

Deep Dive in Perspectives and Challenges

DAY 1

PRISMA summer school

Presentation by Elina Brutschin (IIASA)

Key points

- What is justice?
- Justice in models and scenarios
- Core issues and outlook

What is justice?

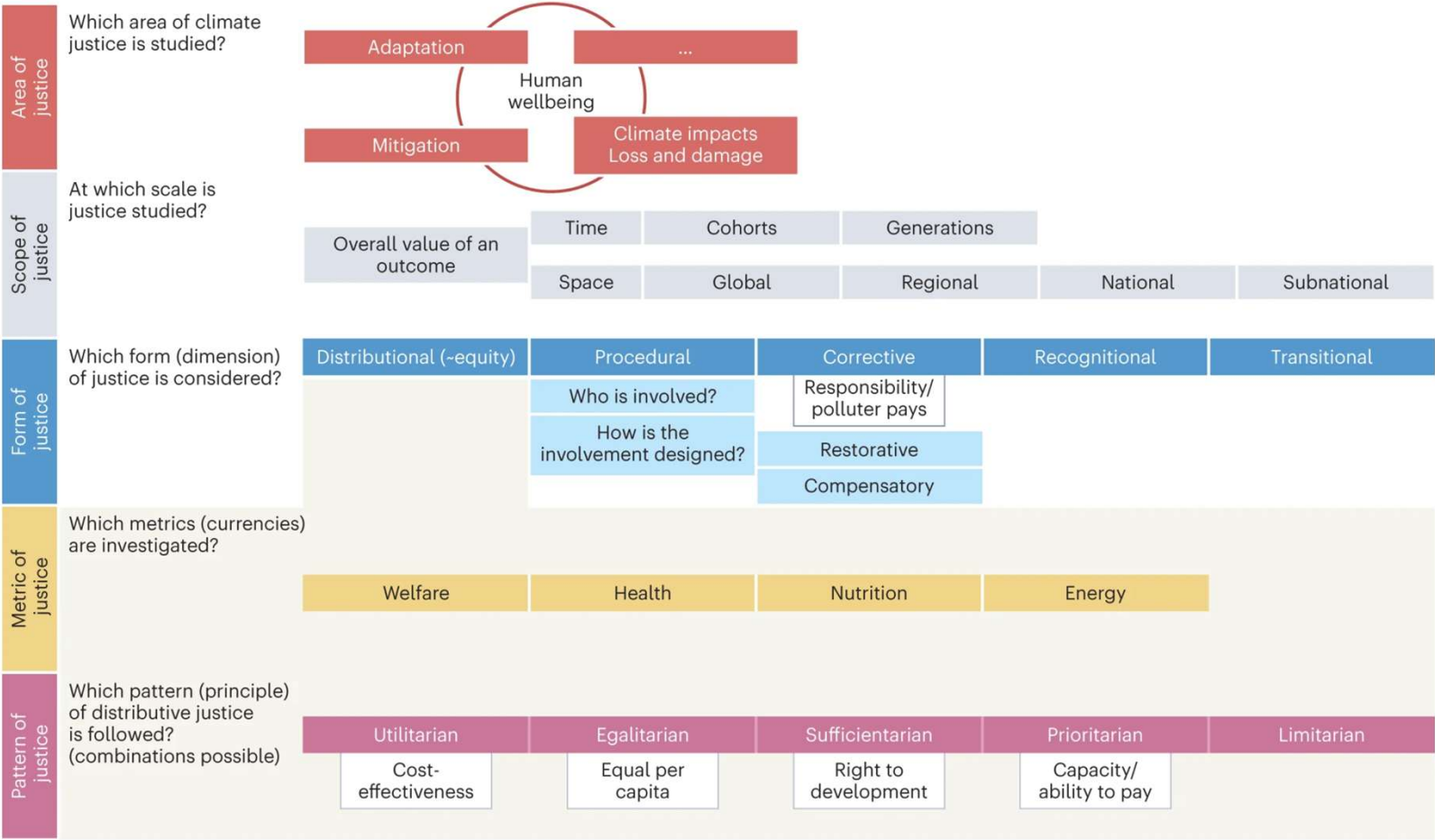
Justice definition

Term	Definition	Role in Climate Policy
Justice	Foundational moral principles (exist before action)	What is right or deserved
Equity	Normative criteria to implement justice	How responsibilities/resources are distributed
Fairness	Individual perception of correct rule application	Whether processes are judged as just

Core reading: Grasso, M. (2007). *A normative ethical framework in climate change*. Climatic Change, 81(3), 223–246. <https://doi.org/10.1007/s10584-006-9158-7>

Recent justice concepts/frameworks

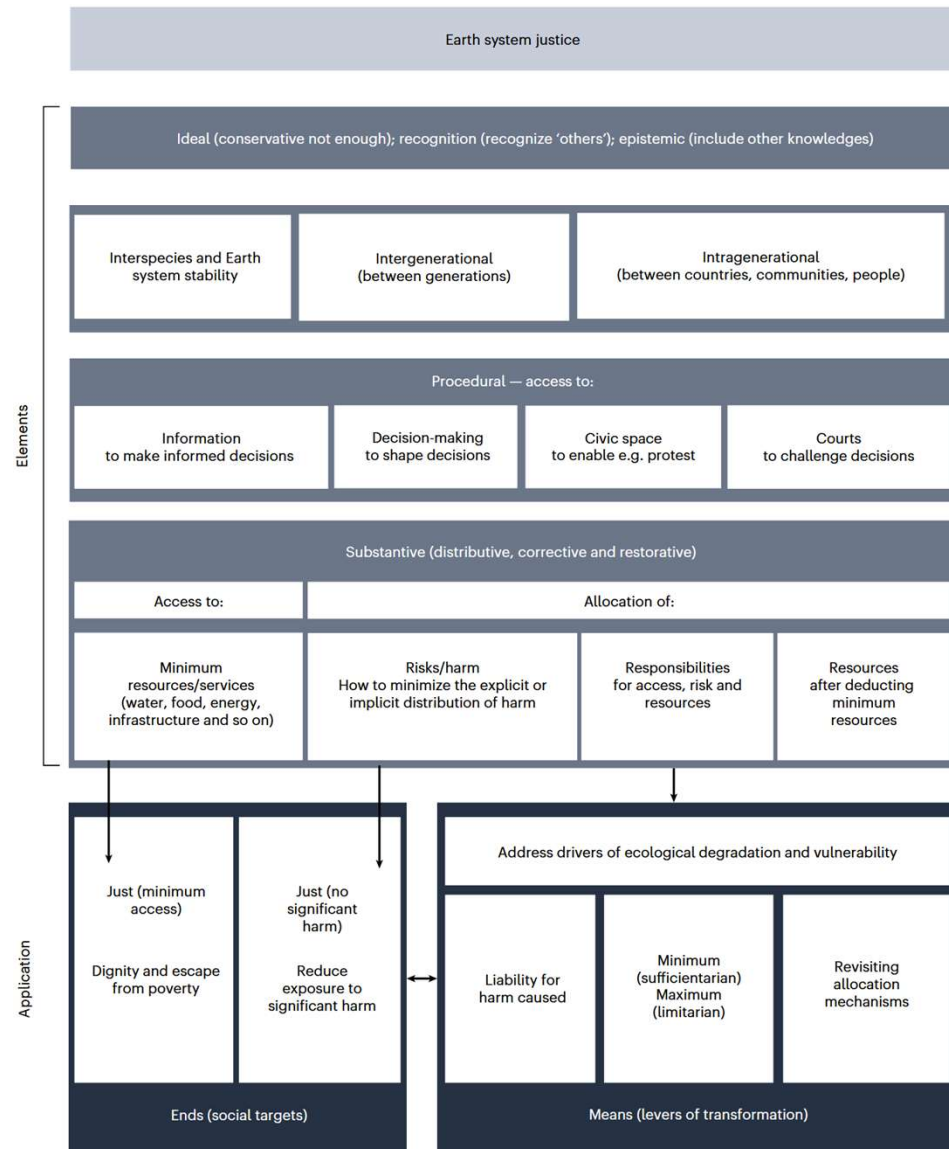
Core reading:
Zimm, C., Mintz-Woo, K., Brutschin, E., Hanger-Kopp, S., Hoffmann, R., Kikstra, J. S., Kuhn, M., Min, J., Muttarak, R., Pachauri, S., Patange, O., Riahi, K., & Schinko, T. (2024). *Justice considerations in climate research*. Nature Climate Change, 14, 22–30.
<https://doi.org/10.1038/s41558-023-01870-w>



Recent justice concepts /frameworks

Core reading:

Gupta, J., Liverman, D., Prodani, K., Aldunce, P., Bai, X., Broadgate, W., Ciobanu, D., Gifford, L., Gordon, C., Hurlbert, M., Inoue, C. Y. A., Jacobson, L., Kanie, N., Lade, S. J., Lenton, T. M., Obura, D., Okereke, C., Otto, I. M., Pereira, L., Rockström, J., ... Verburg, P. H. (2023). *Earth system justice needed to identify and live within Earth system boundaries*. *Nature Sustainability*, 6, 630–638. <https://doi.org/10.1038/s41893-023-01159-0>



Justice in models and scenarios

Distributional justice in scenario literature



Fig. 2 | Distributional justice patterns, indicators and implementation approaches in the SSP literature. The literature review included articles with explicit justice terms in their titles or abstracts ($N = 77$). The number of unique

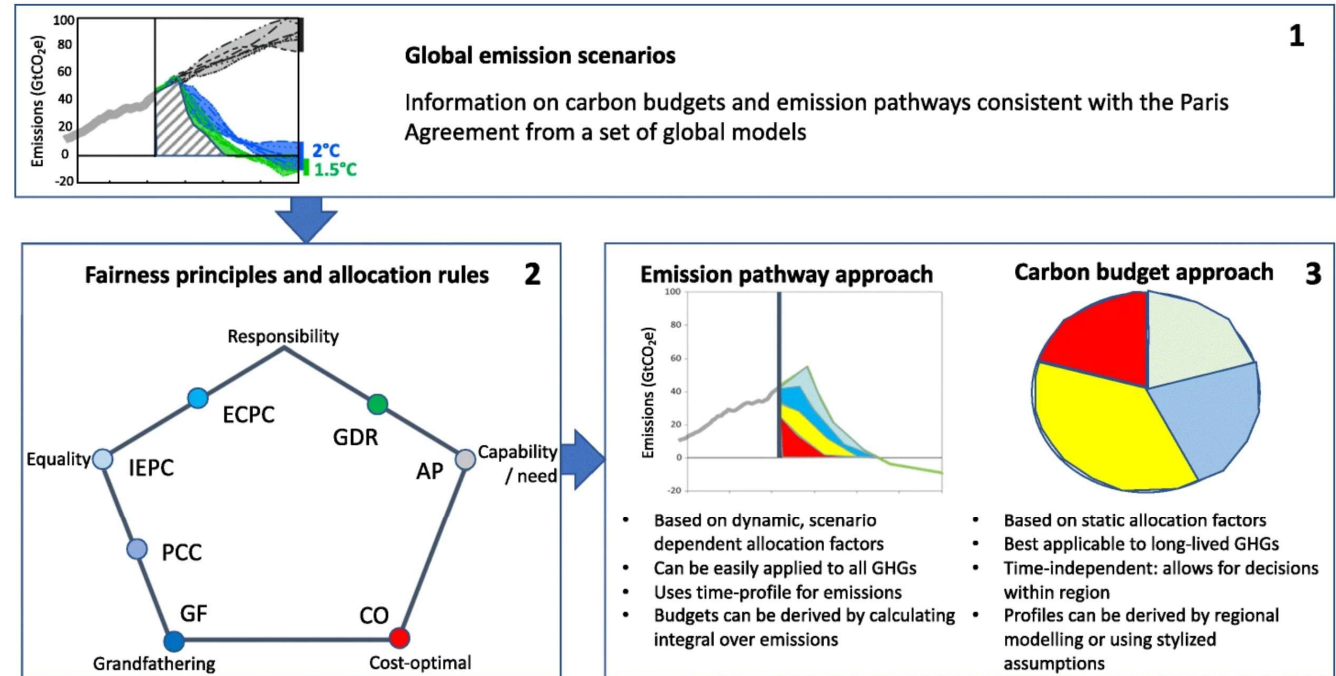
studies does not match the total, as some studies involved several patterns (for different metrics) and some involved patterns that were not easily defined. See the Supplementary Information for more details.

Examples ex-post approaches focusing on
emissions

Examples of fairly established approaches

Ex-post using
outputs/data from
scenarios

Regional
distribution of
global carbon
budget/
investments
following different
fairness principles



Core reading: van den Berg, N. J., van Soest, H. L., Hof, A. F., den Elzen, M. G. J., van Vuuren, D. P., Chen, W., Drouet, L., Emmerling, J., Fujimori, S., Höhne, N., Köberle, A. C., McCollum, D., Schaeffer, R., Shekhar, S., Vishwanathan, S. S., Vrontisi, Z., & Blok, K. (2020). Implications of various effort-sharing approaches for national carbon budgets and emission pathways. *Climatic Change*, 162(4), 1805–1822. <https://doi.org/10.1007/s10584-019-02368-y>

Insights from expert interviews

- **Expert Interviews**
→ 39 semi-structured interviews with international experts across IAMs, climate ethics, and climate justice.
- **Interdisciplinary Sampling**
→ Participants from diverse fields: economics, political science, philosophy, modelling, and policy.
- **Thematic Analysis**
→ Qualitative coding of interview transcripts to identify recurring themes and tensions.
- **Focus on Perceptions**
→ Emphasis on how experts understand the role of justice in IAMs and what changes are possible or needed.

Core reading: Low, S., Brutschin, E., Baum, C. M., & Sovacool, B. K. (2025). *Expert perspectives on incorporating justice considerations into integrated assessment modelling*. npj Climate Action, 4, Article 10. <https://doi.org/10.1038/s44168-025-00218-5>

Core insights from expert interviews

Shape	Description	Key Justice Avenue(s)
1. Improve Inputs & Representation	Integrate justice directly into IAMs by enhancing model structures , variables, scenario narratives, and outputs.	- More nuanced social group representation - Justice criteria (e.g., distributive equity) embedded in parameters
2. Expand Co-Design & Access	Connect IAMs with other tools, disciplines , and user communities to broaden participation in model development and scenario design.	- Co-creation with stakeholders - Multi-disciplinary engagement beyond standard IAM users
3. Refine IAMs' Role	Rethink how IAMs are used within broader climate governance , possibly limiting their scope or pairing them with alternative assessment processes.	- Define IAMs as one component among diverse tools - Emphasize procedural justice, plural perspectives, and contextual application

What are the core points in the third shape?

- **Risk of Misrepresentation:**
Simplifying complex justice issues through assumptions and limited data can distort real-world perspectives.
- **Potential for Co-optation:**
Risk that societal concerns get superficially included but constrained by what IAMs can quantify.
- **Call for Broader Debate:**
Need transparent discussion on limitations and implications before further embedding justice in IAMs.