

# Science and policy for the sustainability transformation



## Science and policy: Together for the great transformation

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The way humankind deals with climate change is a reflection of our treatment of each other. The impacts of climate change are unfairly distributed, and regions that have played almost no part in global warming are especially hard hit. Our children and grandchildren are far more affected by the impacts than those who are largely responsible for causing them. Finding bold, appropriate responses to the climate crisis is therefore a question of justice, solidarity and responsibility.

If we want to secure good living conditions on Earth, if we want to curb extreme weather events and other consequences of climate change, we have to change something fundamental: the way we run our economies, how we generate energy, our forms of mobility, how we work and live. That is why the German government has adopted the goal of climate neutrality by 2045. We made this goal legally binding in the Climate Change Act that I introduced.

Achieving climate neutrality is pivotal for the future. This task is at the heart of the great transformation that will make our cities more liveable and our crops more diverse; a transformation which will modernise our infrastructure and harness digitalisation as a tool for environmental protection. The German Advisory Council on Global Change (WBGU), which was instrumental in shaping this concept with Professor Dirk Messner, states that the great transformation offers prospects for the future of sustainable economic activity.

This is clearly true, as the great transformation holds huge opportunities for more prosperity and competitiveness. This has been demonstrated by both scientific studies and a growing number of practical examples in the steel and chemicals industries, the energy sector and agriculture. The technologies of the future can ensure jobs for the future and give Germany a massive boost as an exporting country, for instance of electrolyzers for green hydrogen, heat pumps and electric vehicles.

That is why, more and more often, I hear the same question from scientists: Given these outstanding opportunities and the overwhelming evidence of the impacts of climate change, why is the necessary great transformation not moving forward more rapidly? And, above all, how can we work together to accelerate it?

My answer is this: Together, policy-makers and the scientific community can significantly advance the great transformation. However, their roles in this task are different and complementary.

### *Science and policy as drivers of the great transformation*

The role of science as I understand it is to provide the ideas and impetus that are the foundation of good policies anchored in science. Independent science is the basis for difficult political decisions and strengthens their credibility. This has been highlighted by the COVID-19 pandemic as well as the climate crisis. Science asks questions – critical, concrete and fundamental questions. It does not have to always answer these questions conclusively. Critical scrutiny is part of the very essence of science. At the same time, responses within science come from different viewpoints and draw different conclusions depending on whether the question is put to biologists, psychologists, sociologists or economists.

Science cannot and must not compromise. The task of policy-makers, on the other hand, is to win over the majority, gain acceptance for policies and, ultimately, make decisions. Decisions which are often built on compromises and which sometimes have almost no sound scientific, legal or any other basis – as we saw at the start of the coronavirus crisis – but which still have to be taken nevertheless. Such decisions go hand in hand with the risk of later turning out to be flawed or even completely wrong.

In their decisions, policy-makers have to bring together the different viewpoints and persuade the public to get on board. This is the very substance of democracy. Winning people over is sometimes hard work and not to be achieved overnight. For these reasons, scientific findings

cannot always be fully and directly implemented in policies – certainly not straightaway.

In the climate crisis, policy-makers are fortunate to have had scientists providing them with a wealth of data and scenarios over several decades. Through this work, the scientific community has created an enormous awareness of the problem of climate change. This valuable achievement has broadened the scope of action for policy-makers and advanced many important policy decisions. These include, for example,

- Germany's decision to lay down climate action in law and, more recently, to significantly raise its climate targets.
- The EU's goal of becoming the world's first climate-neutral continent with its Green Deal.
- At international level, the decisions of countries such as the United States, Costa Rica and Japan to set themselves more ambitious climate targets.

Science-based policy has created a framework for our progress to climate neutrality. Now we must flesh out that framework and implement the goals.

This hands a mandate to both policy-makers and scientists. There is already general awareness of the problem; now it is time to raise awareness of the solutions. The solutions to the climate crisis are in our hands; now we have to bring them into the mainstream.

- We must speed up the expansion of wind power, solar energy and the electricity grids.
- We must put more electric vehicles and bicycles on the roads and build an adequate charging infrastructure.
- We must expand bus and rail networks.
- We must tap the potential of digitalisation, especially artificial intelligence, for environmental protection.
- We must improve the energy efficiency of buildings, modernise heating technology and much, much more.

To advance the great transformation, science and politics need

- Vision and the ability to anticipate obstacles.
- Joined-up thinking and interdisciplinary work.
- Stronger international networks and collaboration.
- The courage to state the problems and develop practical solutions to them.

*The German Environment Agency as a driver of transformation*

There is an institution at the interface of science and policy that meets all the above criteria: the German Environment Agency (UBA). The UBA is on the road to becoming the driver that the scientific community and policy-makers need to jointly advance the great transformation. This is where the different strands of science merge and where knowledge is pooled in the interests of a socially just, green restructuring. The UBA stands for independent scientific expertise and policy advice that – to the discomfort of some – does not shy away from conflict. Its practice-oriented findings help propel the transformation.

With his scientific prowess, his international contacts and his fine grasp of politics, Professor Dirk Messner embodies all these aspects in his role as UBA President. He brings his pragmatism and foresight to bear in those areas where this expertise is needed – be it the steel industry, food and agriculture policy, digitalisation, or the idea of a “Bauhaus der Erde” he developed with renowned climate scientist Professor Schellnhuber. Professor Messner’s passion is infectious and sparks a sense of pleasure in the whole process of the great transformation. He has positioned the UBA as a globally networked knowledge institution for the shift to sustainability. Under his leadership the UBA has matured into a hard-hitting institution that puts science to the best possible use for the great transformation. We need the UBA today more than ever before to protect ourselves and our environment from the consequences of human activity – and to seize the opportunities that the great transformation has to offer.

*Setting off for the solar, wind and hydrogen age*

We have made a start: In many places the great transformation is already well underway. From being a niche product, electric mobility has moved to the mainstream, the expansion of renewable energies continues apace and the German government has adopted the phase-out of coal. Industry is developing climate-friendly technologies and production processes. This opens the door to new alliances for the great transformation. Alliances among scientists, businesses and environmental associations, policy-makers, unions and social organisations.

These advances are outcomes of the Paris Agreement, but also of the German government's climate policy during this legislative period. Increasingly, climate action is determining our course. A growing number of countries around the world are leaving the age of coal, oil and gas behind. Together we are setting off for the age of solar power, wind energy and hydrogen.

