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Policy Surveillance

Its Role in Monitoring, Reporting, Evaluating and Learning

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12.1 Introduction

Successfully mitigating the risks posed by climate change will necessitate substantial efforts by consumers, businesses and governments in nearly 200 countries to change their activities that are contributing to greenhouse gas (GHG) emissions. Doing so will require surmounting a collective action challenge; mitigating GHG emissions produces a global public good. Thus, the sources of these emissions have insufficient incentive to abate them (Barrett, 2003). In the multilateral sphere, there is uncertainty about the credibility of commitments, reflecting questions on whether a country can implement policies that alter the behaviour of private agents (e.g. emissions abatement) as well as questions on the ability to observe a country's performance with respect to its commitment (Hafner-Burton, Victor and Lupu, 2012). Mitigation efforts at lower scales of governance – by states and provinces, businesses and even universities – have resulted in commitments to reduce emissions and implement mitigation policies (see Chapter 1). Such self-organised efforts may reflect how local impacts can drive lower-scale mitigation initiatives (Ostrom, 2010), but uncertainty also characterises the extent and efficacy of these efforts.

An extensive academic literature illustrates how transparency can reduce uncertainty and mitigate incentives to deviate from a commitment, and thus enable a set of reciprocal actions to deliver on a public good. This is all the more important given the prominent role of voluntary commitments emerging through various forms of governance, including the evolution of pledge-and-review in the international climate policy architecture. This highlights the needs and opportunities for a robust system of monitoring, evaluating and learning of mitigation performance; in short, climate policy surveillance.

Climate policy surveillance refers to the generation and analysis of information on the existence and performance of GHG mitigation policies and measures, such

as emission levels and estimated reductions, costs and cost-effectiveness, potential cross-border impacts and ancillary benefits. In effect, the scope of an effective surveillance system would reflect the interests of various stakeholders and governments that demand information. This would require reporting and monitoring of relevant climate policy performance data, as well as the analysis and evaluation of those data. Doing so can facilitate learning about the efficacy of mitigation efforts and subsequently build trust that countries, subnational governments, businesses and others that have made commitments to combat climate change are delivering on them. This surveillance can be institutionalised in international agreements, but it can draw from the provision and analysis of data by national governments, businesses, civil society, academics and others. Polycentric climate policy surveillance can take two general forms: (1) transparency of a polycentric system of emission mitigation efforts; and (2) multiple, independent transparency efforts that may feed into a more centralised mitigation regime (e.g. the United Nations Framework Convention on Climate Change [UNFCCC]). These are not mutually exclusive, and the emergence of the former could influence the implementation of the Paris Agreement's transparency regime.

Signalling the seriousness of commitment is often a condition for securing agreement among parties. Schelling (1956: 288) suggests that transparency and publicity of a party's ex-ante pledge and ex-post outcome can enhance the credibility of commitments. The 'publicity' Schelling called for can be established by the 'information structures' created by the rules of international institutions (Keohane, 1998). The provision of information could also come from non-profit organisations, academics, business stakeholders and other non-state actors (Aldy, 2016a). Transparency can facilitate 'naming and shaming' by other parties to an agreement, by interested stakeholders, by the media and by others. The prospect of adverse reputational consequences for deviating from an agreement or a public commitment may promote compliance (Chayes and Chayes, 1991; Simmons, 1998). Even without an enforcement mechanism, information-generating institutions may 'contain deviance within acceptable levels' (Klabbers, 2007: 1004).

Barrett (2003: 150) notes that the 'incentive for parties to deceive creates an incentive for others to monitor'. Indeed, any entity with an interest in ensuring that promised emission mitigation efforts are delivered has an interest in monitoring these efforts, as well as an incentive to experiment with alternative surveillance techniques (Ostrom, 2010). The probability of detecting deviations from an agreement increases with the transparency of the regime, which can thus reassure those predisposed to comply and deter those considering deviation (Levy, Keohane and Haas, 1993; Chayes, Chayes and Mitchell, 1998).

The iterative nature of multilateral climate negotiations provides an opportunity for transparency to inform subsequent rounds of negotiations. First, information

can promote compliance in repeated games. In his discussion of monitoring in international environmental agreements, Barrett (2003: 284) notes that ‘transparency is of fundamental importance in a repeated game’. Levy *et al.* (1993) also note that ‘effective monitoring is a condition for sustained cooperation’. In economic policy contexts, Simmons (1998: 81) observes that ‘[g]reater transparency and opportunities for reciprocity also enhance compliance where there is repeated play within a small group, for example in the EU or among the large countries in the [World Trade Organization]’. In common pool resource management, Ostrom (1998: 10) emphasises that ‘all reciprocity norms share the common ingredients that individuals tend to react to the positive actions of others with positive responses and the negative actions of others with negative responses’. Second, structuring iterative negotiations around periodic information collection and analysis could inform the setting of goals and their implementation in subsequent rounds of negotiations.

Given the repeated nature of mitigation pledges envisioned under the Paris Agreement, verifying countries’ past performance can increase confidence and build trust that they will deliver on future rounds of pledges (Chayes and Chayes, 1991). Moreover, experimental evidence suggests that a transparency mechanism could increase both the ambition of pledges and the realised mitigation performance relative to a regime without review (Barrett and Dannenberg, 2016).

To deliver on the potential for global climate change efforts to attain the goals set in the Paris Agreement, however, climate policy surveillance will need to improve considerably. Section 12.2 discusses the experience with policy surveillance – and the substantial shortcomings – under the UNFCCC. The design of more effective climate transparency can benefit from the experiences implemented through various forms of governance in other, related contexts. Section 12.3 presents four mini-case studies of transparency practices: International Monetary Fund (IMF) Article IV consultations, the Group of 20 (G20) fossil fuel subsidies agreement, the US government’s retrospective review of regulations and industries’ voluntary reporting and disclosure through the CDP (formerly, the Carbon Disclosure Project). The selection of these case studies reflects an interest in: (1) illustrating transparency through a broad range of governance forms, from the multilateral to the business level; (2) drawing insights from reporting only as well as reporting subject to independent analysis schemes; (3) providing both positive and negative examples of review and surveillance; and (4) presenting examples of review schemes that each play at least a modest role in the existing structure of polycentric governance.

This chapter closes with a discussion of how monitoring, reporting and evaluation may in the future occur through more polycentric frameworks. In particular, it identifies opportunities for civil society, academics, business stakeholders and

international organisations outside of the formal UNFCCC process to contribute to and enhance the rigour, accountability and legitimacy of policy surveillance. These conclusions emphasise complementarities in policy surveillance at different levels of governance – some of which have self-organised in the vacuum created by the weak UNFCCC transparency regime – as well as how other institutional approaches could address gaps in the multilateral climate transparency regime.

12.2 Shortcomings in Climate Policy Transparency

The opportunities for polycentric transparency and policy surveillance to make valuable contributions to climate policy reflect, in part, the shortcomings in multilateral climate policy transparency. The infrequent reporting of emissions, the incomplete information on mitigation policies and the absence of analysis and review of emission outcomes and policies have characterised the UNFCCC since the early 1990s (Aldy, 2014a, 2016b). The Convention established vastly different standards for reporting on emissions and national policies for industrialised (Annex I) countries and developing (non-Annex I) countries. In the first two decades of the UNFCCC, most developing countries had presented no more than two emission inventories (Breidenich and Bodansky, 2009). For example, China submitted information on its GHG emissions inventory for 1994 in its 2004 national report, and for 2004 in its 2012 national report. A once-per-decade snapshot of emissions, with nearly a decade-long reporting lag, is clearly inadequate to inform negotiations, policy design and investment decisions.

Developed countries submit annual emission reports, pursuant to established guidelines subject to expert review. By contrast, the infrequent developing country emission reports submitted before 2014 were neither subject to the same standards as developed countries nor underwent expert review (MacFaul, 2006; Breidenich and Bodansky, 2009). Even the regular reporting of developed country emissions was insufficient to characterise the effectiveness of emission mitigation policies in these countries (Thompson, 2006a; Ellis and Larsen, 2008; Breidenich and Bodansky, 2009). The reviews of industrialised countries typically draw, in an ad hoc nature, from government-sponsored experts (academia, business and government sectors) to conduct a review, with occasional in-country visits. The pre-2014 developed country national reports were so incomplete and inconsistent that it was not possible to credibly assess the impacts of mitigation policies across countries or even compare efforts *within* a country over time (Thompson, 2006a; Aldy, 2014b; Ellis and Moarif, 2015).

Given the poor track record on climate transparency, the multilateral community has aimed to enhance reporting and review. The Copenhagen Accord and Cancún Agreements included a variety of mitigation pledges, such as emissions targets

relative to a base year, emission reductions relative to a business-as-usual forecast, improvement in the emission-to-gross domestic product ratio, as well as sector-specific policies and goals. While this heterogeneity of pledges may facilitate broader participation (also evident in the Paris Agreement), it may present challenges in assessing and comparing mitigation efforts absent in a robust transparency regime. These two agreements required biennial reports by developed countries and biennial update reports by developing countries (Ellis and Moarif, 2015). These reports feed into a consultative process for peers to discuss individual nations' domestic emission mitigation programmes. Again, the standards differ considerably between developed and developing countries. The Annex I nations have standardised reporting templates and all met their initial deadline of December 2013 for biennial update reports. By contrast, non-Annex I countries have substantial discretion in what and how information is presented in their reports, which undermines comparability. More importantly, the compliance with the due dates for the biennial reports has been low. By December 2016, the due date for the second biennial update reports, less than one-quarter of all developing countries had submitted their first biennial report (UNFCCC, 2017). China submitted its first report in 2017.

The Paris Agreement calls for further transparency efforts by building on these efforts. Significant improvements in policy evaluation will be necessary. This will be a challenge, given that some developing countries lack the institutional capacity to monitor emissions, evaluate programmes and policies, estimate emission reductions across various sources and sectors and report this information. For example, the 2013 United Nations Environment Programme Emissions Gap report notes that 'serious information gaps preclude comprehensive assessment of several countries' emission trajectories under current policies (UNEP, 2013: 12). Likewise, Ellis and Moarif (2015: 4) conclude that the 'lack of complete and/or timely information from a large number of countries prevents assessments of progress towards collective commitments or goals'. Moreover, UNFCCC reviews of developed country emission mitigation programmes have provided little useful information about policy efficacy as well as lessons and/or recommendations for policy export to other nations. The credibility and trust necessary for the Paris pledge-and-review framework to deliver more mitigation ambition over time will depend on countries understanding not only their peers' emission levels but also the impacts of the mitigation policies and programmes. This kind of policy evaluation could benefit substantially from inputs and contributions from non-UNFCCC processes. The next section presents several case studies and from them derives lessons for how a more polycentric approach to transparency could address these needs.

12.3 Surveillance in Action: Insights from Four Case Studies

This section briefly describes each of the four transparency case studies. The following section synthesises the key lessons learned from them.

12.3.1 International Monetary Fund Article IV Consultations

The IMF undertakes country-, regional- and global-level economic surveillance (IMF, 2001; Schäfer, 2006). Individual country surveillance occurs annually under so-called Article IV consultations. The IMF conducts regular surveillance of the global economy – in effect, an assessment of the aggregate impact of various economic, monetary and fiscal policies of the member countries – and publishes the World Economic Outlook typically twice per year. While these reviews focus on economic policy, they have occasionally addressed climate-related policy reforms, such as fossil fuel subsidies (IMF, 2011).

The IMF consultations have enhanced monitoring and analysis capacity within countries, produced economic data for review and enabled policy review. As a result, scholars focused on climate policy have considered the IMF review as a gold standard worthy of emulation in the climate context. For example, Victor (2007) called for a climate change review mechanism based on the IMF model. Aldy (2013) also suggested that a formal institution with permanent staff could implement a transparency mechanism for the global climate policy regime. Such an institutional capacity could provide confidence in the review mechanism as a function of its credibility, competence and independence.

12.3.2 G20 Fossil Fuel Subsidies Agreement

At the 2009 Pittsburgh G20 summit, the leaders of the 20 largest economies agreed to ‘phase out and rationalise over the medium term inefficient fossil fuel subsidies while providing targeted support to the poorest’ (G20, 2009). The G20 leaders called on all nations to eliminate their fossil fuel subsidies, and Asia-Pacific Economic Cooperation leaders echoed the call to phase out such subsidies at their 2009 Singapore summit (Aldy, 2017).

Following up on the G20 agreement, leaders established processes of implementation and review to promote such transparency. Leaders tasked energy and finance ministers to identify their nations’ fossil fuel subsidies, develop a plan for eliminating these subsidies and report to leaders on their progress. The G20 published a summary report of each member’s identified subsidies and the plan for eliminating them at the 2010 G20 summit. Leaders have continued to task energy and finance ministers to continue their efforts and report back regularly

(e.g. G20, 2013b). Several G20 governments have also voluntarily subjected their subsidy phase-out performance to a formal peer review process. In 2016, the G20 reported on the China and US peer review efforts (OECD, 2016a, 2016b).

12.3.3 US Government Retrospective Review of Regulations

In January 2011, President Obama issued Executive Order 13563, ‘Improving Regulation and Regulatory Review’. This called for, among others, retrospective analyses of existing significant regulations. The president called on regulatory agencies to ‘consider how best to promote retrospective analysis of rules that have become outmoded, ineffective, insufficient, or excessively burdensome, and to modify, streamline, expand, or repeal them in accordance with what has been learned’ (Section 6). Under the Executive Order, each regulatory agency published a plan for periodic review of existing significant regulations and began evaluating their rules in the summer of 2011.

The Obama administration aimed to institutionalise retrospective review of regulations after ad hoc regulatory look-backs implemented at the behest of the White House in every previous administration since the 1970s (Aldy, 2014a). The United States is not alone; a number of other developed countries have also pursued retrospective review of their regulations (OECD, 2009; European Commission, 2014). These efforts represent a national-level form of self-surveillance. In the US government, federal regulators had the sole authority to initiate and undertake the review of their existing rules.

12.3.4 Voluntary Firm Reporting through the CDP

The CDP, initially launched in 2003, collects and publishes information on companies’ climate change-related activities (Matisoff, Noonan and O’Brien, 2013). This includes data on company efforts to mitigate exposure to climate change risks, company GHG emissions and emission-abatement efforts and internal carbon pricing for project and investment evaluation. The CDP is a non-profit organisation, initially launched by major institutional investors, that operates around the world and aims to address the demand for information about companies’ environmental-related outcomes from investors (Hahn, Reimsbach and Schiemann, 2015).

Each year, the CDP publishes a report that synthesises and analyses the climate-related data voluntarily reported by major companies (CDP, 2016). In addition, in recent years, the CDP has expanded to include reporting by cities on their climate-related activities. This reporting enables those who demand the information to assess and compare climate change actions by region, by industry and by other characteristics of business.

12.4 Lessons from Polycentric Transparency

12.4.1 Producing Credible Information

Producing credible data and analysis can enhance the legitimacy and facilitate trust in the policy surveillance. As Thompson (2006b) notes, national governments have frequently delegated surveillance responsibilities to international organisations, and these entities can play important roles by generating ‘neutral’ information. The IMF and G20 models both rely on international organisations for implementing policy surveillance.

Under Article IV consultations, teams of permanent staff experts make in-country visits as part of policy and data reviews (IMF, 2001; Schäfer, 2006). These expert teams use country-provided data, among other sources, in their review of a country’s economy and relevant economic policies. After a country visit, the IMF expert team compiles a report that feeds into a peer review process (see Section 12.4.2).

To facilitate transparency of the fossil fuel subsidies agreement, the G20 leaders tasked four international organisations – the International Energy Agency (IEA), the Organisation for Economic Co-operation and Development (OECD), the Organization of the Petroleum Exporting Countries (OPEC) and the World Bank – to evaluate fossil fuel subsidies. This includes an examination of countries’ subsidies, their proposed subsidy reforms and the economic, energy and environmental impacts of these subsidies. These international organisations published their first joint report to G20 leaders at the 2010 Toronto meeting and have continued to provide analysis and reviews of countries’ implementation strategies (IEA, OECD and World Bank, 2010). In addition to these joint reports, the IEA (2013), the OECD (2013) and the IMF (2013) have produced their own estimates of country-specific fossil fuel subsidies.

Drawing from experts among various international organisations to evaluate fossil fuel subsidy reforms mirrors the approaches taken by the IMF, the OECD and the World Trade Organization (Aldy, 2013, 2014b). Relying on external experts at established international organisations also mitigates concerns about the politicisation of the transparency mechanism and allows for a rapid ramping up of the review process. A potential limitation of relying on existing international organisations, however, may be the legitimacy of those with incomplete memberships. For example, some developing countries may question reviews by the IEA, whose membership is comprised of predominantly developed nations. Others may challenge the legitimacy of the IMF because of the greater weight that larger, more developed economies have in its decision-making, hiring and operations (IMF, 2017).

By contrast, the retrospective review of regulations in the US government requires regulators to review their own rules. Given the scarce resources, agencies

have the discretion to identify rules for review, determine the nature and detail of analysis and make the final decision about changes to existing rules. Likewise, the firms disclosing through the CDP are subject to selection. Moreover, their reporting is not reviewed independently. As a result, such processes, absent supplemental review, may raise questions of credibility and legitimacy. In a polycentric world, however, they could enhance information in broader climate transparency schemes. For example, ex-post review of the performance of a carbon dioxide mitigation regulation could serve as an input in a country's reporting and review under the Paris Agreement's transparency regime (Aldy, 2016a).

12.4.2 Engaging Peers

Providing a forum for countries to engage one another through peer review can facilitate learning about effective policy practice and promote mutual understanding about individual policy designs and experiences of implementation. The IMF expert staff report serves as the basis for a peer review by the Executive Board, which includes 24 country directors representing member countries or groups of countries. A summary of the Board discussion and the report are typically published. Making these reports public enables stakeholders to push for better economic policies in their respective countries and improves the quality of the IMF review product by effectively subjecting the reviewers to external assessment (Fischer, 1999).

Coupling peer review with expert review enhances transparency on implementation and can empower domestic stakeholders as well as peer nations to apply pressure to push a country to deliver on its commitment. At the 2013 G20 summit, leaders supported broad participation in a voluntary 'country-owned' peer review of fossil fuel subsidy phase-out efforts (G20, 2013a). Through this process, small groups of G20 nations work together in reviewing one or more nations within each group that voluntarily submit their policies for review (G20, 2013b). Third-party experts (e.g. from the OECD) and non-G20 countries may participate in the reviews at the reviewed country's discretion. The peer review addresses the fossil fuel subsidies identified for phase out by the country under review. A reviewed country may agree to a broader assessment, including analysis of other potential subsidies, barriers to subsidy reform, etc. Initiated in 2014, the first round of peer reviews addressed China and the United States (OECD, 2016a, 2016b), and the second addressed Germany and Mexico.

The G20 agreement explicitly invites non-G20 countries to follow suit in eliminating their fossil fuel subsidies and provides an opportunity for non-G20 members to participate in peer review. For example, the Friends of Fossil Fuel Subsidy Reform – including Costa Rica, Denmark, Ethiopia, Finland, New

Zealand, Norway, Sweden, Switzerland and Uruguay – participate in the G20 peer review process. Learning about effective reform efforts can then spill over to countries outside of the G20. Policy surveillance in an open club framework promotes the dissemination of information and knowledge – a public good that could benefit club members by leveraging subsidy reform outside of the club, i.e. de facto opt-in to the fossil fuel subsidies agreement (Victor, 2007).

12.4.3 Enhancing Capacity

The IMF supports standards for data dissemination and codes for good policy practice that can facilitate surveillance and also benefit member countries in their design and implementation of economic policy. Such standards provide transparent, timely and measurable metrics for evaluating policy performance and identifying potential economic vulnerabilities. The IMF emphasises the value in implementing such standards and codes to communicate clearly to the markets and other countries on a country's economic situation.

In the context of the retrospective review of government regulations, building capacity and increasing experience in conducting analyses of regulatory performance can create a 'culture' for review (Sunstein, 2012). Creating such a culture can change the pattern of periodic, ad hoc retrospective reviews (Coglianese, 2013). The institutionalisation of retrospective review, especially with regular reporting, helps promote that culture.

A critical element of building a culture for review lies in planning for review when developing new regulations. Some regulations are difficult to evaluate through rigorous statistical methods, as evident in the academic literature on the costs, benefits and impacts of federal regulations (Aldy, 2014a). This may reflect the absence of necessary data, time, resources and bureaucratic capacity to undertake a feasible analysis or an implementation that does not naturally lend itself to causal identification. Planning for ex-post analysis of a rule could ensure both the availability of such data and an implementation scheme that may permit causal inference on the impact of the rule. The Department of Homeland Security indicated that it would 'build in retrospective review at the earliest stages of regulatory development' (Aldy, 2014a: 61). The Departments of Labor, the Interior and Treasury indicated an interest in experimental designs to facilitate rigorous statistical evaluation of their regulatory actions (Sunstein, 2011). Such an analysis could help address key questions the public may have, such as whether the rule was successful (Coglianese, 2013). Nonetheless, none of the significant regulations promulgated by regulatory agencies in the first three years of the Obama retrospective review effort included plans for their future performance evaluations (Aldy, 2014a).

12.4.4 Facilitating Policy Learning

An effective transparency mechanism not only collects information but also provides analysis and evaluation of policy actions and outcomes. Analysing and disseminating data on countries' actions under an agreement are necessary for transparency to contribute to regime compliance (Chayes *et al.*, 1998).

In addition to providing templates for analogous work in the climate context, Article IV consultations can improve the information set about the climate impacts of economic policy reforms. For example, the IMF reported on the impacts of Iran's major 2010 fuel pricing reform in its 2011 Article IV consultation. In this analysis, the IMF stated that the dramatic reduction in fuel subsidies (Iran quadrupled the price of petrol on one day) had reduced emissions of carbon dioxide as well as nitrogen oxides, sulphur oxides and particulate matter (IMF, 2011).

One of the key motivations for targeted, small-group efforts is to identify actions and processes that can successfully lower GHG emissions. A well-designed transparency regime can provide the information necessary to demonstrate whether the small-group process delivered on its objectives. It can illustrate the most effective reforms and highlight potential opportunities for scaling up the effort to a larger set of countries or even to the full UNFCCC negotiations. Working in a smaller group of similar countries may permit a more extensive system of policy surveillance. For example, the G20 members have substantially more resources and bureaucratic competency than the average of the UNFCCC membership. Thus, G20 members can draw on the technical expertise of their bureaucracies – and in some cases their civil society and academia – to experiment with ideas for effective policy surveillance. Demonstrating a well-functioning system of policy surveillance for the largest developed and developing countries can then serve as a model for large-group contexts such as the UNFCCC.

Retrospective review can increase the efficiency of regulations by reducing regulatory duplication, which has been an objective of retrospective reviews dating back to the 1978 Carter Executive Order and the 1980 Regulatory Flexibility Act. This is all the more important today, as agencies – such as the Environmental Protection Agency, the Department of Energy and the Department of Transportation – deal with various overlapping jurisdictions.

Improving multi-agency coordination would help address these issues of duplication and also better identify the cumulative extent of regulatory burdens borne by regulated entities. This can also be important as the United States works to better coordinate regulatory policy with other major trading partners. Each country is different in how it allocates regulatory responsibility to various agencies within its government, and thus regulatory coordination and coherence

on any specific set of regulatory issues will likely involve multiple regulatory agencies in each country. With an increasing number of countries undertaking some form of retrospective review of regulations (OECD, 2009), there may also be opportunities for US government agencies to coordinate with overseas counterparts on retrospective review and hence potentially learn from other countries' regulatory agencies. For example, the European Commission is implementing the Regulatory Fitness and Performance Programme, which 'aims to cut red tape, remove regulatory burdens, simplify and improve the design and quality of legislation so that the policy objectives are achieved and the benefits of EU legislation are enjoyed at lowest cost and with a minimum of administrative burden' (European Commission, 2014: 2).

While governments craft climate policy, businesses and consumers will undertake the changes in behaviour and investment necessary to abate GHG emissions. The CDP reports provide ground-level evidence of corporate mitigation projects and outcomes and illustrate opportunities for learning from business peers. Moreover, they can enable policymakers to calibrate their assessments of climate change policy and determine if they are delivering on their desired results. Finally, business-level climate transparency can corroborate and complement transparency by governments in those regions where a given business operates (CDP, 2016).

The business reporting through the CDP can also signal private-sector expectations about the future of climate change policy. The nature of emission mitigation investments as well as the internal carbon price for planning reveals the expected effective carbon price influencing the returns to the business's operations. In its 2016 report, the CDP noted that more than 1,000 companies use or plan to soon use a carbon price for internal project evaluation and investment analysis. For example, large American corporations, including Duke Energy, General Motors, Google and ExxonMobil; large Asian corporations, including NEC, Samsung, TEPCO and Toto; and large European corporations, including BMW, BP, Deutsche Bank and Unilever, employ carbon prices in internal planning ranging from 5 to 100 per tonne of carbon dioxide. Formally integrating a carbon price in the assessment of business options reflects an expectation that policies of one form or another will impose an explicit carbon price (e.g. a carbon tax) or an implicit carbon price (e.g. through command-and-control regulation) on these companies' business operations. The dramatic heterogeneity in expected carbon prices among these companies, however, also reflects the continued uncertainty about the form, timing and ambition of international climate change policy after Paris (Aldy, 2016b).

12.5 Conclusions

Let me close with a discussion of the demand and supply for transparency, and the opportunities – indeed the need – for a polycentric approach to transparency.

Transparency reflects the demand for information, which will be a function of the interests of all those engaged, one way or another, in climate policy. Governments may request the collection, analysis and dissemination of information through the transparency mechanisms that address the interests of their domestic publics and stakeholders (Aldy and Pizer, 2016; Aldy *et al.*, 2016). Some business stakeholders may view transparency as a way to assess the policy and economic landscape in a given country for purposes of determining future investments. Other business stakeholders, concerned about potential adverse competitiveness impacts of the domestic programmes they operate under, may be interested in assessing the comparability of mitigation effort among countries, with a particular focus on the energy-cost impacts of domestic mitigation programmes borne by their competitors (Aldy and Pizer, 2015). Environmental stakeholders may use assessments of a country's mitigation programme and comparisons with other countries to identify and pressure laggard countries. Addressing these interests will require information on the economic, energy and environmental impacts of domestic mitigation policies.

The Paris Agreement acknowledges the substantial interests in transparency by tasking the development of a policy surveillance mechanism to future negotiations (see Chapter 2). The track record of climate transparency in the UNFCCC processes to date suggests that the supply of transparency will be inadequate. Will the information be credible? Will there be sufficient analysis to address the most important questions? Will there be enough investment in the institutions to enable learning among peers? Will countries have the capacity to produce and consume information on climate policy performance? Failing to identify key policy insights will retard the development of more effective mitigation policies around the world. Drawing lessons from existing schemes of transparency can inform the supply of these necessary elements and processes of policy surveillance.

There may be, however, novel sources for information that can be tapped. The Paris Agreement emphasises the potential role of so-called non-party stakeholders – including civil society, the private sector, financial institutions and subnational authorities – in a markedly more open and positive manner than previous multilateral climate agreements (see Chapter 4). The decision adopting the Paris Agreement specifically calls for leveraging the expertise and knowledge of non-party stakeholders to complement the contributions of parties, convention bodies and international organisations in the existing technical review processes of pledges through 2020. Soliciting ‘experiences and suggestions’ creates an

opportunity for stakeholders to inform, shape and demonstrate approaches to transparency that can facilitate greater mitigation over time (UNFCCC, 2015: para. 109). Moreover, the decision reiterates this enthusiasm for non-party stakeholders by noting that it ‘encourages non-party stakeholders to increase their engagement’ (UNFCCC, 2015: para. 119). Finally, the decision focuses on the role of domestic mitigation policies and carbon pricing, suggesting that stakeholders could play a role in integrating the design of domestic policy, the review of these policies and the implications for the transparency and assessment of mitigation pledges under the Paris framework. Non-party stakeholder experimentation with alternative transparency approaches may also identify more effective surveillance design (Ostrom, 2010).

Indeed, interest in domestic mitigation policies and actions is likely to continue to grow as parties and stakeholders seek a better understanding of how parties’ nationally determined contributions are implemented and how far implementation delivers on a given country’s initial pledge. Stakeholders often have more extensive input on the design and evaluation of domestic policy, including mitigation policy, than on a headline goal made in multilateral negotiations. Understanding what policies will work in practice can draw from stakeholder expertise. In addition, stakeholders can work with policymakers on the design of domestic policy to facilitate the supply of information for the benefit of both domestic policy review and international climate policy transparency (Aldy, 2016a). This can improve the efficacy of domestic policies, promote cost-effectiveness, enable greater policy learning and enhance the credibility of a country in international negotiations by rigorously demonstrating a good faith effort in mitigating GHG emissions (van Asselt and Hale, 2016).

A challenge in a polycentric approach to climate change policy lies in the prospect that the emerging climate change regime may include some redundancies in promoting emission mitigation as well as some omissions. These may simply reflect the lack of complete coordination among the various efforts to address climate change, but it could also be an outcome of strategic incentives and interactions (Gunningham and Sinclair, 1999; Ostrom, 2010). Just as there are free-riding incentives in the mitigation of GHG emissions by any individual source or country, the same can hold for polycentric mitigation efforts. If a small group of countries or an industry or major donor institution advances mitigation efforts, that risks weakening the incentive – and potentially the political resolve – to take action in other domains. In effect, there could be substitution among polycentric mitigation activities. This is not necessarily the case, but absent thoughtful coordination, this substitution could easily occur.

By contrast, the public good nature of providing information means that a polycentric approach to transparency could create strategic complementarities.

If one regime enhances its transparency – such as businesses revealing information about their climate-related activities, including their emissions, internal carbon price for project planning, and changes in carbon-related investment – then that may lower the cost of undertaking transparency in a related regime – such as a retrospective review of domestic emission mitigation regulations, which could calibrate models of policy efficacy based on the business disclosures. Likewise, lowering the costs of national policy surveillance would increase the supply of information into plurilateral and multilateral transparency regimes. Thus, making commitments to transparency in the evolution of a polycentric climate policy complex could make it that much easier to improve the quality and usefulness of information going forward. Furthermore, given the critical role of learning about emission mitigation performance to build trust in global climate policy efforts as well as to identify and export efficacious policies in promoting more ambitious climate change policy, leveraging the strategic complementarities in polycentric transparency can contribute to a more successful global climate policy effort.

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