Preface: Change the Game

Pledge-and-review was invented for the United Nations Framework Convention on Climate Change (UNFCCC) by Japan in 1991, and it hasn't changed much since. It's what happened in Kyoto, although they tried hard to avoid the fate of each country simply pledging to do whatever it wanted followed by unenforced reviews. It's what happened under the Copenhagen Accord and the Cancún Agreements. And it's what happened again in Paris.

At least under Kyoto there was a bit of structure. Countries picked commitment levels relative to 1990. But within the European Union (EU), these ranged from a 30% cut to a 40% increase. There was virtually no structure in Paris; countries pledged almost anything. Now they will review it. And then there may be more pledges and more reviews.

Elinor Ostrom, a political scientist, won the 2009 Nobel Prize in economics for her lifelong studies of common-pool dilemmas—one of which is climate change. And her work is part of an enormous literature describing hundreds of real-world systems, thousands of laboratory experiments, and a great deal of theory. Yet after 25 years of failure, climate negotiations stick with an approach that ignores what we know about human cooperation.

To save the commons, the users of the commons must cooperate. That requires trust, and trust requires a reciprocal agreement—we will if you will, and you will if we will. For a group, especially a group of 10 or 100 countries, finding a reciprocal agreement requires simplification to a common commitment. Finding that commitment, and finding how to strengthen and stabilize it—that's the job undertaken by this book. But before you delve into that, we would like to show you a sort of magic trick.

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Negotiation design matters. We will now take a group of 10 completely selfish individuals and show you how they cut each other's throats in one game. Then, changing one rule—so they make common commitments instead of individual commitments—you will see those very same people, their temperaments unchanged, cooperate like angels.

You and nine other cut-throat individuals (representing countries) play a game. Each player has $10, of which each must simultaneously pledge some part to the common pot. A referee makes sure they honor their pledges but uses two different rules, one per game, for what it means to "honor a pledge." Every dollar (for CO_2 abatement) placed in the pot will be doubled (by natural climate benefits) and distributed evenly to all players. So any dollar placed in the pot will be doubled to $2, and 20 cents will be returned to each player.

First, in the "*individual* commitment" game, all pledges are independent of those of others. So the referee makes sure each contributes exactly what he or she pledges. This is the classic public-goods game, and the rational strategy for the narrowly self-interested player is to contribute nothing because this makes a player better off no matter what the others do. The result is the famous tragedy of the commons. Cooperation does not occur, except perhaps on the part of a few committed altruists, who correctly note that if only everyone cooperated, everyone would be better off.

Second, consider the "*common* commitment" game, in which the rule is that the referee interprets a pledge of $x to mean a player will contribute up to $x, but only as much as the *lowest* pledge. As before, this involves enforcement, but enforcement is weaker in the sense that, unlike before, the referee will not enforce contributions greater than the lowest pledge. This is a reciprocal agreement. It says, "I will if you will." But it does not say what anyone must do. Any outcome from "all contribute $0" to "all contribute $10" is possible, each is free to pledge from $0 to $10, and no one is forced to contribute more than his or her pledge. As before, after enforcing these common-commitment pledges (under the new rule), the money is doubled and distributed evenly.

This changes everything. Pledging $0 will mean simply keeping your $10, whereas pledging $10 could result in ending up with anything between $10 (if the lowest pledge is $0) and $20 (if the lowest pledge is $10), depending on what others pledge. So, even though you are completely selfish, because you cannot lose and could gain by pledging $10, that's what you would do.

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So, assuming that all play in their narrow self-interest, all pledge $10, and the group's $100 is doubled and divided evenly, and all end up with the maximum amount of $20.

Because the common commitment protects against free-riding, selfish behavior has been changed from "contribute nothing" to "contribute everything," and the outcome is changed from no cooperation to full cooperation. With the common commitment, all know that "We are in this together." This demonstrates a key point. We will get better outcomes from the same players if we design better rules, even if those players do not increase their political will or ambition at all.

Of course, there is still a long way to go before we turn these ideas into a viable climate treaty, but there's something refreshing about seeing that human behavior can be changed without increasing enforcement power, changing human nature, or increasing ambition or political will. The referee fully enforced pledges in both games, and players were just as greedy in the second game as in the first. That the design of the negotiations can dramatically change human behavior allows a more optimistic interpretation of the climate predicament. It says, we are not as uncooperative as we have appeared to be for the last 25 years. The problem was just that we were trapped in the wrong game.

A focus on cooperation. This book is about climate cooperation—what it means, why it's needed, and how to attain it. The first three introductory chapters set the stage. They explain that, although COP21 in Paris formulated an ambitious global climate goal, this is only progress if the collective goal will be translated into a reciprocal, common climate commitment (MacKay et al., chapter 2). Indeed, Paris led to an unresolved gap between what is collectively needed and the intended national climate policies (Cooper et al., chapter 1). Narrow self-interest, responding to domestic pollution concerns and technological miracles, will not be enough to solve the dilemma (Parry, chapter 3), and neither will altruistic ambition. Cooperation is what is needed—and it is a feasible alternative to simply relying on narrow self-interest or altruistic ambition: If the game is changed to involve a reciprocal common commitment, national self-interests will be realigned with the public good. Ambition will follow automatically.

The second part of the book includes nine chapters that each provides different perspectives on the same theme: how the simple idea of a common commitment, illustrated by the previous example, can actually be

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turned into a viable climate treaty. A key insight of all chapters is that narrow self-interest as well as Paris' "pledge-and-review" approach will fail as long as it is based on individual commitments (Gollier and Tirole, chapter 10). Rather, all contributors agree that the best candidate for a common commitment is carbon pricing. Global carbon pricing is a natural comparison standard for abatement efforts, facilitating reciprocity (Cramton et al., chapter 12) and enforcement (Nordhaus, chapter 7); it substantially simplifies negotiations by focusing on a single minimum price variable, as opposed to many different quantity targets (Weitzman, chapter 8); it is efficient and flexible with respect to national climate policies (Stiglitz, chapter 6); it can help to make other, idiosyncratic climate policies more effective (Edenhofer and Ockenfels, chapter 9); it substantially reduces countries' risks and makes it easier to take into account "differentiated responsibilities" (e.g., because all proceeds from global carbon pricing stay in the country) (Cramton et al., chapter 12; Laurent, chapter 11). Overall, there is a remarkable consensus among the different contributors to our book regarding the most fundamental role of a reciprocal common price commitment for successful climate policy, although the contributors come from different backgrounds, including game theory, cooperation science, economic design, political science, engineering, risk analysis, climate negotiations, climate policy, and climate economics. That said, there are, of course, still many controversies and details that need to be addressed along the way. Gollier and Tirole, for instance, put forward monitoring reasons for why they personally favor an international cap-and-trade agreement to implement a global carbon price, whereas all others prefer a minimum price agreement. Cooper (chapter 5), for instance, discusses the likely impossibility of negotiating a global cap-and-trade scheme because the global "caps" would be too high and because the allocation of permits to domestic agents would invite corruption. Cramton et al. (chapter 4) provide a survey of the merits of global carbon pricing for negotiating international cooperation.

We emphasize that, although global carbon pricing facilitates cooperation and is an essential climate policy, it is of course not the only policy needed to effectively address climate change. Investments in green research are needed, too, and there is a role for some command-and-control style regulation, such as building standards. But the lack of a common commitment on carbon pricing is the primary source of the problem, and so correcting this is what this book is about.

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A common commitment says, "We will do what is required for the common good as long as you do as well." This type of reciprocity is almost universally what drives human cooperation. It is not new. It is ancient and has now been well documented by the various sciences that study human cooperation. It is universally used by governments when, for example, they fund highways or toxic waste cleanup. It is more difficult to achieve without the strong arm of a government. Explaining how that is done is the point of Ostrom's and many others' research on cooperation, and the conclusion is: "trust and reciprocity." Explaining how to apply this to the earth's atmosphere is the purpose of this book.

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