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From Carbon Insolvency to Climate Dividend

How to keep within with the two-degree guard rail and still profit

by Claus Leggewie und Bernd Sommer

Abstract

The results of the UN World Climate Summit at the end of this year in Copenhagen will have to be measured by whether or not they are able to preventing a dangerous warming of the globe by more than 2° Celsius. The authors take up a suggestion of the German Advisory Council on Global Change to the Federal Government (WBGU), which in its current Special Report calculated to what extent worldwide greenhouse gas emissions must be reduced in order to achieve this goal, and at the same time submitted a proposal on how to distribute the reduction requirements among individual states. The core idea of the WBGU approach is to distribute the total amount of the carbon dioxide still allowed to be emitted among all people equally so as not to exceed global warming by 2° C. This results in national emissions budgets from which required reductions can be derived that are fair and transparent, and that can be implemented flexibly.

The authors subject the consequences of this budget approach to scrutiny with a view to the structure of climate-friendly international relations and a post-carbon global order. If, in fact, the declarations of the old and new industrial nations saying they intend to keep within the 2° guard rail is to be more than lip service, this will fundamentally change the international regime and require a historically new degree of cooperation. For it is only through new forms of global governance — such as can already be seen in the Major Economies Forum on Energy and Climate and the G 20, but also in the virtual duumvirate of the USA and China — that a “global climate treaty” to be agreed upon in Copenhagen can be implemented. Climate protection can be effective only if it is not misunderstood by the citizens of the states negotiating in Copenhagen as a mere government affair (“top down”), but rather if they grasp it as historically and factually responsible individuals.

Introduction

At the summit meeting of the G8 states in L'Aquila in July 2009, something happened that may one day be seen as a historical departure: The heads of government, German Chancellor Angela Merkel and President Barack Obama foremost, but also the leadership of China and India, adopted the "two-degree target" as their own. This means that they intend to limit global warming to two degrees Celsius above the level of 1880, as scientific panels have long recommended and according to the guideline set by the UNFCCC in 2007.

If the "Declaration of the Leaders of the Major Economies Forum on Energy and Climate" is more than lip service, then it will have consequences whose radical nature those who met in Abruzzo probably never foresaw. For, in fact, to keep global warming under 2° C, worldwide carbon emissions must be limited to no more than approx. 200 billion tons (approx. 750 gigatons of CO₂) by 2050. At the current rate of emissions, this budget will be exhausted in 20 years; should emissions grow further, the world would become "carbon insolvent" even sooner. The reduction of CO₂ emissions and other greenhouse gases (see infor-

mation box) must begin as quickly as possible. A delay in reversing the trend until 2020 would make annual global reductions necessary that would be far beyond what was agreed upon by the industrial nations in the Kyoto Protocol for the entire first 5-year commitment period. Any further loss of time would mean exploding costs and would make the two-degree barrier ultimately obsolete. "Resolved" in L'Aquila was nothing less than a blueprint for a new global order. The "formulas for power" (Wilhelm Fucks) were measured for once against energy consumption; in the future, competition to produce the best and fastest climate innovations will stand at the center of international politics. The Herculean task is a simultaneous "great transformation" into a global low-carbon society. The wealthy North may not continue as usual, the threshold states must abandon the old industrial paths immediately, the rest of the world may not even set out upon them.

1. For a new world climate treaty

The negotiations extending from the Kyoto Protocol (the framework convention of the United Nations signed in 1997) to Copenhagen in 2009 do not produce such a radical change. Instead of negotiating individual emissions limits between the now 192 states, a simple, fair and flexible global climate treaty must be put together. For this reason the German Advisory Council on Global Change to the Federal Government (WBGU) suggests a budgetary formula. Its core idea: in the future, all states will be given a national per capita emissions budget that combi-

Info

Greenhouse gases

Other greenhouse gases (like methane or nitrous oxide) have a greater numerical warming potential per ton, but carbon dioxide (CO₂), because of its large volume and enormous longevity in the atmosphere, is the decisive factor in all considerations of climate protection.

nes historical responsibility, the current productivity of the state in question and global provisions for the survival of humanity.

Three climate worlds may be delineated:

- **Group 1** includes roughly 60 states with current annual CO₂ emissions of more than 5.4 tons per capita: besides the industrial nations of the OECD, a group of Arabian states, Iran, Venezuela and South Africa. How small the budgets for countries of group 1 are may be seen by the example of the USA and Australia (with the highest per capita emissions of 19 tons of CO₂ per year). For both, the budget will not last for another 6 years, and even with linear reductions starting in 2010 they would theoretically have to achieve zero emissions within 11 years. And the budgets allocated to Germany until 2050 (11 t CO₂ per capita/year) and the EU (9 t CO₂) will last only ten to twelve years without reductions. What is true for all industrial nations is that they must step up the decarbonization of their economies quickly and comprehensively by 2050, that is, conserve fossil energy and convert to renewable energy sources. Since these countries, even after reducing greenhouse gas emissions to the greatest possible extent, will overdraw their budgets, they will have to rely on cooperation with developing countries that still have budgetary margins.
- **Group 2** includes around 30 states, all currently emitting more than 2.7 t CO₂ per capita. By far the biggest emitter in this group is China, whose budget (and that of the world as a whole, by the way)

will only last for another 24 years. China too must therefore convert comprehensively and quickly to renewable energy sources. Threshold states like Mexico, Argentina, Chile and Thailand are in similar circumstances. Contrary to what is suggested by the Copenhagen talks, this group also can no longer carry on "business as usual" and must significantly intensify "green business".

- **Group 3** includes all other states with emissions under 2.7 t CO₂ per capita, which currently contribute only twelve percent of global emissions and thus of the emissions budget. These countries, which will also be the main sufferers from the consequences of dangerous climate change, have overall considerable margin for higher emissions. But because of the necessary lower global margin of 1-1.5 t per capita by 2050, they must by that time also draw back emissions. At the top of this group are countries like Brazil, Egypt and Peru, whose budget, given constant emissions, will last for another 42, 56 or 59 years, respectively. They must therefore begin to uncouple greenhouse gas emissions from planned economic growth in order to stay within budget. At the bottom of the group are 45 countries mainly in sub-Saharan Africa that currently emit less than 0.5 t CO₂ per capita.

To cut the Gordian knot of climate talks, the agreement would have to be: technology and financial transfers for budget surpluses. A good example and particularly interesting in this regard is India, the biggest

emitter in Group 3. Within the framework of the global budget, this country (currently at 1.2 t CO₂ per capita) could triple its emissions until 2030 and then reduce them almost symmetrically to the present level until 2050. But in order to achieve the trend reversal in 20 years, India too requires a sophisticated low-carbon strategy.

The Indian case shows that the budget reserves to compensate for the inevitable budget deficits of the industrialized nations through global emissions trading lie in Group 3. This offsetting must be coupled with concrete climate protection planning, so that what is sold by low-emissions states is not merely “hot air”, that is, enormous financial transfers being staged without any climate protection effects. Rightly understood, emissions trading leads to strategic climate partnerships between countries with higher and those with lower emissions, so that developing countries can leapfrog to a sustainable, low-carbon economy. This deal makes climate protection immediately attractive for all nations, even if their per capita emissions are still low at present. The determining factor for negotiations is thus the size and structure of the financial transfer.

2. From burden sharing to benefit sharing

The Kyoto process and the Copenhagen talks have until now stood under the heading “burden sharing”, and the renunciation of greenhouse gas emissions has been seen as a burden and an imposition, indeed as a growth and prosperity killer. Thanks to this

point of view, the nations were caught in the prisoner’s dilemma, a situation in which the individual actors value their individual advantages more highly than a possible cooperative solution — and thus contribute to the worst possible outcome for everyone. Attempts oriented to the short-term self-interest of the actors to minimize their own climate-political obligations, that is, to negotiate an “offset” here and an emissions allowance there, lead in the end to an outcome that not only irreversibly harms the international community as a whole but also each individual nation.

The global climate treaty outlined here, in contrast, offers the possibility of benefit sharing. The givers and receivers in classical development cooperation become partners with complementary interests. The

Kyoto Protocol and the EU burden sharing

The Kyoto Protocol was adopted in 1997 by the third session of the Conference of Parties to the United Nations Framework Convention on Climate Change. In the protocol the industrial nations commit to reducing their total emissions of the most important greenhouse gases during the period from 2008 to 2012 by a minimum of 5% below the level of 1990. In so doing, the various countries took on differing emissions reduction obligations.

The EU redistributed its total reduction obligation of -8% for the first period according to an internal EU burden distribution scheme in June 1998. Accordingly, the reduction obligations of the EU member states in reference to their 1990 emissions are as follows: Luxembourg -28%, Germany/Denmark -21%, Austria -13%, Great Britain -12,5%, Belgium -7,5%, Italy -6,5%, Netherlands -6%, Finland/France +/-0%, Sweden +4%, Ireland +13%, Spain +15%, Greece +25%, Portugal +27%.

Source: Bundesministerium für Umwelt, Naturschutz und Reaktorsicherheit

world map is redrawn, and with it the “formulas for power”: sub-Saharan Africa can offer the most emissions rights, and India (whose budget at a constant rate of emissions would last another 112 years), Bangladesh (384 years), Pakistan (124 years) and Ethiopia (1,200 years) become strategically important actors in the global emissions trade, which opens up to them immense development opportunities.

The emissions trade between the countries of Groups 1 and 2, in contrast, will be limited by their tight budgets. Nevertheless, the industrial nations will have much interest in technological partnerships, particularly with China, to prevent the eruption of competition between the countries of Groups 1 and 2 over the limited emissions rights of Group 3, competition that would have price effects contrary to the interests of the industrial and threshold nations. This is why there must be from the start strategic climate alliances between China, the EU and the USA. Because of its highly dynamic economic growth and its already relatively high per capita emissions, China is under time pressure to come up with a comprehensive decarbonization strategy the initiation and promotion of which are in the best interests of the USA and the EU.

The decisive transformation in world society lies in the medium-term decoupling of economic development opportunities from fossil energy production. Whereas the growth of nations until now depended on the combustion of coal, gas and oil, the 21st century

— to the extent that the two-degree guard rail is taken seriously — will see an inversion: those nations can (also) grow rich that are not yet far along the path of carbonization (as in large parts of Africa) or that withdraw from that path early (like India), because they will help out those societies that must decarbonize at a scorching pace. A responsible global climate policy allows a fundamental shift in international relations — and involves not just impositions, but possibly a kind of indirect climate dividend.

**“Givers and takers
become partners with
complementary
interests”**

For most people, climate change was long a scientific abstraction. It took on concrete form when the first signs became visible and the costs calculable. People get involved when they realize the material and also the immaterial advantages of their actions.

3. The Devil is in the Details

Of course, all this is still a utopia. The emissions trade in its current state is hardly able to perform such a hinge function, and considerable audacity is required for institutional innovations in the realm of global governance. The economist Ottmar Edenhofer and the WBGU suggest the creation of a central “climate bank” to register and oversee the transfer of emissions rights as a kind of global budget manager. This bank would also have the task of ensuring that the emissions trade does not break the overall global budget, for example by a total selloff of unneeded emissions rights by individual developing nations at the start of the commitment period. This complex task can only be met if the central climate bank

is provided with the necessary power, which in turn implies that it is accountable as an institution of global governance and that it enjoys the democratic legitimacy that transnational agencies (such as the World Bank) have until now entirely lacked.

What is required, therefore, is a financial mechanism under binding international law that — following the logic of the budgetary approach and in keeping with the “polluter pays” principle — is for the most part fed by the countries with historically high emissions. Each country’s payments can be generated from the revenues of a national CO₂ tax or from the auction of national emissions rights. This mechanism would have the advantage of being measurable, reportable and verifiable (MRV). The global central climate bank can collect these payments in a central fund and disburse them according to an agreed-upon key; it would need the ability to effectively sanction those countries that do not meet their payment obligations. Conceivable in this regard are group liability rules for a given set of countries, temporary exclusion from the flexible mechanisms or financial penalties (as in the EU). Public resources will by no means be enough to meet the necessary financial requirements; private investors, especially in threshold and developing countries, must be brought in by means of attractive interest rates and credit guarantees. Another financing option would be matching funds, in which the monies of private investors for preventive measures are augmented by state participation at a given percentage.

For the success of the budget-based global climate treaty, **three further conditions** must be observed:

I.) Global intermediate milestones:

As a benchmark for global emissions progress it should be resolved that by 2020 at the latest, worldwide CO₂ emission may no longer rise, and must sink thereafter. Additionally, there must be a benchmark for maximum global emissions in 2050. Otherwise the limitation of the global temperature rise to 2°C will be virtually impossible.

II.) National action plans:

All states must commit to developing national plans that transparently show how they expect to keep to their national budgets. Independent international panels must review these plans for plausibility and feasibility. This should limit the danger that individual governments might defer the necessary steps to future generations. Strengthening of national responsibility (owing to the great flexibility in the choice of transformative paths) and accountability to the global community would thus be interconnected.

III.) Interregional flexibility:

The worldwide management of the national budgets within the framework of a global CO₂ emissions trading system requires that the national emissions budgets be broken up into emissions rights that are declared to be tradable property. The emissions trade between states allows bi- and multilateral transactions of all types and, indeed, encourages them.

4. A different world is possible — and necessary

The “normal mode” of international cooperation is too slow for this transformation, because it tends, as the Copenhagen climate talks show, to result in agreements reduced to the lowest common denominator. Other examples for the hegemony of national interests and the logic of competition between nations are the poor outcomes of talks within the World Trade Organization (WTO), the purely rhetorical Millennium Development Goals (MDG), and even the political processes within the most advanced arena of cross-border cooperation, the European Union. This means the widespread recognition among many political decision makers that the increasing number of global problems in an interdependent world can only be solved by global governance has not yet been translated into a desirable acceleration of the routines of global regulations.

4.1. The Gorbachev model

A successful climate policy oriented to the two-degree guard rail is therefore dependent on an internal and institutional revolution in international cooperation. There are hardly any historical examples of this, with perhaps the exception of the then completely unexpected reform policies of Mikhail Gorbachev. The president of the Soviet Union, as we know, admitted to himself that the existing socialist model was bankrupt and that maintaining the unyielding confrontation between East and West would accelerate the economic and political decline of the state and increase the risk of international

confrontation. This opened the way for the end of the nuclearized East-West conflict. The climate crisis shows certain analogies: The high-carbon development model is no further from bankruptcy, an international negotiation strategy oriented toward promoting short-term interests risks the imminent collapse of the fossil world economy and entails immense international tensions and conflicts. The parade of nations staking their claims in the Arctic is one example, the growing migration pressures from drought-stricken and disaster-ridden areas (and soon from islands and coastal regions) is another.

4.2. A problem for all humanity

A conflict-free global climate treaty is certainly not to be had. But the dominant “prisoner’s dilemma” can only be overcome when the players become conscious of a danger that threatens all actors, notionally as if a meteor strike were in the offing. Is the warming of the median global temperature by more than 2° C that dramatic? Most people would deny it. But even if warming were to have regionally divergent outcomes, it is clear that in consequence of their indisputable effects on the natural world (rise in sea levels, increasingly extreme weather events, loss of species and ecosystems, etc.) and on human communities (food shortages, forced migration, destabilization of political systems, etc.) the most negative results are ultimately to be expected. In this sense the problem of climate change does in fact resemble a threat of the proportions of a large meteor, which would bring with it catastrophic floods and abrupt, radical changes in the earth’s climate (“impact

winter”). That is to say, the effects of unmitigated global warming present an indivisible problem to humanity as a whole. There is no “outside” onto which the negative consequences could be displaced. The often misused term “community of suffering” is lent full credence by the climate problem. Only when this realization takes hold will there be a chance to break the global climate deadlock. If, in the end, no country would be spared the effects of a global temperature rise between 4 and 6° C, the readiness to take part in the international cooperation necessary if we are still to prevent dangerous climate change must grow.

4.3. Political-moral act of will

There are also no historical precedents for the technical-financial efforts that are now required. One could at most adduce (with reference to Al Gore) the Apollo Program started in 1960 by the US government, when a clear, initially just as utopian goal (putting a man on the moon) was established, to be realized within ten years. To achieve it, resources financial (25 billion dollars) and human (400,000 people) were committed in amounts heretofore unheard of. Just as important was the clear commitment of the Kennedy Administration, which set plain goals and timetables and was ready to subordinate all other efforts to this objective. Given the challenges of climate policy, a much broader, worldwide combination of political leadership, technical innovation and civil mobilization is required. And worldwide decarbonization is less rooted in the technological optimism of the “open frontier” that always drove the United States forward than

in an imminent threat to humanity in the form of dangerous climate change and the particular urgency of political action. The renunciation of fossil economic and energy policy presupposes a political-moral act of will historically analogous to the abolition of slavery and child labor in the 18th and 19th centuries. The motive behind those initiatives was not the expectation of technical-economic advantages (which only crystallized in the further course of the industrial revolution), but the deliberate break with politically and morally untenable practices and the social habits based upon them.

“The term
community of suffering
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4.3. Eye-to-eye negotiations

Institutionally, the resolution of L’Aquila implies making the two-degree guard rail the global measure of climate policy, as well as the establishment of new forms of global governance. This includes the consolidation of “eye-level” talks between the old (USA, EU) and new hegemonic powers (China) that function as G2 or G3 as well as exercising veto power in the UN Security Council, and the aspiring developing nations, to whom from case to case other regional powers like Mexico, Turkey and Indonesia may be added. In this expanded arena of international relations, the old G 7/8 no longer acts as a hegemonic center, but rather as a sort of relay station and preparatory committee. At the same time, connections to the numerous conference institutions of the UN family, which continue to introduce the full weight of the G 192, exist within a variable negotiating structure. Further networks exist between political-economic regional and continental alliances like the EU,

Mercosur or the African Union. Moreover, global climate policy will in future also be determined by bilateral agreements within the framework of the emissions trade and related ecological matters (such as biodiversity). This flexible, but also fragile negotiation structure within a nested multi-level system can only function if it is oriented to clear assumptions and receives sufficient democratic legitimation and participation in national and local arenas. Constellations of power of the type represented by the Group of 20 imply a kind of democratization paradox: they include nations and agendas that have not previously been sufficiently represented, and can therefore at most provide global public goods in the sense of a democracy-promoting multilateralism; they themselves do not possess a mandate. This accrues to them at best indirectly via non-governmental organizations.

Outlook: How much democracy can climate protection take?

The transformation into low-carbon societies can of course not succeed if directed only from the top down. Consumers and voters must also make decisions that optimize their long-term benefits, even when short-term costs appear to be involved. In blockades, “change agents” — strategic persons and groups who precede social transformation and spread awareness of its opportunities — play a major role. Historically, all periods of great transformation have been marked by new technologies and leading economic sectors, but even more by aspiring social classes that challenged thought patterns, institutions and mentalities. Strategic groups and

networks acted across national boundaries as role models and trendsetters, and thus gave isolated (or what at first seemed to be hopeless) innovative impulses their cultural hegemony.

“Change agents” bring about innovation by questioning world views, challenging ingrained attitudes and behavior patterns, abandoning familiar paths and strongly motivating potential followers to change. Today they are found in environmental and citizens’ action groups, in nongovernmental organizations (NROs) — including churches and foundations, among scientists, in political parties, and among engineers, urban planners, architects and other professionals who see enormous opportunities and creative challenges in the decarbonization of the economy, in the utilization of space, and in questions of mobility. This “sustainability intelligentsia” can be met with in energy companies and in independent professions, in the environmental agencies (and other departments) of local and regional administrations, in ministerial bureaucracies and in the general directorates of the European Commission, and not least in energy cooperatives, pilot projects and application-oriented research projects. Such agents often work isolated and dispersed; they doubt the possibility of broad political alliances and sense a great distance between themselves and the leadership elites. By the same token, the elites often don’t know what strong allies they have in these pioneers in the communication and propagation of supposedly unpopular policies.

The Kyoto process, which in its final form was barely understood by most people,

would fail if only the technical terminology and diplomatic compromises of the final communiqués were taken into account and climate protection were misunderstood as a purely governmental matter ("top down"). Certainly, climate protection requires decisive action from legislators and corporations, but such incentives will succeed only if citizens from the bottom up see themselves as historically and factually responsible. This requires an comprehensible regionalization of climate protection goals down to the level of municipal districts and townships, and a feedback loop to climate policy at the higher levels of governmental and corporate action.

Everything thus depends on successful framing of the issue. Energy-efficient and climate-friendly actions are more likely if the expected short-term costs recede into the background because of the medium- and long-term benefits that accrue. The consequences of the steps needed to implement Copenhagen must be openly acknowledged; parliamentary debates, experts' reports from NROs and plans of action from local authorities are just as important as proactive consumer counseling and political-cultural information and education opportunities, which above all instill an inter-generational sense of responsibility. Any climate policy from below must include laypeople as knowledge bearers and multipliers.

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in a special report of the WBGU to be presented in August 2009.

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