

BILL GATES

PROVIDE
EVERYONE ON
EARTH WITH
AFFORDABLE
ENERGY
WITHOUT
CONTRIBUTING
TO CLIMATE
CHANGE.

ENERGYFORHUMANITY.ORG



**CLEAN
ENERGY
FUTURE**



**ENERGY FOR
HUMANITY_**

Kirsty Gogan
Energy for Humanity
GIF / AFF Symposium
Paris October 2018



ENERGY FOR
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**GLOBAL
ELECTRICITY
GENERATION
IS RISING**



**AT ABOUT
ONE BRAZIL
EACH YEAR**

WHICH IS
**IMPROVING
THE LIVES OF
MILLIONS**

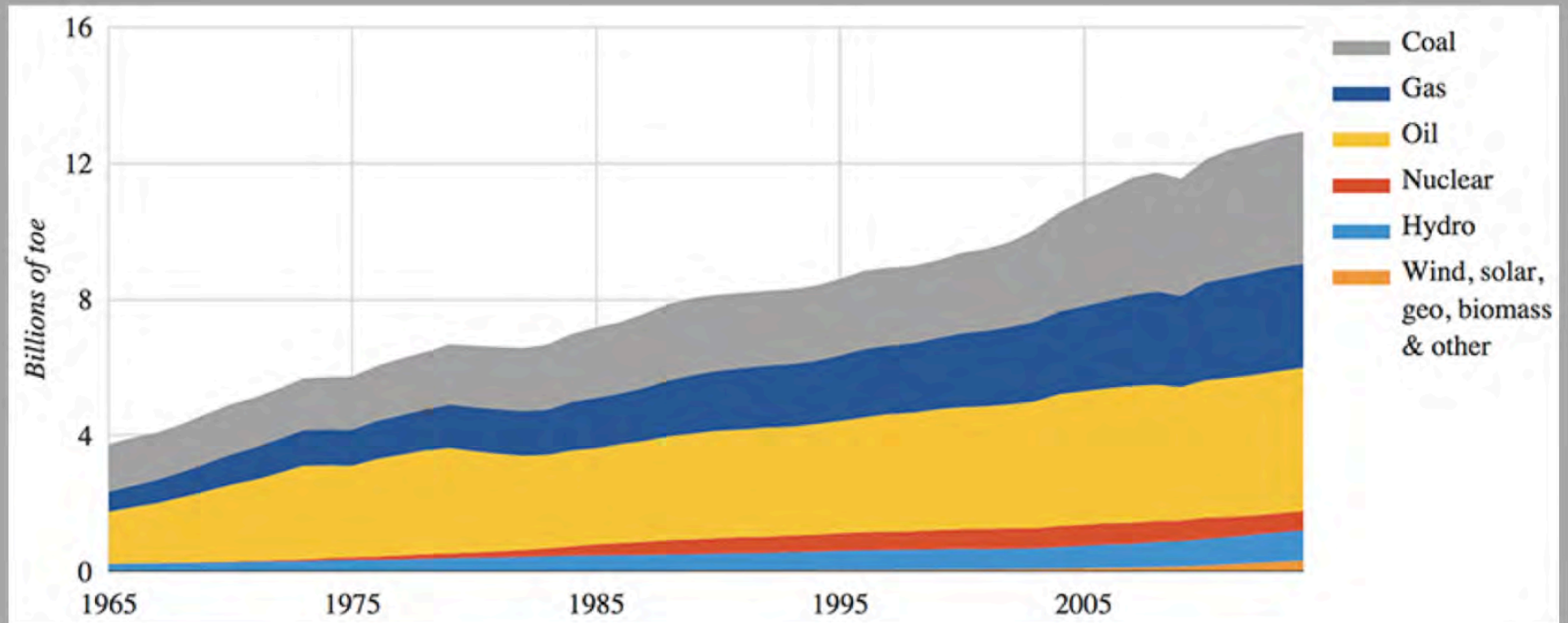


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The Scale of the Challenge

FOSSIL FUELS DOMINATE GLOBAL ENERGY SUPPLY, PROVIDING 85% OF THE TOTAL



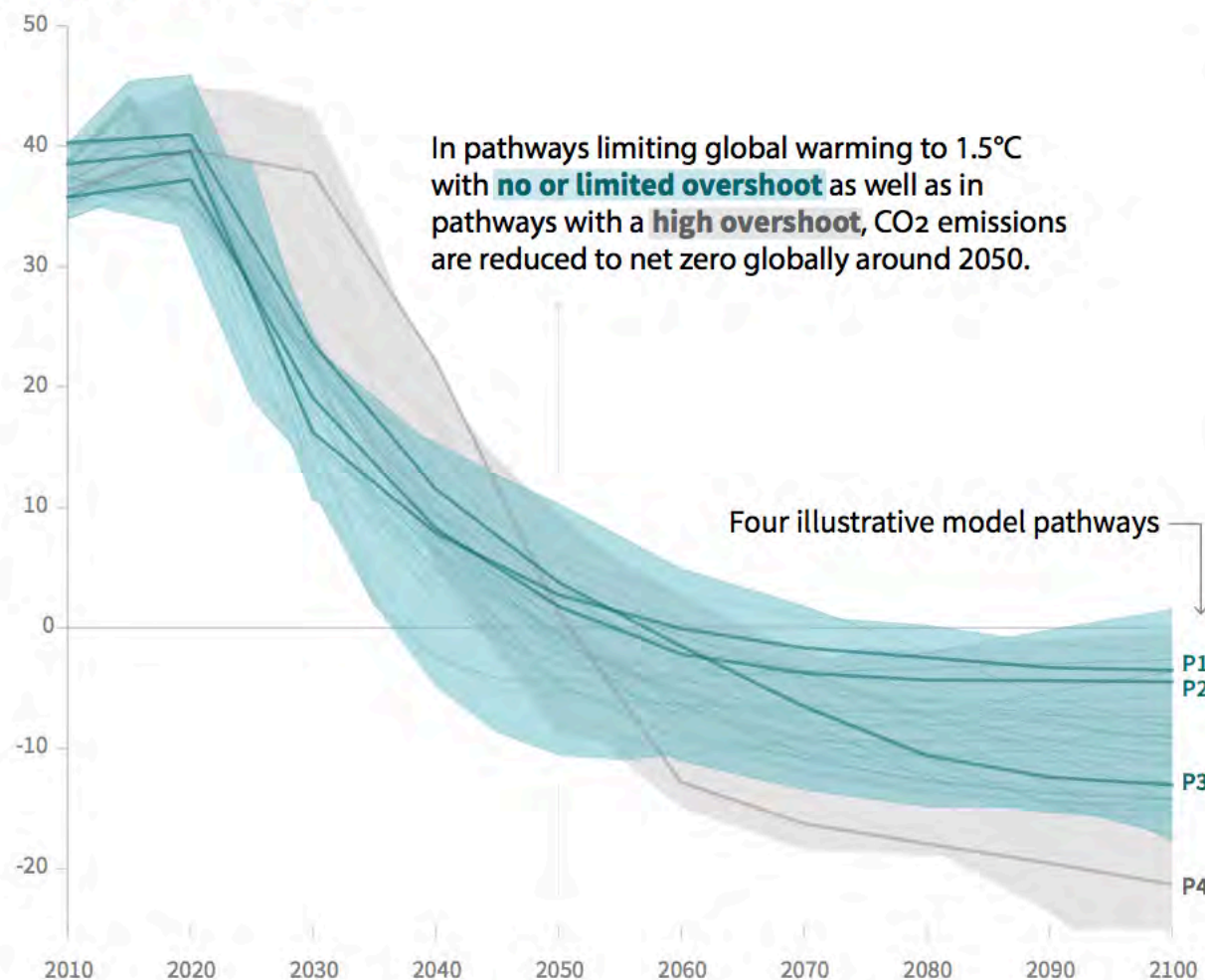
World energy use by source, 1965-2014.

Source: BP Statistical Review of World Energy 2015. Chart by Carbon Brief.

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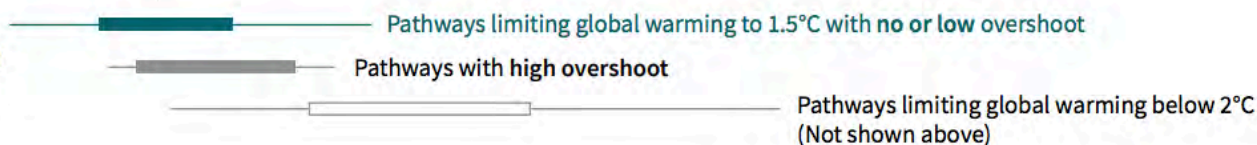
Global total net CO₂ emissions

Billion tonnes of CO₂/yr



Timing of net zero CO₂

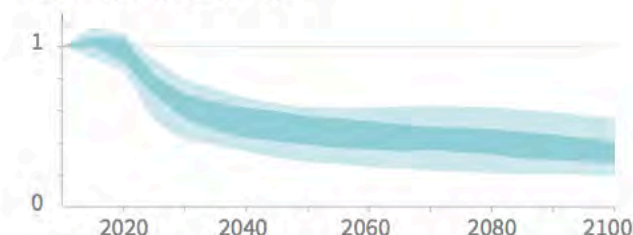
Line widths depict the 5-95th percentile and the 25-75th percentile of scenarios



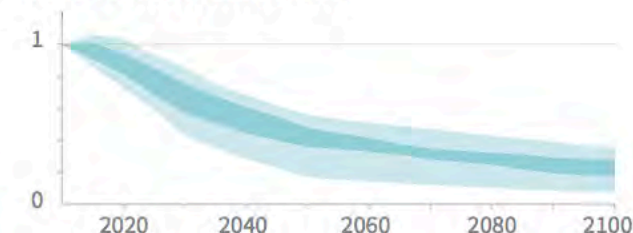
Non-CO₂ emissions relative to 2010

Emissions of non-CO₂ forcers are also reduced or limited in pathways limiting global warming to 1.5°C with **no or limited overshoot**, but they do not reach zero globally.

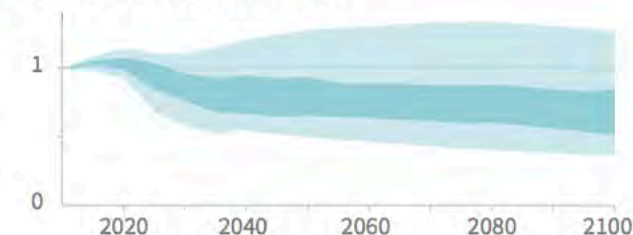
Methane emissions



Black carbon emissions



Nitrous oxide emissions





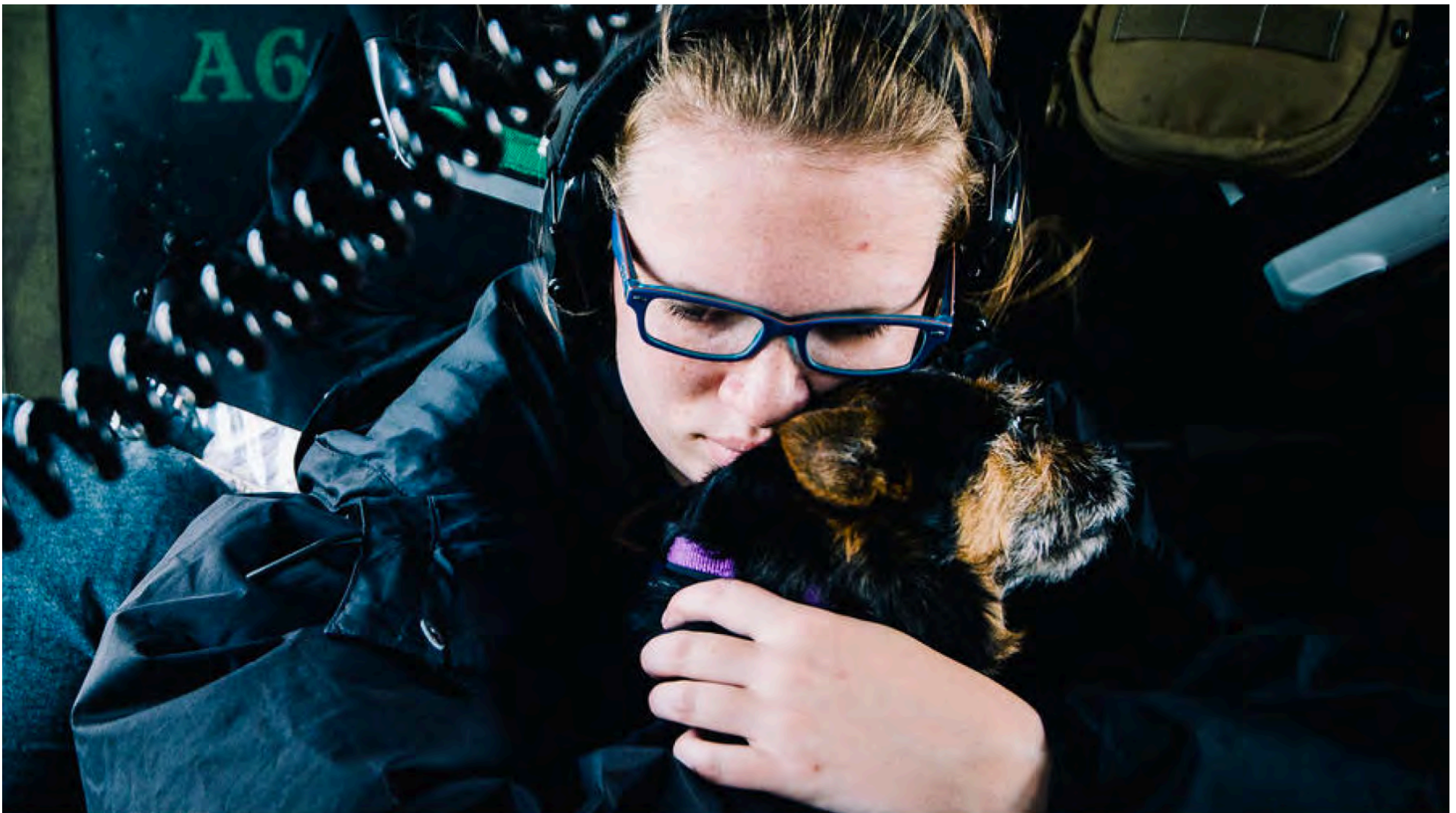


Source: National Geographic 2017





Floodwaters from Tropical Storm Harvey surround homes in Port Arthur, Texas,
Aug. 31, 2017
Source: Chicago Tribune.



A young girl clutches her dog after getting into an HH-60 Pavehawk from the 129th Rescue Squadron for extraction to a safer location during the relief effort for Hurricane Harvey, Aug. 31st, 2017, Beaumont, Texas.
Source: Chicago Tribune.



Source: BladeRunner 2049

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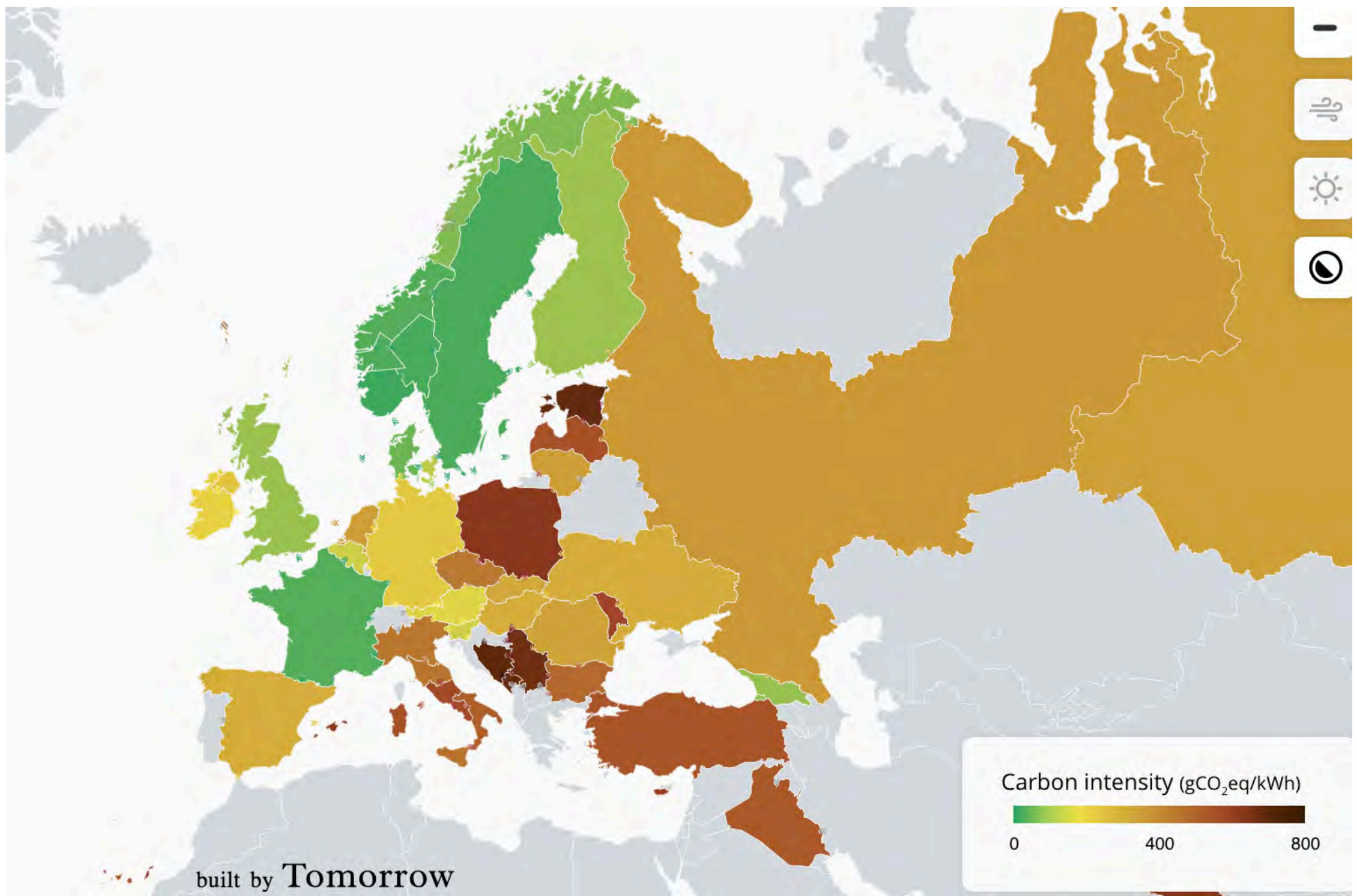
How to solve

CLIMATE CHANGE

1. Clean Up Electricity
2. Electrify Everything
 - 2.a) Eliminate Waste



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Source: ElectricityMap.org 21 September 2018



Great Britain

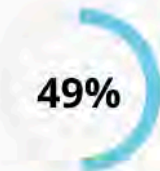
September 21, 2018 7:35 AM



Carbon Intensity
(gCO₂eq/kWh)



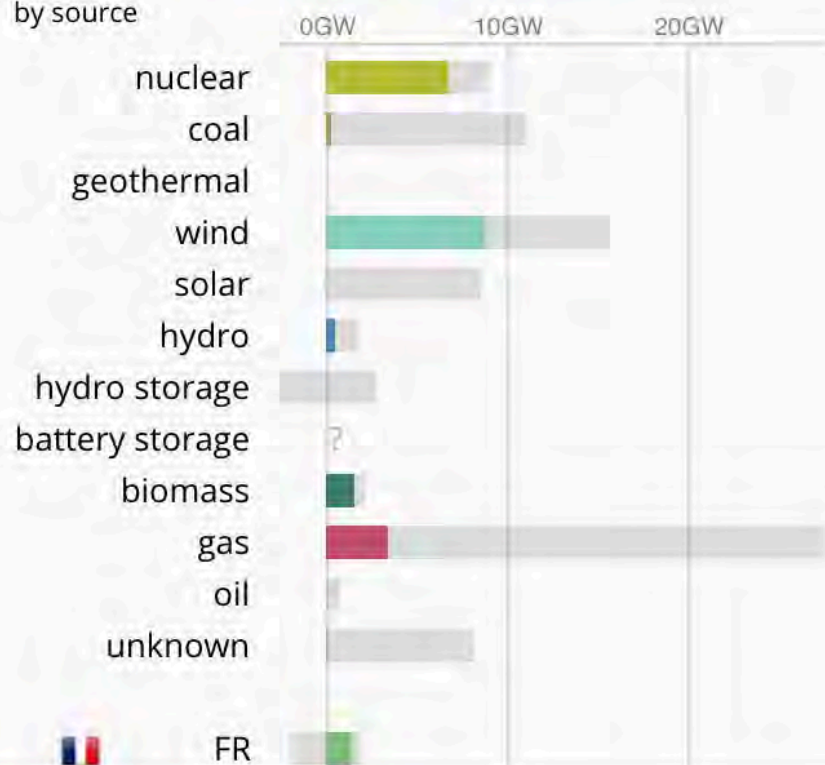
Low-carbon



Renewable

Electricity | Carbon emissions

by source



Germany

September 21, 2018 7:35 AM



Carbon Intensity
(gCO₂eq/kWh)



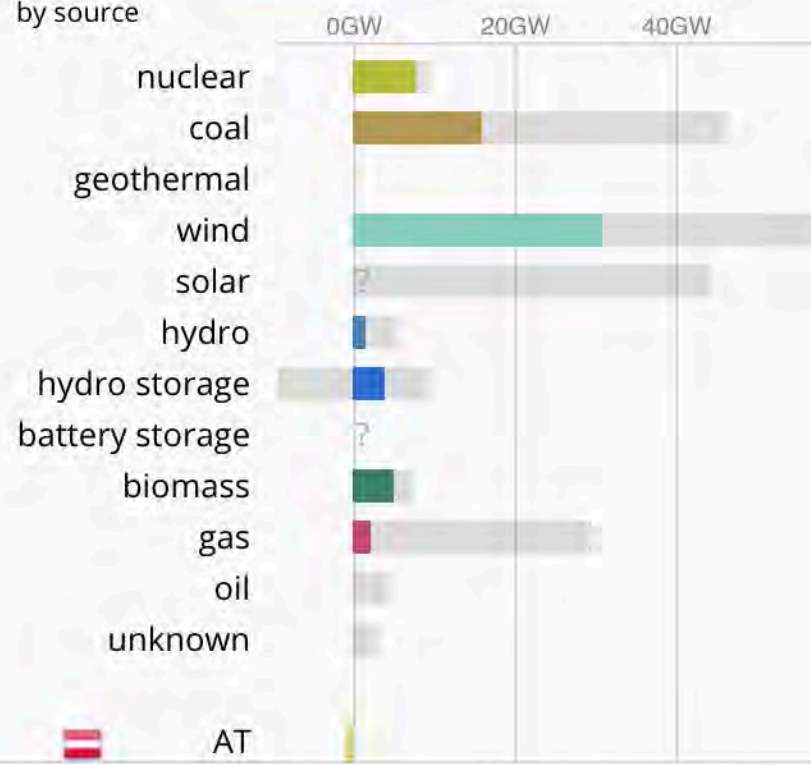
Low-carbon



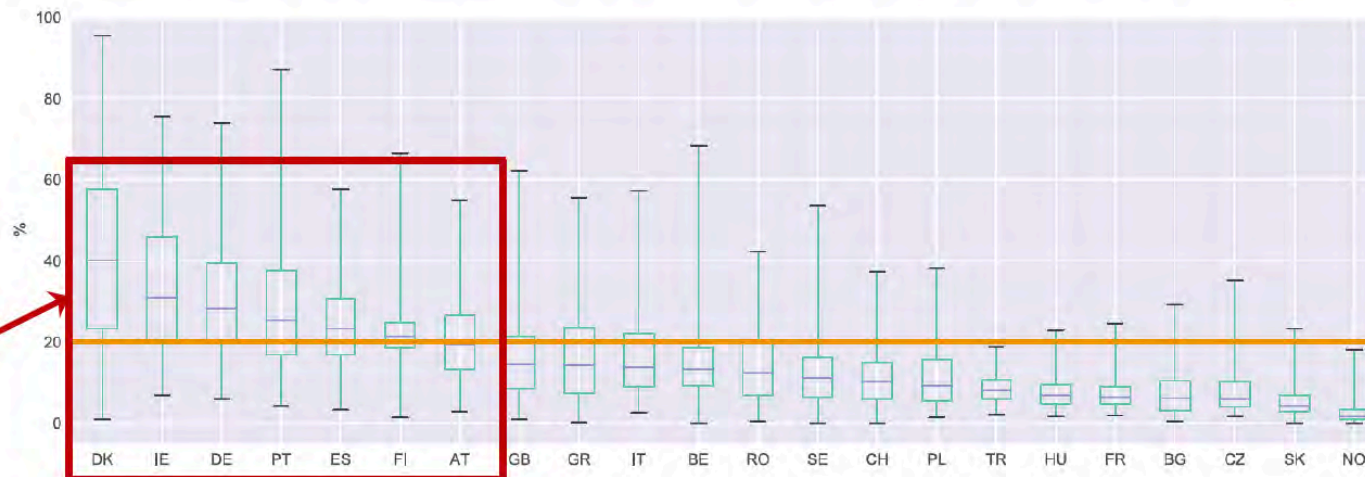
Renewable

Electricity | Carbon emissions

by source

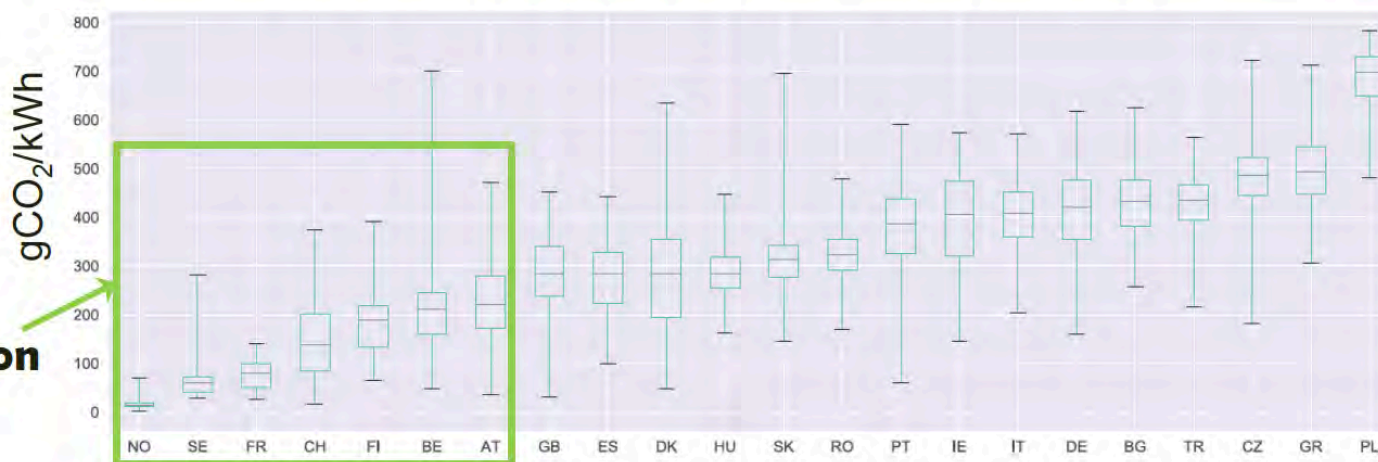


Share of non-hydro renewables wind, solar & biomass Oct 2016 – Sept 2017 (Chart 1)



EU countries with high installed capacity of intermittent renewables

Carbon intensity of electricity generation systems Oct 2016 – Sept 2017 (Chart 2)



EU countries with low carbon intensity

Note: Ranked by median values (blue lines). The box represents 25th and 75th percentile, and vertical lines cover all hourly datapoints.

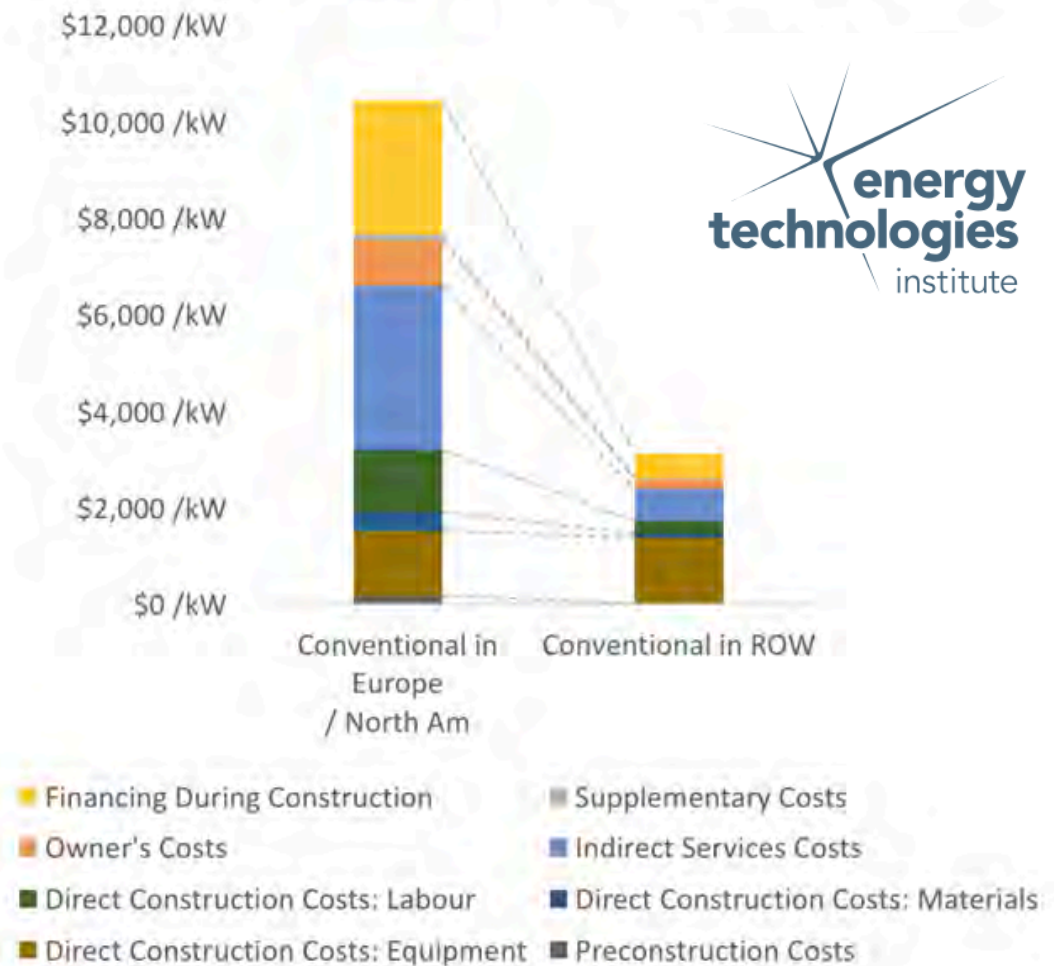
NO correlation between high installed capacity of wind and solar and low carbon intensity

But it's *SO* expensive...

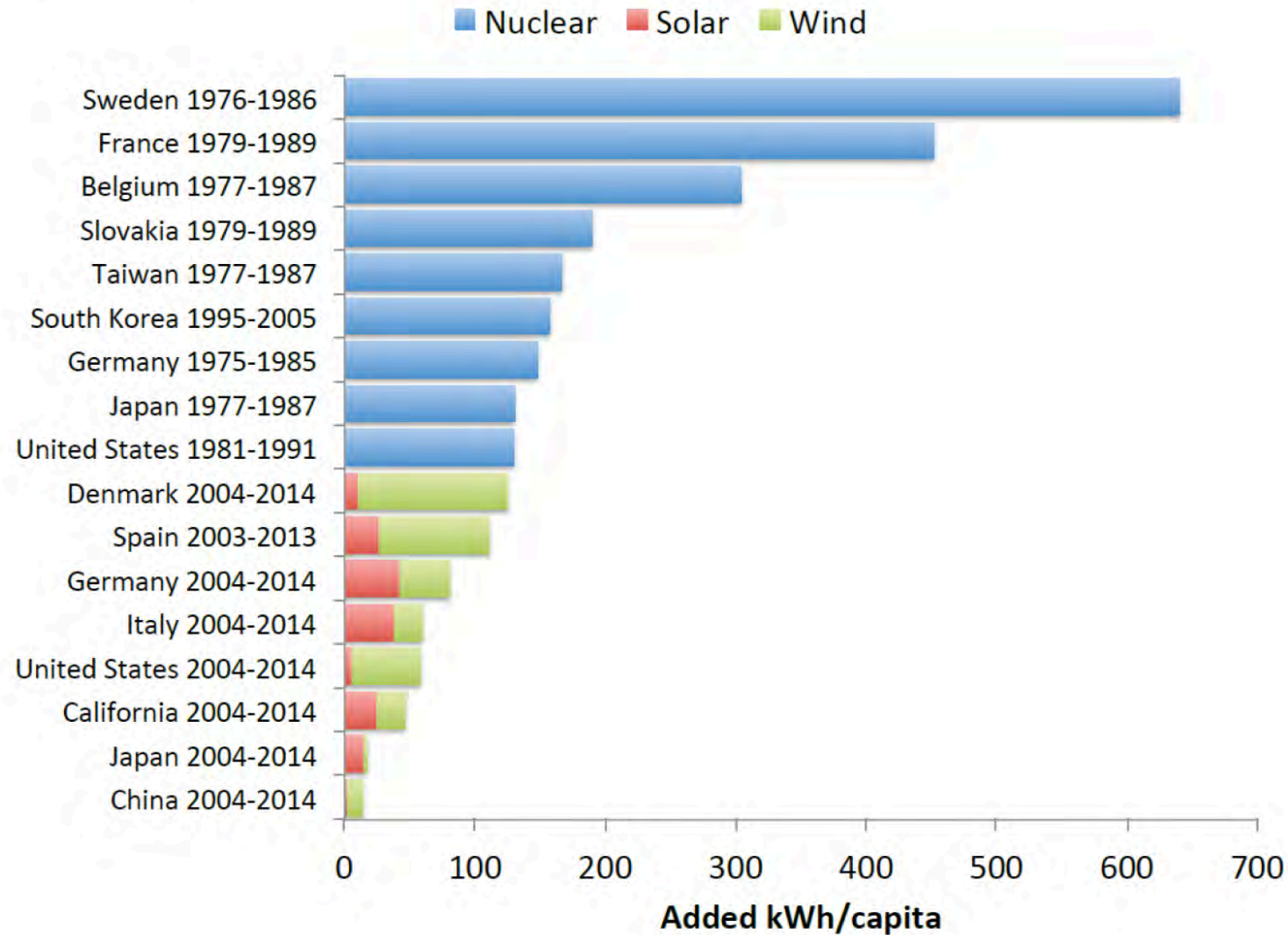
... no it isn't

... or at least it doesn't have
to be...

Figure 9. "Genre" Cost Comparison: Europe/North America and ROW Costs



THERE IS A SILVER BULLET FOR FAST DECARBONISATION



Nuclear Reimagined Series by Third Way
“High Temperature Reactor for Industry” scenario



Nuclear Reimagined Series by Third Way

“Clean Transit Hub” scenario





Nuclear Reimagined Series by Third Way
“Remote Arctic Community” scenario



THANK YOU

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