Global Electricity Review 2021
G20 Profile

EMBER
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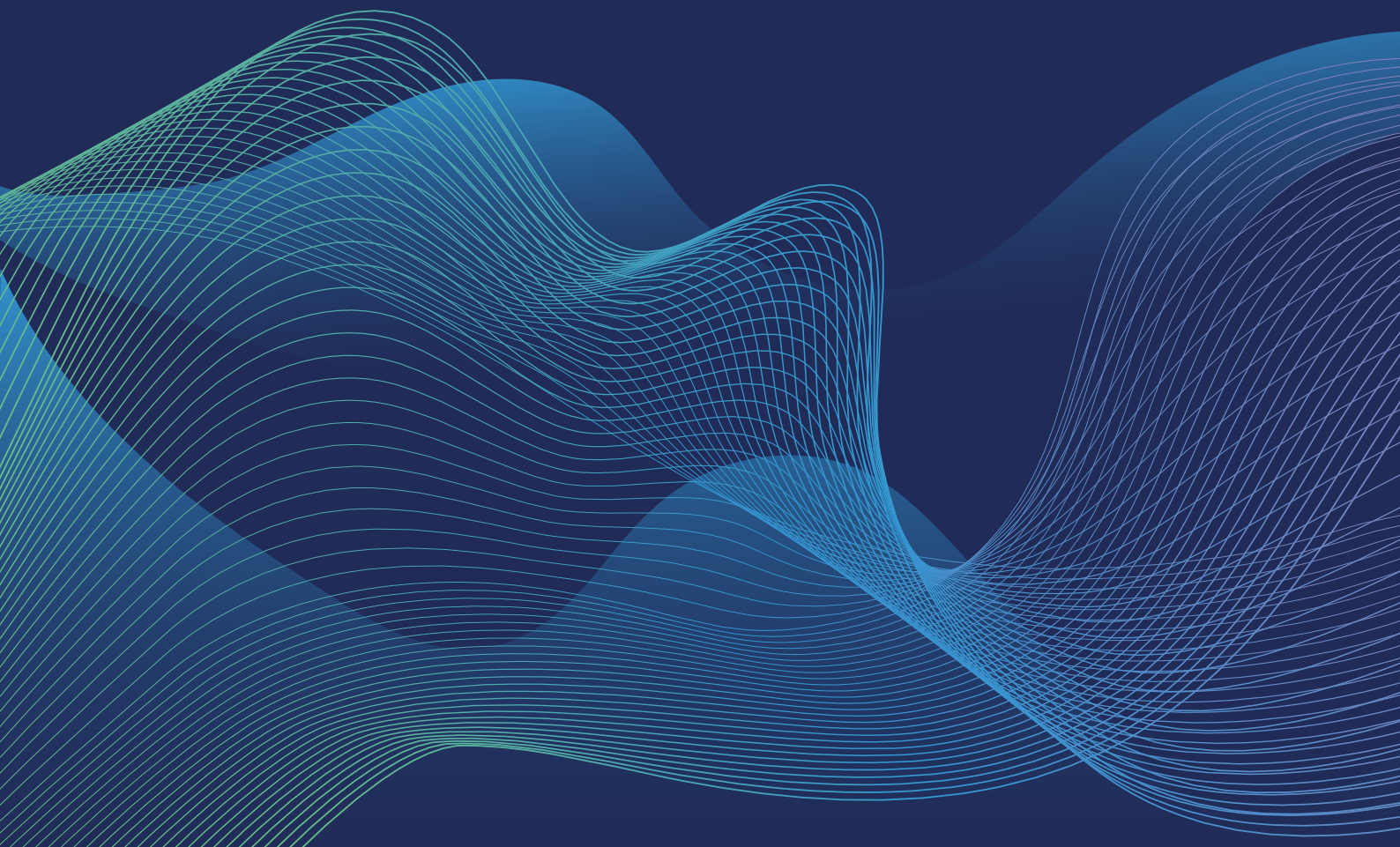
SAUDI ARABIA

Saudi Arabia keeps promising an electricity transition, but there is near-zero progress so far

March 2021



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Published date March 2021

About Ember's Global Electricity Review

This annual report analyses electricity data from every country in the world to give the first accurate view of the global electricity transition in 2020. It aggregates generation data by fuel by country from 2000. 68 countries comprising 90% of world electricity generation have full-year data to 2020 and have formed the basis of an estimate for changes in worldwide generation. All remaining countries have full data as far as 2019. G20 countries, which comprise 84% of world electricity generation, each have a separate in-depth country analysis. All the data can be viewed and downloaded freely from Ember's website.

www.ember-climate.org/global-electricity-review-2021

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"For Saudi Arabia to reduce its carbon emission in the coming decade, it has to stick to its promises. A fast and large scale adoption of wind and solar is needed to satisfy rising electricity demand and cut into the already high share of oil used for electricity generation."

Nicolas Fulghum
Junior Data Analyst, Ember

Key findings

1

Saudi Arabia remains the only country among the G20 that relies entirely on fossil fuels

This puts it well behind South Africa which comes in second-last with 89% fossil generation. There has been no progress towards transitioning to renewable energy in the last decade.

2

Insufficient data availability prohibits judging the transition in 2020

Saudi Arabia is the only G20 country without any electricity data for 2020.

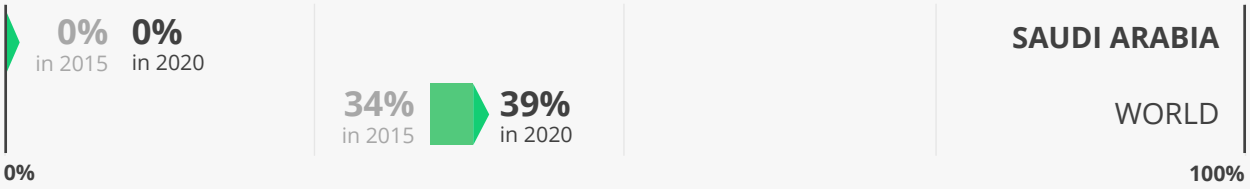
3

Saudi Arabia did not live up to its promises of substantial adoption of renewable energy projects

As was the case in the past, it seems unlikely that new policies promising up to 50% of electricity from renewable sources by 2030 will be fulfilled. However, the first large scale wind projects may soon come online by 2022.

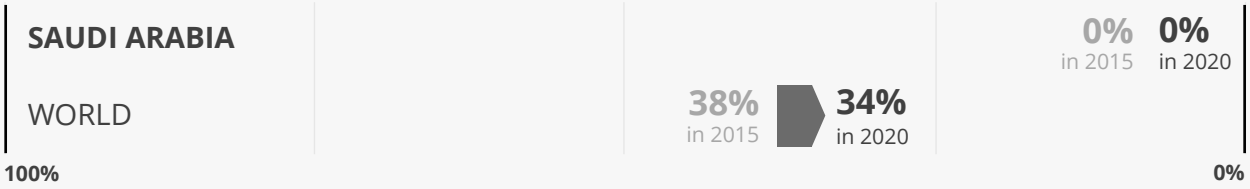
Progress to 100% clean electricity

Percentage of all renewables & nuclear in total generation



Progress on phasing out coal

Percentage of coal in total generation

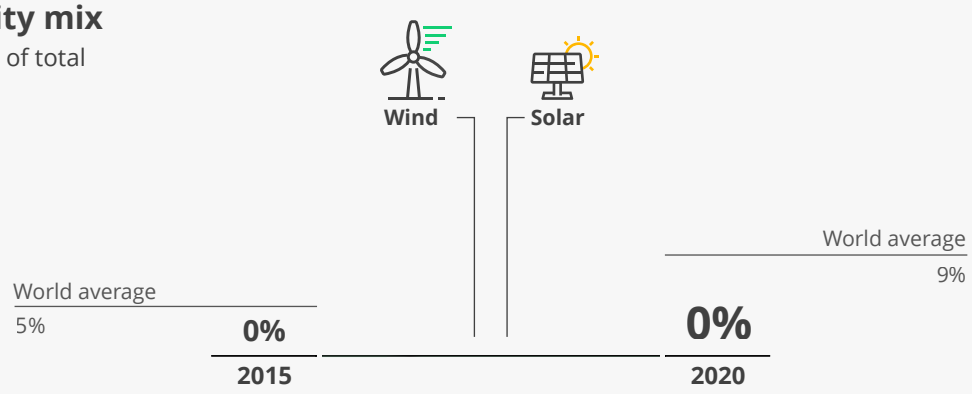


Saudi Arabia's electricity transition in the spotlight: 2015-2020

Wind and solar are near-zero

Wind & solar in electricity mix

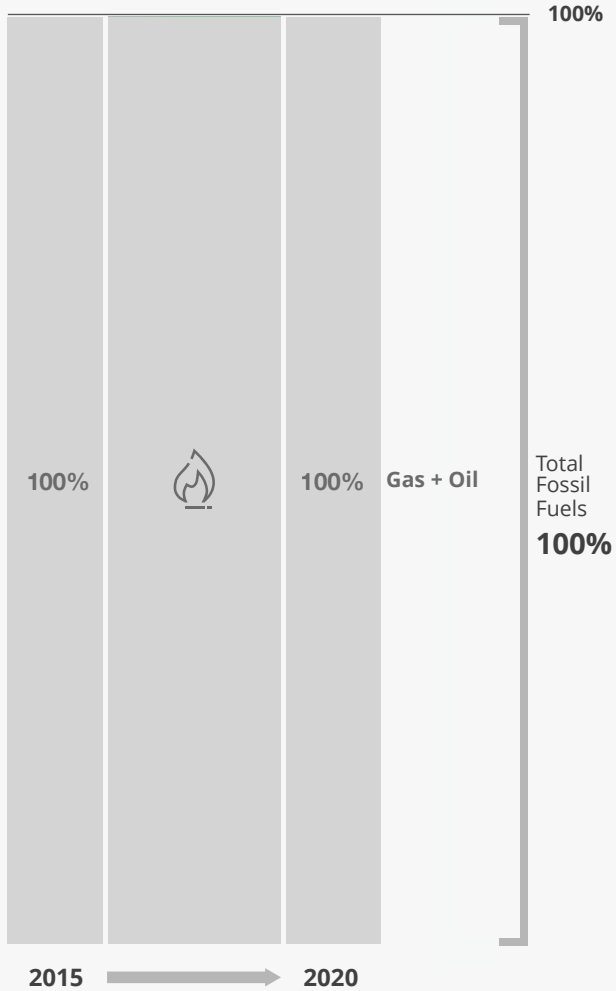
Percentage of total generation



Gas and oil generate 100% of Saudi Arabia's electricity

Electricity mix

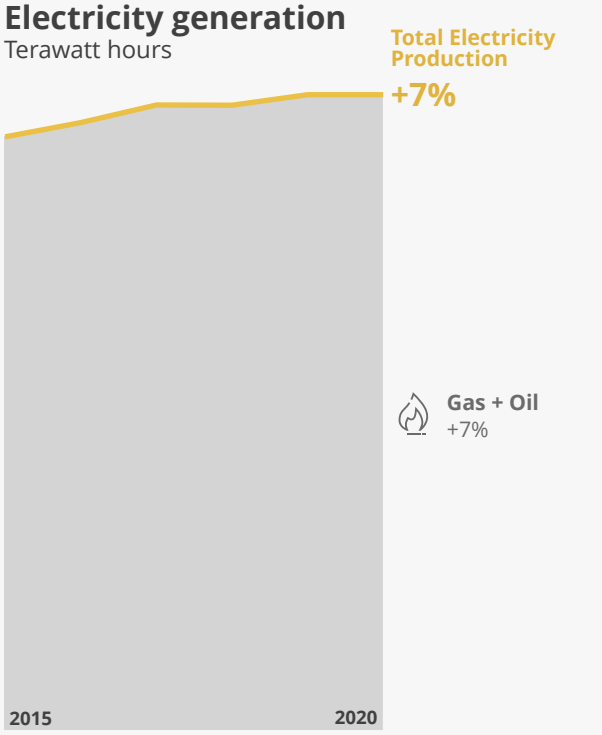
Percentage of total generation



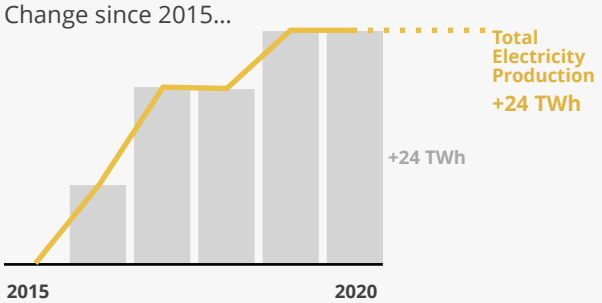
Rising electricity demand met from fossil fuels

Electricity generation

Terawatt hours



Change since 2015...



Despite perpetual promises by government officials, Saudi Arabia's transition to renewable energy is virtually non-existent. After a decade of empty promises, the Kingdom's share of wind and solar in the mix remains at less than 0.05%.

The only significant shift in its electricity mix has been a shift from oil generation to gas. In 2019, gas generation reached 213 TWh, an increase of 59 TWh over 2015. Simultaneously, electricity generation from oil dropped 34 TWh since 2015 to a total of 149 TWh in 2019. There is no electricity data available for Saudi Arabia in 2020, the only G20 country for which this is the case.

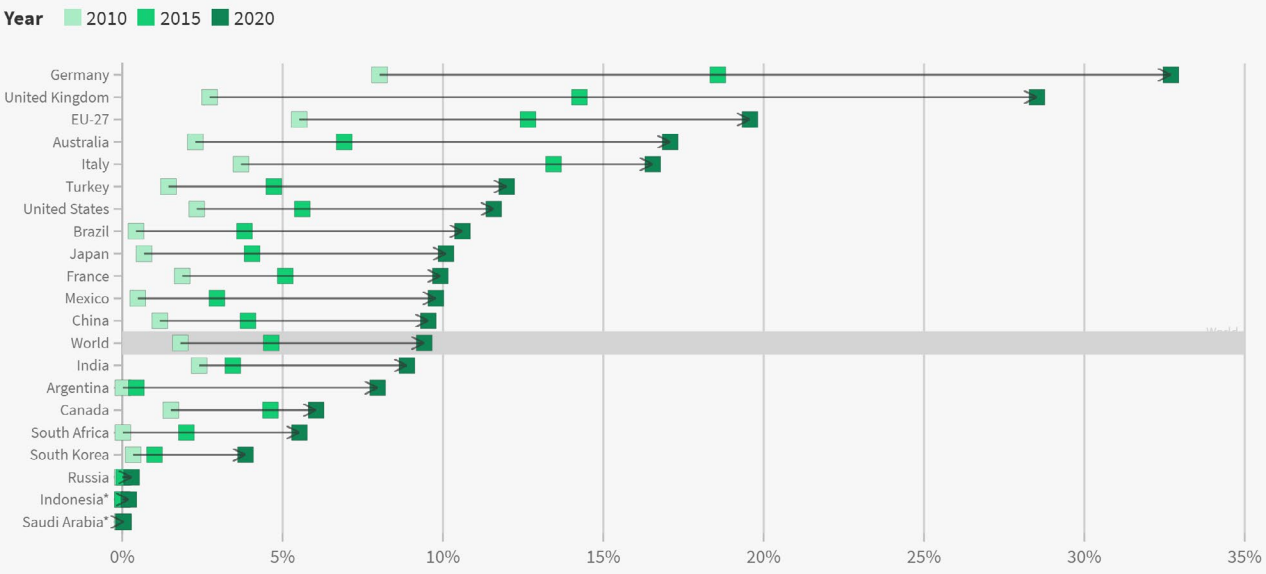
What happened in 2020?

Saudi Arabia continues to rely almost entirely on gas and oil for its electricity. Since there is no electricity generation data for 2020, capacity additions and 2019 data act as a proxy to judge changes in the electricity mix. Even though changes of the exact share of gas and oil in the electricity mix in 2020 remain hidden, given that no new wind and solar capacity was added, we can use 2019 values as a basis for the analysis and any comparisons with other G20 countries. The lack of renewable capacity additions also makes a start to the transition in 2021 equally unlikely.

Saudi Arabia's transition in comparison with G20 countries

While the transition is underway in other G20 countries, Saudi Arabia is still in the starting blocks

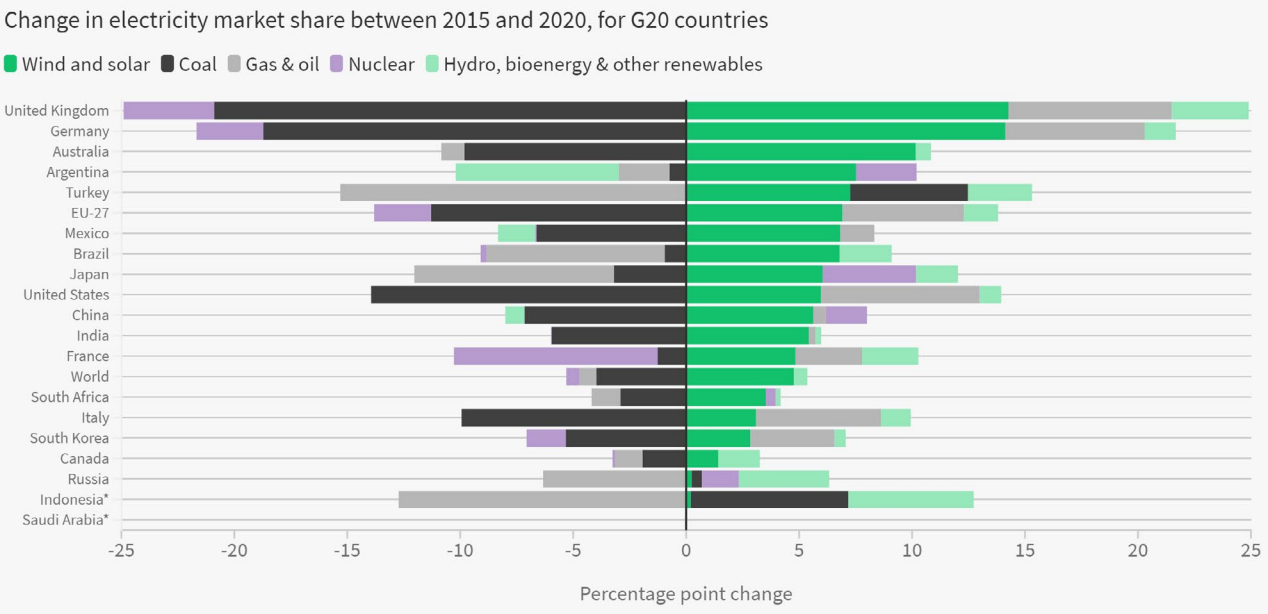
Wind and solar as % share of electricity production for G20 countries



*For Indonesia and Saudi Arabia, 2019 is used as no 2020 data exists
Ember's Global Electricity Review, March 2021.

Most G20 countries have significantly increased their share of wind and solar over the last decade. Three countries – Russia, Indonesia and Saudi Arabia – have thus far remained unphased by the global trend. Even among these countries, Saudi Arabia is the only G20 member to not add any wind and solar in 2020. This stagnation was in no way inevitable. Brazil, Japan and Mexico have all started from a position of having nearly no wind and solar in their electricity mix in 2010. However, at the end of the decade, all of them have surpassed the world average and have achieved near or above 10% market share.

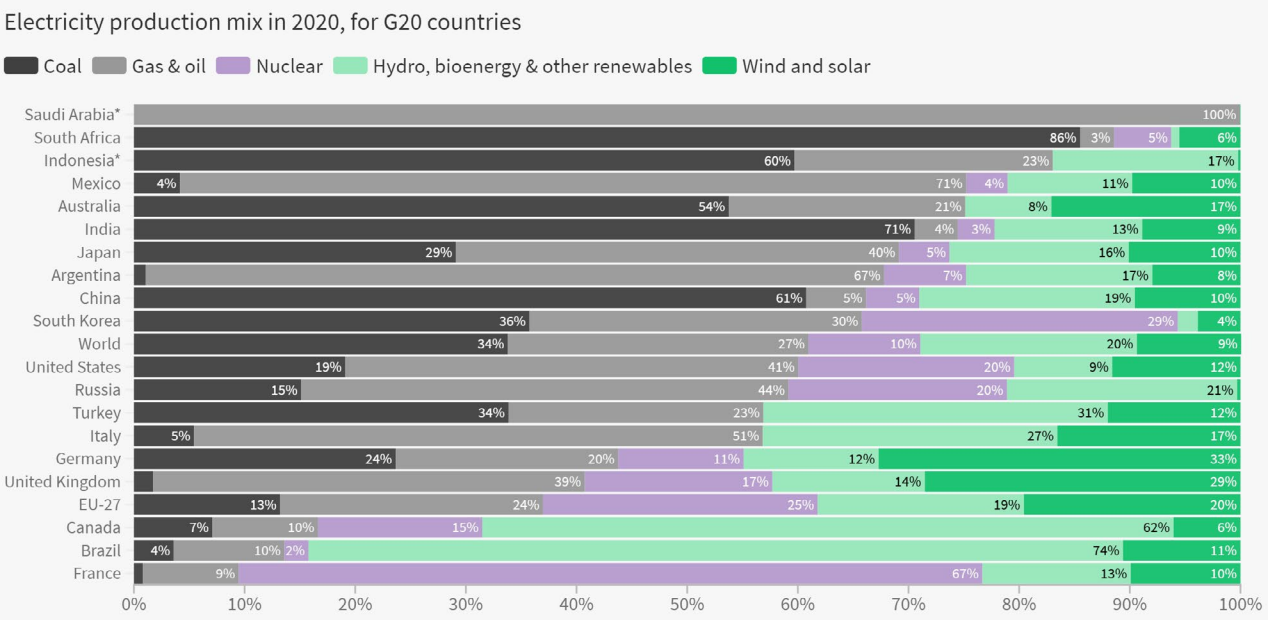
Saudi Arabia is left behind as other countries transition away from fossil fuels



*For Indonesia and Saudi Arabia, 2019 is used as no 2020 data exists.
Ember's Global Electricity Review, March 2021.

Saudi Arabia is a laggard among laggards. Similar to Saudi Arabia, Russia and Indonesia show barely any wind and solar additions. However, they have managed to at least slightly reduce their reliance on fossil fuels, primarily by shedding gas and adding hydro to their electricity mix. There is no change visible for Saudi Arabia, as they continue to rely 100% on gas and oil for their electricity.

Saudi Arabia has the most fossil fuel-intensive electricity among G20 countries

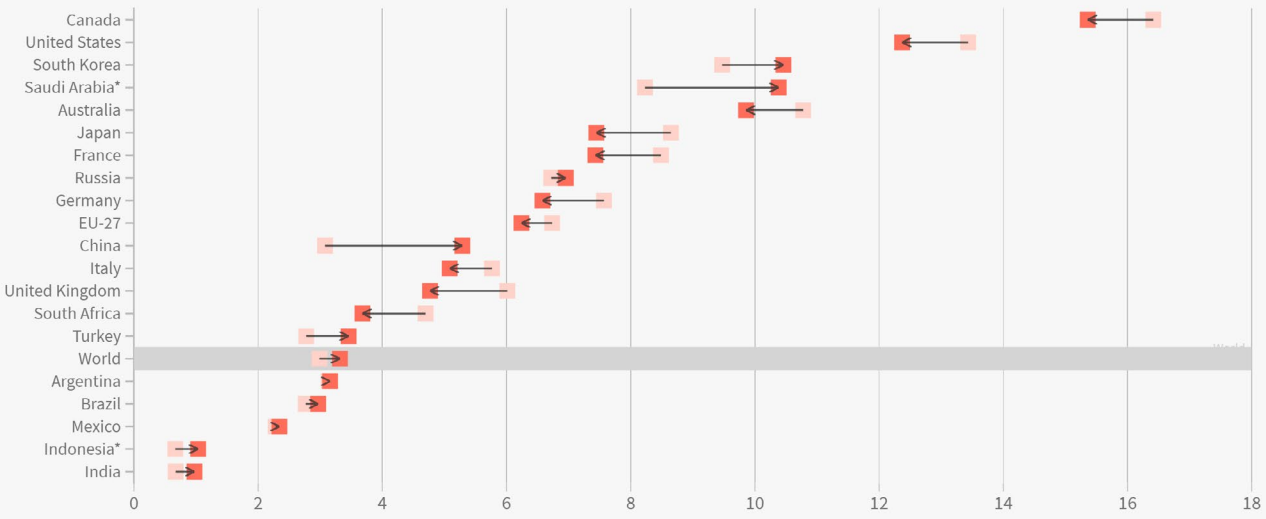


*For Indonesia and Saudi Arabia, 2019 is used as no 2020 data exists.
Ember's Global Electricity Review, March 2021.

Other countries that show a slow transition, such as Indonesia or Russia, benefit from nuclear and hydro generation that reduces their reliance on fossil fuels. Since Saudi Arabia currently does not use substantial sources of electricity beyond gas and oil, it is the clear leader in fossil fuel generation. Its dependence on oil puts it particularly at odds with the rest of the G20. As of 2019, 41% of electricity came from oil. The country with the next-highest share of oil is Mexico at just 11% (in 2020). With South Africa and other countries with a fossil fuel-heavy electricity mix recently beginning their transition away from fossil fuels, Saudi Arabia's gap is set to widen further over the coming years if it does not dramatically change its course.

Demand per capita rises at a pace that is only second to China.

Electricity demand per capita (Megawatt hours), for G20 countries



For Indonesia and Saudi Arabia, 2019 is used as no 2020 data exists. • Population sourced from United Nations.
Ember's Global Electricity Review, March 2021.

Saudi Arabia's demand per capita has risen significantly over the last decade, almost overtaking South Korea for the third spot among G20 countries. At more than double the world average of 3.3 MWh per capita, the high demand of 10.4 MWh per capita emphasises the importance of a shift in electricity production in Saudi Arabia. Only China had a larger increase in demand per capita since 2010.

Concluding remarks

Saudi Arabia continues to show no significant signs of beginning its electricity transition from fossils to renewable energy. 100% of its electricity comes from gas and oil. Most other G20 countries, with a few exceptions such as Russia or Indonesia, have added wind and solar to their mix over the last five years culminating in a world average share of electricity production of 9.4% in 2020.

After a decade of no change, Saudi Arabia is repeating its strategy of promising sizable renewable energy projects with a goal of 50% of electricity coming from renewable sources by 2030. Given the government's track record, achieving this goal seems unlikely. However, projects like the 400 MW Dumat Al-Jandal wind farm, which is due to come online in early 2022, could be a sign that Saudi Arabia's electricity transition in the next decade will be more than just promises.

If the substantial increase of demand seen in the last decade continues, rapid additions of renewable energy to the electricity mix become even more important. Otherwise, wind and solar additions are at risk of being outpaced by demand. The use of oil to satisfy additional electricity demand is especially problematic. It is significantly more carbon intensive than natural gas. For Saudi Arabia to reduce its carbon emission in the coming decade, it has to stick to its promises. A fast and large scale adoption of wind and solar is needed to satisfy rising electricity demand and cut into the already high share of oil used for electricity generation.

More information about the Global Electricity Review 2021

Global Electricity Review 2021	www.ember-climate.org/global-electricity-review-2021		
Main Report	Global Trends	English	Español 中文
G20 Profiles	Argentina	English	Español
	Australia	English	
	Brazil	English	Português
	Canada	English	
	China	English	中文
	European Union	English	
	France	English	Français
	Germany	English	Deutsch
	India	English	
	Indonesia	English	Bahasa Indonesia
	Italy	English	Italiano
	Japan	English	にほんご
	Mexico	English	Español
	Russia	English	русский
	Saudi Arabia	English	عربي
	South Africa	English	
	South Korea	English	한국어
	Turkey	English	Türk
	United Kingdom	English	
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