

Fit for transformation?! – How to break out of the environmental niche and contribute to sustainability transformation: the example of the German Environment Agency (UBA)

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1) *Introduction*

2021 was a groundbreaking year in Germany's institutional setting for environmental protection. It was in April 2021 when the German constitutional court ruled that the climate protection law of the Federal Government does not achieve protection for future generations and hence asked for a review of the climate protection law. This judgement is a milestone and reflects what Dirk Messner, the president of UBA, has been advocating for a very long time: the need for a sustainability transformation which implies a structural and fundamental transformation towards a sustainable society that respects the planetary guard rails of sustainability (WBGU 2011). Although the need for rapid action for climate and environmental protection is known in most western economies, the gap in order to stay

within the planetary boundaries is huge. Change will not come from environmental movements, civil society and NGOs alone. Therefore, Messner works with passion towards transformation in governmental institutions. After entering the Anthropocene, the sustainability transformation (hereafter referred to as: transformation) alongside the digital transformation is the greatest task and challenge of mankind.

This article reflects on the role of governmental research institutions and environment agencies in the context of these transformations and the transformative changes initiated by Messner in UBA in particular. These changes will be discussed in the following chapters:

- A transformative approach to research and policy advising
- A systemic approach to environmental protection and sustainability
- Working in networks nationally and internationally
- Digitalisation and sustainability

2) A transformative approach to research and policy advising

Governmental institutions are perceived as structurally conservative; they don't have a claim for change. Shaped by the concept of an ideal bureaucracy developed by the German sociologist Max Weber in the early part of the 20th century, administration regularly does not stimulate innovation. The question how to make a governmental research institution a change agent of the necessary sustainability transformation is therefore a very relevant one. Transformative research claims high ambitions: namely to contribute actively to societal change towards sustainability. The characteristics of transformative research are that it challenges conventional wisdom (1), leads to unexpected insights that enable new techniques (2) or redefines the boundaries of science, engineering or education (3) (NSF 2009). Initially, transformative research was done by non-governmental frontrunners, which developed innovations in niches (WBGU 2011). Messner however introduced transformative research in UBA. He is one of the pioneers connecting state actors with emerging initiatives, civil society, industry and academia on a joint journey for change. Environmental research often is still very much based on descriptive-analytical research (Wittmayer et al. 2018). In order to achieve sustainability transformation, research has to go beyond that and introduce *inter alia* quantitative reduction targets in soil, water and air pollution, greenhouse gas emissions (GHG), use of chemicals, plastic, industrial waste, combustion engine cars, gasoline, meat consumption and environmental harming subsidies. In areas such as circu-

lar economy, electric cars, hydrogen production or sustainable building, strict target systems are necessary. These targets have to be accompanied by effective instruments and transformative governance.

3) A systemic approach to environmental protection and sustainability

In order to mainstream sustainability, a systemic perspective is needed in environmental research and policy advising. The concept of the Anthropocene challenges the singular look at the environment, where humans have taken control of the planet. The planetary boundaries are at risk: the term “environmental problems” doesn’t do justice to the urgent crisis (Bonneuil & Freesoz 2013: 20). We need to overcome the separation between natural sciences and social sciences in sustainability research. The Anthropocene leads to the reunion of human (historical) time and earth (geological) time. “Social” relations are full of biophysical processes and impact the “natural” system all the time (Bonneuil & Freesoz 2013: 32–33).

For governmental institutions that are divided through the rigid distribution of “Ressorts” (federal ministries) this is a lot to ask for.¹ The deep divisions became problematic in the 19th legislative period (2017–2021) when the environmental ministry came up with a binding climate protection law covering among others also the energy, agricultural and transport sector. The other ministries successfully blocked a more ambitious climate protection law (reducing 65% of greenhouse gas emissions from 1990 to 2030 instead of 55%) that eventually was overthrown by the constitutional court (noted above).

Example 1: The systemic perspective on climate protection

The one environmental field that has managed to erupt in an ambitious, transformative way during the last 25 years is climate protection. Thousands of think tanks are dealing with the climate crisis. The energy transition discussion continues to centre around the shift to renewable electricity (RE). But the rising resource use for RE technology, mainly steel, concrete and petrochemical resources has been overlooked and neglected. UBA understood the critical junction and

¹ In the Federal Republic of Germany, ministries that carry environmental tasks are the ministry of economic affairs, the agricultural ministry, the transport ministry, the health ministry, the research ministry and the ministry for development cooperation.

introduced an integrated systemic perspective on climate protection and circular economy, meaning *inter alia* the genuine contradiction between RE increase and resource reduction. Little progress has been achieved in this area, windmills have gained a longer life cycle and material use became more efficient. We are far away from a circle in which RE material can be recycled by maintaining its primary value.

4) *Working in networks nationally and internationally*

Creating knowledge together, working in networks with other research institutes is the third element for Messner's leadership style. UBA in the future shall be led by principles such as co-creation and flexibility. These principles are rather new to big parts of the descriptive-analytical research areas in UBA. Moving from a more authoritative approach to co-creation on equal footing, e.g. with industry, and learning together in scientific networks is a huge step. A different skill set of researchers is needed: networking, foreign language and cooperation skills etc. A key target for UBA is to further develop strong institutional ties with other outstanding research institutions in Germany, Europe and the rest of the world and work towards an agile administration. Agility means, among other things, thinking along connections and interactions, setting fast and realistic goals and reacting quickly to changes. Such administrations avoid silo thinking, network across organisational boundaries and integrate relevant external actors at an early stage. To this end, they create suitable working structures and spaces for cooperation (Wirth 2020: 161). Messner has introduced several initiatives for international cooperation in UBA. Two examples should be highlighted here:

Example 2: TES Academy

In 2021, UBA set up the “International Academy for Environment and Sustainability Transformation (TES Academy)”. This Academy will provide a curriculum for different sustainability stakeholders, ranging from business, society and academia – especially in the G20 countries. It establishes a network of leaders, experts and decision-makers that closely interact. The programme is aligned with key topics of sustainability transformation. Formats are a 2- to 3-day programme for executives from business and public institutions for the practical implementation of transformation processes or summer schools for junior executives. A concept for knowledge cooperation will be developed and UBA's network will be strengthened.

Example 3: New European Bauhaus – UBA as partner

Another project in which Dirk Messner has created a co-learning network with UBA as one partner is the “New European Bauhaus”. Alongside with climate researcher John Schellnhuber, Messner took the EU initiative as a chance to bring together different actors from the building, architecture, arts and design, and transport sectors to think about the future of climate-neutral, healthy, social neighbourhoods with high life quality. The Bauhaus initiative also serves as a prime example where the systemic perspective should allow to develop radically new ideas and innovation. That means, e.g., not to turn a blind eye on embodied carbon emissions. One quarter of the emissions in the existing building and construction sector comes from embodied carbon emissions associated with materials and construction processes (WorldGBC 2019). UBA’s new Bauhaus project is offering completely new approaches towards developing and constructing buildings.

5) *Digitalisation and sustainability*

The second dynamic of the Anthropocene next to the sustainability transformation is the significant technological progress in the field of digitalisation towards artificial intelligence. Messner was one of the first environmentalist researchers who emphasised the benefits of digitalisation for humanity and its planet: this goes beyond discussing some practical potential for sustainability solutions such as smart electricity grids. Instead he is asking the big questions: How do the two dynamics interact? What does sustainability of human societies mean in the digital age? If humans have become the central force of change in the earth system in the 20th century, how will learning machines influence the earth system? Against many critics who have little hope that digitalisation and artificial intelligence (AI) can support the sustainability transformation, Messner trusts that human capabilities will help doing so (Messner 1997): Learning, justice, social intelligence and cooperation support digitalisation to contribute to a healthy planet (Messner & Wehinger 2021).

Example 4: Coalition for Digital Environmental Sustainability (CODES)

Worried that the sustainability community underestimates the disruption and deep transformation of society through digitalisation, Messner and his allies at United Nations Environment Programme (UN-

EP), The World Resources Institute, Future Earth etc. have launched the new Coalition for Digital Environmental Sustainability (CODES). The Coalition has four core objectives: 1) to offer a vision of the environmental sustainability and digitalisation nexus; 2) to establish an acceleration plan for digitalising environmental sustainability; 3) to help unite various environmental sustainability and digitalisation initiatives and 4) to mobilise the scientific community and set a research agenda (CODES 2021).

6) *Food for thought*

What else can help governmental research institutes like UBA to become a transformation agent? To become “fit for transformation”, governmental research institutes need a strong focus on “learning”. According to Senge, prerequisites for a learning organisation are learning practices, processes and infrastructures, but also leadership behaviour that reinforces learning (Senge 2008). There is a need for the development of an “evolutionary organisation”, in which transformation develops through emergence, in distinction to the “legacy organisation”, which strives mainly for goal achievement through compliance (Dignan 2019; Herrmann 2021). Messner personally exemplifies the desire to learn and the passion for research. A learning organisation needs a strong focus on staff. Recruitment, promotion, training and motivation of employees are key factors. In terms of staff motivation, UBA could learn from the concept of Public Service Motivation (PSM) that is used to measure motivation in the public service (Jopp & Rölle 2021: 107). Of the four dimensions (political motivation, desire to serve the common good, social compassion and altruism) covered in the concept, the first two seem to be particularly applicable to UBA: political motivation and the desire to serve the common good and to assume social responsibility. Additionally, UBA with its strong focus on research should have a spirit of curiosity. We sometimes notice that highly motivated PhD graduates lose this spirit of research ambition once they work for UBA. This is something the authors suggest investigating further. A more inquisitive culture, better infrastructure for excellent and transformative research, and competitiveness could *inter alia* change this.

Furthermore, an institution that promotes transformation and claims to contribute to the greatest transformation since industrialisation needs to “practice what it preaches”. UBA employees desire a top environmental-friendly employer, suggesting, e.g., bike purchase subsidies and vegetarian canteens. UBA also needs an urgent modernisation of its IT infrastructure,

better digital capabilities of staff and high-tech learning, and working modules.

The article intends to show how governmental agencies can undertake a profound transformation themselves, in order to contribute to the transformation towards a sustainable society. Messner is a strong and tireless advocate for this transformation.

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