Social tipping mechanisms for rapid decarbonization

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Tipping

• A small quantitative change that triggers a non-linear change process at a certain point or threshold

• Driven by system-internal feedback mechanisms and inevitably leads to a qualitatively different, often irreversible, state of the system (Milkoreit et al., 2018)

Otto et al. (2020) PNAS
Social tipping processes are rapid

Spatial and temporal scales for climate tipping elements (panel a) and social tipping elements (panel b). Source: Winkelmann et al. (2022).
Example of a social tipping process

Upward-scaling tipping cascades. Source: Figure 2 in Sharpe & Lenton (2021).
Endogeneity

• To understand the basic system dynamics of interacting social tipping processes over different timescales.

• To strengthen the conceptual foundations for formal (quantitative) modelling of social tipping dynamics.
Global GHG Emissions

*Otto et al. (2020) PNAS*
Workshop
Outcome 1:

Delineating the feedback mechanisms by taking potential barriers into account
Outcome 2:

Identifying cross-system interactions to evaluate the cascading effects of social tipping interventions
Energy Production – Norms and Values - Education and Information – Urban Infrastructure – Finance

Outcome 3:

Identifying the variables that can guide data collection efforts and help monitoring the tipping processes
Next steps

- Empirical evidence for the feedback mechanisms within and between systems characterized by social tipping processes

- Quantitative modelling to evaluate the potential of social tipping dynamics for decarbonization, and the effectiveness of interventions
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