



## Making the Paris Process More Effective: A New Approach to Policy Coordination on Global Climate Change

### Summary

The Paris conference on climate change featured a new bottom-up approach to negotiating commitments. After years of failed efforts to create integrated, top-down agreements that are acceptable to all nations, this new approach is auspicious.

Decomposition of the grand problem of climate change into smaller units is a crucial first step toward effective cooperation. It allows flexibility for individual countries to tailor their own best strategies. It allows small groups of countries to work together on focused problems, rather than requiring that all nations sign on to the same global undertaking. And it allows, in time, diplomats to stitch together more effective global bargains from these many decentralized efforts.

At its best, the Paris Agreement will provide an umbrella under which these many efforts can proceed and start a process of experimentation and bargaining that will lead to more effective international coordination. Whether that positive vision for the Paris Agreement is actually realized depends on building the institutions needed to promote experimentation, decentralization, and learning. On this front, there are many warning signs. The road to Paris largely ignored the fact that decentralized, flexible systems of policy coordination only work if they are backed by effective review mechanisms. Diplomats continue to be focused on ambitious emission goals that are wildly at odds with what real governments can actually achieve through a flexible, decentralized process of policy coordination.

Fixing these problems requires an active after-Paris process to improve the quality of the pledges that countries are making as well as the institutional machinery needed to review and assess which policies actually work. Failure to build those institutions could relegate the Paris Agreement to yet another in the long series of moments over the last 25 years in climate diplomacy that, in time, have little real impact on solving the climate problem.



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Climate change has proved to be one of the hardest problems for societies to address. The dangers of unchecked climate change are huge and growing.<sup>1</sup> Yet the policies needed to cut emissions are seen as expensive, with immediate costs that can harm economic competitiveness. Effective policies will transform the global economy—affecting core industries such as energy and agriculture—which is no easy task.<sup>2</sup> Not surprisingly, politicians and diplomats have been good at talking about bold policies, but globally, emissions continue to rise.<sup>3</sup>

A new approach to international policy coordination was displayed at the climate summit in December 2015 in Paris. The Paris meeting—officially the 21st Conference of the Parties to the United Nations Framework Convention on Climate Change (UNFCCC)—marked the first time in 18 years that diplomats came to a major meeting on climate change and left successfully with a new agreement in hand, the Paris Agreement.

This success is rooted in many factors—new science, new political attitudes, and savvy political strategies. But a key element in the success of Paris was a more flexible system for crafting international agreements. Unlike top-down systems for bargaining in which diplomats agree on centralized commitments that apply to all members of a binding international treaty, the new approach is bottom up. It allows flexibility for countries to make their own pledges for policy efforts. Formally these pledges are known as Intended Nationally Determined Contributions (INDCs).<sup>4</sup> The Paris process also allowed small groups of countries to focus on particular topics rather than requiring all policy coordination to be integrated within a single, universal legal undertaking. In Paris, for example, there were important new agreements by relatively small groups of countries to increase public-sector research and development. Similarly, there were new commitments to protect forests and also new pledges by small groups of countries on sundry other topics.

We see this shift as auspicious. But it could easily fail in the coming years without the right institutional framework. Success in Paris should be seen as an early milestone in a long process. Making that process effective will require an active effort, that began in Paris, to build the procedures and institutions that will be needed to make bottom-up efforts effective.

Work is needed on four fronts:

1. **The system for pledging must be improved.** Today's INDCs are a grab bag of promises and visions—some are realistic, others not. Yet no mechanism is emerging that would allow countries to review each other's INDCs to determine which are being implemented. Building that review system will not be possible entirely within the UNFCCC system, where decisions are made by consensus. Volunteer governments and nongovernmental organizations (NGOs) can help by providing a first round of reviews, focused not on the inadequacy of existing pledges, which has been a perennial topic in NGO reviews, but on what is being learned through the pledges about policies that work

as well as policies that do not. The United States, China, and the European Union (EU) could play a pivotal role in this review process by nominating their own policies for the first round of review and setting up an intergovernmental process outside the UNFCCC but supportive of the UNFCCC's goals to show how serious reviews can be done in nonthreatening ways.

2. **The intergovernmental process must continue to shift toward flexibility and experimentation.** One of the central challenges in climate diplomacy is that governments do not know which policies will work best, and they do not know what they can commit to. A new round of INDCs should begin after Paris that includes information not just on what governments are actually doing and promising—which is the focus of current INDCs—but also on what they are trying. Information is needed not just on the policies that governments think will work but also on high risk policies that might fail. The same is needed for international institutions, such as development banks, that are playing supportive roles: more experimentation and better documentation of outcomes. Indeed, some of the most important policy innovations—in climate finance and in protecting of forests, for example—have come from policy experimentation.
3. **Decentralization is crucial.** Over the last decade a wide array of “clubs” of countries, NGOs, and firms emerged. Most of the real innovation and action comes through these clubs, not the universal UNFCCC process. In Paris, albeit not directly referred to as clubs, it was crucial that the final agreement and COP decision made room to recognize and give solid footing to cooperative actions amongst smaller groups of actors. At the same time, the clubs themselves must provide more information to allow assessment of which efforts are working. Decentralization along with that information will make it possible for diplomats to stitch together diverse clubs and INDCs into future, stronger international agreements. Absent that information, this decentralized approach could simply devolve into chaos and inaction that masquerades as real policy.
4. **It is crucial to recognize that action on climate change will not emerge solely through altruism.** Governments, firms, and NGOs must see, as well, the prospect of harmful consequences if they fail to cut emissions. These extreme penalties will require, among other things, the ability of countries to use trade measures to punish nations that do not make comparable efforts. After Paris, an urgent and long overdue effort must begin—led by countries that are already doing the most to control emissions—to experiment with different trade measures and their compatibility with the World Trade Organization (WTO). Protecting the climate while not running roughshod over important WTO legal standards and the accomplishments of the WTO is possible but not an easy task. The best solution is not obvious today.<sup>5</sup>

## Background

The logic of getting countries to work together to provide the global public good of a safe atmosphere demands global coordination to solve free-rider problems, which occur when an actor who does not contribute to a public good benefits from the actions of others. The logic of tragedies of the global commons demands coordination to reconcile the interests of those who use it. But coordination can emerge in different ways. It can result from integrated, purposeful efforts to align the behaviors of key players—top down. Or it can emerge in a more decentralized fashion—bottom up—from a myriad of more localized and focused efforts at problem solving. Some of these decentralized experiments will prove effective and can diffuse widely. Some of the experiments worked out in one area—say palm oil deforestation—can be applied as well to effective problem solving in adjacent areas, such as stopping deforestation from the production of soy and beef. Some will be unique solutions to their own particular niche.

The top-down world has long been assumed to be the best strategy for solving serious global problems. It takes for granted which players should be at the table and that those players know their interests and capabilities. When the United States and the Soviet Union set out to cap the volcano of strategic armaments, they did not rely on lots of decentralized actors to figure out what might work. Instead, those governments, represented at the highest levels, sat down and bargained directly. The result was integrated, top-down treaties focused on aligning interests where that was possible and enforcing key obligations where that was necessary. Similarly, the keystones in international economic coordination all emerged from top-down bargains, most famously at Bretton Woods, where the key actors sat around a table and crafted major economic institutions.<sup>6</sup> Since then, most trade negotiations have followed that same model, with each round of talks beginning with an agenda and each member of the talks agreeing, ultimately, to a single, integrated undertaking. The assumption that top down is best pervades the diplomatic community, as reflected in the many grand efforts to reach global bargains in trade, human rights, and the environment.

While prized as the best way to solve global coordination problems—because it is strategic, comprehensive, and integrated—top down is very demanding. It can only succeed if the key actors know ahead of time where the system should be going and how best to get there, which in turn requires that they understand their interests and can agree on some distribution of costs and benefits that reconcile them. Where critical information is lacking, or the complexity of deal making is overwhelming, essential players may be unwilling or unable to coordinate their behavior. Thus bottom-up strategies have long been a fallback position in international cooperation. When the United States and Soviet Union could not agree top down to stop atmospheric nuclear testing, a fallback, tacit bargain to stop that behavior emerged: the Soviets and then the Americans just stopped the practice for a time.

Most diplomats seem to treat strategic bargaining with a common, integrated purpose as plan A. Failing that, a distant plan B envisions that countries and other key players cobble together what they can, where they can, and make progress. In this policy brief, we argue that conceptually, the ranking of plans depends on the context. Integrated bargaining makes sense in settings where uncertainty is low—prior knowledge of means, ends, and preferences is reasonably complete—and bargaining costs are correspondingly low. Where uncertainty is high and actors, unsure of what outcomes are possible, are unable to reliably specify their own interest and do not understand with precision the interests of others, experimentation and learning are better means of advancing.<sup>7</sup>

This same debate has unfolded in climate change over the last 25 years. Plan A strives for a strategic, integrated, legally binding agreement focused on the problem of global warming. This approach treats the United Nations as having a monopoly on legitimacy and relies on the UNFCCC as the exclusive venue for diplomacy. Diplomats have invested massively in plan A, and many theorists have gone along for the ride, increasingly to demonstrate why the misalignment of incentives has led to diplomatic efforts that are bound to fail.<sup>8</sup> A similar focus on integrated solutions has emerged conceptually from the broad fields of earth system science and sustainability science, which have emphasized that diverse environmental and social problems are interlinked, leading to the need for policy strategies that engage the whole planetary community. Rooted in the logics of global public goods, tragedies of the commons, and global interconnectedness of systems is an argument that there has been massive default support for policy strategies that emphasize global solutions to global problems.

For many years, the faults of plan A have been surfacing—most strikingly in 2009 at the 15th Conference of the Parties to the UNFCCC in Copenhagen, Denmark, when countries even failed to formally accept a plan for further negotiations. Plan B, a bottom-up strategy, has since emerged to fill the resulting vacuum. In late 2015 in Paris, this bottom-up mode of diplomacy was on full display as governments adopted a broad umbrella agreement under which a plurality of subuniversal and unilateral initiatives are slotted.

Our thinking about bottom-up strategies for policy coordination fits squarely within a growing academic and policy literature on the benefits of decentralization. The underlying idea is the same, although the language varies. Some scholars talk of “building blocks.”<sup>9</sup> Others focus on “clubs” of countries.<sup>10</sup> Some have long emphasized the merits of decentralized policy efforts launched within national governments, such as states and cities.<sup>11</sup> Others focus on the benefits of tackling particular pollutants, such as soot.<sup>12</sup>

The common thread in this literature is the idea that self-reinforcing cooperation can emerge within small groups of self-interested actors and, under favorable conditions, spill over into more encompassing problem solving. A complementary literature on polyarchy and regime complexes in climate change suggests how these many subuniversal efforts—from

clubs of countries to domain-specific regulation—can produce a decentralized regulatory system.<sup>13</sup>

## Why Experimentation Matters

Climate change is marked by two intertwined sets of characteristics that make integrated, top-down bargaining all but impossible.

The first set is political: the fragmentation of power and authority in the international system, and the corresponding absence of a hegemon to impose order on actors with sharply divergent interests.

The second set is cognitive: uncertainty about the feasibility of achieving policy outcomes, such as lower emissions, at acceptable costs. This uncertainty explains the inability of any country or firm that takes deep decarbonization of emissions seriously to predict what behavioral, technological, and regulatory commitments will prove most effective.

This shroud of uncertainty about the actual burdens of various commitments exacerbates the bargaining problems; the bargaining problems in turn heighten the sense of uncertainty as key parties cannot anticipate—and must fear—how counterparts will react to the frustration of expectations.<sup>14</sup> If it is unknown at the time of bargaining which commitments can be fulfilled and how others will respond if some are not, bargaining among parties with sharply different interests will be highly complex and cautious to the point of paralysis. Risk-averse players will prefer deadlock to codifying ambitions that may prove too costly or simply unattainable.<sup>15</sup>

Decentralization, decomposition, and experimentation can help break this vicious circle. Here we draw on the logic of experimentalist governance (XG), a concept that was developed in other settings but that applies particularly well to the cognitive, administrative, and political challenges in climate change.

XG shows how actors facing uncertainty can jointly explore practical ways to realize their goals. And through this iterative process, the underlying interests and preferences of the actors shift toward more cooperation while goals are adjusted in light of evidence about what is feasible.<sup>16</sup> XG emphasizes that regulator and regulated rarely know what is feasible when they begin to tackle a problem under uncertainty; it prizes a diversity of efforts rather than monopoly. It identifies and continuously improves on solutions that work—and pushes them to scale—while siphoning resources away from those that do not.

Applied to climate change, XG suggests that progress will arise when policy efforts shift from focusing mainly on the massive, grand challenge of decarbonization—a task so large that it is cognitively, administrative, and politically unworkable—into smaller manageable units. Those could include reducing the deforestation associated with increased cultivation of palm oil, soy, or sugar, or the emission of greenhouse gases produced by combustion in vehicles of electric power generation—units that governments, firms, and NGOs have begun to understand.

Problem solving within these units can arise when there is at least a thin consensus among actors regarding an urgent problem: no sharp disagreement over fundamentals (that this particular problem exists and is urgent), but no capacity to formulate a comprehensive and detailed plan of attack, to say nothing of monitoring it. In other words, the actors recognize that there is a problem and that it is so fraught with uncertainty that familiar problem-solving strategies cannot be applied to it. Collaborative exploration is therefore preferable to inaction. In addition, there must be civil society actors—firms and their trade associations, NGOs of various kinds—as well as regional or municipal public officials with local knowledge of the problem and at least embryonic ideas about solutions or where to look for them—actors, in other words, with practical knowledge of the problem based on continuing, immediate experience; knowledge not yet captured in consolidated theory or reflected in prices.

Even the thinnest consensus on problem definition suffices for articulation of an initial, provisional goal. Such goals, in the next step, lead various groups of ground-level actors to the responsibility for achieving the goal. They are authorized to search for and develop solutions as their experience suggests, but on condition that they report results to the convening authority. The results are then compared through various forms of peer review so successes can be quickly identified and if possible generalized, failures rejected early on, and faltering efforts corrected in view of the advances of more promising ones. Where experience warrants, the goals themselves are revised—targets tightened, relaxed, or extended to new domains—and the revised goals are the starting point for the next round of local exploration.

How can a process such as this gain traction if there are veto players that might not, on their own, want successful solutions to emerge? And why won't XG simply lead to a chaos of decentralized efforts and partial solutions that could be worse than no effort at all?

The logic of XG finds the answers in two places. One is the threat of a penalty to players that refuse—what's known in the literature as a penalty default. A penalty default is a draconian sanction, such as exclusion from a valuable market, typically imposed after persistent failure to provide or make good-faith use of information necessary for joint problem solving. Penalty defaults can come from many places, such as normative pressure on firms that fear harm to their brand. They can emerge from law, for example, penalties under national legislation. And they can emerge from hierarchy when powerful players punish others, for example, the use of economic sanctions. Often they combine, such as when normative pressure, legal standards, and sanctioning by powerful countries pushed other countries to improve their protection of wildlife.<sup>17</sup>

The other source of answers comes in the tangible benefits from integrated solutions over time. Indeed, a flaw in the existing literature about building blocks and clubs related to climate change is the excessive emphasis on the benefits of decomposition but not the need for reintegration. In practice, XG is a blend of top down and bottom up. In XG, higher level or more comprehensive understanding is

corrected in light of local experience and vice versa. XG regimes therefore require an institutionalized center, even if its role is facilitative—organizing the discovery, pooling, and evaluation of information—rather than directive.

The requirement to articulate reasons for decisions across levels makes it necessary, moreover, to articulate assumptions that would otherwise remain unspoken in the background. So XG, unlike Elinor Ostrom’s work on governing the commons and many other institutional arrangements that rely on local knowledge, does not operate tacitly.<sup>18</sup> Instead, it actively fosters explicit learning. We call this form of governance experimentalist precisely to underscore the way it uses the impact of problems to reveal shortcomings of habits and routines and to prompt exploration of alternatives.

These features, especially against the backdrop of penalty defaults, increase the dynamic capacity of XG regimes to extend their scope. Organized centers, adept at superintending joint exploration, develop economies of scope: the more they move from domain to domain, as new problems appear, the easier it becomes to move yet further afield. Reason-giving requirements produce explicit learning, some generalizable. A growing stock of generalizable knowledge and flexible, institutionalized capacity for practical problem solving lower the cost of policy action even in the face of increasingly difficult problems, reducing the risk of defection as coordination becomes more demanding.

Thus while XG stresses decentralized decision making and evaluation of costs and benefits as in the clubs and building blocks literature, it differs from these in three ways. The first concerns the nature of the relevant incentives. Clubs form when private actors conclude that provision of some good has benefits to each in excess of costs.<sup>19</sup> XG, in contrast, stresses that actors often “volunteer” to participate in joint activities only when faced with the threat of draconian penalty defaults, such as exclusion from a valued market.

Second, where the theory of clubs presumes that the nature and benefits of club goods are self-evident—firms that choose to abate can in principle adhere to a code specifying how to do so, and their choice is motivated by the known returns to adhesion—actors in XG face uncertainty regarding such self-evidence: XG organizes joint exploration of how to abate; this exploration yields information about possibilities, including especially costs, unknowable ahead of time; and these findings can reshape calculations of interest.

Third, the institutional endowment of XG regimes offers an explicit theory for how cooperation that might begin in small groups focused on decomposed problems will spill over to wider and deeper cooperation as new information makes regulatory action easier and the benefits more apparent. Most of the building blocks and clubs literature has not offered a dynamic theory to explain how bottom-up cooperation does not get stuck at the bottom.

In a larger study that we are writing in parallel with this policy brief, we detail more fully how XG can work, with more attention to the many forms of penalty defaults and

how information gained through national and sectoral experiments can make it possible to develop more effective international governance.<sup>20</sup>

In that study, we also use the XG framework to reexamine some widely known success stories in environmental governance, ranging from how California cleared its air to how nations are slowing deforestation to the wildly successful international accords on the ozone layer. In the ozone case, for example, what in retrospect looks like a relatively easy task of international coordination was actually beset by a wide array of problems surrounding the speed and ease of moving from ozone-depleting substances to more benign alternatives. Additional challenges were rooted in lack of information surrounding the cost and method for compensating developing countries for their mitigation programs. These problems were solved through a sophisticated system of international institutions, including technical options committees, that helped to set provisional goals, adjust goals in light of experience, and develop credible information on the cost and feasibility of deep cuts in ozone-depleting substances.<sup>21</sup> The Montreal Protocol on the Ozone Layer also helped to catalyze an approach to setting commitments that was sensitive to the political vagaries of each country, allowing countries to adjust their national commitments, within limits, when viable substitute chemicals were not yet available.<sup>22</sup> Similar challenges, albeit on a much grander scale, exist today for the problem of coordinating policy on climate change.

## Implications for the Climate Change Regime After Paris

Applied to climate change, XG suggests that decomposition of the global climate-change problem into building blocks is the first step. But decomposition must be organized in a way that induces firms and regulators to search for and identify effective solutions and then apply those solutions to other areas and other countries. The theoretical logic of XG and the practical application in the Montreal Protocol offer some insights into how this might be done.

XG depends on an institutionalized process for setting provisional goals, then reviewing, revising, and generalizing them as efforts at implementation warrant. The present system of climate-change diplomacy is not fully capable of this.

Currently, countries articulate their efforts to realize the goals of the UNFCCC in pledges, the INDCs. Some proposals for bottom-up diplomacy use these commitments as a starting point. But at present, the INDCs are a mess. Absent any standards or format for presenting goals and results in INDCs, some countries mostly use them to celebrate their plans and accomplishments. Few bother to do even that. Nearly all the INDCs are being submitted late, with no opportunity for real learning and comparison. A stronger system of pledging should be a top priority after Paris.

The system for reviewing pledges within the UNFCCC is no better. There are recent proposals to create a strong review mechanism.<sup>23</sup> But agreeing to an effective alternative

within the UN system is likely to be impossible so long as agreement requires, as now, unanimity.

Given these limits, there should be greater emphasis on what forerunner countries are doing outside the UN process, since those leading efforts are the main source of new information about what might work (and not). Countries (and sectors of industry or agriculture) that see their actions as good examples for others to follow and do not fear—indeed want to learn from searching—other countries could volunteer themselves for extensive peer review and active XG-style learning. Candidate countries include, among many others, Denmark, Ireland, Norway, and Uruguay, all of which are leaders in applying XG methods to environmental problems. The EU is likely to play an especially prominent role as it is a leader in the application of XG to environmental problems within its borders and in the use of penalty defaults to achieve extraterritorial effects.<sup>24</sup>

China could play a pivotal role in allowing its INDC to be reviewed and exploring ways to implement further actions. While China will be wary of doing that in a UN forum, other venues might be more comfortable, such as the recently established US-China arrangements on climate change. In return for tangible benefits, China will subject its national policies to international scrutiny, as it did with accession to the WTO and, less conspicuously, by inviting the World Bank and the International Energy Agency to review its economic and energy policies.<sup>25</sup>

NGOs could also play an important role in building review mechanisms of their own as complements and backstops to the intergovernmental process. Many NGOs are gearing up to assess the INDCs. NGOs already actively monitor important areas of climate policy such as Reducing Emissions from Deforestation and Forest Degradation as well as Forest Law Enforcement, Governance, and Trade initiatives on land use and forestry, and industry-oriented initiatives to control methane emissions.<sup>26</sup> NGOs can perform reviews and, under some circumstances, threaten penalty defaults against firms and governments that do not participate.

These efforts to improve goal setting and review should go hand in hand with exploration of new institutional designs, particularly for funding efforts by developing countries. As was the case with the Montreal Protocol, the best way to fund projects is not clear at this time. As mechanisms such as the Green Climate Fund take shape, it will be important to encourage experimentation, perhaps with a separate funding window to test and evaluate experimental schemes. Many innovations in funding, such as the World Bank's new reverse auction for funding projects to cut methane, can make finance much more effective over time.

Stronger and more credible penalty defaults will be essential as well. Future pledges of action should include announcements by countries to impose costs on those states that do not make equivalent efforts at abatement. The current INDCs, by contrast, studiously ignore this vital incentive for deeper cooperation. Indeed, asymmetries in power can be enormously helpful in advancing the goals of the regime.

Trade sanctions and border tariff adjustments will be a particularly important incentive to discourage free riding and encourage deeper cooperation. Experimentation will be needed to identify practical ways to use trade measures. Several studies have shown how existing trade law would allow the use of trade measures.<sup>27</sup> But the law is ambiguous on many critical issues, such as which kinds of trade measures are legal and how broad a coalition of sanctioning countries is required for the effort to be treated as legitimate.<sup>28</sup> Indeed, a central challenge in developing and implementing practical trade measures will be to take advantage of the ability to sanction in small groups, which can create an incentive for climate clubs to deepen their efforts, while also tempering the risks of unilateralism. One lesson from the Montreal Protocol experience is the need to link trade measures to practical technical assistance according to the principle of common but differentiated responsibilities—to offer carrots to countries that want to cooperate and sticks to those that refuse.

## Conclusions

Success in Paris reflects many factors. The evidence about climate change dangers is growing stronger. Major emitters have become more willing to adjust their policies. Even large emerging-economy countries such as Brazil and China—countries that have long been reluctant to take on commitments to control emissions—are doing more than in years past. Political leaders and activists have become much savvier about linking climate change to other topics, such as local air pollution, that their constituencies care more about.

A big part of the looming success, however, is rooted in a new mode of diplomacy. For most governments and analysts steeped in the politics of climate change, bottom up has been more a fallback position than a strategy. It is a reluctant choice after years of failed efforts to craft global solutions. It is defined more by what it is not—the alternative to a top-down effort—than by a clear understanding that decentralized governance, by fostering on-the-ground problem solving, may be able to address problems for which more encompassing regimes are presently impractical.

The shift to this new flexible, experimentalist approach should be embraced only if the conditions are met to allow for success. A difficult first step has been taken—old ideas have been abandoned and new approaches adopted. But much more difficult steps lie ahead, especially in this crucial period after Paris.

This is not the first time such an approach has been tried. Indeed, early instances of bottom-up diplomacy on climate change were advanced as pretexts or diversions, as when the administration of US President George W. Bush tried to cobble together a coalition of willing supporters for an Asia Pacific Partnership after withdrawing from the Kyoto Protocol in 2001. The G-20 embraced climate change as one of its earliest topics, but in the years since it has done almost nothing to advance the agenda. Other clubs, including the Major Economies Forum on Energy and Climate, have been beset by a high ratio of talking to doing. Advocates for aggressive cuts in emissions will be

skeptical that this time is actually different—that bottom-up, flexible, and club approaches to policy coordination will generate much beyond the status quo.

In theory, XG is well suited to the climate problem. There is an emerging consensus on the need for action and growing political support even for costly policies. Political systems, however, face huge problems in identifying policies that actually work and knowing, in advance, what can be sustained politically. Those cognitive, administrative, and political obstacles are particularly great in the countries that matter most—the very large emitters, such as China, India, Brazil, and the United States, whose participation is essential but where long-term political support and the administrative feasibility of deep cuts is in question.

In practice, whether XG actually helps governments manage the climate problem depends on whether they build the needed institutions. XG does not automatically generate effective governance. Penalties for failure are essential. Revisable goals are essential, as are mechanisms for connecting local experience to global goals. Institutions that can help focus on the right lessons from experimentation are essential.

The road to protecting the climate will be a long one. An experimental approach is not just the best way to approach the climate problem—it is also a slow one. Perhaps the greatest enemy of a wise XG approach will be the continued hope that something faster, more aggressive, more centralized, and more effective is possible. The last 25 years of dithering on climate change should be ample evidence that it is not.

## Endnotes

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