



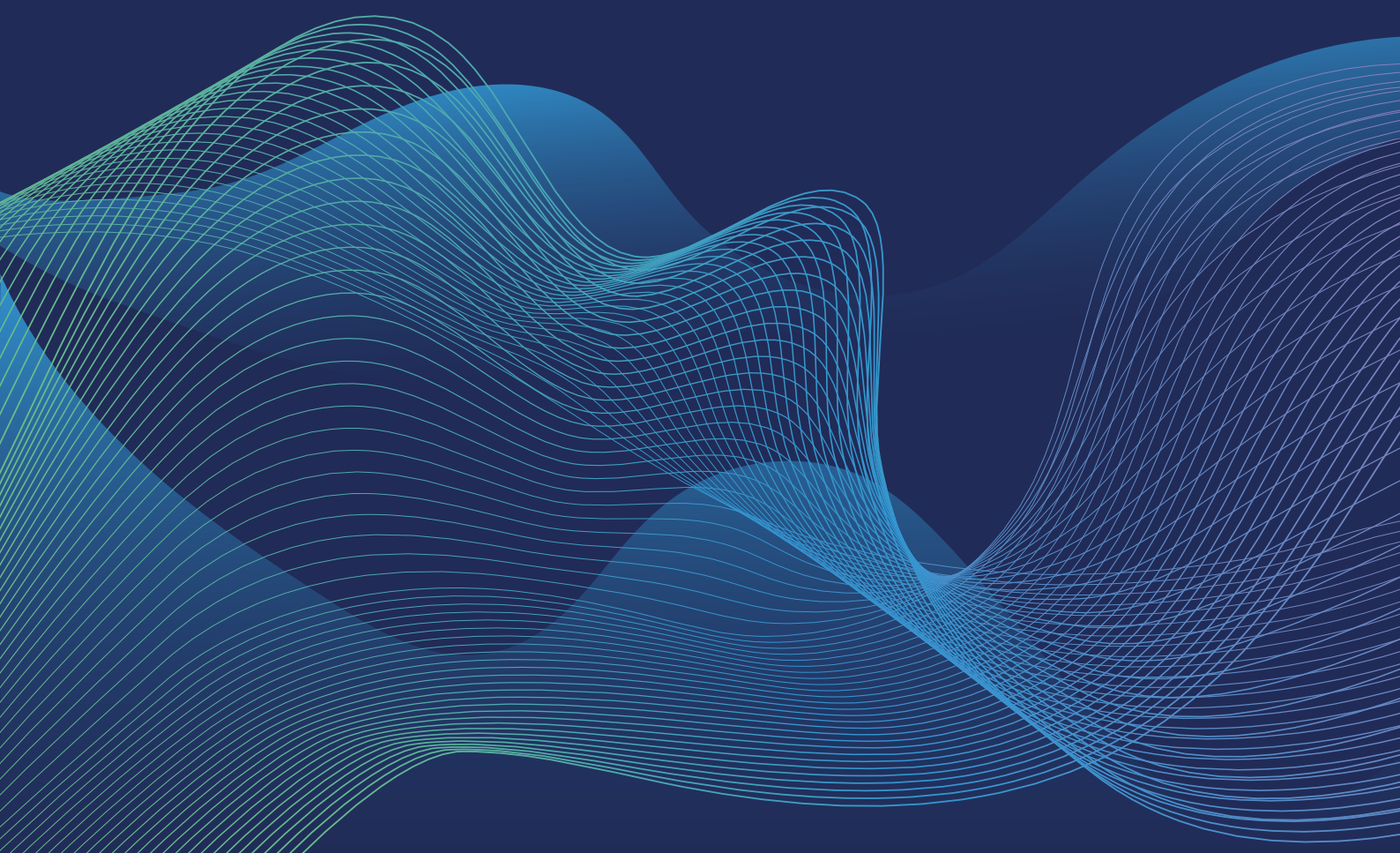
**Global Electricity
Review 2021**
G20 Profile

EMBER
COAL TO CLEAN ENERGY POLICY

CANADA

Coal generation falling at half
the rate of the US and EU

March 2021



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**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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CANADA

Coal generation falling at half the rate of the US and EU

Canada defies global trend as electricity transition slows down

"Despite aiming for a coal phase out by 2030, Canada's current transition is one of the least ambitious among G20 countries."

Nicolas Fulghum

Junior Data Analyst, Ember

Key findings

1 Canada's coal generation has fallen by half the rate of the US and EU since 2015

In 2020, it fell 8%, compared to 20% in the US and the EU. In the five years since 2015, it fell 23%, compared to 43% in the US and 48% in the EU.

2 While other peer countries have accelerated their transition away from coal to wind and solar in the second half of the decade, Canada has been notably left behind

Wind and solar generation slowed, and Canada added less in the last 5 years than almost any other G20 country except Indonesia, Russia and Saudi Arabia

3 Canada is green but not getting greener

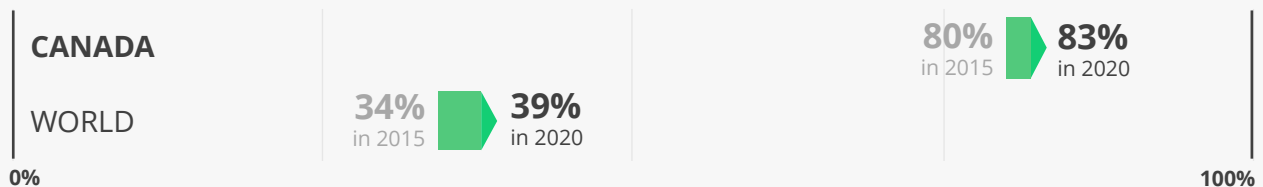
A high share of hydro generation keeps Canada as one of the cleanest electricity grids among G20 countries, but it still produced 17% of its electricity from fossil fuels in 2020, which is only a gradual fall from 20% in 2015.

4 Although coal and gas generation both fell in 2020, this was due more to temporary, than structural effects

The combined effects of better hydro conditions, better wind conditions, and lower electricity demand led to both coal and gas generation falling by 8% each in 2020.

Progress to 100% clean electricity

Percentage of all renewables & nuclear in total generation



Progress on phasing out coal

Percentage of coal in total generation

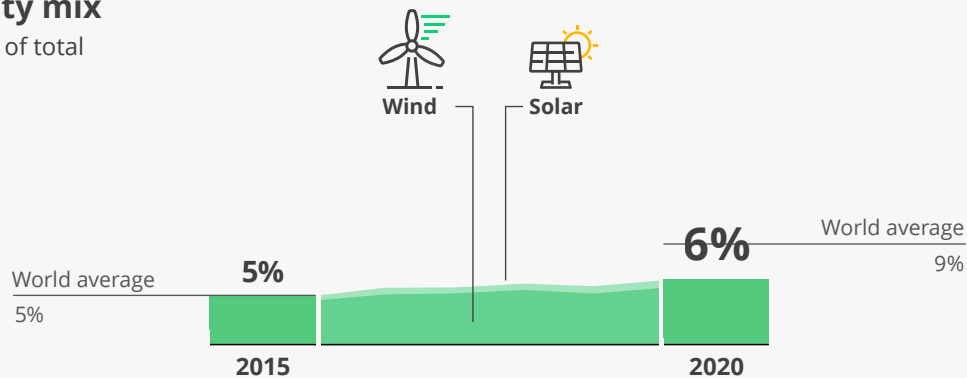


Canada's electricity transition in the spotlight: 2015-2020

Wind and solar growth slow down

Wind & solar in electricity mix

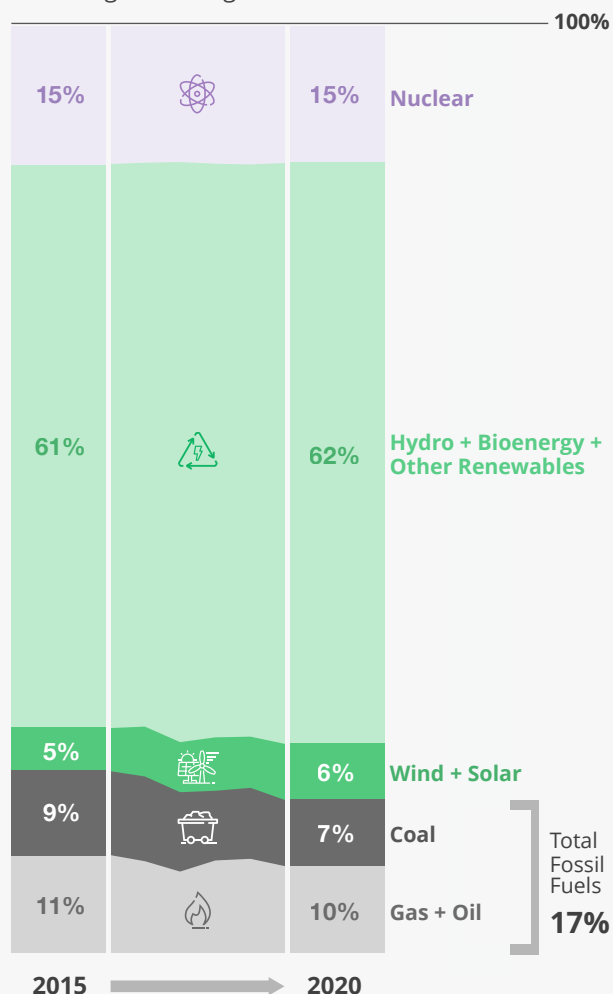
Percentage of total generation



Coal and gas + oil market share only slightly lower

Electricity mix

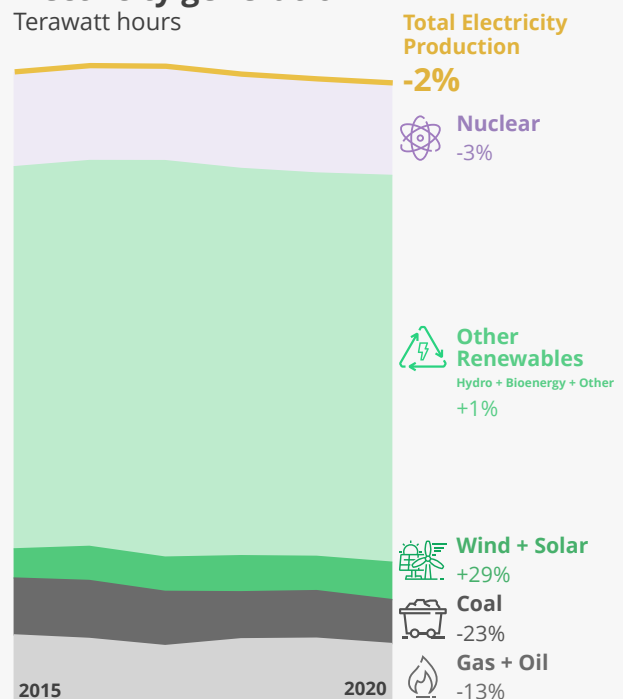
Percentage of total generation



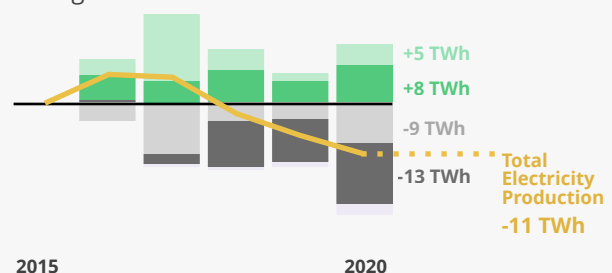
The slow pace of Canada's electricity transition

Electricity generation

Terawatt hours



Change since 2015...



Canada's electricity transition stalled in the second half of the last decade.

The first half of the decade saw modest growth of wind and solar generation by 20.7 TWh. Since 2015, however, only 8.4 TWh of wind and solar were added. This alone does not fully capture the more recent deceleration of Canada's transition to wind and solar. A majority of its growth since 2015 occurred in 2016 alone, with an addition of 5.1 TWh in just that year. The last four years, including 2020, saw a total increase of just 3.2 TWh. As a consequence of this slow transition, the share of electricity production for wind and solar has only increased by 1% from just under 5% in 2015 to 6% in 2020 and therefore ranks well below the world average at 9.4%.

The slow transition is further exemplified by a slow reduction in coal generation.

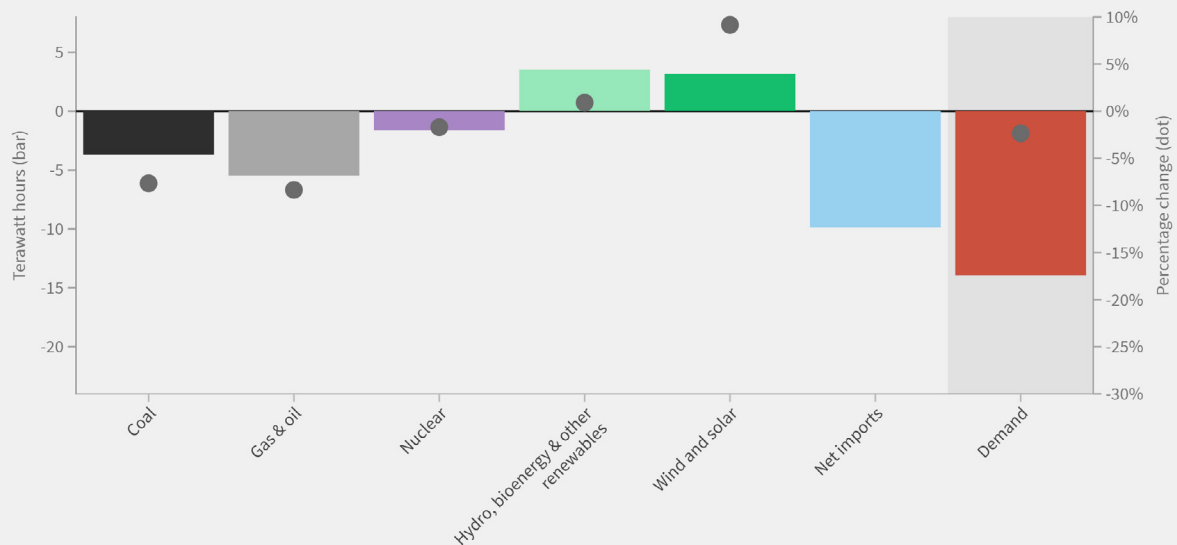
Compared to 2015, coal fell by 13 TWh and now makes up 7% of the electricity mix, down from 9% in 2015. However, 8.3 GW of capacity remains in operation.

In positive news, the additions in wind and solar capacity during that period came largely at the expense of fossil fuel generation which lost 3% of their market share. Two thirds of this were offset by an increase in hydro generation.

What happened in 2020?

Canada - Electricity changes in 2020 by source

Year-on-year change



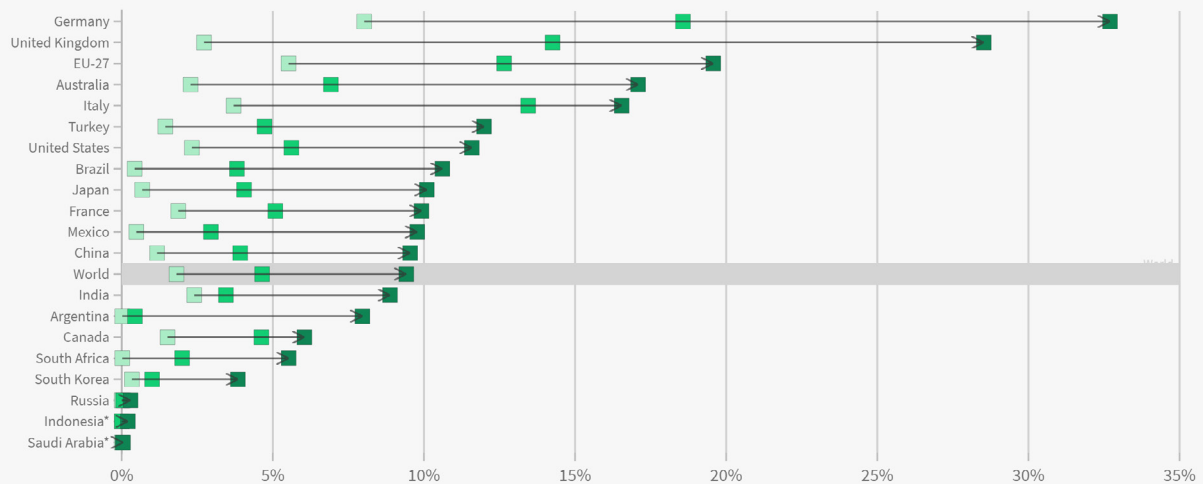
Favourable hydro and wind conditions led to a temporary fall in coal and gas generation in 2020 of 8% each. Unlike in other countries, electricity demand didn't suffer a large fall in 2020 as the pandemic hit, falling only 2%. Wind increased by 10% (+3 TWh) due mostly to better wind conditions, rather than new capacity. Only 166 MW of new wind capacity was installed in 2020. This signifies a reduction of 72% for wind capacity additions compared to 2019.

Canada's transition in comparison with G20 countries

Canada's adoption of wind and solar slowed down in the second half of the decade

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

Year 2010 2015 2020

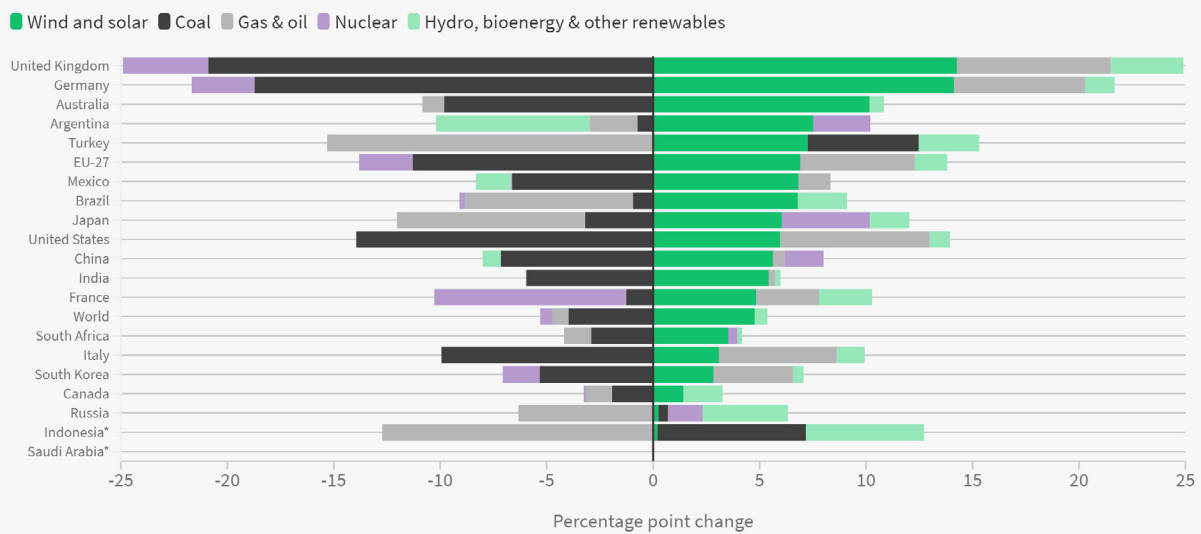


*For Indonesia and Saudi Arabia, 2019 is used as no 2020 data exists
Ember's Global Electricity Review, March 2021.

The second half of the decade saw other countries such as Brazil, Mexico and India, who previously lagged behind Canada in the share of wind and solar, overtake it significantly. At 6%, its share of wind and solar is now well below the world average of 9.4%. It now ranks 15th among G20 countries for wind and solar, only eclipsing countries that are heavily reliant on coal and gas. In fact, only Russia, Indonesia and Saudi Arabia have had a smaller growth in market share of wind and solar since 2015. Canada was significantly outpaced by its neighbour, the United States, which added 6% of market share since 2015, compared to Canada at 1%.

Canada shows smallest change in the electricity mix of any G20 country

Change in electricity market share between 2015 and 2020, for G20 countries

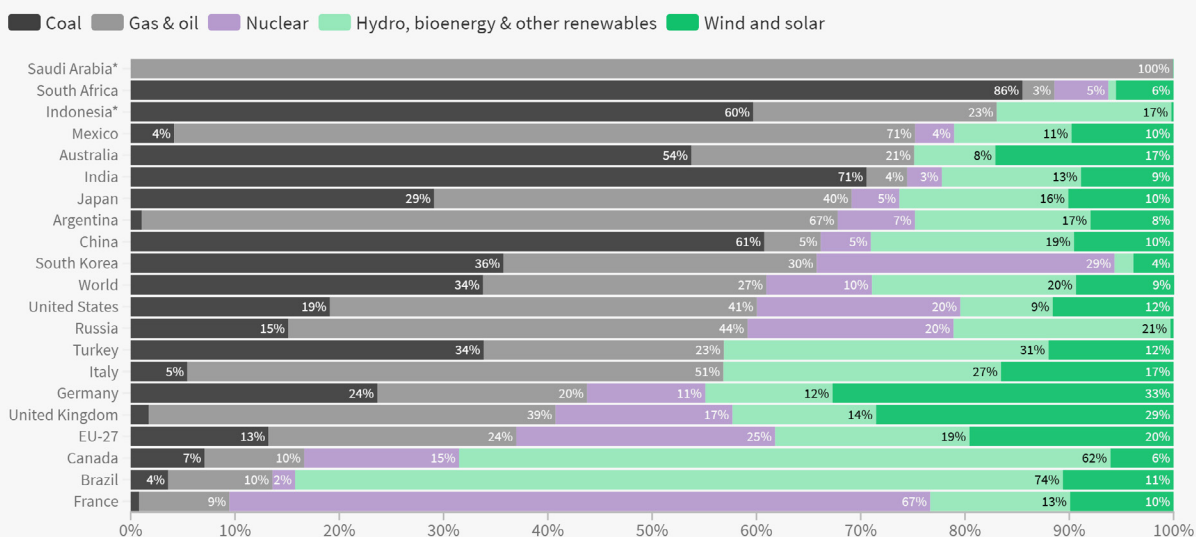


*For Indonesia and Saudi Arabia, 2019 is used as no 2020 data exists.
Ember's Global Electricity Review, March 2021.

As was the case for other G20 countries, the reduction of market share for coal generation was partially replaced by wind and solar, although two thirds were offset by increased hydro generation. Still, Canada's market share of coal decreased by only 2% since 2015, while the United States recorded a fall of 14% in the same period.

Although Canada has one of the cleanest electricity grids, it is far from fossil free

Electricity production mix in 2020, for G20 countries



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

Canada is among the leaders in market share of renewables, but lags behind other G20 nations in transitioning from coal and gas to wind and solar. The recent changes in market share put wind and solar generation almost on par with coal, although they failed to overtake it with a market share of 6% compared to 7% for coal and 17% for all fossil generation. Missing this milestone in 2020 is particularly illustrative of the missed opportunities in Canada's electricity transition from coal to clean. Even just following the world's trajectory on wind and solar market share would have been sufficient for wind and solar generation to surpass coal generation as early as 2018. However, the clear negative deviation from the world trend since 2015 prohibited this. Consequently, recent trends appear all the more unfortunate.

Even though Canada's share of wind and solar generation remains low among G20 countries, it places behind only Brazil in terms of renewables' share of electricity production (69% compared to 85% for Brazil) because of its high share of hydro.

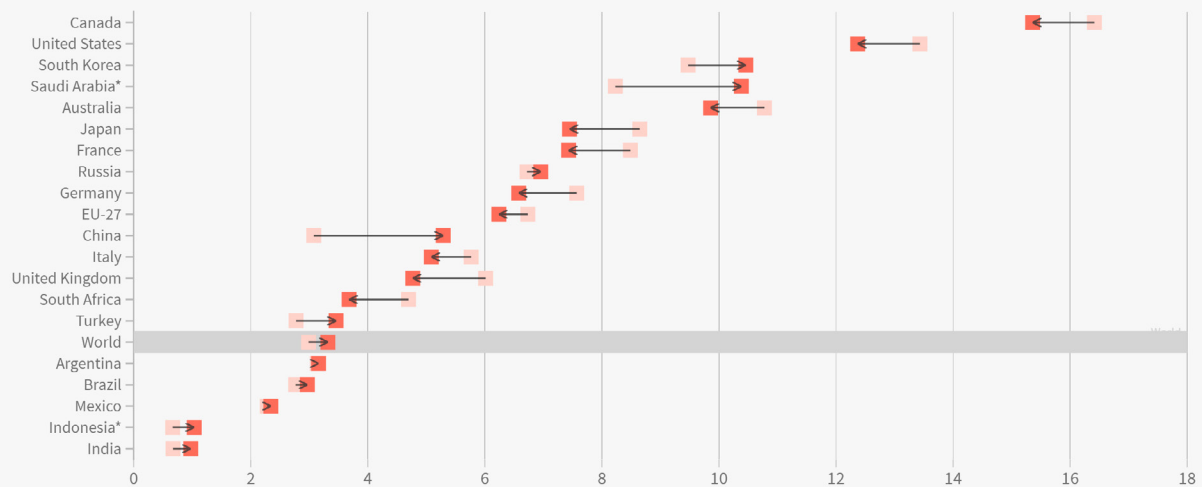
In late 2018, Canada announced regulations to phase out coal by 2030 as well as aiming to have 90% of their electricity produced by non-emitting sources. Given that renewables and nuclear power already make up 83% of the electricity mix, a target of 90% in a 12 year time frame is a very low bar to hit. The United States currently has a much larger share of fossil fuels (60%). However, President Biden is pushing for a target of net-zero electricity by 2035. In comparison, Canada's goals appear significantly less ambitious.

Its advantageous position due to its already renewable-heavy electricity mix creates an opportunity for Canada to not only match the goals and speed of the transition in the United States, but to introduce even more ambitious targets. A net-zero goal of 2035 or even 2030 would be well within reach if the transition away from fossils happened at a pace similar to the United States' current rate of phasing out its coal generation.

Canada remains the country with the highest electricity demand per capita

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

Year 2010 2020

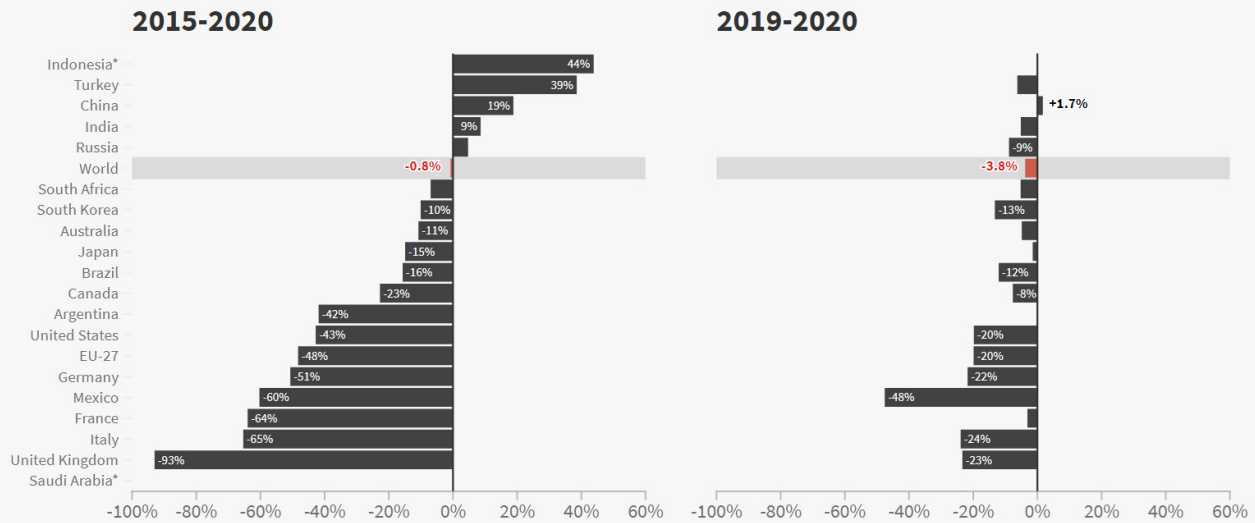


For Indonesia and Saudi Arabia, 2019 is used as no 2020 data exists. * Population sourced from United Nations.
Ember's Global Electricity Review, March 2021.

Despite recent downtrends, Canada remained the country with the highest demand per capita among the G20. Even though demand per capita (currently 15.4 MWh) has declined since 2010, it is more than four times larger than the world average (3.4 MWh) and well ahead of the United States (12.4 MWh) which has the second highest demand per capita. The high demand per capita makes it especially important for Canada to decarbonise its electricity grid.

Canada's coal is falling, but it is far from setting records

Change in coal generation, for G20 countries



*For Indonesia and Saudi Arabia, 2019 is used as no 2020 data exists.
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As mentioned above, final regulations cementing the 2030 phase-out date were introduced in late 2018, but were first announced as early as 2016. Additionally, Canada is part of the powering past coal alliance that has the stated goal of accelerating the phase out of coal-fired electricity, yet coal in Canada fell only by 23% since 2015. Other G20 countries significantly outperformed Canada in this regard, even though most of them, like the United States, had a significantly higher market share of coal generation. In 2020, coal fell by 8% which is only half the fall seen in the United States and the EU (-20%).

Concluding remarks

Despite aiming for a coal phase out by 2030, Canada's current transition is one of the least ambitious among G20 countries. However, its high share of hydro generation means that it still ranks as one of the cleanest electricity grids in the world.

In 2020, Canada continued its comparatively slow transition from fossils to wind and solar, having fallen well behind the world average in the second half of the last decade. In a year that saw demand reductions across many G20 countries hit by the Covid-19 pandemic, Canada's coal and gas generation fell and wind and solar grew slightly, although not nearly at the pace of the first half of the decade.

In 2018, Canada announced a planned phase-out of coal fired power plants by 2030 and a target of 90% of electricity coming from non-emitting sources. However, the current speed of the electricity transition is unlikely to achieve this target, if not for a significant reduction in demand per capita where it currently leads the world. Canada must once again accelerate its transition to clean energy to meet its own climate targets and avoid another missed opportunity in the coming decade.

More information about the Global Electricity Review 2021

Global Electricity Review 2021

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

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	Russia	English	русский
	Saudi Arabia	English	يبرع
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