



## Consideo - Kai Neumann, Franc Grimm





# How and why change is possible

SYSTEMIC INSIGHTS FROM THE IAM AND THE D3 MODEL FOR THE FEDERAL ENVIRONMENT AGENCY

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*The potential for exponential adaption of life-styles*

## Abstract

In two projects for the German Environment Agency, Consideo and renowned partners have systemically investigated the potentials of a societal transformation towards more sustainability.

An qualitative Integrated Assessment Model shows the importance of emotional effectiveness of alternative behavior depending on guiding principles and the possibility to measure the benefits of our actions. It is no wonder that we change too slowly, where currently in vicious circles each actor waits for support in the form of appreciation from other actors (lock-in effect). Emotionally effective behavioral changes of the population through appropriate offers from business and politics can turn vicious circles into virtuous circles.

The comprehensive D3 simulation model then shows the potential of exponential change across different social milieus and behavioral domains and the associated consequences for the environment, climate, economy, welfare and happiness. According to the model, such a change would hardly harm the economy while welfare and happiness would increase significantly.

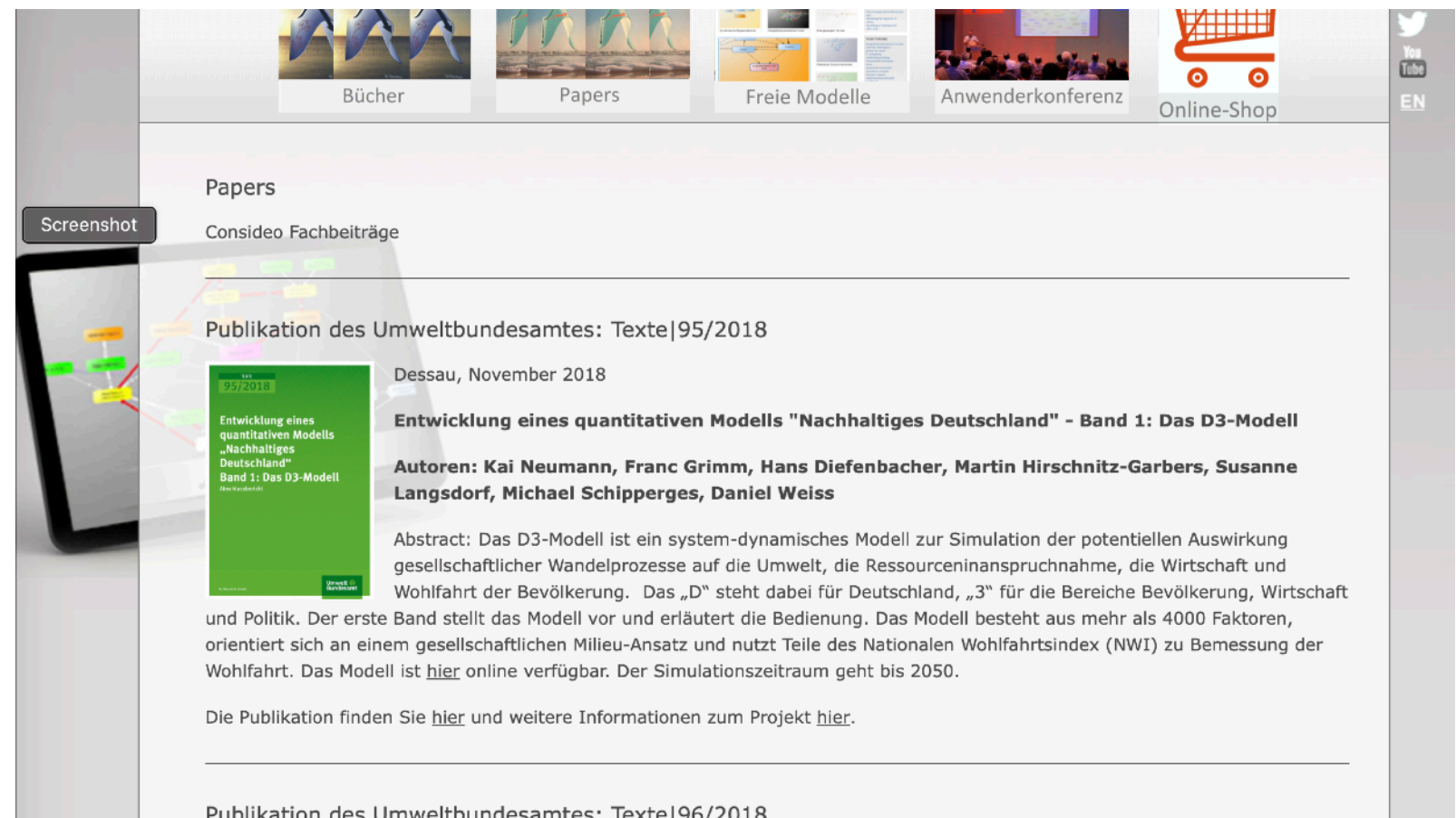


## The 'grey series'

Studies do not seem to reach policymakers at all, are usually too specific for the general public, and are all too often perceived as competition by other scientists or are then not taken up.

We can reach policy makers through the public, and for the scientific community we will continue to write official project reports and also peer-reviewed articles. But for the public, we want to offer an attractive-to-read format that gets to the heart of findings and action to be derived from them - our 'gray series' in reference to the term "gray literature."

"How and why change would be possible" closes important



Screenshot of the Consideo website with the project reports and scientific publications linked there ([www.consideo.de/papers.html](http://www.consideo.de/papers.html))

knowledge gaps in our eyes. That by change in these times we mean above all our modes of consumption and economy, and that this is wanted by most, seems clear. But why has transformation research so far not been able to clarify why so little is

happening? We think we have found the answer and the conclusions.





### The Integrated Assessment Model

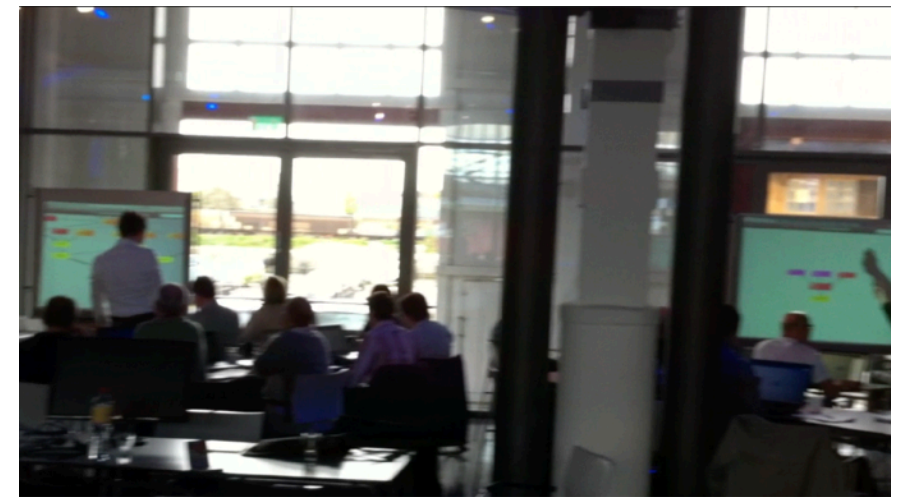
The Federal Environment Agency asked the question of how the gap between wanting and acting arises in the topic of sustainability. Through extensive, participatory stakeholder modeling with representatives from companies, agriculture, banks, local politics, the media and citizens, among others, a comprehensive, qualitative cause-effect model (see figure on front page) was created together with Prof. Heinrichs from the Leuphana University of Lüneburg, which reveals a so-called lock-in effect from the overall context (see figure on next page).

According to this model, it is no wonder that change does not take hold: companies wait for demand and specifications, politicians for support from society and presumably

also from companies, and citizens for supply, specifications and - crucially - emotional support in the form of appreciation from other citizens.

Of course, all actors have a responsibility. Politics in particular would be effective. But the citizens have the greatest leverage.

For them to become active, alternative behavior must be emotionally effective. This requires models that describe what is important to our society as an alternative to material prosperity. And it requires a way to evaluate alternative behaviors so that we can improve and compare ourselves in what we do and achieve.

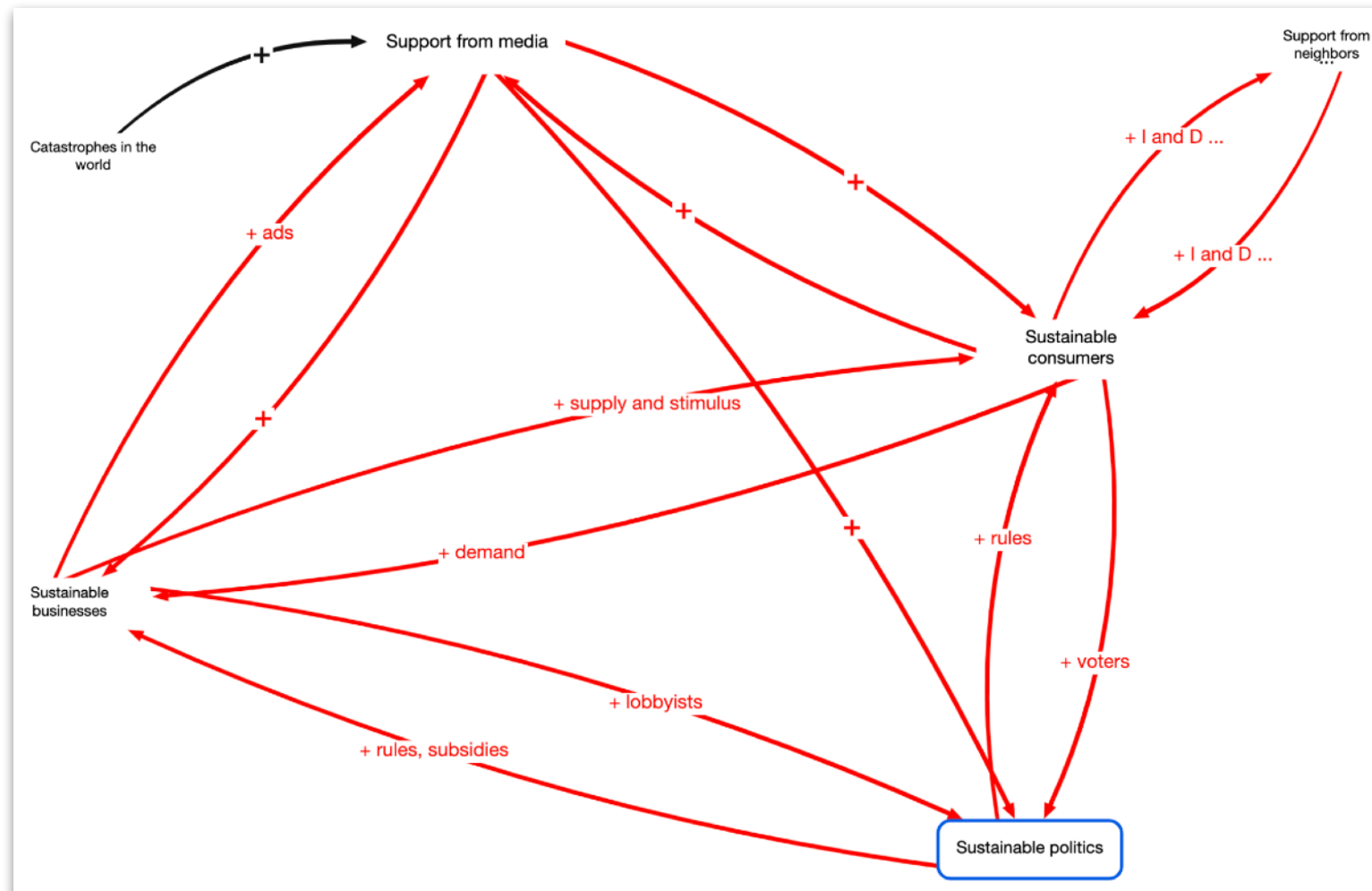


*Participative, explorative, qualitative  
Stakeholder-Modeling at the MODELER-  
Camp 2012*

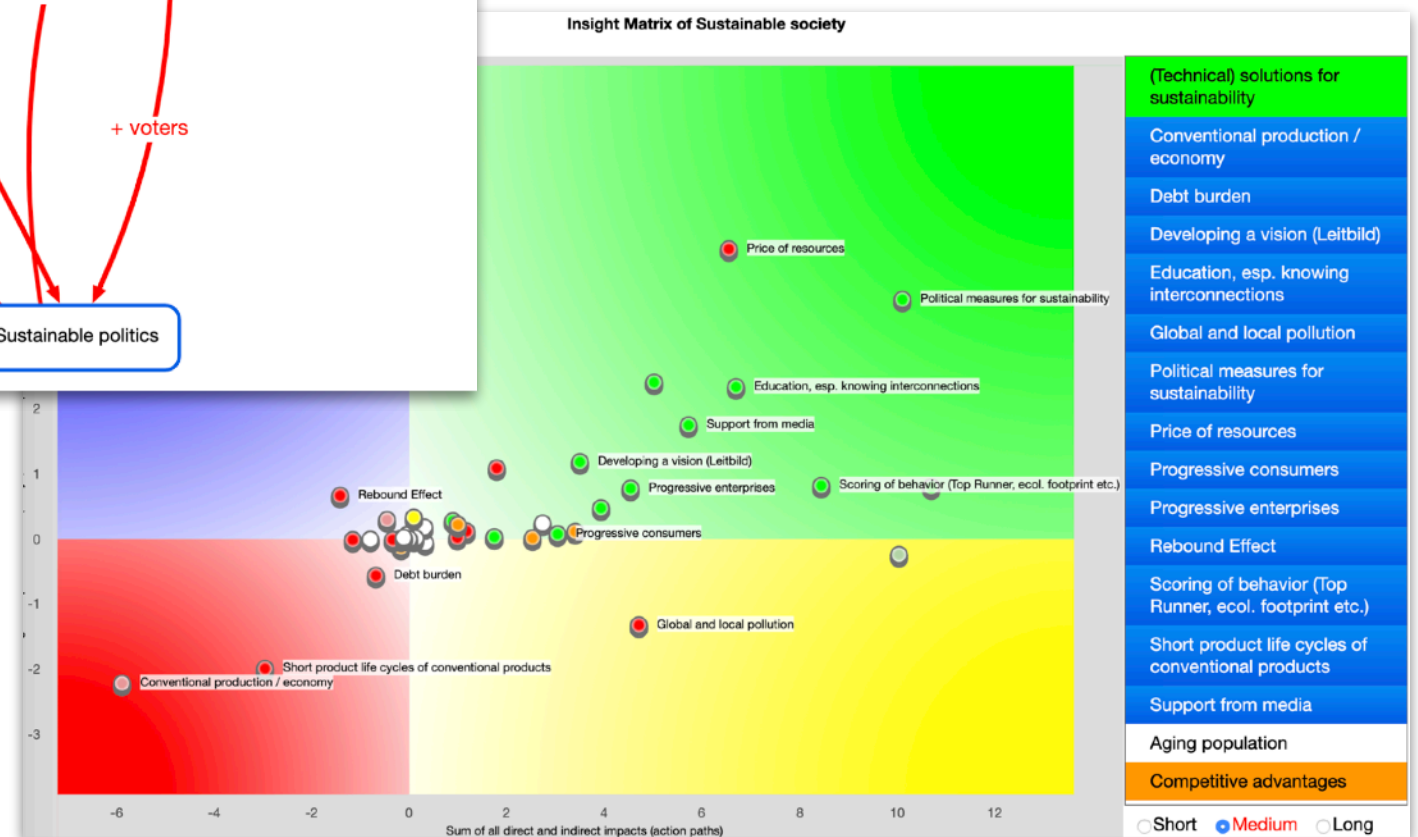




# HOW AND WHY CHANGE IS POSSIBLE



Small model to show the Lock-In Effect - "I" stands for emotionally effective feelings of integration, "D" for feelings of development according to KNOW WHY Thinking



Insight-Matrix from the IAM  
([https://www.know-why.net/model/\\_jA9IAITiEeGdQeWhn-EGUA](https://www.know-why.net/model/_jA9IAITiEeGdQeWhn-EGUA))



# HOW AND WHY CHANGE IS POSSIBLE

## Driver behind our behavior

The survey of citizens confirmed what bio- and evolutionary psychology and a systemic view of the drivers of our actions also support: More than purely rational action, emotionally effective action is decisive. Great cars, long-distance travel, new clothes, a big apartment, new gadgets - all this is perceived further development integrated by the values of our environment.

Alternatives must therefore further develop the individual and our environment must value this. Purely rational action will only prevail when we are already happy.

It is also remarkable that active doing and being able to do, buying and having something, passive (TV, computer games, etc.) experiencing as well as also junk food and drugs

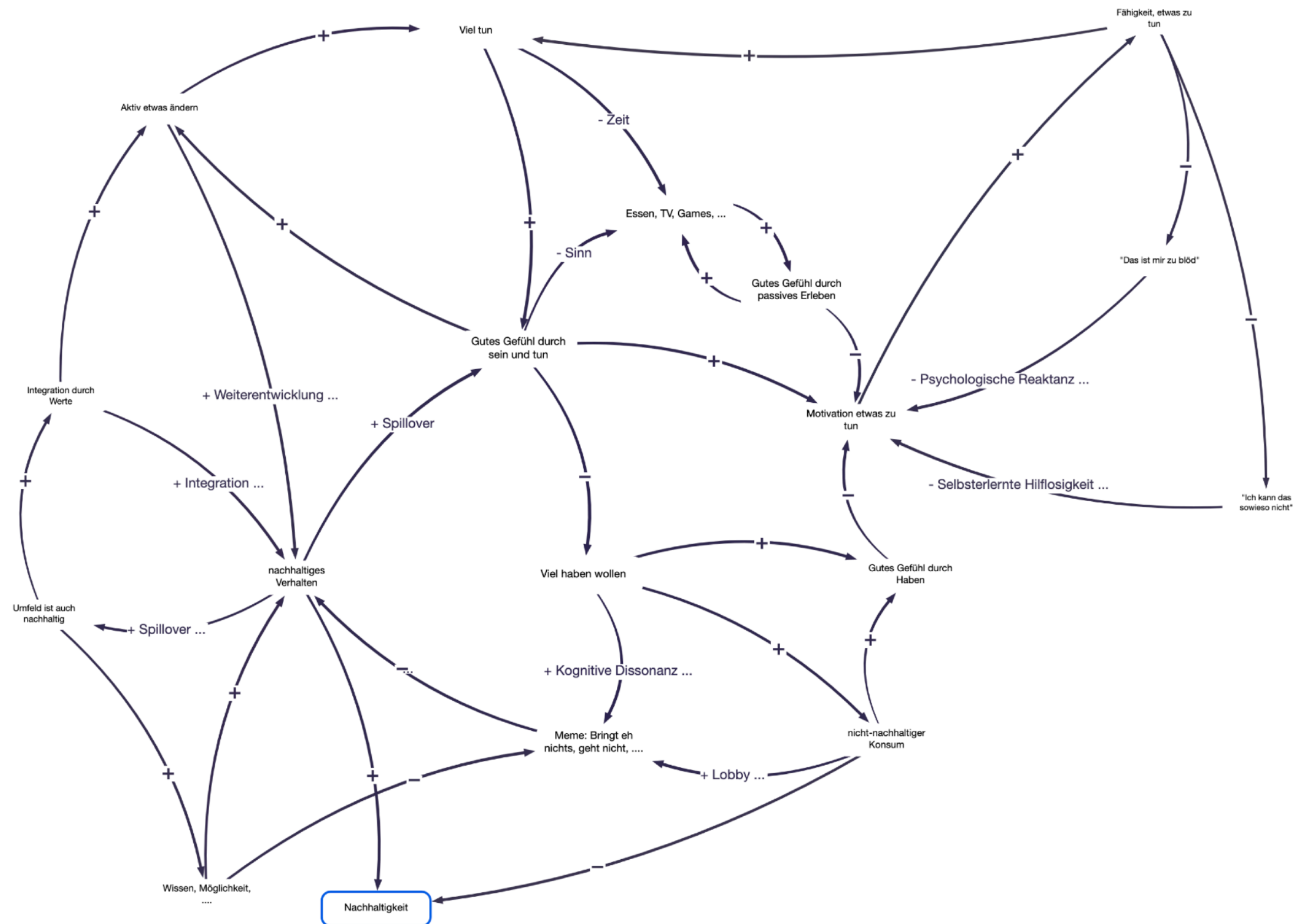
each enable the same good feelings, and hormones. activate the same neurotransmitters



Small, qualitative Model on the general drivers behind our behavior



# HOW AND WHY CHANGE IS POSSIBLE



Cause and effect model of the psychology behind sustainable behavior - from having to doing





# HOW AND WHY CHANGE IS POSSIBLE

## Leitbild and footprint

In particular, the exploratory question about any resistance to change highlights the need for a mission statement and a way to measure sustainable behavior.

The clear message behind a mission statement should be supported by economic and ecological scenarios and disseminated through emotionally effective narratives.

The assessment of sustainable behavior should be differentiated according to areas, since in an overall assessment 'failures' in one area would immediately take away the motivation for all other areas.



*Qualitative cause and effect model about a Leitbild (clear message) and the measurement of the ecological footprint or even better handprint (valuation/scoring system)*



# HOW AND WHY CHANGE IS POSSIBLE

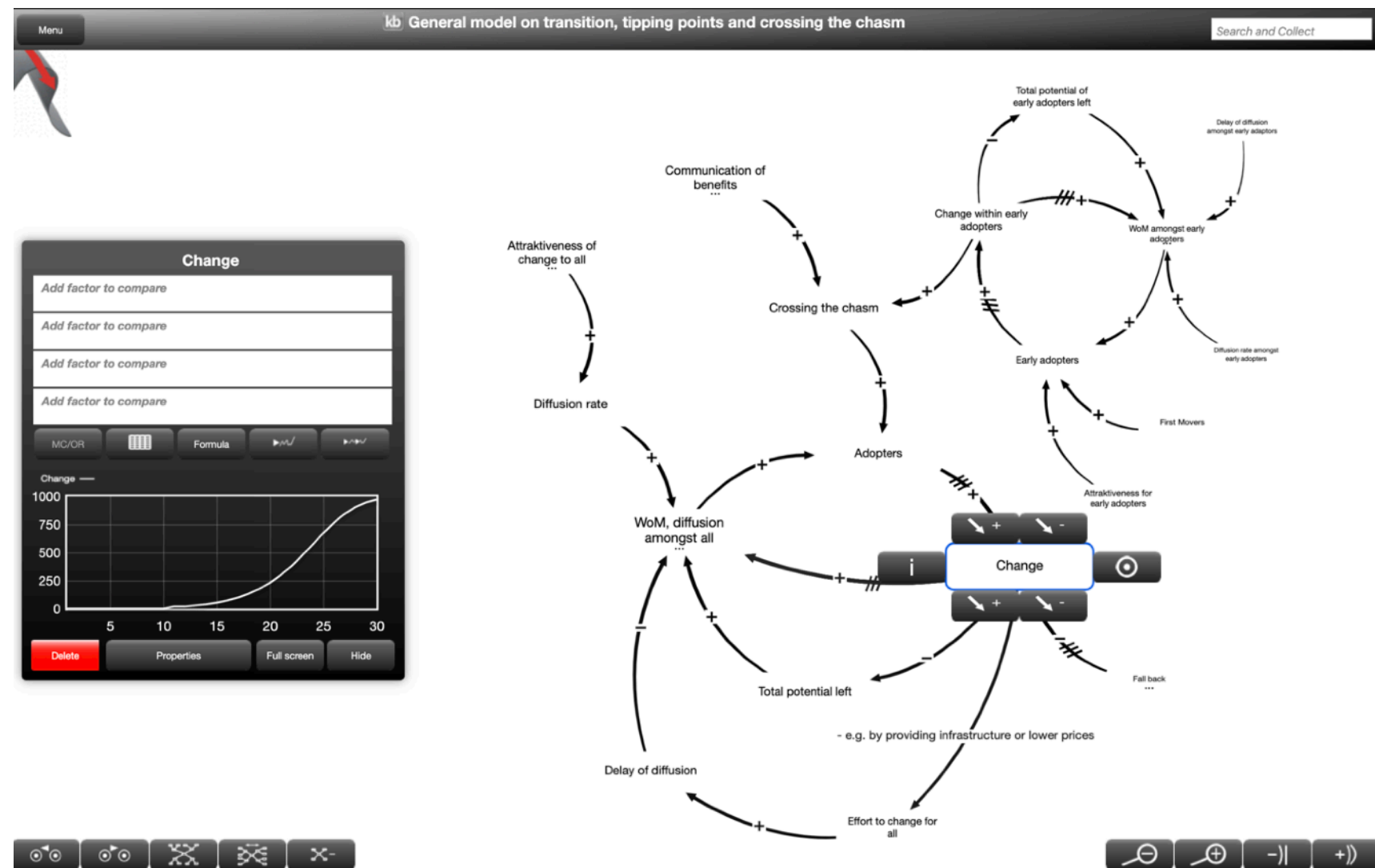
## Transformation

The previous models have all shown how the behavioral changes of individuals potentially transform the values of society and then others want to change their behavior as well.

In reality, there will be countervailing forces that do not want to challenge material prosperity and the business models behind it. What ultimately prevails depends on a "crossing the chasm" and a "tipping point," an initial moment and then sustained appeal.

As we enter 2020, we have all the rational frameworks, first movers and first steps from all the players.

But we have neither an emotionally effective mission statement nor an rating system, which is why crossing



Small quantitative simulation model of the mechanisms of a "Crossing the Chasm" (Geoffrey A. Moore) and a "Tipping Point" (Malcom Gladwell)

the chasm already seems unlikely. In almost all cultures, we strive to have more, not to be better people.

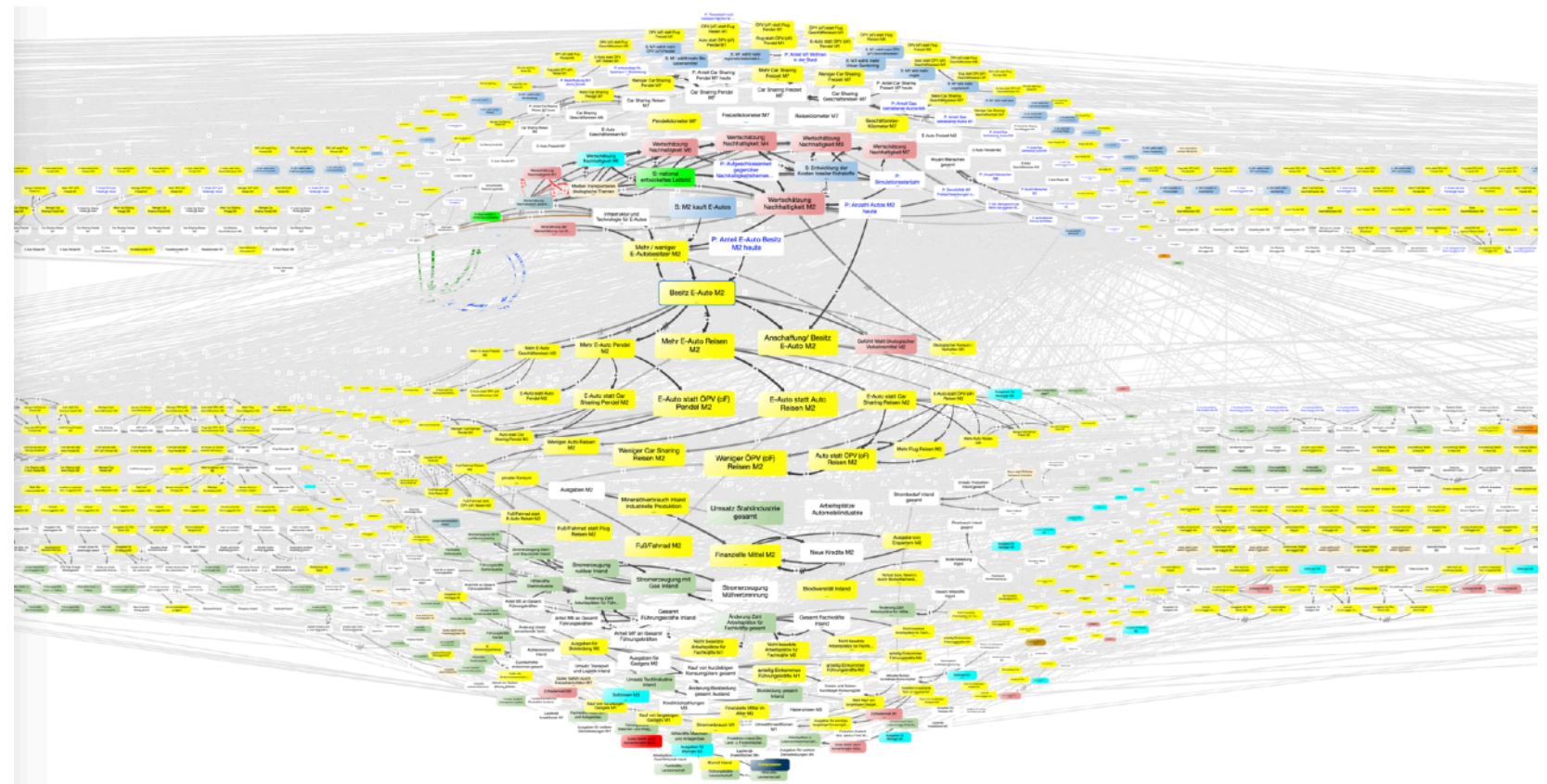


# HOW AND WHY CHANGE IS POSSIBLE

## The D3 Model

Again, the Federal Environment Agency asked how such a change could have a concrete impact on our society and economy. How would the so-called social milieus change, what effects would this have on the economy, or is the National Welfare Index the decisive measure?

Together with Prof. Hans Diefenbacher (FEST), Dr. Martin Hirschnitz Gabers and Susanne Langsdorf (both Ecologic Institute), Michael Schipperges (sociodimensions) and Daniel Weiss (adelphi), we created a comprehensive simulation model (System Dynamics) with more than 4,000 factors to look at possible developments and effects of a national transformation in scenarios.



*Excerpt from the D3 Model with over 4,000 factors (there is also a small simulation game available)*

Social milieus and all behavioral domains (nutrition, mobility, housing, clothing, urban gardening, sharing, etc.) were mapped, purchasing power and jobs (part-time/full-time), soft factors such as self-determined lifetime, economy by sector, environmental pressures, resource use, greenhouse gas emissions,

elements of the National Welfare Index, and happiness in the respective milieus.





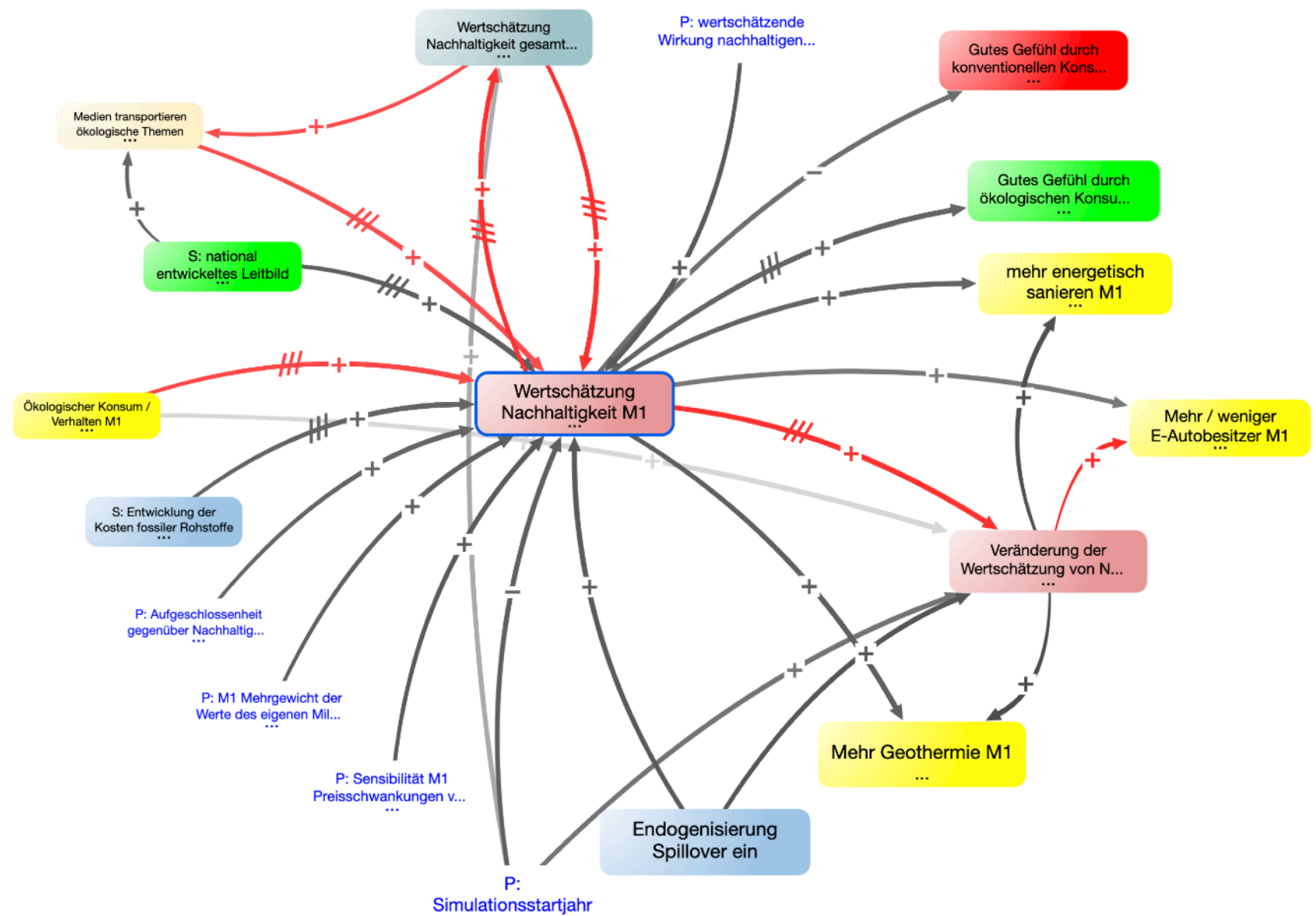
## HOW AND WHY CHANGE IS POSSIBLE

In order to predict the behavior of the respective social milieus, it is crucial to have an explanatory model for the so-called spillover effects, i.e. the question of how behavior in one area, such as mobility, also affects behavior in other areas, and how the change in behavior of one social milieu influences the respective other milieus.

The model on the drivers of human action and the question of the extent to which change is rationally motivated or emotionally effective served as an explanatory model levers for a variation of assumptions..

The result is that under the right conditions, only a part of the "critically creative milieu," for example, has to behave more sustainably in one area, and via spillover effects, the behavioral

changes also begin exponentially in other areas and with a delay in other social milieus as well.



Excerpt from the D3 Model showing the spillover-effect



## HOW AND WHY CHANGE IS POSSIBLE

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The insights from the D3 model are manifold. All scenarios in which sustainable behavior becomes an emotionally effective alternative for material values lead to exponentially more sustainability.

What is interesting here is that the milieus with high purchasing power first define themselves by buying sustainable solutions (e-cars, energy-efficient renovation, photovoltaic systems, organic clothing, etc.) and only then, when society as a whole is living sustainability, also resort to more sharing, public transport and part-time work. On the other hand, the milieus with less purchasing power cannot afford organic clothing and food or even an e-car and define themselves through renunciation/sufficiency (fewer travel kilometres, more public transport, more sharing, less meat, etc.). These social milieus then save in order to be able to

invest in energy renovation, PV, e-cars (rebound!), etc. with a time delay.

This pattern thus explains the trajectories of the simulation curves for the economy (figure next page): the investments lead to a boom (green economy) followed by a drop in the economy due to the consumption cutbacks (sufficiency) and also shortened working hours.

While the economy could fall below today's level, welfare would also fall after the investment boom, but would remain at a much higher level than today. Satisfaction among the population, on the other hand, would rise steadily.

There are numerous other findings, such as the need for the state to also invest in infrastructure in order to reduce the overall ecological footprint, or that urban gardening

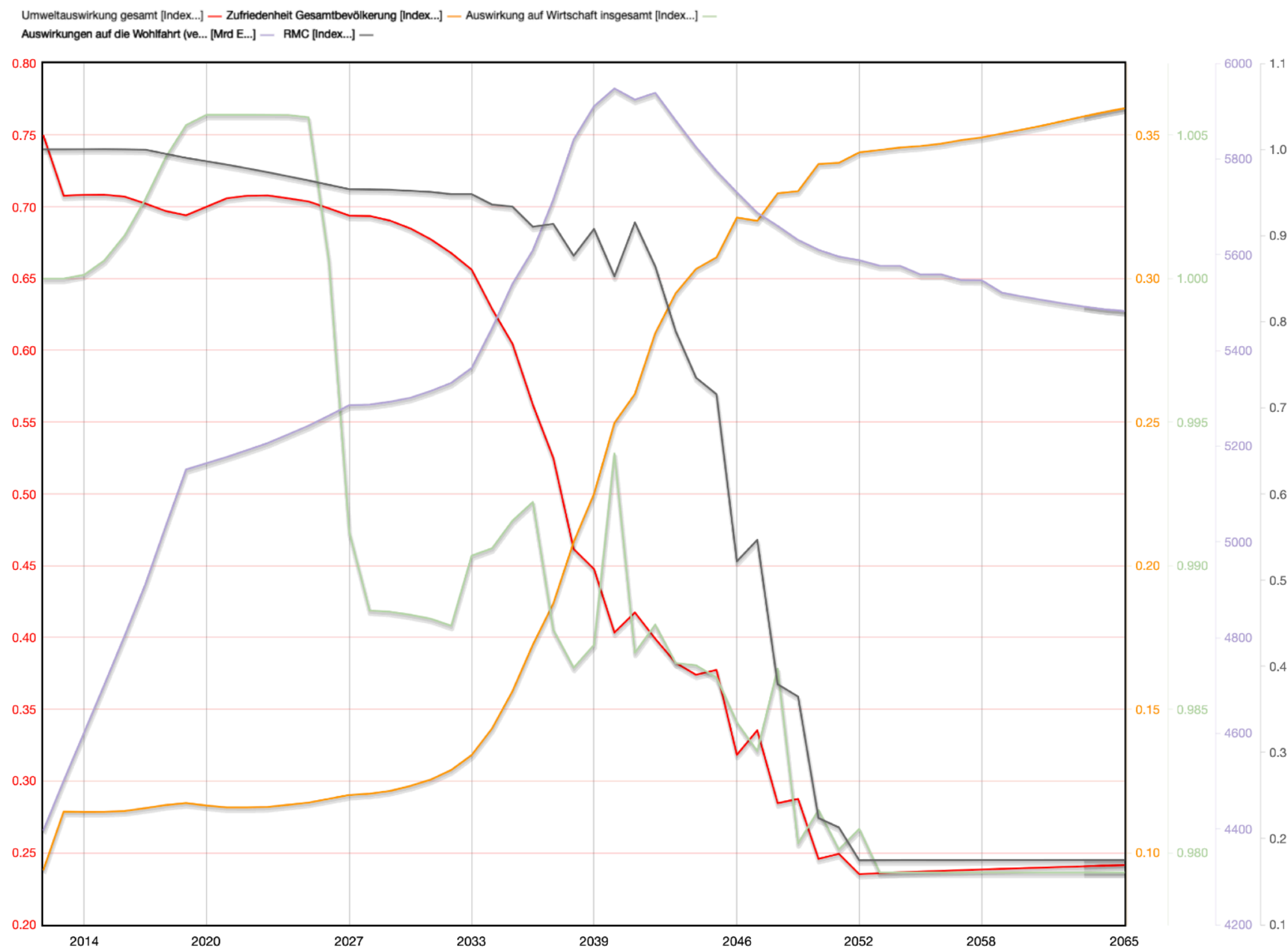
and car sharing bring little in absolute terms, but can in turn be very effective as levers for changing values.

The interpretation of the D3 model is simple: without emotionally effective mission statements, there are no spillover effects. With them, on the other hand, there is the potential for exponential change from which all parts of society can emerge as winners.

But part of the reality is that our economy is export-oriented and sufficiency-based part-time workers can become critical in the international context - at least until we are a less export-oriented circular economy that feeds off the anthropogenic stockpile of raw materials.



# HOW AND WHY CHANGE IS POSSIBLE



*The developments from emotionally effective spillover-effects: The economy, raw material consumption (RMC) and environmental damage go down, welfare and happiness go up.*





## HOW AND WHY CHANGE IS POSSIBLE

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### What we need now ....

... are mission statements, narratives (here Consideo is has also working on a project with Z-Punkt, sociodimensions and mediacompany) and an evaluation system, like the "For-a-Better-World-Score" ([www.for-a-better-world.net](http://www.for-a-better-world.net)).

This creates demand from people for alternatives, which transforms the lock-in effect from a vicious circle to a virtuous circle and generates tailwind for business and politics.

On the one hand, the general conditions are good with Fukushima, weather extremes, forest fires, Fridays for Future etc.. Major players from industry and finance are rethinking, and even politics could result in "competitive altruism." But of course, conservatism is also fighting back, and disruptive change and social

imbalances are fueling very different values than sustainability.

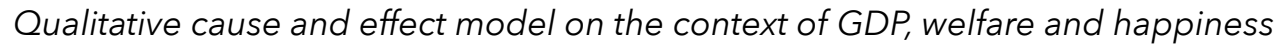
In another research project for the Federal Environment Agency on the National Welfare Index with FEST Heidelberg, FFU Berlin, ZOE Bonn, IMK Düsseldorf and adelphi Berlin, we identified the need for such an index to be properly popularized out of the professional world and into the public debate.

What is also decisive in all this is the social design of the change. Sufficiency alone will not make people happy - sustainable solutions must also be made possible for sections of the population with less purchasing power.

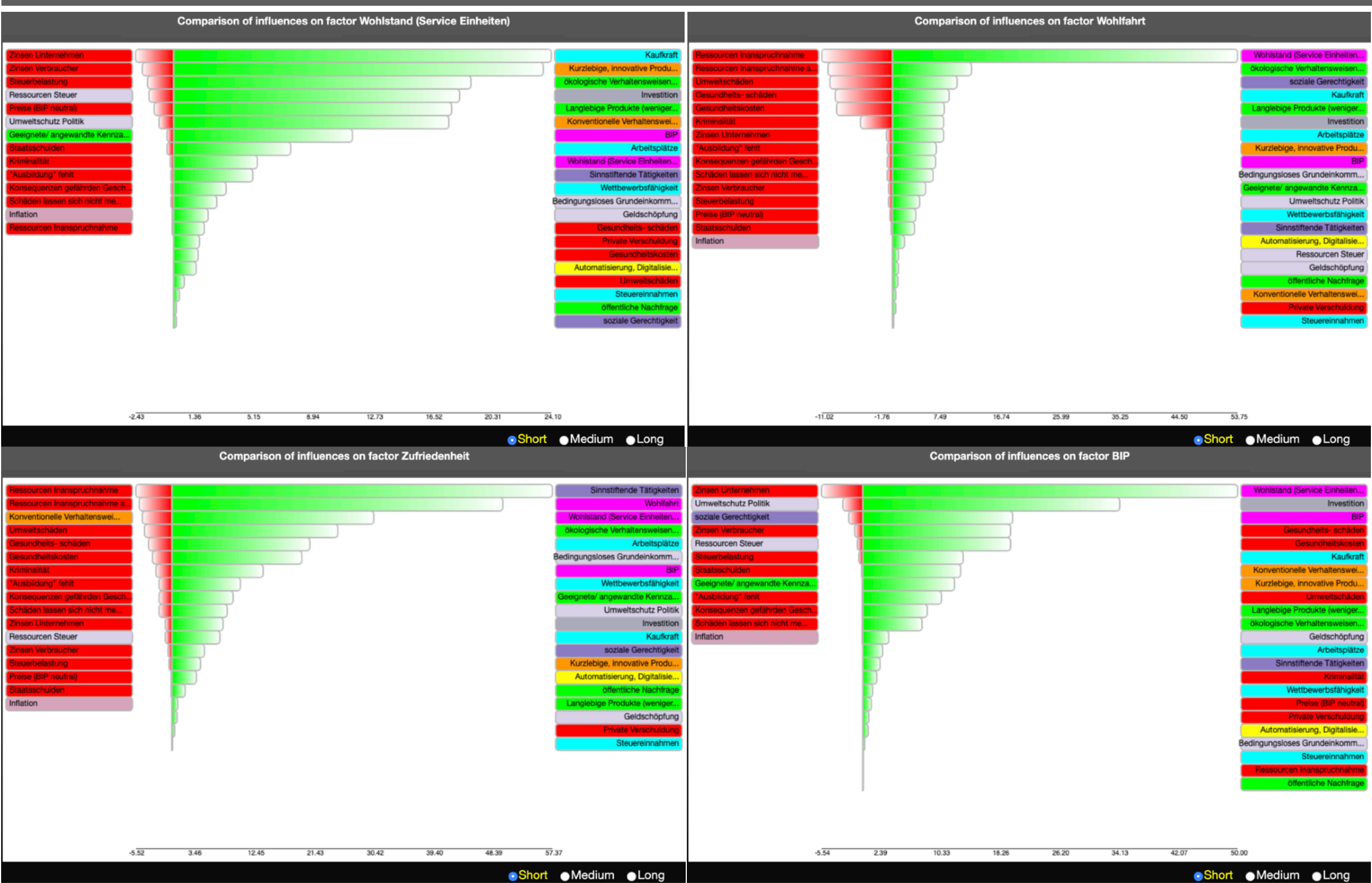


*The framework conditions are good - the only things missing are mission statements and the ability to measure better behavior.*





# HOW AND WHY CHANGE IS POSSIBLE



Insight-Matrices (Tornado-View) for wealth, welfare, happiness and GDP





# HOW AND WHY CHANGE IS POSSIBLE

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## Sources, links

The IAM project:

<https://www.umweltbundesamt.de/publikationen/entwicklung-eines-integrated-assessment-modells>

[https://www.know-why.net/model/\\_jA9lAITiEeGdQeWhn-EGUA](https://www.know-why.net/model/_jA9lAITiEeGdQeWhn-EGUA)

## About Consideo

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The D3 project:

<https://www.umweltbundesamt.de/publikationen/entwicklung-eines-quantitativen-modells>

Consideo has a vision of a better world. The mission is to help people understand the connections. We work with the award-winning software iMODELER for business, research, politics and individuals.



With the platform KNOW-WHY.NET we offer collective connections.

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