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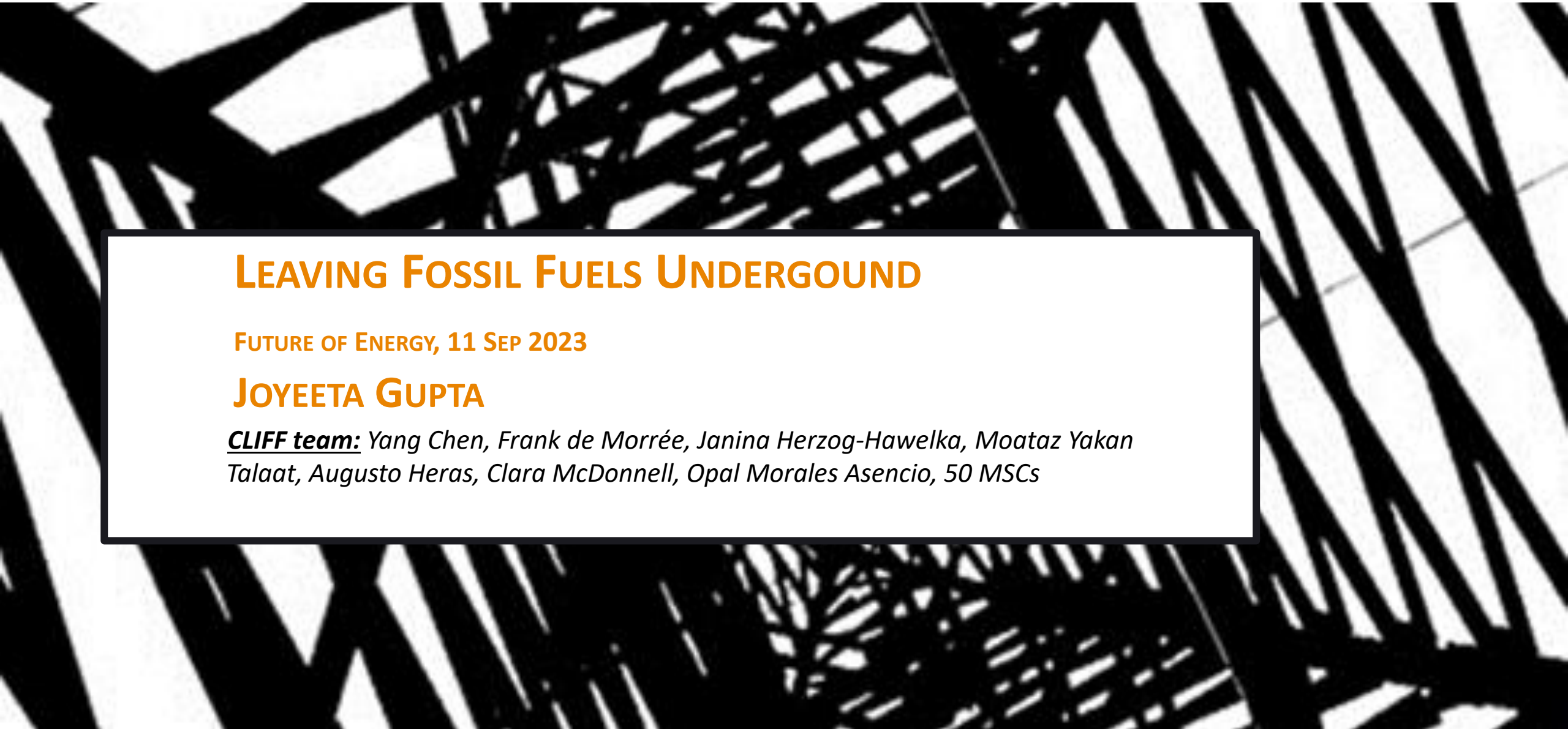

Leaving Fossil Fuels Underground

Future of Energy, 11 Sep 2023

Joyeeta Gupta

CLIFF team: *Yang Chen, Frank de Morrée, Janina Herzog-Hawelka, Moataz Yakan Talaat, Augusto Heras, Clara McDonnell, Opal Morales Asencio, 50 MSCs*

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CLIFF

The problem

- Demand side solutions are not working to address climate change
- Supply side solutions are urgently needed
- Fossil fuel (FF) enterprise worth $16-300 Trillion
- Phasing out FF is expensive for all shareholders/stakeholder

Objectives

- Analyse investors; Changing N/S dimensions; policy instruments for different actors; agents of change; ICID model

Gap in knowledge and Question

What is the role of big investors in leaving fossil fuels underground (LFFU), what are the North-South implications of LFFU, and what measures can be taken by whom to equitably allocate and accelerate shareholder and stakeholder responsibility in energy transformation for inclusive development?

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Key Actor Groups

Actor Group	*Importance in LFFU*	*Origin of Capital & Financial Flows*
FF Firms	up to $300 trillion	Largest firms in US, EU, Canada, Brazil, Saudi Arabia, China & India
Pension Funds	51% of 2019 global GDP; managed $270-980 billion in liquid FF assets in 2019	98% of 2019 pension fund assets are in the OECD area
Philanthropies	Have 100s of billions in total assets; many with ties to FF sector	Largest foundations are in US, UK, EU
Debt Financiers	US, EU & Asian banks lent $2.7 trillion from 2015-20 for FF; Export credit - $30 billion	Mostly located in US, EU, China & India
LMIC	85% of global oil reserves & 67% of coal reserves are outside N. America & Europe	E.g. in Mozambique, Ghana, Kenya, Uganda

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Messages

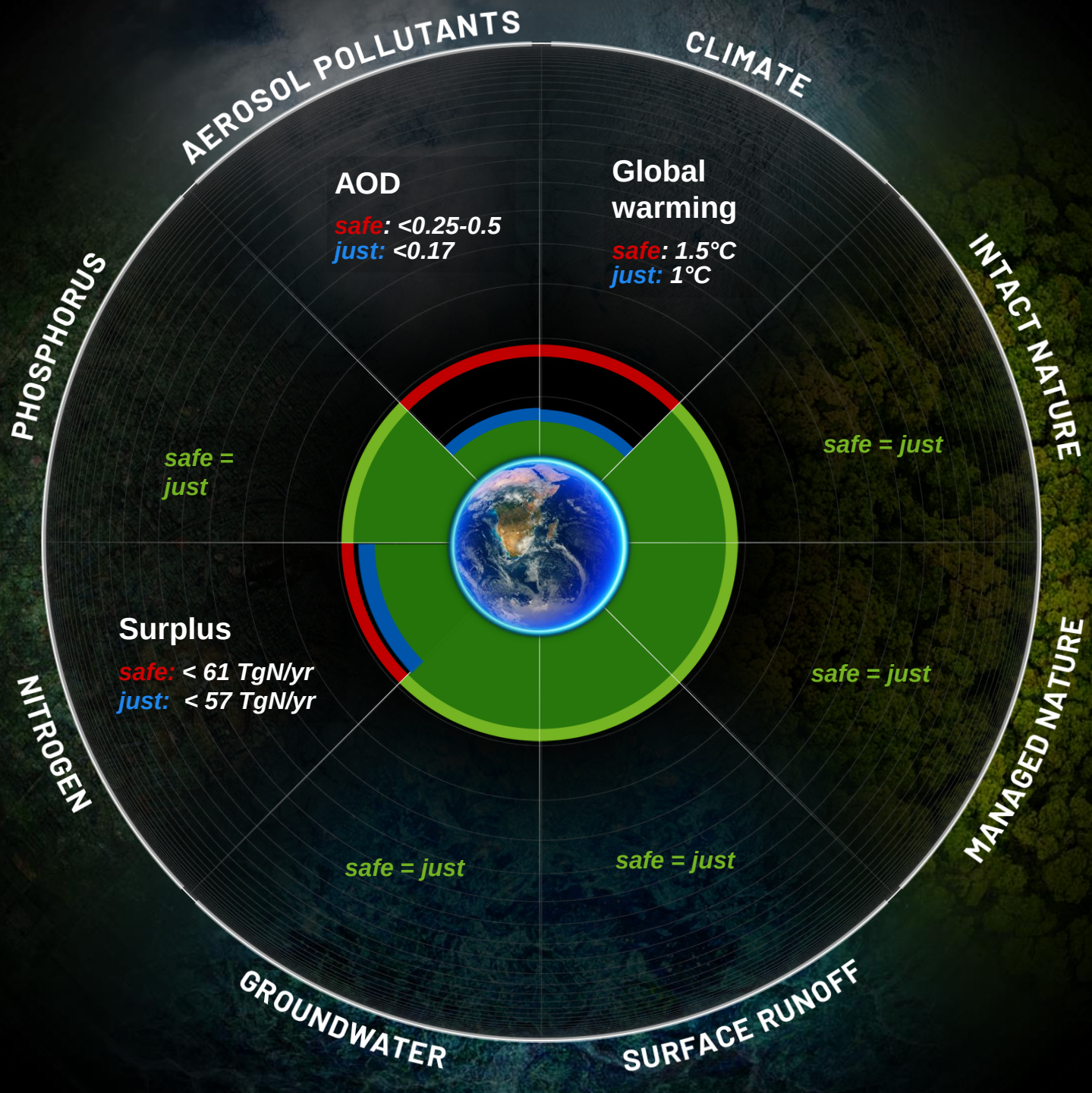
1. Safe and just climate boundary is more stringent than Paris Agreement. Requires faster phase out.
2. Meeting min. Needs within boundary requires just transformation.
3. Earth system justice needed.

JUST BOUNDARIES: RESULTS

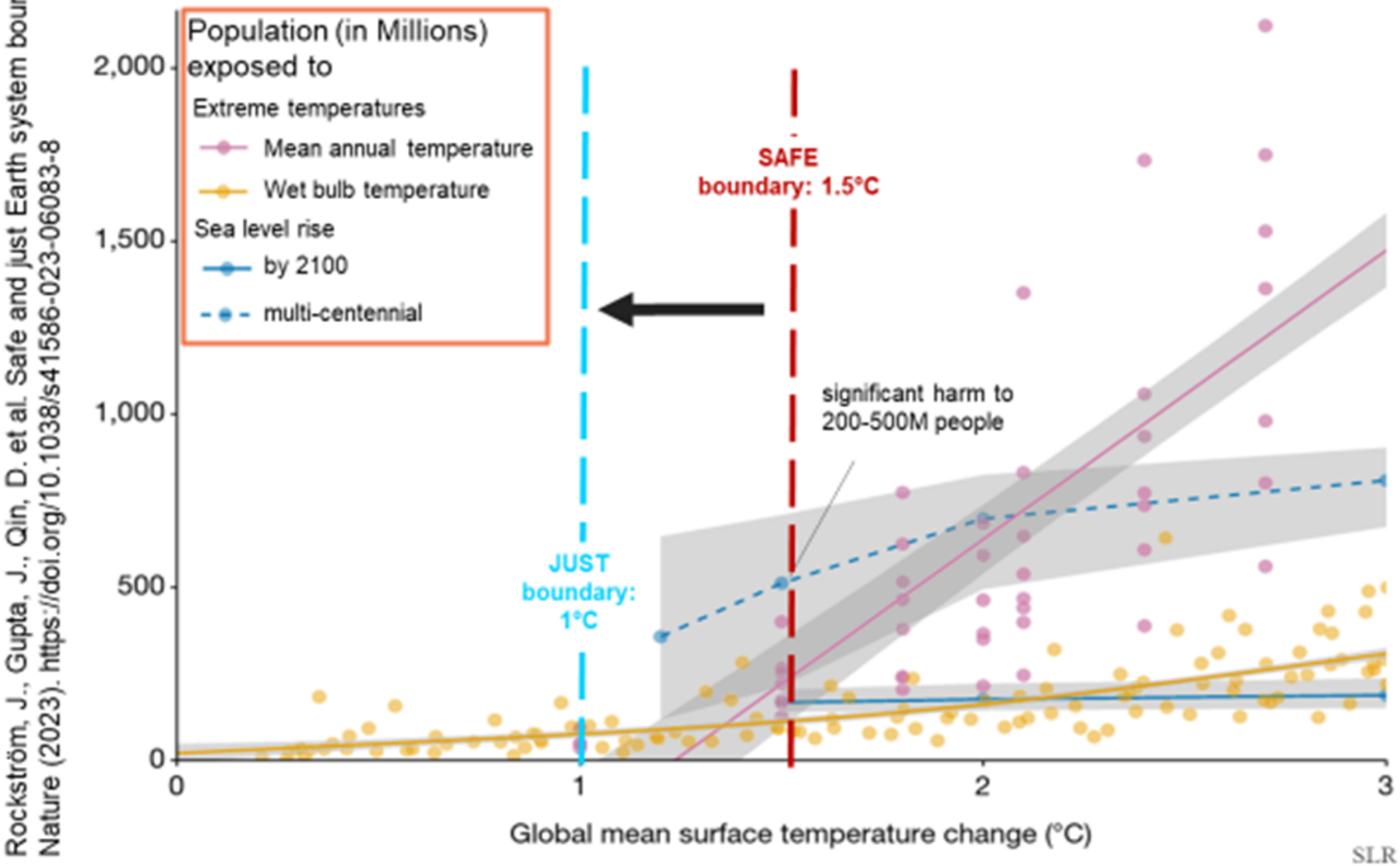
to **minimise exposure of humans to significant harm** from Earth system change, based on

- 3I's framework
- assessment of (no) significant harm

leads to **stricter boundaries** for aerosols, climate, nitrogen



EXAMPLE: SIGNIFICANT HARM FROM CLIMATE CHANGE



Rockström, J., Gupta, J., Qin, D. et al. Safe and just Earth system boundaries. Nature (2023). https://doi.org/10.1038/s41586-023-06083-8

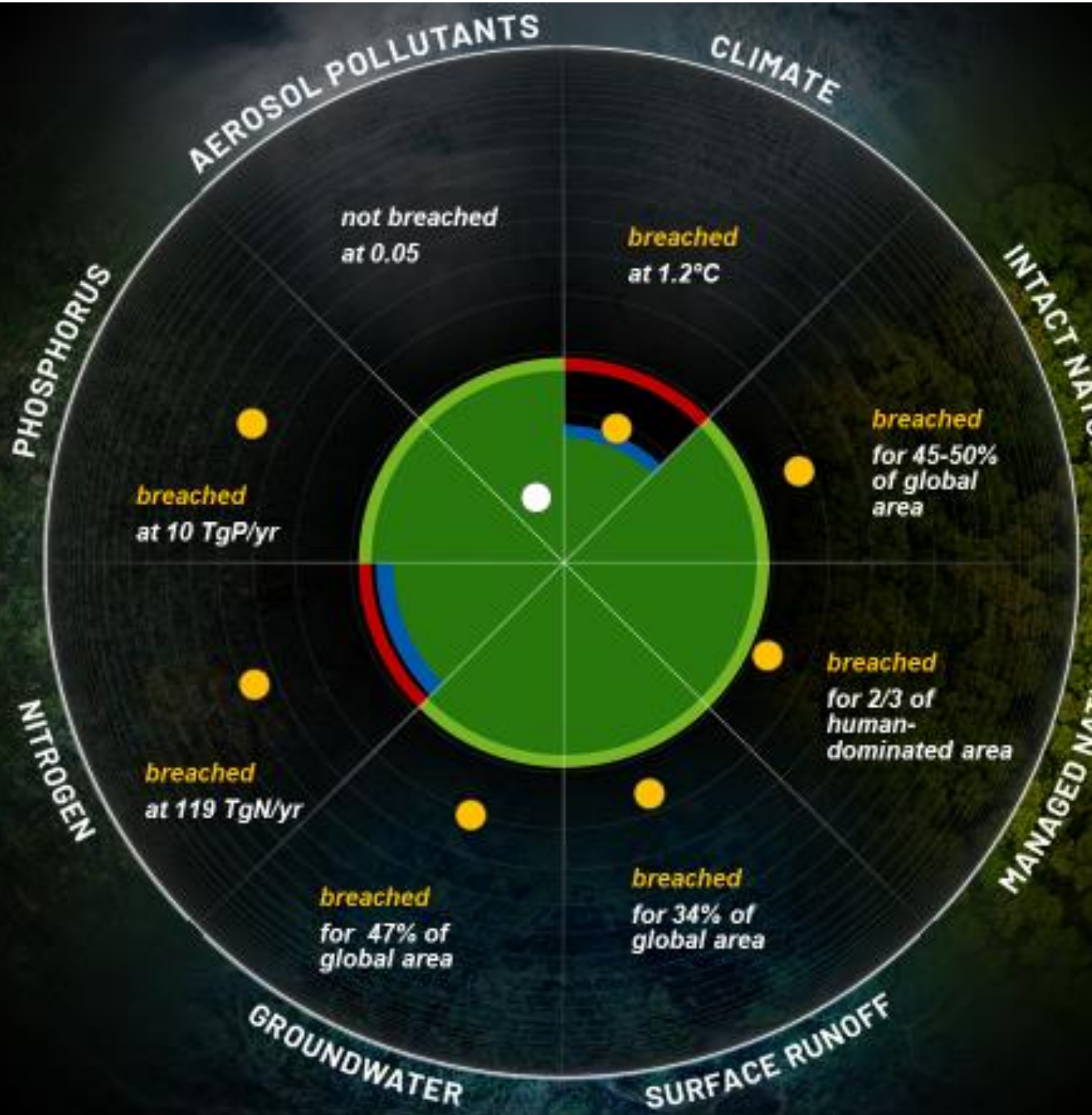
Safe boundary at 1.5°C allows for significant harm to › 200 M people

To avoid exposure of ›10 M people to significant harm, a tighter **Just** boundary at 1°C is needed

SLR exposure from Strauss et al. 2021
Mean annual temperature from Lenton et al. 2023

CURRENT STATE WITH RESPECT TO GLOBAL ESBs

We have **breached** 7 out of 8 globally defined boundaries



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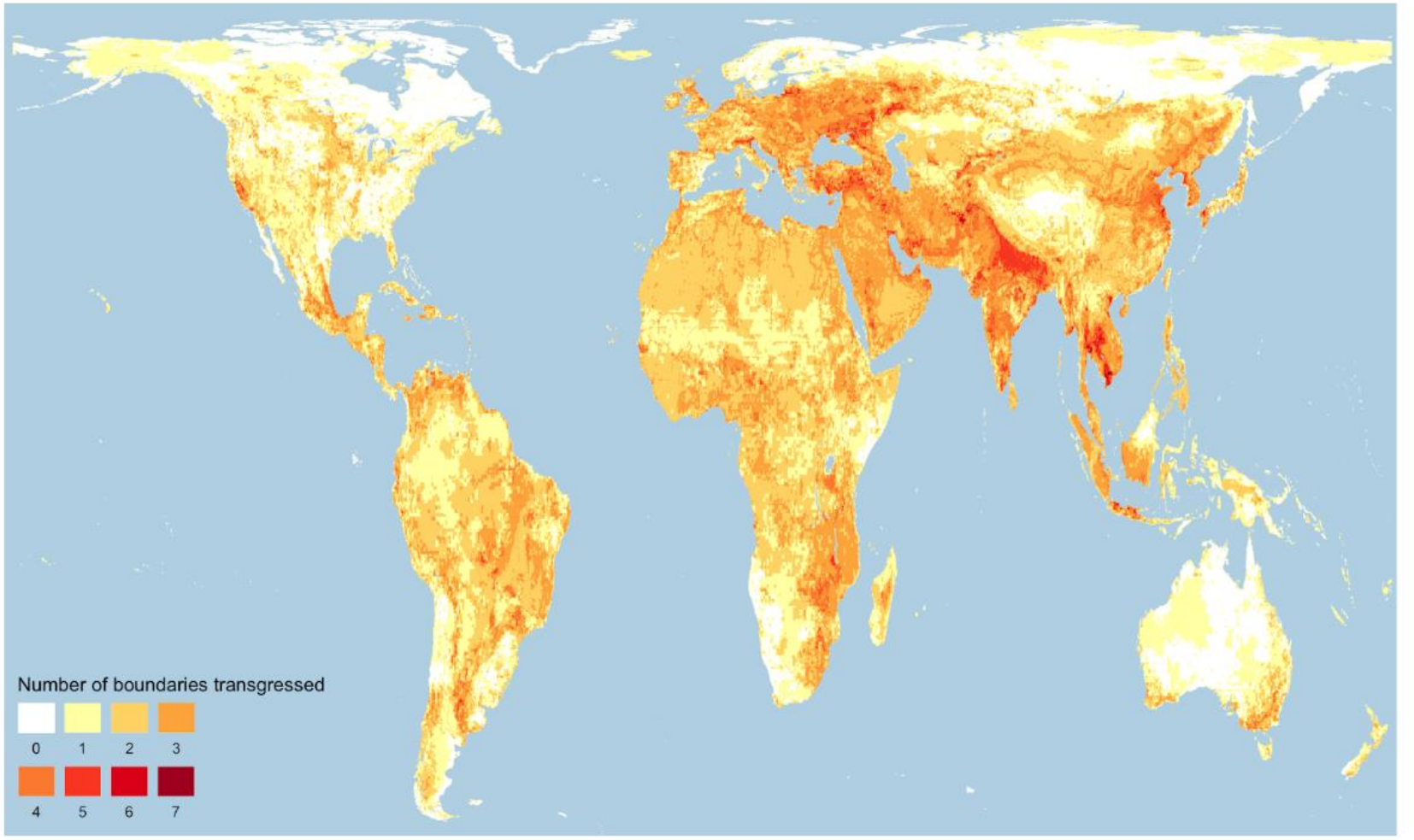
MANY LOCAL BOUNDARIES ARE BREACHED

At least two boundaries breached for 52% of land area / 86% of global population



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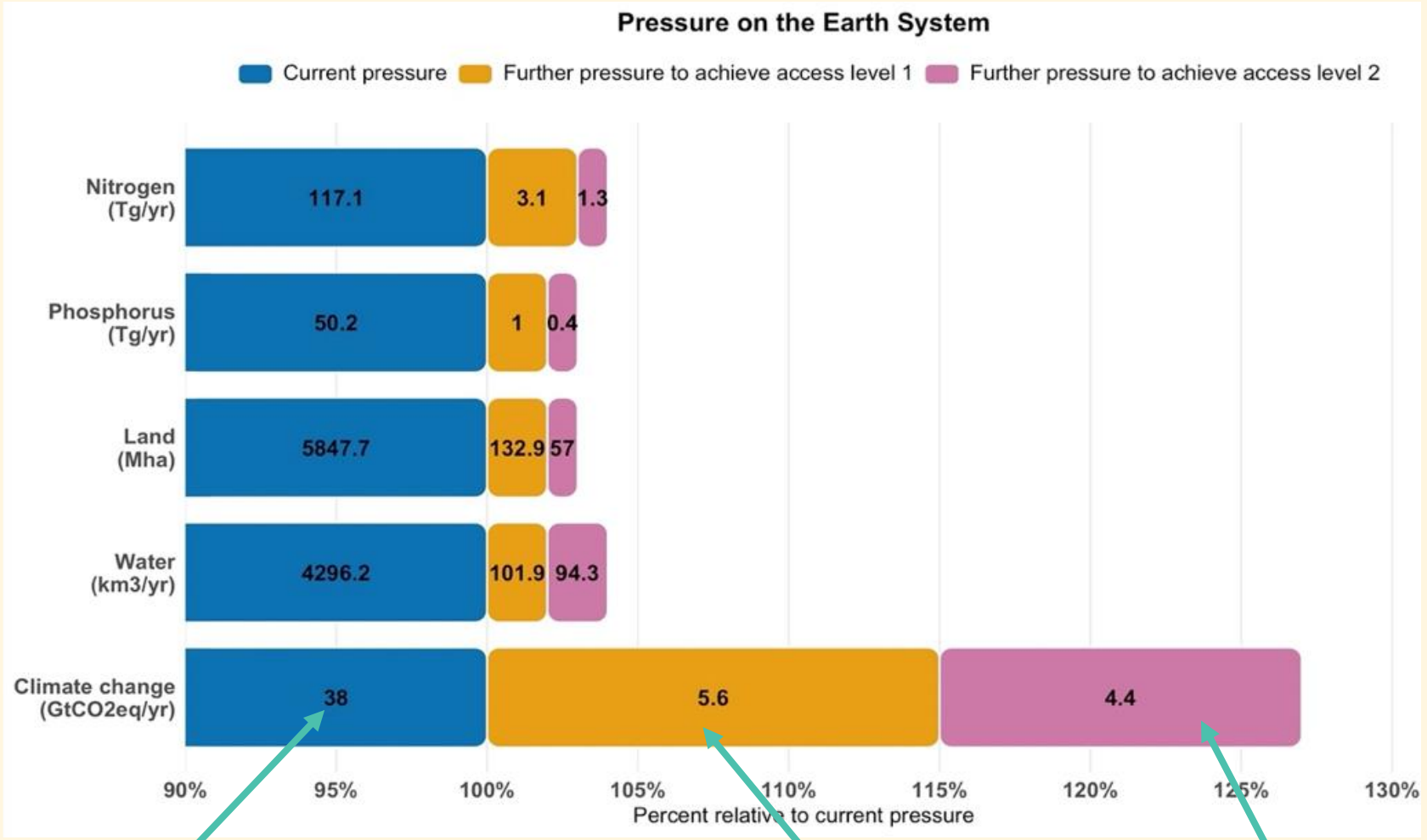


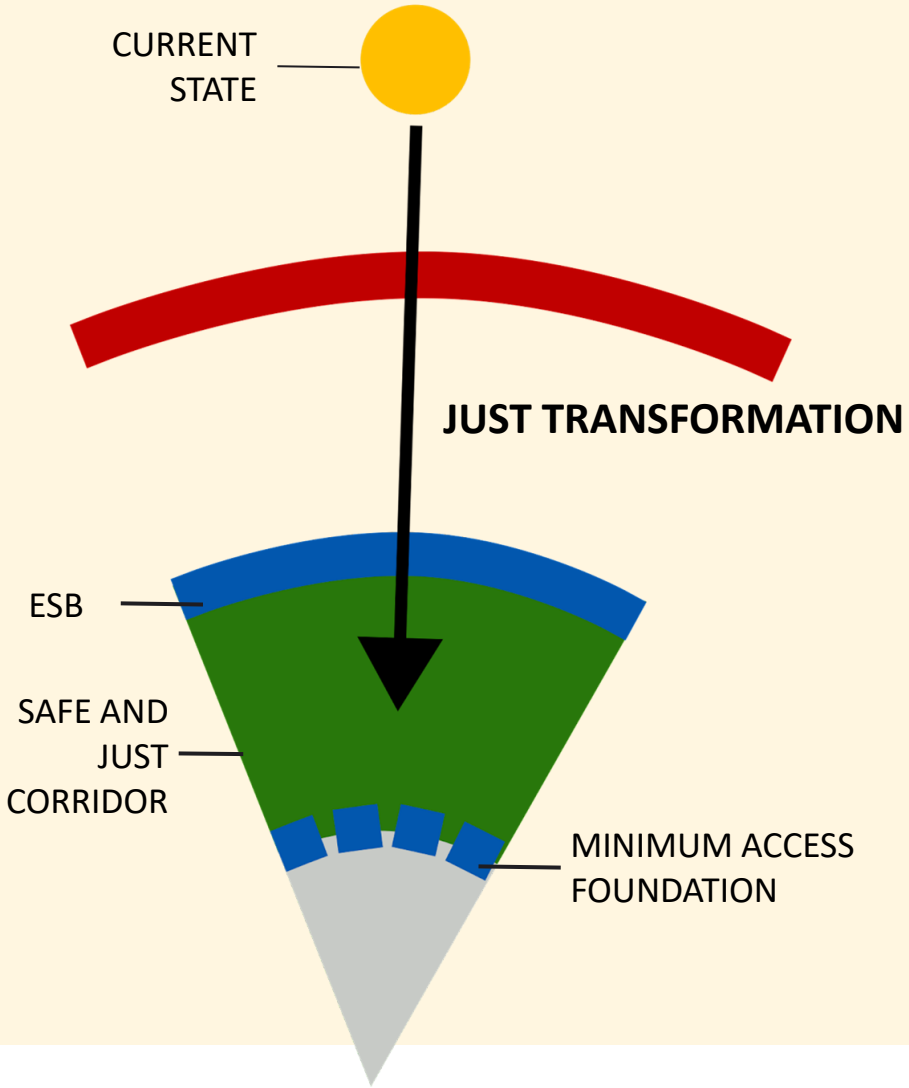
Current Pressure

A dignified life beyond survival

Escape from poverty and vulnerability

Rammelt, C.F., J. Gupta, D. Liverman, J. Scholtens, D. Ciobanu, J.F. Abrams, X. Bai, L. Gifford, C. Gordon, M. Hurlbert, C.Y. A. Inoue, L. Jacobson, S. Lade, T.M. Lenton, D.A. McKay, N. Nakicenovic, C. Okereke, I.M. Otto, L. Pereira, K. Prodani, J. Rockström, B. Stewart-Koster, P.H. Verburg, C. Zimm (2022). Impacts of Meeting Minimum Access on Critical Earth Systems amidst the Great Inequality, Nature Sustainability, https://doi.org/10.1038/s41893-022-00995-5.

JUST BOUNDARIES NEED TO BE JUSTLY ACHIEVED



- Need to ensure sufficient **access to resources for all** without transgressing boundaries (Rammelt *et al*. 2022), forming a **safe and just corridor** for humans
- Will require **redistribution** and **transformation** (Gupta *et al.* under review)
- Supported by cross-scale **translation** to actor targets (Bai *et al*. 2022)

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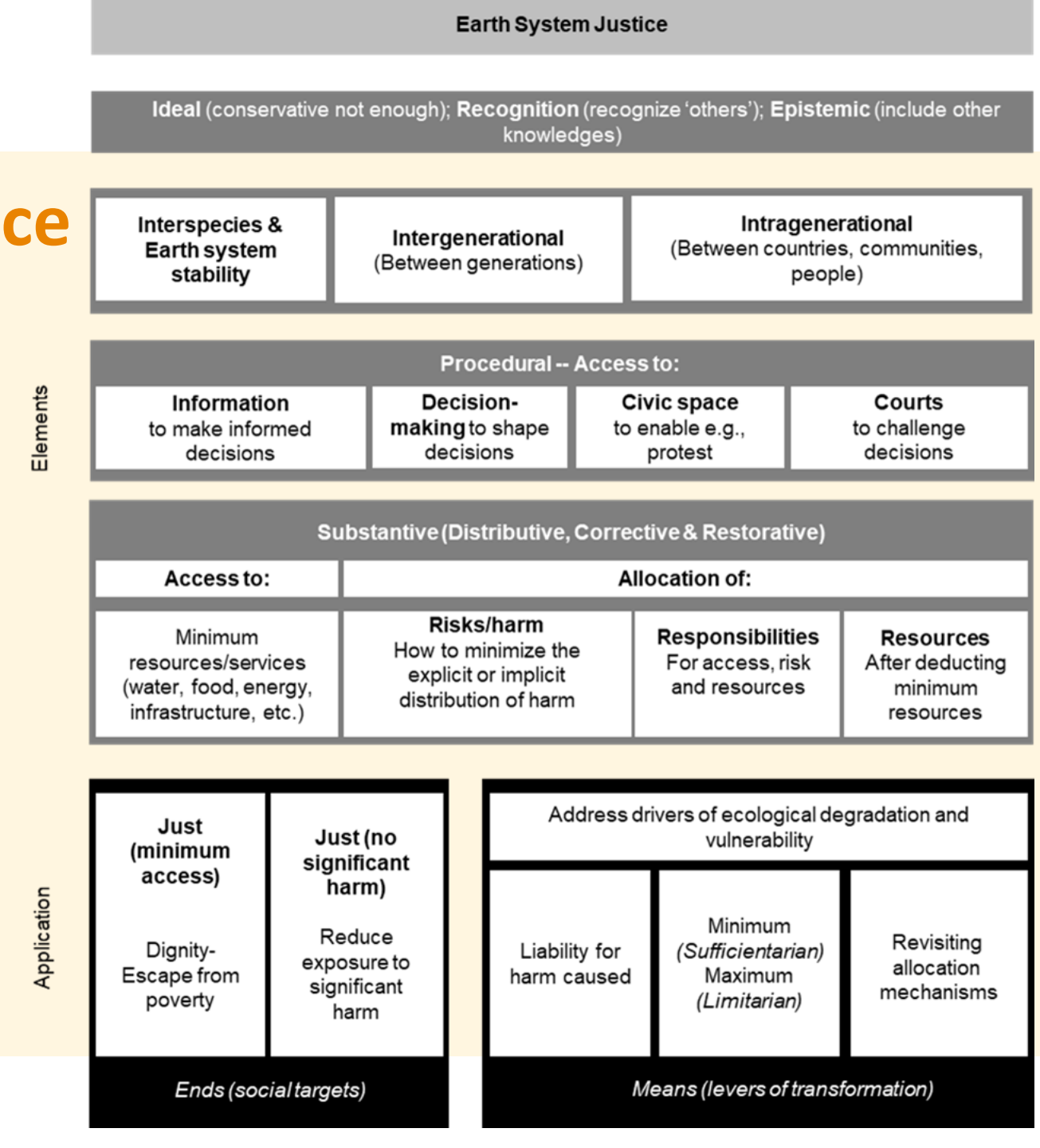
Earth System Justice



Gupta, J., D. Liverman et al. (2023). Earth system justice needed to identify and live within Earth system boundaries, Nature Sustainability, https://doi.org/10.1038/s41893-023-01064-1.

Gupta, J., K. Prodani, J. D. Tabara, I.M. Otto, T.M. Lenton, C. Rammelt, J. Scholtens, L. Gifford, X. Bai, L. Pereira (2023). Earth System Boundaries and Earth System Justice: Sharing the Ecospace, *Environmental Politics*, DOI: 10.1080/09644016.2023.2234794.

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LMICs

WHY?

- Most reserves in the Global South: justice issues and Right to Development (RtD)
- Double-edged sword: climate change exacerbation + carbon lock-in and stranding risk
- States own or control most FF reserves (Lenferna, 2018; Van de Graaf, 2018)
- Global South governments ultimate owners of potential loss (Semieniuk et al., 2022)

Lessons learnt from literature

Renewable energy sources (RES) deployment

- low investment and energy addition
- *But* potential for **leapfrogging** in the Global South

Fossil fuel supply-side

- FF expansion and growing stranding risk
- *But* potential for **accounting for stranded resources and assets**

Governing the transition

- Right to Development (RtD) and limited governance capacities
- *But* potential for **global and multi-level just transition** as enabling concept

Heras, A. and J. Gupta (…).Fossil fuels, stranded assets, and the energy transition in the Global South: a systematic literature review, WIRES Climate Change, in review.

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O&G

Why?

- Emits 30,000 Mt of CO2 per year
- Fossil fuel industry US-$16-300 trillion
- Policymaking favours demand-side regulations, supply-side policy needed

Corporate Climate Strategies

- Diversifying business, Managing reputation, Lobbying

Drivers & Barriers

- Endogenous (Corporate power, Shareholders)
- Exogenous (Jurisdiction/ legal framework, Climate policy, Competition, Activism)

Lessons-learned & Shortcomings: Barriers > drivers

- Divestment ≠ phase-out
- Diversification ≠ reduction in FF production
- State-owned companies --> underrepresented

Herzog-Hawelka, J., Gupta, J., 2023. The role of (multi)national oil and gas companies in leaving fossil fuels underground: A systematic literature review. Energy Research & Social Science 103, 103194. https://doi.org/10.1016/j.erss.2023.103194

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Context: Development Banks as commercial Banks lenders

•Commercial Banks have provided directly $4.6 trillion to the fossil fuel industry since 2015. (RAN ,2022).

•Less loans are directed to Fossil Fuel from development banks, yet development loans have to stay "**bankable**". Meaning the required return has to match the risk.

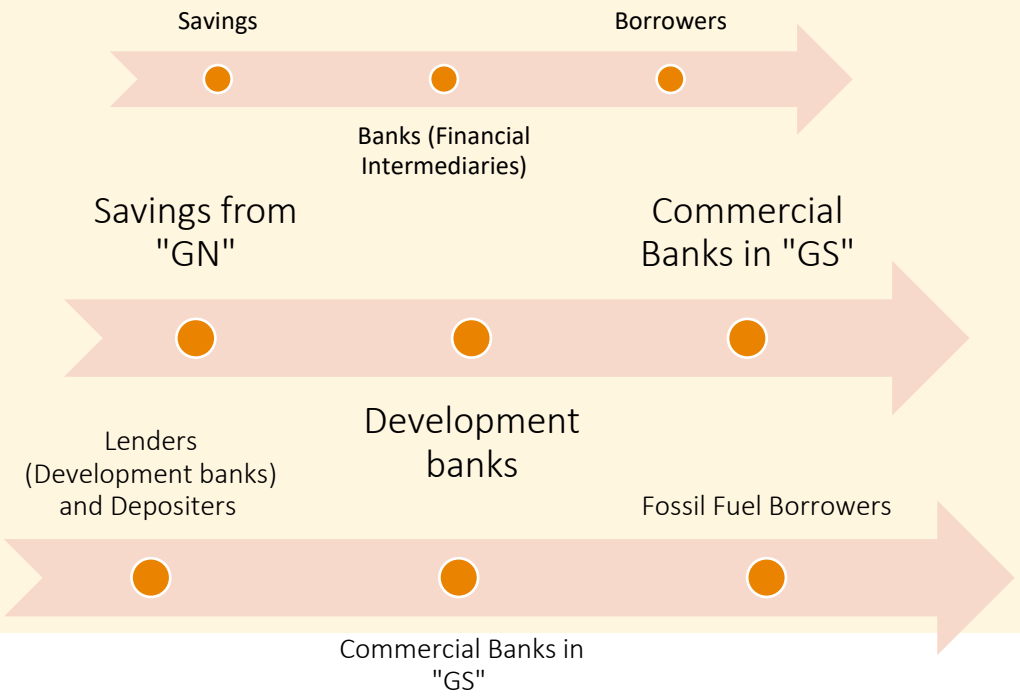
• As a result of limited "bankable" projects,

Competition between development banks follows

an **oligopoly** manner of competition (state of limited

Competition within limited number of players).

(McHugh,2023)



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Development Banks as commercial Bank lenders

Why?

- Commercial banks have lent USD 4.6 T for FF;
- Dev Banks lend less directly on FF, but indirectly to stay viable;
- Tend to be oligopolistic

Lessons learnt

While direct debt from development banks to FF decreases, debt to the financial system in the GS increases. Fueling pressure to expand in extractive industries like FF.

Financial Risk and return still dominate investment decision making.

"climate finance" and "green and impact funds" have diverse definitions.

Pension Funds

Why?

- Institutional investors control $154 T, pension funds $57 T
- This market is dominated by US, UK, and EU based investors
- Pension funds have been at the center of efforts to influence FF companies through their shareholders through both engagement and divestment

Strategies:

- Divestment, Shareholder engagement, Hiring practices, Shareholder engagement with financiers, Engagement with indirect actors, Litigation, Green investment

Challenges:

- Fiduciary responsibility;
- Voluntary efforts are insufficient

McDonnell, C. and J. Gupta, Beyond divest vs. engage: a review of the role of pension funds in an inclusive fossil fuel phaseout, *Climate Policy*, in review.

Philanthropy (foundation, charity, family/corporate/comm., etc.)

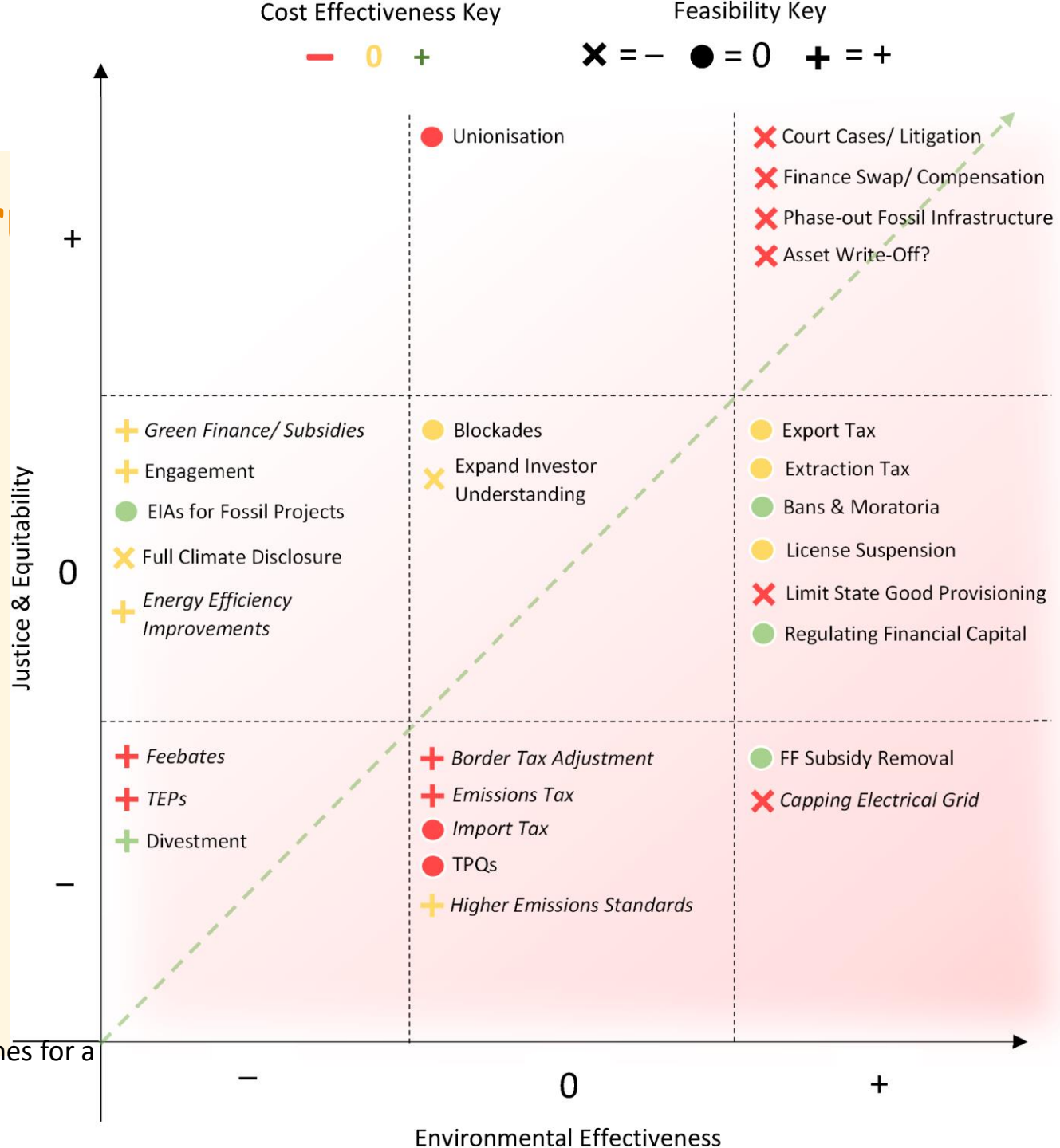
- $1,5 T in assets
- $150 B annual expenditures
- Invited to policy discussions
- Many legal/organisational definitions
- Unclear what the aggregate global sector is doing

Faces of Philanthropy

- Grantmakers
- Investors
- Agents of Change/ disruption/ status quo maintenance
- Friend, foe, and everything in between of LFFU

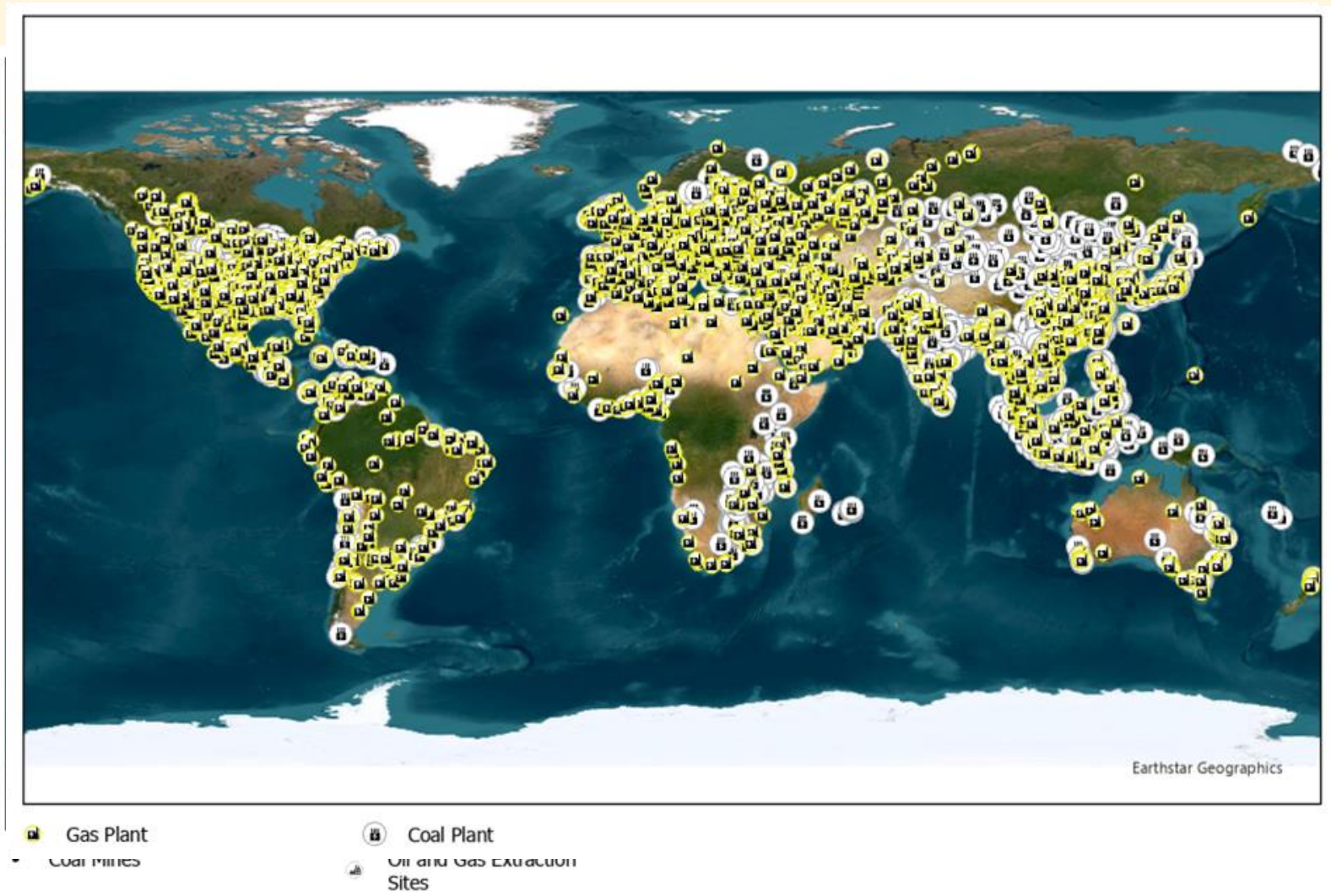
Fossil fuel supply side instr

- Instruments are either efficient or just;
- Instrument mix needed;
- Few instruments to address MNC, banks, pension funds, philanthropy



Rempel, A. and J. Gupta (2022). Equitable, effective, and feasible approaches for a prospective fossil fuel transition, WIREs Climate Change,13:e756, https://doi.org/10.1002/wcc.756

Interactive atlas



The final product is a web platform: users can **zoom, toggle, select, query, and analyze** the mapped content, which is complemented with storylines.

Yang Chen

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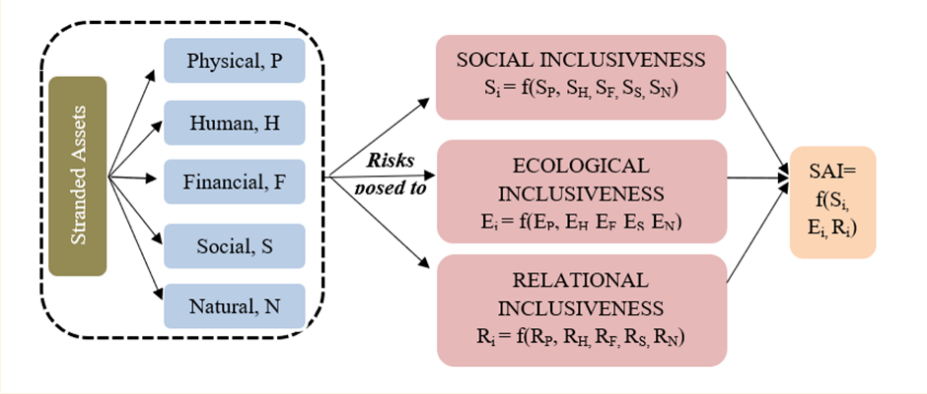
Stranded Assets Index (SAI)



-To be quantified **across local-regional-national levels**

-Each dimension is also **spatially explicit** and therefore can be found as **a piece from the Interactive Atlas**

-**Methodologies to be based on** Human Development Index (UNDP), Multidimensional Poverty Index (U of Oxford), Climate change Performance Index (Germanwatch), Worldwide governance indicators (WB)

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Policy briefs

1. Investing in renewables does not automatically replace fossil fuels
2. Fossil fuel businesses hamper phase out by managing the ‘narrative’
3. Net-zero targets may enable continued fossil fuel use
4. Ending export credit finance for fossil fuels
5. Energy Charter Treaty hinders fossil fuel phaseout
6. Bilateral investment treaties hinder the fossil fuel phaseout
7. From lock-in to leapfrogging: the public, private, public-private interdependencies
8. Global finance can phase out fossil fuels: but will they?
9. The Just Energy Transition Partnership seen from below: conditions under which decarbonisation should be financed in South Africa
10. Europe’s inclement climate sanctions against South Africa: ‘Carbon Border Adjustment Mechanism’ punishment for high-fossil exports

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Messages from MSC Theses

- 1/3rd of NDCs (2020 to 2022) refer to FF. Volume of fossil fuel production, reserves, and imports does not correlate to discussing fossil fuel supply.
- Energy Charter hampers phaseout; EC inviting DC participation!
- FF in DCs mostly in NOCs; FF phase out will lead to huge stranded assets
- Divestment shifts asset ownership to private companies/equity firms, and NOCs, decreasing transparency, risking carbon leakage affecting distributional and restorative justice.
- MNC use climate denial, spreading, lobbying, greenwashing, techno-optimism, and strategic blame placement
- Labour: 12.6 million people; Companies lack knowledge of just transition.

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MSCs

- Argentina's development policy is incoherent climate policy, promoting extraction, b) public debt influences climate policy, c)poverty and democratic cycle hinders policy; It is locked in: FF dependence, normative views, and 'systemic failure' (public debt, hyperinflation, FF subsidy); uses gas as a bridge fuel; Just Transition focuses on re-training and skill-learning. O&G workers are best-paid workers and highly unionized.
- Kenya: heavy dependence on renewables; but new oil & mineral opportunities beckon. Risk of stranded assets and resource curse. diverse perspectives, unequal power distribution, ignorance affect climate policies.
- South Africa: promotes hydrocarbon development, welcomes foreign hydrocarbon finance. Ignores risk of stranded assets, social and ecological damage. Corruption plays a big role.

EU

NL: 1990-2020 cost effectiveness and fear of loss of competitiveness drove policy

Germany: fossil fuels so embedded in Germany that LFFU is challenging. War on Ukraine (crises) enabled construction of a new gas terminal.

Cyprus: Locked in; island state; no ambition

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Theory of Change

- Identify agents of change;
- Powers and countervailing powers;
- Agenda shaping
- Alternative narratives and
- Better instruments.

World Economic Forum, WBCSD

WRI, UNEP, IPCC, Earth Commission

CEOs, CFOs

Netherlands: Miljoenen Nota, Klimaatraad, AIV

Collaboration with economic faculties

Scientific conferences

Extinction Rebellion, NGOs

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