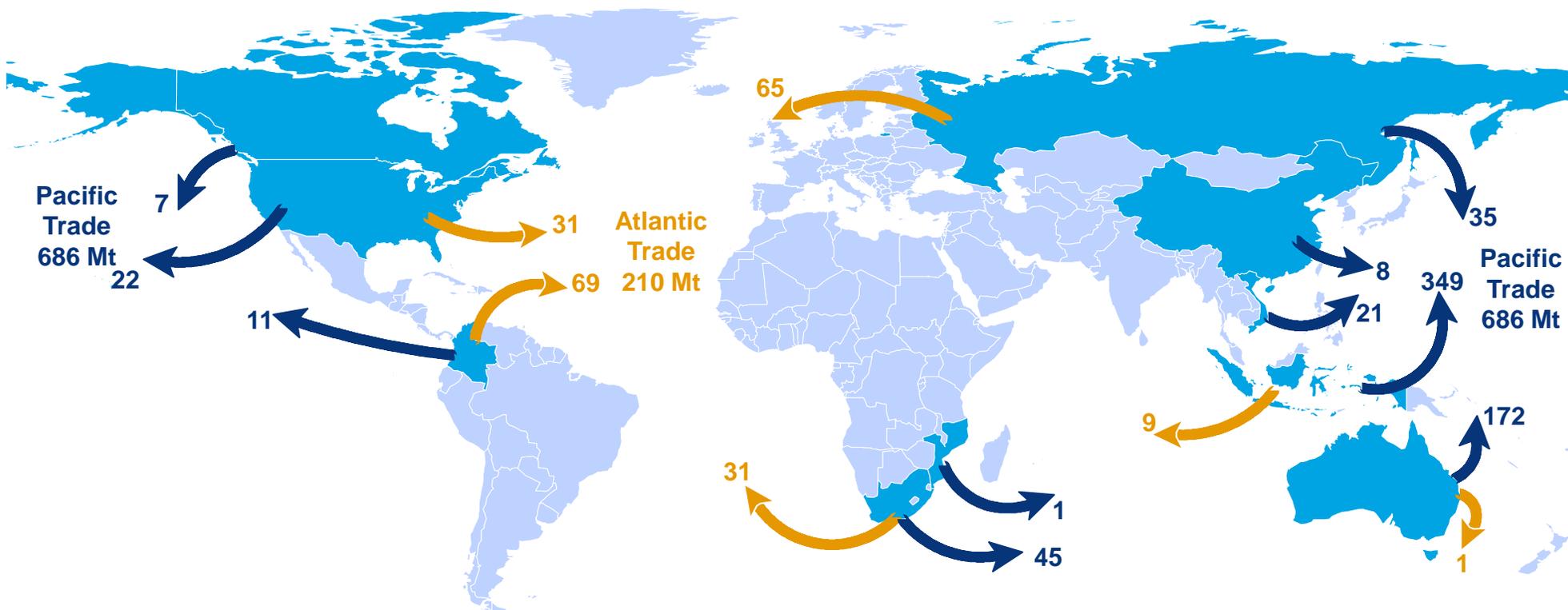


2030



Source: Wood Mackenzie Coal Market Service

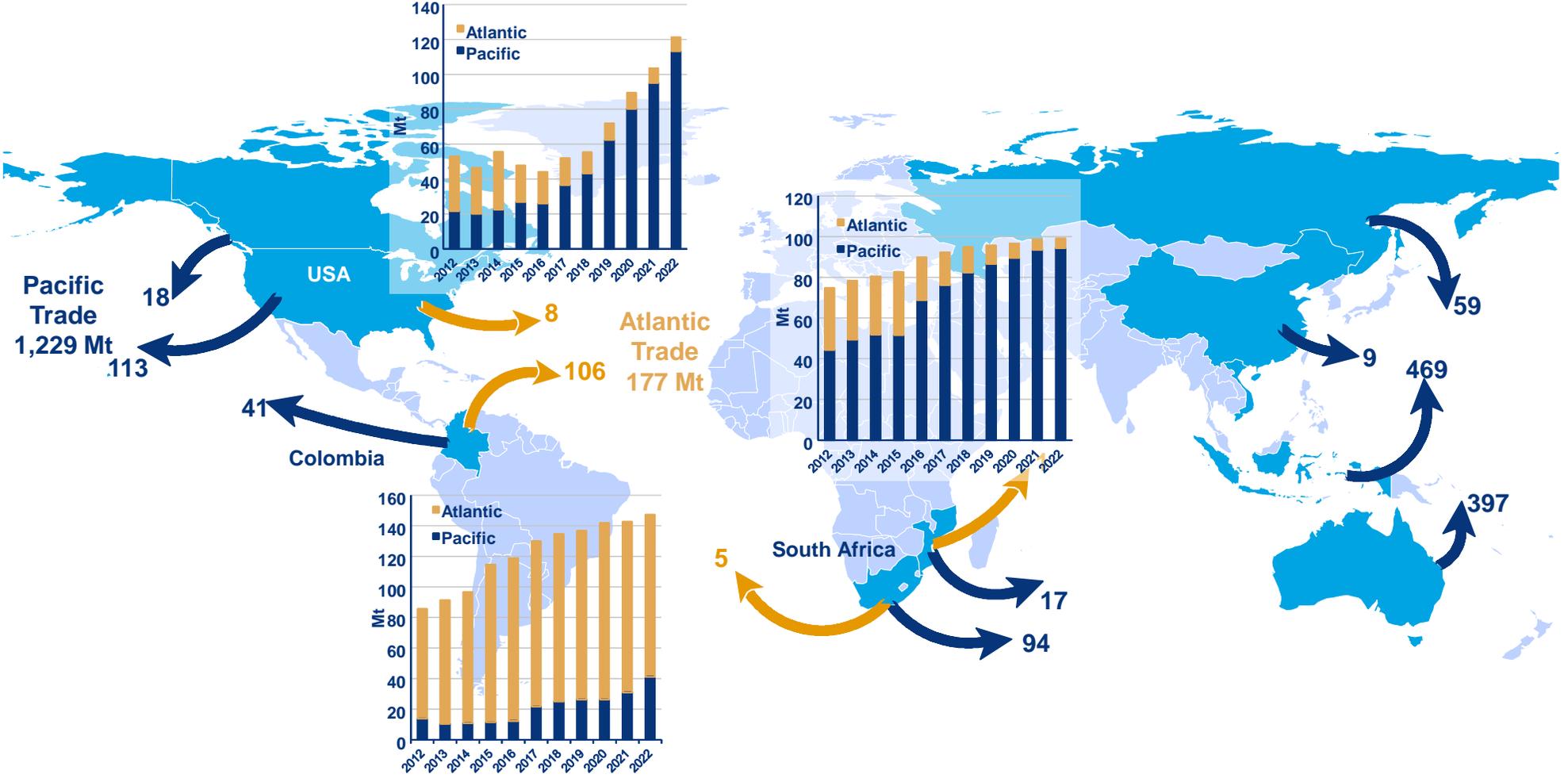
# Seaborne thermal coal supply is relatively consolidated in a few key countries



The map shows 2012 trade flows from major exporting countries

Source: Wood Mackenzie Coal Market Service

# Future trade patterns will change...as Atlantic basin suppliers divert/expand supplies in to Asia

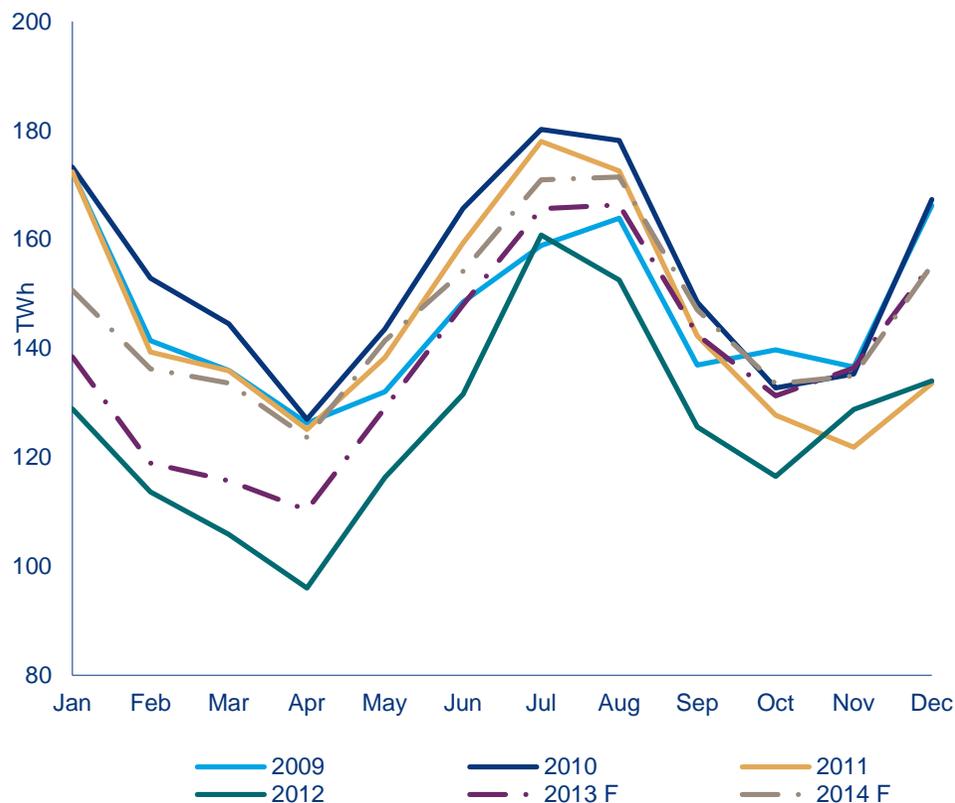


Source : Wood Mackenzie Coal Market Service

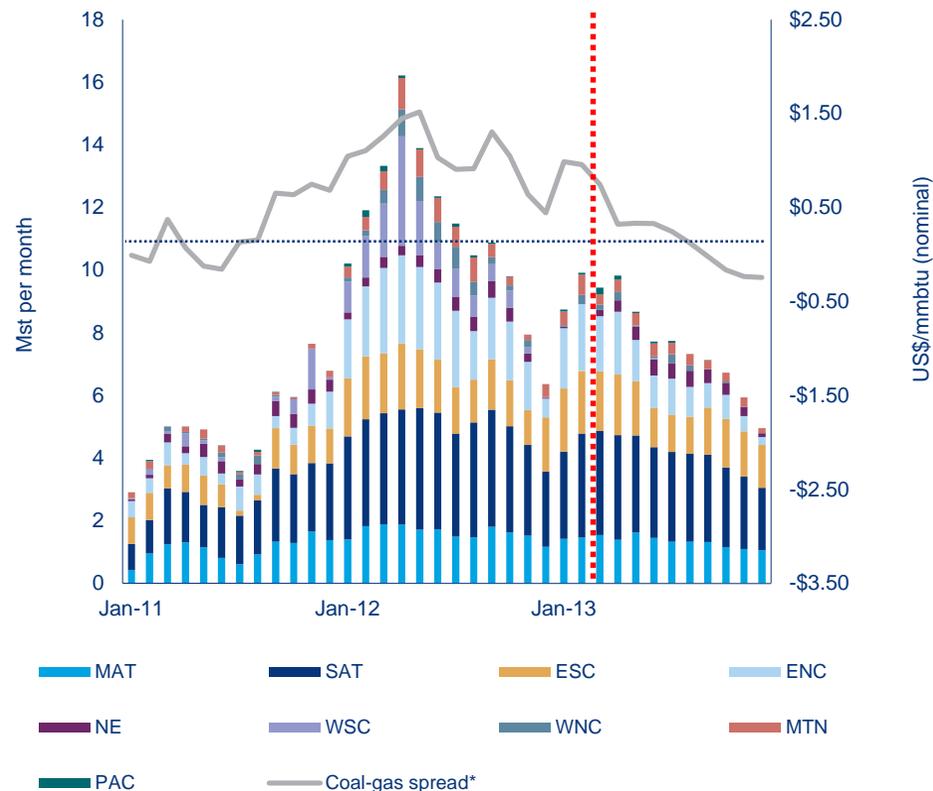
# The domestic thermal market for US coal has become increasingly challenged owing to regulatory pressure and low-cost natural gas...

Coal-based generation has fallen y-o-y...

...with gas displacement a primary culprit in 2012

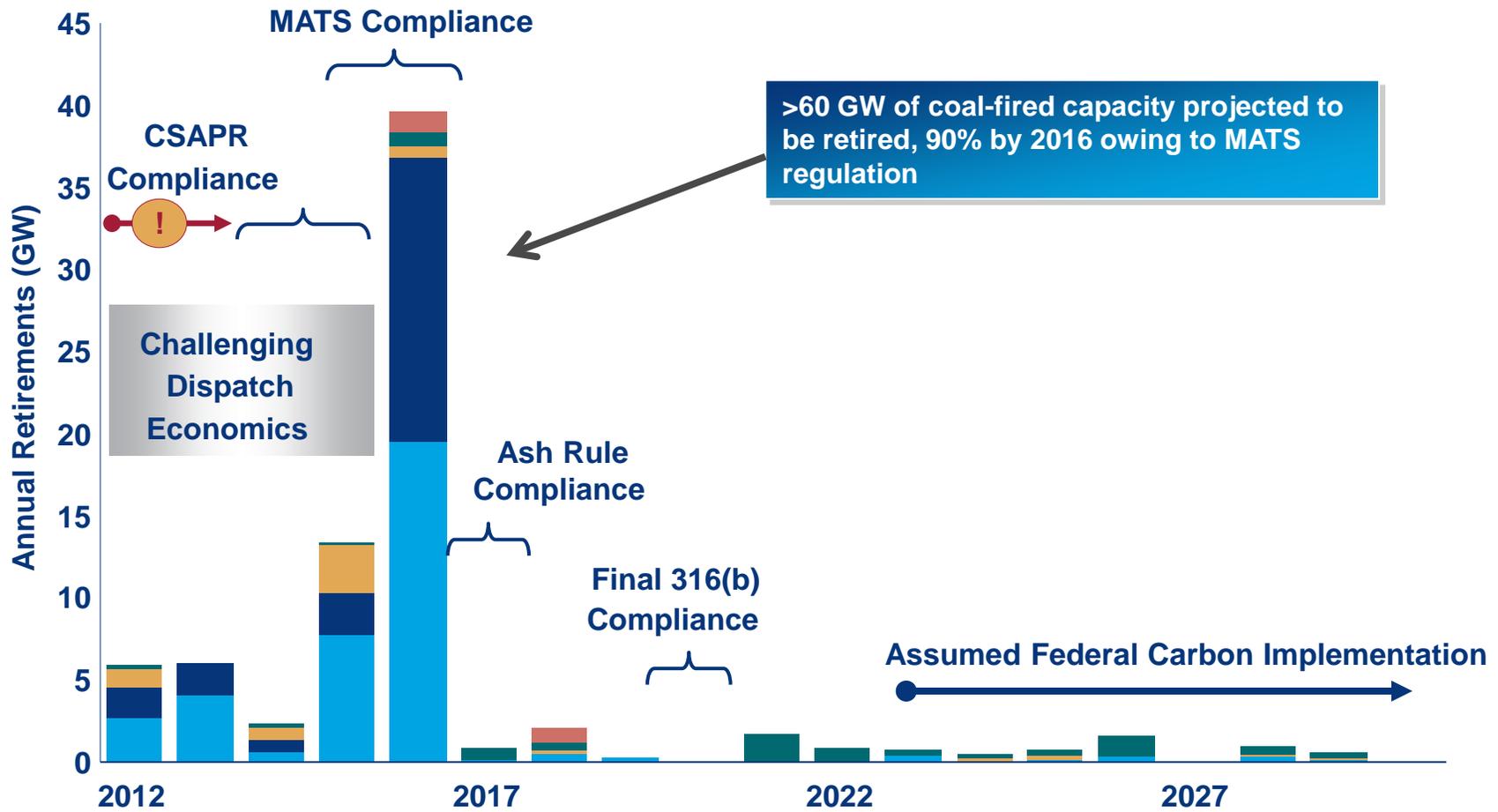


Source: EIA (history), Wood Mackenzie (forecast)



Source: Wood Mackenzie Coal Market Service & NAGS

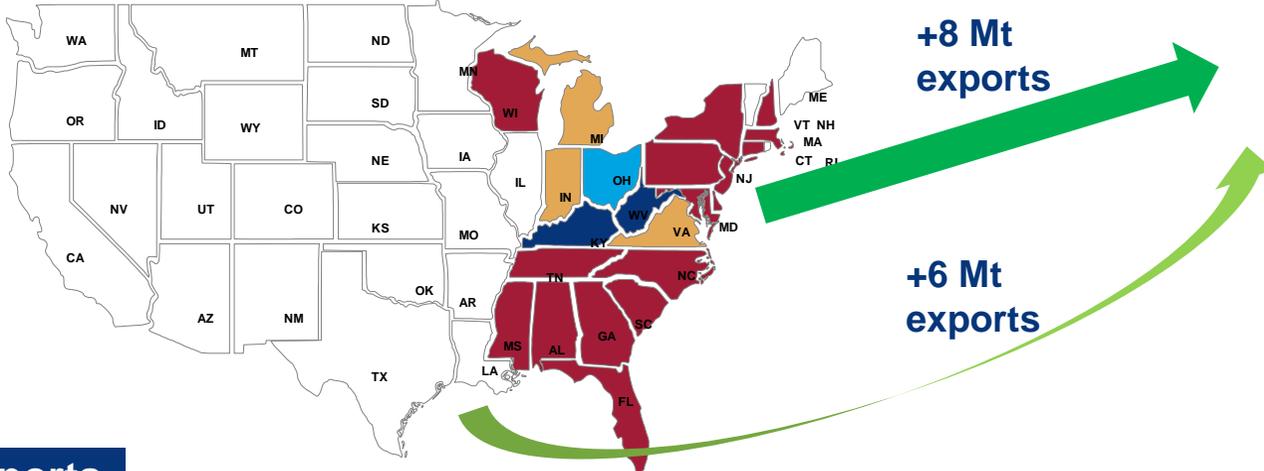
# ...and it stands to lose further ground from coal plant retirements



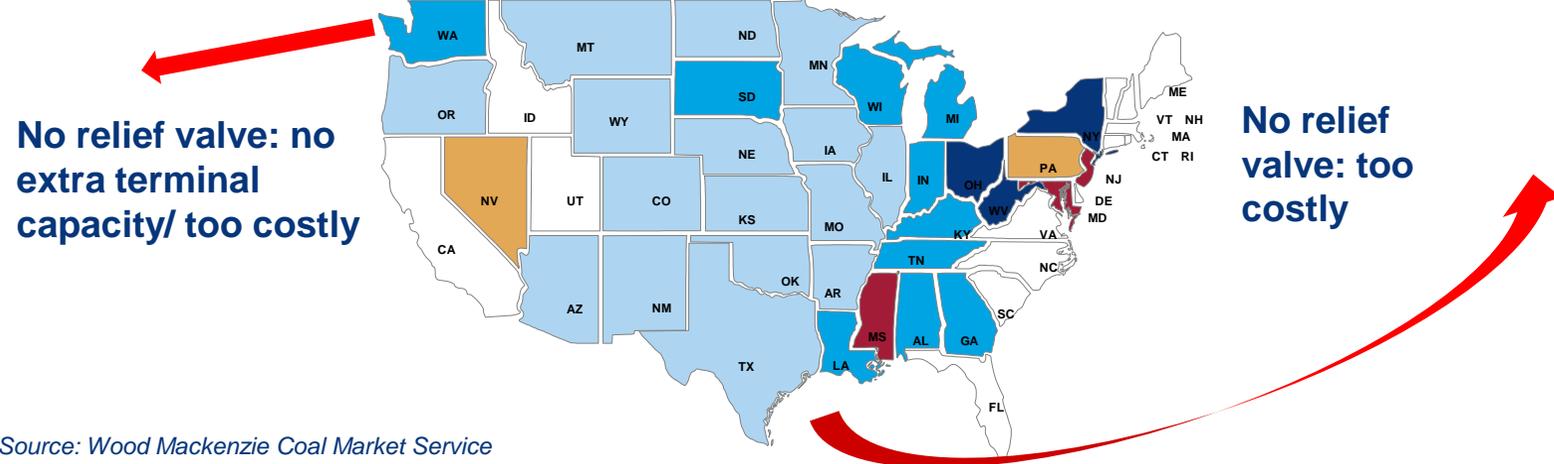
Source: Company Announcements; Regulatory Filings; Wood Mackenzie North America Power and Coal Market Services

# The challenged market in the US led to extra supply into Atlantic markets

## Eastern US Exports



## Western US Exports



No relief valve: no extra terminal capacity/ too costly

No relief valve: too costly

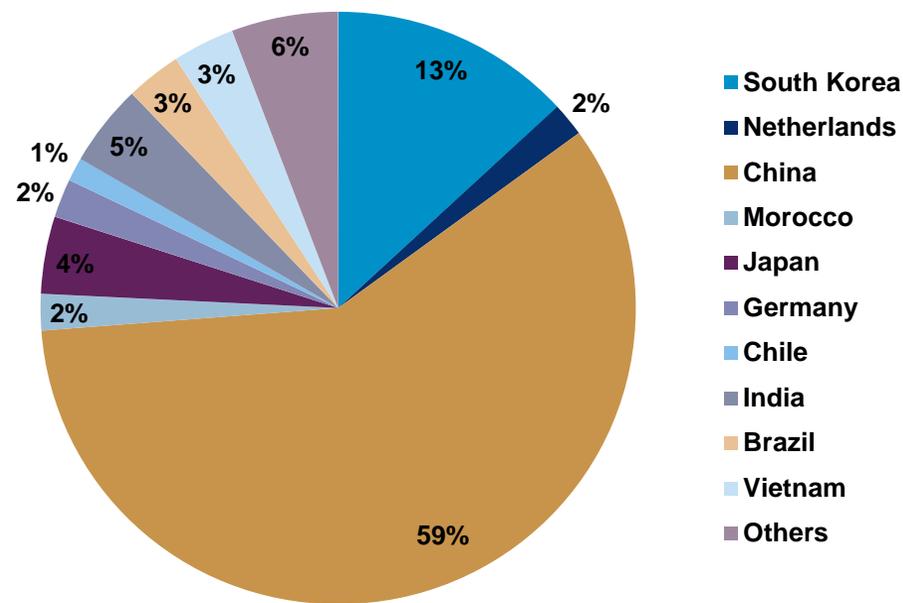
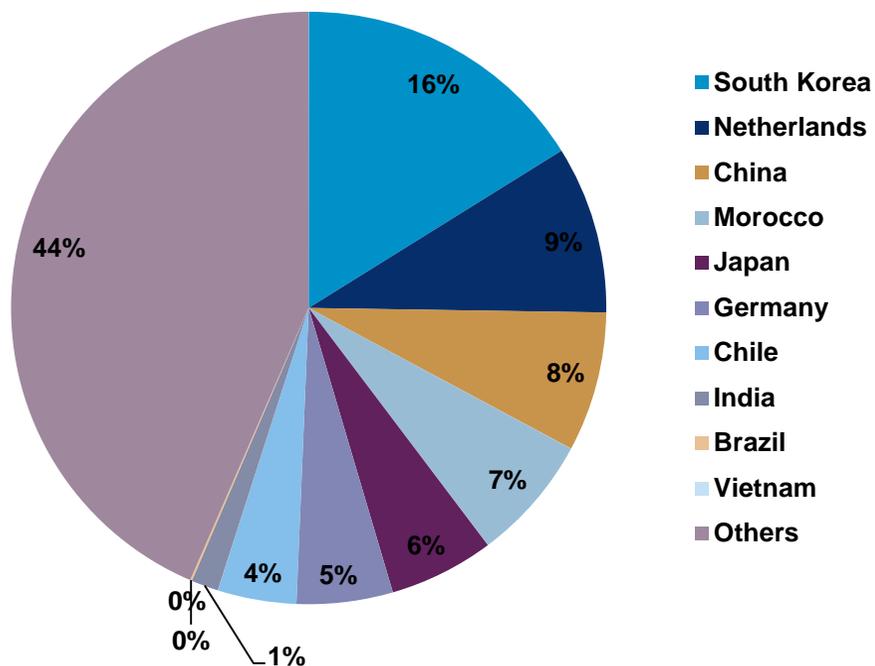
Delivered costs
>\$3.50/mmbtu
\$3-3.49/mmbtu
\$2.50-2.99/mmbtu
\$2-2.49/mmbtu
<\$1.99/mmbtu

Source: Wood Mackenzie Coal Market Service

# Trade patterns will shift dramatically from the US

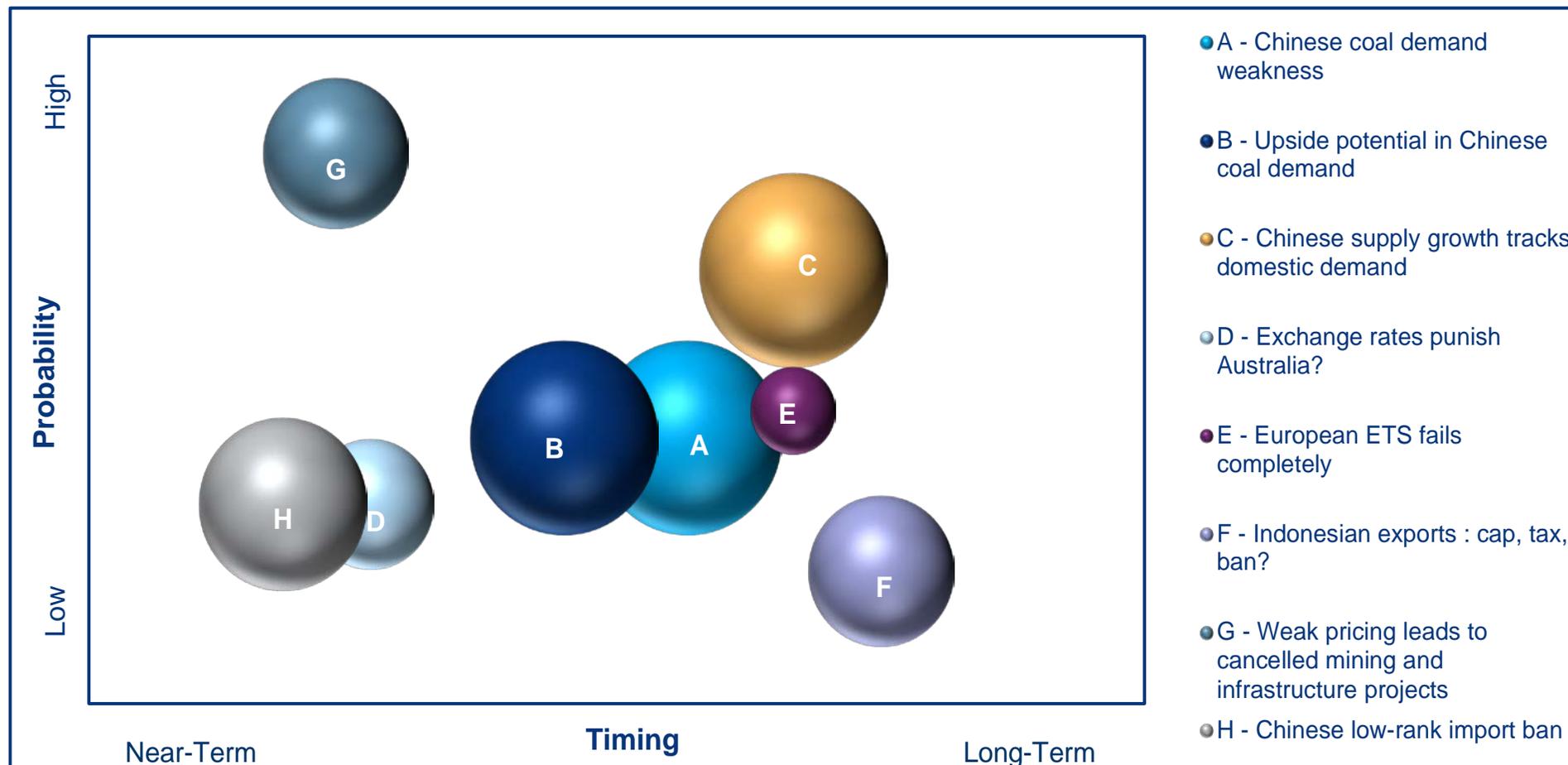
**US seaborne thermal coal exports by destination, 2012**

**US seaborne thermal coal exports by destination, 2030**



Source: Wood Mackenzie Coal Market Service

# Risks and uncertainties



Source: Wood Mackenzie Coal Market Service

\*Circle size represents the potential impact of each risk. Timing of some risks can carry throughout the end of the forecast.

## Wood Mackenzie Disclaimer

- › This presentation has been prepared by Wood Mackenzie Limited for delivery at the U.S. Department of State Foreign Service Officers' Coal and Power Training Course in Arlington, VA on the 15<sup>th</sup> of July 2013. It has not been prepared for the benefit of any particular attendee and may not be relied upon by any attendee or other third party. If, notwithstanding the foregoing, this presentation is relied upon by any person, Wood Mackenzie Limited does not accept, and disclaims, all liability for loss and damage suffered as a result.
- › The information contained in these slides may be retained by attendees. However, these slides and the contents of this presentation may not be disclosed to any other person or published by any means without Wood Mackenzie Limited's prior written permission.

#### Global Contact Details

Europe +44 (0)131 243 4400  
Americas +1 713 470 1600  
Asia Pacific +65 6518 0800  
Email [energy@woodmac.com](mailto:energy@woodmac.com)  
Website [www.woodmac.com](http://www.woodmac.com)

#### Global Offices

Australia	Japan	United Arab Emirates
Brazil	Malaysia	United Kingdom
Canada	Russia	United States
China	Singapore	
India	South Korea	



INVESTORS  
IN PEOPLE

Wood Mackenzie is the most comprehensive source of knowledge about the world's energy and metals industries. We analyse and advise on every stage along the value chain - from discovery to delivery, and beyond - to provide clients with the commercial insight that makes them stronger. **For more information visit: [www.woodmac.com](http://www.woodmac.com)**