CRITICAL DECADE FOR CLIMATE ACTION CONFERENCE

MONDAY 8 SEPTEMBER

Session 1: Keynote | 1.45-2.45pm

Midway through the critical decade: Accelerating climate action for the next five years and beyond

Speaker: Gonéri Le Cozannet, French Geological Survey

Chair: Robert Nicholls

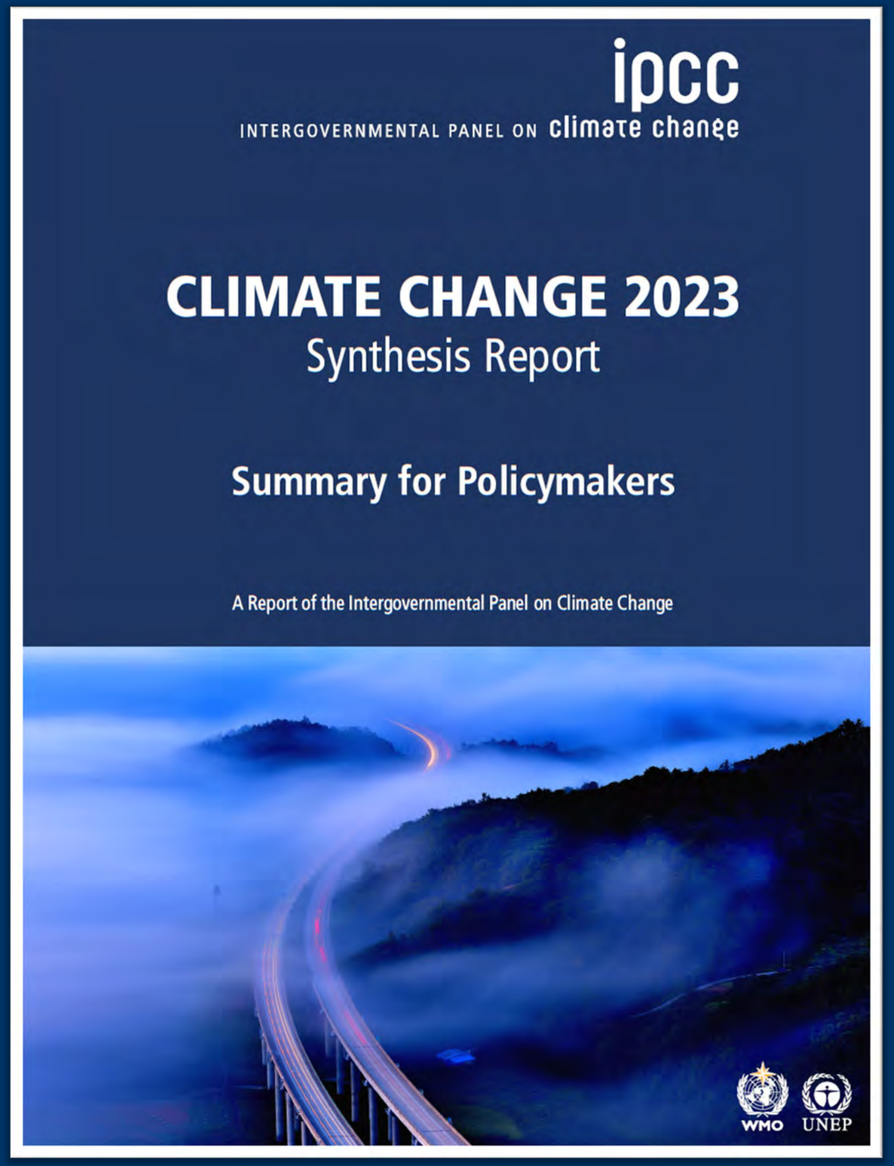
Rapporteur: Roland Smith

RÉPUBLIQUE FRANÇAISE
Liberté Égalité Fraternité

Géosciences pour une Terre durable brgm

Tyndall Centre for Climate Change Research

UEA University of East Anglia

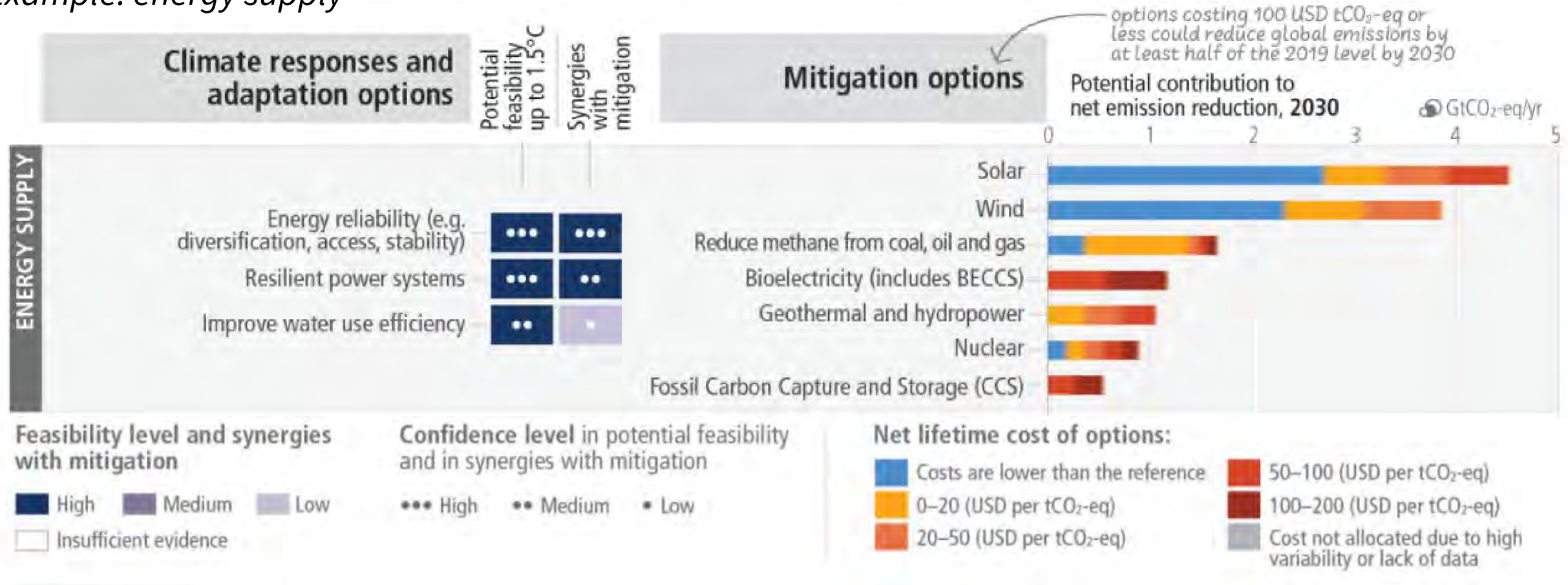


“Feasible, effective, and low-cost options for mitigation and adaptation are already available *with differences across systems and regions. (high confidence)*”

IPCC AR6 Synthesis Report SPM – C3 - https://www.ipcc.ch/report/ar6/syr/

Options to respond to climate change

Example: energy supply



Feasibility and effectiveness of adaptation options

Effectiveness and feasibility of adaptation options for water-related climate impacts and risk in Europe

Impact type	Adaptation option	Effectiveness	Feasibility: Economic	Technological	Institutional	Socio-cultural	Ecological	Geophysical	Confidence: Evidence	Agreement
Flooding - Coast/River	Flood defenses (Protect)	●	●	●	●	/	●	1	●	●
	Flood preparedness and early warning plans (Protect/Accommodate)	● 2	●	●	●	/	●	/	●	●
	Planned relocation (Retreat)	●	●	●	●	●	●	●	●	●
	No-build zone, restrict new developments (Avoidance)	●	●	●	●	/	/	/	●	●
	Flood insurance (Supporting)	●	●	●	●	●	●	/	●	●
Flooding - Coast	Ecosystem based (e.g. wetlands, oyster reefs) (Protect)	●	●	●	/	/	●	● 1	●	●
	Sediment based (e.g. nourishment) (Protect)	●	●	●	●	/	●	● 3	●	●
	Wet and dry proofing (Accommodate)	●	●	/	●	●	/	/	●	●
Flooding - River	Ecosystem based (e.g. floodplain restoration, widening riverbed) (Protect)	●	●	●	/	/	●	●	●	●
	Retention and diversion (Accommodate)	●	●	●	/	/	/	/	●	●
	Wet and dry proofing (Accommodate)	●	●	●	●	●	/	/	●	●
Flooding - Pluvial	Retention: green roofs (Accommodate)	●	/	/	/	/	●	●	●	●
	Retention: parks (Accommodate)	●	/	●	/	/	●	●	●	●
	Update drainage systems and pumps (Accommodate)	/	●	/	/	/	/	●	●	●

Assessement score

● Low ● Medium ● High

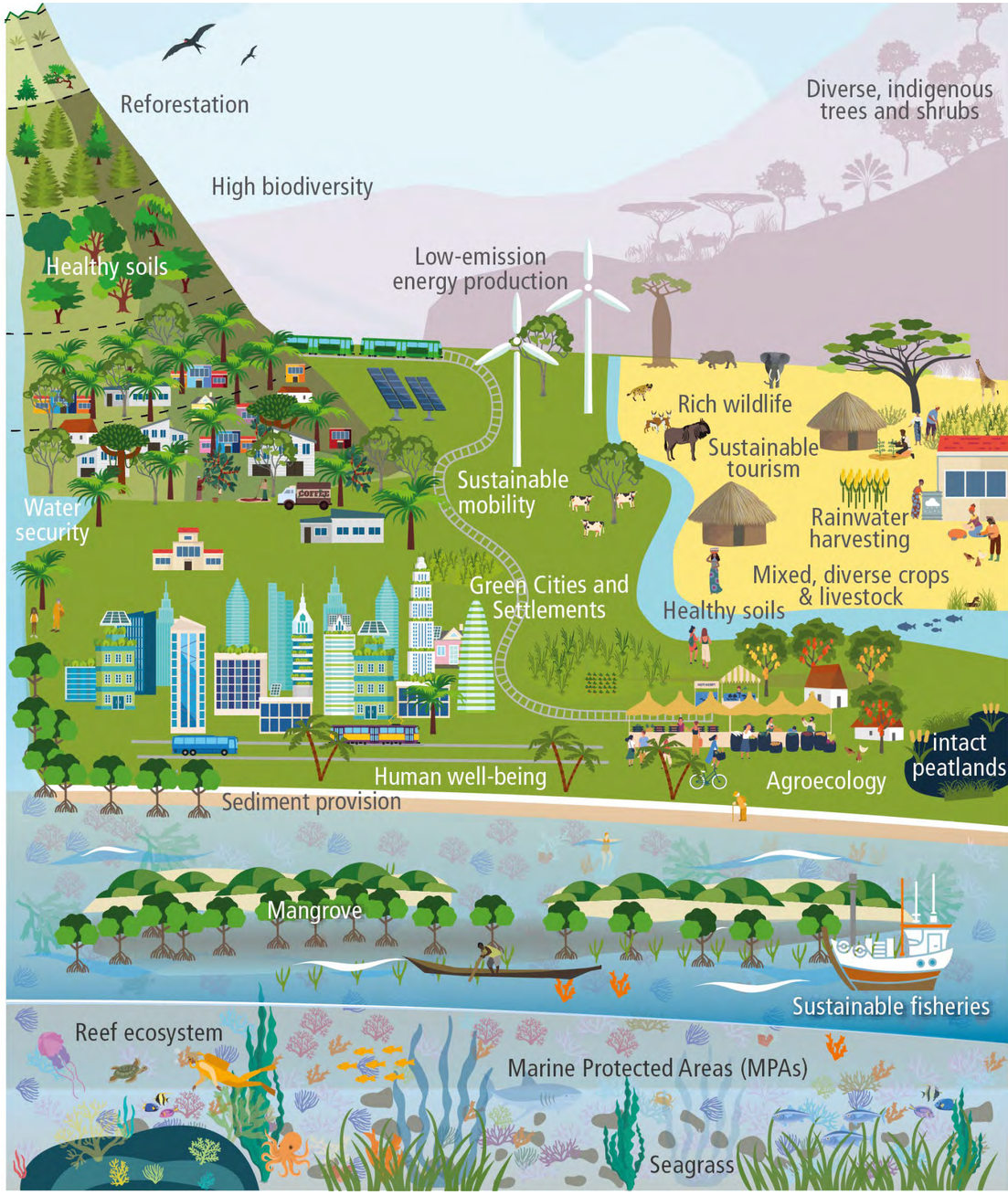
/ = no/limited evidence

1 = Physically hampered in highly urbanized regions.
2 = Low on preventing damage, medium on preventing fatalities.
3 = Availability of sand can hamper feasibility in Southern Europe.
4 = In Southern Europe, no evidence for other parts of Europe.
5 = Medium in Southern Europe and high in Western and Central Europe/Northern Europe.

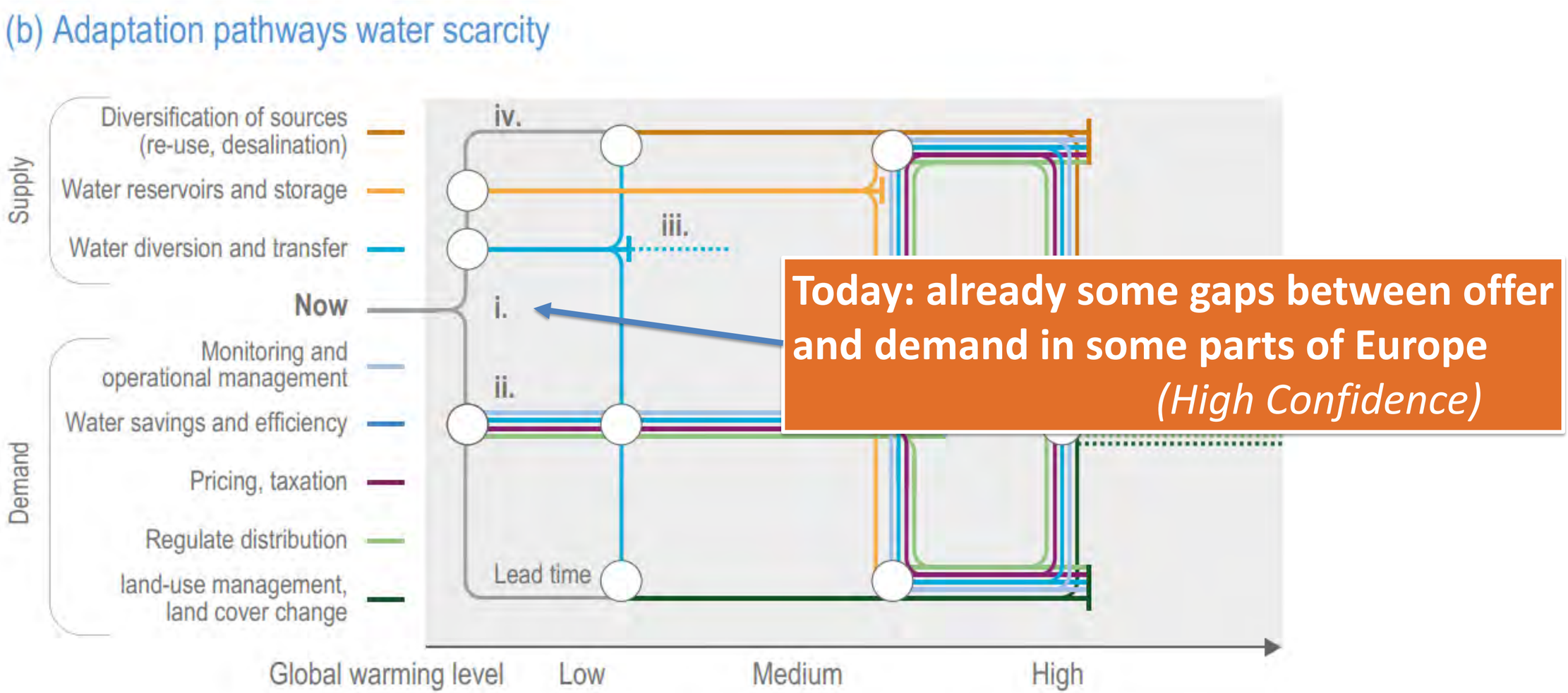
AR6 WG2 TS https://www.ipcc.ch/report/ar6/wg2/downloads/report/IPCC_AR6_WGII_TechnicalSummary.pdf

Many effective and feasible options also provide wider benefits

- Cities: clean energy, green infrastructure, public transport, walking and cycling, urban forests, wetlands and agriculture
- Agriculture and food: demand-side policies, sustainable healthy food (plant-based), agroecological practices, agroforestry…
- …

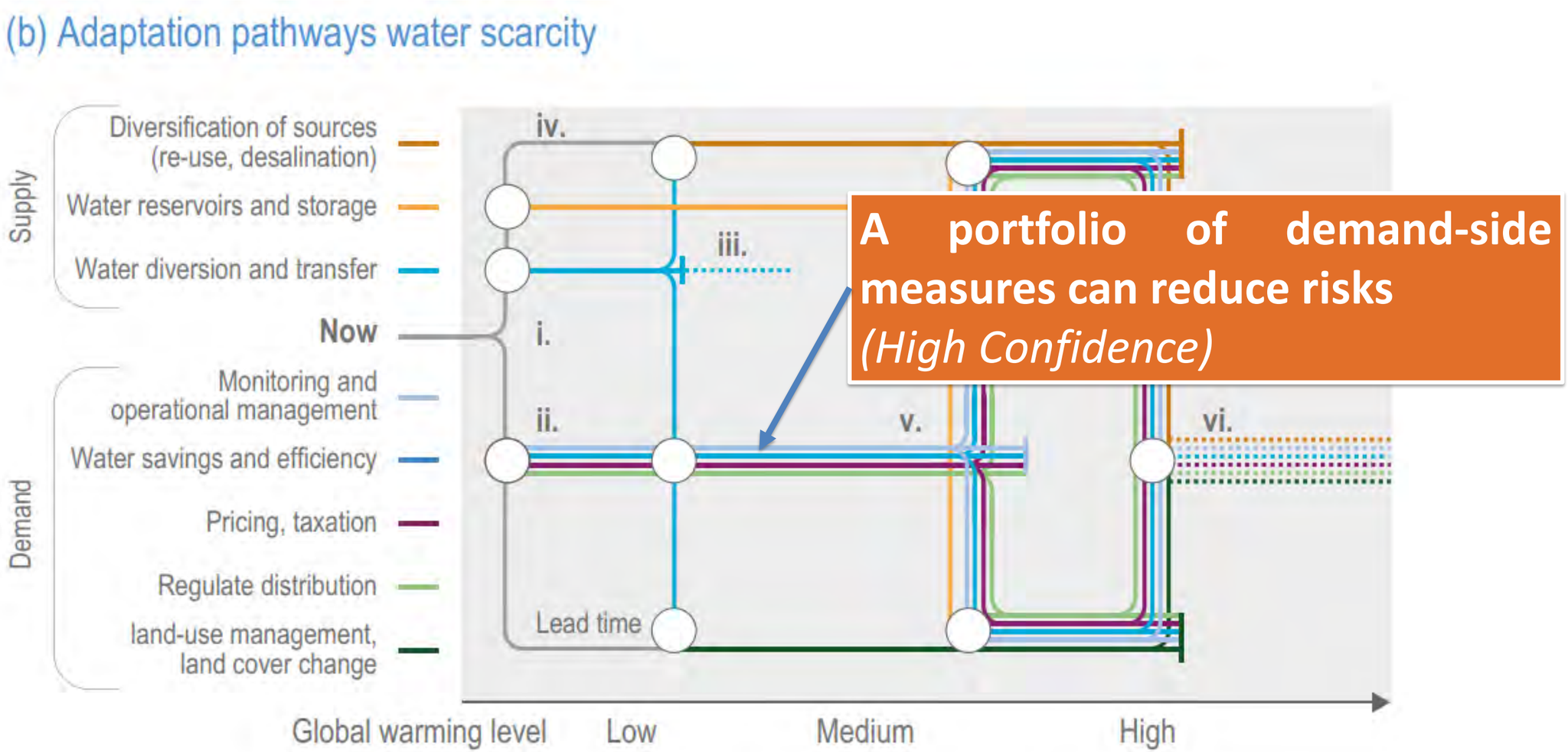


Transitioning toward climate resilient development



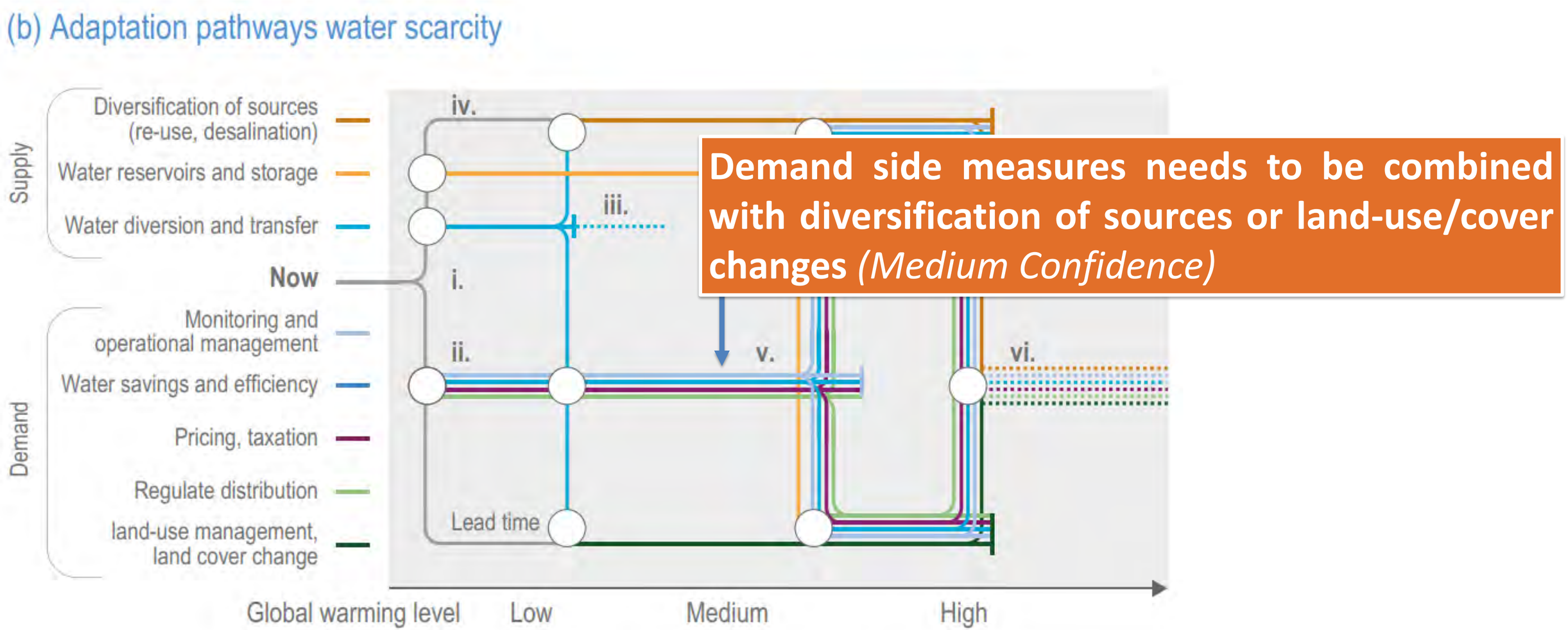
AR6 WGII Ch13 – Fig 13.31

Transitioning toward climate resilient development



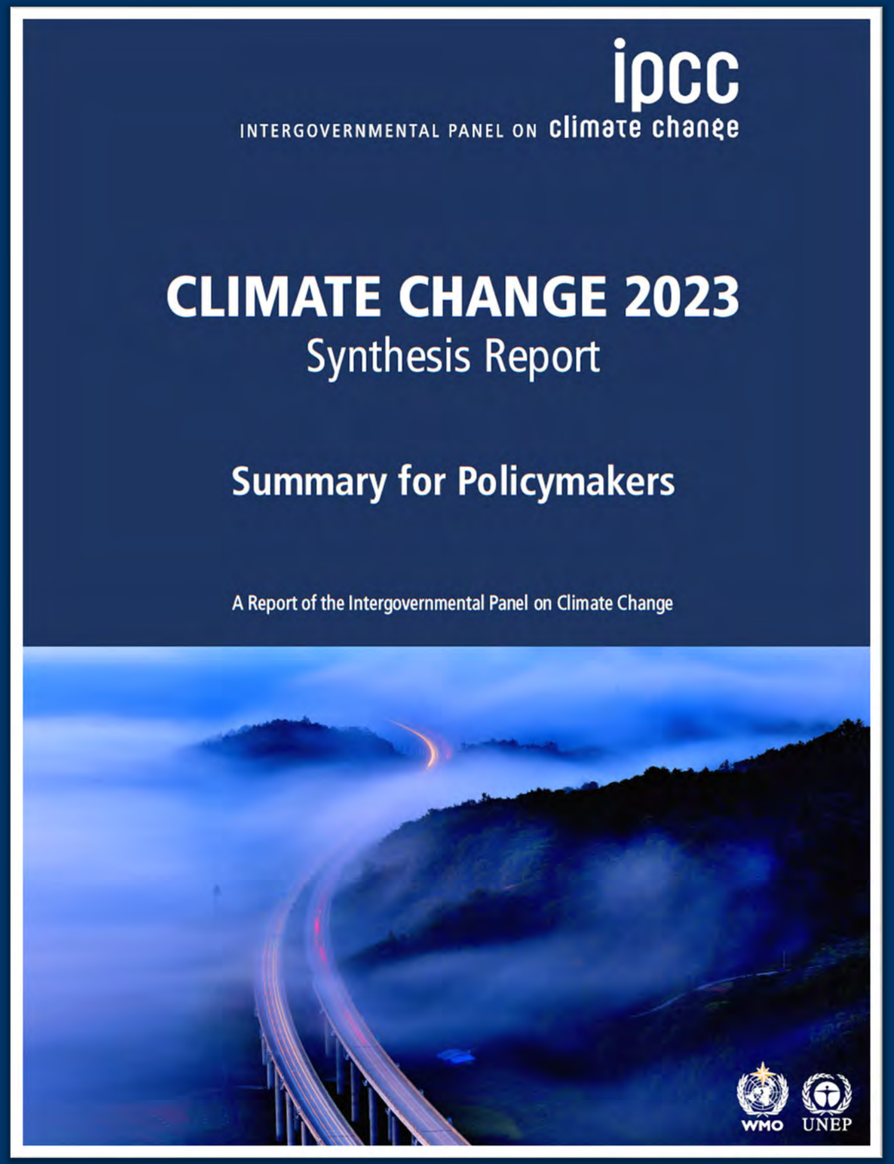
AR6 WGII Ch13 – Fig 13.31

Transitioning toward climate resilient development



Demand side measures needs to be combined with diversification of sources or land-use/cover changes *(Medium Confidence)*

AR6 WGII Ch13 – Fig 13.31



Options to respond to climate change are available already, but

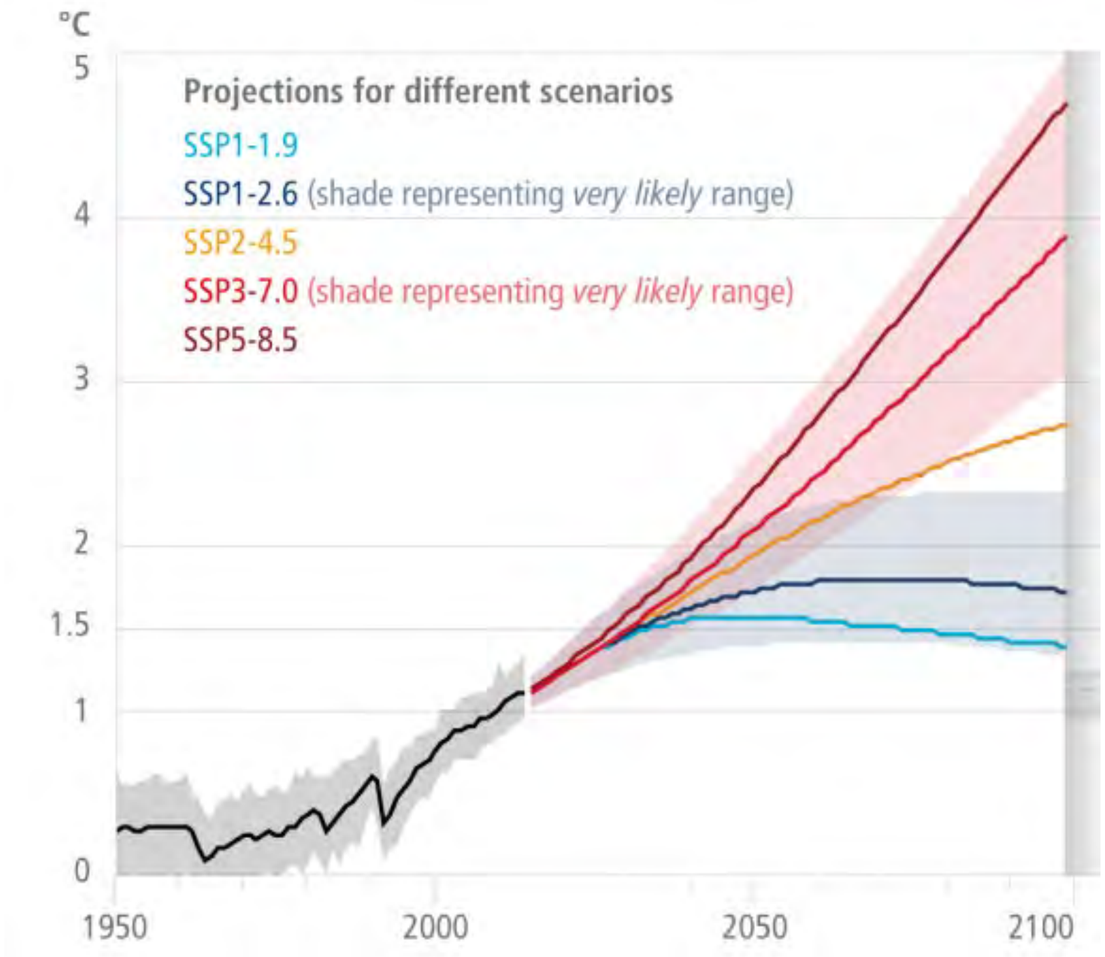
"There is a rapidly closing window of opportunity to secure a liveable and sustainable future for all *(very high confidence)*"

How are we using this window of opportunity?

IPCC AR6 Synthesis Report SPM – C1 - https://www.ipcc.ch/report/ar6/syr/

AR6 SYR SPM; UNEP, 2024 – Emission Gap Report; HCC, 2025, Rapport Annuel
JRC/IEA EDGAR GHG emissions for all world countries

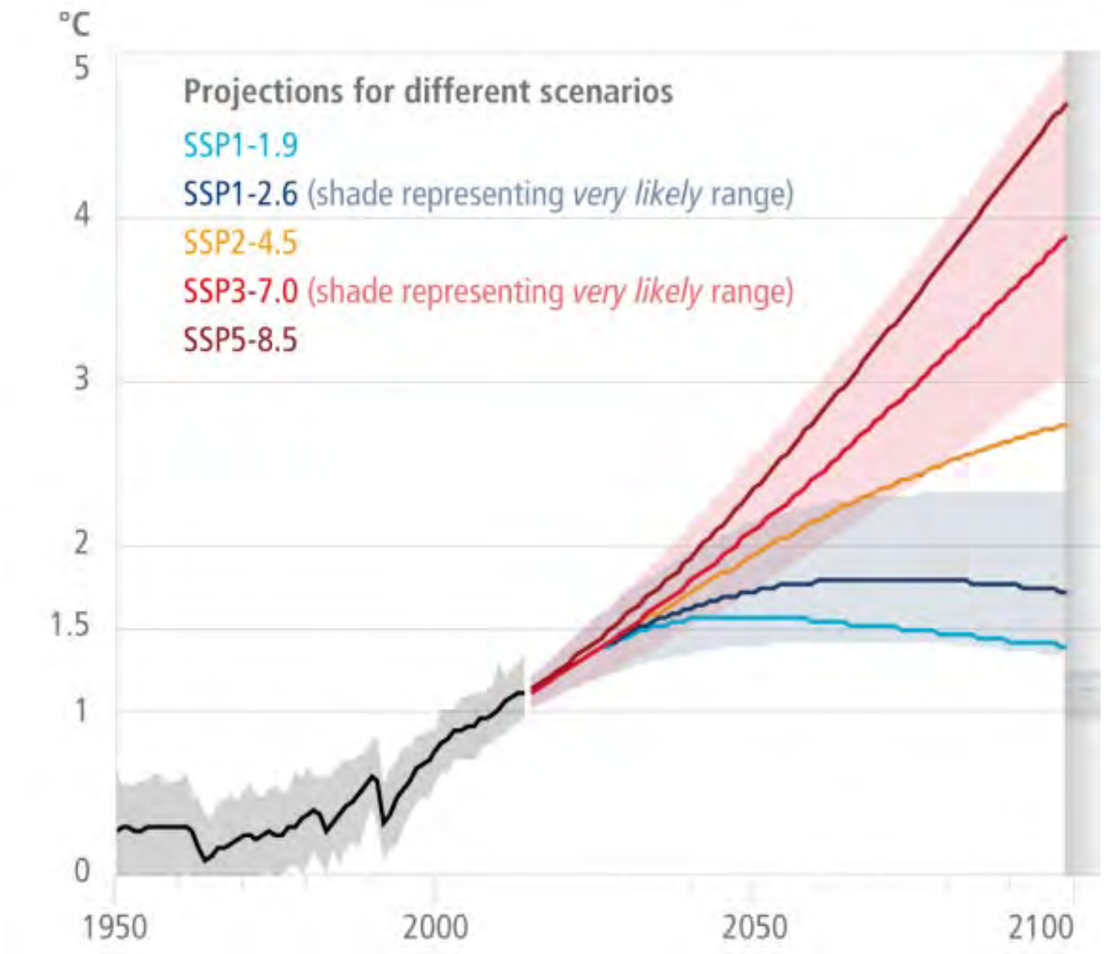
Climate policies have recorded some concrete advances

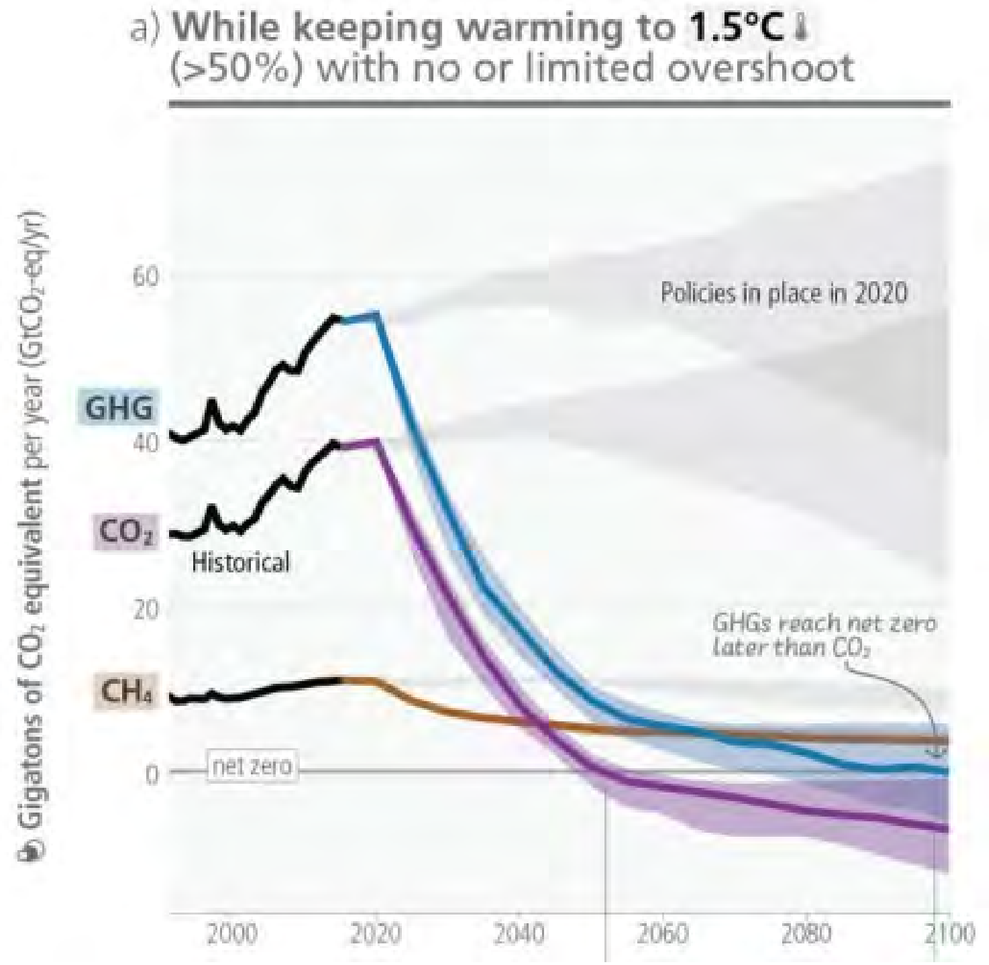


AR6 WGI SPM www.ipcc.ch

- Several Gt CO_2-eq/year have been avoided already owing to climate policies (AR6 SYR SPM)
- Since 2015, 60 countries have reduced their emissions, 147 countries have reduced their carbon emissions per GDP unit (JRC/IEA, 2024)
- 107 countries (82% of global emissions) have committed to reach carbon neutrality (UNEP, 2024)

Climate policies remain insufficient to meet the targets of the Paris agreement



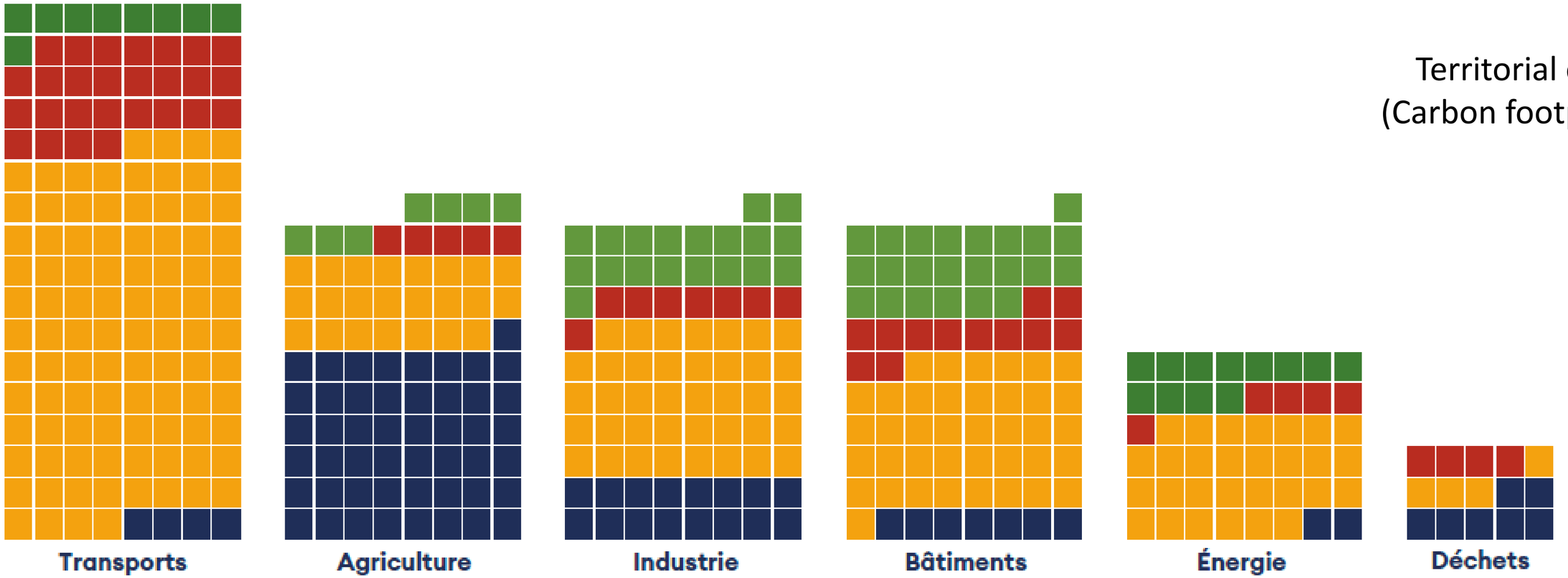


Gonéri Le Cozannet, French Geological Survey and French Climate Change Committee, Haut conseil pour le climat: "Midway through the critical decade"

Haut Conseil pour le Climat – Annual report https://www.hautconseilclimat.fr/publications/
Based on Citepa (2025), Format Secten & DGEC

Example: achieved and planned greenhouse gas emissions in France

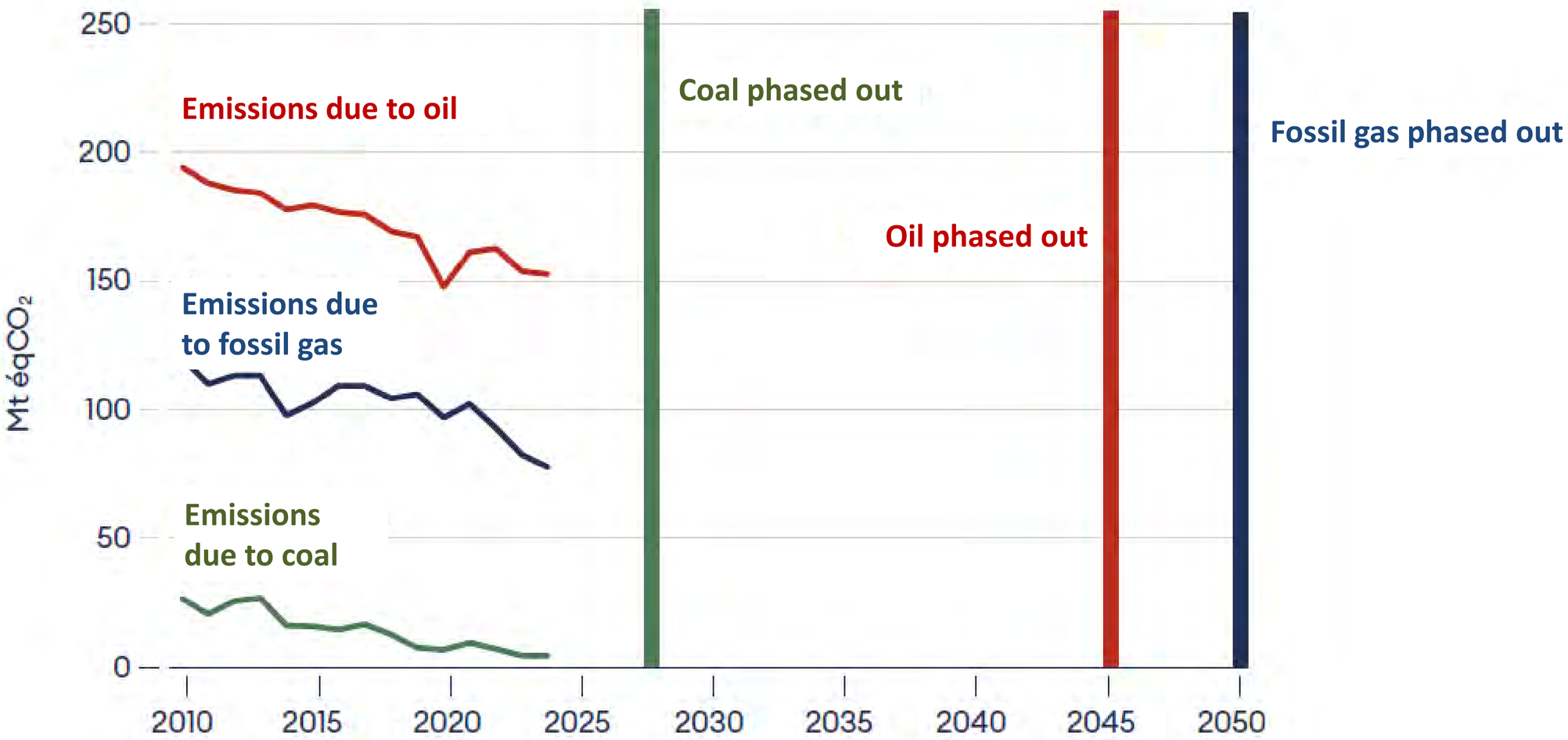
Territorial emissions
(Carbon footprint: ~x1,6)



HAUT CONSEIL pour le CLIMAT

Haut Conseil pour le Climat – Annual report https://www.hautconseilclimat.fr/publications/
Based on Citepa (2025), Format Secten & annonces président République at COP28

Example: phasing out coal, oil and fossil gas in France



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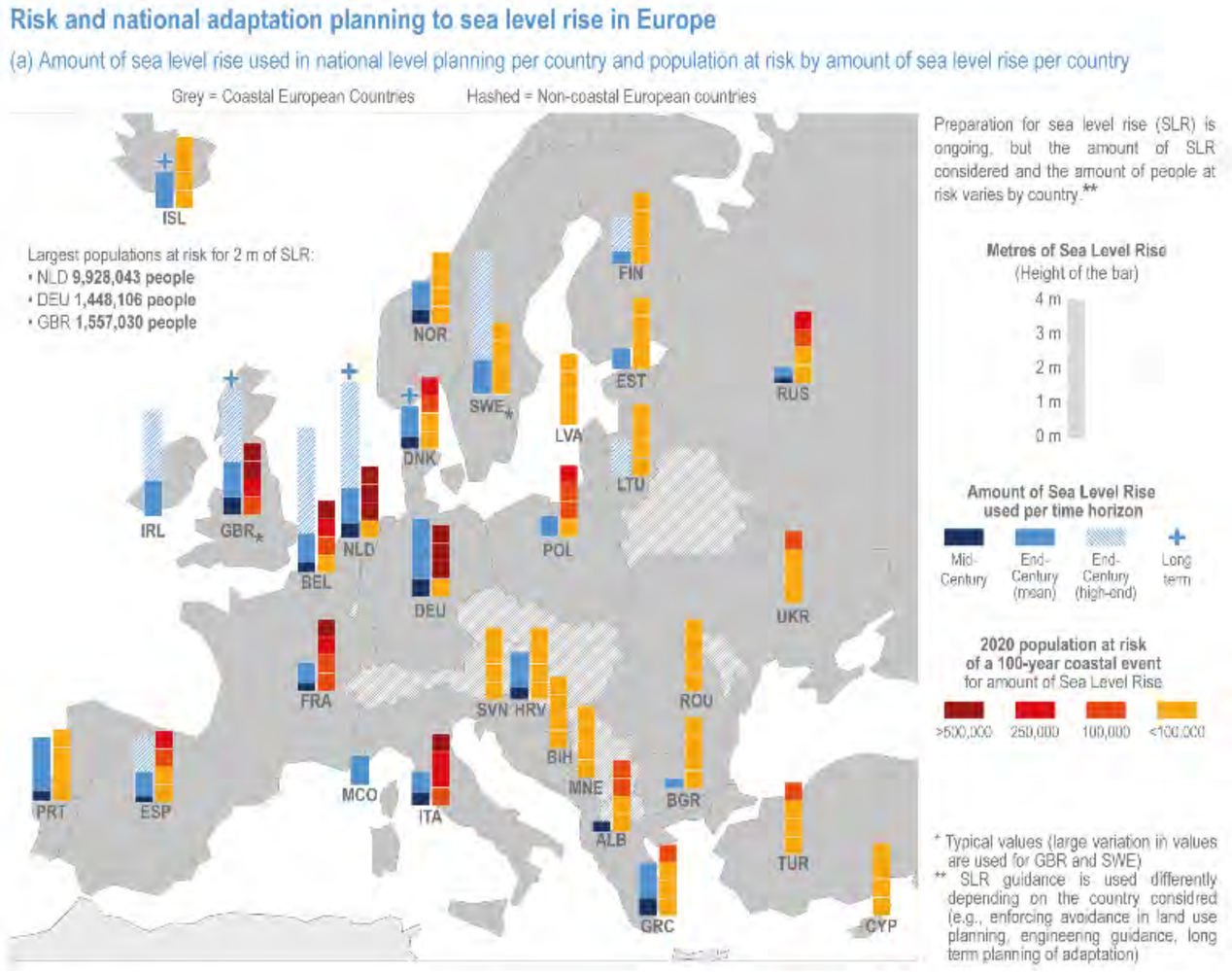
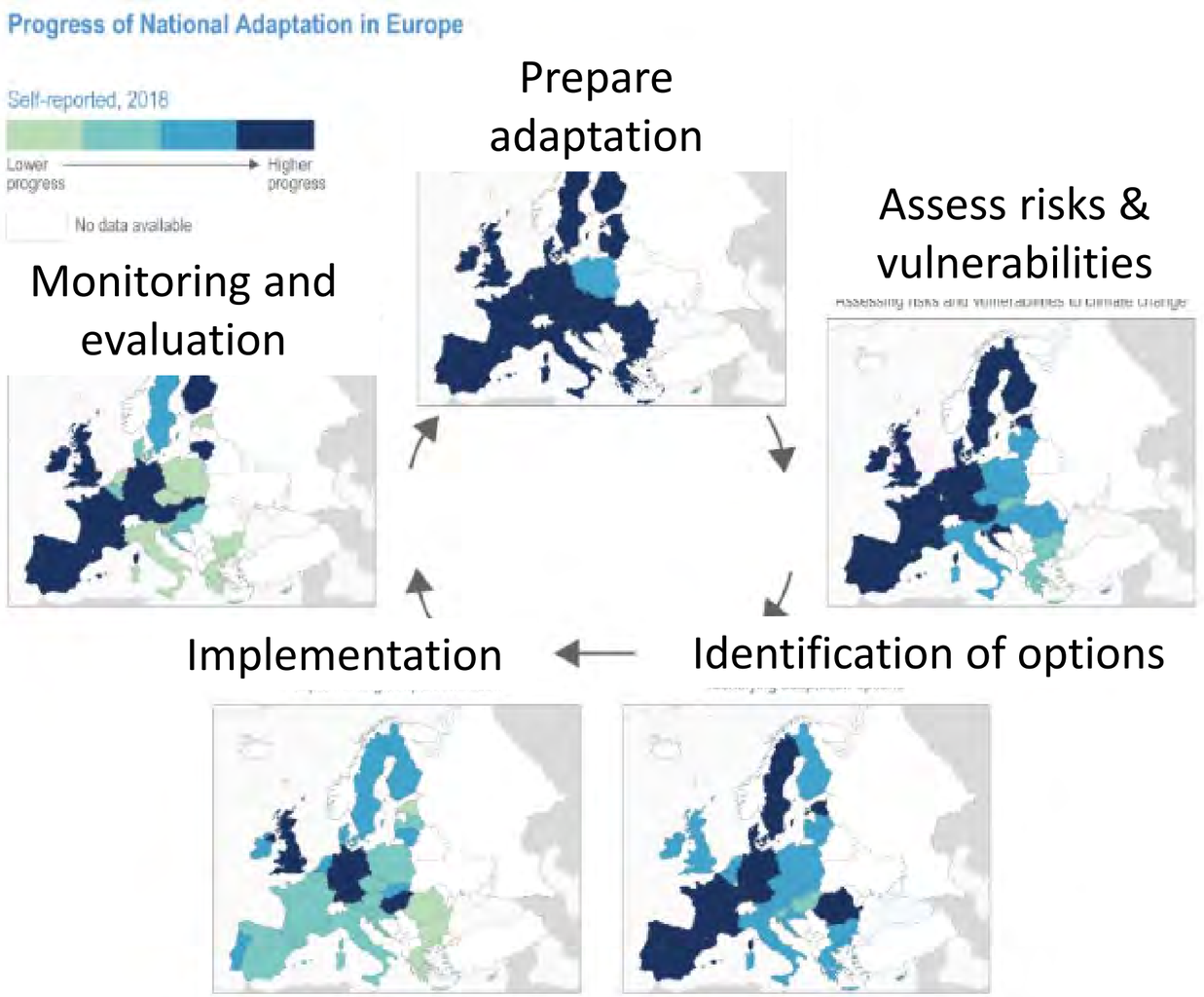
Adaptation is progressing in Europe

- New public policies, including adaptation plans, regulation, actions at city scale
- Easier access to information, e.g. through climate services
- New experiments (e.g. Nature Based Solutions)



Adaptation is not yet implemented at the scale, depth and speed to avoid the risks



- Adaptation remains limited in the private sector, unevenly implemented in cities
- A gap remains between planning and implementation
- Adaptation is largely incremental

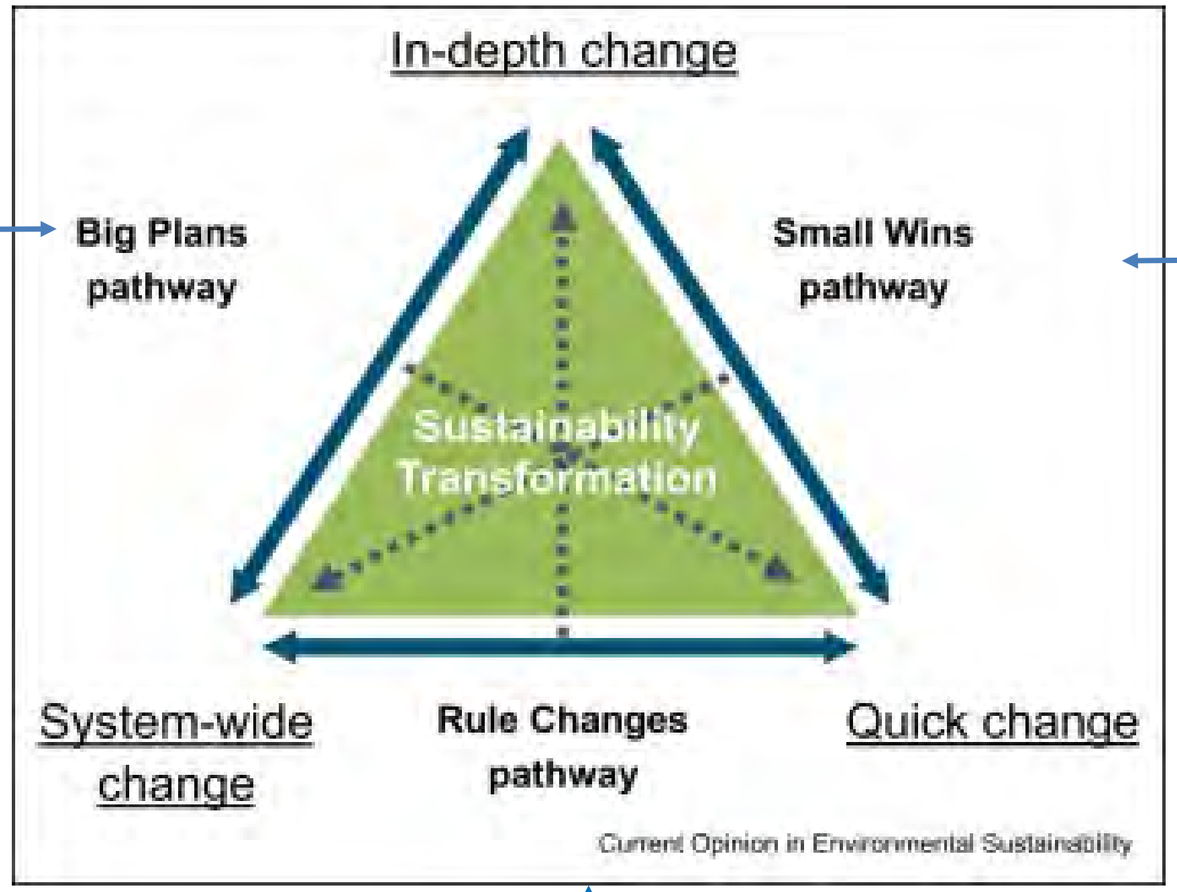
⇒ Transformational adaptation?

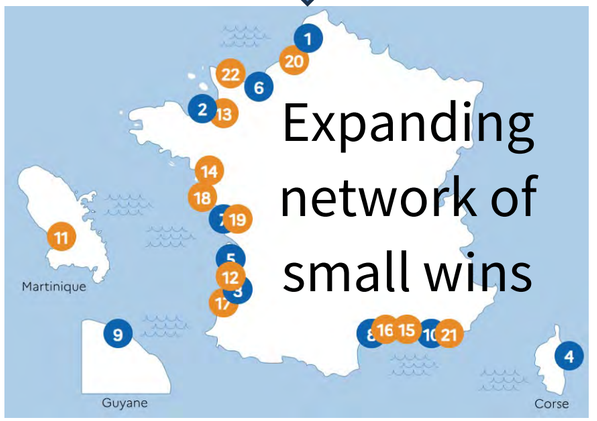
Termeer et al., 2024 https://doi.org/10.1016/j.cosust.2024.101479

Generic approaches to initiate transformational adaptation


Oosterscheldekering – GLC


GLC



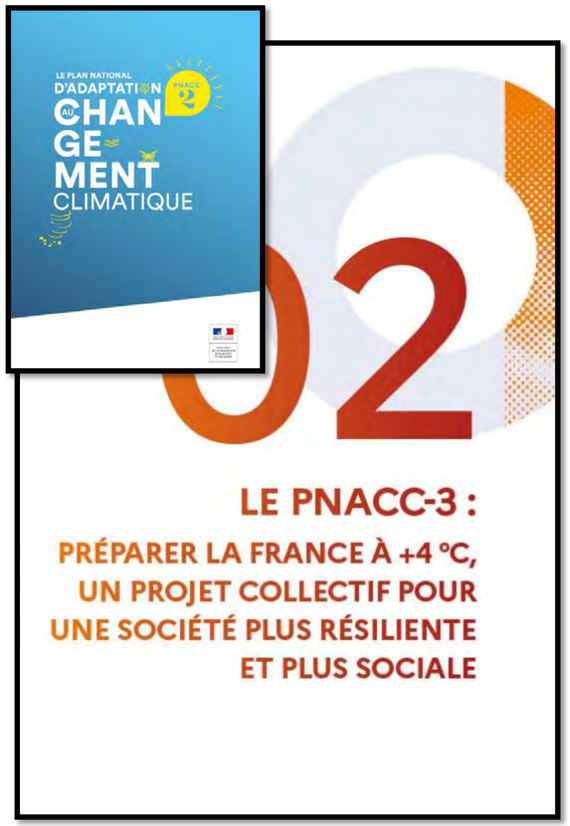


adapto+ | Co-funded by the European Union

Gonéri Le Cozannet, French Geological Survey and French Climate Change Committee, Haut conseil pour le climat: "Midway through the critical decade"

UNEP, 2024 - https://www.unep.org/resources/adaptation-gap-report-2024; MTCET, 2025

National adaptation plans



To be strengthened:

- Equity and justice
- Biodiversity
- Finance
- Governance
- …

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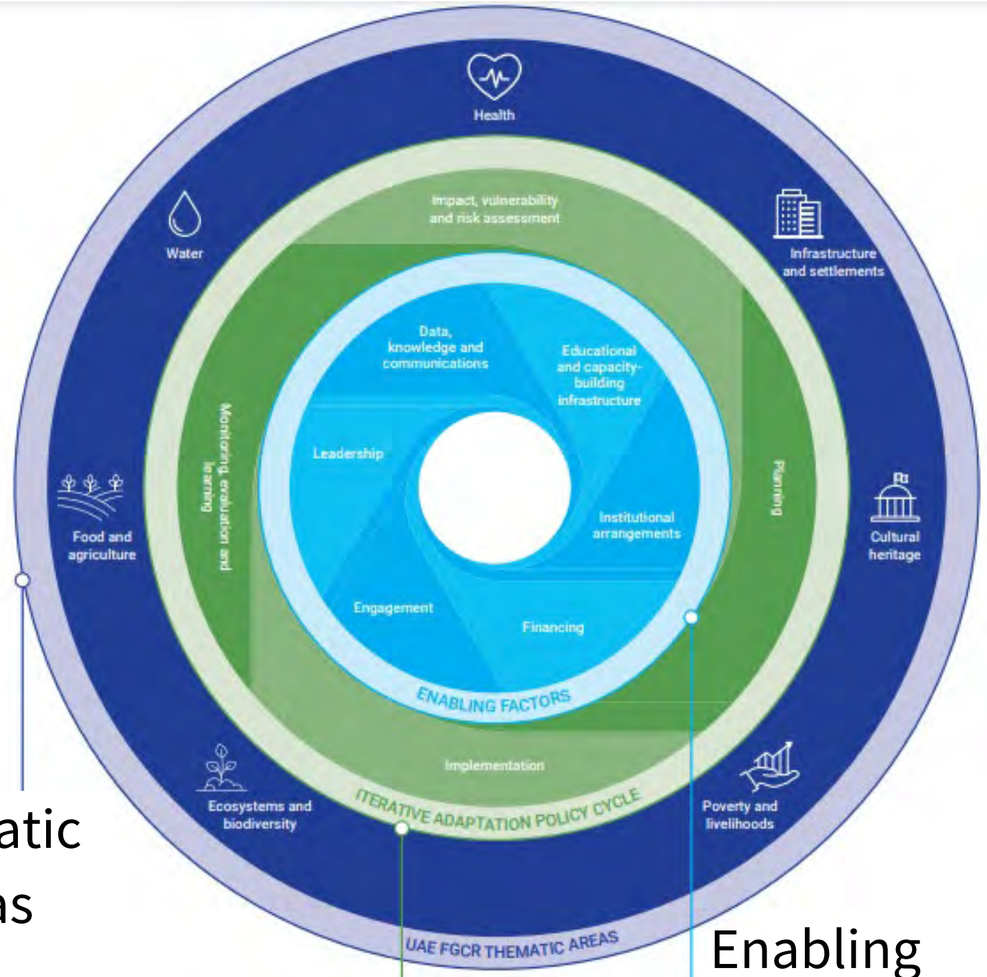
Global goals on adaptation



Thematic areas

Iterative adaptation process

Enabling conditions

AR6 WG2 Chapter 13 - https://www.ipcc.ch/report/ar6/wg2/downloads/report/IPCC_AR6_WGII_Chapter13.pdf

Delays in adaptation and mitigation will increase climate risks

Key risks in Europe

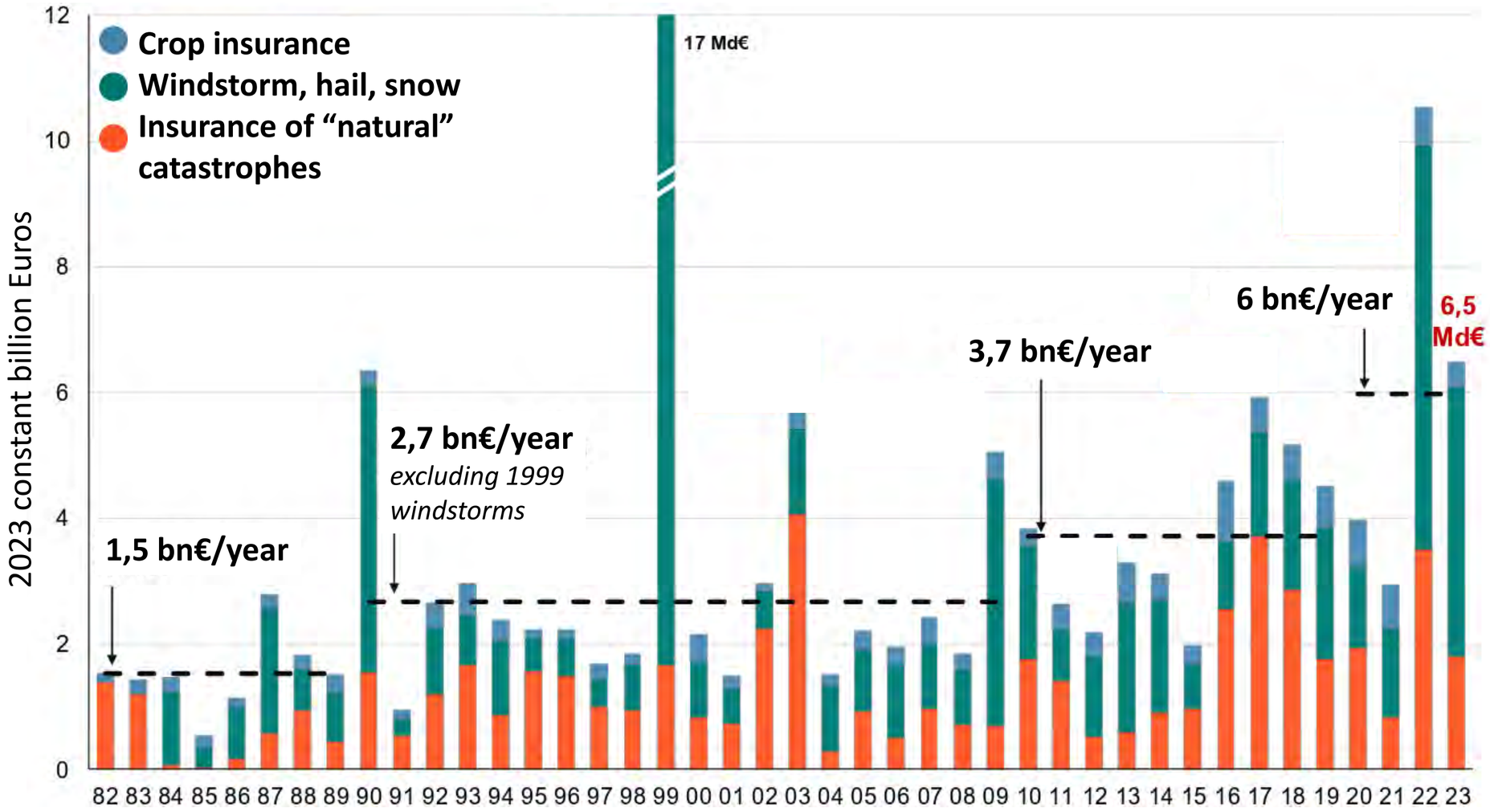
- Risks to people and ecosystems from heat
- Heat and drought stress on crops
- Water scarcity
- Inland and coastal flooding

+ Cascading risks

France Assureurs https://www.franceassureurs.fr/wp-content/uploads/2024-03-26-slides-cdp-complete-vdef.pdf

Despite mitigation and adaptation, losses and damage are increasing

Example: insurance of climate risks in France



France Assureurs

France Assureurs https://www.franceassureurs.fr/wp-content/uploads/2024-03-26-slides-cdp-complete-vdef.pdf

Despite mitigation and adaptation, losses and damage are increasing

Example: excess death during heatwaves in France

Not all losses and damage are monitored adequately today

- Impacts on humans, e.g., morbidity, mental health, labor productivity…
- Noninsured damages, e.g. roads damages due to clays instabilities…
- Impacts on water availability and quality
- Impacts on ecosystems…

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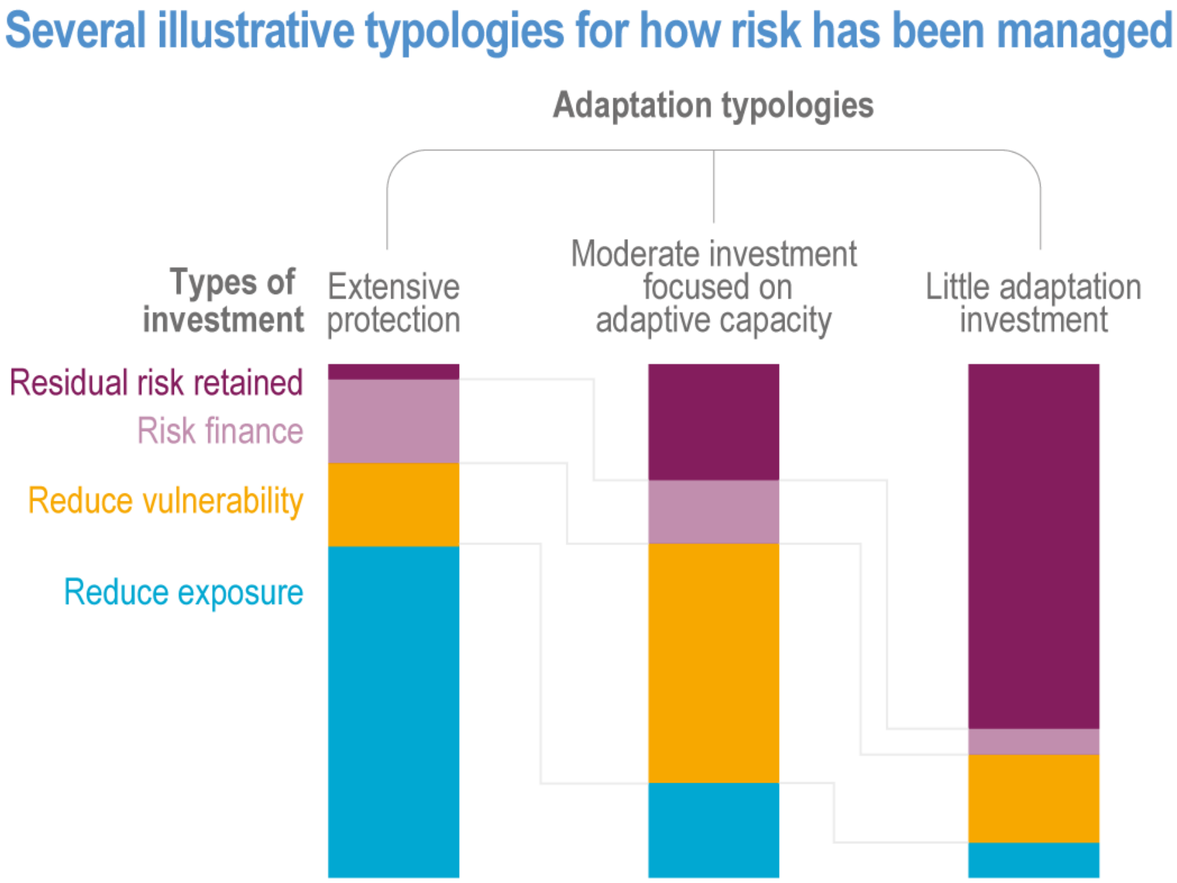
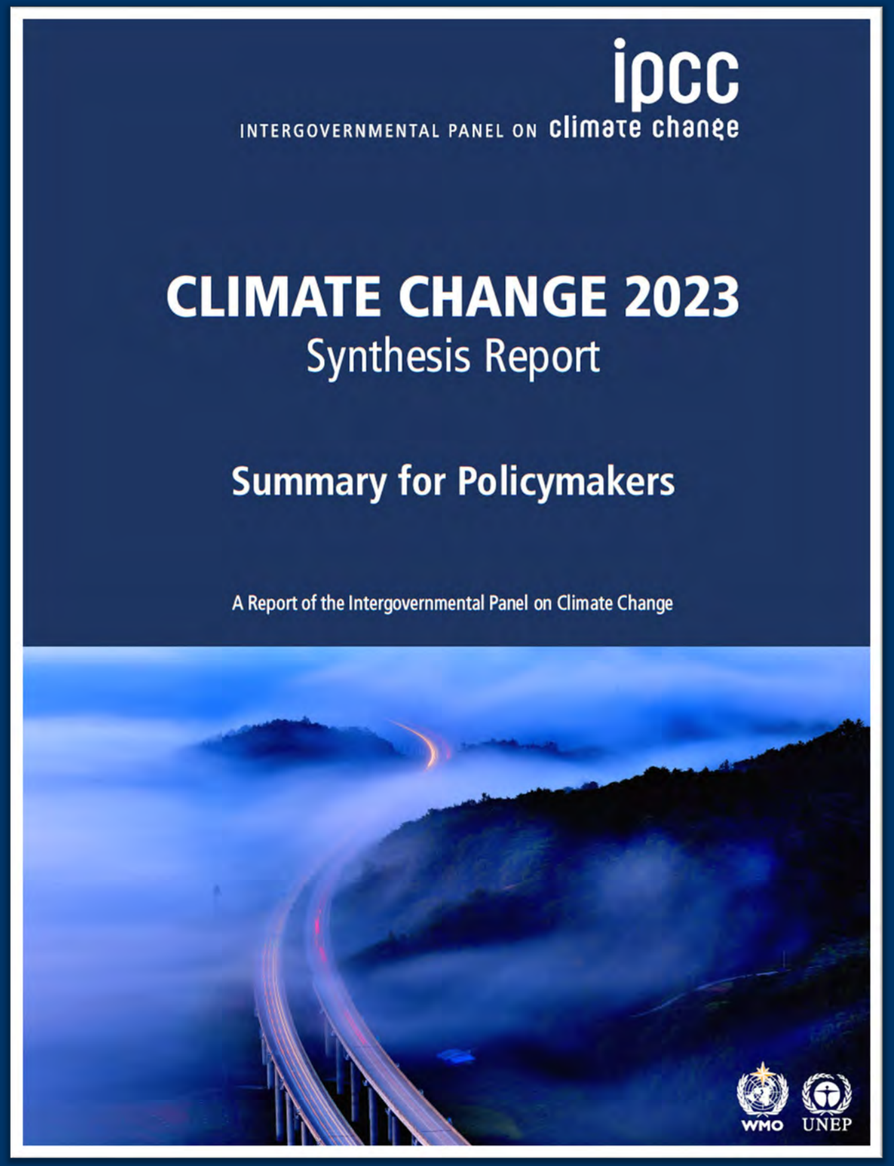
Poor mitigation & adaptation → greater losses and damages



- Insurance and compensation mechanisms at risks of failure
- Residual risks retained by individuals and companies
- More social discontent and litigation cases



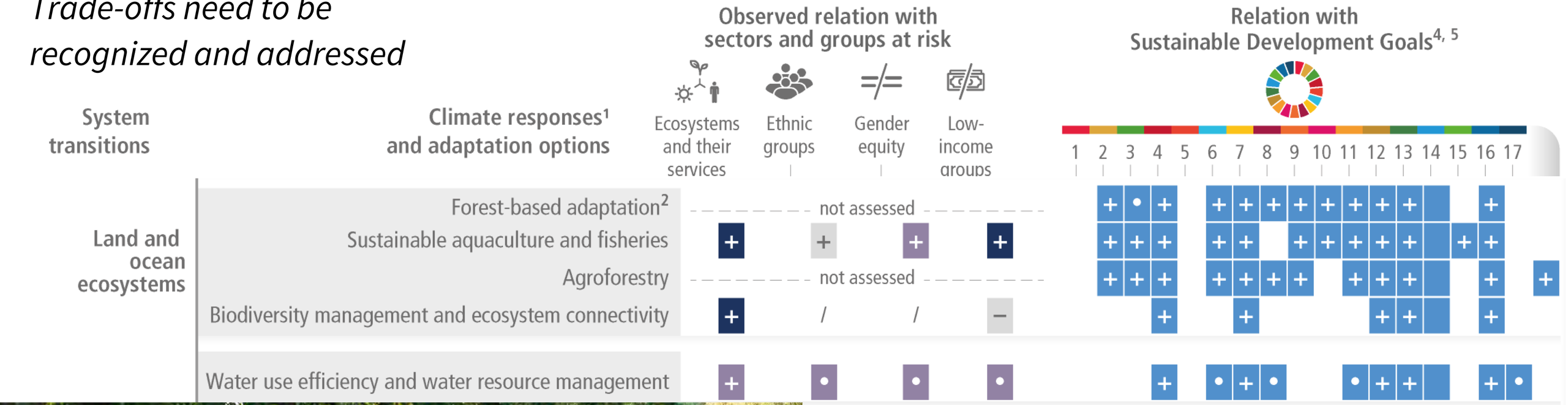
“[Accelerated mitigation and adaptation action in this decade] would deliver many co-benefits, especially for air quality and health (high confidence)”

IPCC AR6 Synthesis Report SPM – C2 - https://www.ipcc.ch/report/ar6/syr/

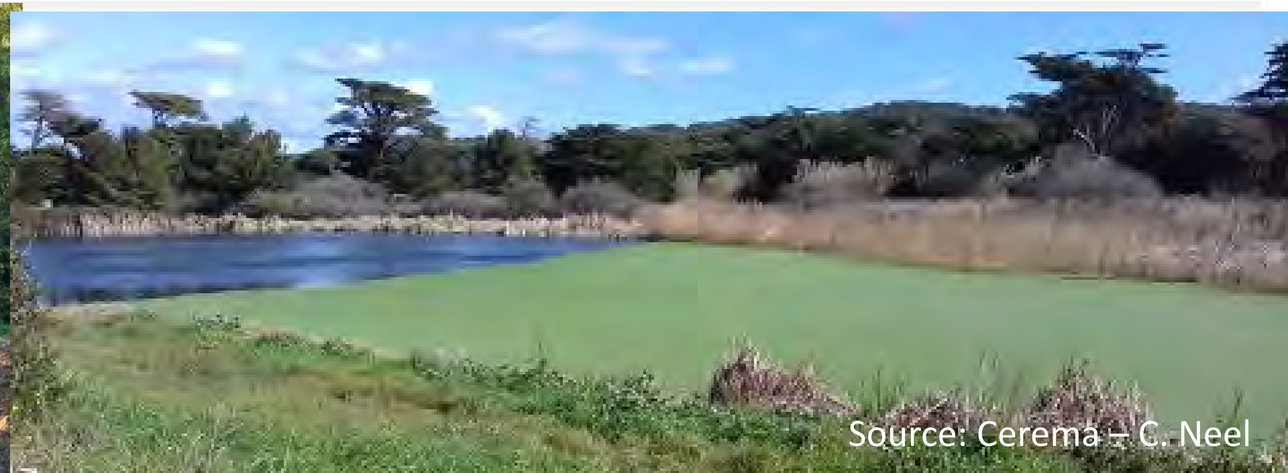
IPCC AR6 WGII SPM 2022
https://www.ipcc.ch/report/ar6/wg2/downloads/report/IPCC_AR6_WGII_SummaryForPolicymakers.pdf

Co-benefits of adaptation and mitigation are clear

Trade-offs need to be recognized and addressed

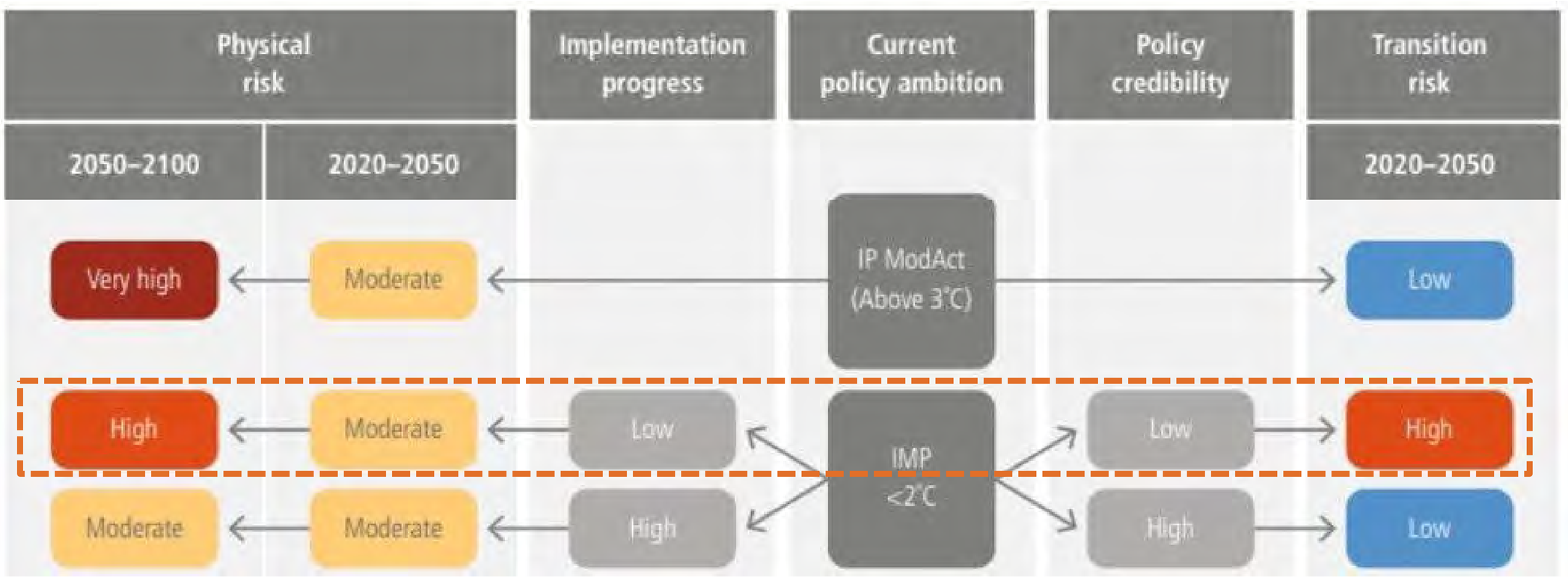


Source: ministère de l'agriculture



Source: Cerema – C. Neel

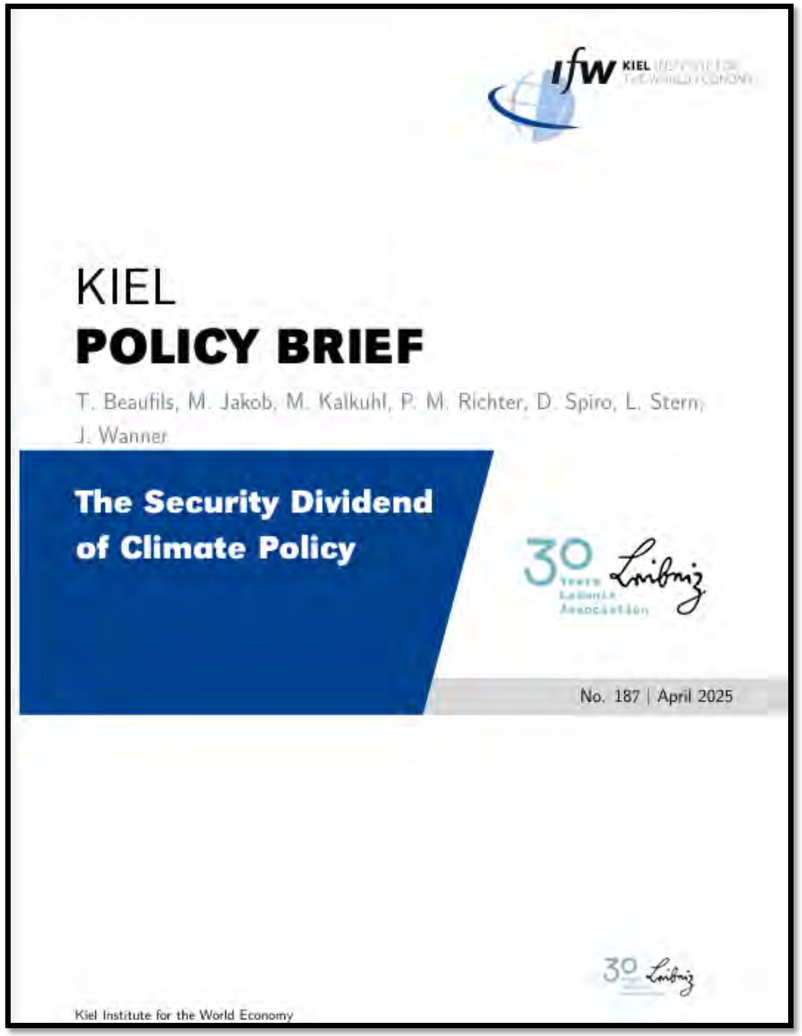
Credible climate mitigation policies reduce both climate and transition risks



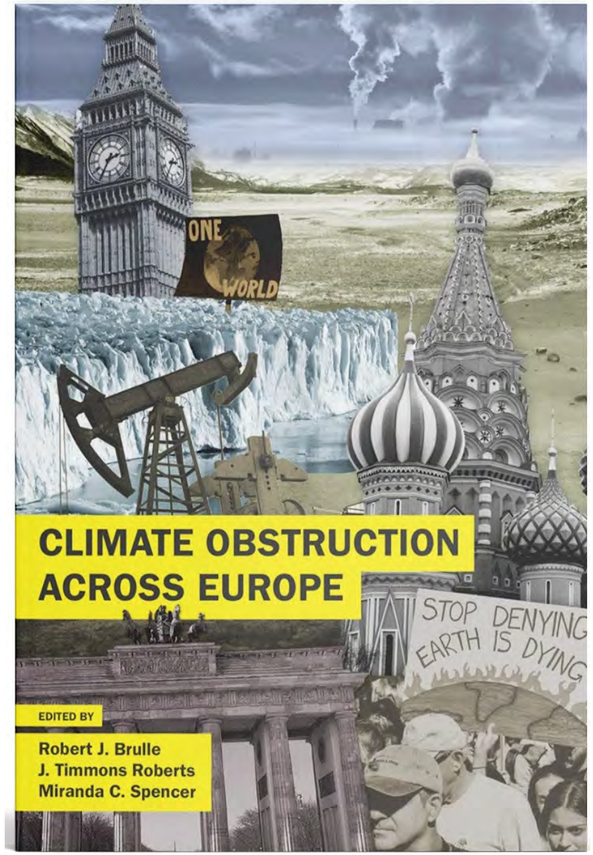
https://www.ifw-kiel.de/publications/the-security-dividend-of-climate-policy-34008/

Climate mitigation policies provide security dividends

- “Ambitious climate policies in Europe reduce demand for oil and gas”
- “Ambitious climate policies weakens Russia’s financial strength and its ability to finance the invasion of Ukraine”
- “A pillar of the European security architecture, reducing the needs for military spending?”
- Ex: maintaining the 2035 target for electric cars avoids 3 bn€ military spendings in Europe



Despite evidence of the benefits of adaptation and mitigation, climate action is at a low point




Le Monde

Environment | COP29 Carbon bombs Adaptation The Earth's Pulses PFAS

ENVIRONMENT · SPACE AND ASTRONOMY

NASA fires climate researcher Katherine Calvin, the agency's chief scientist

The co-chairwoman of the Intergovernmental Panel on Climate Change had been appointed in 2022 to advise NASA's leadership on scientific programs and investments. In all, some 20 positions will be affected by the NASA cuts announced on Tuesday.

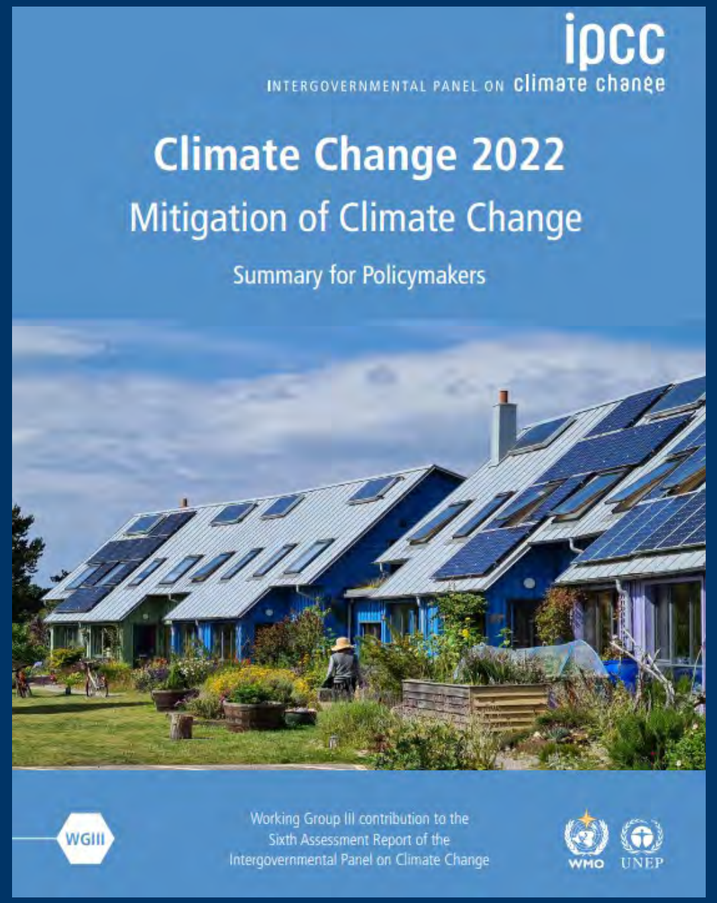
Subscribers only

- Institutional and economic path dependencies
- Vested interests and climate obstruction
- Climate policies as a vehicle to mobilize public dissatisfaction
- Political powers controlling, muzzling or dismissing independent expertise i.a. in the USA

A way forward?

- Re-establish the conditions for the implementation of climate action
- <u>Supply-side policies:</u> decarbonized products and services must be on the market
- <u>Demand-side policies:</u> increased efficiency, sufficiency

Gonéri Le Cozannet, French Geological Survey and French Climate Change Committee, Haut conseil pour le climat: “Midway through the critical decade”



"Sufficiency: A set of measures and daily practices that avoid demand for energy, materials, land and water while delivering human well-being for all within planetary boundaries (AR6 WGIII Glossary)

Europe Sustainable Development Report https://eu-dashboards.sdgindex.org/map

Sufficiency is not the same as scarcity

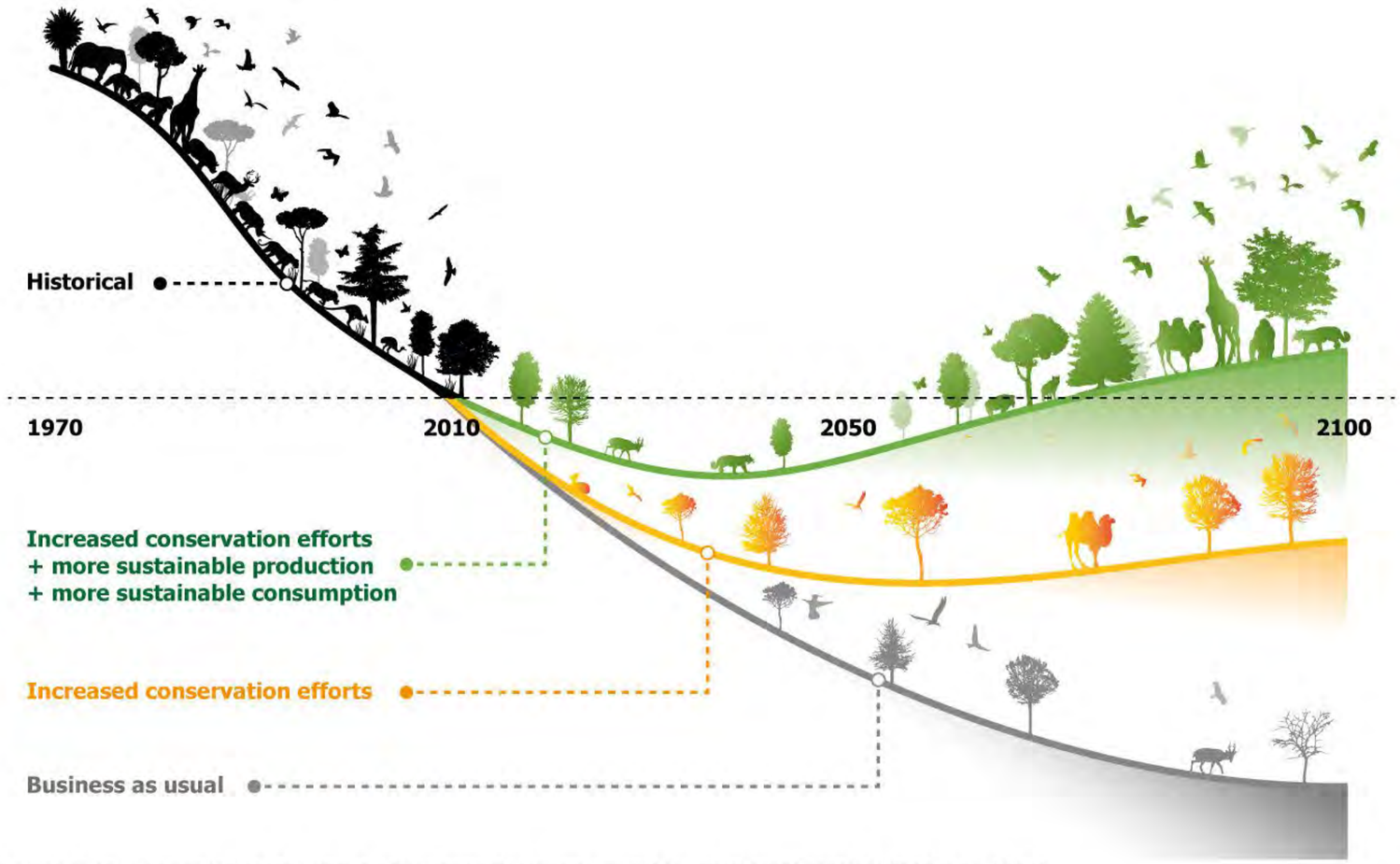
Sufficiency aims at advancing sustainable development goals

France, 2024

Leclère et al., 2020 https://doi.org/10.1038/s41586-020-2705-y; AR6 WGII Table 18.1

Without sufficiency, biodiversity targets are severely compromised

- No single SSP scenario allows to meet Sustainability Goals on biodiversity (AR6 WGII Ch18)
- Need for development pathways that activate sufficiency

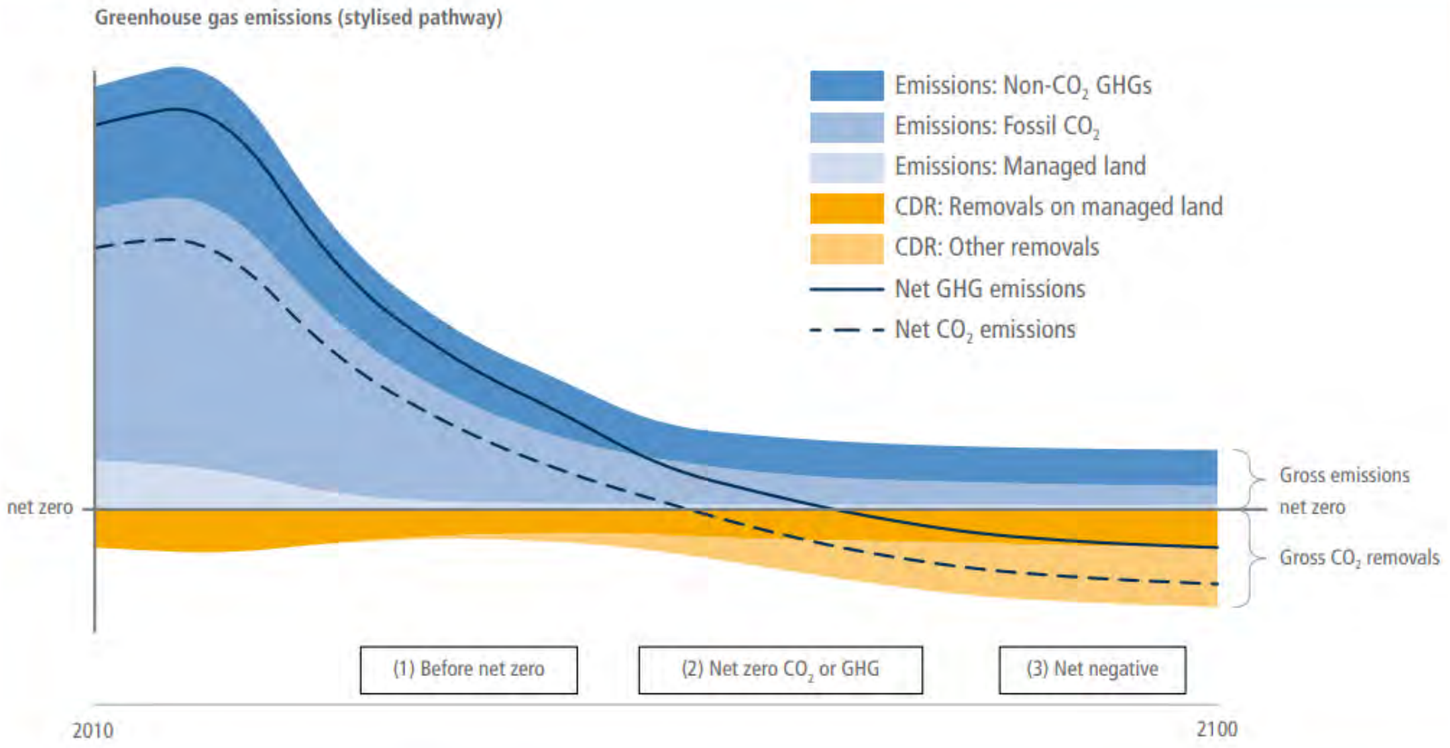


This artwork illustrates the main findings of the article, but does not intend to accurately represent its results (https://doi.org/10.1038/s41586-020-2705-y)

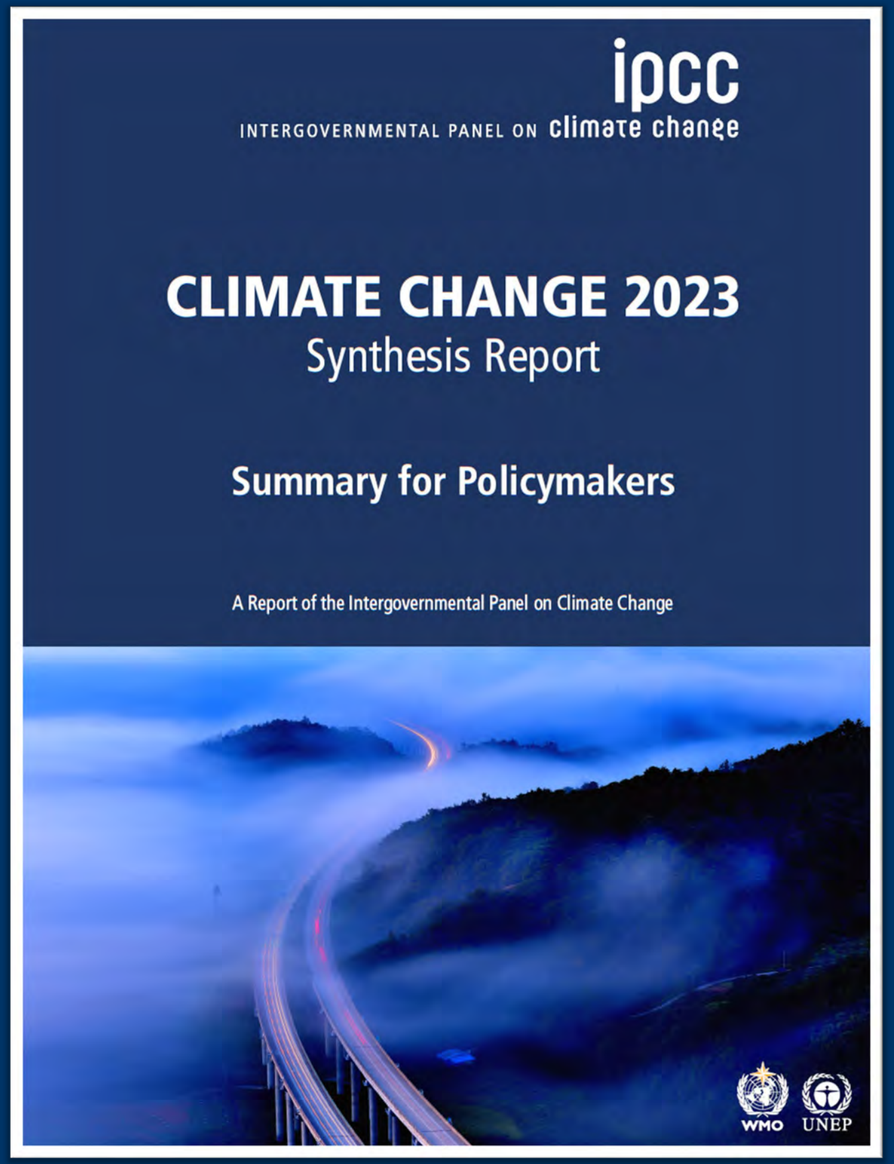
AR6 WGIII CCB8 Fig 2 https://www.ipcc.ch/report/ar6/wg3/

Without sufficiency, a massive need of carbon dioxide removal

- Carbon Dioxide Removal will be to compensate for residual emissions
- Without sufficiency, carbon dioxide removal needs become larger and potentially not realistic
- Need for development pathways that activate sufficiency



Cross-Chapter Box 8, Figure 2 | Roles of CDR in global or national mitigation strategies. Stylised pathway showing multiple functions of CDR in different phases of ambitious mitigation: (1) further reducing net CO_2 or GHG emissions levels in near-term; (2) counterbalancing residual emissions to help reach net zero CO_2 or GHG emissions in the mid-term; (3) achieving and sustaining net-negative CO_2 or GHG emissions in the long-term.



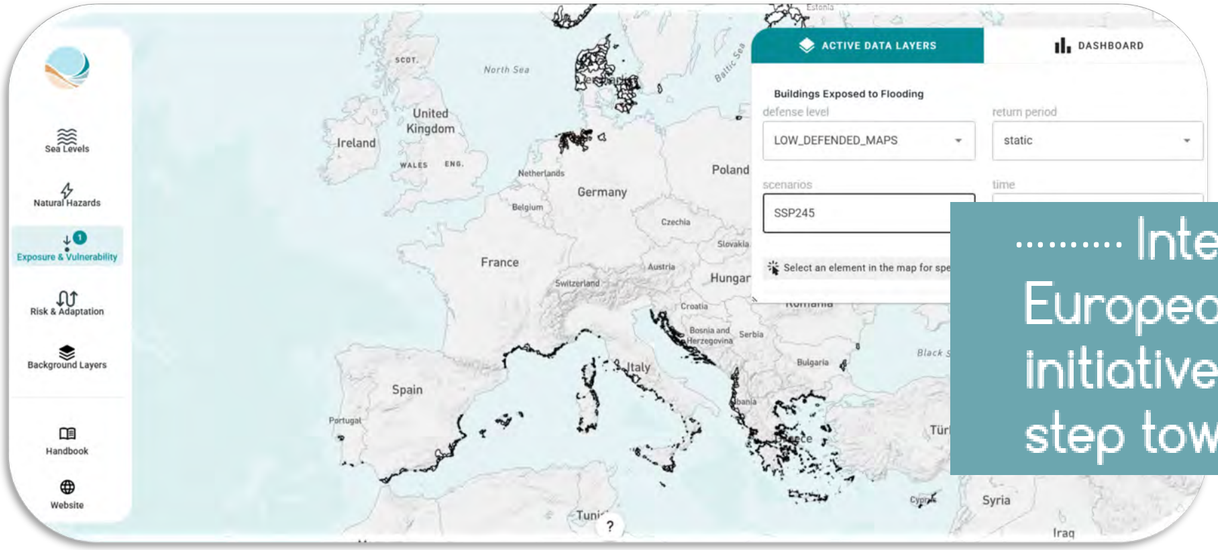
Potential contributions of scientists?

“Increasing education, including capacity building, climate literacy, information provided buy climate services and community approaches can (…) accelerate behavioural changes and planning (high confidence)”

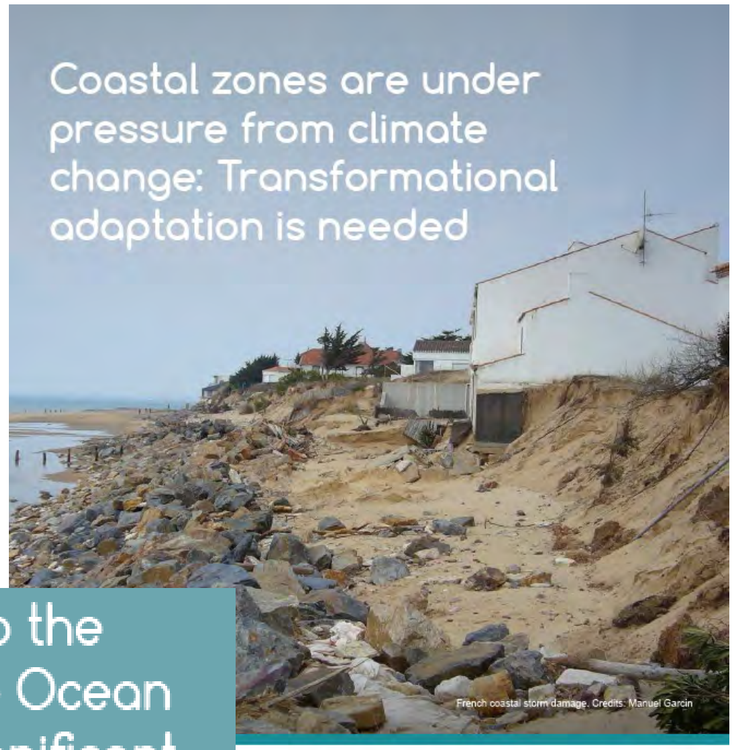
IPCC AR6 Synthesis Report SPM – C3.8 - https://www.ipcc.ch/report/ar6/syr/

Scientists can contribute to climate services development

- Climate services can support adaptation
- Challenges: operationalization, certifications, capacity building, avoid instrumentalization…



https://platform.coclicoservices.eu/



..... Integrating CoCliCo into the European Digital Twin of the Ocean initiative would provide a significant step towards this goal.

CoCliCo
coastal climate core services

In association with

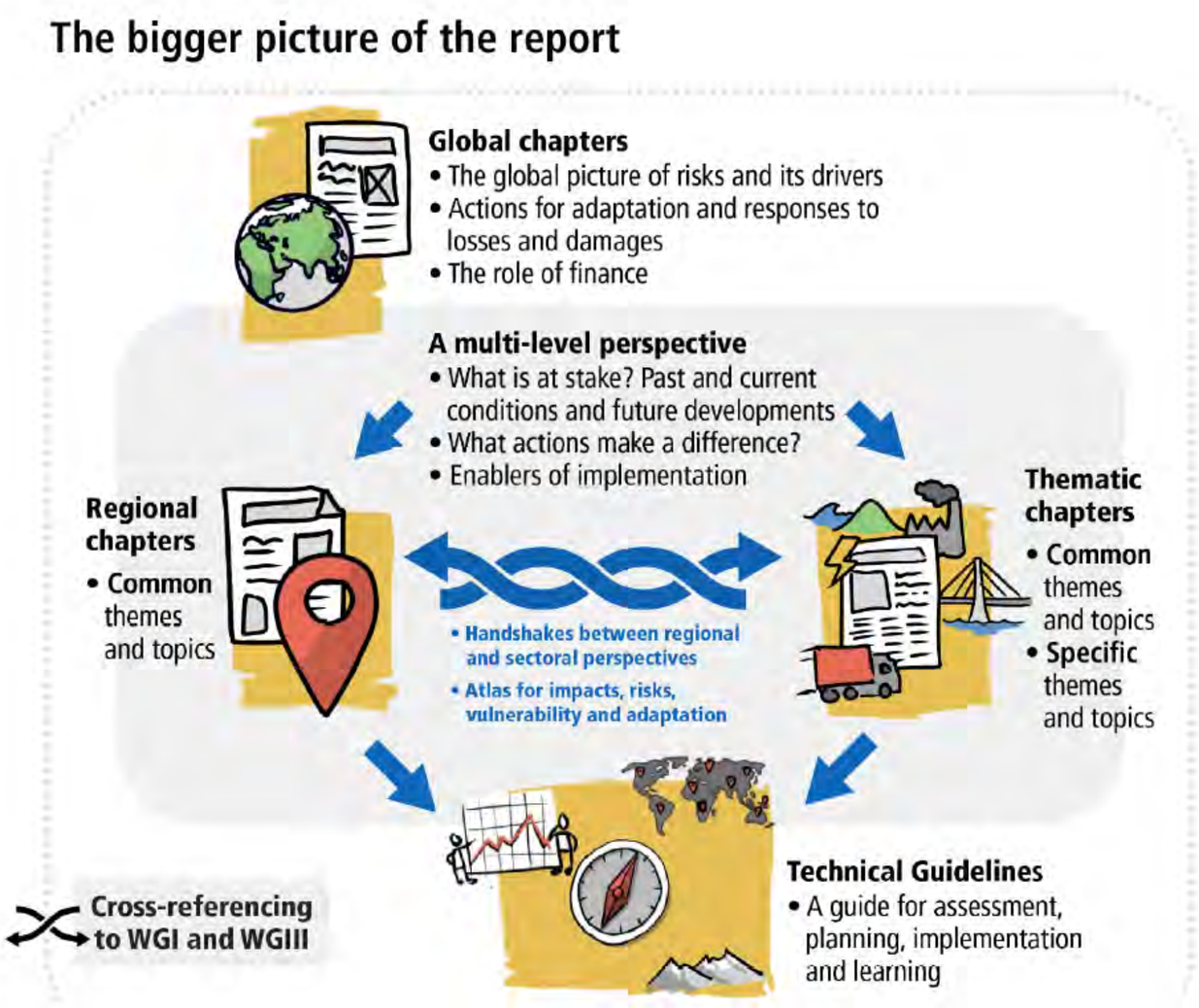
Protect CRYOSPHERE & SEA LEVEL · score · REST-COAST

CoCliCo has received funding from the European Union's Horizon 2020 research and innovation program under grant agreement No 101003598

Scientists can contribute to strong and robust assessments

⇒ *Work and publish policy-relevant research addressing gap of knowledge*

- More robust evidence on responses to climate change
- Scenarios to achieve sustainability
- Impacts of an overshoot?
- Impacts of solar radiation management and other climate interventions?



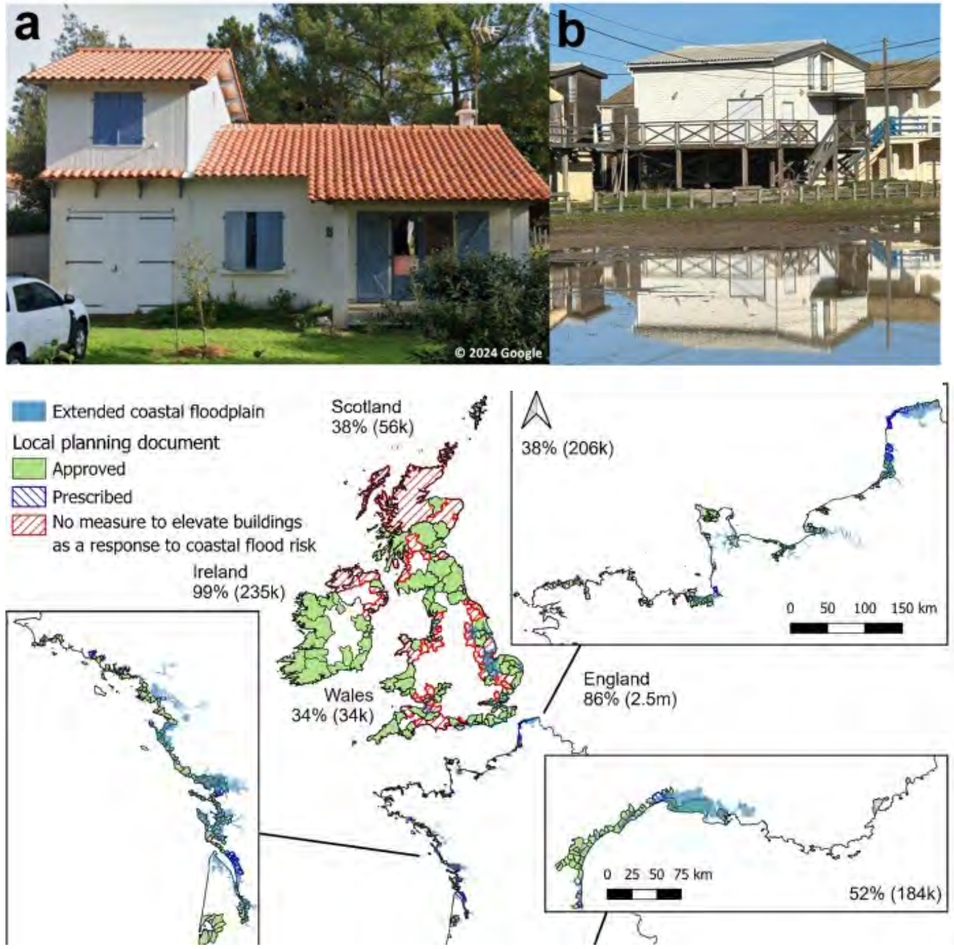
Pasquier et al., 2024 - https://doi.org/10.1016/j.crm.2024.100655

Research needs to support AR7 WGII (selection)

- Co-benefits of adaptation are (relatively) clear
- Effectiveness and feasibility of adaptation more difficult to assess, especially above 1,5°C GWL
- More evidence needed on:
  - equity and justice
  - enabling conditions (finance, governance)
  - maladaptative outcomes
- Current issues: lack of literature, reporting biases…

Example: Pasquier et al., 2024

Coastal accommodation

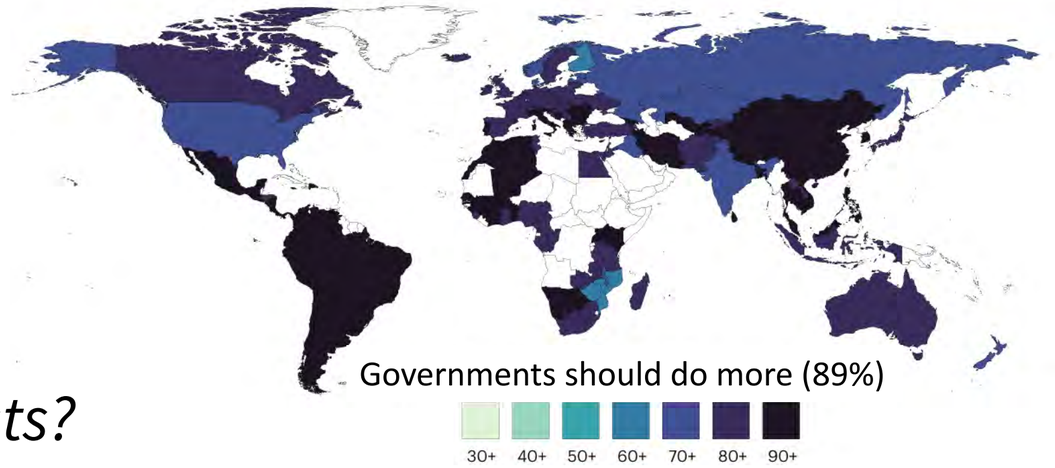


Gaveau, 2024 https://doi.org/10.1038/s44168-024-00112-6

Other arena of engagement?

Citizens generally demand climate action (Andre et al., 2024) and trust scientists

- Engage with communities
- Engage with medias
- Engage with decision makers (e.g., Gaveau, 2024)
- …



Andre et al., 2024 https://doi.org/10.1038/s41558-024-01925-3

Toward more climate lawsuits? What role for scientists?

Example: le train du climat

Image UVSQ ©Ch. Maître/Inra

Example: tournée climat biodiversité

Science is being distorted and politicised.

In the U.S., scientific institutions have been silenced, keywords censored, and scientists dismissed, all of which threaten evidence-based decision-making.

The New York Times

These Words Are Disappearing in the New Trump Administration

By Karen Yourish, Armie Daniel, Saurabh Datar, Isaac White and Lazaro Gamio March 7, 2025

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As President Trump seeks to purge the federal government of "woke" initiatives, agencies have flagged hundreds of words to limit or avoid, according to a compilation of government documents.

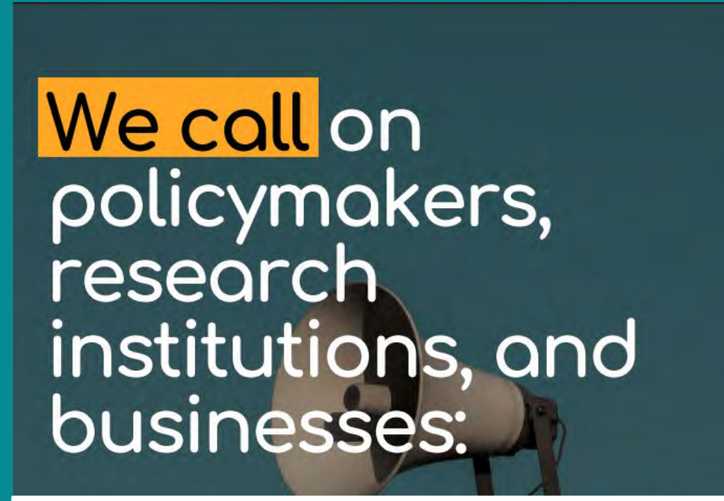
accessible	discriminated	inclusive	privilege
activism	discrimination	inclusive leadership	privileges
activists	discriminatory	inclusiveness	promote diversity
advocacy	disparity	inclusivity	promoting diversity
advocate	diverse	increase diversity	pronoun
advocates	diverse backgrounds	increase the diversity	pronouns

Climate obstruction is rising across Europe.

From denial to delay, misinformation and anti-science tactics weaken democracy and block transparent policy.

My personal take: researchers and their institutions are being pushed into the public debate because values underpinning their work are under threat.

As scientists, we should stand together to defend science, facts and informed decision making.



CoCliCo

coastal climate core services

Gonéri Le Cozannet, French Geological Survey and French Climate Change Committee, Haut conseil pour le climat: "Midway through the critical decade"

Tyndall Centre for Climate Change Research

Thank you

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