

# **Challenges and opportunities for the international coal trade**

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# Who are we and what do we do?

**We are an international organisation, endorsed by the International Energy Agency. We provide independent, objective information on how to produce and use coal more effectively, efficiently and cleanly, to minimise its environmental impact while providing reliable cost effective energy**

## Overview of the IEACCC work programme

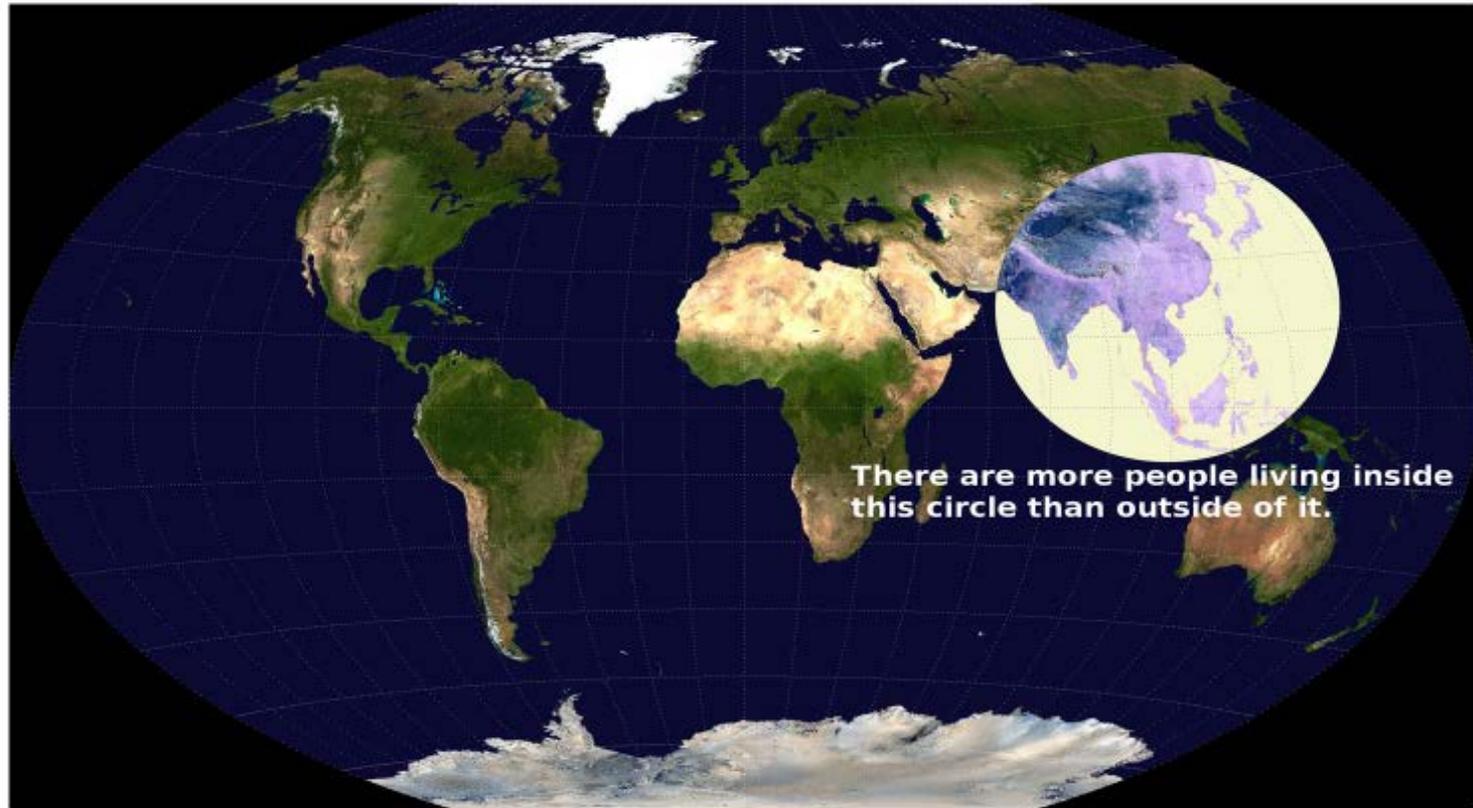
### Four interlinked activities:

- **Coal based assessment studies** (covering both a wide range of technical issues and, increasingly, more policy and regulatory considerations plus global funding issues)
- **Dissemination activities** (via web site, the press and other media sources)
- **Outreach activities** (increasingly in developing and industrialising countries)
- **Provision of specialist support upon request by individual members**

## Scope of presentation

- **Background to international coal markets, chiefly seaborne trade**
- **Current market trends for both steam and coking coal**
- **Recent trends in export supply and import demand**
- **Factors that will shape near and longer term market trends**

## **A sobering thought....** (Butler 2016)

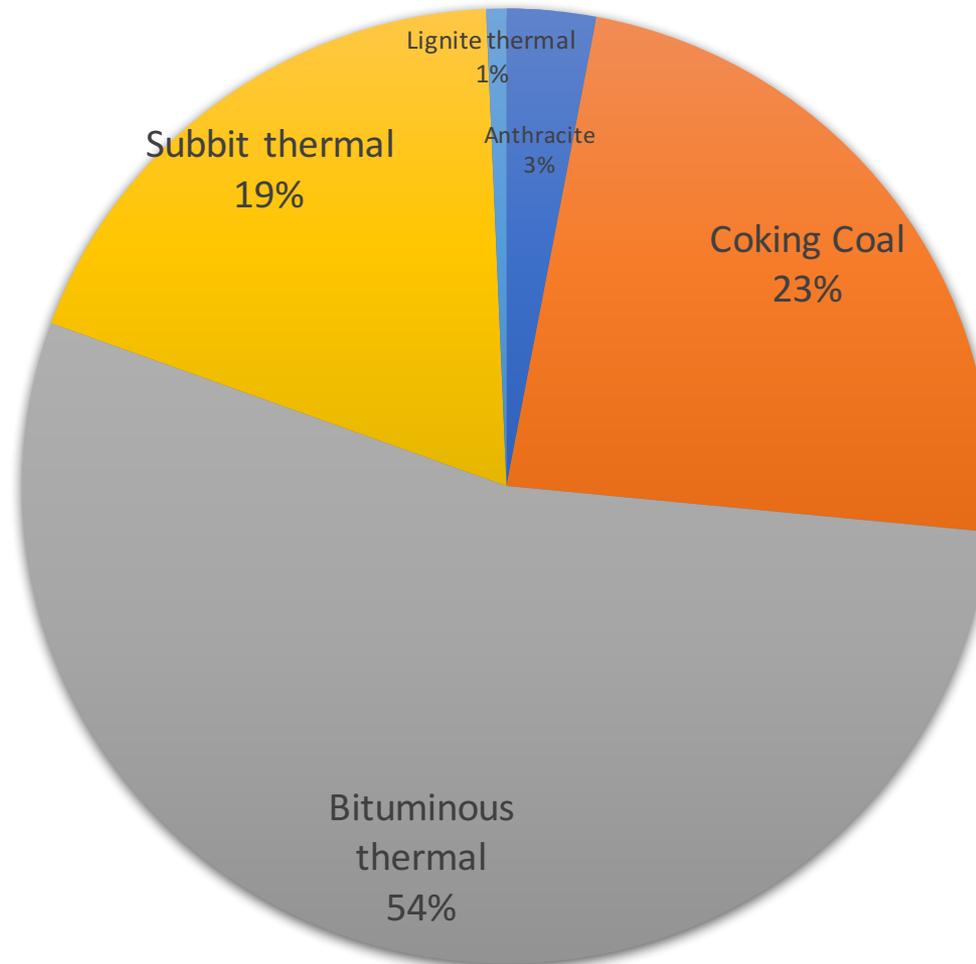


### **Coal's shift to the East is accelerating**

- **Sustained coal consumption will continue in North Asia with strong growth in South and Southeast Asia to ensure affordable security of supply**
- **In contrast, the decline of coal in Europe will continue while in North America it will probably remain under threat from gas**

## World coal trade by coal type in 2016

World coal exports in 2016, total = 1333 Mt (source: IEA, 2017)



## **Most international trade is by sea** (SSY Jul 2017)

- **In 2016, the seaborne coal export trade was 1118 Mt accounting for 84% of the international market**
  - 823 Mt of steam coal
  - 295 Mt of met coal
  
- **The remainder is transported by overland rail, barge or truck**

(Source,)

## **Coal is a truly global commodity**

**In 2016, 142 importing countries traded coal with more than 70 countries (some coal producing countries, many others being transit nations)**

### **Key exporters:**

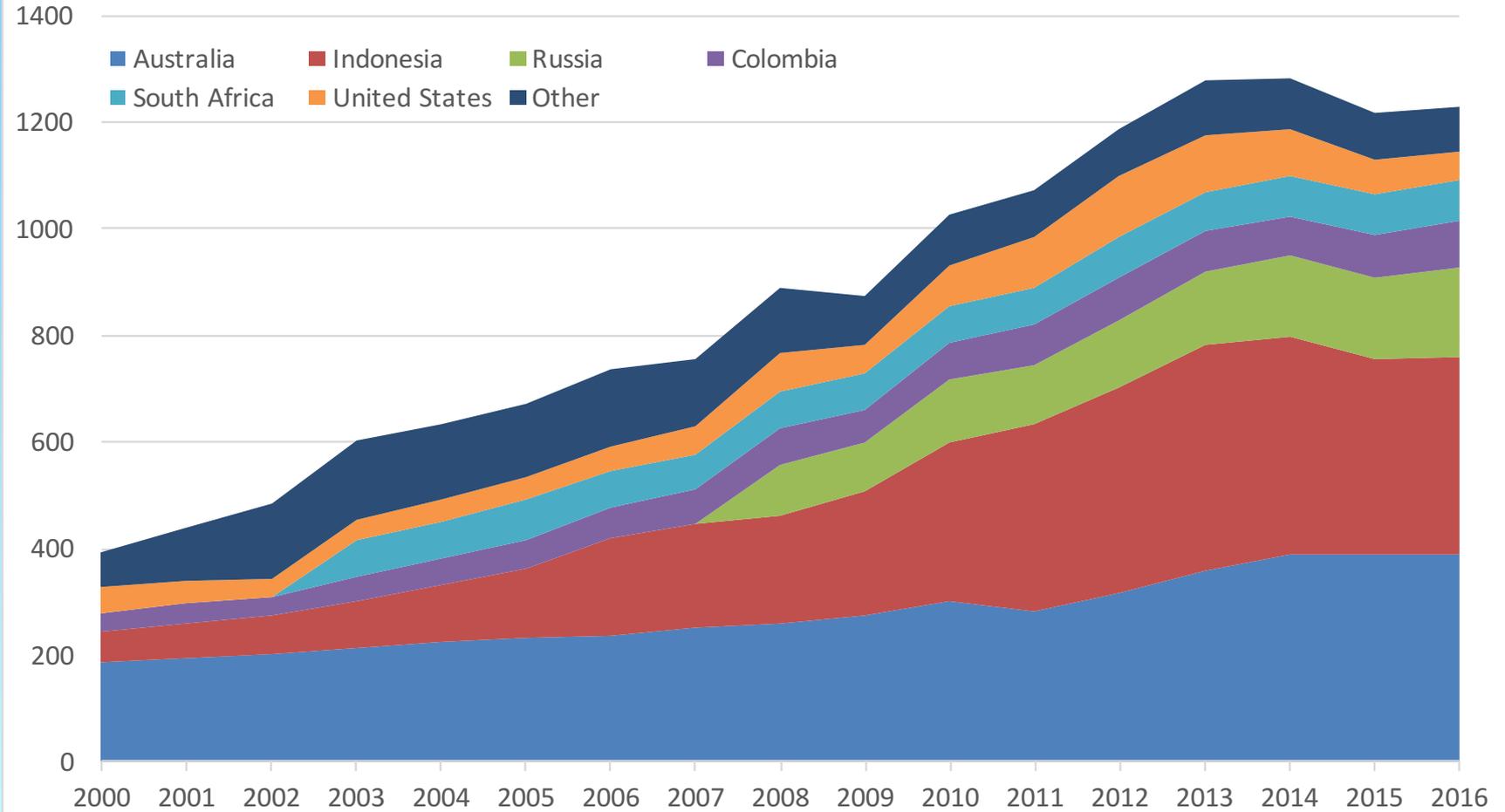
**Australia**  
**Indonesia**  
**Russia**  
**Colombia**  
**South Africa**  
**United States of America**

### **Key importers:**

**India**  
**China**  
**Japan**  
**Europe**  
**Korea**  
**Taiwan**

# Major seaborne exporters (steam and met)

Global coal trade since 2000 (Source IHS, Sep 2017)

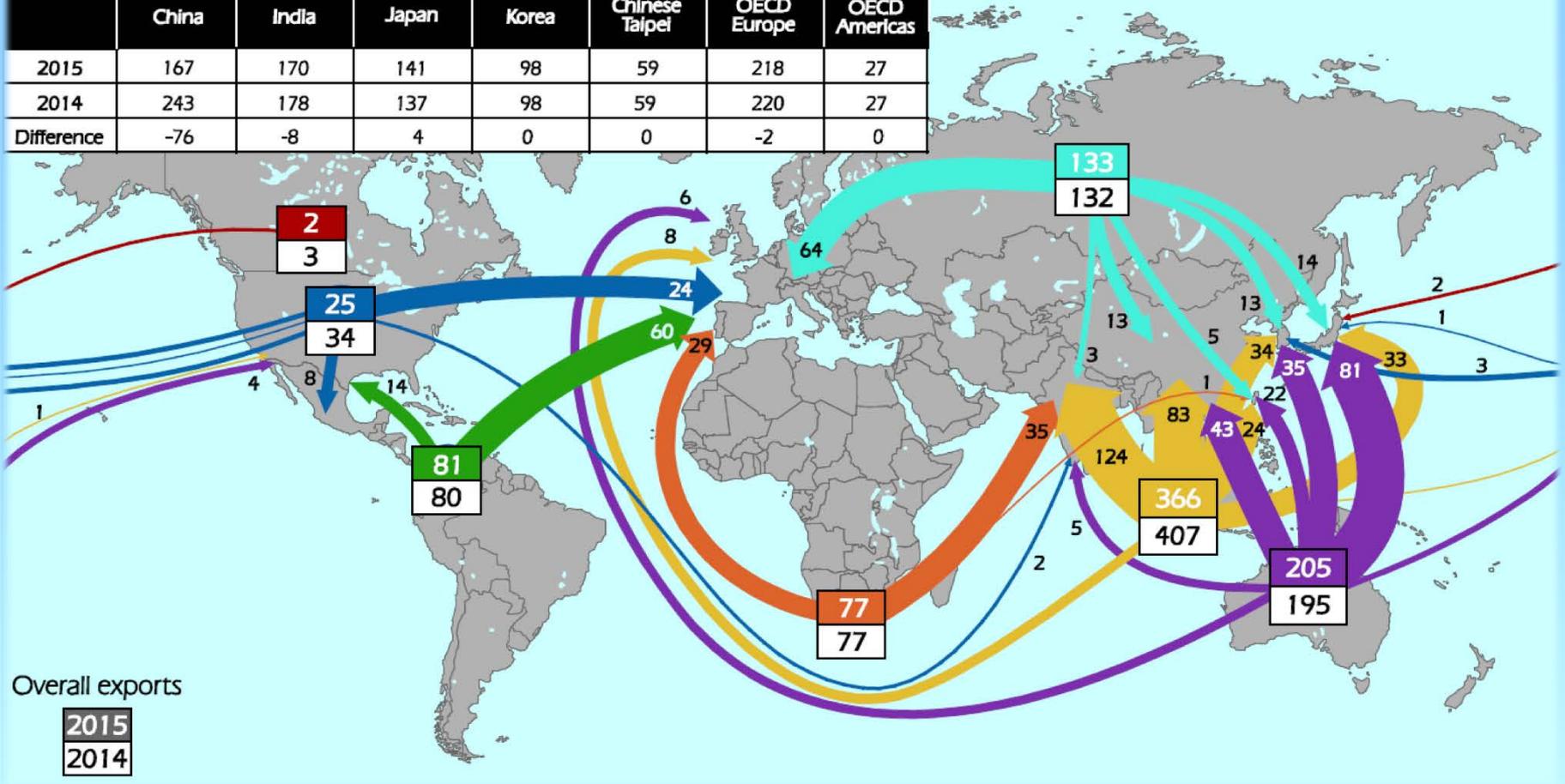


# Thermal coal trade flows in 2014/15

(IEA Medium Term Outlook 2016)

Overall imports per country/region

	China	India	Japan	Korea	Chinese Taipei	OECD Europe	OECD Americas
2015	167	170	141	98	59	218	27
2014	243	178	137	98	59	220	27
Difference	-76	-8	4	0	0	-2	0



(Source:)

# Recent buying trends for the international coal trade

(IEA Medium Term Outlook 2016)

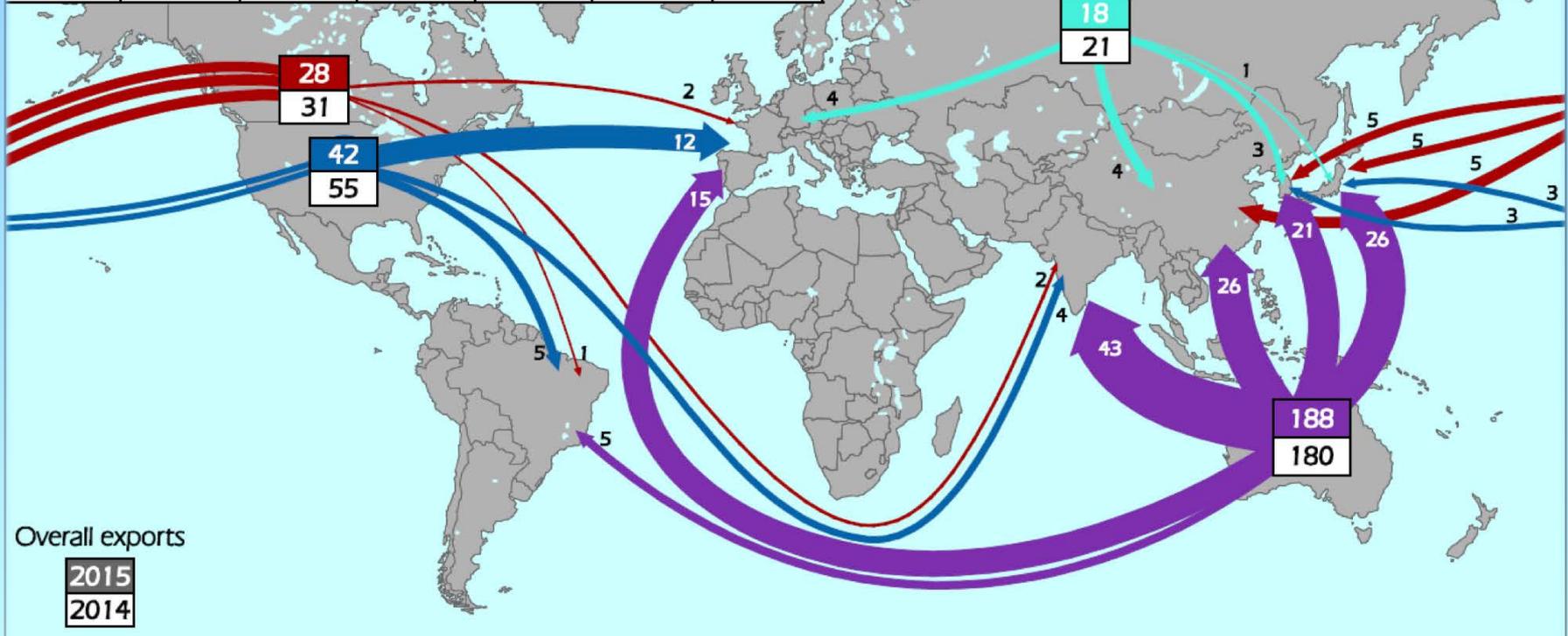
- **The Pacific Basin hosts the largest importers of coal (as well as exporters)**
- **In 2015, India became the largest single coal importer in the world closely followed by Japan and China**
- **China and Japan were the second- and the third-largest importers of thermal coal, respectively**
- **OECD Europe currently remains a large importer (218 Mt), with Germany the major user of this coal**
- **China's imports decreased substantially in 2015, with the share of trade shifted to India and other Asian destinations**

# Coking coal trade flows in 2014/15

(IEA Medium Term Outlook 2016)

Overall imports per country/region

	China	India	Japan	Korea	OECD Europe	Brazil
2015	48	51	50	37	47	10
2014	62	48	51	33	50	11
Difference	-14	3	-1	4	-3	-1



This map is without prejudice to the status of or sovereignty over any territory, to the delimitation of international frontiers and boundaries, and to the name of any territory, city or area.

(Source:)

## Features of the metallurgical coal market

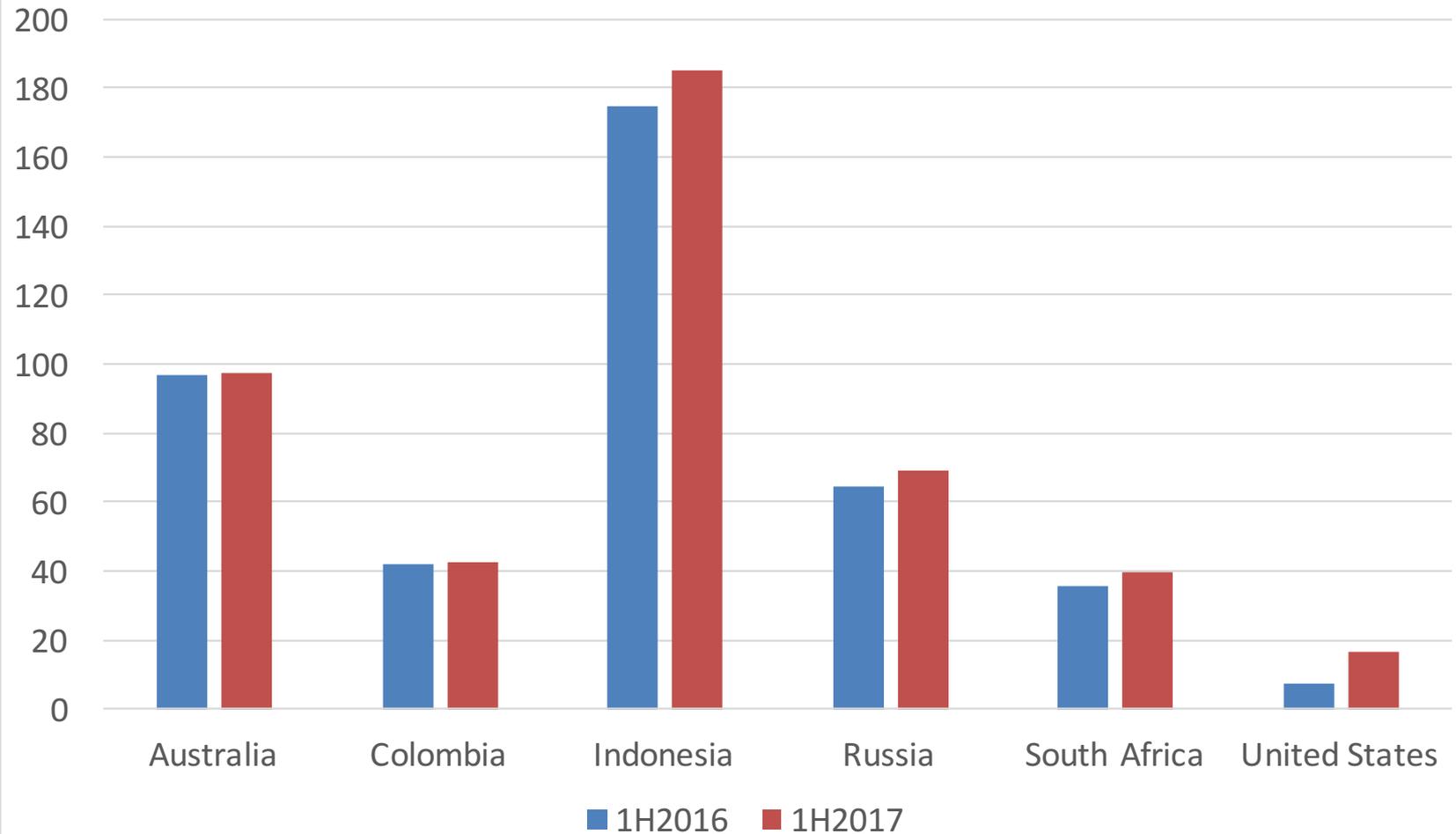
- **The international metallurgical coal market is highly concentrated in terms of supply**
- **Three countries are responsible for more than 80% of global met coal exports**
  - Australia (63%)
  - USA(14%)
  - Canada (9%)
- **Leading importers are India, Japan, China and OECD Europe**
- **Global met coal consumption is around 1000 Mt, with 285 Mt being imported**

## **2016 brought a 1.2% rise in the international coal trade**

- **Overall softening of exports from South Africa and the USA**
- **Russia saw 9-11% rise with exports to Asia, Egypt, Morocco and Turkey**
- **Colombia saw a 10% rise in exports to Asia, Mexico, and in 2017 larger deals with Turkey**
- **Australia and Indonesia both saw a modest 0.6-1% rise between 2015-16**

## Export appear to trend higher in 2017

1H 2017 steam coal exports vs previous year, Mt



## **Volatility in coal prices**

- **Steam coal prices in 4Q 2016 were 50-60% higher than 4Q 2015**
- **Steam and coking coal prices move in tandem**
- **Jul-Sep 2016 saw spot FOB coking coal prices from Australia increase to more than 100 \$/t (peaking at 311 \$/t)**
- **In Australia, technical problems at mines and industrial action meant Australia could not respond to the market fully**
- **USA responded and exports surged at the end of 2016 and early 2017 – demand from India, Japan, Korea, and even Europe due to outages of nuclear stations in France**

## **Factors that could affect the markets beyond 2017**

- **Outlook is only partly market led, and is influenced by policy decisions amongst major coal users**
- **S Korea – energy policy, 5 \$/t rise in coal import tax, impact on low-CV coal**
- **China policy on domestic production to artificially create (im)balances to influence domestic prices - annual working day rules; import permit restrictions on lower quality coal through smaller ports - could impact wider market**
- **Indications from Japan suggests coal power will be influenced by nuclear restart decisions although the broader energy policy will maintain coal use**

## Factors to affect coal demand

- **SE Asia** is focused on coal for power rather than gas and renewables while Africa and Middle East are following a path to diversify and/or expand coal power
- **India** is in internal conflicted between its commitment to solar power and its aspirations for its coal industry
- **China** continues a programme to raise the performance of its massive capacity coal power sector through advanced technology and plant replacement
- **OECD Asia** comprises heavily energy import dependent nations; nuclear policy in Japan will steer coal demand
- **USA** coal power could continue to be displaced by gas, but how will domestic gas prices develop as USA becomes more prominent in the LNG market?
- **OECD Europe** will continue to force coal out of the market through regulation, except in Greece and Poland and other Eastern European countries, where there are major security concerns about access to Russian gas supplies

## **Longer term expectations for international suppliers**

- **Australia will remain a major exporter, with both high quality steam and coking coal. Exports could increase further with investment from China and India. Most greenfield capital expenditure could be geared towards exports of coking coal**
- **Indonesian may limit exports as it draws in coal to power it's own expanding fleet of new stations**
- **Russian exports will continue, possibly benefitting even further if the rouble remains weak against the dollar**
- **Colombian exporters may face challenges with a shrinking Atlantic market; expansion of the Panama Canal and low freight rates may allow better access to Asia**
- **South African exports will face challenges as export-oriented mines face reserves depletion**
- **USA export potential remains good if freight rates are favourable and export port facilities have the capacity**

# **Direct and indirect climate change impacts on coal utilisation**

- **The COP activities and initiatives focus on climate issues to the exclusion of the other aspects of the energy trilemma, namely security of energy supply and economic competitiveness. The COP is politically driven, with little regard for the practicalities of changing the global energy mix to a lower carbon model. As such their approach lacks technical and economic credibility**
- **It is difficult to envisage the developing countries giving up on coal use, especially when they mostly have young and growing coal power fleets. If such actions could be forced to occur, the global energy system would collapse, with a disproportionate adverse impact on developing nations that are trying to lift their populations out of poverty**

## **Win-lose, win-win or lose-lose?**

- **There is no guarantee that the COP21 settlement will lead to the cuts in emissions of carbon dioxide and other greenhouse gases which have been declared necessary to stop the atmosphere from warming, with potentially disastrous effect**
- **Certainly, for coal, the need is to ensure new plant is High Efficiency Low Emissions technology, based on ultra-supercritical steam systems, capable of including carbob capture utilisation and storage in due course**
- **Indeed the need to include and promote the use of CCUS has to be critical and currently the lack of a commercial delivery mechanism for the technology is a significant handicap**

## Key messages and final thoughts

- Coal use around the world remains extensive but a geographical divide in the coal market is emerging with a strong shift to the East, which is accelerating
- China will remain the largest coal user and has significant market influence in the seaborne trade, which will be mainly destined for Asian buyers
- Market forces also driven by India and SE Asia
- If Indonesia withdraws tonnage, who will fill the gap?
- Will suppliers to the Atlantic OECD market manage to divert business to Asia?
- Coal using nations should make the transition to ultra-supercritical coal power systems with very effective non-GHG emissions control systems, to have a major and cost effective positive impact on global carbon emissions. Subsequent introduction of CCUS will ensure that the technical and economic advantages of coal based power production

**Thank you for your attention**

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## Appendix

**The remaining slides provide additional information that will not be directly presented**

## Background

- **Global coal production (2016) was 7,100 Mt**
- **International trade typically accounts for 17-20% of world production**
- **International coal trade (seaborne and land trade) decreased for the first time in 2015 by 2.6% or roughly 200 Mt**
- **However, in 2016 exports rose again by 25 Mt to 1333 Mt**
  - **Thermal coal (bit, sub) = 73% (980 Mt)**
  - **Met coal = 24% (313 Mt)**
  - **Anthracite and lignite = 3% (40Mt)**

## Recent trends in international supplies

- **Australia remains the leading exporter of coking coal providing 64% of seaborne exports; and is the 2<sup>nd</sup> largest steam coal exporter**
- **Indonesia remains the largest steam coal exporter (311-366 Mt in 2016 depending on data source)**
- **Coal prices rose in late 2016, mainly driven by supply side policy changes in China**
- **Mining costs fell in every exporting country, and the industry remains cautious with regards to investments**

# Changes in thermal coal trade flows between 2014-15

**Table 2.1** Thermal coal exports in 2015 (Mt) and net changes from 2014 (colour-coded), in Mt<sup>15</sup>

From \ To	China	India	Japan	Korea	Chinese Taipei	Europe	Other Asia	TOTAL
Indonesia	83	125	33	34	24	9	57	365
Australia	43	8	81	35	22	-	11	201
Colombia	-	-	-	-	-	59	-	59
United States	-	2	1	3	-	13	-	19
South Africa	-	35	-	-	1	16	7	59
Russia	13	3	14	13	5	68	5	121
<b>TOTAL</b>	<b>139</b>	<b>173</b>	<b>128</b>	<b>85</b>	<b>53</b>	<b>164</b>	<b>80</b>	<b>-</b>



**Source: IEA Medium term outlook 2016**

**Red shaded cells denote a reduction in trade, green indicate an increase**

## USA coal exports in 2016

