



## A PERSONAL PERSPECTIVE ON THE FUTURE

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My foundation celebrated its fifteenth anniversary in January. For me, this was an occasion to take stock of the probably greatest challenge to all of humankind, namely climate change, in a matter-of-fact way—without taking political, societal, or economic sensibilities into account.

At the legendary Earth Summit in Rio in 1992, climate change was still one challenge among many in the field of sustainability—attention was focused on the global population explosion. Since the late 1990s, it has become ever more apparent that climate change will become the greatest threat to all of humankind in the 21st century.

The world's leading climatologists came to agree that in all probability, average global warming of more than 2°C. by the end of the century, compared with the year 1800, will lead to a tipping point in the climate system, disrupting the climate for centuries and bringing about conditions on our Earth that will seriously endanger the supply of food and drinking water in particular. Yet it cannot be determined scientifically which average amount of global warming will trigger this tipping point.

Politicians in particular are often skeptical and question the scientific robustness and validity of the climate models. In a new book, "Die Zukunft des Klimas. Neue Erkenntnisse, neue Herausforderungen. Ein Report der Max-Planck-Gesellschaft" ("The future of the climate. New insights, new challenges. A report by the Max Planck Society, 2015") Jochem Marotzke, Director of the Max Planck Institute for Meteorology, pointed out three factors that support the reliability of climate models:

1. At their core, the models are based on established basic laws of physics, such as the conservation of mass and energy.
2. The climate models were and are subjected to a series of tests to verify whether they correctly reflect aspects of the climate system. Most of the models have been confirmed in this way.
3. Today, science has a deep understanding of the fundamental effects brought about by the altered composition of the Earth's atmosphere. Ongoing emissions of carbon dioxide results in constant global warming with all its consequences.

A multitude of activities have been launched both at the national and the global levels, especially since Rio 1992. One unit of the gross world product emits roughly 25% less CO<sub>2</sub> today than in the year 1990, i.e., a relative decoupling has been achieved. For years, practically every major corporation in the world has prepared a comprehensive annual sustainability report, continued to set new and more ambitious performance goals, and established and expanded a corporate social responsibility division. Germany has taken on a globally pioneering role in renewables and has begun taking concrete steps with its “Energiewende,” the transformation of the energy system. Most of our media are also granting substantially more attention to the topic of sustainability, in particular the climate.

And civil society in many countries—by no means only in the rich ones—is increasingly willing to change its lifestyles and styles of consumption and economic activity to achieve more sustainability. The “Transition Town” movement has spawned initiatives worldwide, and it is not unusual for them to take effect in municipal governments; the “Degrowth” movement is attracting substantial attention in Europe, as have the more than 1,500 companies that have now committed themselves to the “Gemeinwohlökonomie,” the “economy for the common good.”

All social movements in history have shown that societal transformation always comes from the bottom up, but it frequently takes a long time for it to reach the level of the societal functional elites and the political realm.

And yet—despite all these positive activities and efficiency gains, and despite international agreements to reduce CO<sub>2</sub> emissions, these emissions increased globally from 22 billion tons in 1992 to 35 billion tons in 2014. The fact that their rate of increase has accelerated during the past 15 years is significant. Globally speaking, nine of the warmest years since recordkeeping began in 1880 were in the 21st century, and 2014 was the warmest year of all.

It is noteworthy in this context that warming in the Arctic is twice as severe as the global average. If these dynamics are not halted, it is highly likely that we will exceed 2°C. of global warming as early as 2050. The International Energy Agency (IEA) in Paris, which tends to be on the conservative side and can be considered part of the private sector, now assumes that we will reach 6°C. of global warming by the end of the century, with catastrophic impacts for all of humanity.

**Five factors** above all stand in the way of effective climate mitigation policy around the world:

First and foremost, the entirely insufficient knowledge and thus the lack of awareness on the part of broad segments of society on the planet about the probable consequences of unchecked climate change. The greatest dangers for humanity do not stem from the Greenland ice sheet and parts of Antarctica melting or the Gulf Stream slowing down. These processes may be irreversible after a certain

stage, but they will extend over 100 or 200 years or even longer, and they will not affect the entire global population. The greatest danger to all of humanity will be from vegetation zones shifting abruptly due, for example, to the absence of monsoon rains and repeated loss of major parts of grain and potato harvests because of extreme droughts, heavy rains, and flooding. For billions of people, this could mean certain starvation. Today's emergency food stockpiles last for just 120 days. And in many parts of the world, the exacerbating scarcity of drinking water is an additional problem.

**But politicians' fear of being voted out of office if they drastically curb CO<sub>2</sub> emissions and thus curtail economic growth and jobs paralyzes more effective measures.** This constellation will likely bring about a completely insufficient minimum consensus at the climate summit in Paris in late 2015.

**The hope that economic growth on the one hand could be decoupled globally from resource and energy consumption on the other has not been fulfilled so far, and this will not be possible for several decades to come.** The need for the emerging markets and developing countries to catch up in economic terms and the rebound effect in the industrialized countries are too large.

**A major obstacle on the way to effective global climate mitigation policy is posed by small, elitist, and exceedingly powerful business and finance groups who see their highly profitable economic system in serious danger.** That is why they established scientific institutes and think tanks early on with the single goal of discrediting climate scientists and their research findings, even to the extent of denying the reality of climate change at all. US institutes such as the Heartland Institute, the Cato Institute, and the Competitive Institutes lead the way. They are funded, among other sources, by the billionaire Koch brothers as well as the major energy corporations. The influence of these interest groups on the political and business communities and media cannot be overestimated.

**The probably most significant reason for the current entirely insufficient climate mitigation policy lies in the behavior of the civil societies in democratic countries.** They do not even begin to make use of the potentials of democracy. For example, not even one percent of the German population is prepared to be actively engaged in a political party. Yet in democracies, this is one of the most essential and most promising ways to exert influence and shape policies according to the needs of broad strata of the population. In addition, people can approach their elected representatives, confront them with the urgent questions, and demand answers.

Also, the opportunity has been wasted worldwide to network the progressive forces in society under the umbrella of climate mitigation, first nationally, then internationally, as James Gustave Speth calls for in his book "America the possible: Manifesto for a new economy" (2013) (p. 45); he is actively working toward this end.

In her newest book, “This changes everything: Capitalism vs. the climate” (2014), Naomi Klein rightly points out that recognizing and proclaiming crises is not limited to politics. A “planetary emergency” can also be placed on the global agenda by a mass protest movement of broad strata of society.

In this context, we must consider Stephen Emmott’s book “Ten Billion” (2013) to be a final wake-up call, or, in his words, “it’s about the unprecedented planetary emergency.” Emmott heads a Microsoft Research Institute in Cambridge (England) conducting research on complex systems, including the climate and other ecosystems. He is also a professor at Oxford. In light of his financial independence, he is above suspicion of exaggerating in order to secure further research funding.

In the final chapter, he asks about next steps and sketches out the following scenario: How would the world’s governments react if renowned astrophysicists were to announce that an asteroid would strike the Earth and destroy 70 percent of all life on December 3, 2073? Emmott is convinced that all countries would pool their resources and efforts to save humanity. Half would focus on stopping the asteroid, the other half would secure the survival of our species and create the basis for reconstruction—in the event that the first group should fail.

“We are in almost precisely that situation now, except that there isn’t a specific date and there isn’t an asteroid. The problem is us.”

Emmott shares the opinion of leading climatologists: Unchecked climate change has similar effects as an asteroid strike. He comes to the same conclusion as Dennis Meadows and Jørgen Randers did before him: Although climate change could be contained in time even without further technological innovations, this possibility will fail because of democracy, as the systemic risks are too complex to be conveyed to broad sections of the population in time. That is why the political community will take effective action only when the consequences and effects of climate change are perceptible and visible to each and every human being. However, the argument goes, that will be too late.

I personally do not share this cultural pessimism because I am convinced of the opportunities of broad strata of society to shape things in democracies, and in particular against the background of social media.

#### **What is to be done?**

It would be ideal if each and every individual consumer belonging to the global middle class immediately made an effective contribution to climate mitigation

- by practicing climate-aware consumption. I estimate that roughly 20% of the GDP of industrialized nations consists of junk products; doing without them

would not cost anyone an iota of quality of life—what an immense waste of resources and energy!

- preferring sharing over owning, and eating meat and fish at most three times a week. Approx. 82% of Germans eat meat or fish seven times a week today.
- and making their own mobility eco-intelligent.

Yet among the general public, awareness of the consequences of our lifestyles and consumption patterns is lacking. For the overwhelming majority of the global middle class of consumers, change in the direction of more sustainable consumption is likely to take a least a generation.

But we don't have that much time. If we want to change course toward limited climate change within a window of opportunity of just 15 to 20 years, the political community must first concentrate on measures that define milestones in climate mitigation without turning the structures of the economic system on their head, causing mass unemployment, and interfering in consumption in a dirigiste manner.

Before I briefly outline such programs, I would like to call an essential prerequisite for effective climate mitigation to mind: A McKinsey report and the Stern Report of 2007 showed that we will be successful only if one to two percent of the gross world product, or 500 to 1,000 billion US dollars, are invested annually in climate mitigation. The volume of the investments necessary today is quickly put in perspective if we compare them with other annual global expenditures; in US dollars, they include: 1,500 billion for defense budgets, 640 billion for advertising, more than 1,000 billion for various subsidies—not to mention the trillions that were devoted without hesitation to rescuing the global financial system (in the form of guarantees, loss relief, etc.) without seriously considering alternatives.

Compared with these figures, the Green Climate Fund, whose establishment under the auspices of the United Nations is under discussion, illustrates vividly how catastrophic the difference between ambitions and reality is when it comes to climate mitigation policy: its initial funding is to be a one-off payment of 100 billion US dollars.

Such a fund could be financed by introducing a minimal value-added tax to the global financial system (financial transaction tax) as well as a carbon tax, which is already in force in some places. But even setting aside all the impacts of global warming, measures to reduce carbon emissions are investments in a sustainable society. The increasing concentration of CO<sub>2</sub> in the atmosphere is responsible for ocean acidification, which is proving to be a massive problem for marine communities. Burning down rainforests is wiping out biodiversity to an unimaginable ex-

tent. And our exorbitant consumption of fossil fuels is burning valuable resources, especially oil, that will no longer be available to future generations for much more rational uses.

**But now to the following concrete milestones for climate mitigation:**

1. Ending deforestation and burning down of the rain forests would cut CO<sub>2</sub> emissions by three billion tons per year.<sup>1</sup> According to US scientists' calculations, roughly 44 billion US dollars would have to be raised per year to compensate the emerging economies and developing countries for losses of income.
2. A global reforestation program of 500 million hectares, mostly in the Southern hemisphere, would bind approx. five billion tons of CO<sub>2</sub> emissions in its final stage. The Intergovernmental Panel on Climate Change (IPCC) called for this in a special report as early as the beginning of this century.
3. Retrofitting old coal-fired power plants to the state of the art or replacing them would reduce emissions by almost three billion tons per year.<sup>2</sup>

Now, it does not make much sense to continue such a strong commitment to coal-fired power plants for the next 30 to 40 years. But annual expenditures of 250 to 300 billion US dollars could finance the replacement of the old power plants, especially in emerging economies and developing countries, by a completely different energy mix (renewables as well as gas- and coal-fired power plants) and save significantly more than three billion tons of CO<sub>2</sub> emissions.

Each of the three programs would even create more jobs in these countries and could be implemented relatively quickly. In contrast, cutting more than 11 billion tons of CO<sub>2</sub> emissions through efficiency gains in production processes and consumption would take more time and be more costly.

We would merely gain a little more time for the necessary restructuring of the economic system, the essential changes of lifestyles and consumption patterns, and the science-based discourse in and with civil society about sustainability and the impacts of civil-society forces that are developing and testing new forms of economic activity even today.

In addition, another measure proposed by scientists, namely lowering the birth rate more quickly, is becoming more important. Although it would not have positive effects in relation to the window of opportunity concerning climate change, it would be helpful in the longer term. These scientists estimate that if the global population grew by one billion fewer people, this would save 1.3 to three billion tons of CO<sub>2</sub> emissions per year.<sup>3</sup>

The Berlin Institute for Population and Development is working on a study on lowering the birth rate in sub-Saharan Africa. The focus is on education for girls and family planning as well as supporting the value-added chains in the agricultural sector and expanding decentralized energy supply based on renewables. According to the most recent estimates by the United Nations, Africa's population will grow by a billion people over the next 35 years. In a "business as usual" scenario, the only option for millions of Africans in the near future would be migration—especially to Europe.

Some of these proposals developed by scientists have been on the table for years, but the political community has not taken them up. That is why civil society must take the initiative and make the political community take action. However, this presupposes an educated civil society that has been galvanized about these issues. This can and will succeed only if the general public is informed, without an excess of consideration, about the consequences that unchecked climate change will have even for our children, and all the more for our grandchildren. This has nothing to do with spreading end-of-the-world doomsday scenarios, least of all if it is demonstrated at the same time that it is still in our hands to keep climate change within tolerable limits—without throwing society back to the stone age. On the contrary: Could anything be more irresponsible vis-à-vis the global community than letting it continue on its path toward avoidable ruin unknowingly or with vague promises? In light of the window of opportunity that still exists in the face of climate change, a wake-up call coming from civil society appears to be the only opportunity to set the course toward climate change within tolerable limits.

To this end, we—the educational initiative Encouraging Sustainability, sponsored by the ASKO EUROPA-STIFTUNG, the European Academy Otzenhausen, and my foundation Forum für Verantwortung—plan to network with progressive civil-society organizations concerning sustainability under the umbrella of climate mitigation.

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- 2 Wagner, H.-J., Röder, J., Pulido, A. J. D. & K. Schubert (2014): Reduzierungsmöglichkeiten von CO<sub>2</sub>-Emissionen. Kurzgutachten, Lehrstuhl Energiesysteme und Energiewirtschaft, Ruhr-Universität Bochum, ISBN 978-3-934951-37-2.
- 3 O'Neill, B. C., Dalton, M., Fuchs, R., Liang, L., Pachauri, S. & K. Zigova (2010): Global demographic trends and future carbon emissions. PNAS 107, 17521-17526, doi: 10.1073/pnas.1004581107.