

# More trouble in the Middle East? Oil producers, geopolitics and climate change

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## Changing US posture in Persian Gulf

US is pulling back from era of physical intervention

- Zero carrier battle groups permanently assigned to PG (down from 2)
- Patriot missile batteries removed/repositioned
- Obama-era issues:
  - Asia pivot; Syria redlines; disdain for KSA; support for Arab Spring; Mubarak undermined
- Trump: No strategic coherence. Allies left guessing



## Revival of US Sanctions on Iran

- Unilateral Trump decision, not supported by other JCPOA partners
  - China, France, Germany, EU, Russia, UK not on board
  - All have pledged to continue working with Iran to undermine US sanctions
- Iran already lost 1mbd of exports, could reach 1.5mbd; roughly 5% of traded oil
- Iran hardliners ascendant, pushing hard for restart of nuclear enrichment program
- Disgruntled allies want to wait out Trump and prevent Iran from reverting to nuclear belligerence
- EU governments have tried to prevent loss of Iran oil imports
- But EU-based companies fear US sanctions and loss of US business
  - Governments don't import oil, companies do!





## OPEC and Russia

- Shale leaves OPEC with less control over price
- Prior to 2007, OPEC could act alone to control prices
- Now, OPEC needs Russia's help (OPEC+)
  - If OPEC cuts, shale can ramp up production and dampen the price increase
  - If OPEC floods the market (like it did in the 1980s), shale can cut back and the price will not drop as far.
  - Either way, OPEC less effective.

*Shale is pushing Russia and Saudi Arabia together*



## Saudi Arabia 2.0?

- Saudi Arabia used to be known for cautious foreign policy – sideline player
- Now pursues a more activist foreign policy; more repressive domestically

### Geopolitically

- Khashoggi murder
- War in Yemen
- Antagonistic relations with Iran, Qatar; now Canada and Germany
- Domestic increase in social freedom, decrease in political freedoms

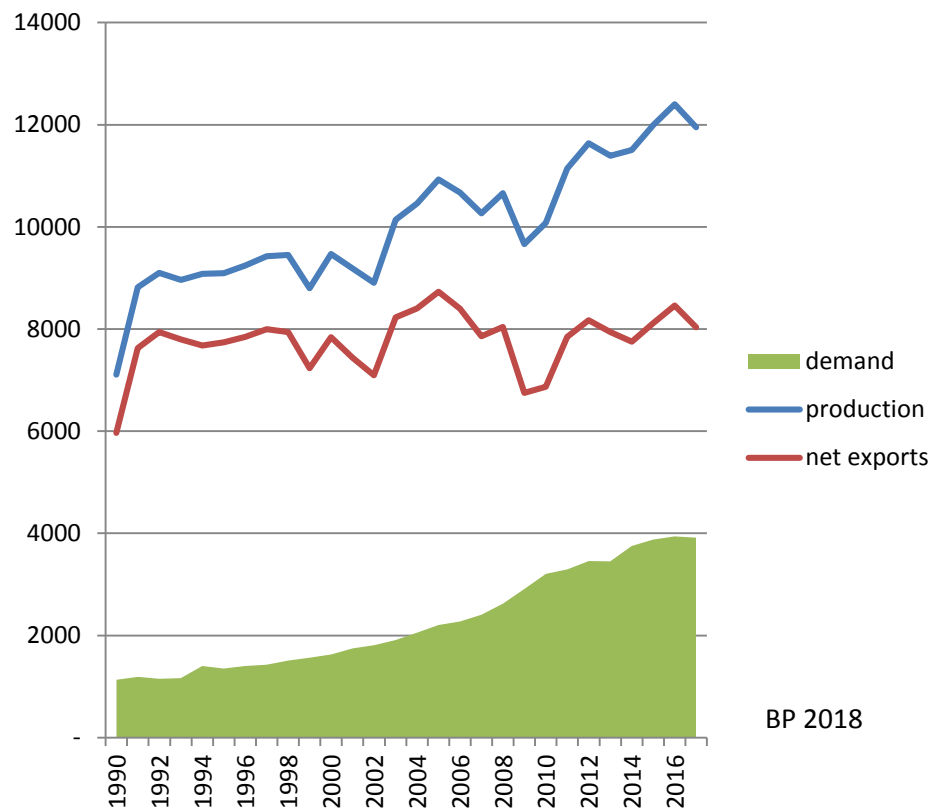
### Economically

- Domestic oil demand
- Climate action on fossil fuels



## Saudi Arabia oil demand growth

**Saudi oil: Demand and production up, exports flat**



**Saudi oil consumption in perspective**

	Oil consumption Rank	Oil consumed 2016 (MMb/d)	Oil consumption per capita (bbl/yr)
<b>USA</b>	1	19.6	22.2
<b>China</b>	2	12.4	3.3
<b>India</b>	3	4.5	1.2
<b>Japan</b>	4	4	11.6
<b>Saudi Arabia</b>	5	3.9	44.2
<b>Russia</b>	6	3.2	8.1
<b>Brazil</b>	7	3	5.3
<b>South Korea</b>	8	2.8	19.7
<b>Germany</b>	9	2.4	10.6
<b>UAE</b>	25	1.0	38.9
<b>Kuwait</b>	38	0.5	44.9
<b>Qatar</b>	45	0.3	48.2

Source: World Bank, BP Statistical Review 2017

## Reform policies are starting to work

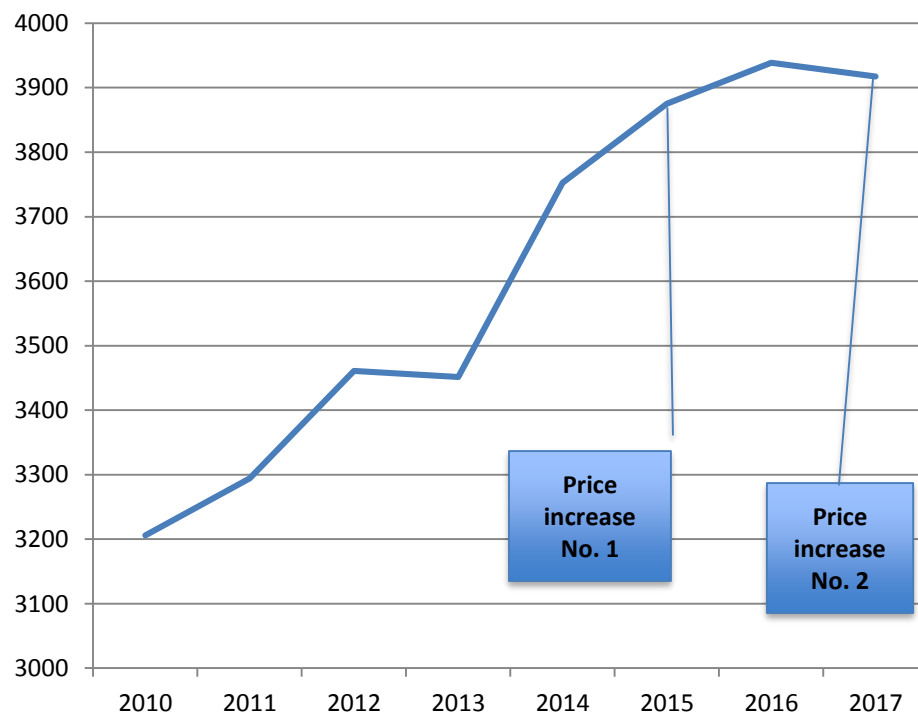
### Policies imposed:

- Produce as much natural gas as possible
  - Substitute gas for oil, especially in power generation
- Raise domestic energy prices by phasing out subsidies
  - Reforms are politically difficult, but possible

### Result:

- Oil demand seems to be responding → → → → →

**Saudi oil demand since 2010**



## Climate change: A problem with multiple facets

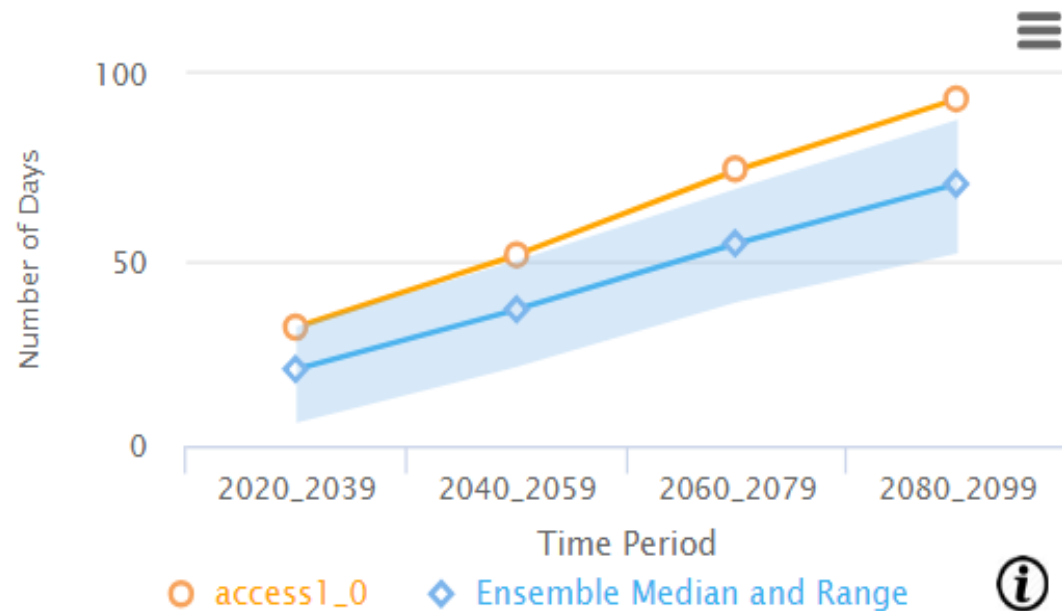
Saudi Arabia is exposed to climate risk in several ways

- as a major fossil fuel producer, exporter, consumer and subsidizer
- as a major emitter
- as an early climate victim →

BUT

- Climate threat is mainly perceived as a threat to the oil business

Projected Change in Annual Hot Day ( $T_{max} > 40^{\circ}\text{C}$ )  
for Saudi Arabia for 2020-2099



Source: World Bank Climate Change Knowledge Portal 2018

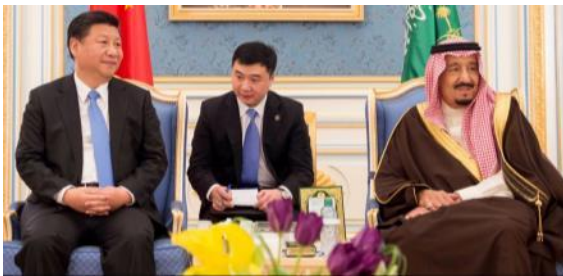
What can they do?

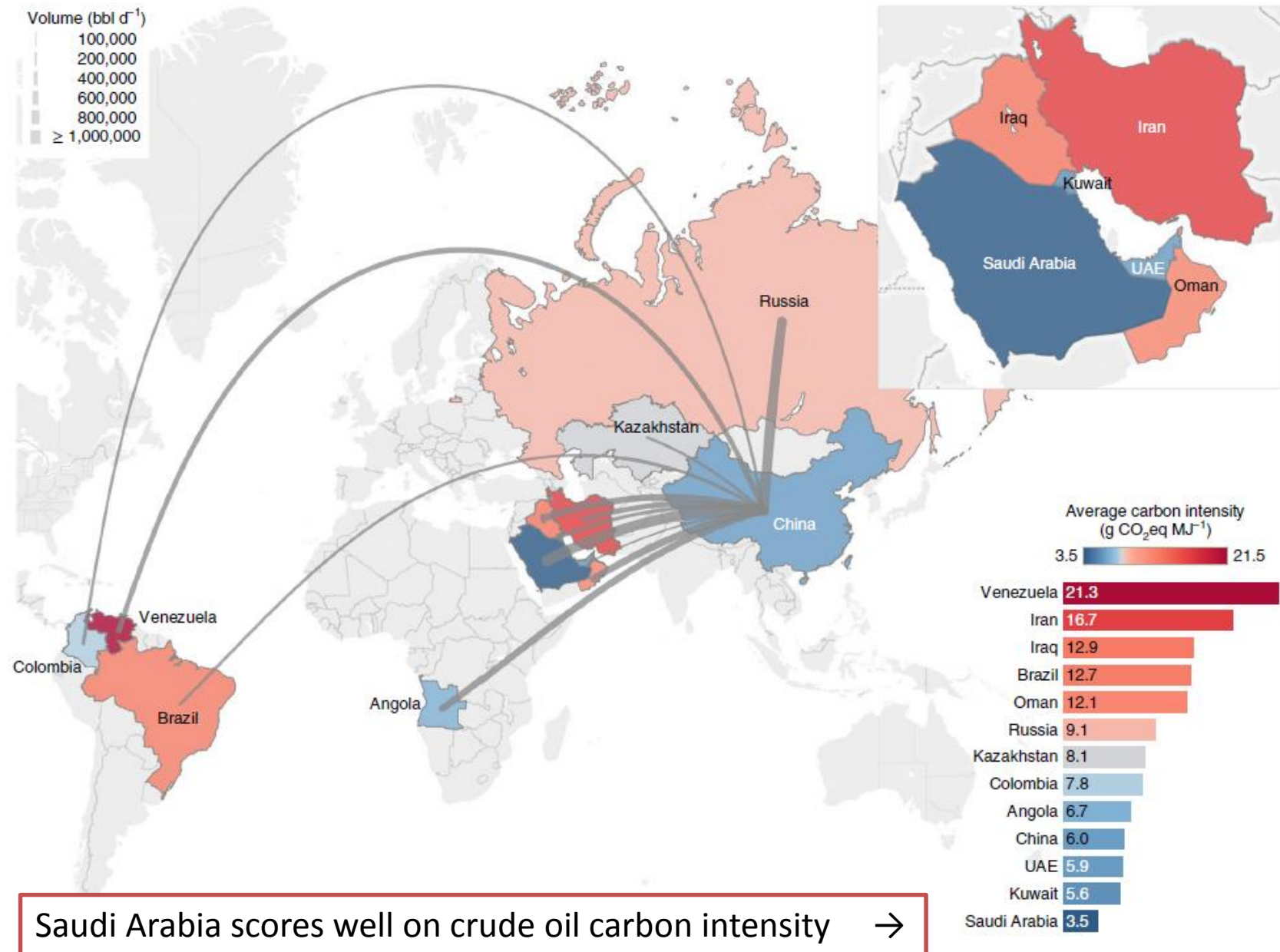


## Strategy 1: “Dig In” – Reduce vulnerability to climate action

Three approaches:

1. Capitalize on **non-combustion uses** for oil and gas: Petrochemicals
  - Plastics serve as a “climate hedge”
  - Growth in Asian demand for plastics is stronger than for oil
2. Protect **market share** with strategic investment
  - Strategic investment in ICE vehicles, maximize efficiency of ICE to compete long-term with EV, prolong lifespan of gasoline
3. Highlight **carbon intensity** of crudes (vs other crudes, biofuels)
  - Carbon taxes that differentiate among crudes favor Saudi oil





**Fig. 5 | 2015 China's crude-oil supply map.** Country-based upstream volume-weighted average GHG intensities (colours) and their corresponding volumetric shares (grey stream lines) in Chinese crude supply. GHG emissions are estimated on the basis of the co-product displacement method. The map is produced using Tableau (<https://www.tableau.com/>). For clarity, countries that supply <1% of China crude mix are excluded (see Supplementary Data 2 for carbon intensity data for each field). See Fig. 6 for representativeness degree of each country's data.

## Clean oil? Saudi versus Venezuelan crudes

Saudi medium crude priced at \$70/barrel with a \$25/ton carbon tax would be **\$4.34 cheaper** than Venezuelan heavy

With a \$50 carbon tax, the Saudi barrel would be nearly **\$9 cheaper**.

Crude oil source	Upstream GHG intensity (g CO <sub>2</sub> eq/ MJ)	Upstream GHG tax per barrel @ \$25 tonne	Upstream GHG tax per barrel @ \$50 tonne	Total GHG tax @\$25 tonne*	Total GHG tax @\$50 tonne	Oil price @ \$70 bbl +\$25 tax	Oil price @ \$70 bbl +\$50 tax
<b>Saudi average</b>	<b>3.5</b>	\$ 0.54	\$ 1.07	\$ 11.64	\$ 23.28	\$ 81.64	<b>\$ 93.28</b>
<b>Venezuela Orinoco</b>	<b>31.9</b>	\$ 4.88	\$ 9.76	\$ 15.98	\$ 31.97	\$ 85.98	<b>\$ 101.97</b>

\* includes upstream CO<sub>2</sub> emissions as well as those from transport, refining and final combustion

Source: Baker Institute, Masnadi et al. 2018

Table 2: Carbon taxes on Saudi and Venezuelan crudes at \$70 per barrel. Combustion assumes emissions of 73g CO<sub>2</sub>/MJ

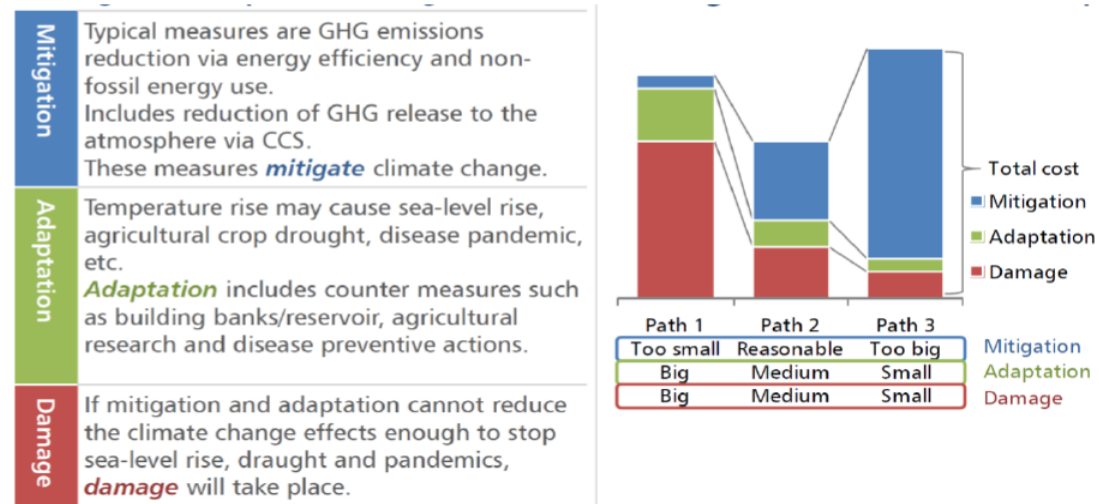
## Strategy 2: “Throw In” – Climate damage is acceptable

- Mitigation costs of holding warming to 2°C are too high.
- More “pragmatic” to allow 3°C warming, and pay smaller combined costs of damage and mitigation
  - “total costs” will be lower if damage is acceptable
- Producer countries seek common ground with big emitters such as the US, Australia and others

Figure 5: Minimizing the total cost (mitigation + adaptation + damage) of climate change and climate change responses.

*Is this accounting realistic?*

*In USA, \$306bn in 2017  
weather/climate damage is  
5x Aramco's 2017 total revenue*





## Concluding thoughts

Climate action and competition from non-fossil technologies will cause countries and firms to compete in new and more intense ways

Other producers will take different routes

No other industry has persistent and high rents, like the oil business. Hard to relinquish

Economic diversification becomes a key backstop for climate risk mitigation



# Thanks for listening!

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