Adaptation is essential, but is it enough?

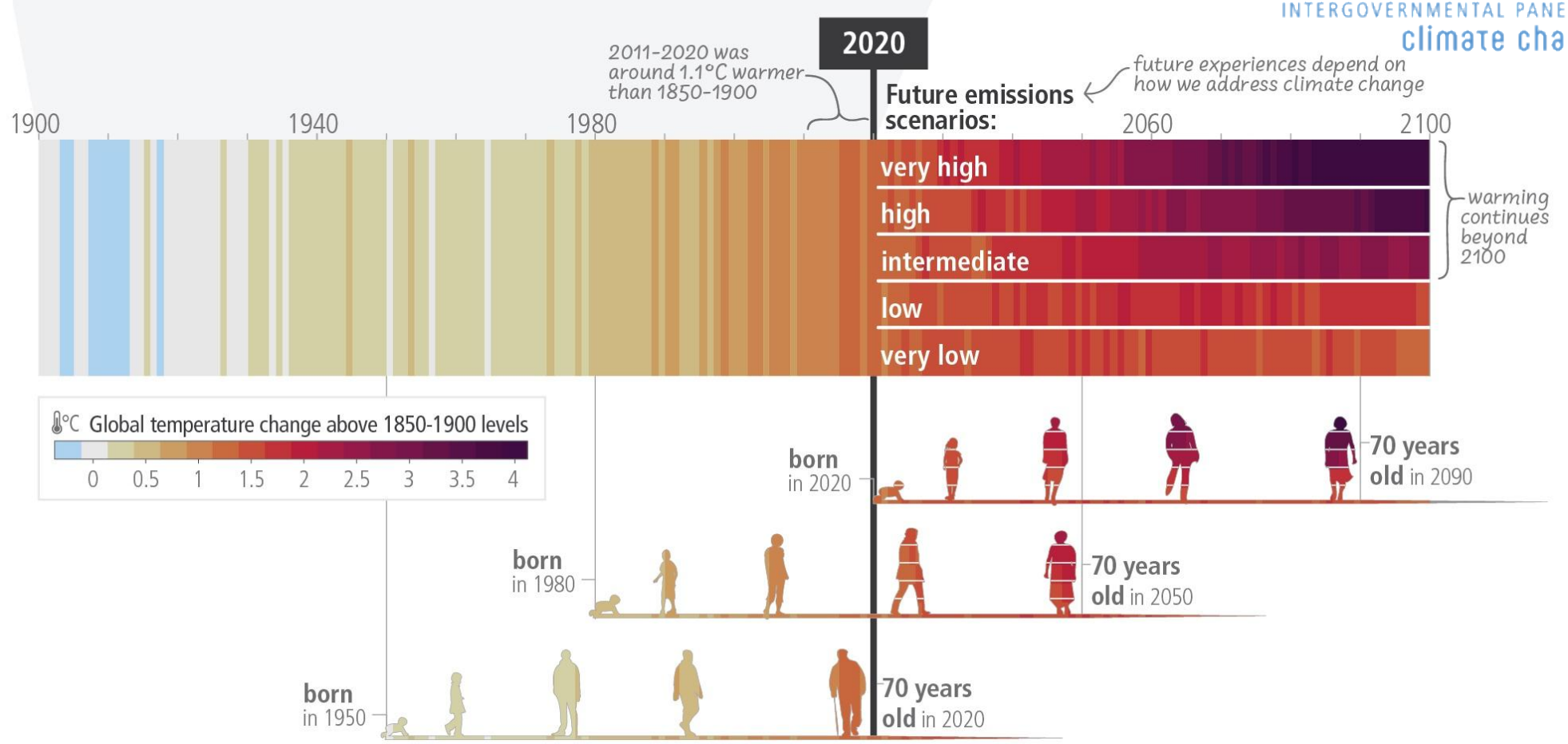
Lisa Schipper

Department of Geography – University of Bonn

lschipper@uni-bonn.de / @lisaschipper.bsky.social

FutureMed 1st General Assembly – Pathways for Just and Sustainable Future – Chania, Crete

30 September 2025



IPCC SYR, 2023

A is for Adaptation

Adjustment to experienced or expected impacts of climate change

2001:

‘…there are two directions and purposes in adaptation research; adaptation research for mitigation policy, and adaptation research for adaptation policy. **To date, the overwhelming preponderance of adaptation research has been conducted in response to the mitigation issue.’**

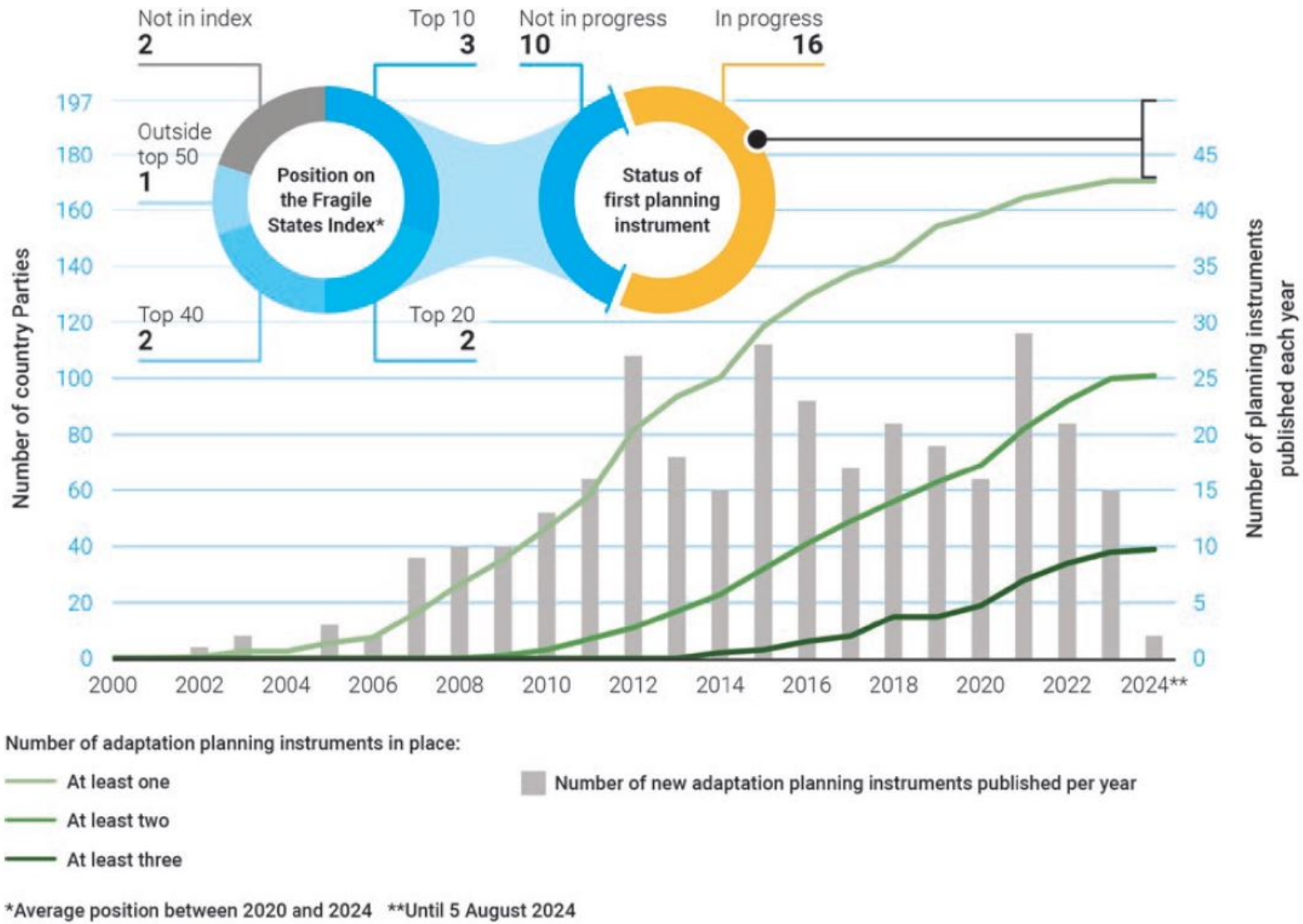
Burton, et al (2001) ‘From Impacts Assessment to Adaptation Priorities: The Shaping of Adaptation Policy’ *Climate Policy.*

2021:

‘Over the last two decades climate change adaptation has **emerged as a central and now acknowledged component** of the international climate change policy and research agenda.’

Nalau and Verrall (2021) ‘Mapping the evolution and current trends in climate change adaptation science’ *Climate Risk Management*

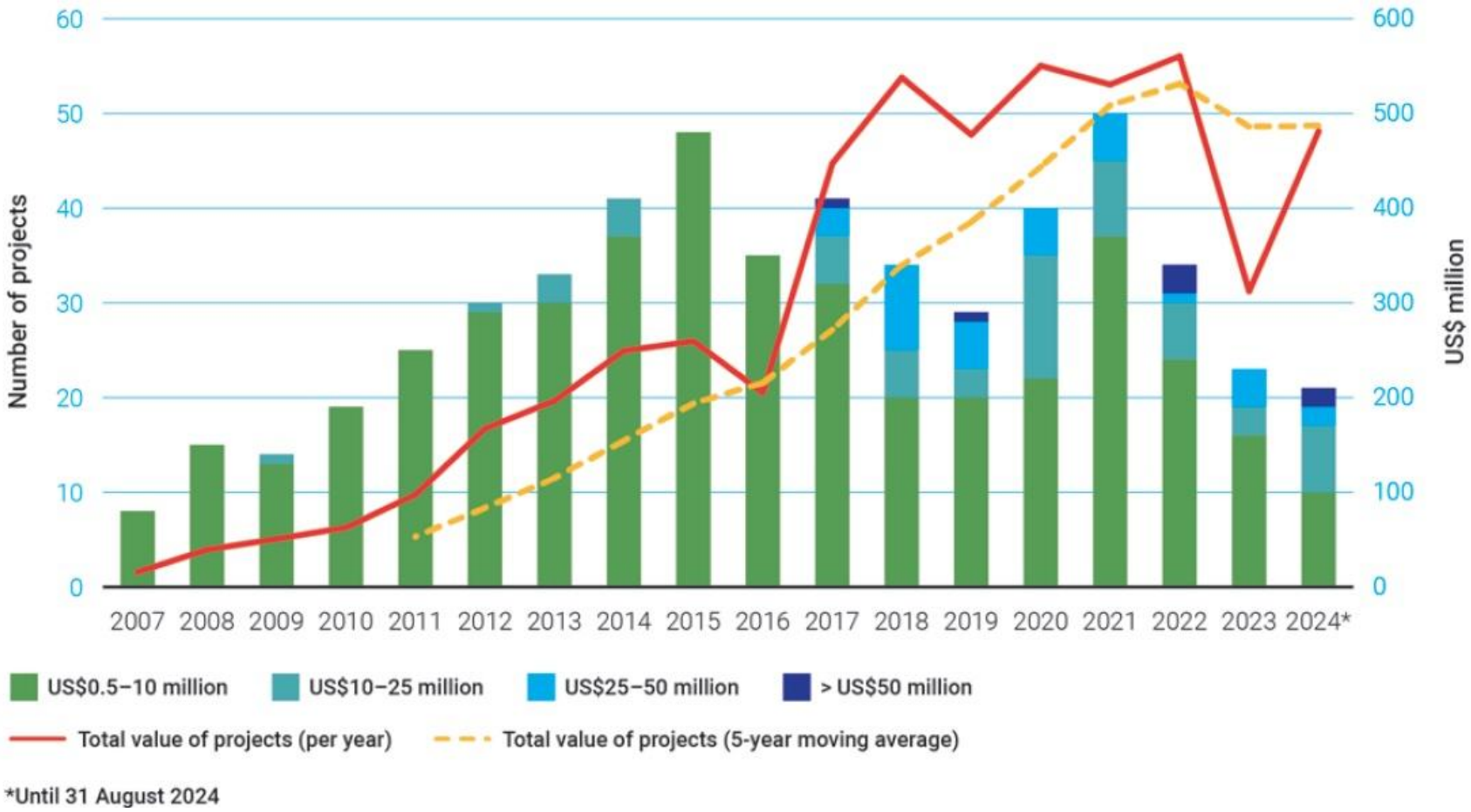
Adaptation planning since 2000



UNEP (2024) 'Adaptation Gap Report'

Number of adaptation projects is increasing…

Figure ES.2 Progress in adaptation projects supported by the financial mechanisms serving the UNFCCC and the Paris Agreement



*Until 31 August 2024

UNEP (2024) 'Adaptation Gap Report'

IPCC AR6: There are limits to adaptation

- Even effective adaptation cannot prevent all losses and damages
- Above 1.5°C some natural solutions may no longer work.
- Above 1.5°C, lack of fresh water could mean that people living on small islands and those dependent on glaciers and snowmelt can no longer adapt.
- By 2°C it will be challenging to farm multiple staple crops in many current growing areas.

Human Climate Niche

nature sustainability

Explore content ~ About the journal ~ Publish with us ~

nature > nature sustainability > articles > article

Article | Open Access | Published: 22 May 2023

Quantifying the human cost of global warming

Timothy M. Lenton ✉, Chi Xu ✉, Jesse F. Abrams, Ashish Ghadiali, Sina Loriani, Boris Sakschewski, Caroline Zimm, Kristie L. Ebi, Robert R. Dunn, Jens-Christian Svenning & Marten Scheffer

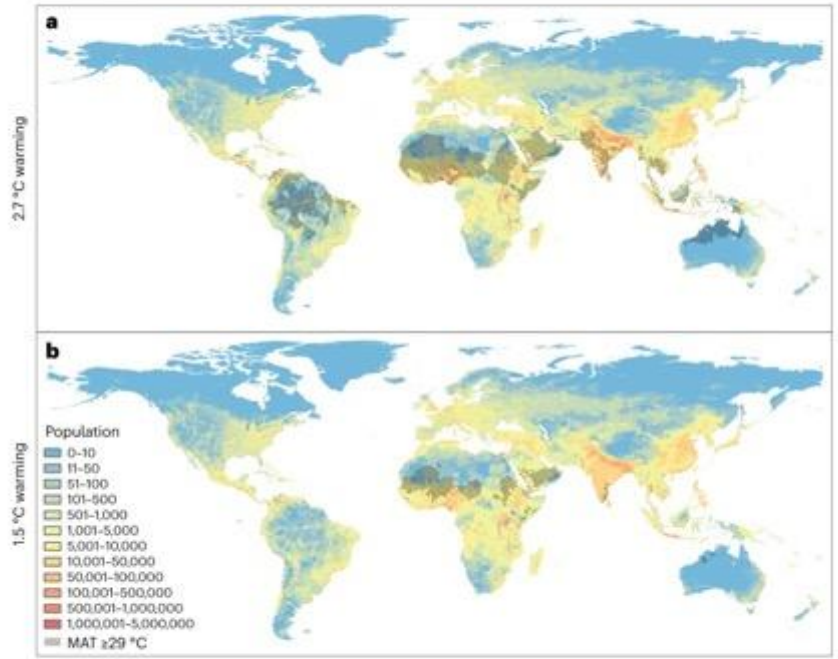
Nature Sustainability (2023) | Cite this article

1044 Altmetric | Metrics

Abstract

The costs of climate change are often estimated in monetary terms, but this raises ethical issues. Here we express them in terms of numbers of people left outside the 'human climate niche'—defined as the historically highly conserved distribution of relative human population density with respect to mean annual temperature. We show that climate change has already put ~9% of people (>600 million) outside this niche. By end-of-century (2080–2100), current policies leading to around 2.7 °C global warming could leave one-third (22–39%) of people outside the niche. Reducing global warming from 2.7 to 1.5 °C results in a ~5-fold decrease in

Fig. 4: Regions and population densities exposed to unprecedented heat at different levels of global warming.



a,**b**, Regions exposed to unprecedented heat (MAT ≥29 °C) overlaid on population density (number in a ~100 km^2 grid cell) for a world of 9.5 billion (SSP2, 2070) under 2.7 °C global warming (**a**) and 1.5 °C global warming (**b**).

We need adaptation, but there are limits to the effectiveness of adaptation – how do we advance from here?

Two thoughts (and a few more provocations)

1. Maladaptation

‘An adaptation that does not succeed in reducing vulnerability but increases it instead’ (IPCC WG II, 2001)

UNIVERSITÄT BONN GEOGRAPHIE

ADAPTATION HIVE

Maladaptatio

Search

Bloomberg | Quint

All Sections | Markets | Business | Research Reports | BQ BLUE | Economy & Finance

CarbonBrief

Climate Responses That Backfire Are a Growing Problem, IPCC Says

Leslie Kaufman & Eric Roston

Why some climate change adaptations just make things worse

Short-term and poorly thought-out solutions are hardly solutions at all.

BY SARA KILEY WATSON | PUBLISHED MAR 19, 2022 11:00 AM

ENVIRONMENT | SCIENCE

meant to protect against rising oceans that make those just beyond their borders more exposed to flooding; irrigation that counteracts **drought** to keep food growing, but at the same time depletes precious groundwater; and tree planting in ecosystems that were never meant to be forested.

All of it was intended to help. "Most often, maladaptation is an unintended consequence," the report

Allgemeine

FAZ.NET

Sport | Gesellschaft | Stil | Rhein-Main | Technik | W

g scheitert

assung an die Folgen der Erderwärmung

ls Beispiel für teurer Fehlplanung zu

Multiple uses and definitions

- Rebounding vulnerability
  - vulnerability returns in same or different form

- Shifting/redistributing vulnerability
  - others become more vulnerable

- Creating negative externalities
  - new problems, not necessarily linked with increasing vulnerability to climate change

Examples of maladaptation

- Infrastructural maladaptation

- Institutional maladaptation

- Behavioural maladaptation

Adaptation projects making people more vulnerable

Many adaptation interventions are found to **reinforce**,

redistribute or

create new sources of vulnerability.

ELSEVIER

World Development
Volume 141, May 2021, 105383

Adaptation interventions and their effect on vulnerability in developing countries: Help, hindrance or irrelevance?

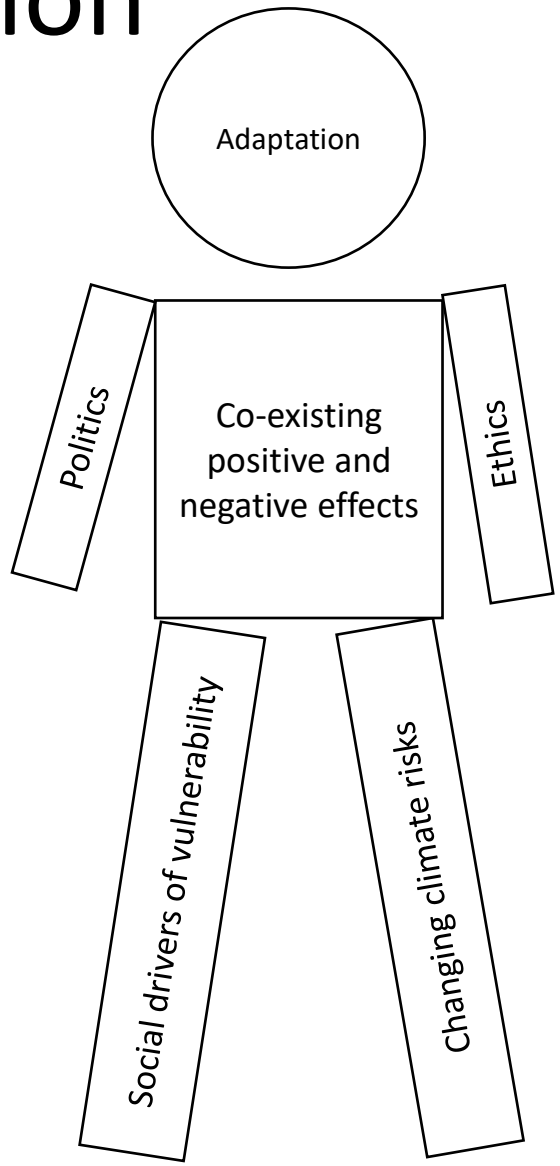
Siri Eriksen [a], E. Lisa F. Schipper [b], Morgan Scoville-Simonds [c, d], Katharine Vincent [e, f], Hans Nicolai Adam [g], Nick Brooks [h, i], Brian Harding [j], Dil Khatri [k], Lutgart Lenaerts [l, n], Diana Liverman [m], Megan Mills-Novoa [m], Marianne Mosberg [n], Synne Movik [o], Benard Muok [p], Andrea Nightingale [q, r], Hemant Ojha [s, t], Linda Sygna [u], Marcus Taylor [v] ... Jennifer Joy West [x]

Challenges

- **When** do we assess the adaptation outcome?
- **Who** should benefit / be adversely affected?
- **What** should the purpose of the original initiative be?
- **What** should it be assessed against?

Possible ways to address maladaptation

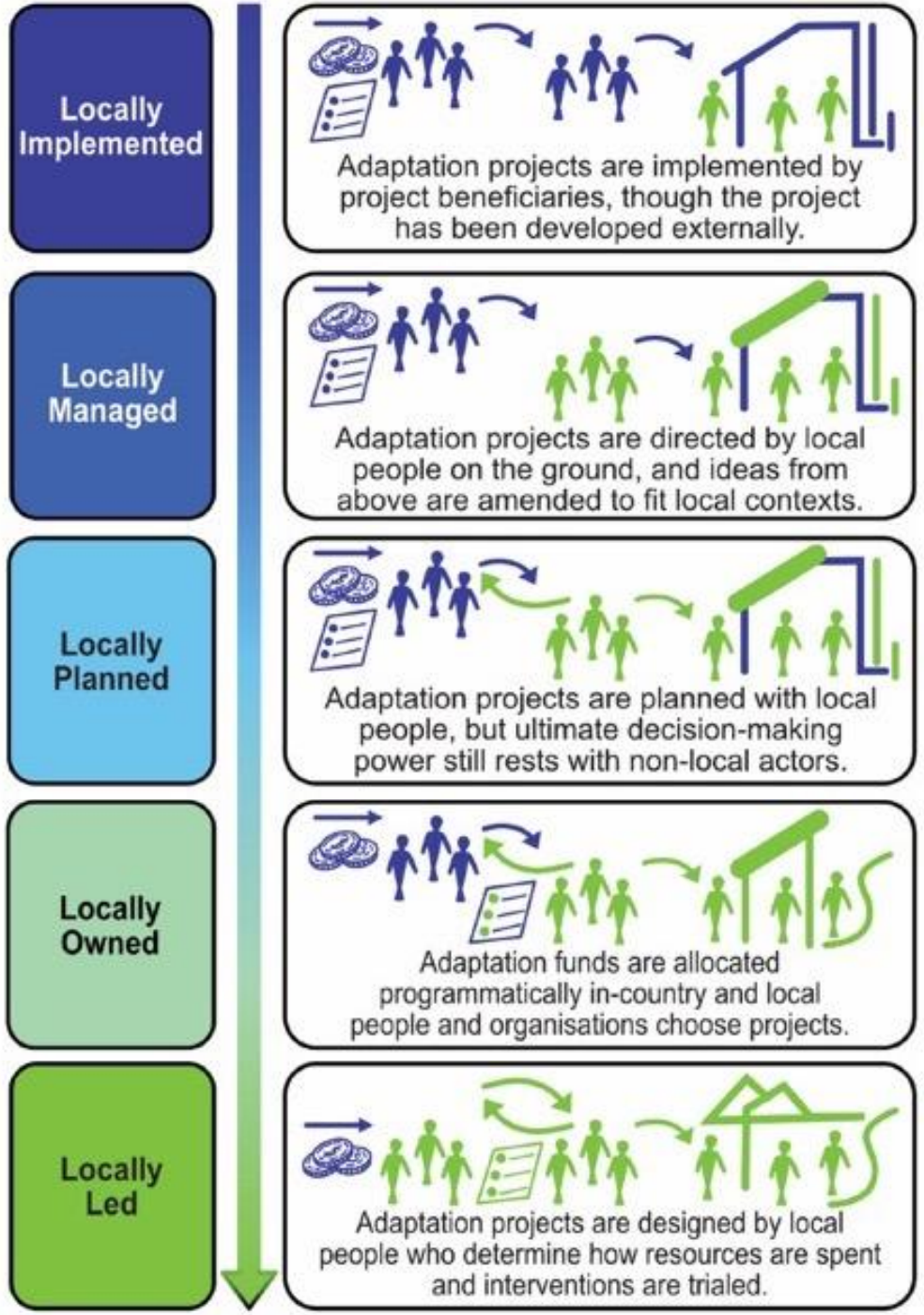
- Better understanding of contexts
- Equitable participation
- Avoid retrofitting adaptation
- Adaptation success should be defined be local agendas



One Approach: Locally-led Adaptation

- Devolving decision making to the lowest level
- Addressing structural inequalities
- Providing patient and predictable funding
- Investing in local capabilities
- Building a robust understanding of climate risk and uncertainty
- Flexible programming and learning
- Ensuring transparency and accountability
- Collaborative action and investment

Rahman et al, 2023 ‘Locally Led Adaptation: Promises, Pitfalls and Possibilities, AMBIO.

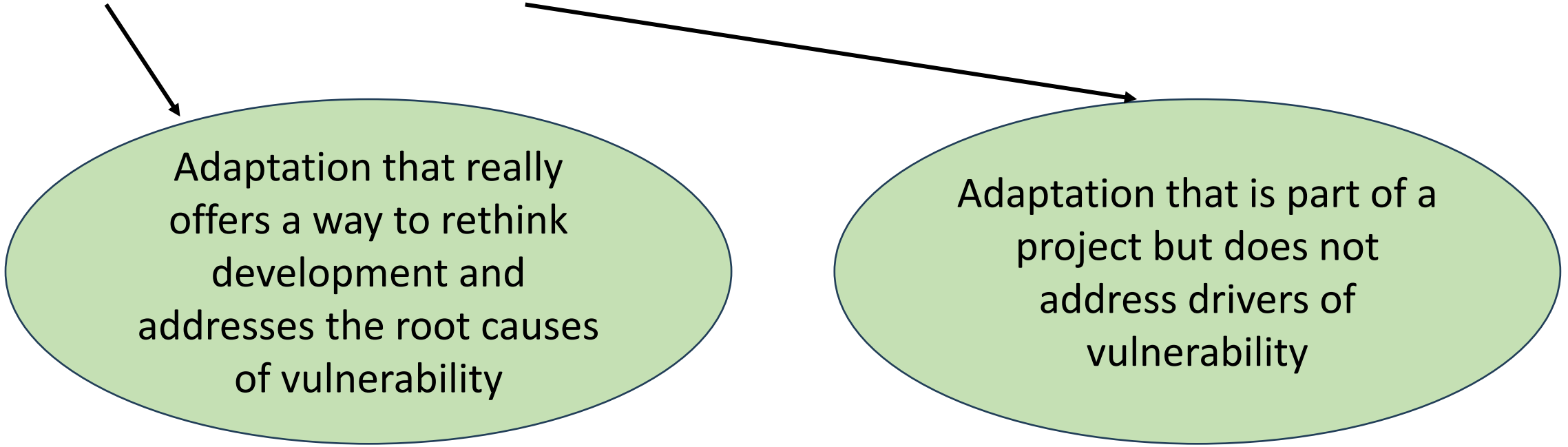


Important!

- Adaptation strategies that are poorly planned can result in maladaptation
  - Maladaptation does not just refer to ‘bad outcomes’
- There are many ways to improve adaptation that can also help avoid maladaptation
- Funding structures – and adaptation practice as an extension of development practice – are also to blame
- Thinking about climate change as something separate from other development challenges may increase the risk of maladaptation

2. Assessing progress…toward what?

‘Adaptation’ vs ‘adaptation’ (Big A vs little a) (via Webber, 2016)

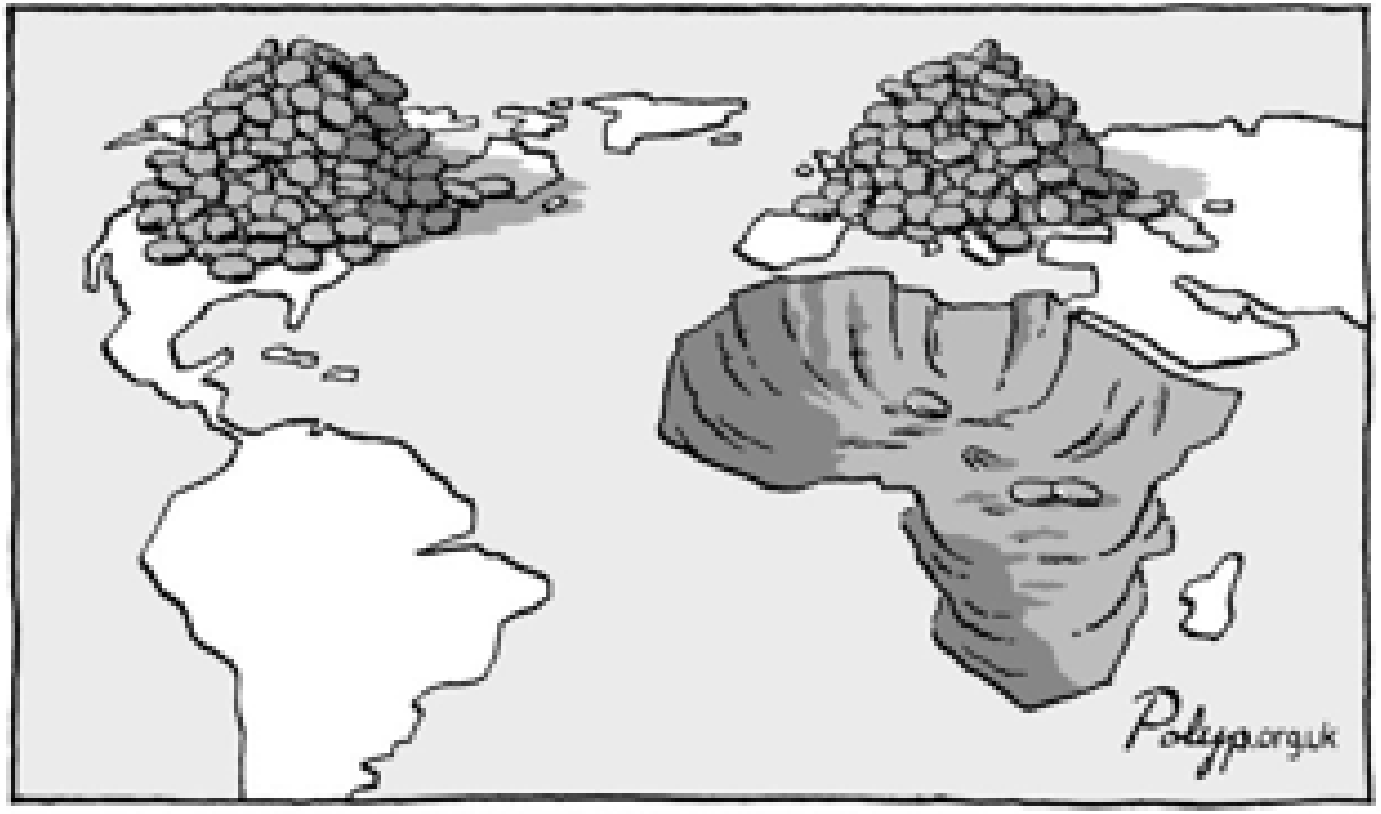


Equity & Justice in Climate Change

Survival vs luxury emissions
(Agarwal and Narain, 1991)

Unequal power relations

Development



'GOLD DIGGERS'

Amitav Ghosh, *The Nutmeg's Curse* (1)

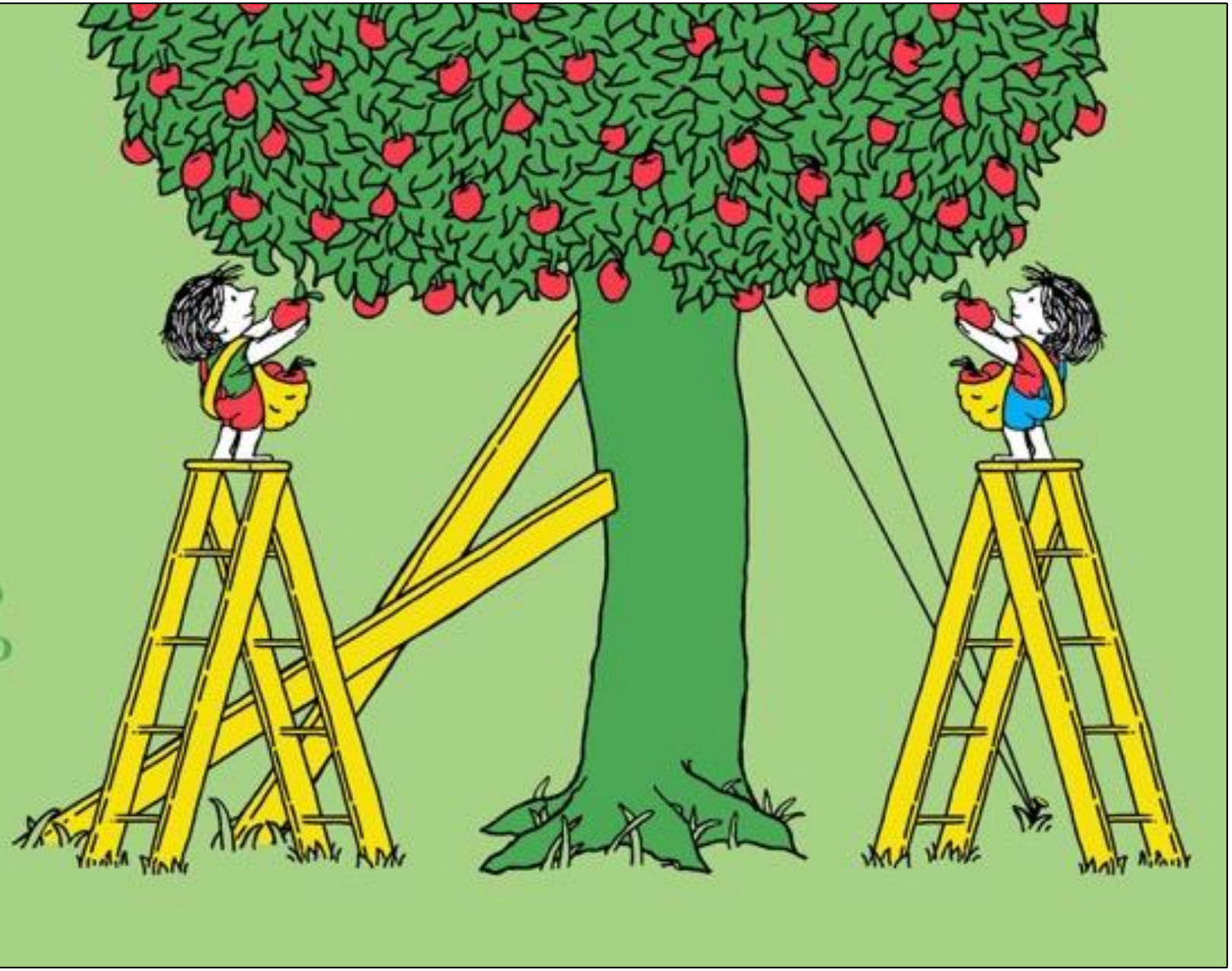
'There is no mystery in this [catastrophic impacts of climate change]. The conclusion that White settlers came to was that omnicidal war would always work to their advantage. This is the lesson that informs Tennyson's vision of the ascent of the 'crowing race'. That is also why there are many people in the former settler colonies who do not flinch from the prospect of accelerating, rather than slowing, climate change; indeed, they welcome it, in the belief that they will be protected from its worst effects'. (p. 168)

Amitav Ghosh, *The Nutmeg's Curse* (2)

'There is, I think, an important question here for the climate movement. Activists have long sought to appeal to the conscience of the privileged by emphasising the message that the costs of climate change will largely be borne by the word's poor, mainly Black and brown people. It now needs to be considered whether these appeals to the conscience may not have had **exactly the opposite** of the intended effect. Is it possible that this message has actually persuaded the privileged to think they need to **do nothing** about climate change because they will be insulated from the worst impacts of global warming by their affluence, and indeed by their bodily advantages?' (p. 170)

Justice

Fixing the system to offer equal access to both tools and opportunities



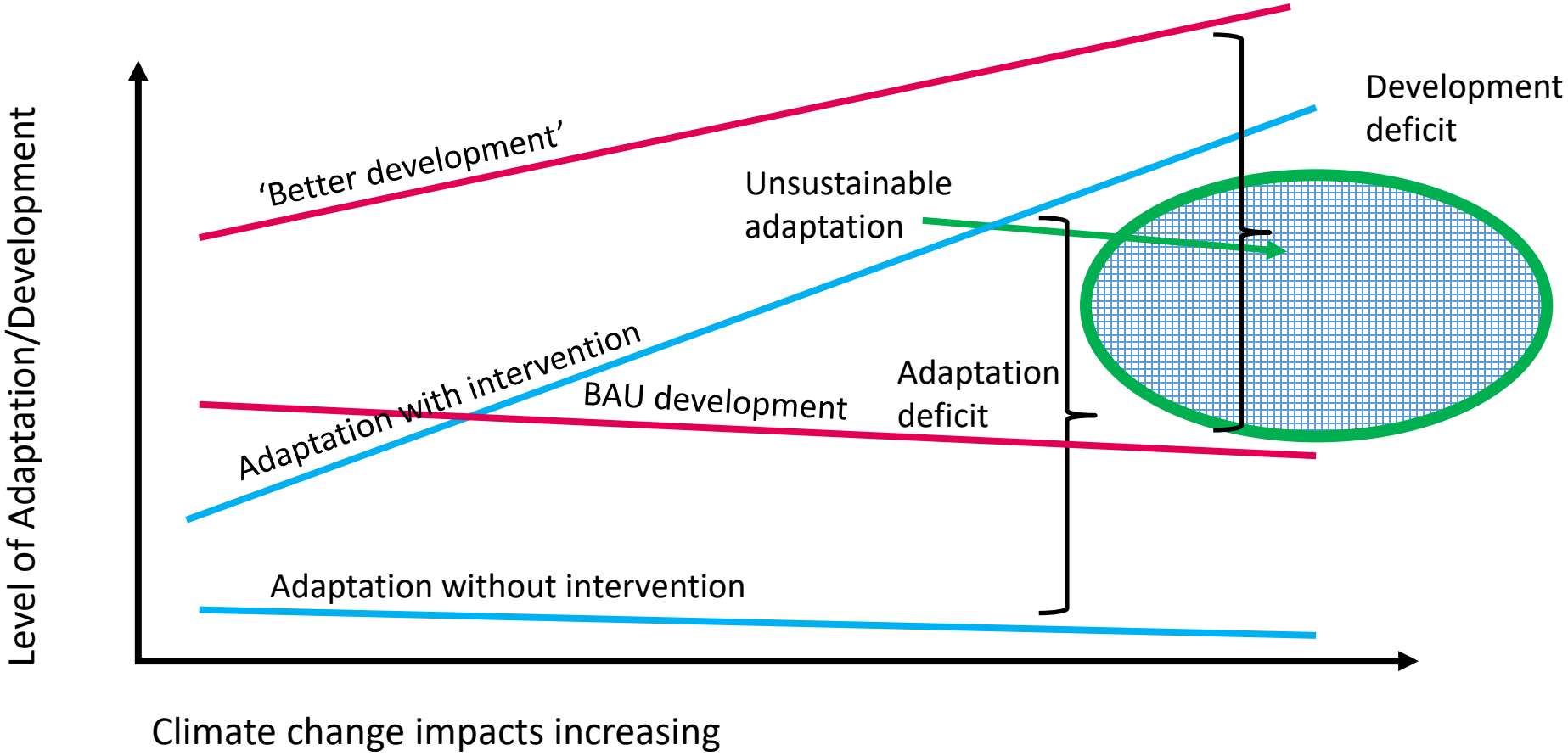
‘If adaptation projects are produced under unjust systems, maladaptation should be considered an expected outcome.’

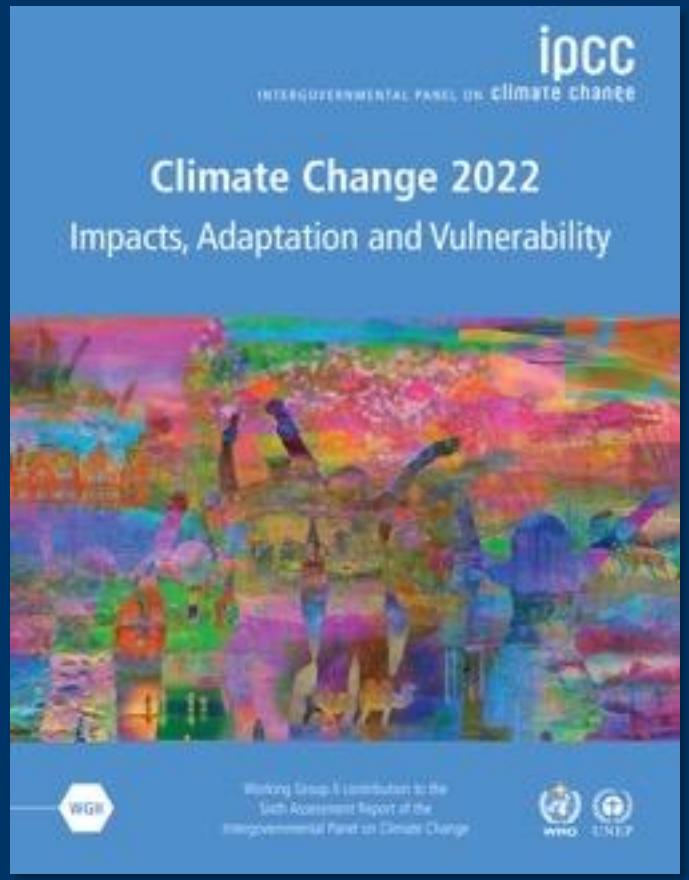
Shah et al (2025) ‘Beyond unintentionality: considering climate maladaptation as cyclical’ *Climatic Change,* https://doi.org/10.1007/s10584-025-03922-7

Decoupling responsibility from adaptation

- Depoliticising adaptation
- Neoliberal approach – project-based, funding-oriented
- Not focussing sufficiently on the root causes of vulnerability
- Not acknowledging the injustice in adaptation – and the challenge of doing successful adaptation in a system that is fundamentally unjust.

Development Deficit vs Adaptation Deficit





“The scientific evidence is unequivocal: climate change is a threat to human well-being and the health of the planet.

Any further delay in concerted global action will miss the brief, rapidly closing window to secure a liveable and sustainable future for all.

ipcc
INTERGOVERNMENTAL PANEL ON climate change
WMO UNEP

In sum

- Adapting to extreme events unlikely – but we can **improve adaptation by rethinking it** (+ reduce risk of maladaptation)
- Adaptation – and climate change – are not happening in a vacuum – **the development context matters** – including colonialism
- Technocratic perspectives on adaptation obscure the **social dimensions of vulnerability,** suggesting that quick fixes are possible
- Incremental adaptation is generally insufficient to trigger the changes we need, **but most adaptation is incremental**
- By framing adaptation as something that can happen outside of other crucial development processes, **the space for unsustainable adaptation becomes larger**

Thank you

lschipper@uni-bonn.de – @lisaschipper.bsky.social