



# Climate impact science and stakeholders in climate litigation

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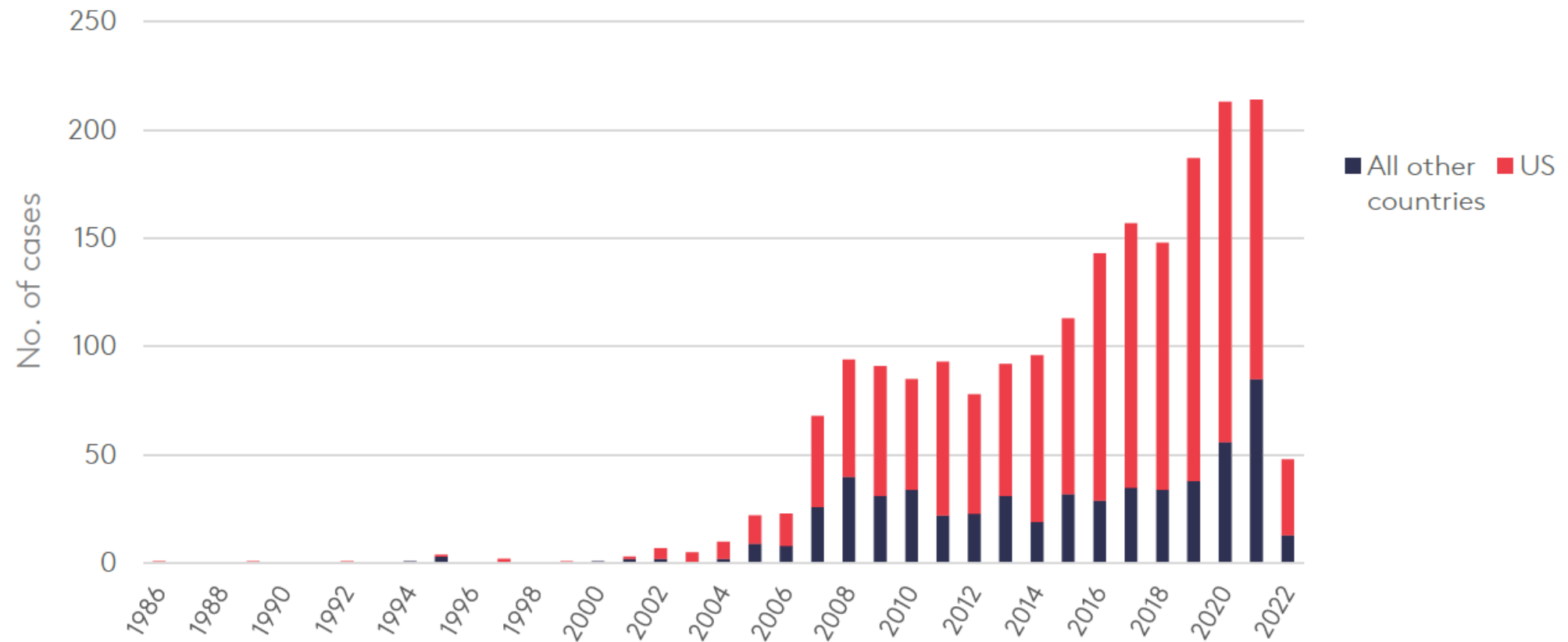


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# Climate litigation is rapidly on the rise

Figure 1.1. Total climate change cases over time, US and non-US (up to 31 May 2022)



Setzer and Higham (2022)



# What is climate litigation?

Lawsuits brought by NGOs, individuals, civil society (plaintiffs) v. governments or corporations (defendants) at regional, national and intl courts

Demands:

- More ambitious climate action: non-observance of emissions reduction targets or inadequate mitigation goals
- Compensation for climate harms
- Adaptation costs

Based on:

- Evidence of attributed harms (impacts)
- Historical inventories of emissions (country-level, company-level)
- Evidence of insufficiency of mitigation
- Evidence of “imminent” risks



Urgenda Foundation v.  
State of the Netherlands (2013/2015 – 2019)

## 'Historic' German ruling says climate goals not tough enough

**Judges order government to strengthen legislation before end of next year to protect future generations**



Neubauer et al. v. Germany (2020 – 2021)

# Who are the “stakeholders” in climate litigation?



Duarte Agostinho and Others v. Portugal and 32 Other States (2020 - )  
ECtHR



KlimaSeniorinnen v. Switzerland (2020 - )  
ECtHR



Luciano Lliuya v. RWE (2015 - ),  
Germany

**Mostly the lawyers!**

# Sources of scientific evidence

- IPCC reports
- Independent litigation-relevant peer-reviewed research papers
- Commissioned expert reports
- Scientific reports and data: Climate Action Tracker, UNEP Emissions Gap report, International Energy Agency reports...

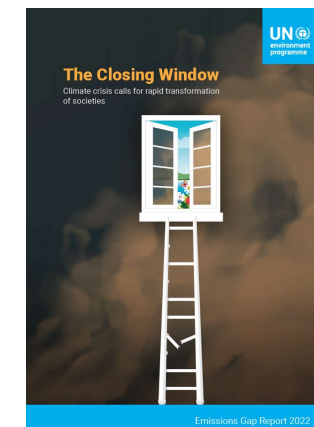


## Increased outburst flood hazard from Lake Palcacocha due to human-induced glacier retreat

R. F. Stuart-Smith<sup>1,2,5</sup>, G. H. Roe<sup>2</sup>, S. Li<sup>1,2</sup> and M. R. Allen<sup>1,4</sup>

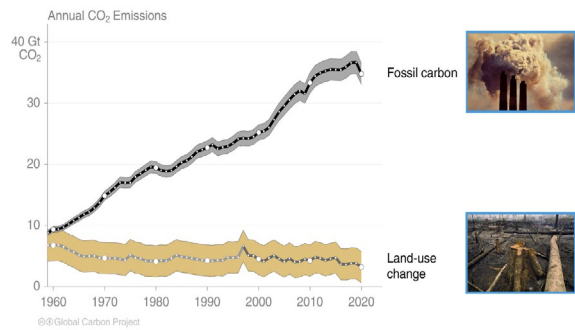


Achieving the 1.5°C Limit of the Paris Agreement: An Assessment of the Adequacy of the Mitigation Measures and Targets of the Respondent States in *Duarte Agostinho v Portugal and 32 other States*

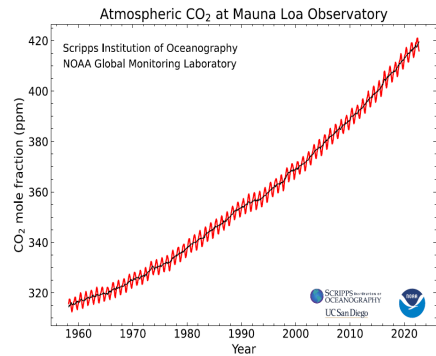




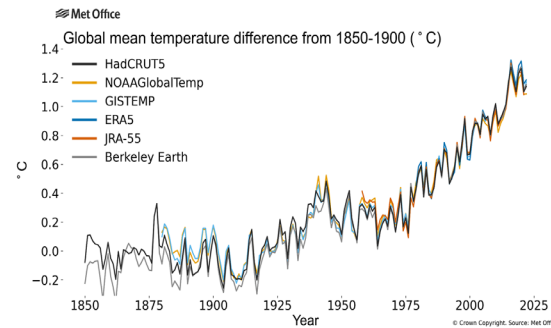
# The causal chain from emissions to impacts



GHG emissions



Atmospheric concentrations



Global temperature & other climatic changes

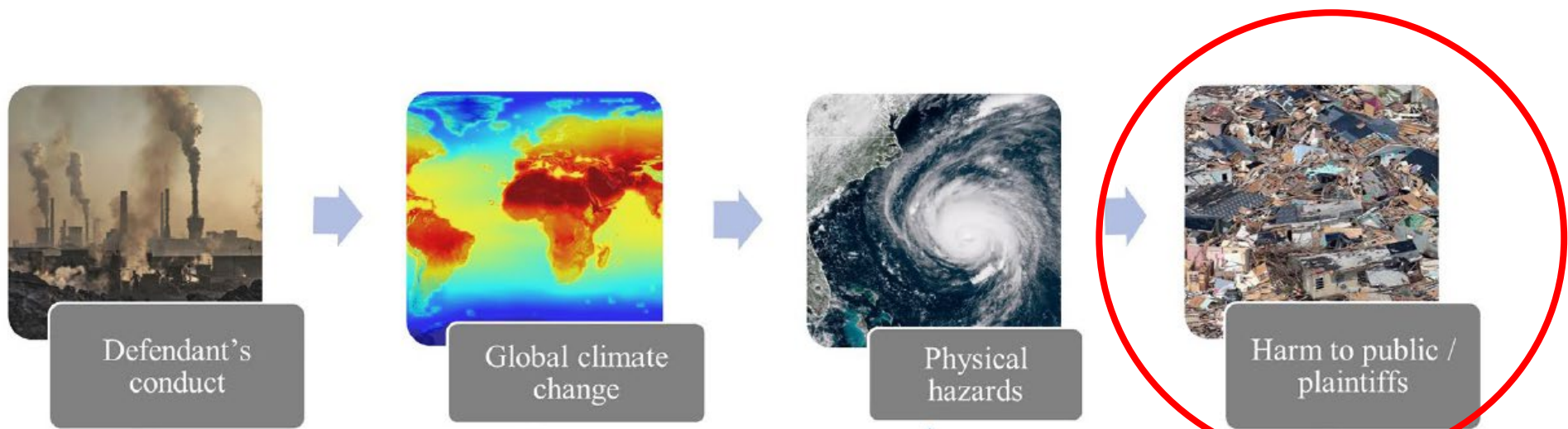


Impacts & harms

Can you link the emissions of a specific country or company to (a part of) warming or impacts?

“The case relates to **greenhouse gas emissions emanating from 33 contracting States** which would participate in global warming manifesting themselves in **heat waves** which would **impact** the applicants’ living conditions and health.”

Duarte Agostinho and Others v. Portugal and 32 Other States,  
Court communication of case to defendant countries (2020)



**Source attribution:** How have governments, corporations, and other actors contributed to climate change through GHG emissions, including net emissions from land use changes?

**Global climate change attribution:** How are GHG emissions affecting the global climate system?

**Impact attribution:** How are changes in the global climate system affecting natural and human systems?

**Extreme event attribution:** How are changes in the global climate system affecting the frequency, magnitude, and other characteristics of extreme weather events?

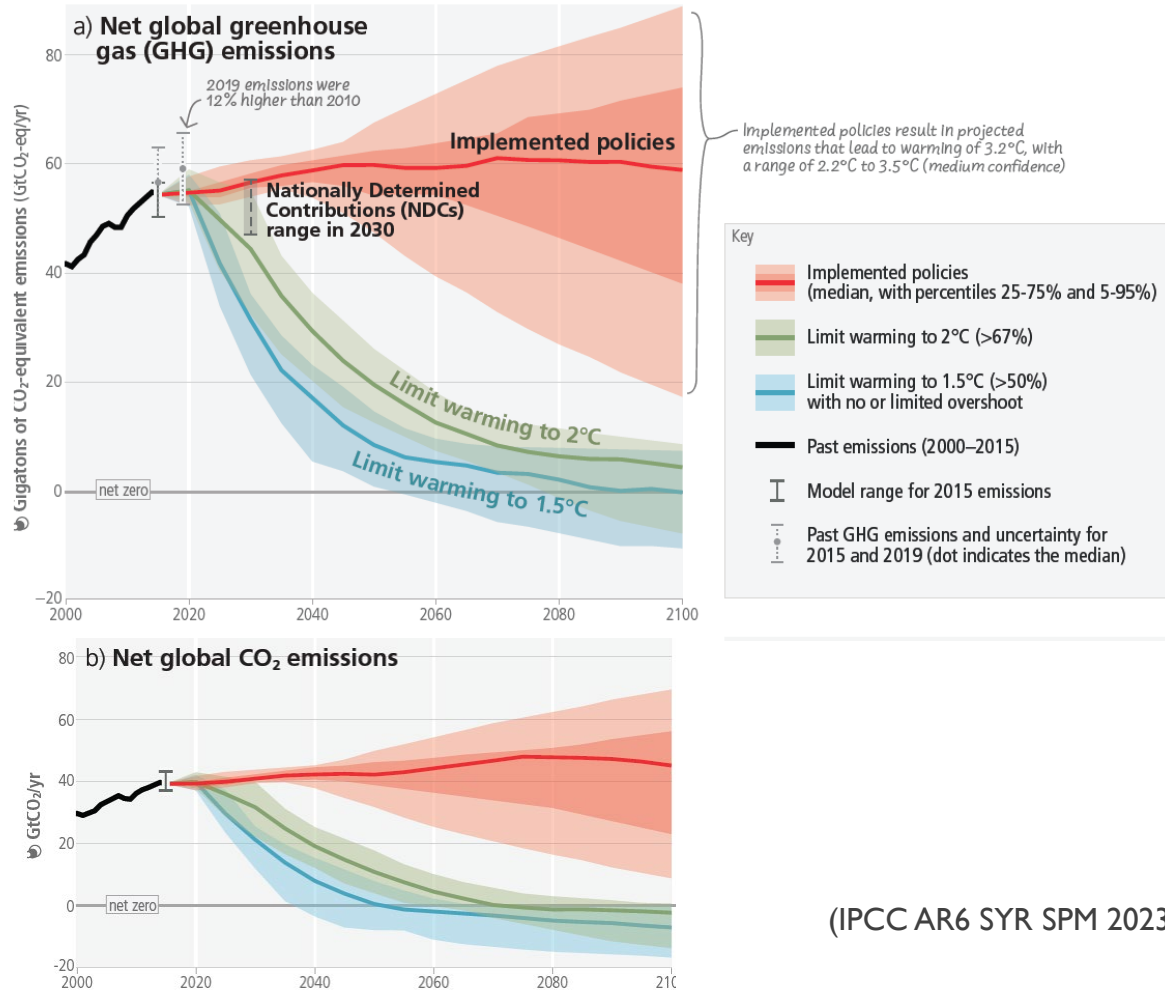
“The applicants assert that the **forest fires** which Portugal has experienced each year for a number of years, and particularly since 2017, are the direct result of this global warming. The applicants allege being at risk of contracting **health problems** owing to these fires and having already experienced, following or during the forest fires, trouble sleeping, allergies and breathing difficulties all exacerbated by the very high temperatures during the hot season”

Duarte Agostinho and Others v. Portugal and 32 Other States,  
Court communication of case to defendant countries (2020)

# Carbon budgets & effort sharing of emissions reductions

Limiting warming to 1.5°C and 2°C involves rapid, deep and in most cases immediate greenhouse gas emission reductions

Net zero CO<sub>2</sub> and net zero GHG emissions can be achieved through strong reductions across all sectors



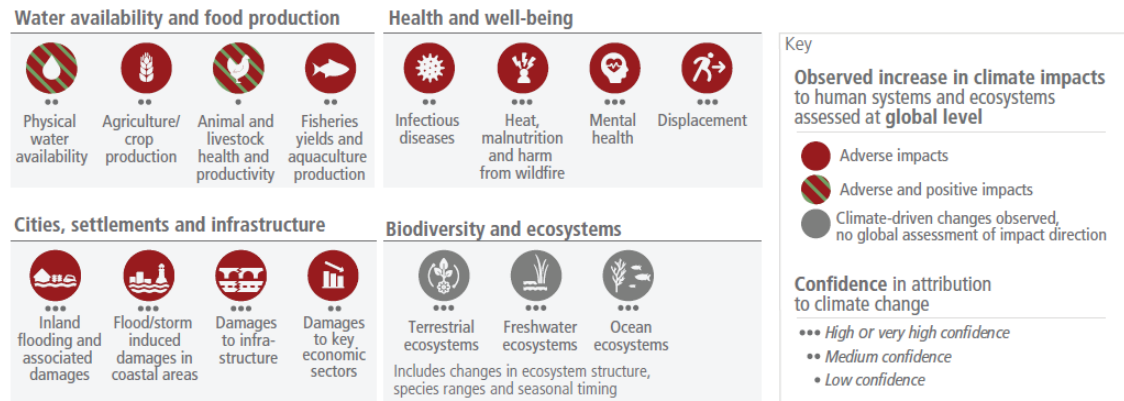
Complemented with different schemes to calculate compliant national emission reduction pathways

(IPCC AR6 SYR SPM 2023)

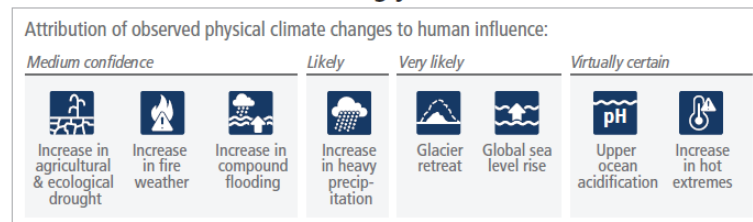
“There is an extremely **limited amount of time available** to take the steps necessary to prevent global warming **from exceeding 1.5°C...**”

Duarte Agostinho and Others v. Portugal and 32 Other States,  
complaint filed with ECtHR (2020)

a) Observed widespread and substantial impacts and related losses and damages attributed to climate change



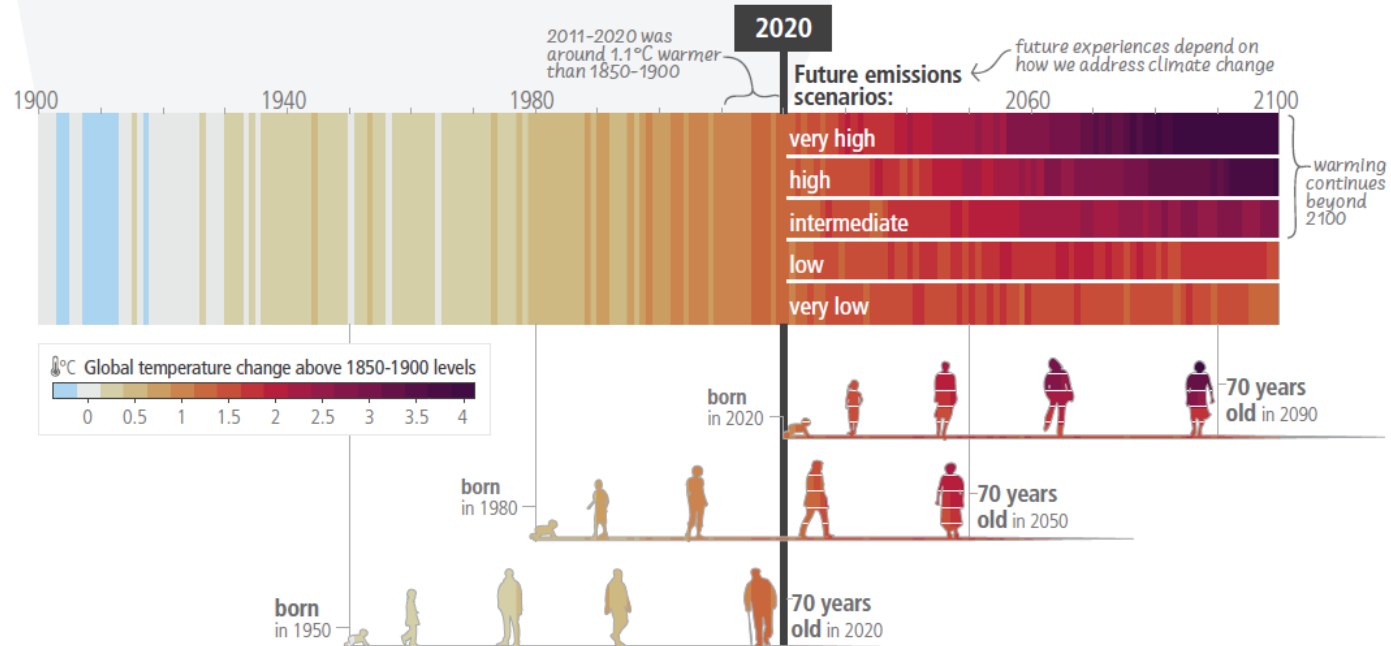
b) Impacts are driven by changes in multiple physical climate conditions, which are increasingly attributed to human influence



“Hazards and associated risks expected in the **near-term** include an increase in heat-related human **mortality** and morbidity... food-borne, water-borne, and vector-borne **diseases**... **mental health** challenges... **flooding** in coastal and other low-lying cities and regions... **biodiversity** loss in land, freshwater and ocean ecosystems... decrease in **food production** in some regions.”

# Implications for children, youth and future generations

c) The extent to which current and future generations will experience a hotter and different world depends on choices now and in the near-term



(IPCC AR6 SYR SPM 2023)

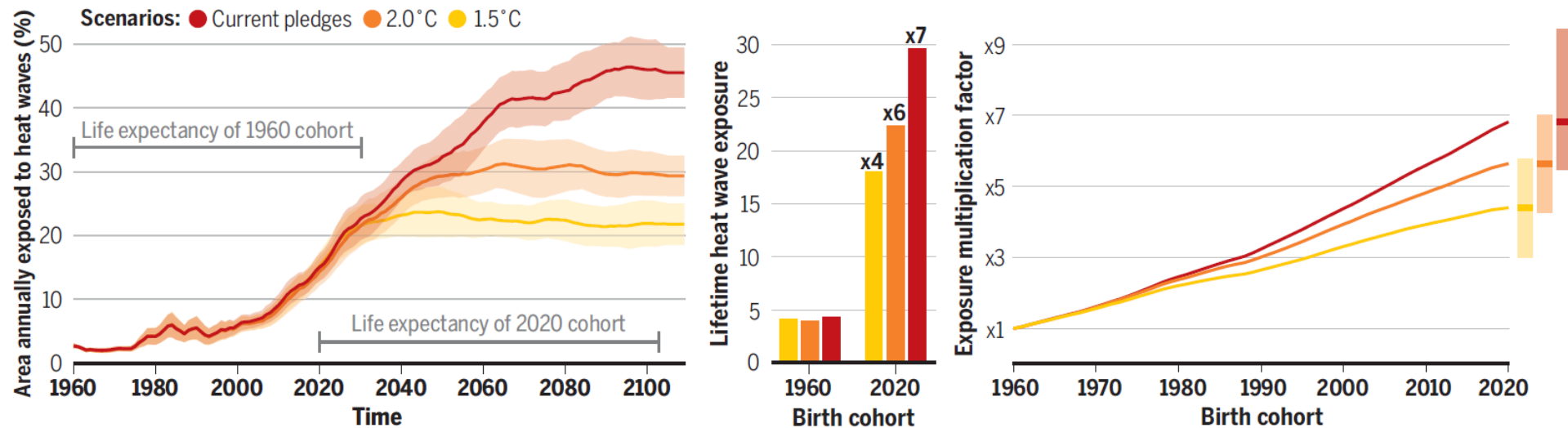


“The material interferences with their rights... are greater than upon older generations, not only because they will live longer, but also because the **impacts of climate change will worsen over time.** There is no objective and reasonable justification for shifting the burden of climate change onto younger generations by adopting inadequate mitigation measures”

Duarte Agostinho and Others v. Portugal and 32 Other States,  
complaint filed with ECtHR (2020)

# ISIMIP output used in case intervention

How many more extremes will someone born in 2020 be exposed to during their lifetime compared to someone born in 1960?



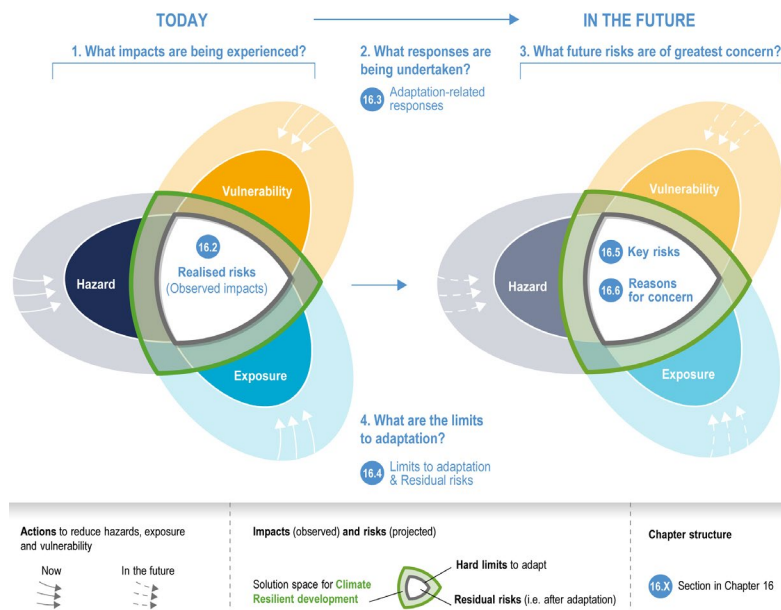
(Thiery 2021, Lange 2020)

“Younger generations... will be **more affected by heatwaves and wildfires...** Under current policy pledges... a person born between 1999 and 2012 in Portugal will experience at least **24.9 times more heatwaves** and at least **1.8 times as many wildfires** than they would have experienced without human-induced climate change. Exposure could be reduced by at least 48% for heatwaves and 18% for wildfires if warming is limited to 1.5°C”

Duarte Agostinho and Others v. Portugal and 32 Other States,  
ENNHRI third party intervention (2020)

*(Thiery 2021, Lange 2020)*

# Relevance for ISIMIP



- ISIMIP incredibly well placed for questions on impacts/harms (observed/attributed, projected but avoidable with stronger mitigation)
- Identification of disproportionately affected regions and groups → ongoing & potential lawsuits
- Addressing “the elephant in the room” (Schellnhuber, 2014)

## How?

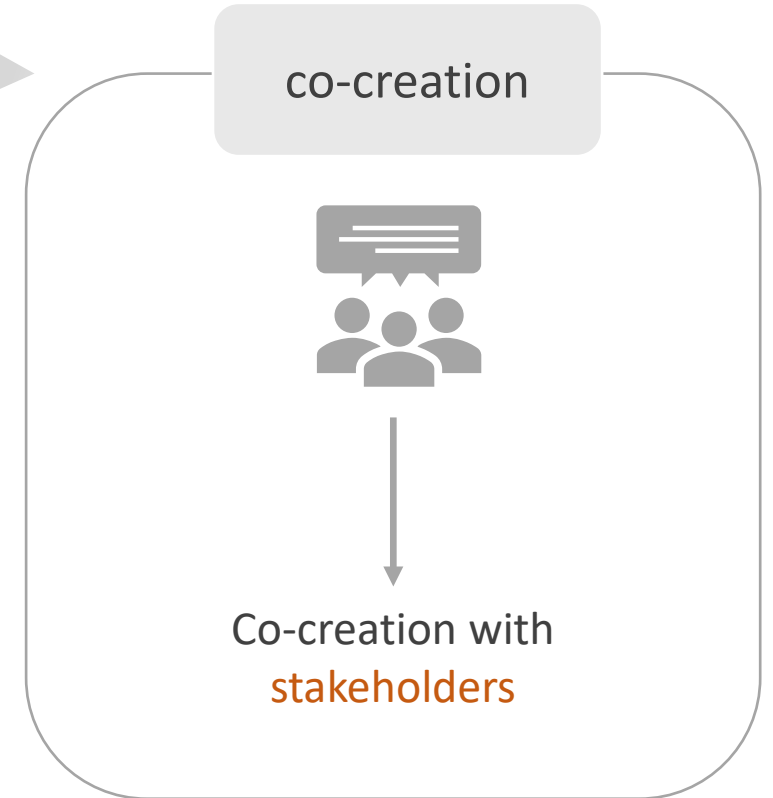
- Communicating what is known
- Translating science for law
- Carrying out litigation-inspired research

## Points for reflection

- Communicating robustness & uncertainties
- The issue of spatial scale global vs. regional
- Scientific independence



Analysis of disproportionate harm/risk to children/youth

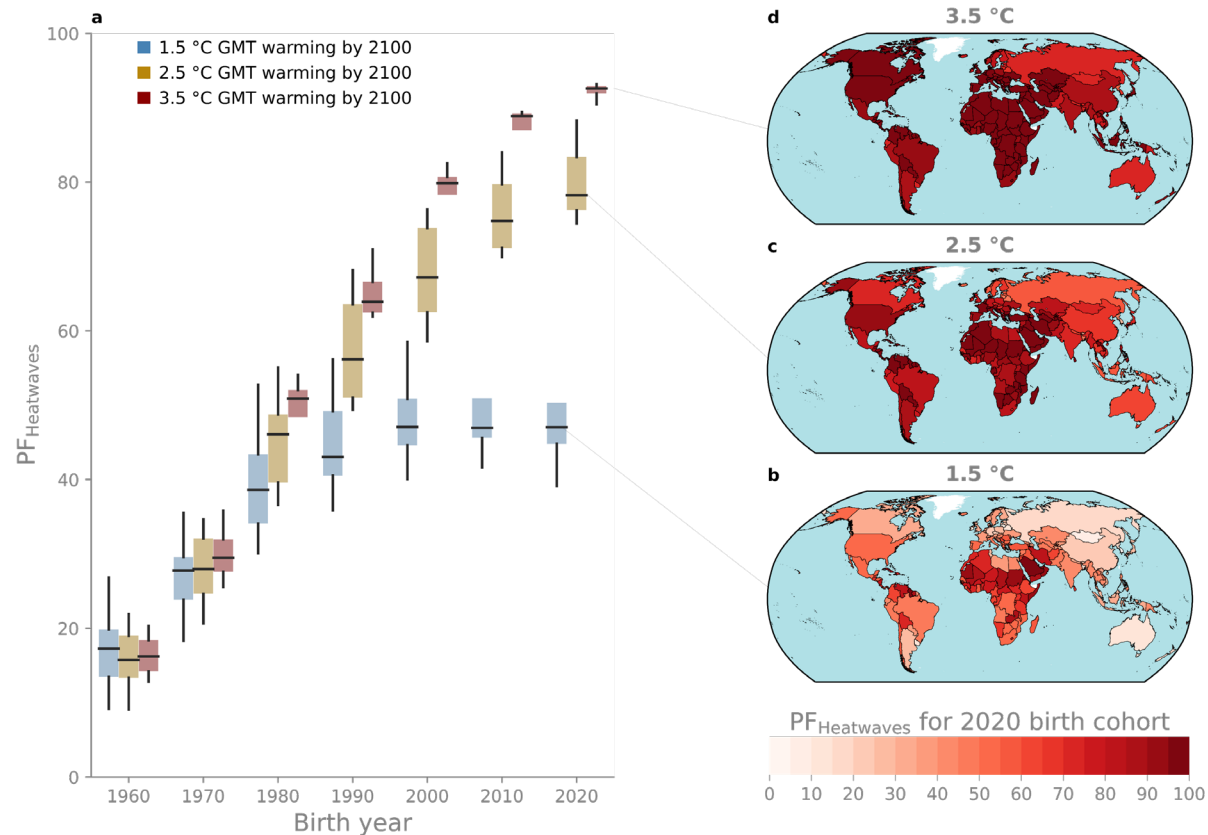


An aerial satellite image of a coastal region. The land is covered in dense green vegetation. A large, irregularly shaped body of water, possibly a bay or estuary, is visible, showing a distinct greenish-brown color, likely due to phytoplankton blooms or sediment. The water body is surrounded by land on three sides. A semi-transparent green horizontal bar is overlaid on the right side of the image, containing contact information.

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What fraction of a birth cohort will live an “unprecedented life” in terms of the number of heatwaves they experience in their lifetime?



(Grant et al. 2021, in prep)

# Open questions

What science to best support which cases cases,  
global vs. regional studies,

how best to frame the harms or risks,

Which harms and risks in what territories, what jurisdictions

What rights in connection to what harms

Present versus future harms/risks

evidentiary challenges vs. procedural challenges