

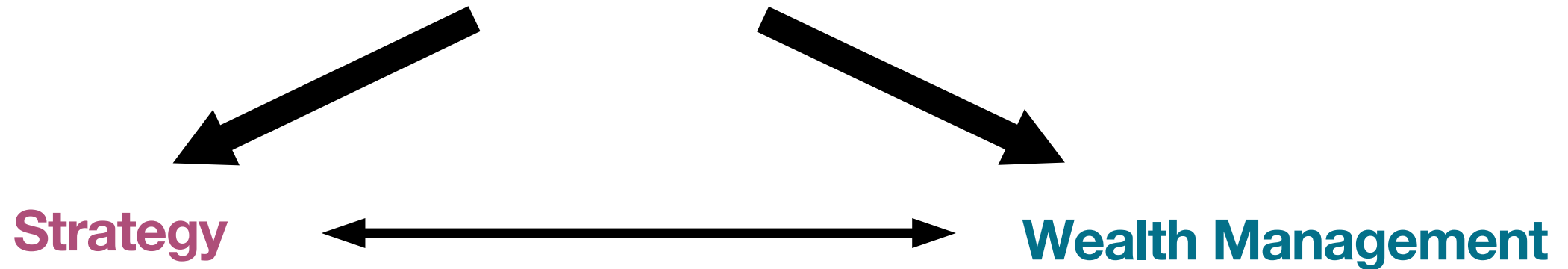
“Climate Shock” in Africa

Turning Climate Challenges into Opportunities

22 November 2023

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Econopolis



Economic advisory services with a focus on climate & energy

- Coastal protection vision 2100
- Climate Roadmap Ghent
- Energy island
- Einstein Telescope
- ...



De Geert Noels
Kristof Eggermont & Yanaika Denoyelle

KLIMAAT

20 oplossingen
voor overheid, bedrijven
en burgers in België

SCHOK



Lannoo

Le Geert Noels
Kristof Eggermont & Yanaika Denoyelle

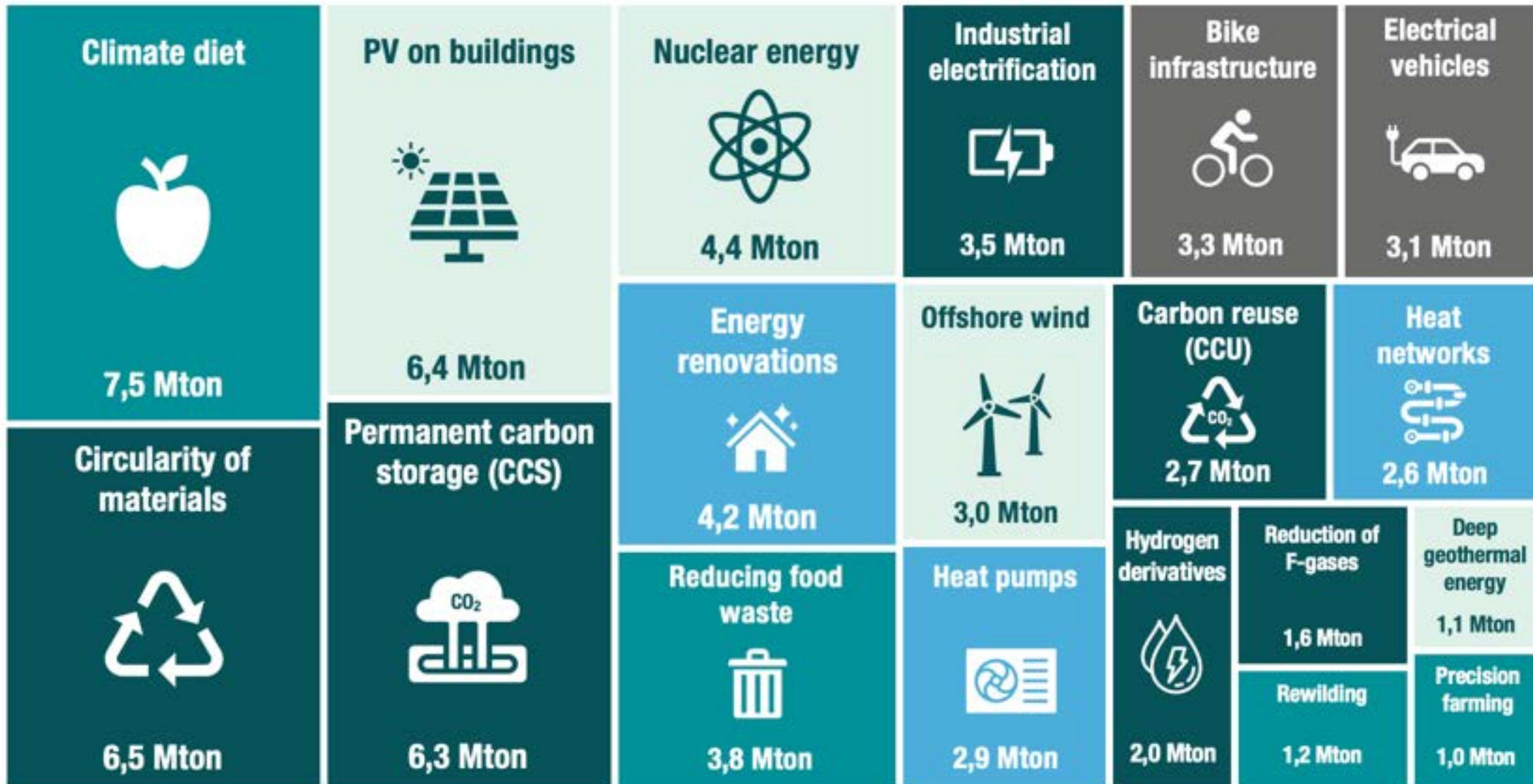
CHOC

20 solutions pour une Belgique
« zéro carbone » en 2050

CLIMATIQUE

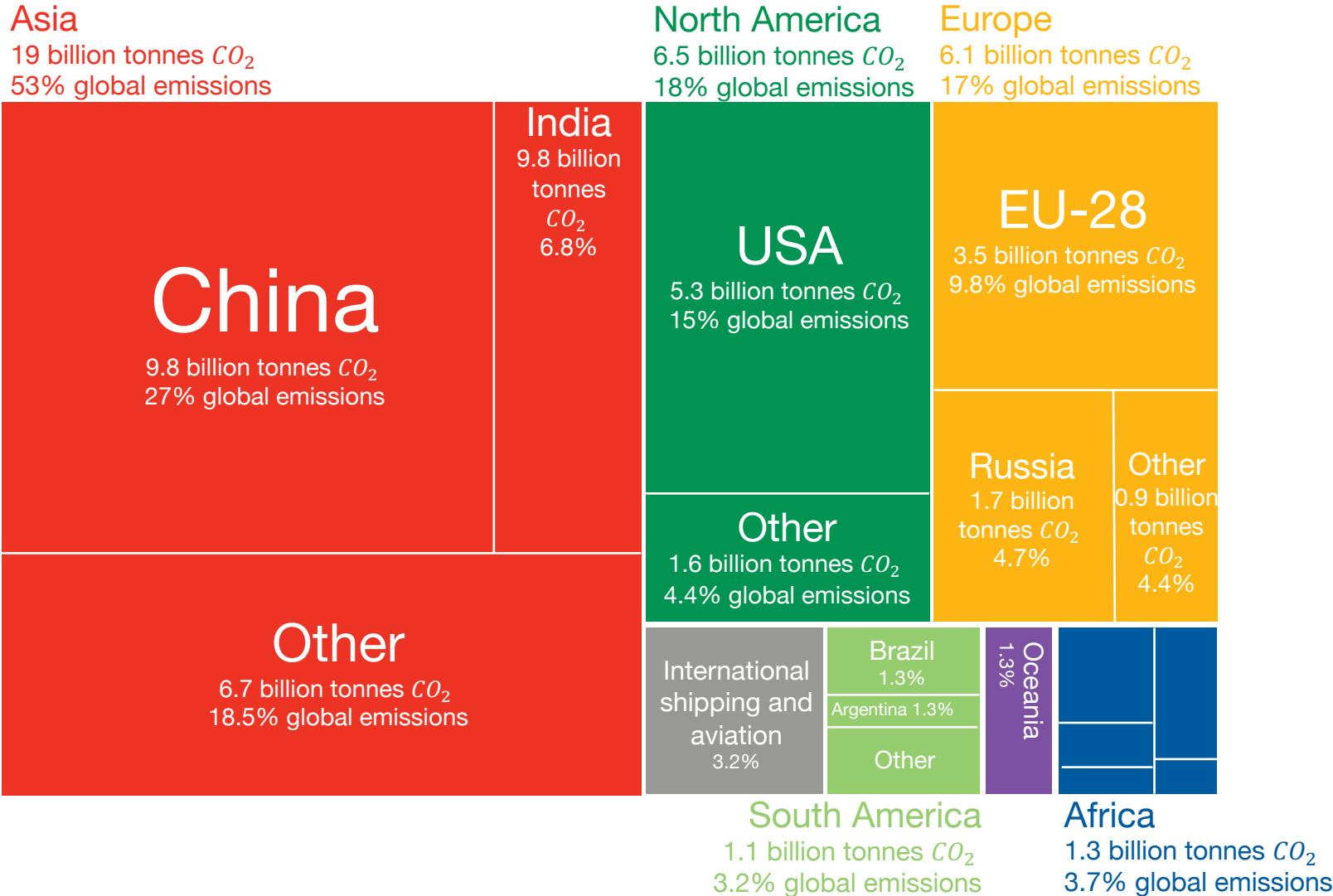
Racine

Horizon 2030 for Belgium



In million tons CO₂e-reduction. Belgium emitted 115 Mton in 2019.

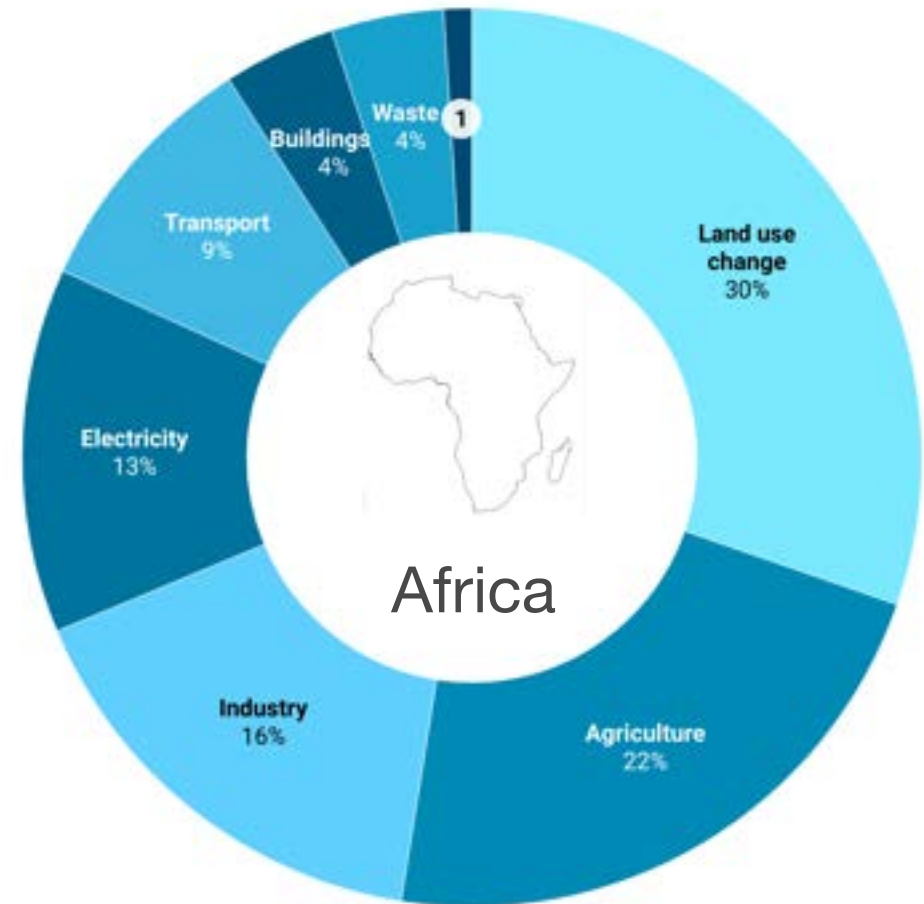
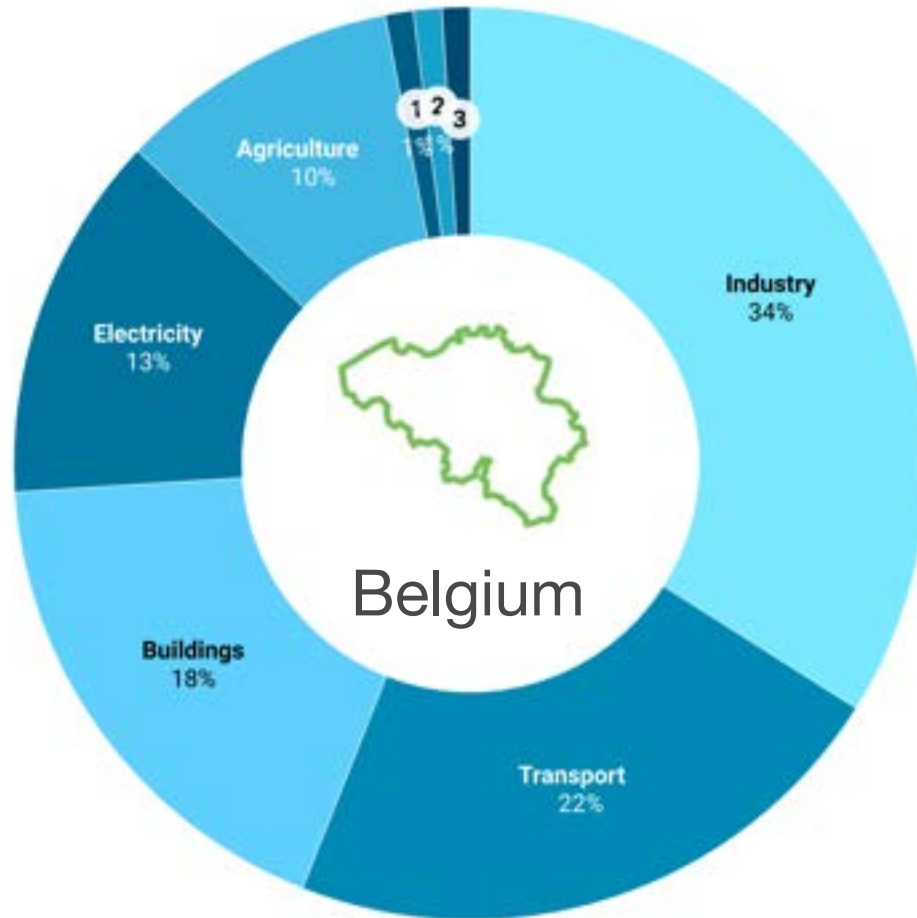
Africa's contribution to global emissions is limited



Global CO₂ emissions from fossil fuels.

Source: Our World in Data

Climate solutions for Africa and Belgium have a different focus point



1 Waste 2 Land use change 3 Others

Others

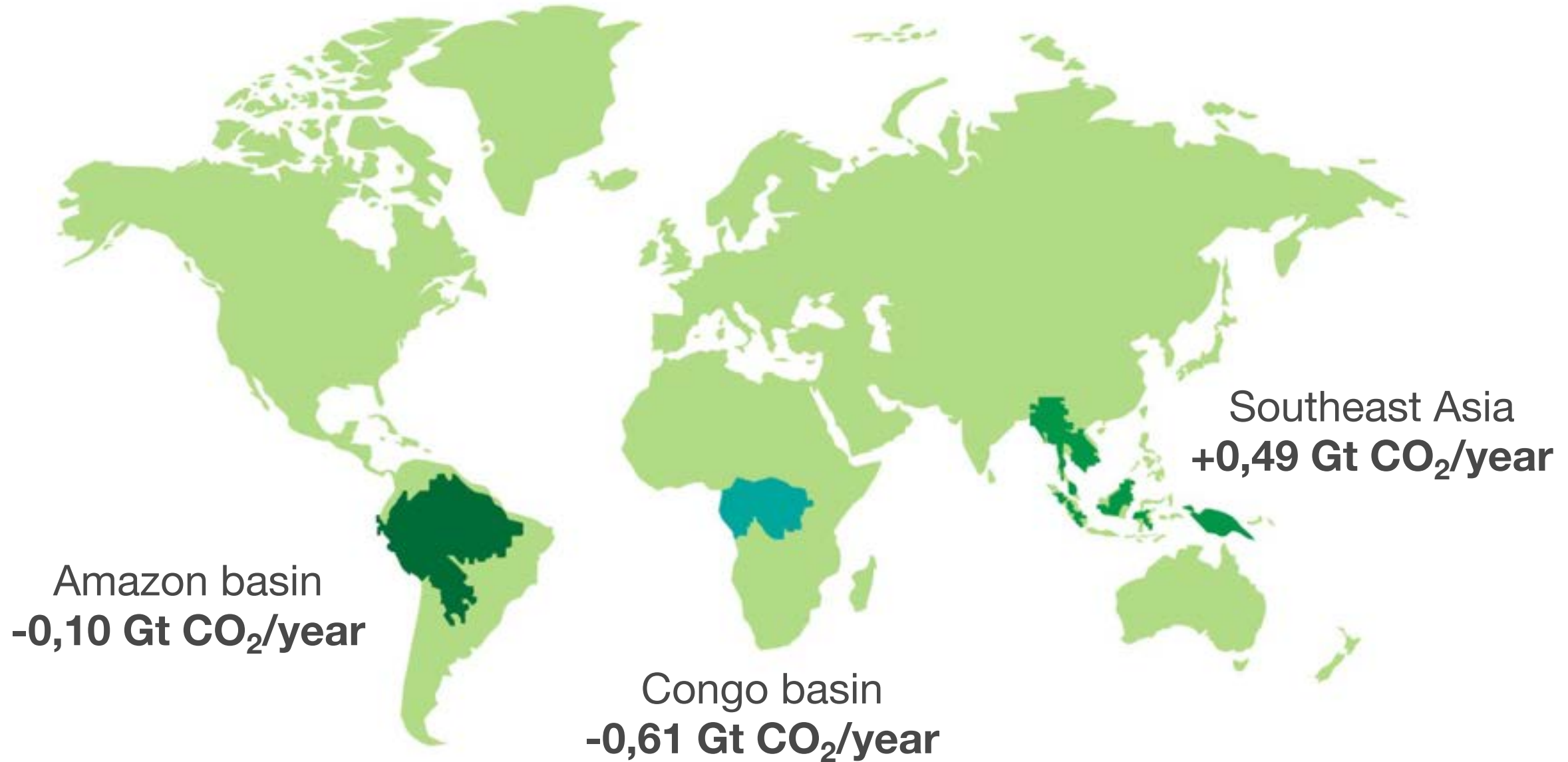
GHG emissions per sector in 2019.

Source: Our World in Data

A vibrant tropical forest scene featuring tall palm trees and large, bright green leaves. Sunlight filters through the canopy, creating a dappled light effect. The word "NATURE" is prominently displayed in a white, sans-serif font within a semi-transparent grey rectangular box centered in the image.

NATURE

Rainforests act as natural carbon sinks



Source: World Resource Institute, FAO

Preserving the Congo Basin is a solution with global impact

Loss of
carbon sink

0,61 Gt CO₂
per year

+ - 50% of Africa's
energy emisissions
or 6x emissions of
Belgium

Deforestation
leads to ...

Stored
carbon
becomes
available

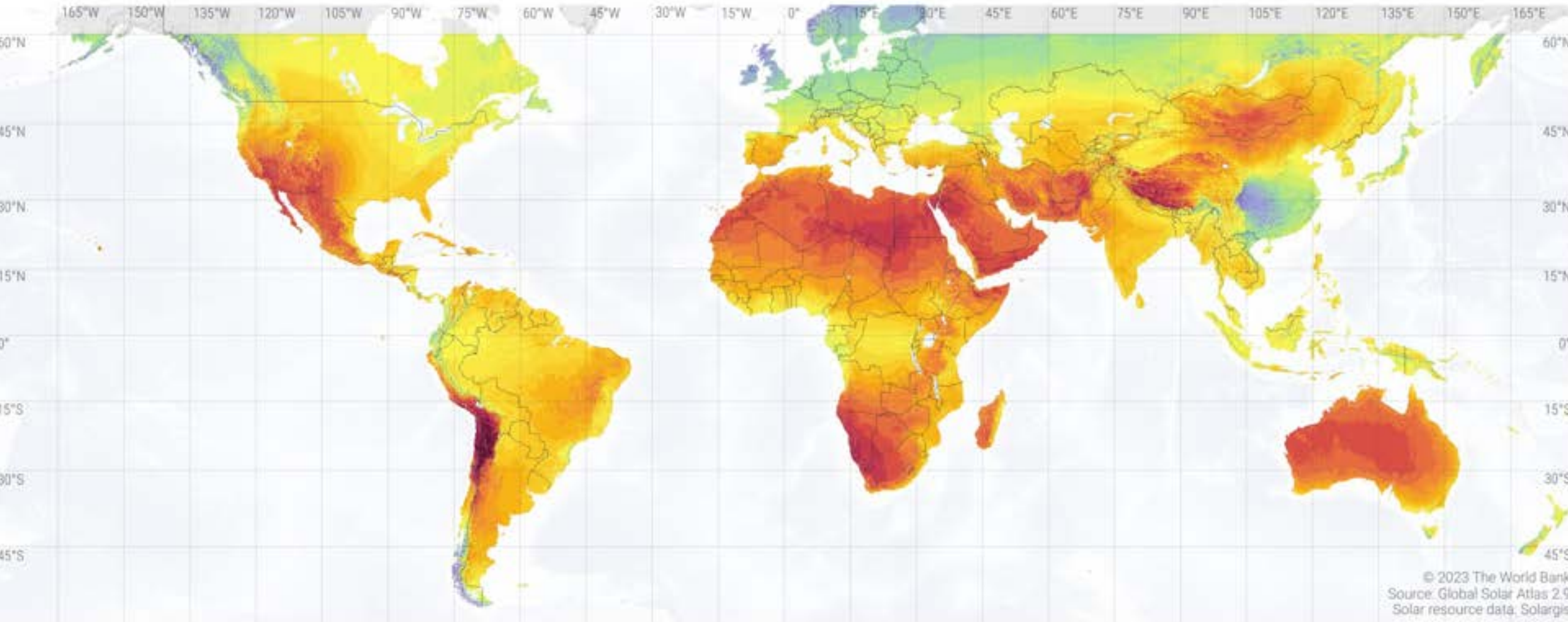
29 Gt of C
stored

3 years of global
GHG emissions

An aerial photograph of a large solar farm. The solar panels are arranged in neat, parallel rows that recede into the distance. The lighting creates a color gradient across the panels, from a warm orange and yellow on the left to a cool blue and purple on the right. A semi-transparent grey rectangular box is centered over the middle of the image, containing the word "Energy" in a white, sans-serif font.

Energy

Africa holds 60% of the world's solar resources



Long-term average of photovoltaic power potential (PVOUt)

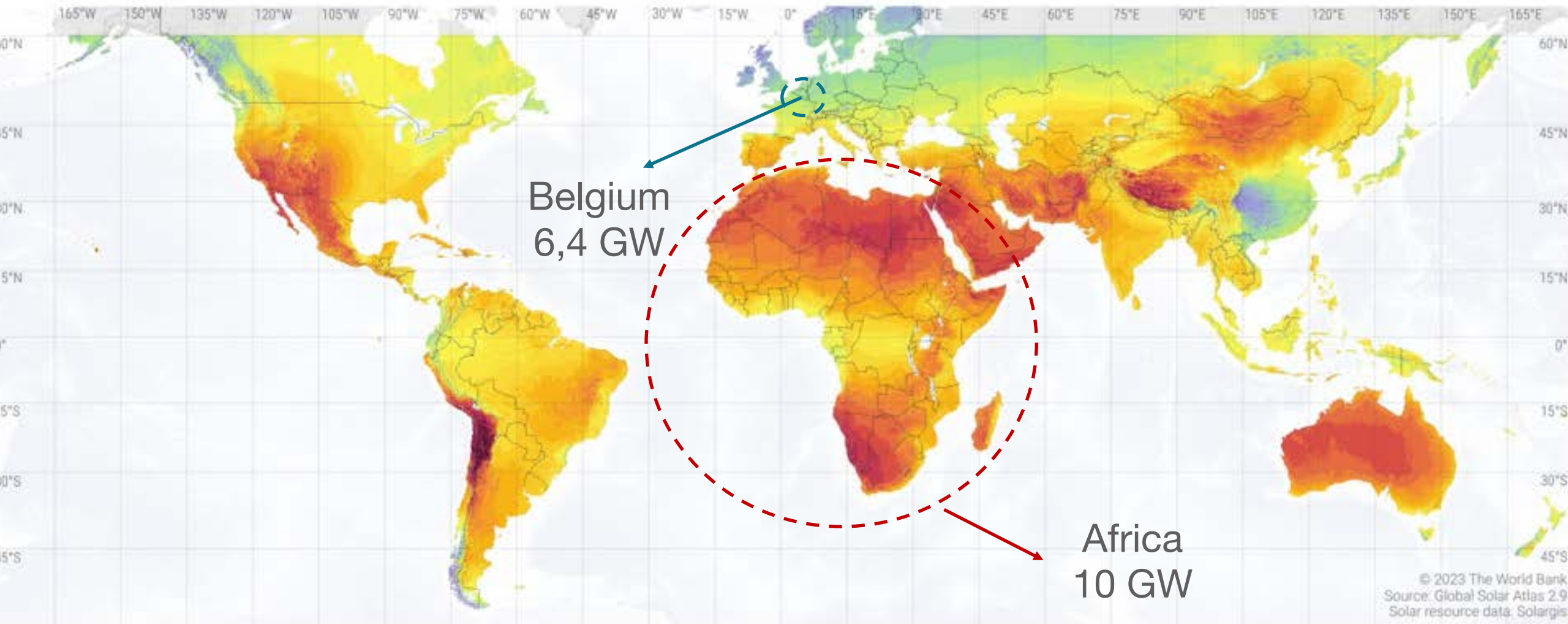
Daily totals:

2.0 2.4 2.8 3.2 3.6 4.0 4.4 4.8 5.2 5.6 6.0 6.4



kWh/kWp

But only holds 1,5% of global installed capacity



Long-term average of photovoltaic power potential (PVOUT)

Daily totals:

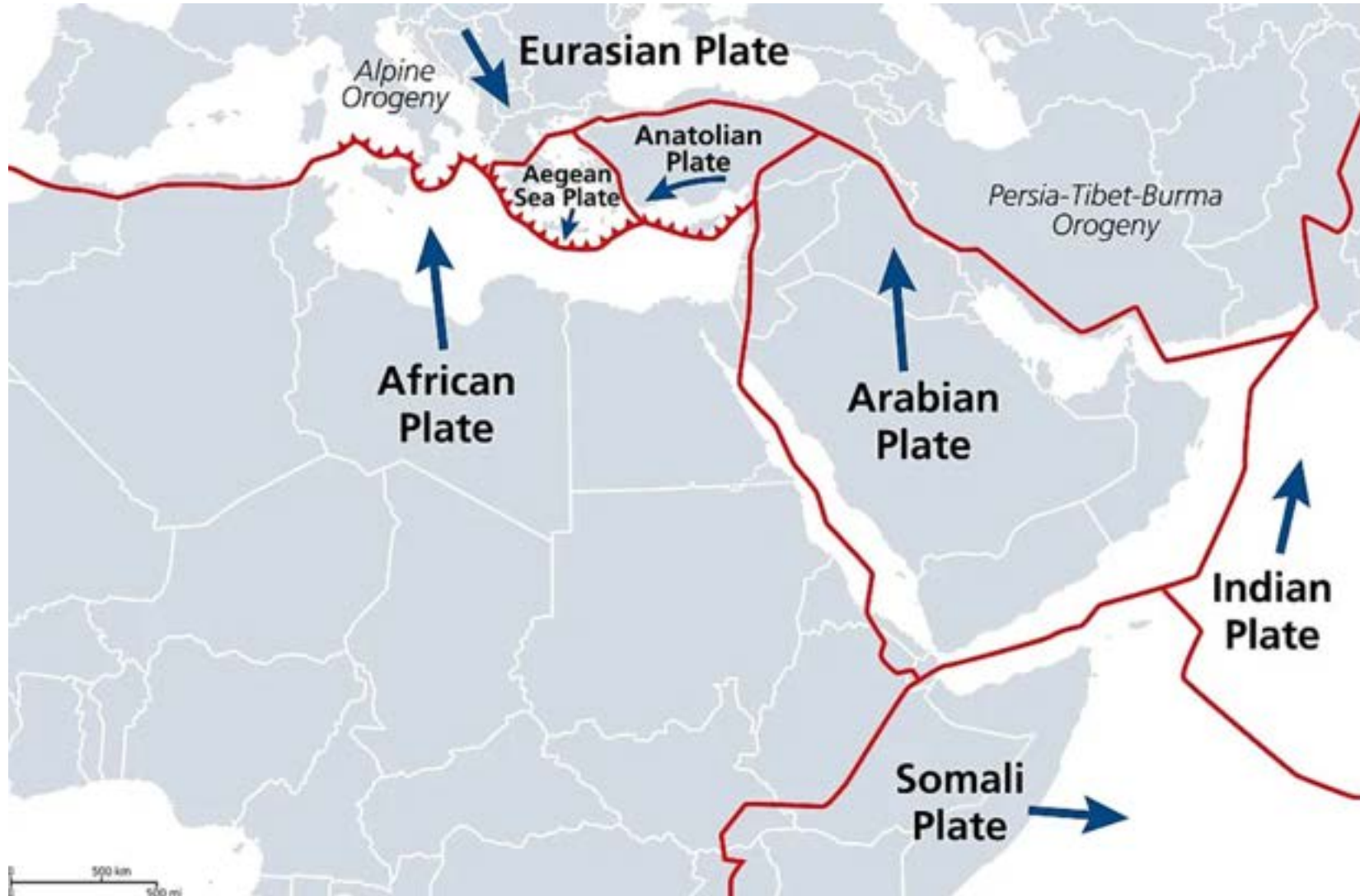
2.0 2.4 2.8 3.2 3.6 4.0 4.4 4.8 5.2 5.6 6.0 6.4



Geothermy in the Rift Valley



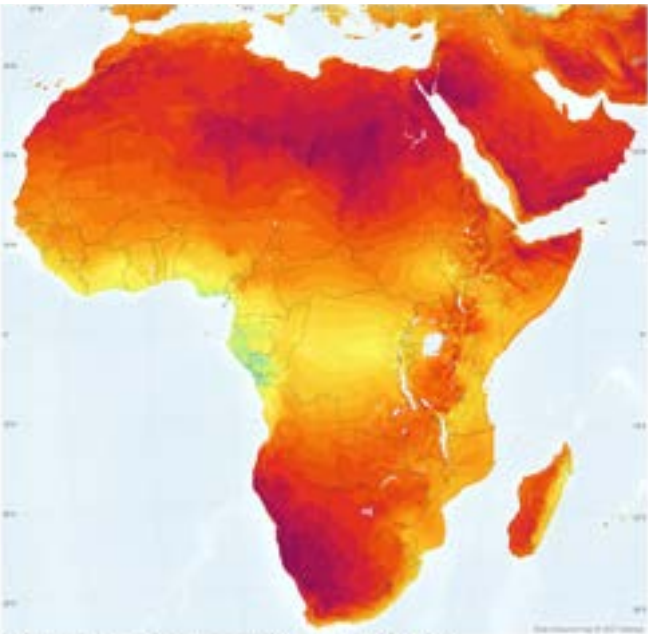
Geothermal activity in the Rift Valley



Geothermal activity in the Rift Valley



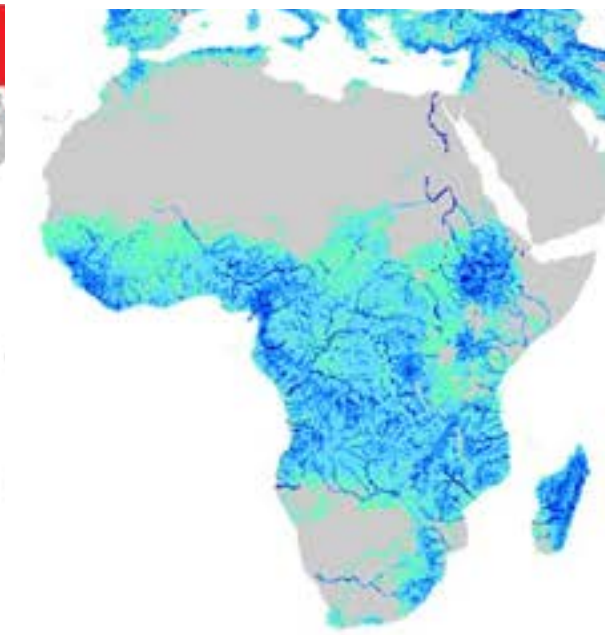
Renewable potential & synergies



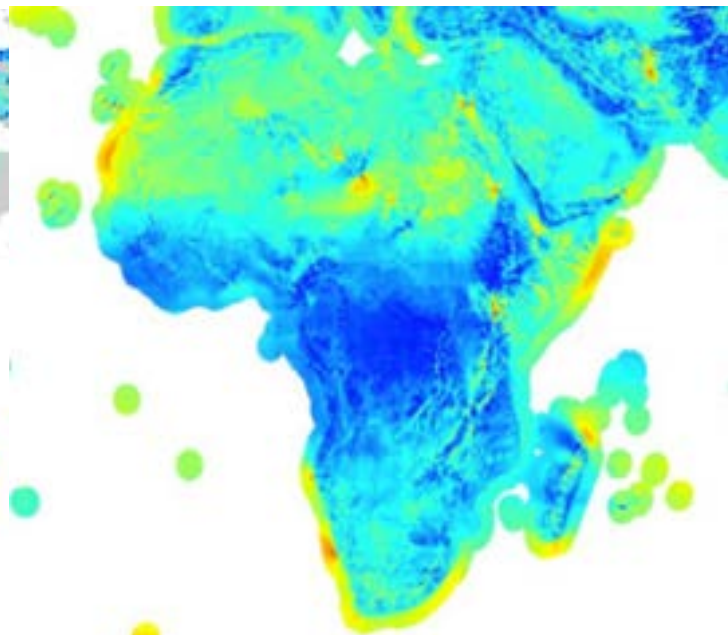
Solar Energy



Geothermal Energy



Hydropower

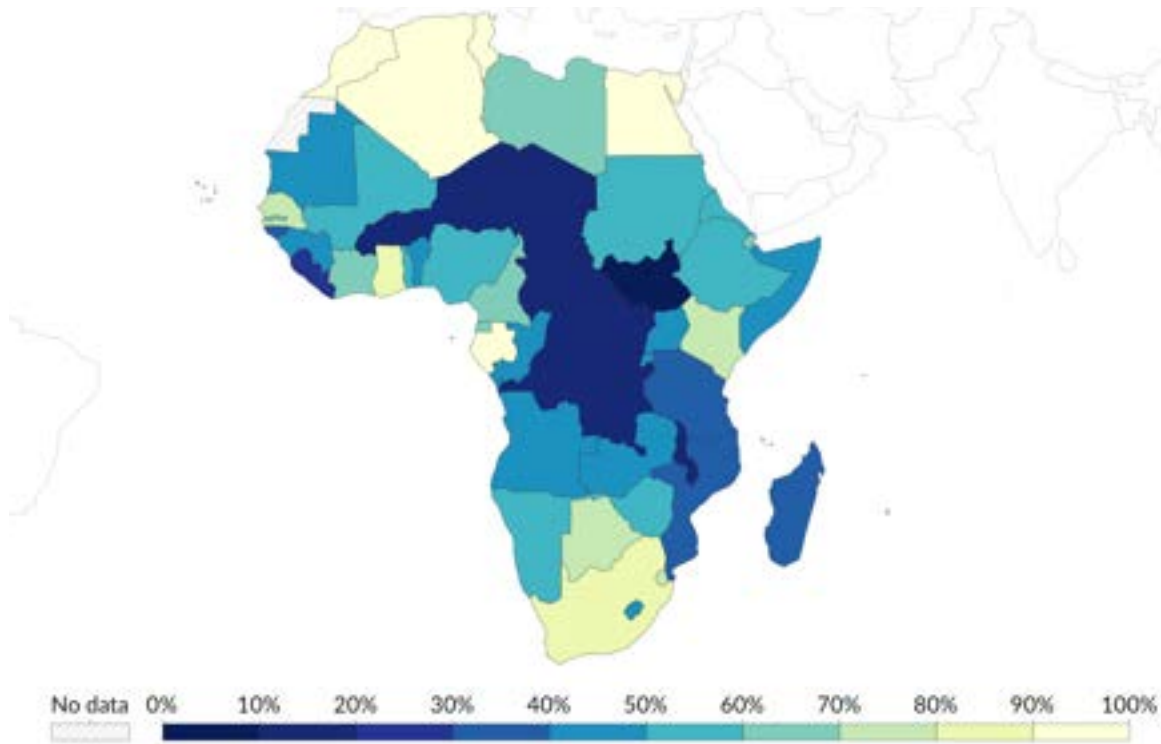


Wind Energy

Why is investing in renewables important?

1. Use clean energy to stimulate regional economic development in Africa

43% of African population has no access to electricity



Percentage of population with electricity access (2020).

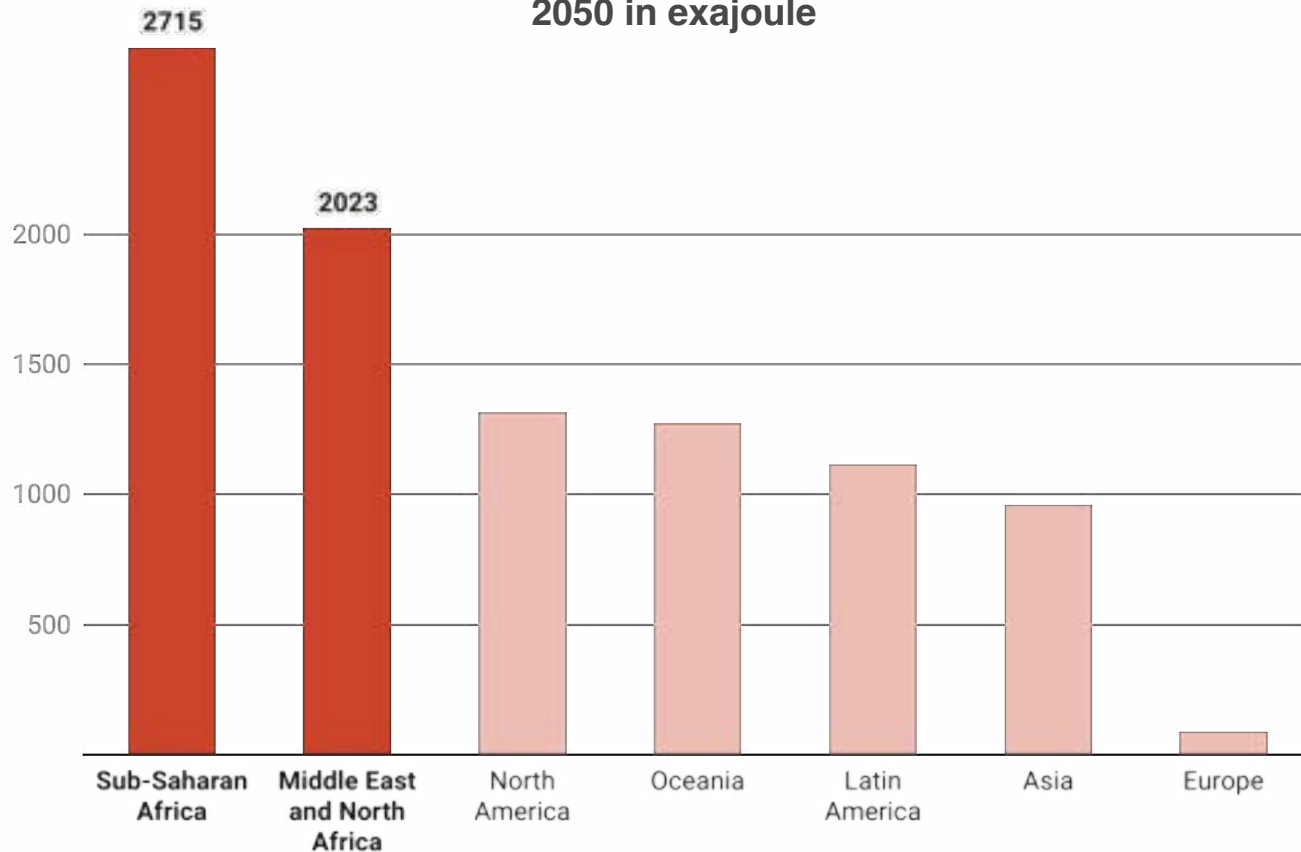
Source: IRENA



Why is investing in renewables important?

2. Use excess energy for export to other continents

Technical potential for producing green hydrogen under 1,5 USD/kg by 2050 in exajoule



Source: IRENA

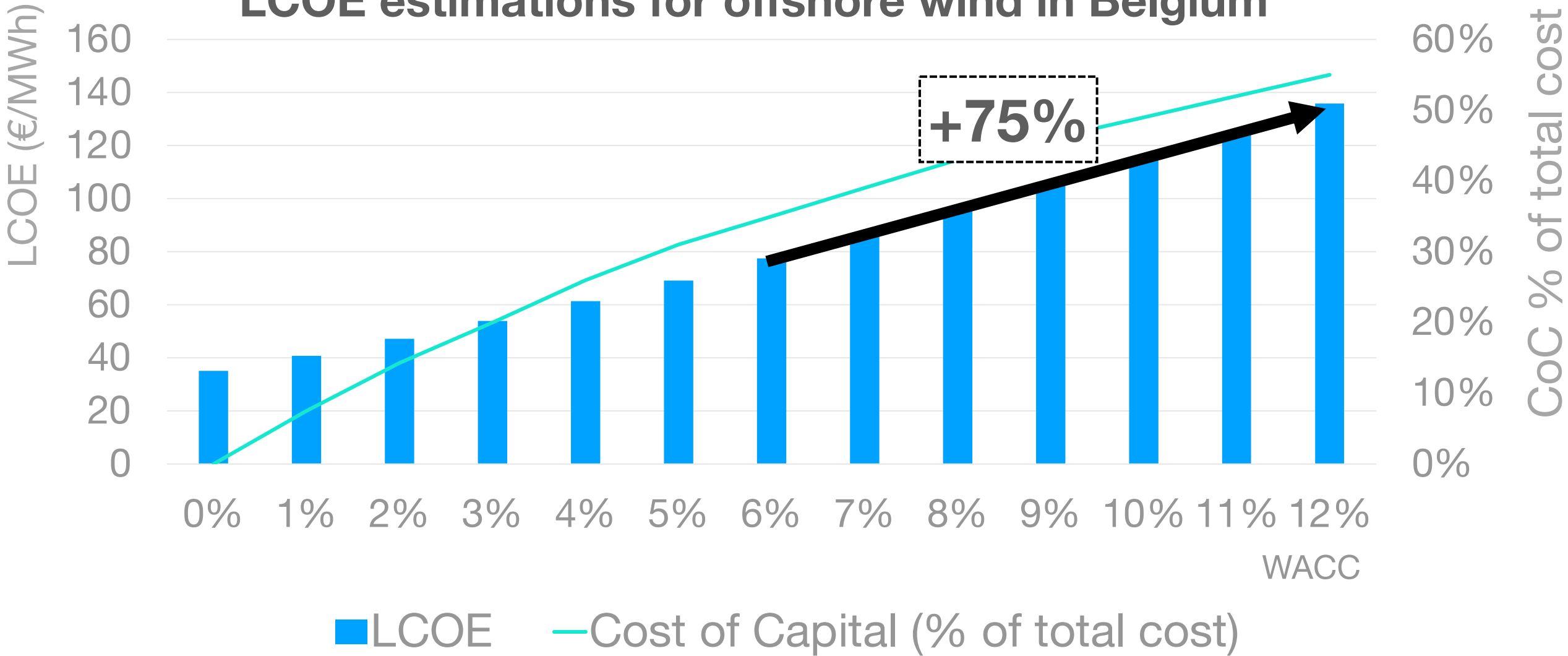
- Africa has an abundant availability of cheap & clean energy sources
- Europe needs power & molecules
- Export via cables, pipelines or shipping
- Conversion from power to H₂-derivatives
- Opportunity to attract industrial activity to Africa
- Role of port areas

A scenic landscape featuring a valley with a dense forest of tall trees. In the distance, a small village with several houses is visible. The background consists of rolling hills and mountains under a soft, hazy sky, suggesting a sunset or sunrise. The overall color palette is dominated by greens, blues, and warm tones from the sky.

Key messages

#1 Risk premium is important driver of clean tech cost

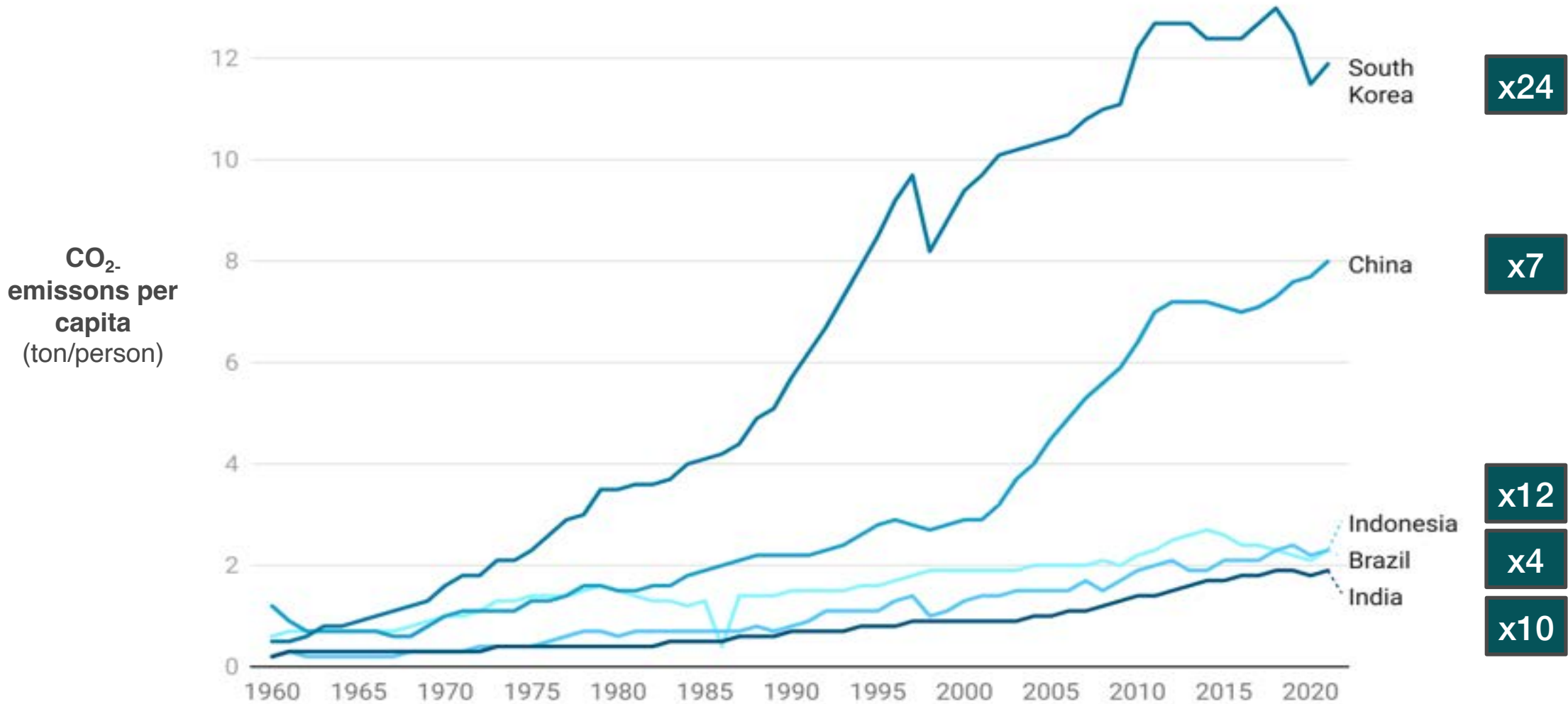
LCOE estimations for offshore wind in Belgium



Source: Own calculations

#2 Climate vs. Economics?

Will Africa follow the same emission pattern in its development?

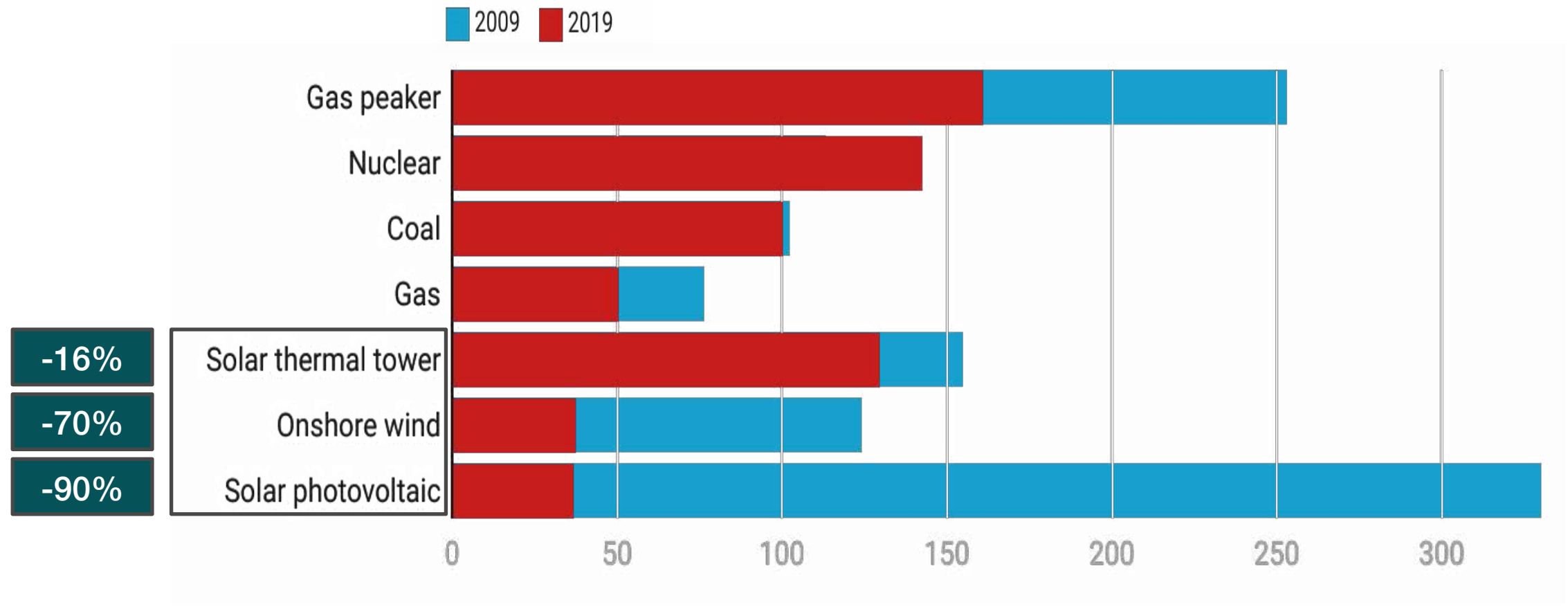


Emissions per capita 1960 – 2021.

Source: Our World in Data

#2 Climate vs. Economics?

No, we cannot extrapolate historical development patterns



LCOE per technoly in 2009 & 2019 (EUR/MWh)
Source: Our World in Data

#3 Climate can lead to regional development & new export opportunities



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