

1 Why Paris Did Not Solve the Climate Dilemma

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Paris Formulated a Collective Goal, Yet Individual Contributions Do Not Add Up

COP21 in Paris reconfirmed the customary global climate goal: warming should stay “well below 2°C” and added that by 2050 the world should no longer produce net greenhouse gas emissions. The breadth of this international consensus represents important progress, but only if the collective goal will be translated into a common climate commitment. Paris participants tried and will continue to try hard to promote ambitious national climate policies, but so far the Paris approach neglects the free-rider problem. National ambition comes with trust in others’ cooperation, and trust comes with a common, reciprocal commitment. With its focus on collective *goals* rather than on common *commitments*, the Paris agreement could inhibit progress, if setting goals are seen as simply tantamount to success.

The Paris talks were based in part on the assumption that narrow self-interest is enough for solving climate change. As Christina Figueres put it, “Frankly, none of them are doing it [agreeing to their pledges] to save the planet. Let us be very clear. They’re doing it for what I think is a much more powerful political driving force, which is for the benefit of their own economy.”¹ As a consequence, COP21 elicited individual and largely independent commitments.

However, climate change is a problem of the commons, and it likely remains one in the foreseeable future (see next section). If each country had its own climate, then self-interested countries would reach the climate

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goal—much like self-interested countries provide education, transportation infrastructure, parks, and other public goods. But with a shared climate, a CO₂-abating country receives only a small fraction of the benefits, yet incurs the full costs of its abatement. The self-interested response is to free-ride. This is particularly true in a globalized economy, where the costs of energy substantially affect economic competitiveness. Self-interested countries would let others do what is in the common interest.

Not all countries selfishly ignore the benefits of national climate policies to others. But even those that do not are unlikely to fully internalize the external benefits, in particular when they see that their cooperation gets exploited. This is why countries can sincerely agree with an ambitious collective goal and at the same time only commit to mostly self-interested individual abatement strategies, which do not add up to the collective goal. Indeed, for example, many African countries are heavily investing in oil extraction or allowing international oil companies to explore within their territories, Australia is predicted to be the world's largest coal exporter by 2020, China's emission level will increase until around 2030 (the ongoing process of reducing China's CO₂ emission growth seems to simply reflect what China intended to do anyway—to reduce deaths from local air pollution), India submitted no intention to peak or decrease CO₂ emissions and their coal production is predicted to double in the next decade, and the United States is focusing on shale gas, which reduces domestic emissions but leads to rising coal exports. Countries rationally prefer to let others make the costly efforts needed to reach the collective goal.

As a result, even if all Intended Nationally Determined Contributions (INDCs) fully materialize, total emissions and emissions per year will increase until 2030. According to the last IPCC report, a 2°C goal would yield a carbon budget of 630–1180 GtCO₂ (90–310 GtCO₂ with a 1.5°C goal) until 2100, yet the INDCs, if fully and unconditionally implemented, would already yield emissions that sum up to approximately 815 GtCO₂ until 2030. Reaching the collective goal after 2030 would then require drastic and rapid emission reductions, including possibly the need for massive negative emissions, making free-riding an even more attractive option. Moreover, the large amounts of already built and currently planned coal-fired capacities seem inconsistent with many of the INDCs in Paris' agreement; they alone are predicted to eat up 450 GtCO₂ of the

remaining budget (Edenhofer et al., 2016; Steckel et al., 2015). There is an insurmountable gap between what is collectively needed and national climate policies.

Ratcheting Up or Ratcheting Down?

The lack of ambition in Paris, when it comes to individual commitments as opposed to the collective goal, explains why negotiators established a review process. The hope is that, as the lack of individual cooperation becomes more apparent and the technology for reducing emissions becomes cheaper, ambition will “ratchet up.” But this hope relies on wishful thinking, not on what we know about cooperation, and not on guarantees concerning technology.

Cooperation. The strong attraction of the free-riding strategy, when there is no common commitment, is a consistent theme across theory, field, and experiment that has been extensively studied not only in static but also in dynamic environments. For instance, in a typical laboratory experiment, players contribute to the public good in the first round, which produces a collective benefit that is distributed evenly to all. This allows players to review the collective contribution. The contribute-and-review process is then repeated several times. The most common outcome by far is that some ambition is shown in the first round, but less is shown in subsequent rounds because parties observe others acting in their narrow self-interest, and nobody likes being taken advantage of. That is, the initial ambition, if any, tends to vanish, and behavior tends to move toward the selfish equilibrium (Ledyard, 1995). The failed Kyoto process provides another example of the attraction of the selfish equilibrium.

Independent climate action and positive leadership that induces others to follow is often thought to be a source for the desired ratcheting up effect. Unfortunately, the effect of independent action is often just the opposite: Without a common commitment, one country’s abatement can increase the emissions in other countries (carbon leakage), increase aggregate world emissions, and reduce the chance of effective subsequent climate negotiations (Hoel, 1991; Sinn, 2008). However, laboratory studies find that unilateral commitment can also enhance cooperation; the effect is typically small, in particular with heterogeneous agents (Levati, Sutter, and van der Heijden, 2007).

Finally, theory suggests and the field work by Elinor Ostrom and numerous experiments confirm that comparability and reliable monitoring of efforts are needed for cooperation to be stable (Bereby-Meyer, 2012; Ostrom, 1990). Yet in the context of the intended review process after Paris, individual pledges and efforts are hardly comparable and differently monitored, reported, and verified.

For all these reasons, it seems likely that the review process, as long as it is based on individual commitments only, will fail to significantly increase ambition. Indeed, it will likely lead to a ratcheting down of cooperation.

Technology. Before Paris, there was general agreement that simply buying the cheapest energy with no thought for global consequences was the source of the climate problem. But the Paris agreement seems partly driven by the reverse assumption: that the cost of clean energy sources will fall so fast that fossil fuel use will become uneconomic—a bold assumption given that as demand for fossil fuels declines, so too do fossil fuel prices (e.g., Covert et al., 2016). Under this scenario, countries would be induced to give up all fossil fuel use by 2050 simply because clean energy is the cheapest alternative. Although this optimistic scenario may be technically possible, this seems a risky bet, especially given the rather short time horizon before the carbon budget is eaten up and the plans in many countries to massively expand coal-based power plants that run for decades. It would not be wise to depend on it.

This Book: A Reciprocal, Common Commitment Is Needed

The failure of Paris to address the free-rider problem is the motivation for this book. We will argue, from different perspectives, that to promote cooperation and discipline free-riders, a collective goal must be translated into a reciprocal, common commitment: an agreement to abide by rules that specify ambitious behavior, provided others abide by the same rules (MacKay et al., 2015). This holds for practically all cooperation problems, from dish washing in shared apartments to international trade and disarmament, to laboratory evidence (e.g., Kosfeld et al., 2009). The *commonality* of the commitment creates a shared understanding of what can be expected from each other, so that the *reciprocity* principle, which can include various forms of enforcement, can be implemented to promote cooperation and mutual trust that one's cooperation will not be exploited.

The best candidate for a common commitment in international climate policy is carbon pricing. Indeed, carbon pricing is recommended by the vast majority of economists and many policymakers as the preferred climate policy instrument. A carbon price directly, efficiently, and transparently addresses the central problem of overusing the limited storage space in the atmosphere as a free dumping ground for greenhouse gases. This has been known for a long time. The main contribution of this book is to present analyses and arguments which show that a common commitment to carbon pricing is also useful to promote international cooperation (see also Cramton et al., 2017).

We hope to convince you with this book that, now that Paris has reached a consensus about the collective goal, there is a chance—maybe the last chance—to bring together what is needed to overcome self-interest and initiate serious cooperation: carbon pricing and reciprocity.

Note

1. <http://edition.cnn.com/2015/12/01/world/cop21-amanpour-figueres/>.

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