



Energy: a path to decarbonization

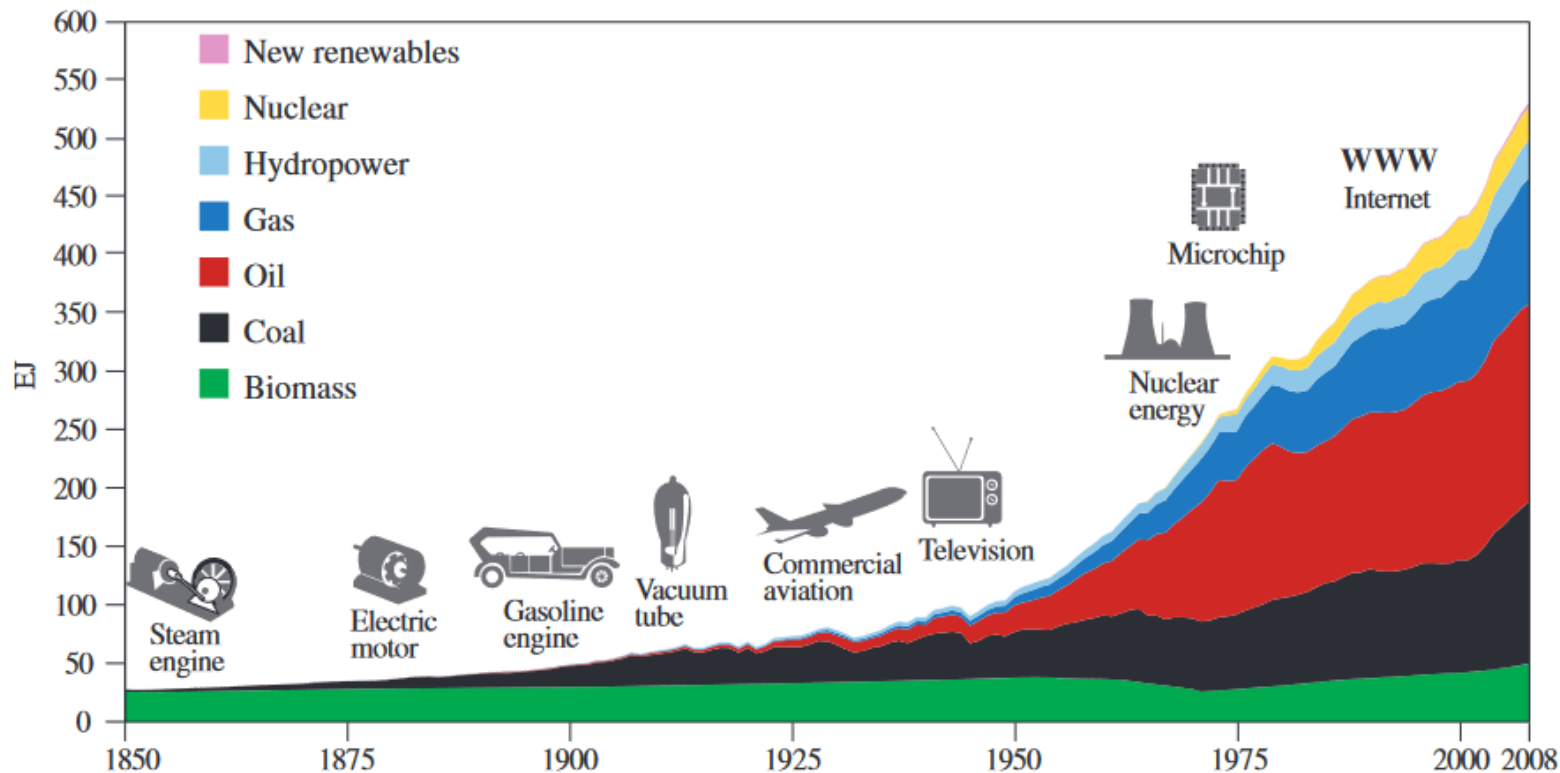
Samuele Meschini
Comitato Nucleare e Ragione

Collegio San Giuseppe, Torino • 01/28/2022

*Culture evolves as the amount of **energy harnessed** per capita per year is increased, [...].*

Energy consumption per year

L. White – 1943



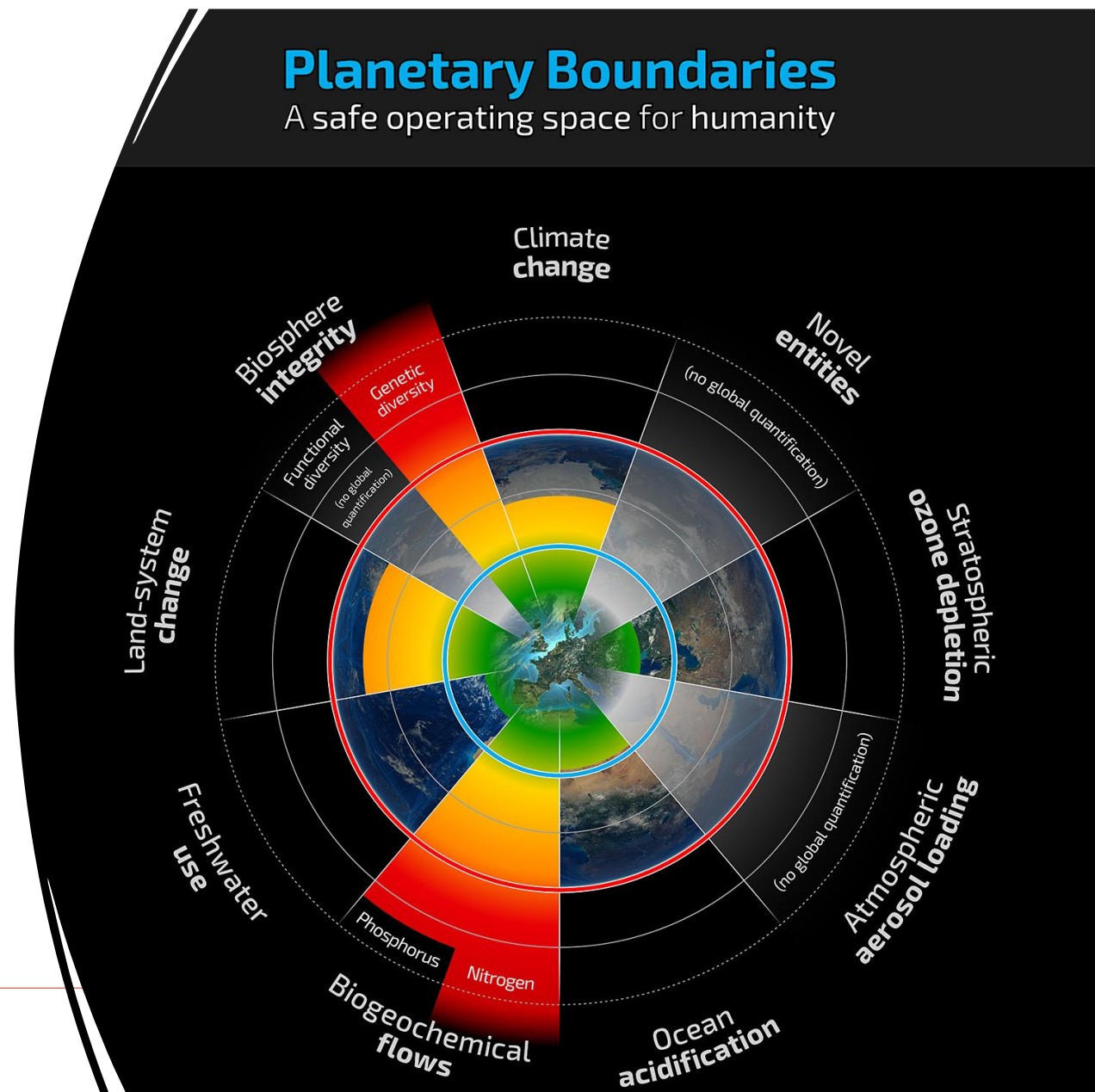
Grubler, Arnulf et al., (2012). Energy Primer.

Everything comes with a price

Planetary boundaries is a concept involving Earth system processes vital for **Earth system equilibrium**. **Nine processes** were identified. Crossing these boundaries increases the risk of generating **large-scale abrupt or irreversible environmental changes**.

Adapted from Steffen et al. Planetary Boundaries: guiding human development on a changing planet. Science (2015)

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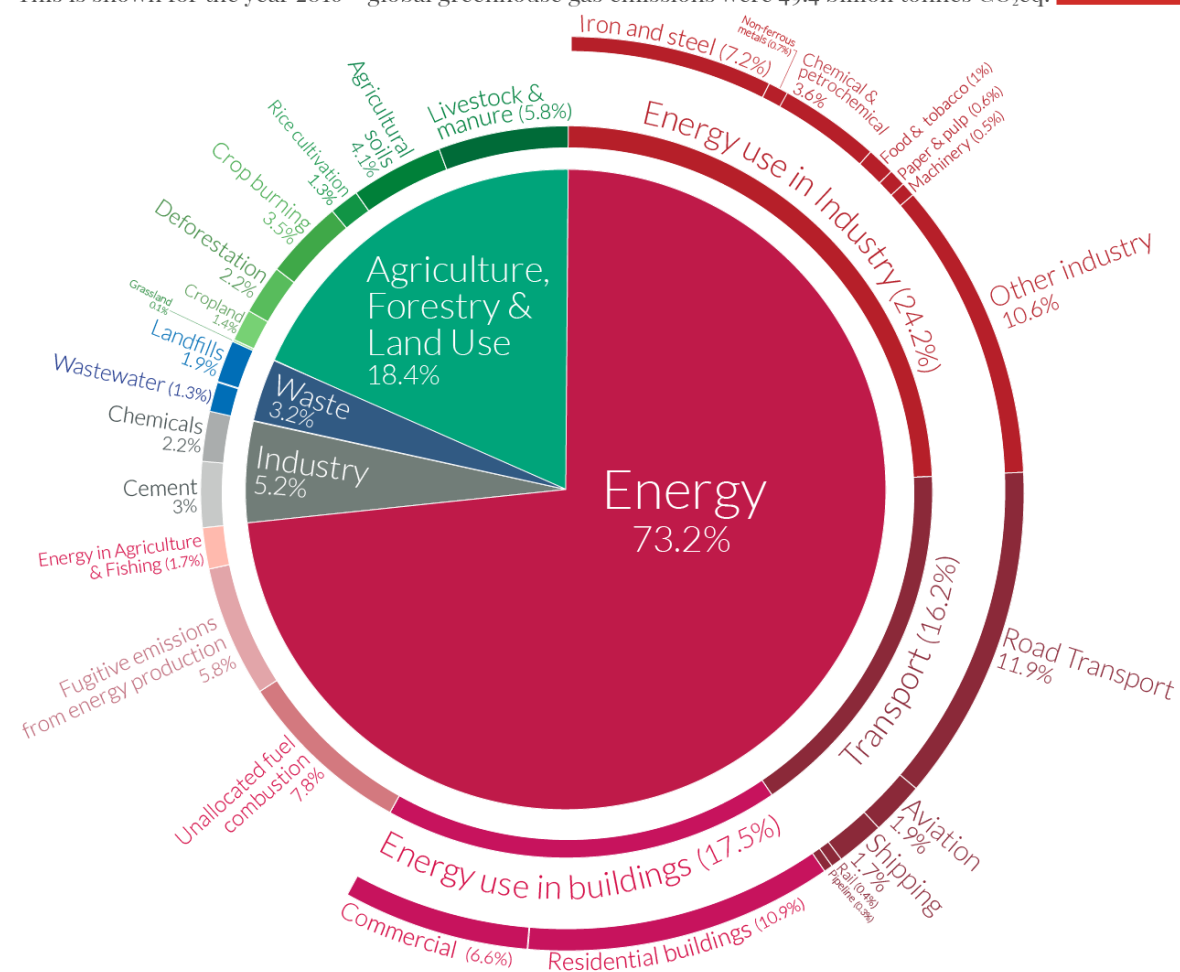


Who is responsible?

Global greenhouse gas emissions by sector

This is shown for the year 2016 – global greenhouse gas emissions were 49.4 billion tonnes CO₂eq.

Our World
in Data

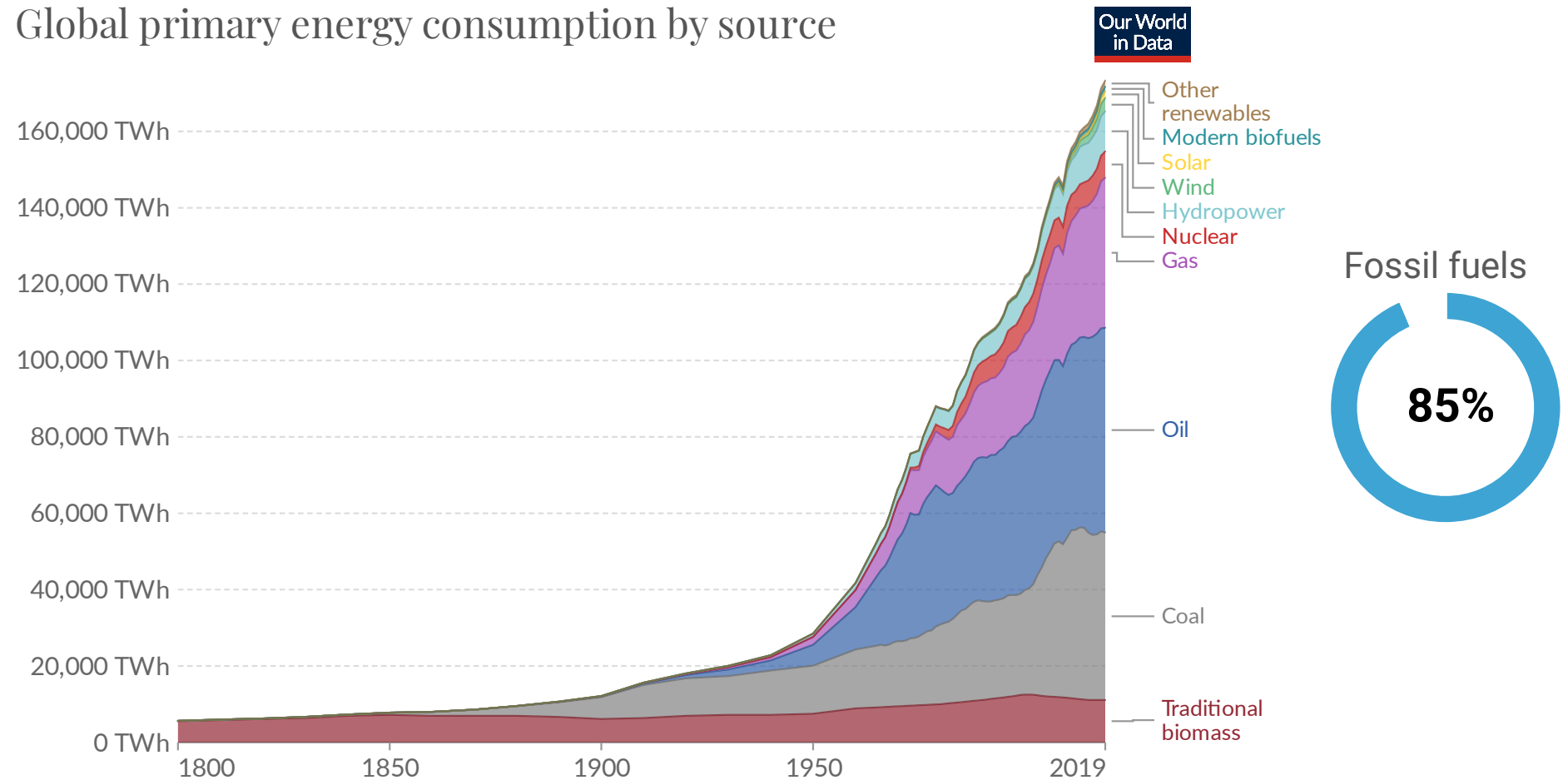


OurWorldinData.org – Research and data to make progress against the world's largest problems.

Source: Climate Watch, the World Resources Institute (2020).

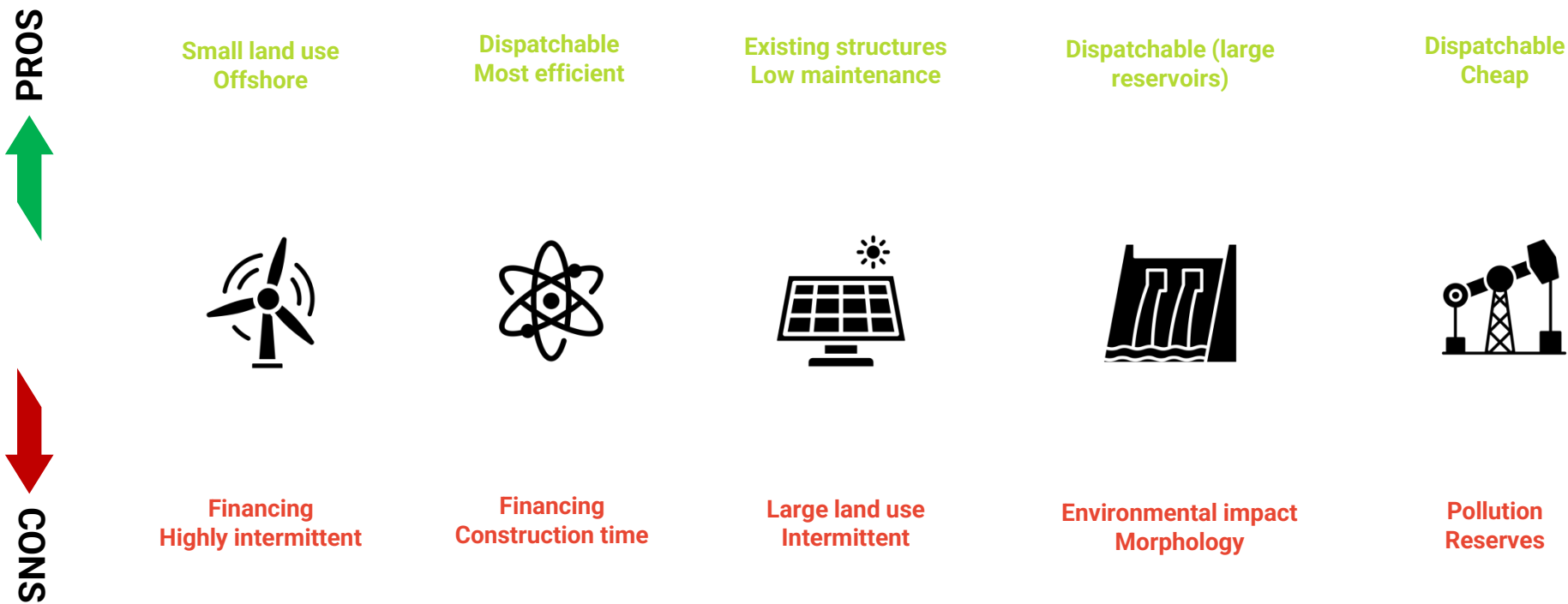
Licensed under CC-BY by the author Hannah Ritchie (2020).

Global primary energy consumption by source



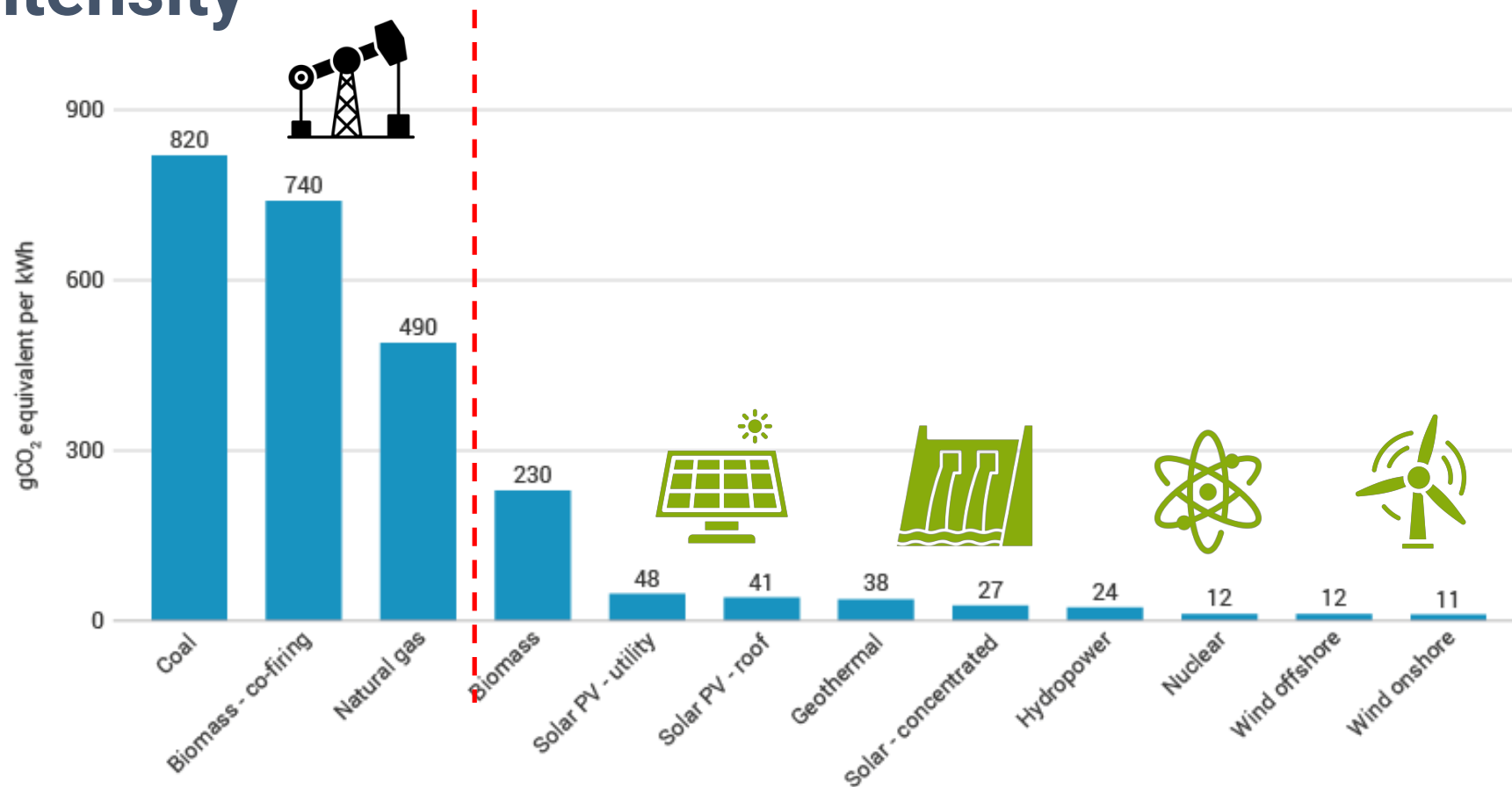
Source: Vaclav Smil (2017) & BP Statistical Review of World Energy

OurWorldInData.org/energy • CC BY

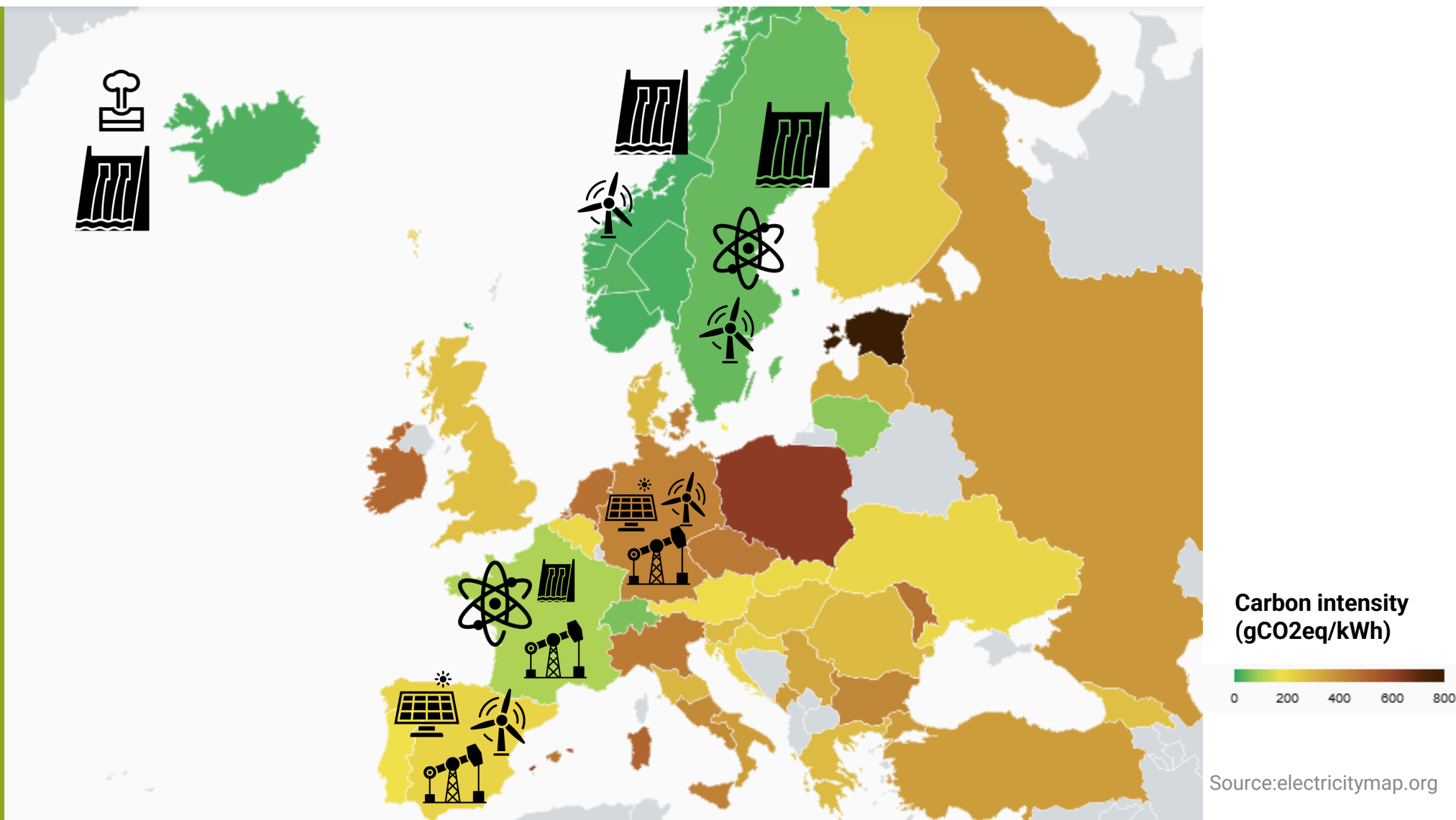




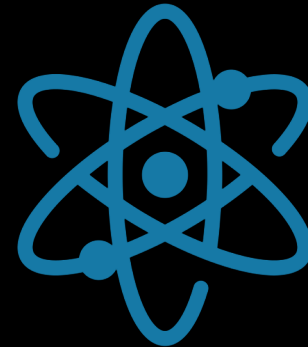
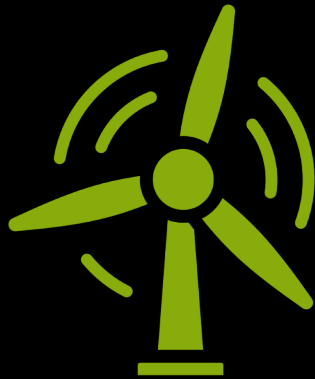
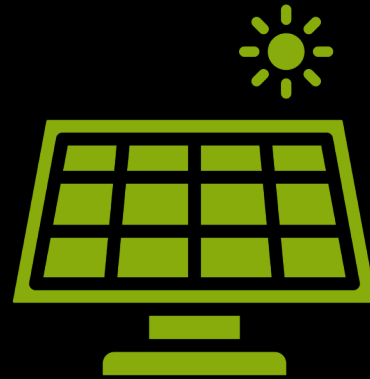
Carbon intensity



Source: IPCC (2014)









Thank you

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