

SYSTEMIC JOURNEY INTO THE NEXUS 'OF RESOURCES AND RENEWABLES'

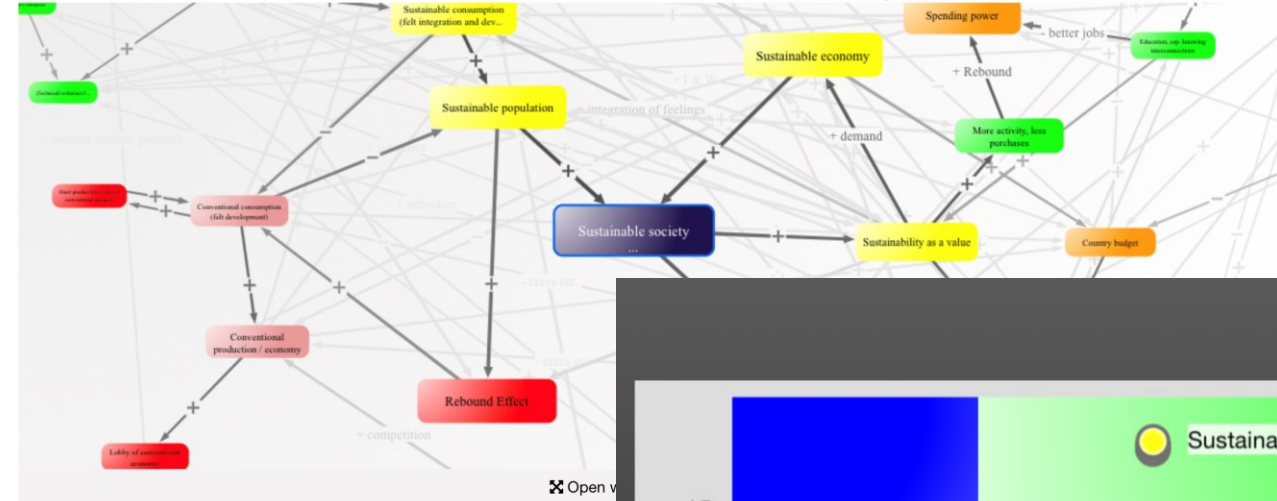
- Integrated Assessment Model (IAM) qualitative explorative stakeholder modeling of the gap between knowledge and action
- Quantitative D3 Model with >4.000 factors to simulate transition of society looking at GHG, environment, economy, welfare, happiness and RMC
- D3 EE model for a closer look at the RMC behind the transition towards renewable energy in Germany
- GEE(R) model to look at the global RMC coming with the transition towards renewable energy ...



Sustainability Model (Excerpt from the IAM model)

by Kai Neumann (#1) Comments (3) published: Sep 18 2014 10:00

Quick view of the model (open complete model with iMODELER):



Kai Neumann (#1) has provided a description of the model.

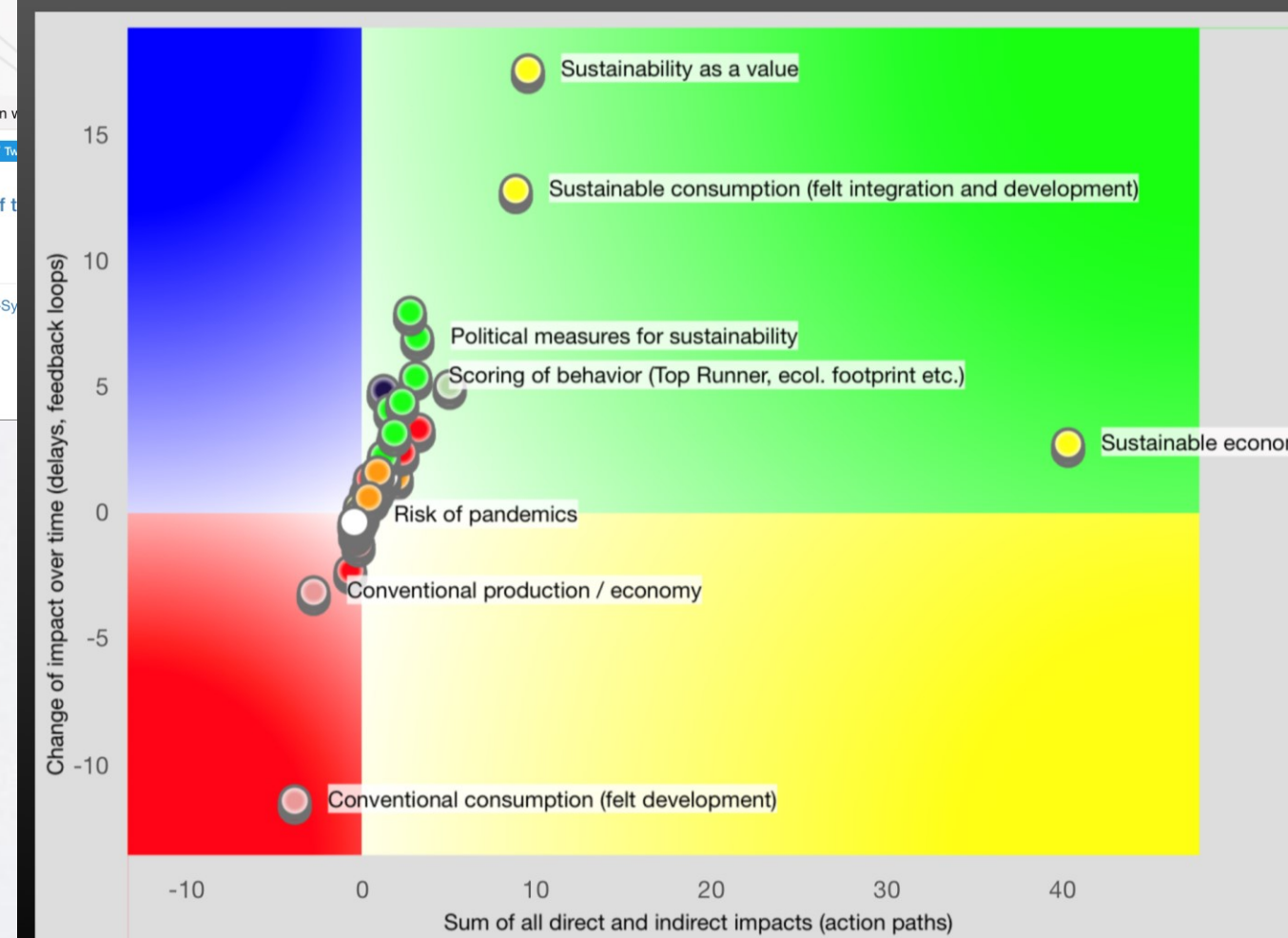
Description

English version of the model from the book (<http://www.amazon.com/KNOW-WHY-Sy>) for an UBA (federal environmental agency Germany) project model:

https://www.know-why.net/model/AT8roK0_fQCHRRrtwhp_1-w

It is a mere qualitative model with a high level of abstraction and aggregation.

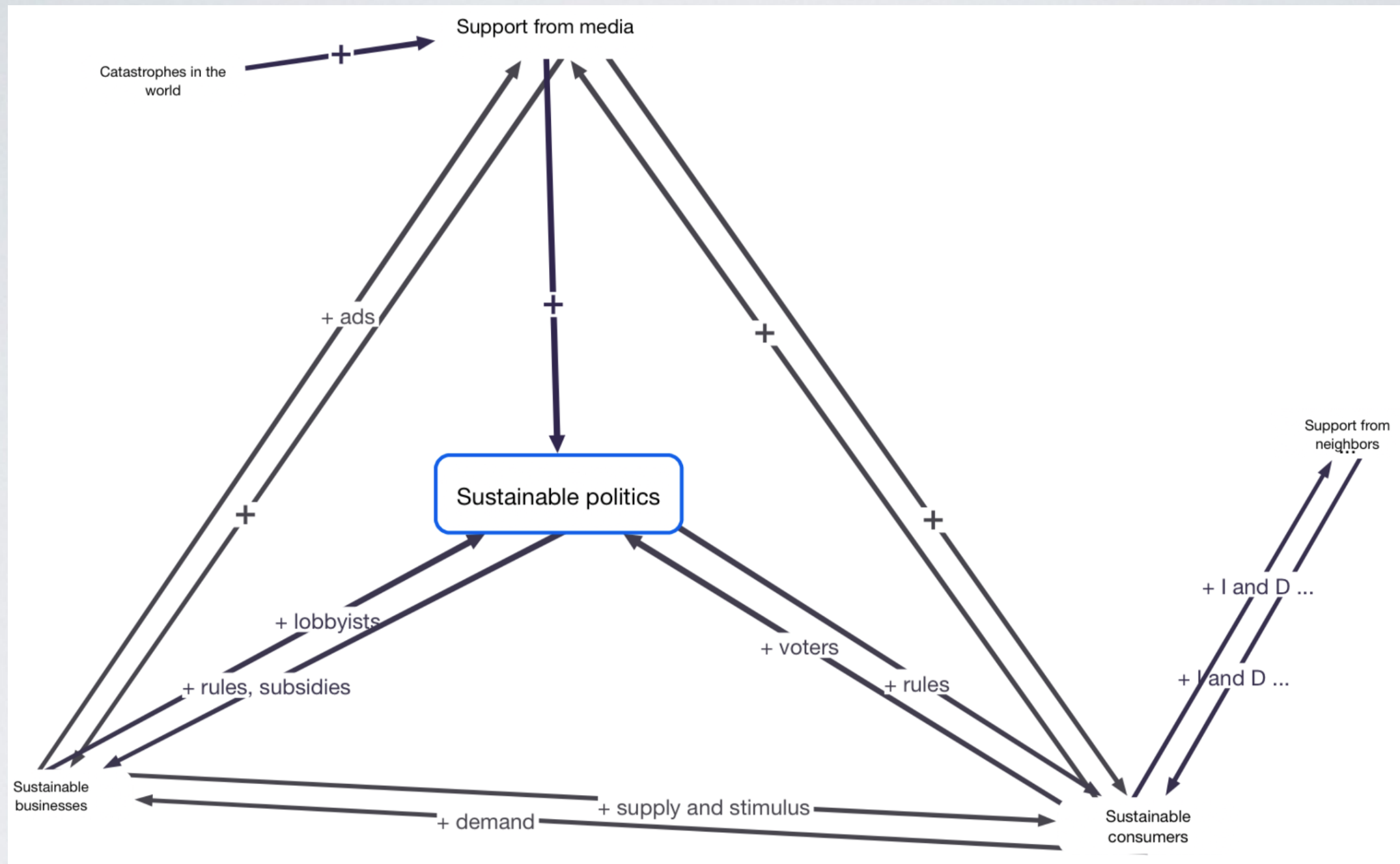
Insight Matrix of Sustainable society



- Globalized politics
- Growing population
- Higher life expectancy
- Increase of (virtual) money volume
- Increase of income gap
- Increase of lending
- Lobby of conventional economy
- Migration
- More activity, less purchases
- New sources for resources
- NGO etc.

Short Medium Long

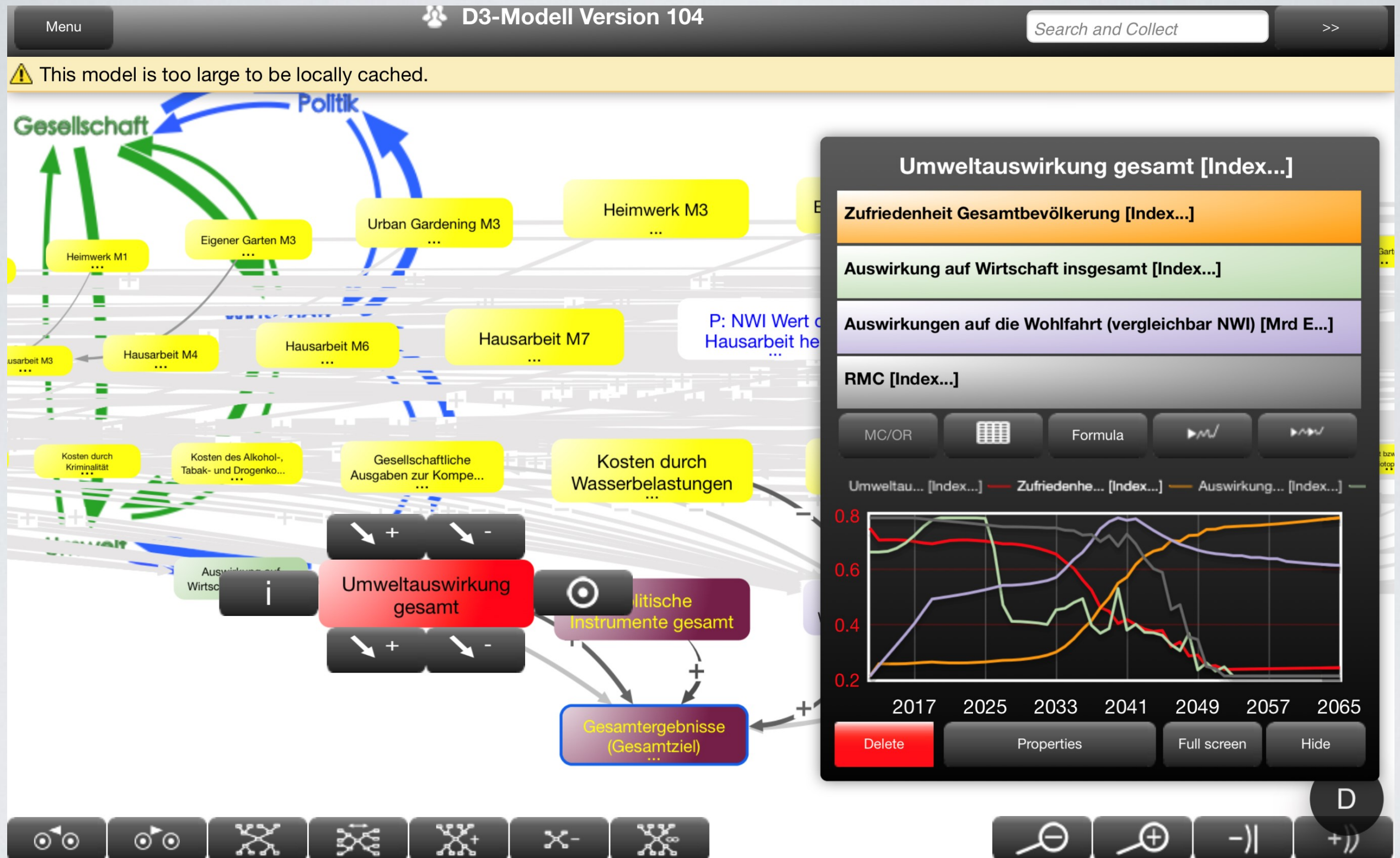
LOCK-IN EFFECT (FROM IAM)



"It's the psychology, stupid!"



D3 MODEL

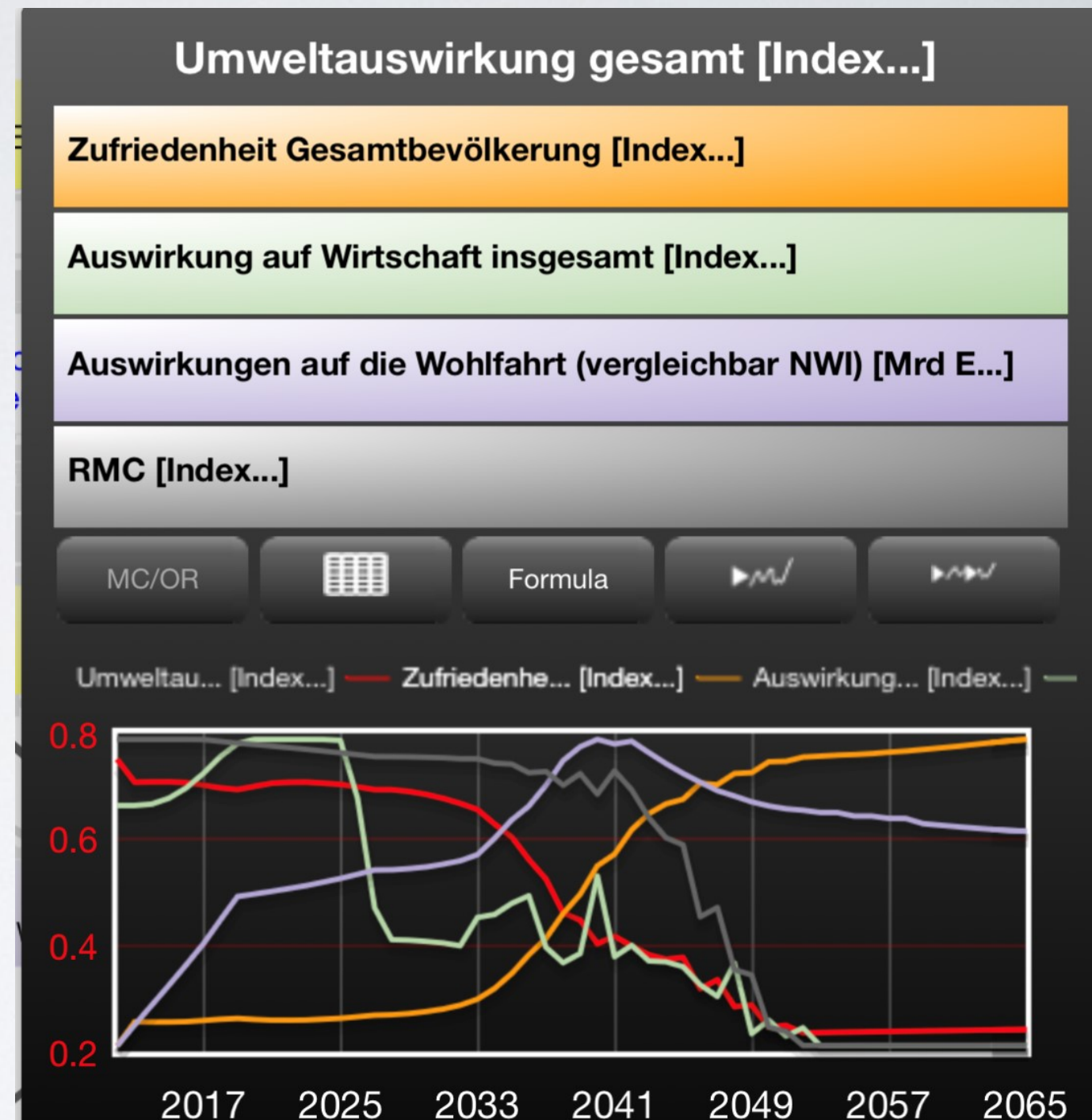


Spillover-effects once we score sustainable behavior to serve our biopsychological needs



D3 MODEL

- Happiness goes up (since new values are easier to achieve)
- Economy goes up to go down (sufficiency after green investments)
- Welfare goes up and then slightly down
- Impact on environment later is clearly reduced
- Raw material consumption goes down with a circular economy

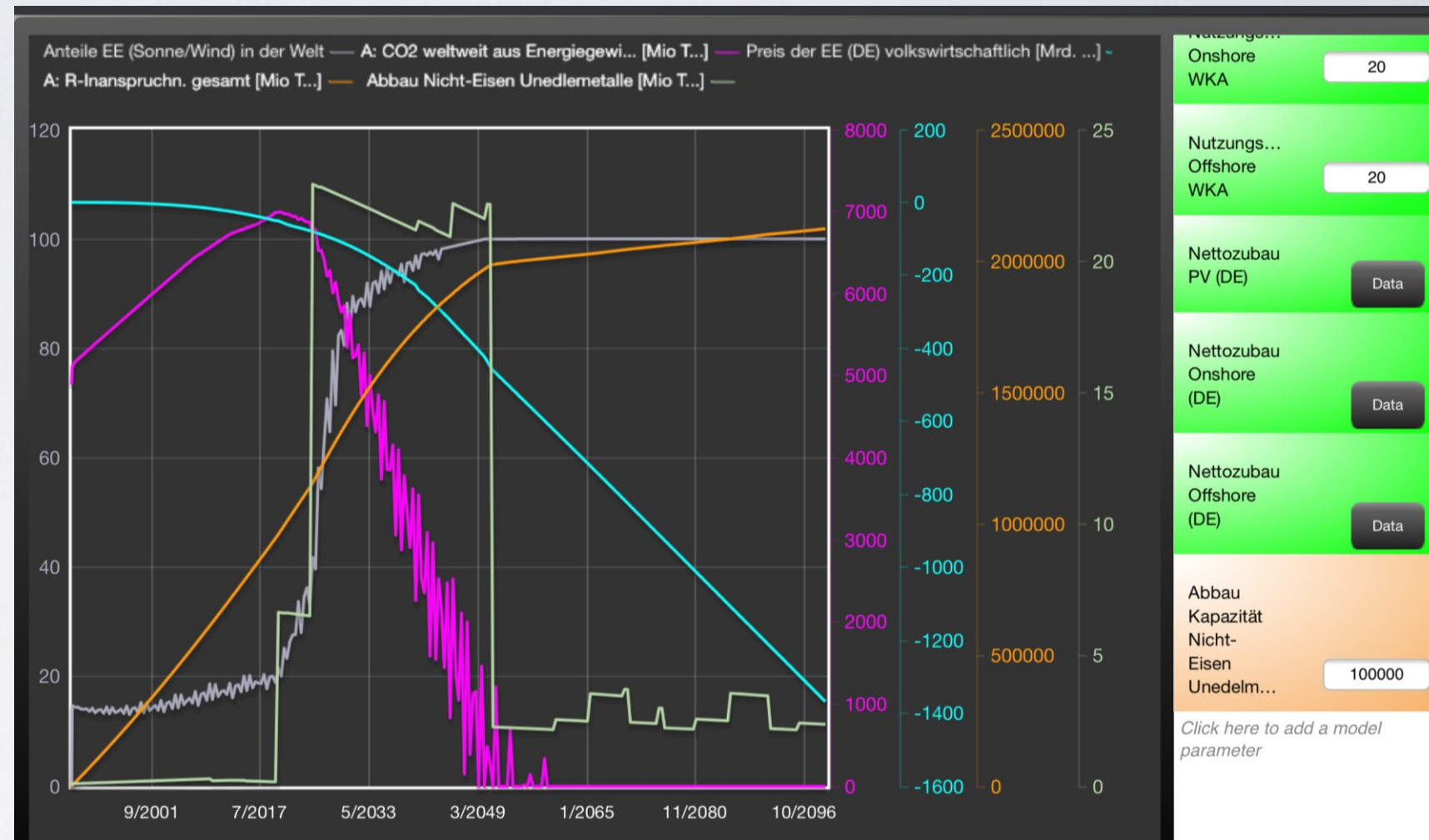


Spillover-effects once we score sustainable behavior to serve our biopsychological needs



GEE(R) MODEL

- Using the World Energy Outlook as a baseline for the demand...
- ... there would be enough raw materials in the world ...
- ... but not less expansive high grade ...
- ... and with the need for enormous mining and processing capacities.
- Implications are winners and losers (currently examined with the ICARE project with Ecologic) with game theoretical aspects
- And an overall benefit for the economy despite rising energy prices



GEE(R) BECOMING ICARE

- System dynamics modeling in contrast to rather discrete calculations show interesting dynamics ...
- ... e.g. the doubling of needed capacities when net construction and repowering come together ...
- ... with implications for prices if there are not enough capacities or unused ones ...
- ... what could well lead to some form of resignation



IMPLICATIONS FOR THE NEXUS

- Increase implementation of renewables now to take all the advantages of an early start (don't wait for later leapfrogging)
- Expect the need to support other parts of the world later (unless there is some concerted global action now)
- Rebound: resources we do not use others will
- ... efficiency means less resources for a later domestic value creation in a circular economy ...
- ... however: for geopolitical reasons we should distribute resources and value creation more evenly.
- In the long run it is the nexus between climate change and a global and local bio economy (featured with the ICARE model)



SCIENTIFICALLY

- Grounded Theory (to be falsified)
with no alternative if we have to look
into the future
- A connection could be proofed to be
wrong...
- ... or a factor missing ...
- ... but there is no empirical evidence
for future developments.

Abductive Logic

