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Tipping positive change to avoid climate tipping points

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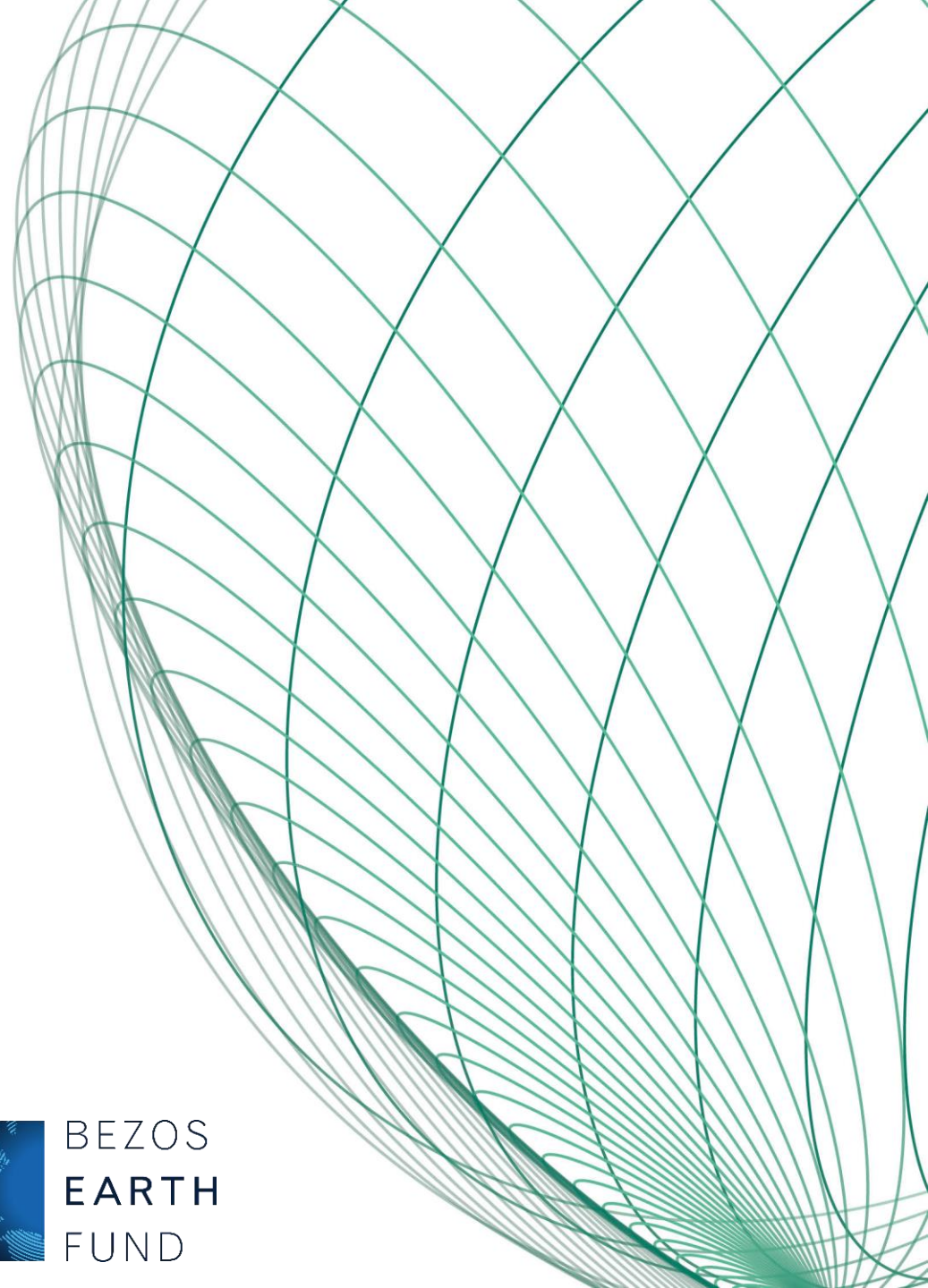
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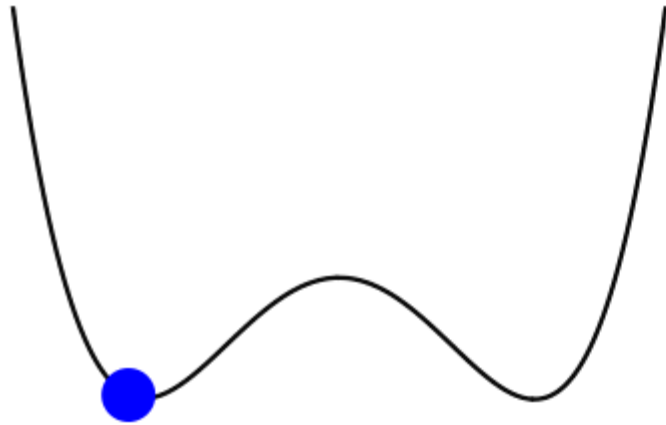
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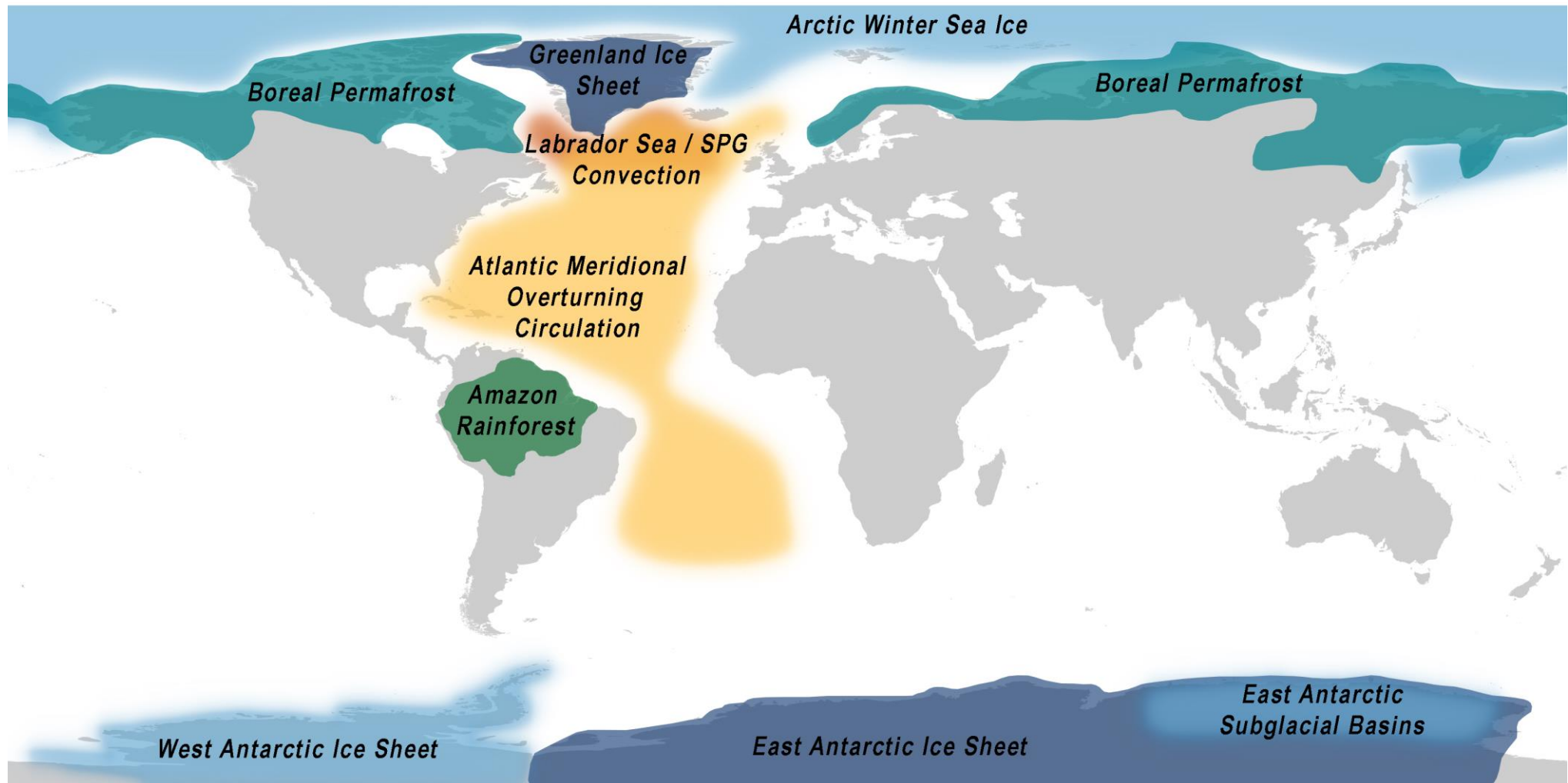


Generic example of passing a tipping point

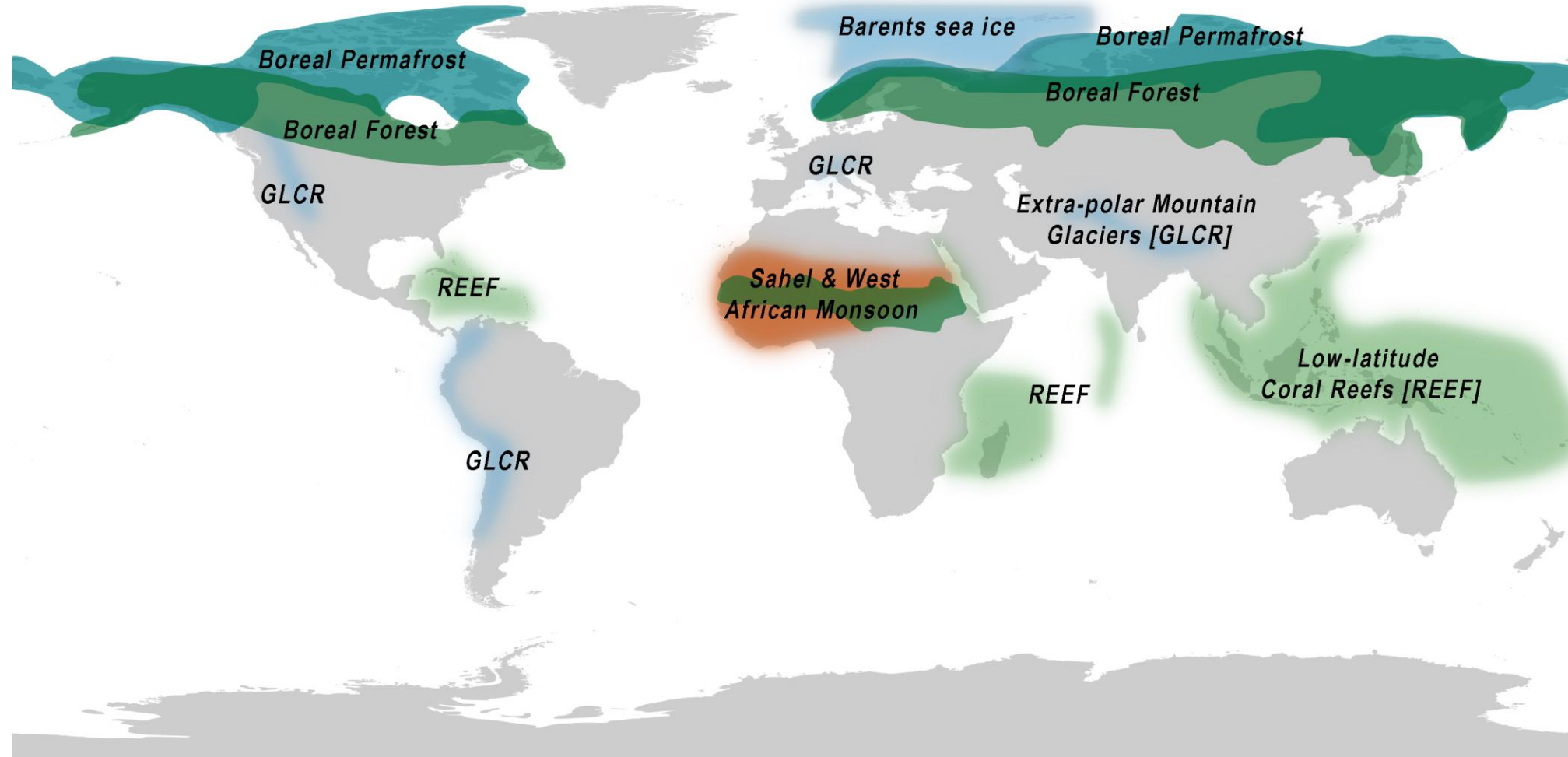


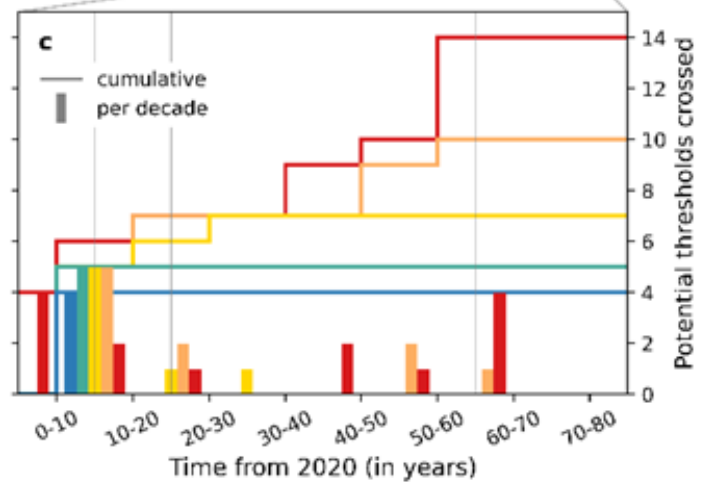
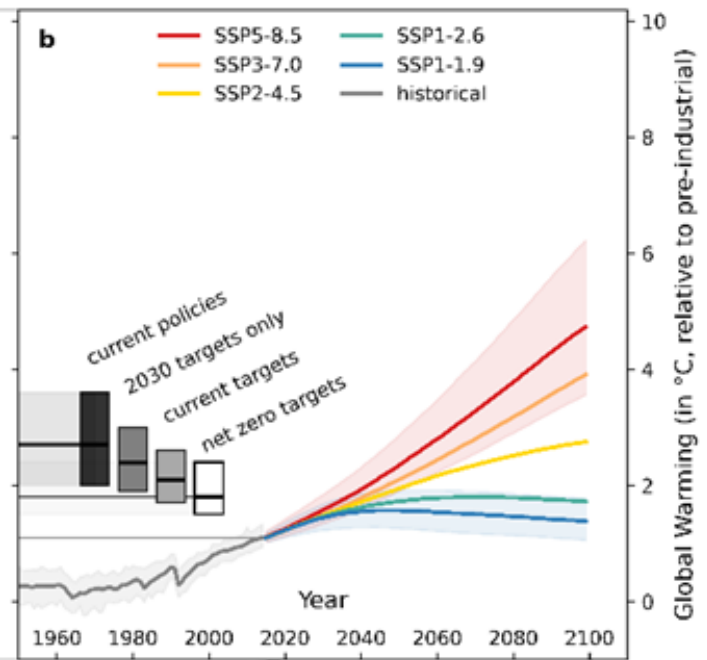
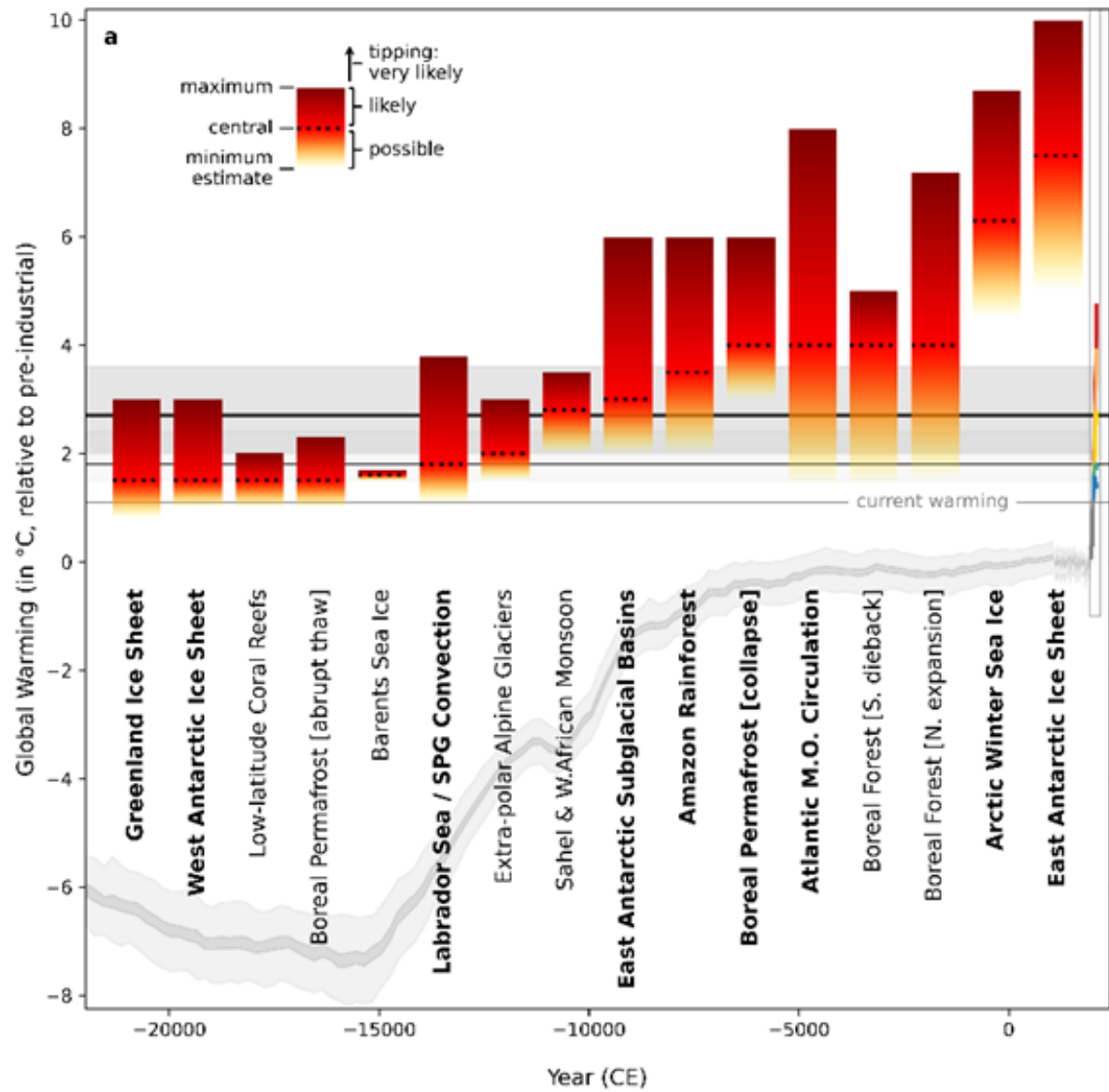
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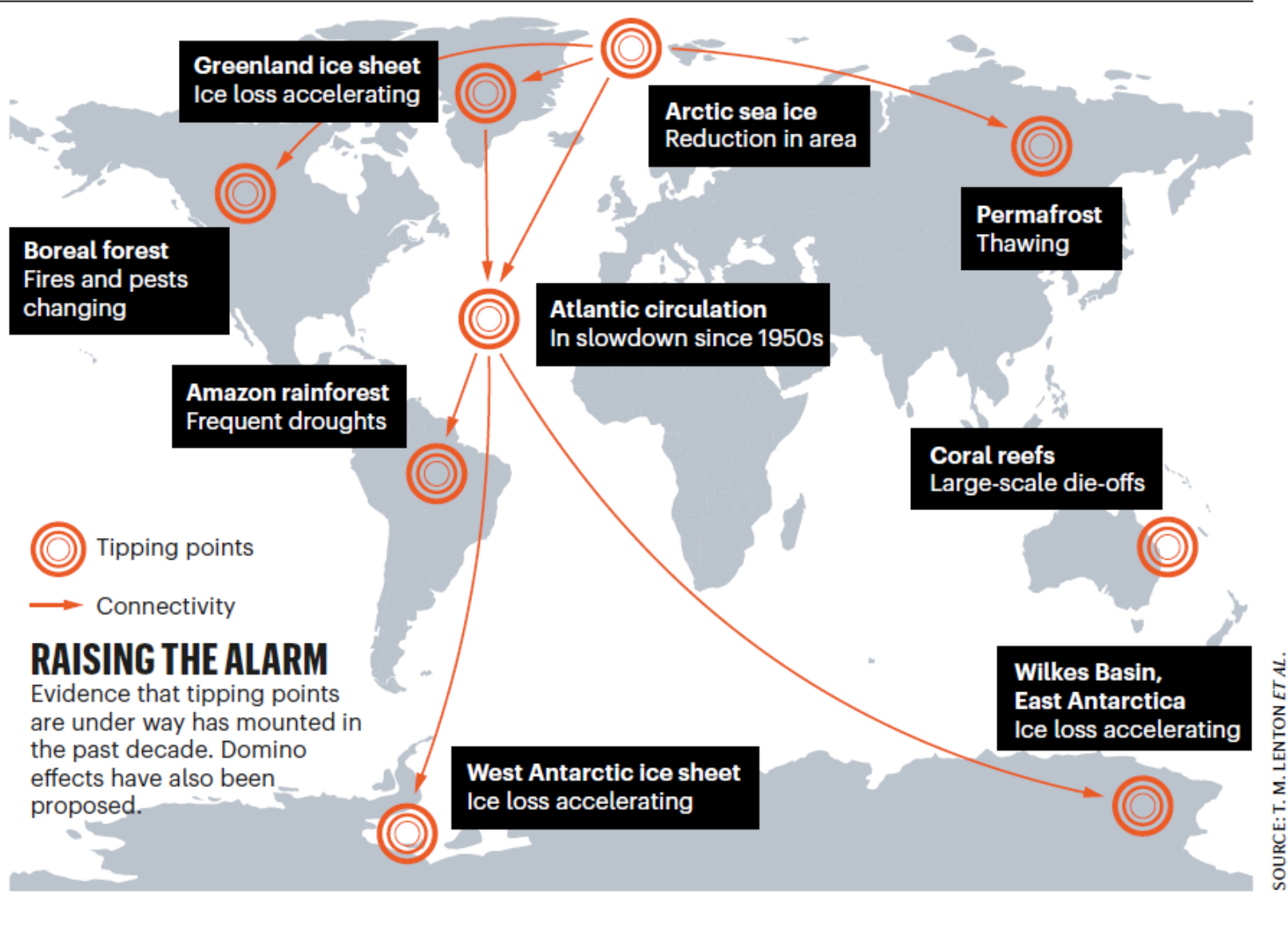
Global 'core' climate tipping elements



Regional 'impact' climate tipping elements

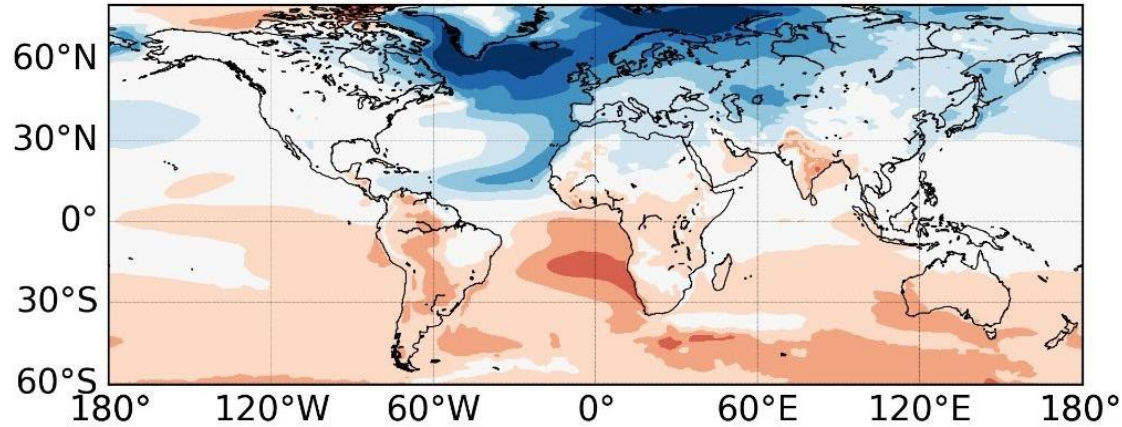






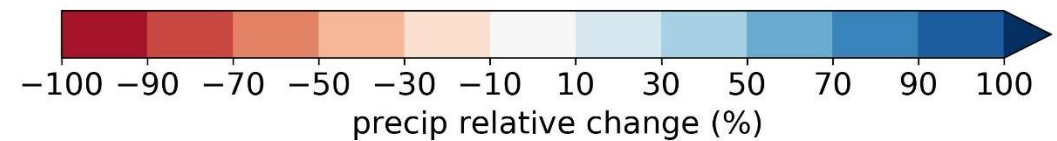
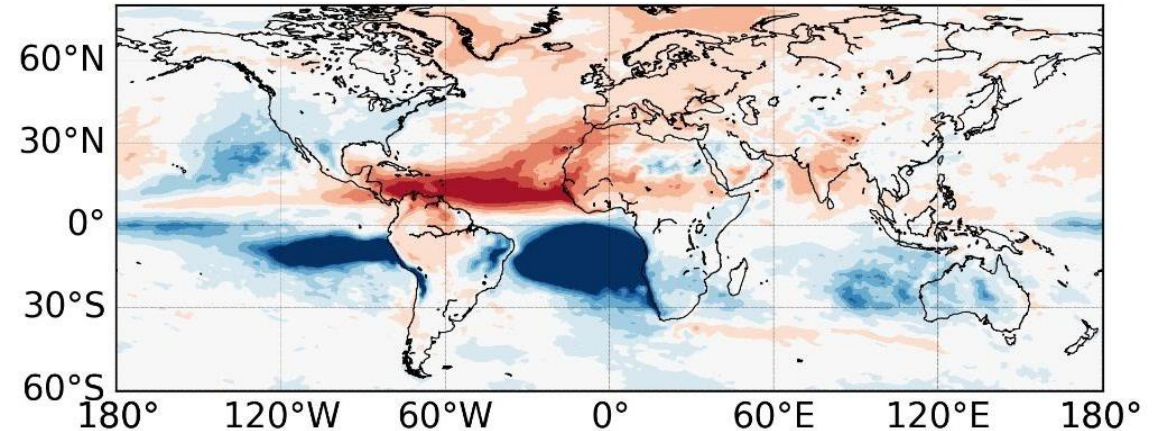
Impacts of global warming + a tipping point

AMOC collapse after 2.5°C warming



Temperature change

AMOC collapse after 2.5°C warming



Precipitation change

Change in suitability for growing staple crops

Wheat

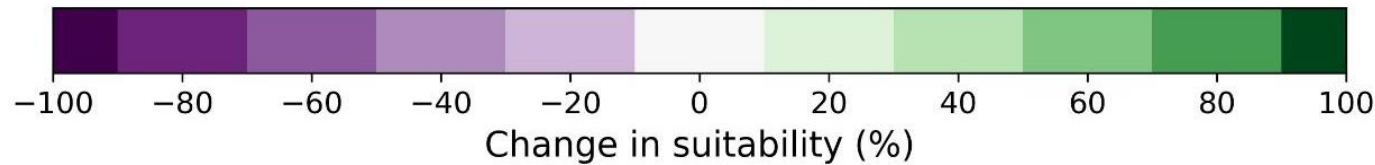
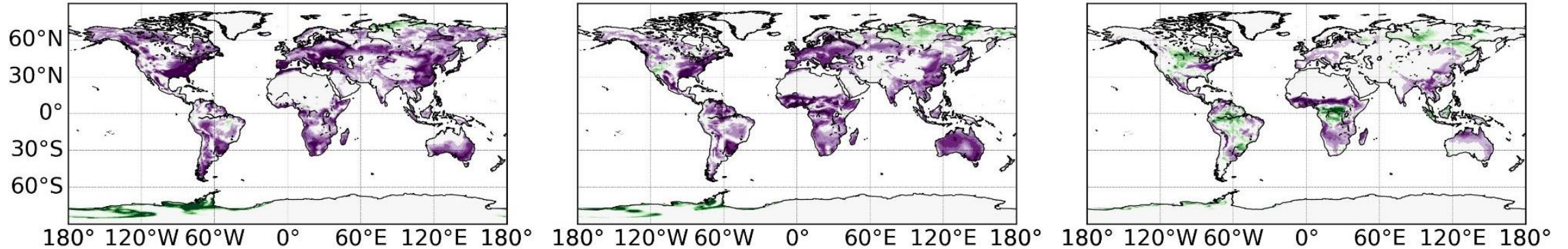
Maize

Rice

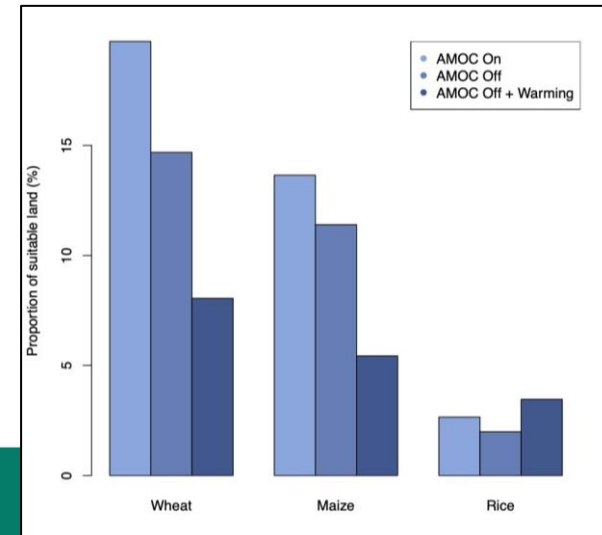
Wheat AMOC off + Warming

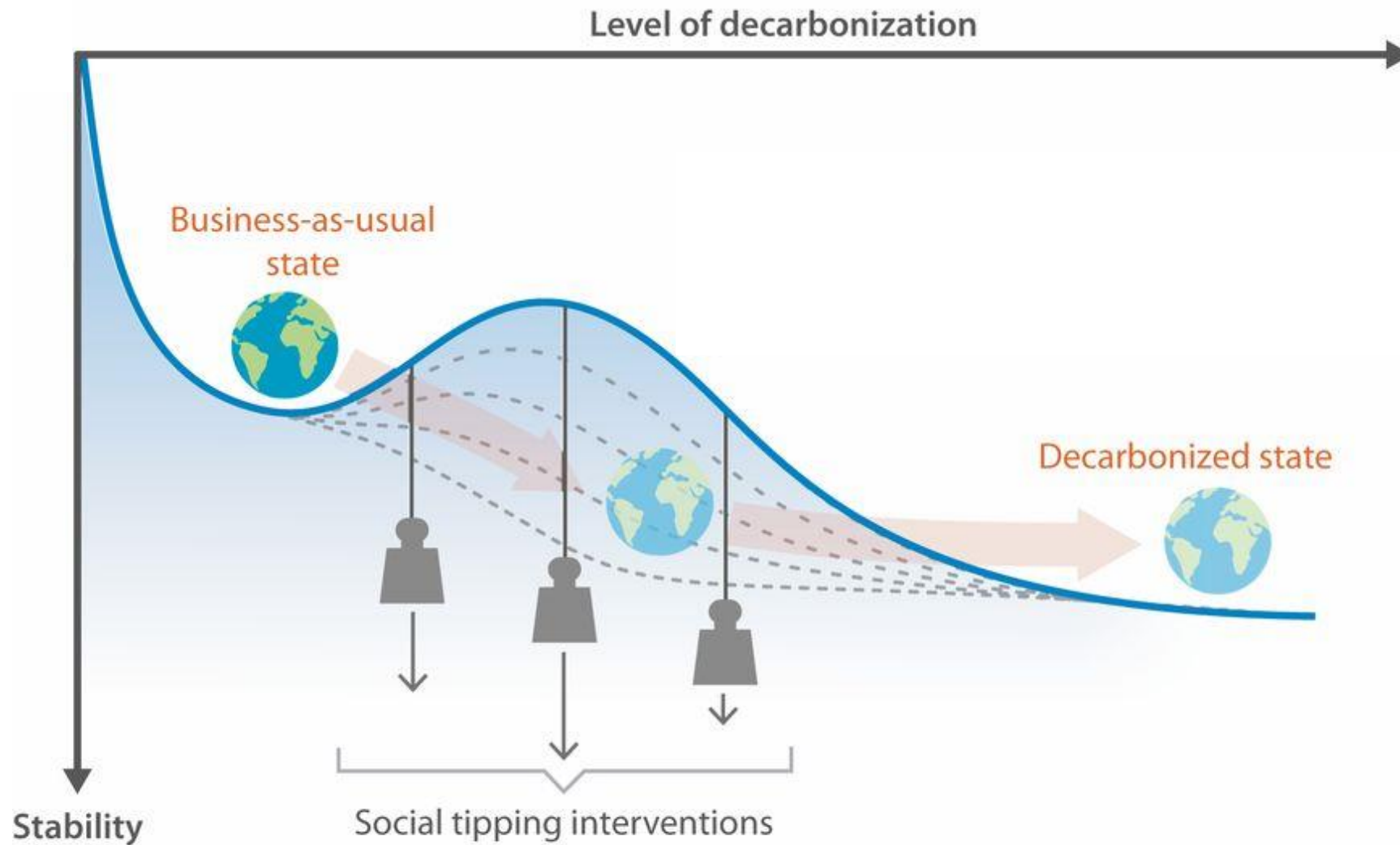
Maize AMOC off + Warming

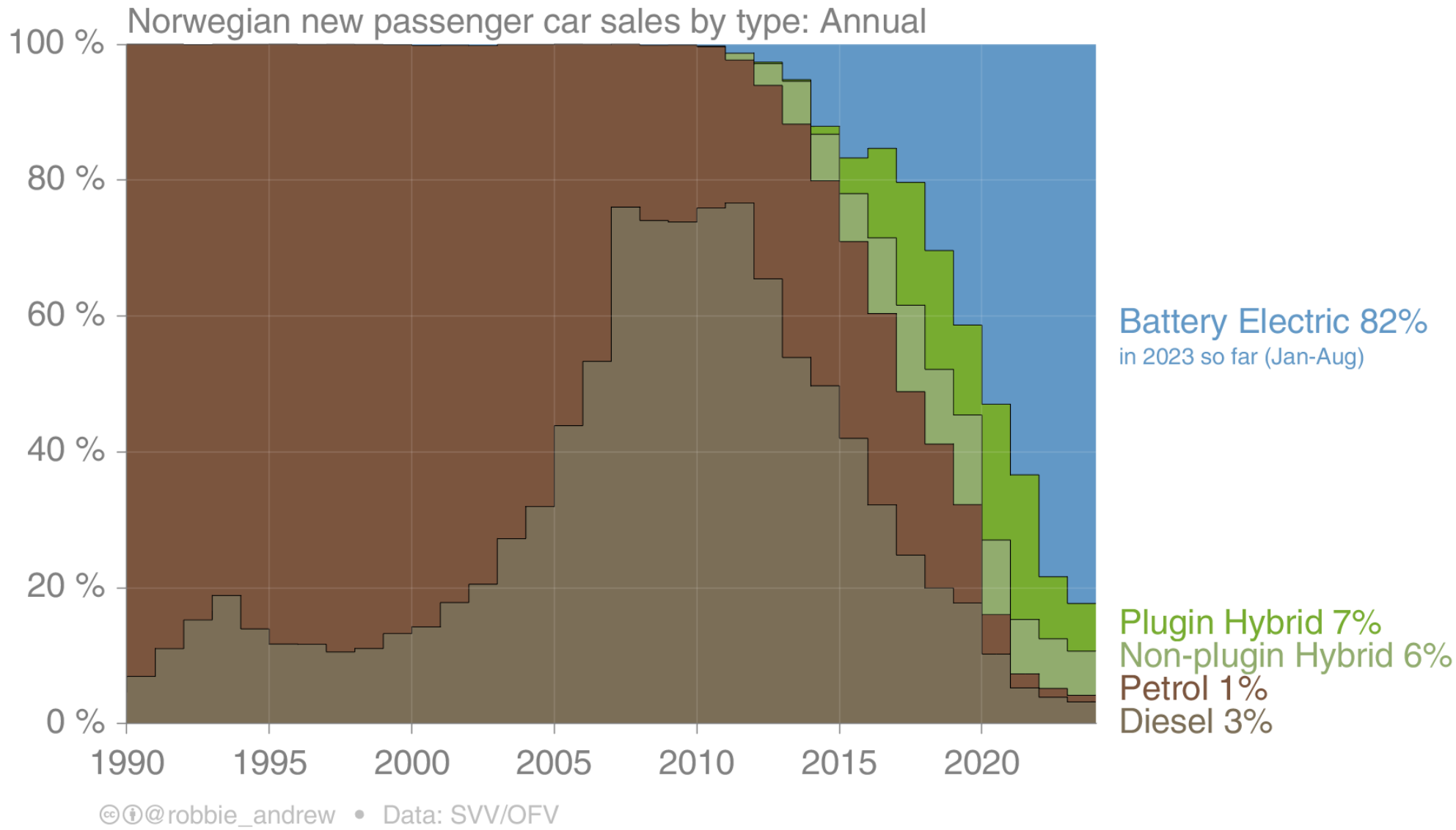
Rice AMOC off + Warming



ECOCROP data on optimal temperature, precipitation and growing season length

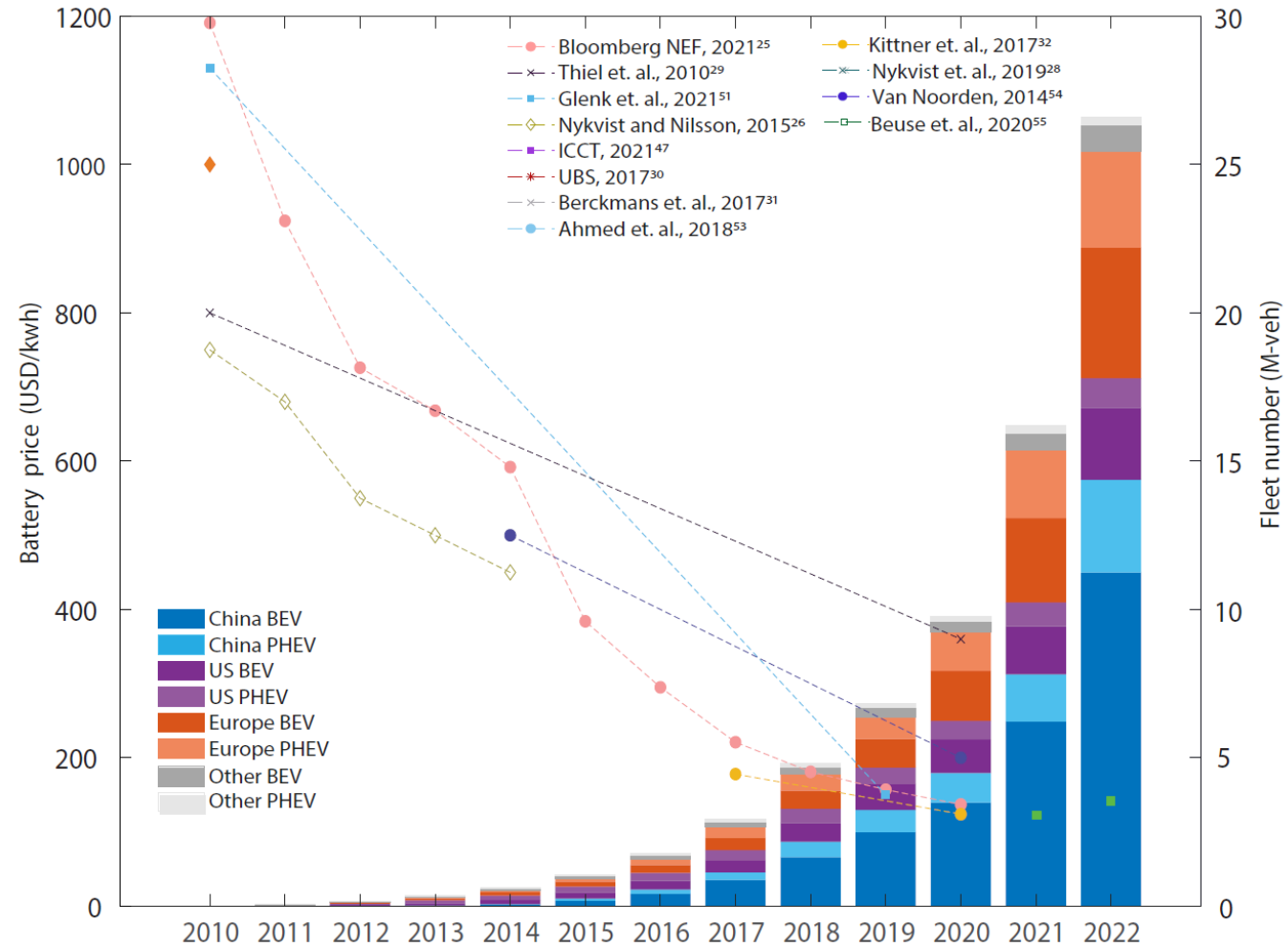




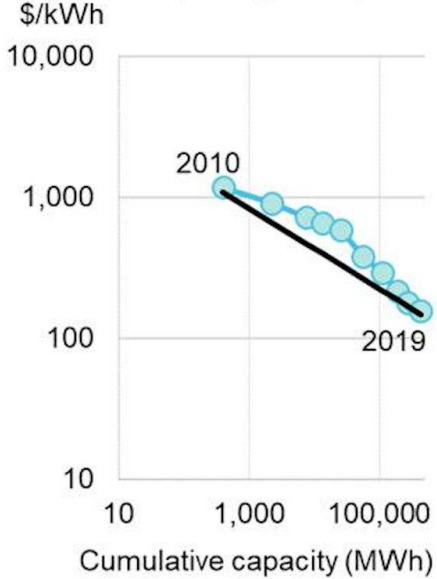




Exponential growth of the global EV fleet



Batteries pack price (\$/kWh)



Electric vehicles cheaper than petrol cars in major economies

EV & battery deployment up; costs down

EV cars cheaper than petrol cars in many markets

Petrol cars still cheaper

EV light trucks cheaper than diesel

Diesel trucks still cheaper

Renewables + battery storage cheaper than coal power

Coal still cheaper

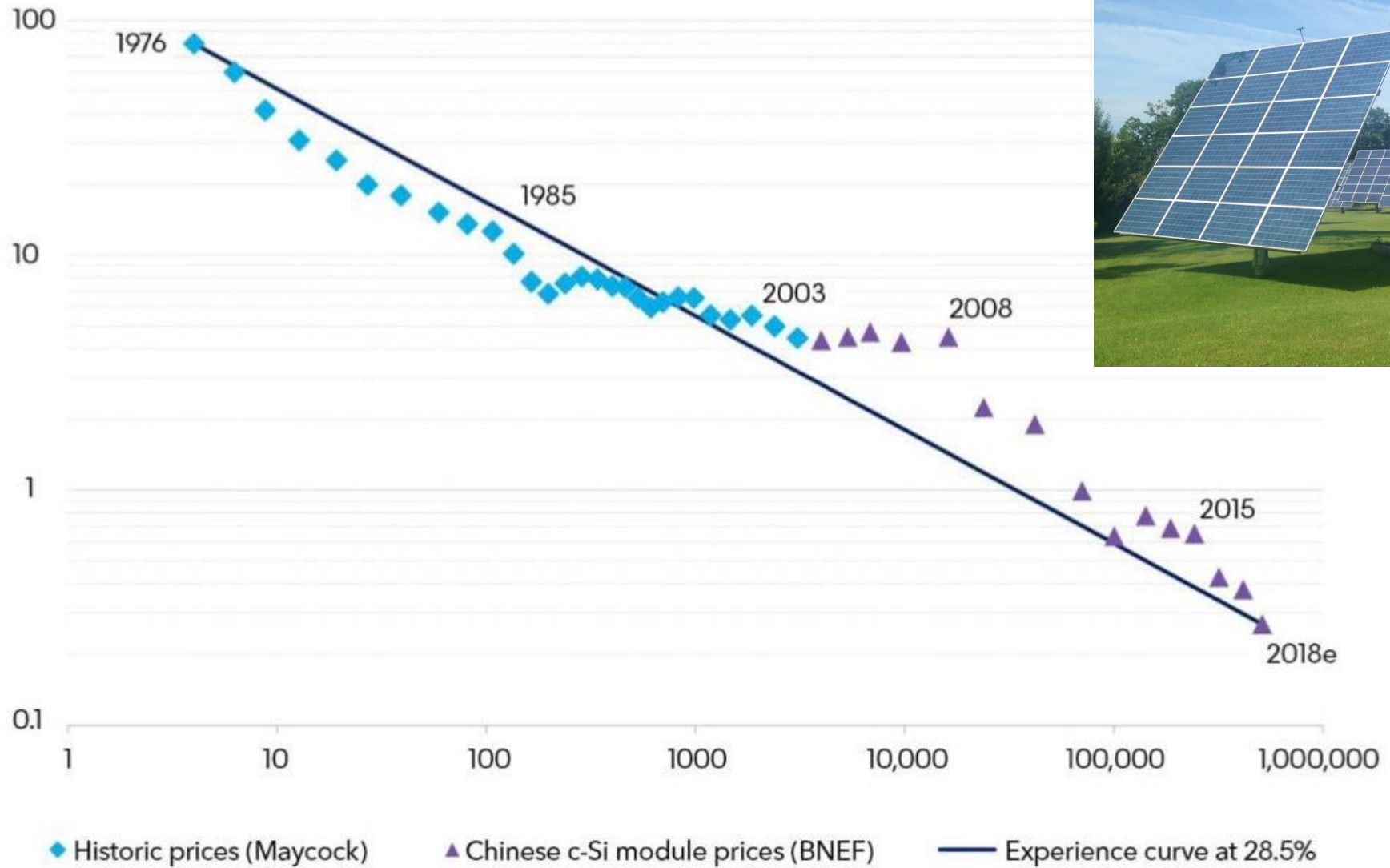
Oil firms commit fully to diversifying investments

Oil firms still hedging their bets

Electric vehicle support policies in major economies

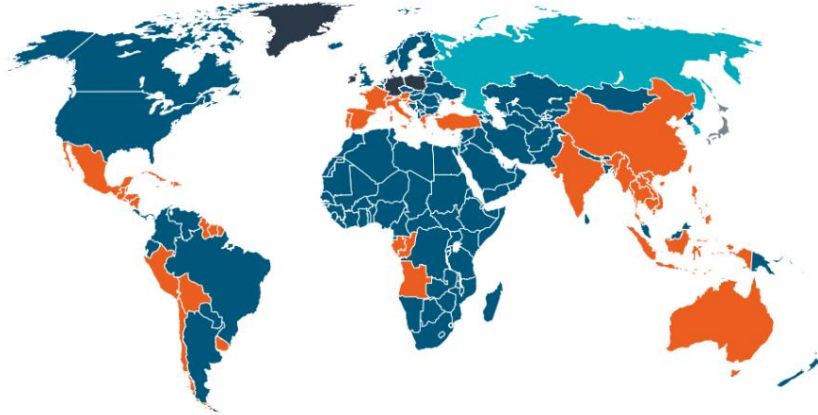
Petrol cars cheaper than electric vehicles

Module price (\$/W, 2018 real)

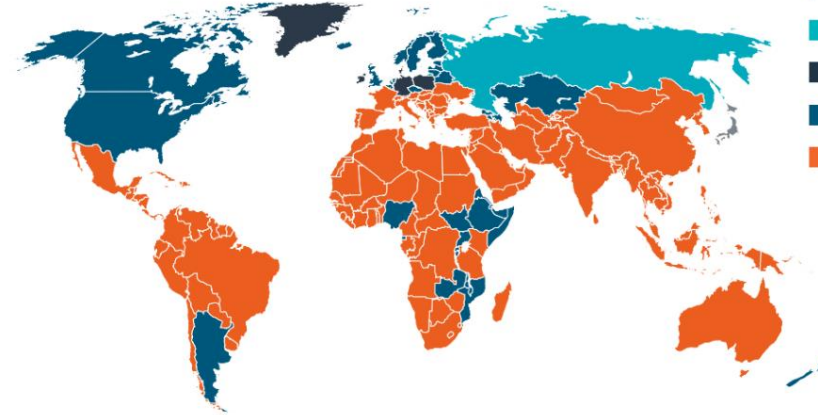


Levelized cost of electricity including storage

Cheapest source in 2020



Cheapest source in 2023

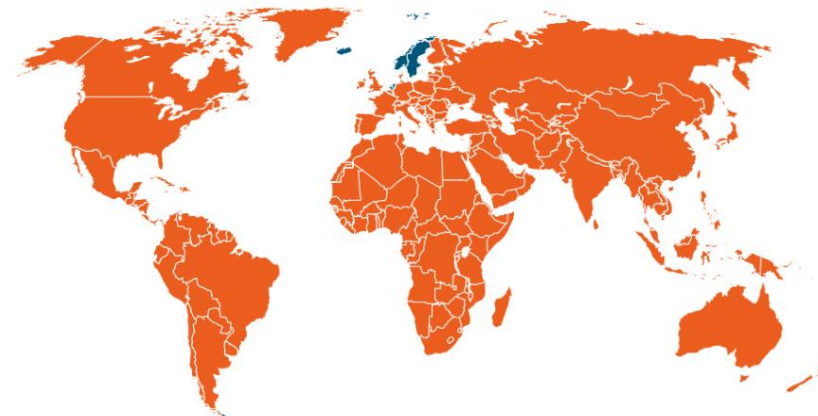


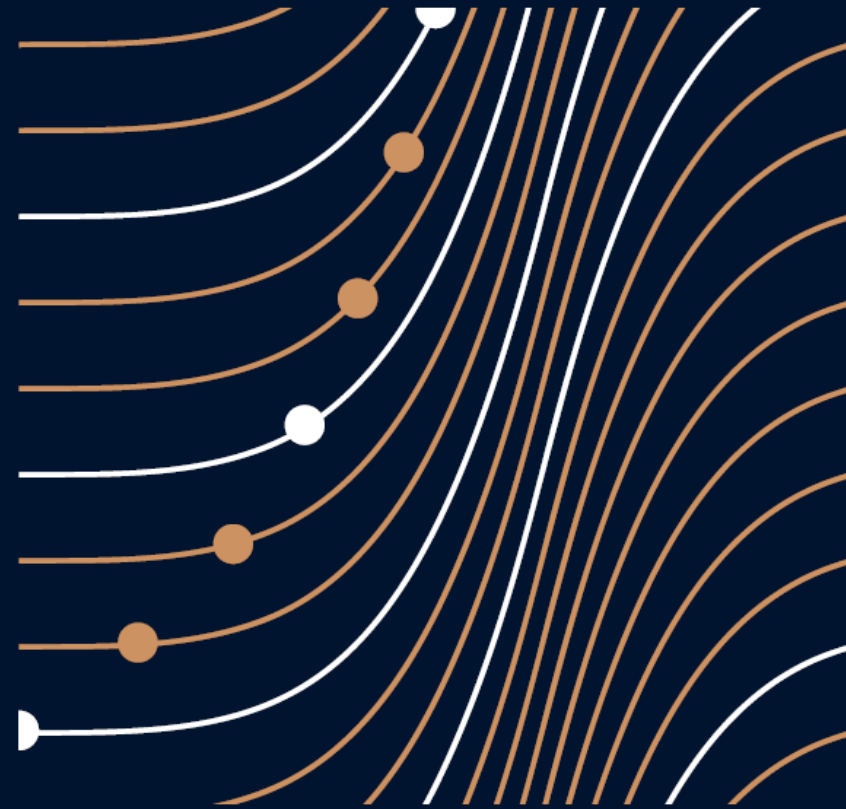
- Coal
- Nuclear
- Offshore
- Onshore
- Solar

Cheapest source in 2027



Cheapest source in 2030



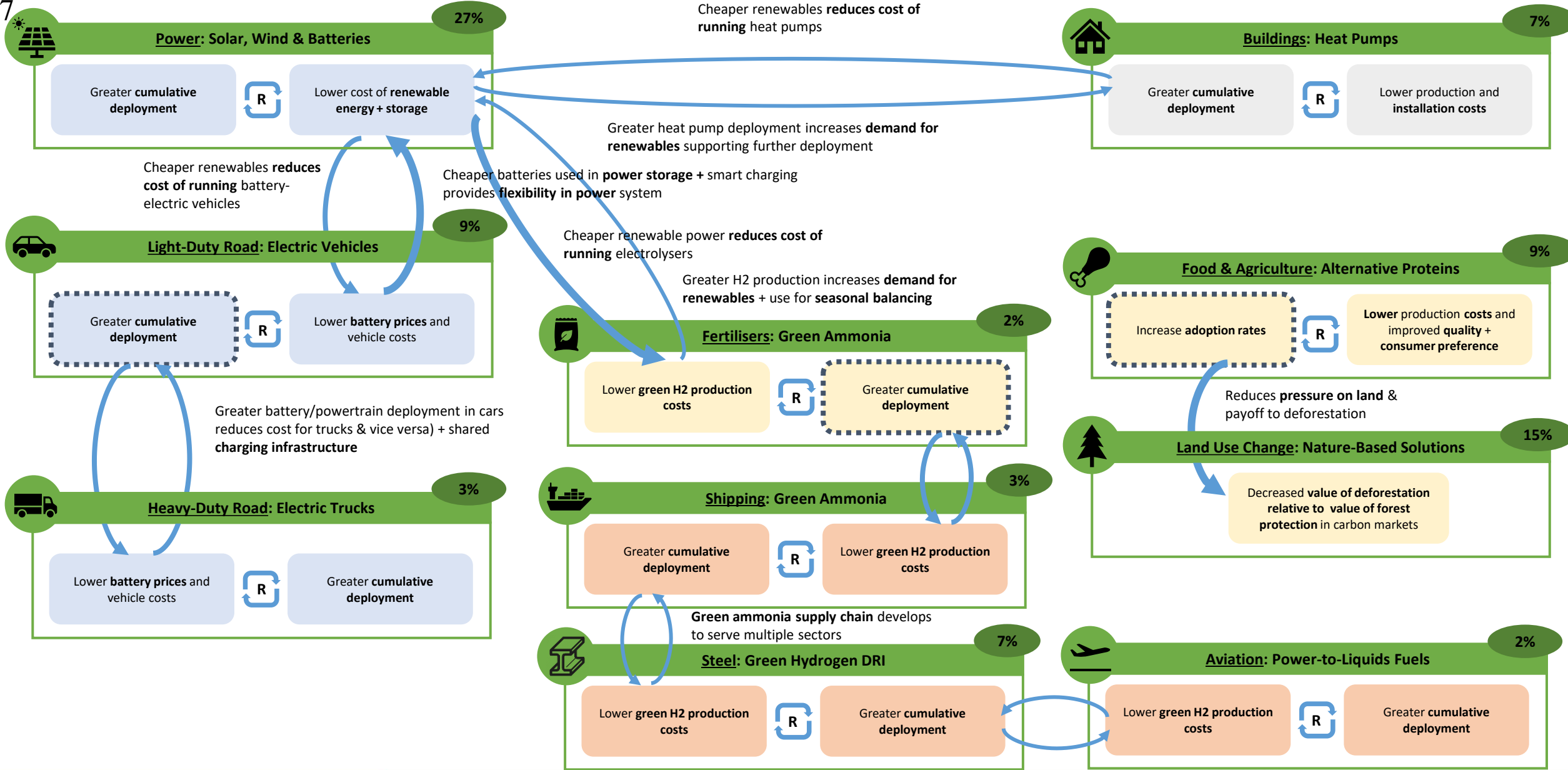


**THE BREAKTHROUGH EFFECT:
HOW TO TRIGGER A CASCADE OF
TIPPING POINTS TO ACCELERATE
THE NET ZERO TRANSITION**

Global Systems Institute



January 2023



Coming soon: Global Tipping Points Report

December 2023

An authoritative assessment of the risks and opportunities of both negative and positive tipping points in the Earth system and society.



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To find out more:
tippingpoints@exeter.ac.uk



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Questions?

Thanks to my research group and all my
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