



# RESEARCH BRIEF

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## Can Communication Facilitate Cooperation in Reducing Greenhouse Gas Emissions?

### Communication Alone is Insufficient to Induce Widespread Cooperation in Reducing Emissions

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DRB 12-14, MARCH 7, 2014

International and domestic efforts to reduce greenhouse gas emissions require a coordinated effort from countries and individuals that differ in terms of their level of income, historical responsibility in terms of contributions to the existing stock of emissions, current intensity of energy use and costs of reducing emissions. This brief reports the results of an economic experiment that examines whether groups of individuals – who differ in terms of their individual costs of reducing emissions – can meet a collective emissions reduction target. Subjects in the experiment communicate with each other in order to decide as a group how to meet the emissions reduction target (by deciding how much each group member should reduce emissions). While communication enables the group to reach consensus, the group decision is not binding and participants are able to decide for themselves how much to reduce emissions. The results indicate that participatory processes and stakeholder engagement (represented by communication) play an important role in promoting cooperation, even when dissimilarities exist. However, the dissimilarities make it harder for groups to reach consensus on how to distribute the responsibility of reducing emissions. Also, the non-binding nature of the agreement results in a significant portion of players not engaging in mitigation, but rather relying on others to reduce emissions. In addition, the difference in costs seems to provide the players whose costs are higher with a justification for not making contributions. The results indicate that participatory processes alone are not sufficient to induce widespread compliance with a mitigation obligation.

#### Key Points

- This brief reports the results of an economic experiment that tests whether groups of individuals can collectively meet an emission reduction target.
- Emissions reduction is more costly for some participants than for others.
- Participants are able to communicate with one another in order to coordinate their strategies.
- The results indicate that communication plays an important role in promoting cooperation, even when participants differ in terms of their costs.
- But, because communication resulted in non-binding agreements, a number of participants contributed nothing to mitigation – instead, they relied on others to reduce emissions.
- The results indicate that participatory processes alone are insufficient to induce widespread compliance with a mitigation obligation.

## Can communication facilitate cooperation in reducing greenhouse gas emissions?

While multilateral climate change negotiations act as a mechanism for cooperation in reducing greenhouse gas emissions, they have failed to induce widespread participation. The economic experiment reported here considers whether cooperation is possible in such a context. The current model for tackling climate change is a top-down approach whereby emission reduction targets are negotiated at international climate talks and then implemented on a domestic level. This implementation phase requires very different groups, for example, businesses, rich and poor households, farmers, lobbyists, environmentalists, and oil and mining companies, to work together to reduce emissions.

In this context, the economic experiment reported here examines whether groups of individuals – who are different in terms of their costs of reducing emissions – can meet a collective emission reduction target through individual actions. Participants were told to think of themselves as either ‘households’ or ‘firms’. It is more costly for households to reduce a unit of emissions relative to firms. This is because households have limited ways to achieve significant reductions in electricity consumption: households can, for example, purchase solar water heaters, use geyser blankets (insulation jackets for water heaters), replace incandescent light bulbs with more efficient compact fluorescent light bulbs (CFLs), and reduce space heating requirements by improving insulation. Many of these measures are extremely expensive for low-income households. Conversely, in addition to these measures, the commercial sector can take advantage of so-called ‘low-hanging fruit’ (e.g., they can decommission lifts and revolving doors, or use timers to switch off lights in buildings and parking lots, etc.).

Stakeholder participation is increasingly seen as an important component of the formulation of policy responses to climate change. Without incorporating the public’s viewpoints, climate policy is likely to be stalled very early on in the implementation phase. In this experiment, subjects were allowed to communicate with one another in order to determine how to divide the responsibility of reducing emissions between themselves. Our results show that stakeholder participation plays a valuable role in helping players to coordinate mitigation strategies, even when there are dissimilarities between players. Within the context of the economic experiment, players were urged to meet a national emission reduction target. Without the opportunity to communicate with group members, only 35% of groups were able to meet the target. When able to communicate with each other and coordinate strategy, this proportion increased to 50%.

However, the results also indicate that the success of communication is limited where players differ in terms of their individual costs of reducing emissions. In the experiment, each participant was given an endowment of experimental coins. Participants could allocate these coins to mitigation (and so contribute to the public good of mitigation) or to their own private account. The results of the experiment illustrate the problem with non-binding agreements. Specifically, while 65% of groups agreed that each member would contribute his/her full endowment to the public good (mitigation), there was no group in which this actually happened. In addition, with the introduction of communication, the proportion of players contributing zero coins to mitigation (relying on the contributions of others) increased significantly. Finally, players’ contribution strategies became polarized between contributing nothing to mitigation versus contributing all their coins to mitigation.

### Conclusions

These results indicate that, while stakeholder participation is important in promoting cooperation, there is always the risk that free riders (individuals who contribute nothing) will engage in participatory processes on the formulation of climate policy, but then thwart efforts at the implementation phase. For example, free-riding individuals might lobby their government when a climate bill is going through congress or free-riding governments might renege on an agreed-to mitigation obligation. The implication is that punishment will likely play an important role in inducing cooperation.

The experimental data indicated that players for whom reducing emissions was more expensive were more likely to contribute nothing to mitigation, relative to players for whom reducing emissions was less costly. The implication is that dissimilarities such as inequality provide

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individuals with a justification to either refuse to cooperate or to renege on an agreement, assuming one was reached. In a climate change context, parties to the negotiations who view themselves as at an unfair disadvantage, for example, developing countries that are poorer and not historically responsible for emissions, are more at risk of non-compliance. Participatory processes therefore must consider the equity contexts within which the negotiations are happening.

Finally, while communication increased cooperation, the outcome was not sufficient. Participants in the experiment met their mitigation target only if the collective contribution of coins by the group reached a specified minimum amount. Let's assume that this was the minimum contribution necessary for keeping temperature warming below 2 degrees Centigrade, the threshold for catastrophic climate change. In such a context, if only 50% of the population met the target (as was the case in the experiment), catastrophic climate change would not be averted. Thus, while participatory processes play an important role, they are not sufficient on their own. In a companion paper, the authors find taxation to be an effective mechanism for inducing compliance with the mitigation target, with the proviso that the tax level is set at the appropriate level. While often unpopular, imposed rules, such as a carbon tax, must be coupled with stakeholder engagement to move society to a lower emissions path.

### ABOUT THIS BRIEF

This brief is based on "Can Communication Facilitate Cooperation in Reducing Greenhouse Gas Emissions? Communication Alone is Insufficient to Induce Widespread Cooperation in Reducing Emissions," by Kerri Brick and Martine Visser, November 2012, EfD Discussion Paper 12-14. (The DRB series of research briefs is associated with the EfD Discussion Paper Series.)

### FURTHER READING

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