

# Views on Development

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## How to Move on from Rio? – Strengthening Investments in the Global Energy Turn-around

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The Rio Conference was clearly a let-down. The 1992 Earth Summit will go down in history as a milestone and the first time that world leaders dealt comprehensively with the need to protect the natural basis of human life. By contrast, the results of the Rio+20 Conference will merely be a footnote in the history of sustainability. And yet the transformation to sustainability is not an incident or a battle that was lost in Rio in 2012; it is a process. Compared to the history of the Enlightenment, it is an amazing success story.

The idea of a sustainable society, a global economy that respects the boundaries of the Earth system, a recycling-based economy which does not rely on using up natural resources to generate growth – this is a concept that will drive the global economy of the future, recognising the physical realities as they are. This new concept will break with the tradition of industrialism aiming for unlimited growth based on the exploitation of natural resources and ecosystems, which has nourished our belief in progress over the past 250 years and has generated enormous wealth in many countries. However, we do not know yet whether a string of crises will force us to make the transformation to sustainability or whether we will be able to shape the process through preventive action.

### Economic imperatives in the Anthropocene

The concept of sustainability becomes even more radical as scientists like Nobel Prize

laureate Paul Crutzen observe that we have entered a new geological epoch – the Anthropocene. The Anthropocene debate is about the relationship between global society and the Earth system. Anthropocene theorists argue that humankind is now the strongest geological force within the Earth system. Over the next few decades, it will be able to open up a new path for the development of the Earth – with unforeseeable consequences for the natural basis of the lives of almost nine billion people (WBGU 2011).

At the beginning of the industrial revolution more than 200 years ago, there were just one billion humans, who only marginally influenced the Earth system in limited geographical areas. At the beginning of the 21<sup>st</sup> century, humans are more than just inhabitants of the Earth. They are important designers, drivers and architects of the Earth system, whether they like it or not. In fact, the established growth pattern of the world economy operates as an Earth system engineering programme.

If the Anthropocene diagnosis is correct, humankind has to learn quickly how to assume comprehensive responsibility for the stability of the Earth system, for the common goods of the global environment and for future generations. From now on, 'development' can only take place within the increasingly narrow boundaries of the planet. For that matter, new regulatory policies at the local, national and global level, new production schemes, consumption and life styles, and a new philoso-

phy and practice of global responsibility have to be “invented”.

### “Sustainability” and “Enlightenment”: Similarities and Differences

The 'discovery' of the concept of sustainability may be comparable to the process which started in the 17<sup>th</sup> century and gave rise to the ideas of the Enlightenment. Essentially, both concepts call for a fundamental reform of the societies in which they emerged. In 1689, John Locke published 'Two Treatises of Government', one of his major works, which stresses the natural rights of human beings and develops a contract theory that requires governments to exercise their powers legitimately, serving human purposes, and being held accountable by those whom they serve. In the 1740s, David Hume developed a moral philosophy and the idea of autonomous humans with a critical mind. He placed human reason at the centre of his social philosophy. Building upon these preparatory works, Immanuel Kant published the 'Critique of Practical Reason' in 1788 and 'Perpetual Peace' in 1795. Kant describes the Age of Enlightenment as a change in the human mindset and as a new era in the history of humankind, which will revolutionise the normative basis for living together as humans. As a result, the point of view from which humans were judging themselves and their societies changed fundamentally. Similarly, the transformation towards the Age of Sustainability requires us to change our point of view.

Comparing the evolution of idea of enlightenment and sustainability can be enriching for other reasons as well. Over many decades, only a few countries adopted the principles of the Enlightenment and of human rights. In England, the “Bill of Rights” was passed in 1689, the United States adopted the Declaration of Independence in 1776, and in 1789 the French National Assembly approved the “Declaration of the Rights of Man and of the Citizen”. However, it was only after the First World War in 1918 that the core ideas of the Enlightenment were enshrined in Germany's Weimar Constitution. 150 years after Kant's “Critique of Practical Reason” and 250 years after John Locke's “Two Treatises of Government”, the United Nations General Assembly

adopted the Universal Declaration of Human Rights in 1948. Thus, the ideas of the Enlightenment did not exactly spread like wildfire, and progress came at a snail's pace.

By comparison, the paradigm of sustainability has experienced a breath-taking career. No more than four decades have passed since Donella and Dennis Meadows prepared, and the Club of Rome published, 'The Limits to Growth' in 1972, which was one of the crucial points of departure for the global sustainability debate. Before the 2012 Rio Conference took place, every important international organisation, including the World Bank, the OECD and the regional development banks, had adopted green development concepts and welfare models that went far beyond the simple orthodoxy of growth. At the same time, the underlying technologies for a green transformation of the economy have made significant progress. A large number of governments, companies, cities and scientists are experimenting with sustainability strategies. The basic elements for a radical shift towards an Earth-compatible economy are now in place (Leggewie/ Messner 2012). Compared to the history of the Enlightenment, the concept of sustainability spreads four to six times faster.

But will this be sufficient to evade the boundaries and tipping points of the Earth system? The Rio Conference showed that multilateral cooperation, which would be crucial to speed up processes of change, has reached a stalemate. On the one hand, we therefore have to form alliances among countries that wish to join forces in achieving a climate-friendly transformation of their economies. International development cooperation can make an important contribution in that respect. On the other hand, regulatory schemes have to be gradually established by as many countries as possible which help to promote "green investments" and boost the shift towards sustainability.

### **The global energy system is at the centre of the sustainability shift**

One of the focal points of the global transformation to sustainability will be the international shift towards a climate-friendly energy system. A global energy turnaround could boost the world economy in many respects, providing major impetus to overcome the current global crisis. In particular, it could help create new clusters of innovation, merge information and communication technologies with renewable energy systems and create

new employment sectors, while intelligent transport systems, building services technologies and household appliances could enhance energy efficiency and create green competitive advantages. Nicholas Stern has recently pointed out that investments in a low carbon world economy are the only realistic growth strategy at the moment.

A green energy turnaround would also offer great opportunities for both emerging and developing countries, providing universal access to modern energy sources for a growing population without placing excessive strains on the resource reserves of future generations. The current global energy system, which relies heavily on fossil fuels, still excludes some three billion people from access to modern energy services.

### **What is the price of the global energy revolution?**

Currently, investments in the energy sector amount to approximately USD 1,300 billion worldwide, accounting for about 2% of global GDP. Roughly USD 960 billion are spent on energy infrastructure, while more than USD 300 billion are invested on the demand side (industry, transport, buildings and private households). Research and development costs are some USD 50 billion, including a mere USD 10 billion spent on renewable energy R&D.

If we want to ensure that by 2050 our electricity is solely generated from renewable sources and no longer by nuclear energy, we need to make some significant upfront investments which, however, will be fully offset by 2040 through energy efficiency increases and savings on fossil fuel costs. We are, therefore, talking about a down payment on the future in order to avoid the dangers of climate change and build a sustainable economy. Altogether, this global turnaround will require additional investments to the tune of USD 1,100 billion today and USD 2,000 billion in 2030. Energy investments have to be rechanneled to the areas of renewable energies and energy efficiency. In this scenario, renewable energy investments, which amounted to roughly USD 190 billion in 2010, will have to rise to approximately USD 600 billion by 2030. At the same time, R&D spending on renewable energies and energy efficiency will have to increase fivefold.

Over the next few decades, North America and Europe each would have to take on 20% of this global investment package, while

China's share would increase from 18% (in 2015) to 26% (in 2030). In this scenario, a major part of the global energy revolution would take place in the developing nations and emerging markets (GEA 2012, WBGU 2012, Griffith-Jones/Ocampo/Spratt 2011).

### **Funding sources – the need to attract and leverage private capital**

Obviously, the long-term investments required to transform the global energy system will essentially have to be made by private players. The ongoing debt crisis of sovereign borrowers lets one easily forget that private investors are looking for secure long-term investment opportunities. Institutional investors and infrastructure funds, which usually have a long-term investment horizon of 10 to 25 years and pursue more conservative return targets than, for instance, venture capital providers, may be of great significance in that respect. According to a McKinsey estimate, global pension funds and insurance companies may have assets of approximately USD 50,000 billion. Therefore, the challenge will be to direct a fair share of the private assets managed by institutional investors into projects that are part of the global energy turnaround (WBGU 2012).

Apart from private funding sources, international development aid may also play an important role if used as a catalyst. But so far, the financial aid provided by national and international development institutions (e.g. bilateral donors, the World Bank, the Global Environment Facility, the regional development banks and the International Development Finance Club) has substantially fallen short of the required amounts. In the 2007/2008 financial year, USD 6.9 billion in official development assistance (or 7% of total ODA) was made available for energy projects. Germany is an important ODA player in financing (renewable) energy schemes. In 2011, the German Development Cooperation invested around EUR 1.8 billion in the energy sector. The KfW financial cooperation commitments amounted to more than EUR 900 million in the same year.

However, ODA investments in the energy sector will have to rise significantly and will have to be rechanneled into projects that promote renewable energies, enhance energy efficiency and/or provide poor communities with access to energy supplies. Official investments are crucial because they can help leverage private capital. For instance, every million provided by the IFC Partial Credit

Guarantee for energy efficiency raises 15 million in private funds, which is a very high leverage ratio. The World Bank's Clean Development Fund raised private capital at a ratio of 8 to 1 and the World Bank's Carbon Partnership Facility at a ratio of 4 to 1. The more public funds help mitigate the risks of private investors, the higher the leverage ratio will be.

## Transformative regulatory measures attract investments and reduce costs

Annual capital expenditure requirements for the global energy revolution currently amount to no more than 0.5% of the capital assets available worldwide. Major reasons why private investors have not sufficiently contributed to the climate-friendly transformation and expansion of global energy systems include (WBGU 2012):

- Inadequate, volatile, short-term oriented energy policies of governments, which are not sufficiently transparent and do not provide reliable basis for long term planning and investment;
- artificially low prices of fossil and nuclear energies, resulting in the perception that the costs for renewable energies are rather high and energetic saving potentials unattractive;
- unfavourable risk-return-ratios due to long capital tie-up periods, new technologies and other investment risks;
- a heavily regulated environment (in both power and capital markets) which often favours fossil energy industry over low carbon businesses.

These are obstacles that need to be removed. In many countries, the climate and energy policies do not offer any regulatory guidance by providing a reliable legal framework, a long-term basis for planning and a transparent environment for investments in renewable energies, energy infrastructure and energy efficiency. The answer to the question as to whether or not it is possible to attract the private capital required to boost the energy turnaround depends a great deal on the framework that is put in place. What is more, smart regulatory measures and the right tool in the box can significantly reduce the real costs of the energy transformation.

This is also relevant for development policies. Isolated investments in climate-friendly energy systems will not produce any long-term effects and the costs of green energies will remain

high unless the appropriate regulatory framework is adapted to support the turnover. Financial and technical cooperation projects have to work hand in hand in order to enhance the regulatory framework of energy and climate policies. At the same time, development investments in the green energy turnaround should focus on those countries that are willing to set up an appropriate regulatory framework.

## Elements of a regulatory framework

The right regulatory toolbox has to be tailored to the specific needs of each country. Important elements of a regulatory framework that is conducive to the transformation process (see WBGU 2012 for more details) include measures to:

1. Rectify distorted pricing schemes

According to an IEA estimate for 2010, annual subsidies to support fossil fuels amounted to USD 510 billion worldwide. By comparison, renewable energies received no more than USD 66 billion in 2010. Fossil fuel subsidies impede the changeover to a climate-friendly energy system.

2. Remove obstacles in capital markets

The fact that most financial and real asset investors take a rather short-term approach may also be attributed to the institutional set-up and the regulatory framework of capital markets. For instance, the remunerations of many financial and asset managers are based on very short accounting periods, providing an ongoing incentive to optimise short-term returns at the expense of long-term investments. Therefore, the current debate about re-regulating capital markets will also impact the energy turnaround.

3. Risk management

There are a number of risks associated with investments in renewable energies and efficiency enhancements, including technical risks (e.g. new technologies which are not sufficiently tried and tested), project management risks (delays in planning processes), market risks (in terms of market, price and demand trends), regulatory risks (with regard to the stability and evolution of the energy policy framework), resource risks (e.g. wind speed and hours of sunshine) and political and country risks (e.g. lack of rule of law). Existing and newly created private risk management and insurance tools may help mitigate many of these risks. As a matter of prin-

ciple, however, there is no commercial insurance policy to address regulatory risks and political risks. This is where the governments have to assume their responsibilities.

4. Information and transaction costs

Measures to improve energy efficiency in private households are often implemented through small-scale projects, and consumers lack sufficient information and expertise. These are investment obstacles that have to be removed through intelligent information policies and commonly accepted standards to measure energy savings.

5. Cross-border grids and storage devices

In the EU and other world regions, there are no regulations on the development and expansion of cross-border grids and storage facilities. This makes it difficult for investors to find attractive investment opportunities.

6. Long-term and sustainability orientation

The G20 should develop initiatives to make sustainable investment principles mandatory for all large financial investors, pension funds, insurance companies and sovereign wealth funds with long-term horizons. In addition, it is necessary to consider what type of risk-reducing and long-term-oriented framework has to be put in place to enable large pension funds and insurance companies to provide a major share of the capital required for the global energy transformation. Organisations like the Institute of International Finance, the International Association of Insurance Supervisors and the Long Term Investors Club should give (even) more priority to sustainability aspects and base their investment decisions on such aspects.

7. Alliances with emerging countries

A major part of the capital that is invested in the global energy revolution will come from the emerging markets. That is why the emerging markets, too, have to combine funding mechanisms with an appropriate regulatory framework. In that context, cooperation between Europe and the emerging markets in the field of energy policies will be of great significance. In addition to technology partnerships and joint investments to train the next generation of low-carbon engineers, there is a need for large-scale cross-border research programmes to strengthen energy efficiency. What is more, energy policy partners have a lot to learn from one another in developing regulatory frameworks that sup-

port transformation processes.

In the wake of the disappointing 2012 Rio Conference there are two fundamental challenges.

First, we need to further pursue search and learning processes in society, politics, economy and science to develop a welfare model that respects the boundaries of the Earth system. The Rio Conference has shown that, at the global level, there is no such thing yet as a social contract for sustainability.

Second, the journey towards a sustainable economy will lead us through the vastness of the plains. On the one hand, this includes

building pioneer alliances among countries, cities, companies and scientists that boost the transformation towards sustainability. On the other hand, a new regulatory framework has to be 'invented' in order to remove obstacles that may hamper sustainability investments. ■

## Literature

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