

# Ensuring the Quality of Scientific Climate Policy Advice

In an Increasingly Pragmatic Policy Environment, Advisors Should Take a Step away from Politics

Oliver Geden

The UN climate summit in Paris will bring about a new *bottom-up* type of agreement based on voluntary emissions reduction pledges by individual states. This marks the end of the *top-down* policy paradigm dominant for more than two decades. Scientific advisors should use the paradigm shift manifesting itself in UN negotiations as an opportunity to critically reassess their role in international climate policy. In the future, it will become even more difficult to present findings that are both politically viable and scientifically sound. In situations where these standards conflict, advisors and advisory bodies must resist both political pressures and incentives that undermine scientific integrity.

There is a paradigm shift underway in international climate policy. The *top-down* approach to mitigating climate change that has guided policy since the adoption of the United Nations Framework Convention on Climate Change (UNFCCC) in 1992 is slowly being replaced by a *bottom-up* model. The focus is no longer on meeting a global climate stabilization target of 2 °Celsius or on establishing a legally binding carbon budget—contrary to the preferences of the European Union (EU), developing countries, environmental NGOs, and mainstream climate policy advisors. The negotiations on a global agreement that are set to be concluded at the 21<sup>st</sup> Conference of the Parties (COP21) to the UNFCCC in Paris 2015 will in-

stead focus on voluntary mitigation commitments of individual states. It is already clear that the aggregated contributions will be nowhere near adequate to maintain the 2 °C target set at the 2010 UN climate summit.

A major shift in a public policy paradigm undoubtedly has consequences for the respective scientific community. Ideally, scientific expertise for policymakers should meet two—potentially conflicting—standards at once: it should be scientifically sound and politically viable. Researchers have played a prominent role in global climate policy over the last 25 years. But in the current, increasingly pragmatic political environment, governments are facing the fact that they are unable to back up

their self-defined targets with action, and this is calling the role of scientific policy advisors into question. If advisors and advisory bodies want to keep their close working relationship with the countries that are pioneers in international climate policy, they will have to provide more pragmatic policy evaluations and recommendations. On the other hand, putting the focus on scientific integrity also means that advisors will have to carefully consider the long-term consistency of their recommendations. If in doubt, scientists should keep more distance from the political process.

### **Shifting policy paradigm**

Only months away from the most significant climate summit to date—COP21 in Paris—a feeling of disenchantment has set in among policymakers, researchers, and the public at large. There has been some political progress, but it will not be enough to achieve the previously set climate policy targets. There is a fundamental shift taking place in the climate policy paradigm, in the way the core problem is defined and the ways potential solutions are derived—and vice versa. Today, the focus is no longer primarily on the problem itself (“dangerous anthropogenic interference with the climate system”) but on the key actors in the political process. To prevent the repeated failures of climate summits from discrediting the process itself, diplomats have essentially stopped trying to work towards an overarching approach to mitigating climate change. It is no longer considered realistic to persuade all major emitters to commit to ambitious and legally binding emissions reductions through UN agreements (see *SWP Comments 29/2015*). The world’s largest polluters—particularly China and the US—decide what they are willing to do on their own terms. Once their pledges on national emissions limits have been submitted, they will not engage in any further serious negotiations, either before or at COP21.

What we are observing here is the rise of a genuinely *political* mode of climate diplo-

macy, in which concepts of strict emissions limits and remaining carbon budgets are being pushed into the background. This new, actor-centered paradigm is not focused on long-term goals for climate stabilization, but on the possibilities and limits of the negotiation process. The focus is no longer on the environmentally desirable, but on the politically feasible.

Almost no one wants to admit this openly. Such an admission would not only signify the failure of the last 25 years of UN climate policy; it would also stand in direct contradiction to the 2 °C target. Climate diplomats and NGOs therefore discuss the bottom-up approach not as a break with the top-down paradigm, but rather as a pragmatic supplement that accommodates the major emitters while also creating a framework for the climate initiatives of sub-national actors such as large cities and corporations. Furthermore, the top-down approach is widely presented as entailing little more than a strong UN role and the existence of legally binding reduction targets. But in contrast to widespread assumptions, what truly defines the top-down approach to mitigating climate change is not the chosen political arena (the UN system) but the overarching policy goal (limiting global warming to 2 °C or even 1.5 °C), from which all further steps are rigorously derived.

The world of climate policy is in a transitional phase. The top-down paradigm has still not been abandoned as a political ideal, but it is slowly being eroded and replaced by a more practical bottom-up approach. This is evident in the contradictory expectations that surround COP21—even among countries, think tanks, and NGOs that are ‘progressive’ on climate policy. In light of the slow negotiation progress, even reaching an agreement that involves all of the UN Member States will be seen as a historic success. Yet contrary to what was decided on at COP17 in Durban in 2011, COP21 in Paris will only try to “keep the 2 °C target within reach”. But to bring the world onto a 2 °C path, “ratcheting-up mechanisms” would have to be adopted in Paris to allow

for a gradual increase in ambitions over subsequent years. Such mechanisms are part of many climate agreements—but they are almost never actually put into practice. Their main function is to conceal disappointing negotiation outcomes and to keep hopes of more ambitious policies alive.

### Shifting scientific advice

This political paradigm shift can be expected to have a particularly strong impact on the researchers who advise policymakers and who are often the public face of climate research. And indeed, such an effect is already being felt. But the two main camps of researchers providing scientific advice on climate policy—natural scientists and economists—are being affected in somewhat different ways.

For natural scientists, the situation seems to look relatively good at first glance. The basic concept of anthropogenic climate change is now generally accepted worldwide, despite the persistence of denial in countries like the US, UK, and Australia. For some time now, the central question in the global debate has not been whether climate change is happening, but how, to what extent, and at what rate. As a result, natural scientists are likely to feature less prominently in advisory councils. This will eventually lead to a “depoliticization” of their research, which will allow scientific uncertainties to be discussed again in a more dispassionate way.

But how will natural scientists react to the growing political pragmatism? If it becomes more obvious that international climate policy is not derived from a global stabilization target, prominent scientists will be forced to choose between two equally inconvenient options. They could vigorously defend their original concept of planetary boundaries and global thresholds, which would be met with increasing dissatisfaction from politicians, policymakers, and public funding agencies. Or they could soften their stance on an exact threshold to ‘dangerous climate change’, perhaps by

allowing for temporary temperature overshoots or even higher stabilization targets. But after two decades of scientists emphatically stressing that a strict temperature limit is imperative, it would hardly seem credible for scientific policy advisors to now shift this threshold (see *SWP Research Paper 5/2013*).

The situation is even more complicated for climate economists, whose importance has grown steadily since the Fourth Assessment Report (AR4) of the Intergovernmental Panel on Climate Change (IPCC) in 2007. By developing models to calculate global emissions scenarios, economists have taken a position at the forefront of the climate debate. Correspondingly, during the work on IPCC AR5, it was in Working Group III (Mitigation) where the governments’ line-by-line approval of the “Summary for Policymakers” proved most contentious. Policymakers entrust climate economists with the authority to say which measures should be taken to reach climate targets with minimized costs. Since global greenhouse gas emissions have increased by 40 percent since 1990, this essentially leaves economists with the uncomfortable task of saying which international climate objectives are still feasible.

A good example of the dilemma scientific policy advisors are facing can be seen in the concept of the emissions budget. It starts from a stabilization target—usually the 2 °C limit set by the UN—that is used to calculate the maximum amount of greenhouse gases that can be emitted worldwide. This construct, which is a centerpiece of IPCC AR5, is much more rigorous than targets like ‘global emissions reductions of 50 percent by 2050’, and is intended to severely limit the options available to policymakers. The later the global emissions peak is reached, and the higher that peak is, the greater the subsequent annual reduction rates will have to be in order to stay within the remaining budget.

But what if policymakers do not comply? What if emissions continue rising with no peak in sight? Again, scientific advisors face two equally unappealing options. They can

become either less relevant to policymakers or more pragmatic. Economists could stick to rigorous calculations and distance themselves from the policy process by declaring that it is no longer realistic within a 2 °C compatible carbon budget. But since funding agencies continue to generously reward policy optimism, and since the global climate community still tends to believe that abandoning the 2 °C target as unrealistic would lead to a sense of fatalism, most climate economists have thus far chosen a more pragmatic path.

This has led to a paradoxical situation. With each year of increasing emissions, the assumptions economists make about the transformative capacity of the global economy look more optimistic—and less plausible. While economic advisors once considered it common sense that the global emissions peak would have to be reached before 2020 and that annual reduction rates of more than 3 percent were not feasible, now economists are revising these critical assumptions.

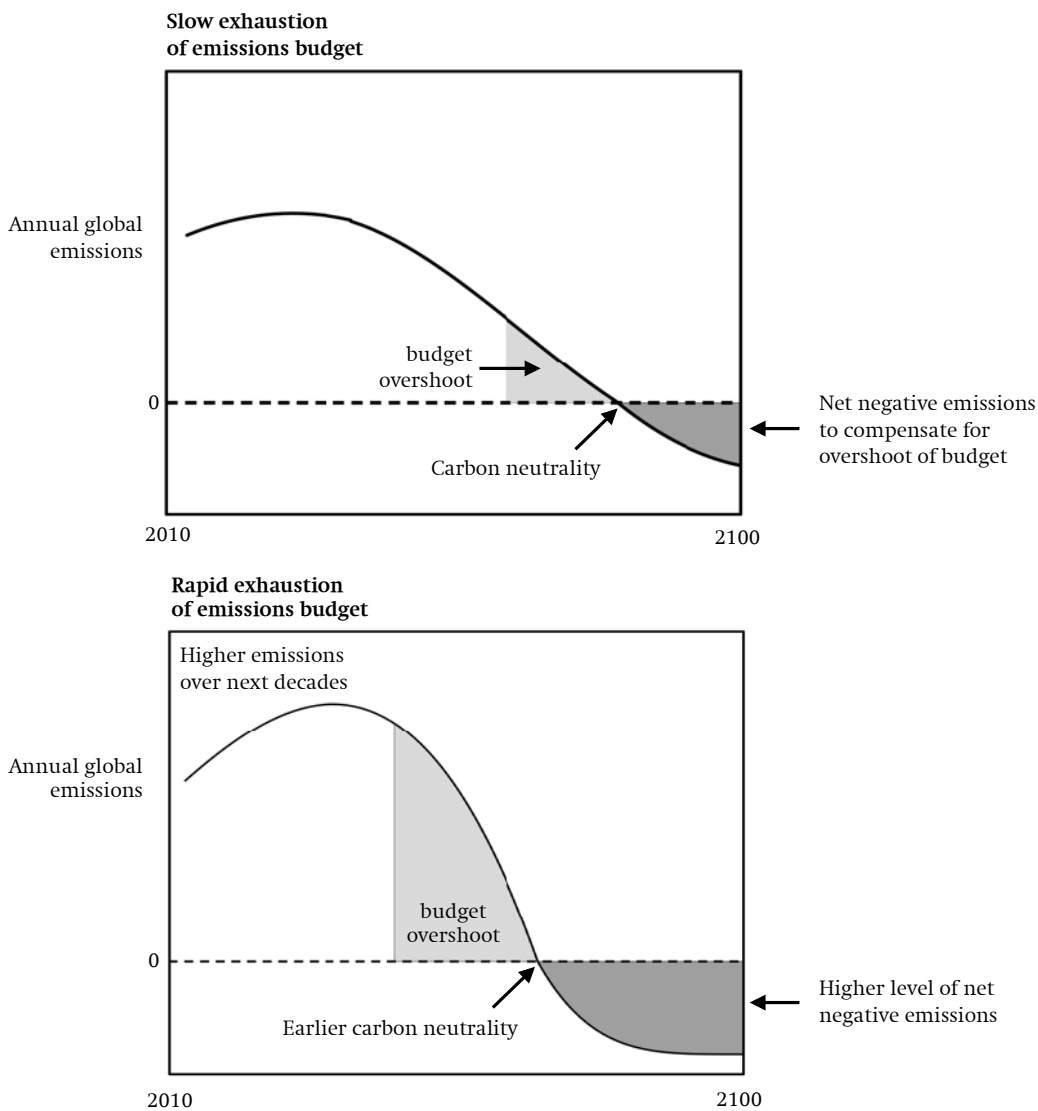
This is clearly evident in the two most important scientific climate policy assessments: the IPCC Working Group III reports, and the annual Emissions Gap Reports of the United Nations Environment Programme (UNEP). While IPCC AR4 stated that for a 2 °C scenario, emissions would have to peak by 2015 at the latest, IPCC AR5 refers to 2030 emissions levels that are even higher than today's and still compatible with a 2 °C target, albeit with annual reduction rates of just 6 percent. And while the first four UNEP reports focused solely on estimating the 2020 emissions gap—the constant difference between global emissions levels compatible with a 2 °C target and the levels expected if UNFCCC pledges are implemented—the 2014 report introduced additional reference points with gap calculations for 2025 and 2030, given the growing unlikelihood that the “emissions gap” can be closed by 2020 as originally intended.

In both cases, climate economists have managed to get around past ‘make-or-break’ points for the 2 °C target only by calculat-

ing in significant amounts of ‘negative emissions’—the removal of greenhouse gases from the atmosphere during the second half of this century. Most models assume this can be achieved using a combination of approaches known as BECCS: bioenergy (which would require 500 million hectares of land—1.5 times the size of India) plus carbon capture and storage, an unproven technology. This approach, which allows missed emissions reductions to be compensated for at a later stage (Fig. 1), highlights climate economists’ political acumen. In national political arenas, it is common to factor in the option of debt when developing fiscal budgets. Negative emissions allow economists to considerably extend the carbon budget originally set by natural scientists. Both types of budgets work with the same net amount, but the economists’ gross carbon budgets often effectively double the remaining emissions quota, establishing ‘carbon debt’, to be paid back later in the century—at least that is the hope.

Due to a growing uneasiness among climate scientists that this kind of calculation could eventually damage their reputations, some advisors are trying to put more distance between themselves and policymakers. While many scientists consider the key assumptions of climate stabilization scenarios to be unrealistic, they usually do not say so publicly. Instead, there are an increasing number of articles in academic journals questioning basic assumptions of climate economics and, for instance, calling on policymakers to seriously consider the practical preconditions and consequences of BECCS. On the one hand, this makes perfect sense, since the 2 °C target adopted by the UN cannot be achieved any other way—at least not with an annual reduction in economic growth of only 0.06 percentage points, predicted and widely communicated by the IPCC. On the other hand, the cautious questioning of negative emissions has come surprisingly late, considering that the concept has been part of official IPCC emissions scenarios for years.

**Figure 1**  
Carbon budget and negative emissions



Source: Figure by author, based on UNEP, *The Emissions Gap Report 2014*.

Unsurprisingly, policymakers have shown little inclination to discuss a potentially controversial technology that would require an extra land use, which equates almost half of today's arable land worldwide. Decision makers are delighted to hear that despite 25 years of dramatically increasing emissions, the 2 °C target is still theoretically within reach. But they leave it at that and ignore the fine print. What is

more, the IPCC in particular has made it all too easy for them to do so given the enormous complexity of the issue—even in its summaries for policymakers.

But there are also positive signs: IPCC AR5 Working Group III already shows evidence of steps in this direction. Using a rather implicit strategy, their report largely avoids normative statements and tends to weigh the risks connected with the differ-

ent policy paths against possible benefits. IPCC AR5 also rejects the task originally assigned to it by the UNFCCC: that of evaluating the adequacy of a 2 °C target compared to 1.5 °C. The IPCC simply turns the question back over to policymakers, saying that target setting is too dependent on value judgments. In taking this stance, the IPCC has theoretically opened up the way for weaker climate targets. At the same time, it is signaling to policymakers that in such a case, scientists will no longer be available to lend UN climate policy scientific legitimacy. Target setting is a genuinely political task, since science is not capable of making authoritative statements about appropriate levels of risk avoidance or intergenerational fairness.

### **Scientific evidence and policy-making**

For the past two decades, there has been an increasing discrepancy between climate policy intentions and the reality of rising emissions. While some degree of nonchalance regarding inconsistencies in talk, decisions, and actions is part of everyday life for politicians and diplomats, this is an attitude that has put scientific policy advisors in a difficult position, and one that is creating a sense of growing unease among climate researchers. Yet the central theme of the climate policy narrative—and the one currently echoed by mainstream scientific advisors—has always remained the same: “Time is running out, but we can still make it if we start to act now”. This statement is incompatible with the principle of scientific consistency. When scientific policy advisors fall back on this mantra, they are reaffirming their established working relationship with climate policy pioneers like the EU. But in doing so, they are also effectively glossing over more than two decades of climate policy inaction.

Today, even moderate progress in UNFCCC negotiations is generally viewed as more significant than achieving a global climate stabilization target. Scientific ad-

visors should use the paradigm shift manifesting itself in the Paris agreement as occasion to critically reassess their role in international climate policy. In the years to come, the difficulty of offering expertise that is both politically viable and scientifically sound will only increase. In situations where these standards conflict, advisors and advisory bodies must resist both political pressures and incentives that undermine scientific integrity. Scientific advisors should stick to their original findings and recommendations even as politicians fail to heed them. Stating the scientifically obvious in clear and unambiguous terms will not win climate advisors any popularity prizes, but it will prevent the recipients of their advice from gaining a false sense of security about the achievability of the 2 °C target and the probable consequences of more than two decades of increasing emissions.

The scientific community must defend its independence from outside interference—from progressive government administrations and NGOs attempting to win scientists over to their ‘just’ causes as much as from climate change deniers. Inviting non-scientific stakeholders from business, government, and civil society to play an active role in defining research agendas, as happens in European ‘transdisciplinary sustainability research’, must be reconsidered. Only when climate policy advisors maintain a certain distance from policy-making and politics will scientists have the freedom to confront decision makers with unorthodox ideas, assessments, and recommendations.

If in doubt, advisors should give precedence to scientific evidence. If not, they will not only be risking their own reputations; they will also be jeopardizing climate research itself due to the enormous public attention on the issue of climate change. Thus, the necessary debate on the quality of climate policy advice should not be limited to those scientists who act as policy advisors: ultimately, all researchers will be affected.

In order to successfully undertake the critical self-examination that is needed, cli-

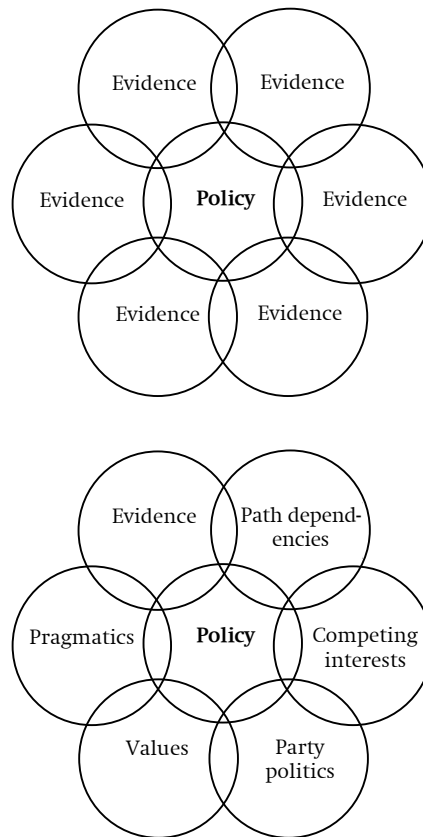
mate scientists must gain a clearer and more realistic picture of their target audience. Up to now, natural scientists and economists have oriented their work around policymakers' idealizing self-depictions. But objective rationality and long-term consistency of action are more the exception than the rule. Everyday politics is often dominated not by "evidence-based policy-making" but by the attempt at "policy-based evidence-making". This is seen, for instance, in policymakers' use of the IPCC reports mainly as a source of quotes with which to legitimize their preferences—a practice that the IPCC should in some cases confront directly.

Climate researchers should strive to understand how the expertise they provide is actually being used in political institutions. Furthermore, climate policy advisors should divest themselves of the notion that they have a special status, and instead align their expectations with the scientific advisory practices established in other public policy domains such as development, health, or foreign and security policy. By doing both, they will inevitably come to the realization that complex political decisions are affected by numerous factors. Scientific evidence is just one of these, along with competing interests, path dependencies, values and sheer pragmatics. The best that scientists can hope for is therefore "evidence-informed policy-making". (Fig. 2)

Climate policy advisors should resist the temptation to be political entrepreneurs peddling their advice, for example, by exaggerating how easy it is to transform the economy or deploy renewable technologies. It is by no means the task of advisors to spread optimism about the future achievements of climate policy. Instead, they should critically analyze the risks and benefits of political efforts and contribute empirically sound—and sometimes unwelcome—perspectives to the global climate policy discourse.

For some time now, responsibility for successfully addressing the climate problem has rested in the hands of governments.

**Figure 2**  
**Evidence-based vs. evidence-informed policymaking**



Source: Figure by author, based on David Christian Rose, "Five Ways to Enhance the Impact of Climate Science", *Nature Climate Change* 4 (2014): 522–24.

Valuable scientific knowledge will remain an important factor going forward, but it will by no means be the decisive factor. To start taking effective action, politicians and policymakers already know more than enough.

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**SWP**  
Stiftung Wissenschaft und Politik  
German Institute for International and Security Affairs

Ludwigkirchplatz 3–4  
10719 Berlin  
Telephone +49 30 880 07-0  
Fax +49 30 880 07-100  
www.swp-berlin.org  
swp@swp-berlin.org

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Deborah Anne Bowen