

Low-Carbon Economy and Sustainable Development

The German Advisory Council on Global Change (WBGU) will present its latest flagship report, [“World in Transition: A Social Contract for a Great Transformation”](#), to Annette Schavan, Federal Minister of Education and Research, and Federal Environment Minister Norbert Röttgen today. In this report, the WBGU explains the reasons for the urgent need for a ‚post fossil-nuclear metabolism‘. It also concludes that the transition to sustainability is achievable, and presents ten concrete packages of measures to accelerate the necessary restructuring. If the transformation really is to succeed, we have to enter into a social contract for innovation, in the form of a new kind of discourse between governments and citizens, both within and beyond the boundaries of the nation state. The modern era’s global crisis can only be overcome through a profound, shared awareness of low-carbon value creation and sustainable development. In this report, the WBGU elaborates on the prospects of future sustainable economies - which, in view of the Fukushima nuclear disaster, must surely be on the agenda of national and international policy now.

A World in Upheaval

The pro-democracy movements currently shaking the foundations of the power structures of a number of Arab states on par with, for example, the fall of the Berlin Wall in 1989 have rapidly lead to upheavals which were, until recently, hardly imaginable. They are proving the huge power and overwhelming dynamics of transformative processes that sometimes take a long time to build up, simmering away under the surface. There are two main lessons to be learned from current developments. Firstly, that often, the time for profound changes has already come, even though, on the surface, a society still gives the impression of stability. This not only applies to the growing demands for self-determination and participation in many of the world’s regions, but also becomes apparent when looking at the proven global change in ethical values to embrace sustainability. Secondly, the sudden instability of autocratic systems whose mainstay is the extraction of crude oil and natural gas highlights the immense economic, political and social costs of a global economy that is almost without exception driven by fossil energy carriers – not to mention the ecological damages. Moreover, the nuclear tragedy in Japan makes it clear that we must choose the fast lane towards a nuclear energy free low-carbon future. However, all over the world, the established industrial model is showing signs of deterioration. In many countries, we are witnessing a dramatic growth in renewable energies. A number of governments, cities and corporations have succeeded in implementing low-carbon strategies. In all areas of society, there are change agents, actively committed to decarbonisation and resource protection. The WBGU calls this incipient powerful structural change as the ‘Great Transformation’ from fossil to post-fossil society – comparable to the transition from agricultural society to coal-based mechanisation in the 18th

century.

A Future without Nuclear Power

In the WBGU's assessment, nuclear energy free, ambitious global climate protection is possible. This is shown not least by the analyses in the WBGU's latest flagship report. At the centre of any decarbonisation strategy must be the massive extension of the renewable energies, and the infrastructure they need. However, the energy transition towards sustainability can only succeed if, concurrently, the huge potentials for efficiency increase are fully tapped, and changing our wasteful lifestyles is no longer a taboo subject, particularly in the industrialised and newly industrialising countries.

Several countries are currently planning to increase their use of nuclear energy. The WBGU urgently advises against this, above all because of the risks accompanying cases of serious damage - which we simply cannot afford to ignore, the still unresolved issues concerning final storage, and the danger of uncontrolled proliferation. Existing plants should be replaced by sustainable energy technologies as soon as possible, and, in the case of evident safety deficiencies, be closed down immediately. However, the phase-out of nuclear energy must not be compensated by renewed or intensified brown or black coal based energy generation.

Overcome Obstacles and Accelerate Transition

For the transformation into a low-carbon society to succeed, we must not just accelerate the pace of innovation; we must also cease to obstruct it. That is one of the WBGU's key messages. For example, adequate investment dynamics towards a sustainable global economy can only develop if subsidies for fossil energy carriers, currently in the region of high three-digit billion figures worldwide, are abolished. We must also take into account the external costs of high-carbon (fossil energy-based) economic growth to set price signals, and thereby to provide incentives for low-carbon enterprises.

Climate protection is, without, a vital fundamental condition for sustainable development on a global level. The WBGU has frequently called attention to the fact that the course for global decarbonisation must be set now, before the end of the decade. Sustainable development means more than climate protection, though, as the natural life-support systems also include many other natural resources, such as fertile soil and biological diversity.

A New Social Contract

The transformation into a sustainable society requires a modern framework to allow the soon-to-be almost nine billion people to lead 'the good life', both in terms of living with each other, and living with nature: a new *Contrat Social*. A largely virtual social contract such as this is reliant not least upon each individual's

self-concept as a responsible global citizen. This contract is also a contract between generations. Science plays an essential role here, as for the first time in history, a profound transition does not need to be caused by imminent necessity, but by precaution and well-founded insight. In this respect, the social contract also represents a special agreement between science and society; that is another one of the WBGU's key messages.

It is also about a new culture of democratic participation. The report suggests a number of options, for example the appointment of ombudsmen and women to ensure the protection of future-oriented interests. This sustainability-oriented approach can be given a secure, firm footing through the inclusion of 'climate protection' in the constitution as a national objective, and through establishing a climate protection law. The WBGU also highlights the fact that a low-carbon transformation can only be successful if it is a common goal, pursued simultaneously in many of the world's regions. Therefore, the social contract also encompasses new ways of shaping global political decision-making and cooperation beyond the nation. In this context, one of the WBGU's recommendations is the establishment of a 'UN Council for Sustainable Development', on par with the UN Security Council, and the forming of alliances of climate pioneers between states, cities, and corporations.

Ten Packages of Measures

Greenhouse gas emissions are primarily caused by the energy industry and land-use, both very much related to rapid global urbanisation. We have thus defined three key fields requiring transformation, where strategies for emissions reduction must show an expeditious and comprehensive effect. In this context, the WBGU elaborates ten packages of measures that are particularly suitable for accelerating and extending the transition to sustainability.

1. The state should show conscious awareness of its enabling and proactive role to advance global decarbonisation. However, this can only be legitimate if it goes hand in hand with offering its citizens far more extensive opportunities for participation.
2. The greenhouse gas CO₂ should globally be given an 'commensurate' global price as soon as possible.
3. A European energy policy aiming for a fully decarbonized energy system by 2050 at the latest should be developed and implemented at once. A direct objective should be the promotion of partnerships with North Africa.
4. Feed-in tariffs for renewable energies should be introduced worldwide.
5. One top priority for any development policy should be to provide access to sustainable energy to the 2.5 to 3 billion people in developing countries

currently living in energy poverty.

6. A huge effort should be made to steer the world's accelerating urbanisation towards sustainability.
7. Land-use can and should become climate-friendly, in particular forestry and agriculture.
8. Financing of the transformation and the massive investments required should increasingly rely on new business models that help to overcome current investment barriers.
9. Within international climate policy, states should continue to work towards an ambitious global treaty. At the same time, multilateral energy policy must promote the worldwide transfer of low-carbon technologies.
10. The United Nations should be brought into a position where they can make effective contributions to the transformation. Development organisations should be reorganised into transformation agencies for sustainable development. The G20 should draft a road map for economic development that takes into account the planetary boundaries. The Rio+20 conference in 2012 is a unique chance to set the global course towards low-carbon development.

Knowledge and Society

Despite its already widely accepted objectives and the many viable low-carbon technologies already available to us, the transformation is a joint quest. Research and education are tasked with developing sustainable visions, in co-operation with policy-makers and citizens; identifying suitable development pathways, and realising low-carbon and sustainable innovations. For this reason, the WBGU recommends intensified refocusing of national and international research towards the Great Transformation, and the provision of the requisite funds. The relevant scientific findings must also be made accessible and understandable to allow people to accept the change and to participate democratically in the transformation.

Main Arenas for the Transformation

Especially during the establishment of low-carbon energy systems, the challenge lies in ending energy poverty in developing countries whilst also drastically, and quickly, mitigating global CO₂ emissions from the use of fossil energy carriers. If this is to succeed, global final energy demand must not rise much more – it currently runs at around 350 exajoule (EJ) per annum, and should not increase to more than 400-500 EJ p.a. by 2050. This requires efficiency improvements and lifestyle changes in many areas of people's everyday lives. Due to the high energy demand in cities,

rapid urbanisation is a central issue. From a technological point of view, there are various realistic options for the establishment of low-carbon energy systems. The WBGU recommends a strategy that relies primarily on an accelerated use of renewable energies. The WBGU advises categorically against an increase in the use of nuclear power. Carbon capture and storage (CCS), on the other hand, is a necessary climate protection measure for countries that continue to rely on the use of fossil energies in the interim. CO₂ sequestration could also become an important technology at a later stage, to achieve the active withdrawal of CO₂ from the atmosphere. As far as land-use is concerned, the main focus is on rapidly bringing a stop to deforestation and forest degradation, and the encouragement of a low-carbon agriculture and climate-friendly eating habits. The WBGU shows that transformation costs can be lowered significantly if joint decarbonisation strategies are implemented in Europe. The transformation also represents a great chance for Europe to make innovation-driven contributions to a globalisation process that has a viable future.

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The WBGU

The German federal government set up the WBGU as an independent scientific advisory body in 1992 in the run-up to the Rio Earth Summit, the United Nations Conference on Environment and Development. It consists of nine members, among them DIE-Director [Prof. Dr. Dirk Messner](#) as Co-Chair of WBGU, each appointed

by the federal government for a period of four years.

The German Development Institute / Deutsches Institut für Entwicklungspolitik (DIE) in brief:

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