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Special Feature on the Kyoto Protocol

Lessons from the Kyoto Protocol: Implications for the Future

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The strengths and weaknesses of the Kyoto Protocol must be carefully assessed in designing future agreements to tackle climate change. The Kyoto Protocol's main strength may lay in its emissions trading feature—a key for cost-effectiveness, environmental effectiveness, and equity. Its main weakness may lay in the incapacity of Kyoto-type targets to deal with the uncertainties surrounding climate change—especially on the side of abatement costs. A mere extension of the current protocol seems unlikely to effectively tackle climate change. A flat rejection of the structure it provides, however, would probably not offer better prospects. Agreements on policies and measures or "technology protocols" might be useful, but can hardly substitute for more comprehensive agreements that would provide clear price signals to economic agents. Carbon taxes would better deal with uncertain abatement costs, but may be more politically difficult at both domestic and international levels. A modified Kyoto structure might give the international community a better chance to achieve its ultimate objective, laid down in the United Framework Convention on Climate Change, of stabilizing atmospheric concentrations of greenhouse gases. It would keep the emissions trading framework but add to the Kyoto-style fixed and binding targets several options to better deal with uncertain costs, namely, price caps, indexed targets, and non-binding targets for developing countries.

Keywords: Climate change, Mitigation, Long term, Ultimate objective, Uncertainty.

1. Introduction

The likely entry into force of the Kyoto Protocol, at the time of writing this article, should not preclude its supporters from acknowledging its weaknesses, when considering future agreements. Nor should it preclude its supporters from acknowledging its strengths. Even ignoring the difficulties of entry into force, one must admit that the Kyoto Protocol was never intended to provide the definitive set of solutions to achieving the ultimate objective of the United Nations Framework Convention on Climate Change (UNFCCC), namely, stabilizing atmospheric concentrations of greenhouse gases. New steps will be needed. At best, Kyoto is only a beginning.

While some analysts seem to believe that the next steps could simply extend the Kyoto agreement in time and, hopefully, space, others propose entirely different types of agreements. But future steps could also further elaborate the basic structure of the Kyoto Protocol—quantified objectives with emissions trading—while incorporating new features. These features—partial indexation of emission targets on economic growth, price caps, and, for developing countries, non-binding targets, would help countries adopt relatively more ambitious targets than otherwise. They could provide more incentives to

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participate and comply, or at least reduce the disincentives to participate. They could thus help to simultaneously broaden and deepen climate change mitigation action—two moves often suggested as contradictory.

The Kyoto Protocol will likely be considered in the future as an important step towards effective climate change mitigation because it introduced emissions trading into the ballpark. This is leading policy makers to introduce emissions trading at domestic levels as their main policy, and might even lead Kyoto and non Kyoto countries to interlink their respective domestic regimes across borders. However, full success in mitigating climate change will require negotiators—either in bilateral, multilateral, or global negotiations—to fix the current shortcomings through options that could make the framework for action truly global and alleviate the rigid, fixed nature of the quantified targets —two points obviously linked, as will be shown below.

This paper is in four parts. *Assessing Kyoto* discusses the strengths and weaknesses of the Kyoto Protocol. *Keeping Kyoto* discusses if Kyoto could be kept essentially unchanged and could prove successful in the future. *Rejecting Kyoto* considers some of the many radical alternatives that have been suggested as a replacement. *Transforming Kyoto* finally assesses ways and means to change the Kyoto structure into a superior agreement, more economically efficient (taking into account its environmental effectiveness) as well as more likely to attract broader participation.

2. Assessing Kyoto

According to its detractors, the Kyoto Protocol will provide too little environmental benefits at too high costs. This may be difficult to prove right or wrong; uncertainties abound on both the benefit and cost sides. Even the real effects on global emissions of the Kyoto Protocol itself (not to mention the dynamics it may create for the future) are not known with precision, in particular due to the opposite effects of potential leakage and technology spillovers.[1] Assessments of leakage rates range from 5 percent to 20 percent in the case of the Kyoto targets (Hourcade and Shukla 2001)—but could go much higher with large emission reductions. Against this, Grubb et al. (2003) set various sources of positive spillover, especially “the international diffusion of more efficient and lower carbon technologies that are developed in response to emission controls in the industrialized world.” They believe that these positive effects do more than offset the leakage. Therefore, regulation of emissions by industrialized countries would also reduce emissions—in comparison to business-as-usual trends—in non-regulated areas.

Moreover, the direct effects of Kyoto on climate change can only be small, because climate change is a problem of a “stock” nature: what drives climate change is not the emissions, but the slow build-up of atmospheric greenhouse gas concentrations over decades, or even centuries. When Cline (2004) finds that “Kyoto” provides positive net benefits, in fact he assesses a hypothetical “Kyoto forever” scenario with emissions of industrialized countries indefinitely capped at 1990 levels. So, what matters for our analysis here is not the effectiveness of the Kyoto Protocol as such, but rather the promises or shortcomings of the architecture it introduces.

1. Leakage is defined here as an increase of anthropogenic emissions of greenhouse gases from countries where emissions are not regulated as an effect of regulation in Kyoto countries.

2.1. The advantages of emissions trading

The main strength of this architecture is in quantified objectives and emissions trading. Most greenhouse gases have no direct local environmental effects; they rapidly mix in the atmosphere, and where they are emitted does not matter. Emissions trading, therefore, does not modify the environmental effect of the targets; but it lowers the costs of emissions reductions, which, depending on the level of stabilization chosen, may be considerable (IEA 2002). This, in turn, is good for the environment, especially as climate change is a long-term issue. Though usually defined as the capacity to reach a given objective at the lowest possible cost, cost-effectiveness can also offer the greater environmental benefits for a given cost—the cost that our societies are willing to pay to mitigate climate change.

Another advantage is that emissions trading, if implemented at the domestic level as well as at the international level, offers governments the flexibility to fine-tune the balance between free allocation and auctioning. This could improve the acceptability of the new regulations to incumbent emitters on the one hand, and maximize social welfare through revenue recycling, on the other. Finally, emissions trading allows international negotiations to focus on an acceptable distribution of efforts, which need not be cost-effective from the onset. This is a key for equity.

Nevertheless, the Kyoto Protocol as it is now does not represent the most efficient solution—nor even the most cost-effective short-term agreement. This would only be the case if the Kyoto Protocol included all emitting countries, allowing the abatement to take place wherever they cost less around the world and preventing leakage.

2.2. Shortcomings of the Clean Development Mechanism

To some extent, however, the Clean Development Mechanism (CDM) instituted by the Kyoto Protocol may substitute for quantified objectives by developing countries and give access to cheap reduction opportunities. Its overall performance, however, is unlikely to be large (Ellis et al. 2004). The CDM is impeded by substantive transaction costs, resulting from the need to assess each project, prove it is additional to what would have happened otherwise, and to define an appropriate baseline. Relaxing the additionality criteria may augment neither the efficacy of the CDM nor its possible benefits for developing countries (Asuka and Takeuchi, forthcoming). As a result, most analysts believe that the CDM will only play a minor role—though, arguably, this also results from a weaker demand for credits following the withdrawal of the United States from the protocol.

Another difficulty is that the CDM is unlikely to be effective against leakage. An agreement effective against this would need to create an opportunity cost for all emissions wherever they take place. This would be possible with a frictionless project-based mechanism if the baselines against which to credit emission reductions were comparable in both industrialized and developing countries. This is not what was decided in the Marrakesh Accords. An efficient plant could possibly be closed in the industrialized world as a result of a carbon constraint, and its production replaced by a less-efficient plant in a developing country, creating leakage. The CDM would not prevent this happening. It may even give such leakage some additional incentive if a newly-built plant is more efficient than those in the host country serving as reference for the baseline, and could thus earn some credits.

It must be noted that, by contrast, the efficacy of a global emissions trading regime to alleviate or eliminate the risk of leakage does not depend on the initial allocation. Even if some countries were allocated surplus emissions beyond their needs, greenhouse gas emissions would have the same opportunity cost everywhere. Any additional emission in such countries would represent a lost opportunity to sell. This loss entails the same cost as buying the permits to cover this emission in a constrained country.

2.3. Not fully cost-effective, even less efficient

An efficient agreement would not only be cost-effective, it would also ensure that benefits outweigh costs and, moreover, provide maximum net benefits in ensuring that an optimum level of abatement is undertaken—usually defined by the level of abatement where marginal abatement cost equals marginal environmental benefit.

It is the conjunction of the stock nature of the climate problem and of the uncertainties surrounding abatement costs that make any arrangement based on fixed quantitative goals, such as the Kyoto Protocol, less than fully economically efficient. If abatement costs were known with certainty, then a quantified objective would define a price, or a price (say, a carbon tax) would define a global quantity. As abatement costs are uncertain, quantity and price instruments are not equivalent. A price instrument would offer certainty on the marginal cost incurred, but not on the actual level of abatement. A quantity instrument would offer certainty on the level of abatement, but not on the costs incurred.

Which instrument is preferable to mitigate climate change? The stock nature of the problem makes the marginal policy benefits roughly constant—over any credible policy interval. That is, avoided marginal climate damages might be high or low, but the first tonne of carbon dioxide that is not emitted in any given year is likely to bring about the same benefit than the last one. By contrast, the cost of abating the first tonne is minimal, while the cost of abating “the last one” (of course, depending on the depth of the cuts) might be very high—and possibly higher than the marginal benefit it provides. Therefore, price instruments, which spontaneously adjust the emission cuts to the reality of the costs, should be preferred over quantity instruments. In other words, the certainty provided by quantitative targets on emissions in any given year has little value but may cost too much (Newell and Pizer 2003; Pizer 2002; IEA 2002).

In sum, what matters for our analysis is the architecture of Kyoto more than its direct results. This architecture provides some key advantages but also has important shortcomings. Thus, should one reject Kyoto and try and build an entirely different agreement, or, rather, aim at transforming Kyoto? Or, would it be more realistic to simply keep Kyoto, despite its shortcomings?

3. Keeping Kyoto

Some analysts, however, seem to believe that the most effective choice would be to keep Kyoto as it is today. It would progressively become a broader, more global agreement, as developing countries develop and reach some thresholds in per capita income (multistage approach). Or developing countries could be incorporated sooner but with large amounts of surplus emission rights, which may or may not result from the adoption of a global rule for emission allocation, such as convergence towards equal per

capita allocation (Meyer 2000; Aslam 2002). Industrialized countries that have resisted participating in the first period of the Kyoto Protocol would possibly be given more lenient targets in subsequent ones.

The problem with "progressive" approaches is that they are hardly compatible with low concentration levels if, ultimately, necessary. This is due to the late entry into the system of most developing countries (Berk and den Elzen 2001), but also to the less stringent targets given to some others.

The problem with the convergence option is that it may first provide a large amount of excess allowances to developing countries. Industrialized countries would need to buy this "tropical hot air" first before financing any real mitigation action in developing countries (IEA 2002). One lesson from the Kyoto Protocol is that providing hot air to some countries to help others accept tough targets may not work; for example, the "blank check" to Russia was one of the reasons invoked by the US administration to reject the Kyoto Protocol.

Later on, allocation based on per capita convergence may bind the emissions of developing countries at much lower per capita levels than those previously enjoyed by citizens of industrialized countries. Arguably, some technology spill-over will reduce the peak of energy intensity reached by new-comers in their industrial development, as happened in the past (Martin 1988). Nevertheless, this constraint on emissions might be perceived by developing countries as an unfair constraint on their economic development itself (Chen and Pan 2003).

In sum, keeping Kyoto unchanged while only playing with the "numbers," i.e., the size of the respective allowances, produces the following dilemma: ensure broad participation with weak targets or undercut the goal of broad participation in setting ambitious targets that not all countries will accept.

4. Rejecting Kyoto

Aldy et al. (2003) list thirteen proposals for a future architecture of climate change mitigation action—and their list is incomplete and may not include some of the most useful options to consider. While some might be considered as building upon the Kyoto structure, others are radical alternatives. The most often quoted radical alternatives seem to be commitments on policies and measures, carbon taxes, and "technology protocols."[2]

4.1. Policies and measures

An existing obligation in the UNFCCC commits all Parties to undertake policies and measures that help mitigate climate change. Identifying specific policy requirements may be a logical extension from existing commitments. One possible approach would be to invite developing and/or developed countries to identify a set of win-win policy reforms, according to their national circumstances. Developing countries, for example, would look for "sustainable development policies and measures" corresponding to their own sustainable development objectives (Winkler et al. 2002), then identify whether they lead to emission reductions below business-as-usual levels, and then seek to have them financed by industrialized countries through the Convention process.

2. Others include Bradford (2002) and McKibbin and Wilcoxen (2002). See IEA (2002, 127, 128) for a short discussion of these proposals.

In the course of the negotiations leading to the Kyoto agreement, however, developing countries have proven very reluctant to make commitments on policies and measures seen as contradictory to their sovereignty. It may be difficult to ensure that a wide set of policies and measures provide cost-effective emission reductions. The international financing of the latter could more easily leverage both public and private financing through emissions trading than through other mechanisms in the Convention.

4.2. Carbon taxes

Carbon taxes offer perhaps the most convincing alternative to the Kyoto framework from a theoretical perspective, especially under the form of harmonized domestic taxes advocated by Nordhaus (2002). Their political economy, however, remains difficult. At the domestic level, taxes are usually unpopular and raise profitability concerns for industry if some competitors in other countries do not face the same additional costs. Taxes offer little flexibility to governments to accommodate these concerns while maintaining their environmental effectiveness.

At the international level, uniform tax rates are required for reasons of cost-effectiveness, but the resulting distribution of costs may be unacceptable, especially by developing countries, likely to ask for side-payments. In sum, carbon taxes can be—and already are—useful as part of domestic policy packages, but making them the centerpiece of any future international strategy is likely to prove extremely difficult.

4.3. Technology protocols

Technology protocols have been suggested as a possible alternative to the Kyoto Protocol, in particular by Barrett (2003), who believes that Kyoto lacks credible incentives for participation and enforcement mechanisms. His proposal would involve collaborative research and development in developing new technologies, follow-up protocols establishing technology standards, a multilateral fund to help spread the new technologies to developing countries, a short-run system of pledge-and-review, and a further protocol for adaptation assistance.

Clearly, although various behavioral changes might help achieve stabilization of concentration, deep technology changes will be required. Policies and measures specifically designed to “push” research and development might bring an invaluable contribution to such technical change. Dissemination of new technologies, however, is unlikely to be rapid enough in the absence of long-term price signals that only economic instruments, such as either taxes or tradable permit schemes, would provide (Philibert 2003). Could technology standards substitute for price signals in providing for rapid dissemination of innovation?

Barrett recognizes that such an approach would not be cost-effective and thus only a second best. But, he argues, the setting of standards “often creates a tipping effect. If enough countries adopt a standard, it may become irresistible for others to follow, whether because of network effects, cost considerations (as determined by scale economies), or lock-in.” Well, it may…or may not. Let us suppose some industrialized countries adopt a standard that would, for example, force energy-intensive industries, the power sector, and refineries to give up fossil fuels or capture and store the carbon dioxide. Is not easy to figure out why this would obligate or incite the rest of the world to follow even if this entails huge costs.

Would new multilateral funds make the difference? Maybe—but it is not obvious that new funds leveraging only scarce public money would do more than mechanisms, such as emissions trading, leveraging potentially both public and private money. Also, if some of these technologies become fully cost-effective thanks to economies of scale and learning curves, then they might be disseminated by their own virtues. The technology spill-over effects might be similar to the Kyoto case. Finally, the Intergovernmental Panel on Climate Change (IPCC) made clear that energy efficiency improvements at the end-user level, likely to provide the bulk of short-term affordable emission reductions, require "hundreds of technologies" (Moomaw and Moreira 2001). Should one then negotiate hundreds of protocols?

In sum, international technology collaboration is useful but already exists, notably through 40 International Energy Agency Implementing Agreements. It could be strengthened, and standards might be one area for improvement (Philibert 2004). Technology collaboration certainly should accompany or be part of future climate agreements. It remains doubtful that it should be the centerpiece.

5. Transforming Kyoto

As already mentioned, transforming Kyoto into a superior agreement would mean finding ways to make the agreement global and more effective in dealing with cost uncertainty. These points are linked; it would probably be easier to get developing countries involved in a global emissions trading regime on the basis of assigned amounts that would be exactly set on their business as usual, unabated emission trends, if these could be known with certainty. Thus, they would have everything to gain and nothing to lose from accepting targets. Similarly, the difficulties for some industrialized countries to accept their Kyoto targets are in part due to the difficulty of estimating the resulting costs with certainty—and without controversy.

5.1. Dynamic targets

One way to get around these difficulties might be to index assigned amounts on actual economic growth. Economic forecast will likely be part of the definition of assigned amounts. Deviation from this forecast could then lead, under "dynamic targets," to modifying these assigned amounts, so as to maintain roughly constant the "gap" between unabated trends and assigned amounts—and the required level of efforts. Such dynamic targets would not need to be "intensity targets," which may not be much more efficient than fixed targets in reducing the uncertainty on the required effort (Dudek and Golub 2003). Indexation could in fact take a wide variety of forms and be only partial (Ellerman and Wing 2003). One advantage of partial indexation might be to reduce the risk of "double pain" in case of unexpected economic recession and to drive a greater level of efforts (though allowing greater emission levels than with the original objective) in case of an unexpected economic boom (IEA 2002). One difficulty might be, especially in developing countries, the need to provide accurate measurements of economic variables such as gross domestic product.

While indexing assigned amounts might provide some relief on concerns related to cost uncertainties, they would only address the uncertainty arising from uncertain economic forecasting. Other sources of

uncertainty regarding abatement costs arise in particular from the uncertain evolution of availability and costs of various energy sources, and unknown future depth and speed of technical change.

5.2. Price caps

A more comprehensive way to deal with cost uncertainty might be the introduction of price caps into the international trading regime, as suggested by Pizer (2002) following a concept from Roberts and Spence (1976). This could take the form of making supplementary permits available in unlimited quantity at a fixed price—at the country level (for domestic entities) or at the international level (for countries). With a price cap, all emission abatement needed to achieve the quantitative commitments would be undertaken as long as the marginal cost of abatement is lower than some agreed price. If abatement costs reach this price, then economic agents and/or countries would be able to cover excess emissions with supplementary permits at the agreed fixed price. The price cap could be implemented either at international or domestic levels (IEA 2002).

A single international price is necessary for unrestricted global trading. Trading might still be possible, however, albeit with the risk of a loss of cost-effectiveness, if prices vary across countries. One solution to ensuring the integrity of the system is that net sellers do not make "use" of the price cap (i.e., their actual emissions remain below their assigned amounts). Thus, no Party or entity would "resell" supplementary permits. However, an agreement on a single price amongst countries of a relatively similar level of development, despite a varying willingness-to-pay, is not necessarily unattainable, as this price cap does not prevent differentiation in respective levels of effort and assigned amounts (Philibert and Criqui 2003).

5.3. Non-binding targets

A similar option for developing countries would be that of non-binding targets. These targets may provide—though emissions trading—an incentive for emission reductions, where sales could occur if (and only if) actual emissions are less than the targets (Philibert 2000). This option may be particularly attractive for developing countries. The existence of such an incentive, however, requires that other countries are potential buyers bound by firm targets.

There are different ways to ensure that countries with non-binding targets only sell emission allowances that exceed the coverage of their actual emissions. The most effective may be to require countries that have over-sold to purchase enough allowances to cover their actual emissions up to the level of the non-binding target—but not beyond (Philibert and Pershing 2001). A commitment period reserve, similar to that instituted by the Marrakesh Accords, would also limit inadvertent mistakes.

Non-binding targets are progressively gaining support, or at least interest, from various experts from industrialized countries (e.g., Bodansky 2003), newly industrialized ones (e.g., Chan-Woo 2002), or developing countries such as India (e.g., Dasgupta and Kelkar 2003) or China (e.g., Chen 2003), and are discussed, for example, amongst Annex I experts (Philibert et al. 2003).[3] The concept could probably be

3. Annex I of the UNFCCC includes the members of the Organisation for Economic Co-operation and Development (OECD) in 1992, plus countries with economies in transition (EIT). The Annex I Expert Group, whose secretariat is assumed jointly by the OECD and the International Energy Agency, oversees development of analytical papers for the purpose of providing useful and timely input to climate change negotiations.

adjusted so as to accommodate suggestions for defining the "conditional" targets by Pan (2003) or Viguier (2003). Finally, non-binding targets might be fixed or dynamic, country-wide or sector-wide. Dynamic non-binding targets would offer developing countries a greater chance to participate in international emissions trading despite possible economic surprises. Sector-wide non-binding targets would likely resemble the concept of sector-wide CDM suggested by various analysts (Samaniego and Figueres 2002; Chung 2003).

5.4. From cost-effectiveness to efficiency

While introducing the options of dynamic targets and non-binding targets for developing countries might be the key to make Kyoto broader, and thus cost-effective, it may not suffice to make it fully efficient.

Climate change is surrounded by many uncertainties on both benefit and cost sides. In the face of uncertainties, what concerns decision-makers are the expected benefits and costs, that is, the average of possible outcomes weighted by their probabilities of occurrence. Adding a price cap to a given target reduces its expected costs by "shaving" the costlier outcomes. It also reduces, however, its expected benefits: if costs reach the level of the price cap, more emissions, and thus more climate damage, will take place than originally sought with the quantitative target.

However, because marginal climate damage (or policy benefits) are roughly constant (over the policy interval), while abatement costs are not, expected benefits are reduced in a much smaller proportion than expected costs. This allows tightening the objective from the onset. At some point, expected benefits would be the same as originally envisaged—at much lower expected costs. The target might be tightened again, up to the point where expected costs are the same as with the original target—but with greater expected benefits. Between these two points there are an infinite number of quantified objectives that, thanks to the price cap, would produce higher expected benefits at lower expected costs than with the original target but no price cap. As a result, the introduction of price caps could allow any agreement to provide greater net expected benefits (as would, but to a lesser extent, dynamic targets for industrialized countries). Wide uncertainties on the policy benefits side probably prevent us from being much more specific on deciding the most efficient target and price cap levels.

Modeling exercises confirm this analysis. Lecocq and Crassous (2003) use a partial equilibrium model of the international allowance market to quantify the economic consequences of the main post-Kyoto quota allocation rules that have been proposed by various authors, and to assess how robust these consequences are to uncertainty on future population, economic, and emission growth. They show that, regardless of the rule selected, the prices of allowances and the net costs of climate mitigation—for all Parties—are very sensitive to uncertainty and in some scenarios very large. This constitutes "a strong barrier against the adoption of any of these schemes if no additional mechanism is introduced to limit the uncertainty on costs."

The possibility of abrupt climatic changes might modify this analysis, if only we had an idea of the greenhouse gas concentrations most susceptible to trigger off such "non-linear climate events."

Uncertain as they are, these possibilities do not really modify the rate of change of marginal expected benefits (Pizer 2003).

While some have seen the price cap as only a short-term "fix" to the current difficulties of the Kyoto Protocol (Jacoby and Ellerman 2004), it could be seen instead as a necessary long-lasting element for future agreements dealing with climate change. Rather than being "inconsistent" with each other, a quantity objective and a price cap would allow a system to spontaneously adjust in real time to the reality of the costs. It would progressively lead us to an efficient level of stabilization, which, given the many uncertainties on both benefit and cost sides, cannot be decided upon today. Decadal revisions of objectives might incorporate new scientific findings on climate change and new assessments of policy benefits, but the process would be too slow to make periodic commitments efficient given uncertain costs.

6. Conclusion

Criticism of the Kyoto Protocol is progressively focusing on the question of incentives for participation and compliance (Barrett 2003; Aldy et al. 2003). Radical alternatives, however, still have to prove they are negotiable, enforceable, and effective. Alternatives have their merits, and could well accompany future agreements at either domestic or international level or both; expecting these to be a substitute for the Kyoto Protocol would imply restarting all negotiations from the onset. On the other hand, the Kyoto Protocol as it stands today remains unsatisfactory for the long term. Keeping Kyoto unmodified is likely to provide a partial and weak response to the threat of global climate change.

Transforming Kyoto might be an efficient way to preserve the achievements of an already long and painful negotiating process, and keep the advantages of international emissions trading but alleviate the shortcomings of the Kyoto-style fixed and binding targets. A transformation of Kyoto, as illustrated in this paper, would help make it more cost-effective and more efficient. It would provide developing countries with real incentives to participate and comply (finance and technology transfer inflows through emissions trading), as well as reduce the disincentives for industrialized countries to participate and comply.

This transformation, however, cannot pretend to bring a definitive solution to the question of incentives. It results from the prisoner's dilemma structure of providing a global public good: all "players" (i.e., countries) have an incentive to "defect" from cooperating while only global cooperation can bring a better collective outcome. In the absence of a supra-national authority or a credible threat capable to modify that structure, however, there might be no definitive response. Identifying ways of reducing the disincentives for some and providing incentives to others might be the best that analysts can do. The rest belongs to policy makers, their sense of responsibility, and ultimately to the citizens of the world.

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