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Feasibility-based Policies: Investigation Application

Potential solutions to impending climate change must take into account a number of societal, national, and global challenges that are relevant today and will continue to be so in future. Among these challenges are the asymmetries in standards of living between the world's societies: The economic aspirations of North and South, the diverging positions of countries rich or poor in natural resources, of democratic and autocratic political regimes, and of states with dramatically different demographic dynamics. Last but not least, we also face the challenge of how to handle the strongly divergent convictions of what members of different cultures hold "sacred". Considering the context of this situation as well as the unforeseeable events and developments that took place during the years following the Kyoto agreement, we have strong doubts that a consensual, globally effective strategy for the sustainable limitation of greenhouse gas emissions will be implemented any time soon. The failed political efforts of the past that aimed at sustainably protecting the global climate from the consequences of human actions are a sure indication that this scepticism is appropriate. The implementation of global agreements must still pass through the bottleneck of national, regional, and even communal contingencies. There is no global political order in place that could support the implementation of global agreements, or even enforce it by means of appropriate sanctions. Every political system will produce its own reactions to the challenges of climate change. The contradictoriness and fragility associated with any sort of (aggregated) activity are inevitable and will constitute the fundamental framework for any solution proposed in reaction to demands for timely and targeted action against climate change. These elementary, and clearly contradictory, framework conditions for

any sort of targeted action still feature insufficiently in the public climate debate and are often even treated as taboos. What insights could therefore be brought to these political debates, misguided developments, and dead ends? What insights could promote an investigation of a feasibility-based policy and force the (often ideologically tainted) propagators of wishful thinking who loom large in the political circles of climate research to come back down to earth? A few weeks ago, German chancellor Angela Merkel stated that carbon dioxide emissions must be limited to an average of two tons per person per year by the middle of this century to ensure that the disastrous consequences of climate change and wars over resources will be avoided. If not, the earth could heat up by more than the “critical threshold” of two degrees Celsius by 2050. As the average American citizen is currently producing twenty tons of carbon dioxide per year, the average German eleven tons per year, and a typical citizen of a developing country considerably less, her proposal can at least be interpreted as a tentative answer to the question of what would constitute a “fair” individual level of carbon dioxide pollution for a global population that is continuing to grow. For Germany, the target set by Merkel for 2050 would mean a reduction by 82 percent; for the U.S., by 90 percent. The figures available on the average emission of carbon dioxide are controversial. For Germany, they most likely exceed the amount of eleven tons per citizen per year that is given here. Furthermore, the global values are at best indications of a carbon dioxide “justice quotient”. But even if they are correct, they are inconsistent with realistic future expectations. In 2050, the population of the earth will have risen to 9 billion; today it is 6.5 billion. Carbon dioxide emissions of two tons per person would amount to total global emissions of 18 billion tons, a figure that would in any case be insufficient to stabilise the world’s climate. Meanwhile, actual carbon dioxide emissions continue to rise. Emissions are currently increasing, also in Germany. At the moment, we are

moving more in the direction of fifteen instead of two tons per person per year. Two other viewpoints are particularly relevant in this context: First, in an essay published in the *Geophysical Research Letters* earlier this year, H. Damon Matthews and Ken Caldeira (2008: L04705) come to the conclusion that a *stabilisation* of the global temperature over the next few centuries is only possible if CO₂ emissions are reduced to zero: “In the absence of human intervention to actively remove CO₂ from the atmosphere [e.g., Keith et al., 2006], each unit of CO₂ emissions must be viewed as leading to quantifiable and essentially permanent climate change on centennial timescales. We emphasize that a stable global climate is not synonymous with stable radiative forcing, but rather requires decreasing greenhouse gas levels in the atmosphere. We have shown here that stable global temperatures within the next several centuries can be achieved if CO₂ emissions are reduced to nearly zero. This means that avoiding future human-induced climate warming may require policies that seek not only to decrease CO₂ emissions, but to eliminate them entirely.” It is no secret that this climate protection target will be difficult to reach; this makes preventive research and policies all the more pressing. The greater the success of mitigation, the better. In any case, the need for adaptive measures remains. Secondly, in a study soon to be published, Peter Sheehan (2008) refers to new data on global economic growth and worldwide CO₂ emissions, pointing out that in recent years the world “has moved to a new path of rapid global growth, largely driven by the developing countries, which is energy intensive and heavily reliant on the use of coal – global coal use will rise by nearly 60% over the decade to 2010. It is likely that, without changes to the policies in place in 2006, global CO₂ emissions from fuel combustion would nearly double their 2000 level by 2020 and would continue to rise beyond 2030. Neither the SRES marker scenarios nor the reference cases assembled in recent studies using integrated assessment

models capture this abrupt shift to rapid growth based on fossil fuels, centred in key Asian countries.”¹ In short, the assumptions made so far on the future volume of global emissions are most likely too conservative. This means that efforts to reduce CO₂ emissions must be even more comprehensive in order to reach the desired goals of climate policy. This in turn indicates that global efforts to limit greenhouse gas emissions will most likely be only moderately successful. Faced with these risks, technology optimists are beginning to consider large-scale technological possibilities to weaken the rate of climate change as alternatives to traditional “climate protection” based on reduction. Such possibilities include the mitigation of sun radiation or the depositing of CO₂ in the sea. At the moment, it hardly looks as if this option will receive the necessary political support, which means that a feasible climate policy will not only rely on research and political efforts, but also, and to an increasing extent, on preventive and adaptive measures. Why, then, are preventative strategies in climate policy and research, i.e. efforts to reduce the vulnerability of societies and their infrastructures with regards to the consequences of climate change, subjected to such extensive taboos, both by the media and by political players? As early as fifteen years ago, former U.S. vice president Al Gore, now winner of an Oscar as well as the Nobel Peace Prize, voiced his uncompromising rejection of a climate policy based on adaptive strategies. Gore considers such a policy an expression of intellectual and political laziness, or, even worse, “an arrogant faith in our ability to react in time to save our own skin”. Only recently, Gore repeated this credo during a discussion of his film *An Inconvenient Truth* at Columbia University in New York. We must concentrate on reduction, is Gore’s uncompromising message to science, politics,

¹ The IPCC *Special Report on Emissions Scenarios* (SRES; Nakicenovic et al., 2000) discusses the qualitative societal framework conditions (e.g. political, social, and cultural developments) that influence the emission volumes. The *SRES Emissions Scenarios* are the quantitative interpretations of this narrative.

and society as a whole. Al Gore's message is a fairly accurate echo of a climate-deterministic attitude that prevails both in science and in everyday life: Due to their unique power and influence over human life, natural forces – and the climate in particular – are responsible for a wide range of societal processes and regional particularities. Climate equals fate; it rules the successes and failures of entire civilizations. In other words, the influence of climate is inescapable. From this perspective, climate changes – whether man-made or “natural” – must by definition constitute an attack on the very foundations of any society. Until recently, scientists and philosophers emphasised the sustainable effects of climate on the development of mankind. Although science has by now abandoned this sort of crude climate determinism, it still has not disappeared entirely from the current debate. When Gore and many other observers of climate change polemise against preventive measures, they in some ways fall victim to a school of thought that is considered outdated, an ideology. In this school of thought, it is almost presumptuous to imagine that we could outsmart the world's climate – for instance by means of technological tricks or preventive measures; strategies of this kind thus convey a wrong sense of security. Adapting ourselves to changing climate conditions thus represents the traditional human hubris in the face of natural forces. We believe that this philosophical assumption is behind the trivialisation of adaptive and preventive strategies in the public debate of climate change on a scientific, political, and societal level. However, there are also other, equally significant reasons: Let us begin with the reasons that can be attributed to the *scientific* investigation of climate change. Faced with recurring doubts, scientific efforts have so far concentrated on two topics: First of all, they aimed at proving that – seen within historical dimensions – we are currently experiencing a rapid and unique global climate change. Secondly, science focused on producing evidence that would show conclusively that the observed changes in

the world's climate were caused by mankind itself. Climate science, in itself a young discipline, has reached these goals within the space of only a few years and has today achieved a far-reaching consensus, as reflected by the reports of the IPCC. Climate science has thus fulfilled one of its selfdefined central functions, by showing that a man-made climate change is currently manifesting itself and that it will become more pronounced in the foreseeable future. However, this consensus within climate science does not give rise to any indispensable, evidence-based instructions for countermeasures – much to the displeasure of science, but also of politics and its dominant vision of the instrumental efficacy of its findings. The dynamics of society are much more complex than those of climate. Nature's fluctuation time frames and time horizons simply do not correspond with the variety of phases and planning horizons in the lives of members of human societies. In comparison, the time frame of climate processes is sluggish and does not correspond with the possibilities and framework conditions of societal change, which are much more short-term in nature. At this point, we must ask the question of what this climate change actually means, in a world that is already changing radically. This is a question that also concerns scientific disciplines beyond physically orientated climate research; for instance climate impact scientists, in particular social scientists, who must investigate how this global change, which involves much more than just climate change, may develop in future; and to what extent this development can be controlled or aided. So far, proposals to this effect have been mostly based on simple models drawn up by climate economists, attempting to reduce the problem to a small number of existential motives, but this approach is certainly too naïve. Our ideas of future societal conditions are shady at best, and the same is true for long-term technological and political frameworks. It is impossible to base definitive instructions for measures to be taken on these contours. The societal status of

natural science and technology is an important reason why the social sciences are reluctant to face the challenge of “climate change in a changing world”. As long as the “human sciences” (Norbert Elias) will continue to occupy a subordinated position in society and their influence is systematically underestimated, the competence to solve the problem of climate change will continue to be primarily seen as the task of the natural sciences and of technology. One of the most frequent answers heard in this context is that, sooner or later, we must find radically new sources of energy. The question of how these efforts will be able to protect our existential foundations, now and in future decades, from the dangers of our future climate, which are severe already and will be even more pronounced in the future, is simply pushed aside. The lack of prestige of the human sciences in society, in combination with the overconfidence of the natural and technological sciences, reduces the problem of climate change to a purely scientific-technological problem. On the market of public knowledge, the natural sciences are the first to offer their diagnosis but are then tied by the fact that their description of the situation requires a certain precise therapy. The road from insight to possible action is thus portrayed as clear-cut, as linear, as mandatory. It is not surprising that the terminology of medical science – the direct route from anamnesis to therapy – plays a central role in this context. Another consequence of the special status enjoyed by the natural and technological sciences is that the failures of the therapy presented by publicly visible climate researchers as “mandatory”, and the lack of resonance of any excursions into “alien” fields of research, are denounced as a regrettable backwardness of the collective mind, or as egotism on the part of politics and society. At times it almost seems as if, when this mandatory advice is not accepted, this egotism is “treated” by escalating the assumed potential dangers. What we need is to rethink the preferential status of the natural and technological sciences, to work towards

a social climate science that focuses on societal issues, and to gain **20** political insights into feasibility-based solutions. In this context, what is feasible is a certain limitation of the emission of greenhouse gases that are damaging to the climate, but primarily also a protection of society from a climate that changes rapidly.

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