

From: s 22  
Sent: Friday, 22 June 2018 2:58 PM  
To: s 22 @industry.gov.au>; s 22 @industry.gov.au>  
Subject: SLIDES -- THE COALERA IS NOT OVER [DLM=For-Official-Use-Only]

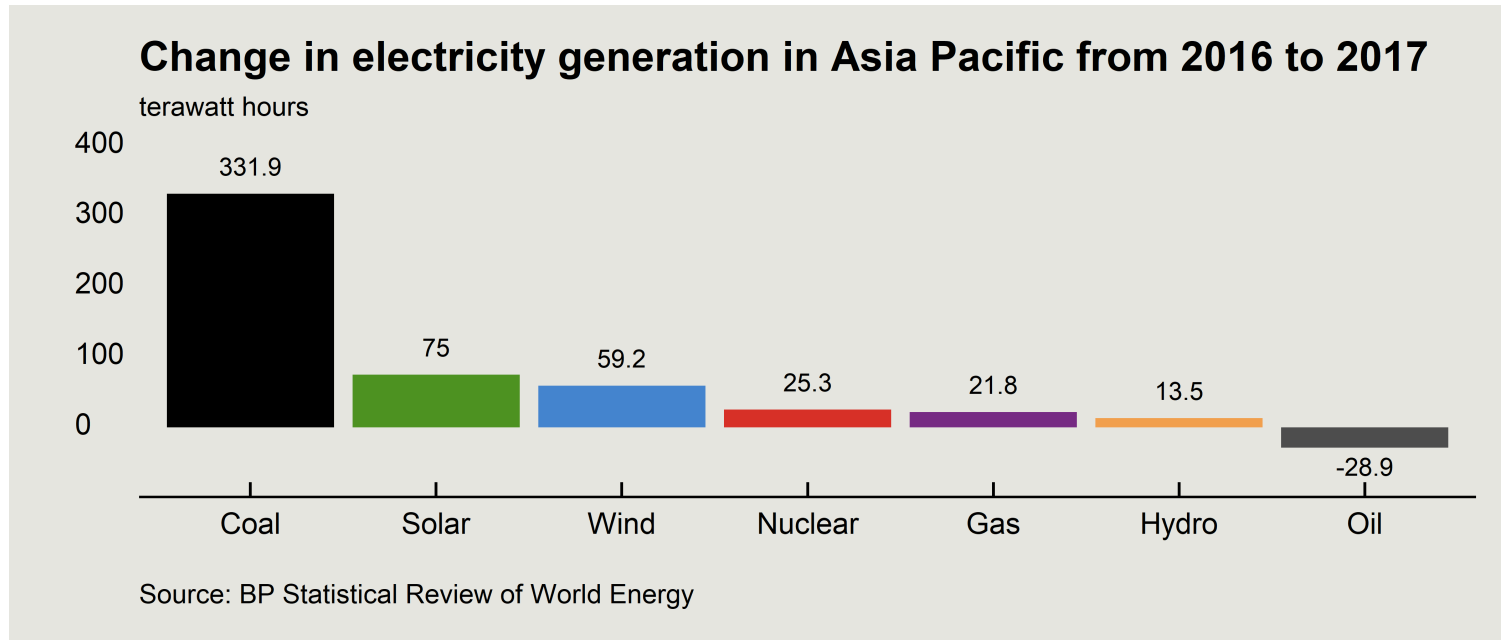
FYI  
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From: "s 22 (Sen M. Canavan)" <s 22 @aph.gov.au>  
Date: Friday, 22 June 2018 at 12:54:49 pm  
To: "s 22 (Sen M. Canavan)" <s 22 @aph.gov.au>  
Subject: FOR INTEREST -- SLIDES -- THE COAL ERA IS NOT OVER

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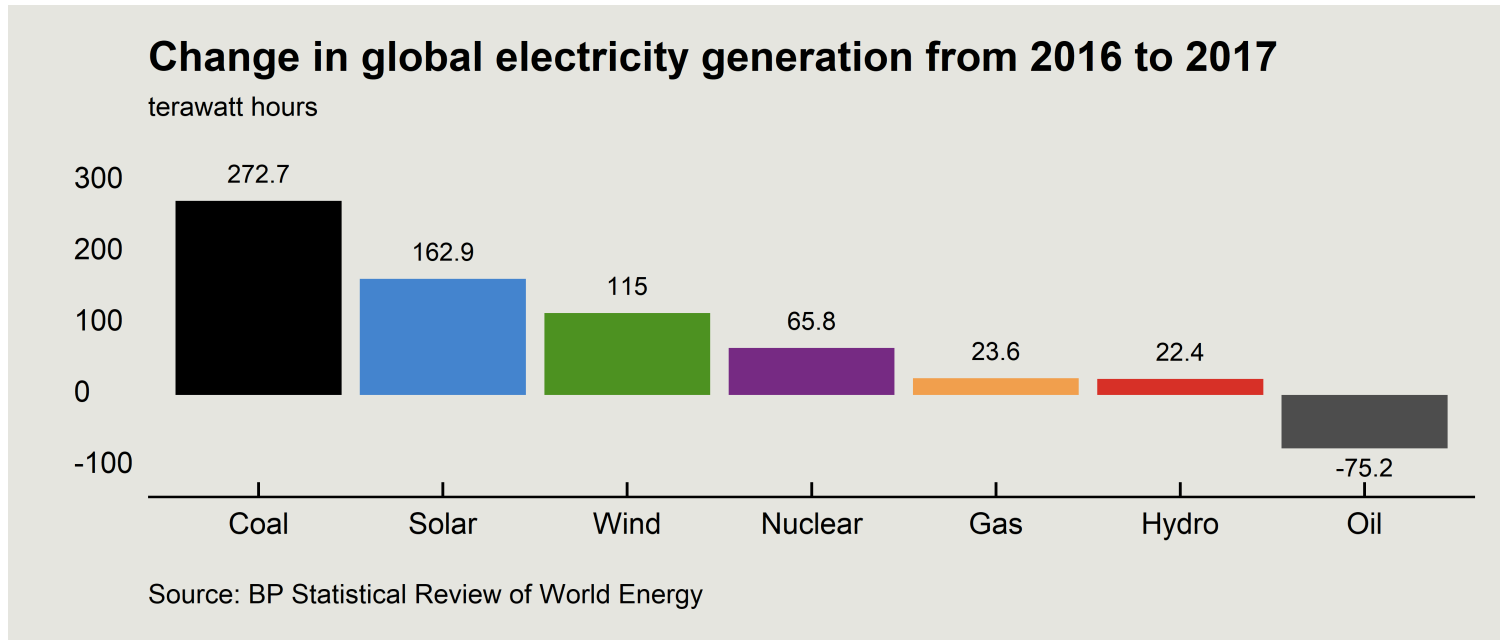
# **THE COAL ERA IS NOT OVER**

# Coal has fuelled growth in Asian electricity



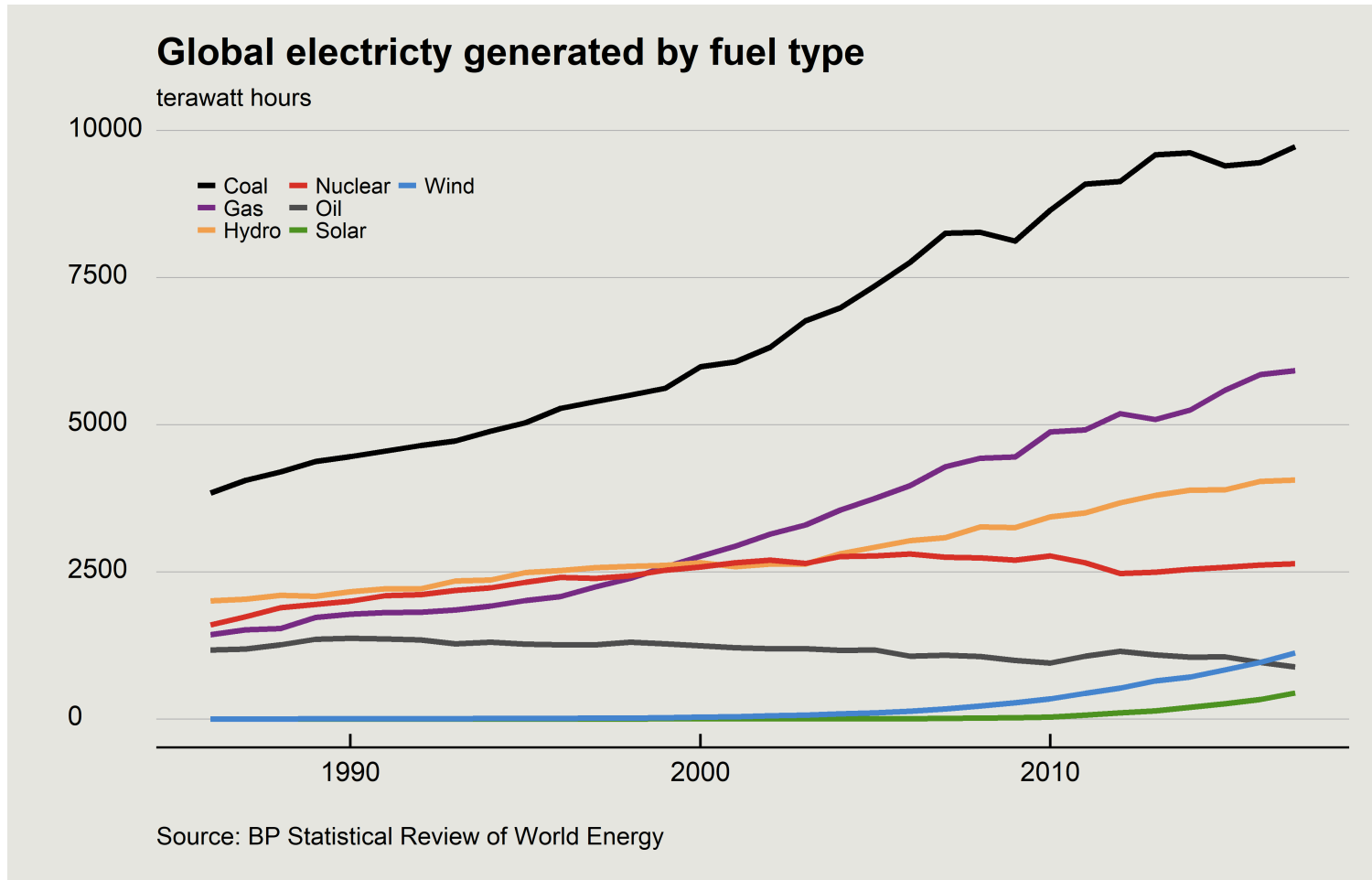
- In the last year, coal fired power generation has increased in the Asia Pacific region by 330 terawatt hours, contributing 66% to increased electricity.
- That is the equivalent of 33 Hazelwoods. (In last year of operation, Hazelwood produced 10 terawatt hours.)

# Same is true across the world



- Global electricity production increased by over 600 terawatt hours in the past year, and just under 50 per cent of this increase was through the greater use of coal.
- There have been declines in the use of coal in the United States (because of cheap shale gas) and Europe (because of policy changes and natural depletion).

# Coal has remained at top for decades

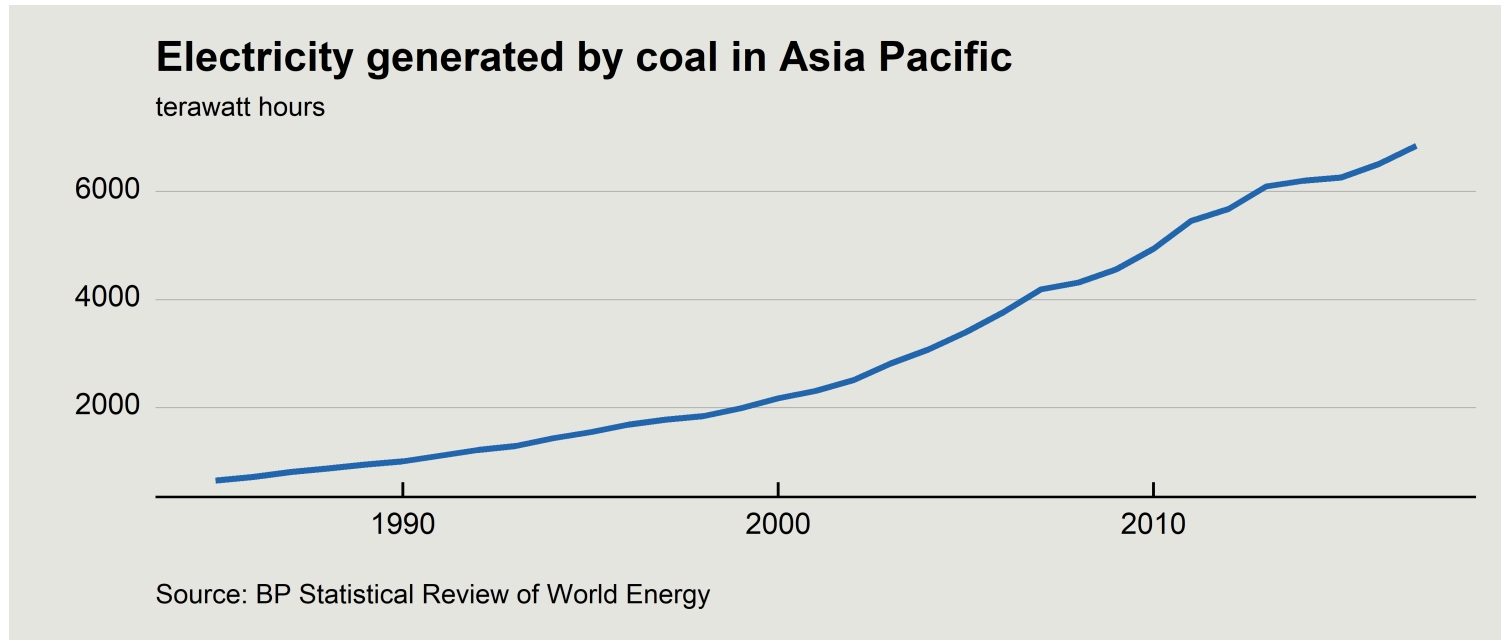


# Energy transitions take longer than you think

- In 2017 coal fired power set a new record for supply at 9723 terawatt hours, representing 40 per cent of world electricity generation, and by far the largest single source of global electricity.
- Coal fired electricity has increased by 62 per cent since 2000. It has been the fastest increase in coal use on record.
- The proportion of electricity supplied by coal has not changed in 40 years.
- As BP's Chief Economist said on the release of the statistics:

... despite the extraordinary growth in renewables in recent years, and the huge policy efforts to encourage a shift away from coal into cleaner, lower carbon fuels, there has been almost no improvement in the power sector fuel mix over the past 20 years. The share of coal in the power sector in 1998 was 38% – exactly the same as in 2017 ... The share of non-fossil in 2017 is actually a little lower than it was 20 years ago, as the growth of renewables hasn't offset the declining share of nuclear.

# Asia is not slowing down

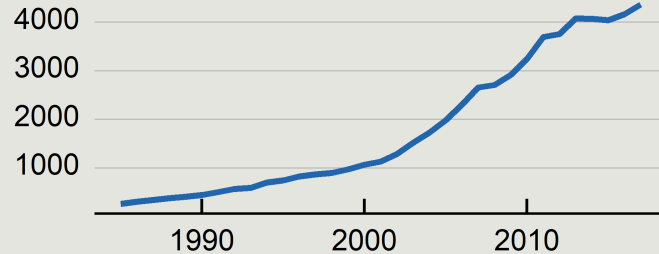


- In the Asia-Pacific, coal power has more than tripled since 2000. Over the past 15 years more than 1000 GW of coal fired power has been built. That is equal to over 600 Hazelwood power stations.
- In statistical terms, 3 new Hazelwood sized coal power plants have opened every month in China for the last 5 years.

# Coal power around the world

## China

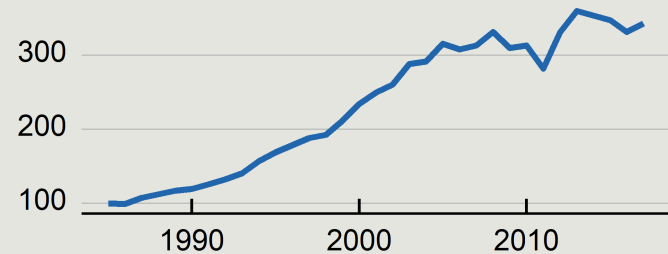
terawatt hours



Source: BP Statistical Review of World Energy

## Japan

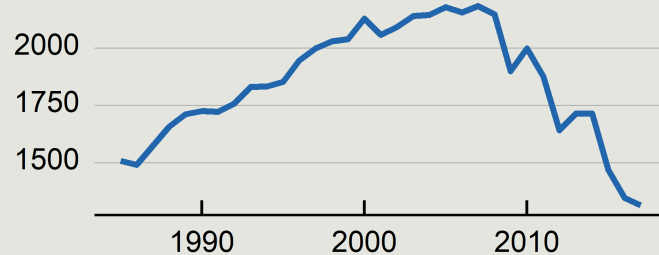
terawatt hours



Source: BP Statistical Review of World Energy

## United States

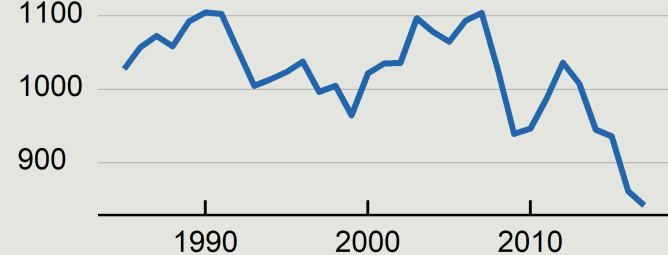
terawatt hours



Source: BP Statistical Review of World Energy

## Europe

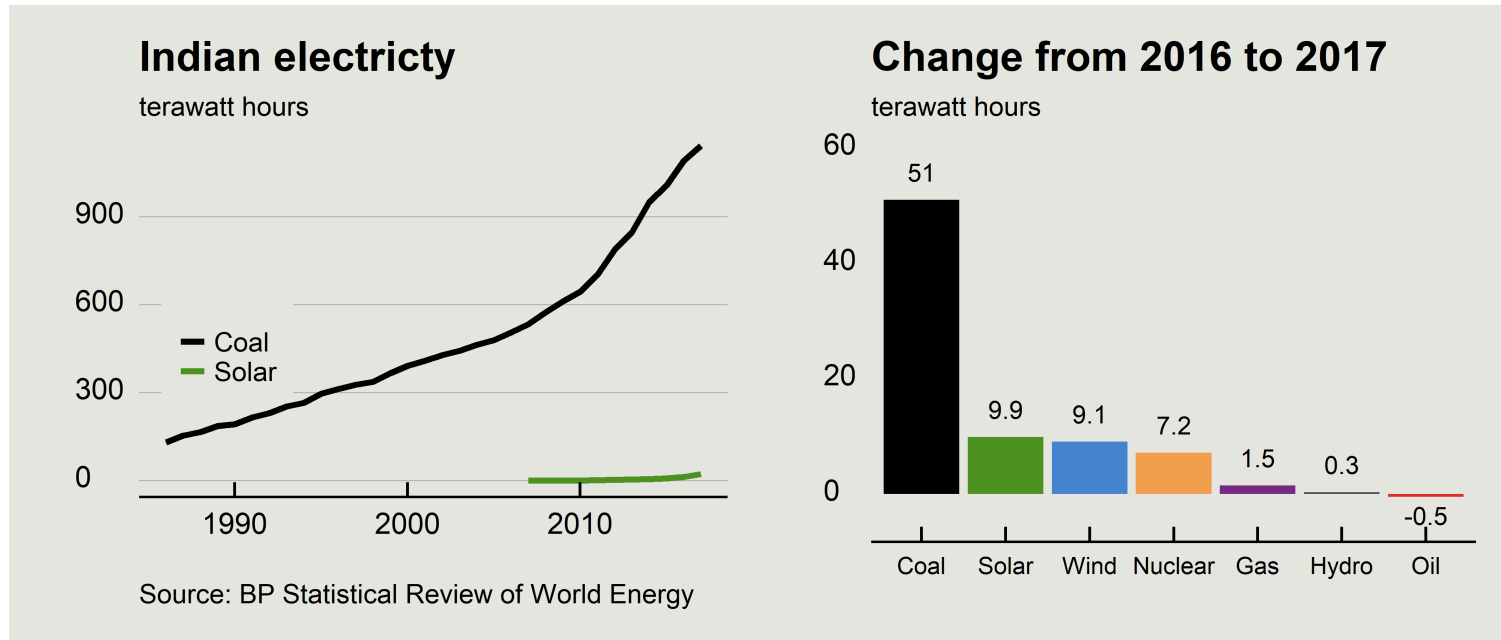
terawatt hours



Source: BP Statistical Review of World Energy



# Solar will not power India on its own

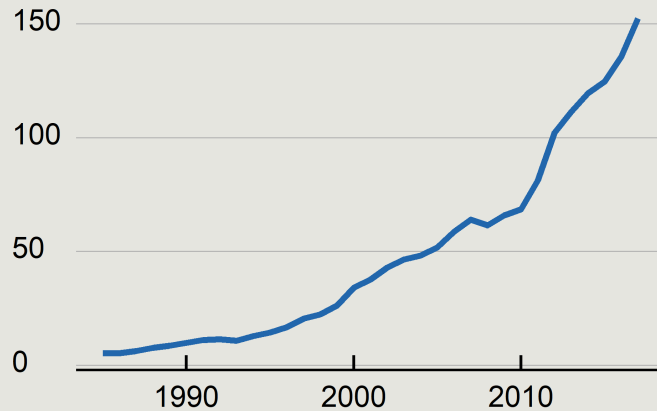


- Solar is growing strongly in India but coal generates 53 times more power than solar in India.
- Over the past year Indian electricity demand grew by over 78 terawatt hours and increases in coal power contributed 65 per cent towards that increase.

# Indonesia will not export as much

## Indonesian coal power

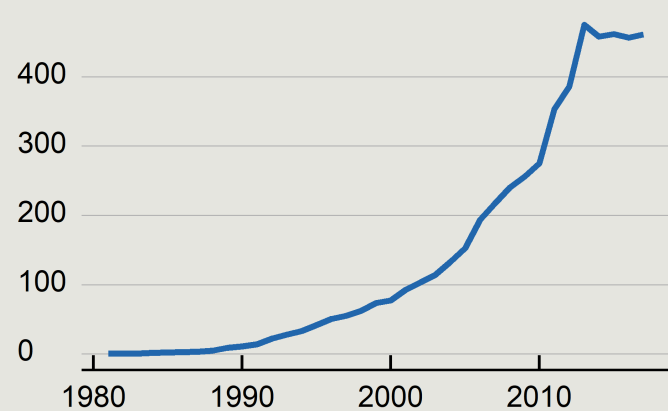
terawatt hours



Source: BP Statistical Review of World Energy

## Indonesian coal production

million tonnes of oil equivalent



Source: BP Statistical Review of World Energy

- Indonesia is rapidly increasing its generation of coal fired power.
- At the same time Indonesian coal production has flatlined. It is unlikely that Indonesia will be able to export as much coal as in the past.

# US coal exports could increase

## Thwarted Exports

Out of seven West Coast export terminals proposed in the past five years, none has opened.

- 1 **Cherry Point, Wash.**  
Critical permit denied by Army Corps of Engineers over violation of Lummi Nation's treaty rights
- 2 **Grays Harbor, Wash.**  
Proponent dropped plans
- 3 **Longview, Wash.**  
Currently under environmental review
- 4 **Port of St. Helens, Ore.**  
Proponents pulled their plans
- 5 **Port of Morrow, Ore.**  
Oregon Department of State Lands denied a needed permit
- 6 **Coos Bay, Ore.**  
Proponents let lease agreement expire
- 7 **Oakland Army Base, Calif.**  
Oakland City Council passed ban on coal handling

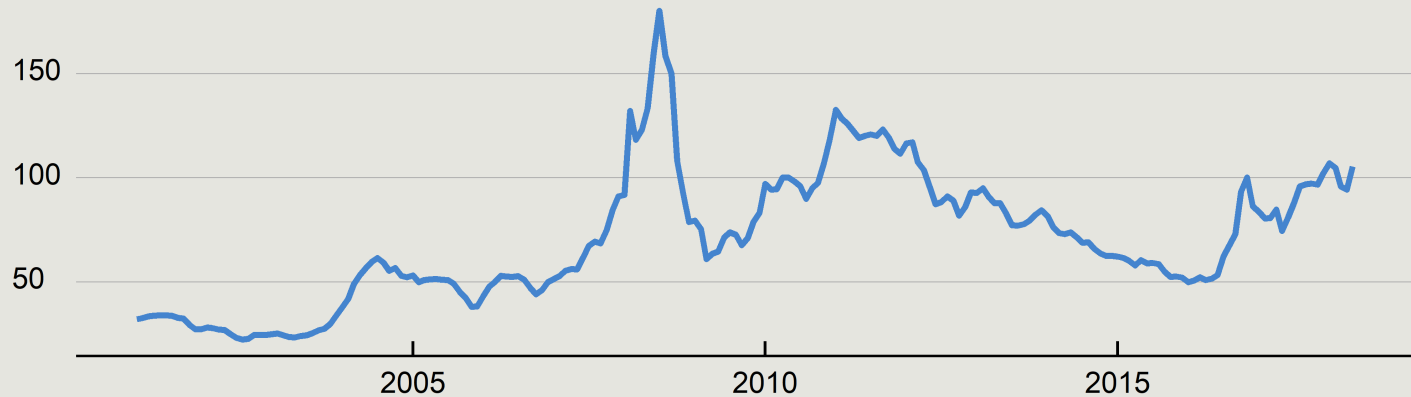


- US coal exports to Asia more than doubled in 2017, although from a low base.
- Additional US coal exports to Asia are limited by the lack of bulk coal export facilities on the US west coast. However, there are 7 proposed coal terminals and combined they could handle over 125 million tonnes per year.
- Earlier this year, Wyoming, Montana, Kansas, Utah, South Dakota, and Nebraska took Washington state to the federal court, arguing that the state's rejection of coal export terminals was a restraint on their trade.

# Coal prices are strong

## Thermal coal prices

per metric tonne, US nominal dollars

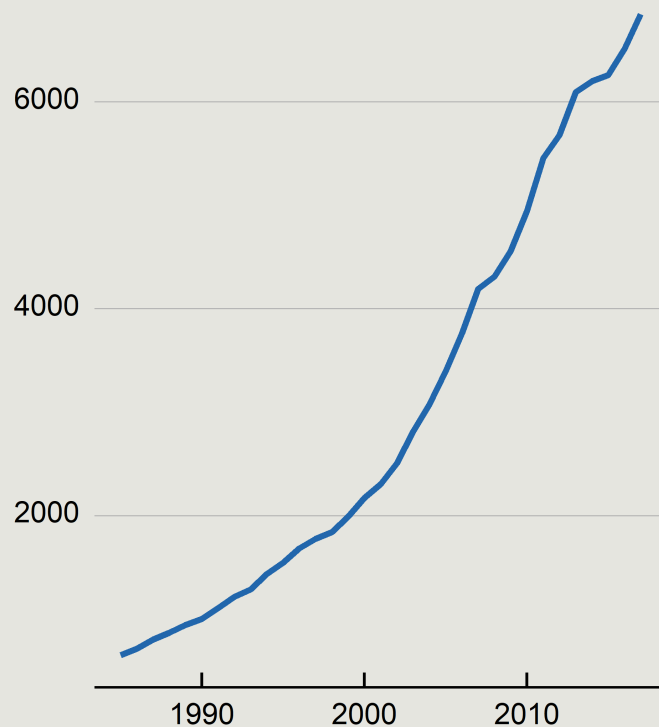


Source: World Bank Commodity Price Data, Newcastle/Port Kembla from 2002 onwards, 6,300 kcal/kg

- Financial analysts Wood Mackenzie estimate that the cost of coal from the Adani Carmichael coal mine will be about US\$40 per tonne. The current coal prices is over US\$100 per tonne.
- The Galilee would be the first major, new coal basin opened for more than 50 years. There are 5 other proposed mines in addition to Adani's and altogether they would create more than 16,000 jobs.

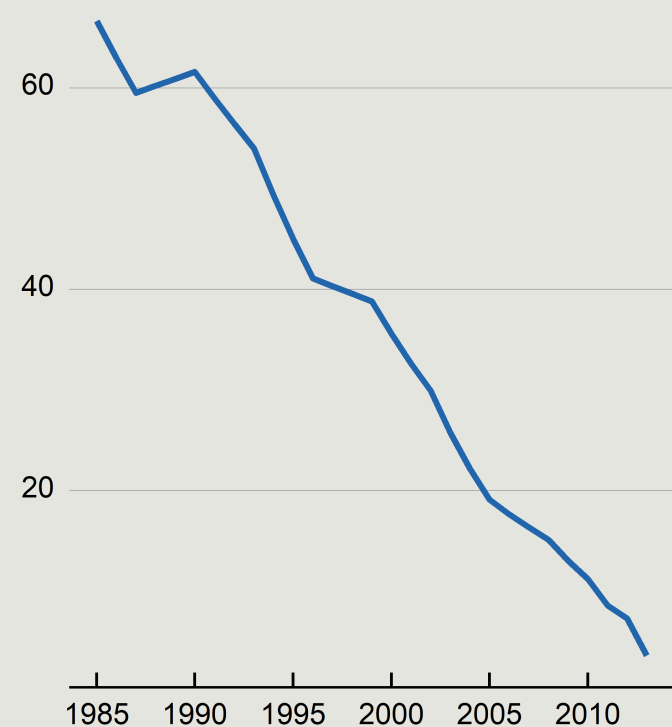
# Coal has helped bring down poverty

**Electricity generated by coal in Asia Pacific**  
terawatt hours



Source: BP Statistical Review of World Energy

**Proportion of population living in poverty**  
East Asia & Pacific, below US\$1.90 per day, real dollars



Source: World Bank DataBank, Poverty and Equity

# A lot more coal must be mined

