Overcoming Behavioral and Institutional Inertia

Many policies to address adaptation and mitigation are already known. Secure property rights, energy-efficient technologies, market-based eco-taxes and tradable permits—all have been piloted and studied over decades. But implementing them still proves difficult. Their success relies not just on new finance and new technology but also on complex and context-specific social, economic, and political factors normally called institutions—the formal and informal rules affecting policy design, implementation, and outcomes.[1]

Values, norms, and organizational arrangements can make policy change hard. Experiences frame current and future action. Patterns of individual and organizational behavior die hard even in the face of new challenges. And political traditions constrain policy choices. Some examples.

Most countries still gear policies and regulatory institutions to ensure the supply of energy—not to manage demand. Pollution taxes in economies where pollution is not considered a public bad will generate resistance from decision makers and the public alike. And economic interests can hinder the deployment of energy-efficient technologies.[2]

The examples show another dimension of the urgency of tackling climate change. In addition to the inertia of climate, technology, and capital stocks, policy has to overcome institutional inertia. Institutions tend to be sticky—once in place and accepted, they can limit policy change and future choices.[3]

Institutional inertia has three implications for climate-smart development policy. First, institutional change should be a priority. Success will hinge on reshaping the institutional framework supporting interventions. Second, institutional reform pays off. Addressing the institutional determinants of climate policy can ensure the effectiveness and sustainability of interventions, maximize the impact of finance and technology, and yield additional development payoffs. Third, institutional change is feasible. Increasing gender inclusion, recognizing indigenous peoples' rights, reforming property rights, and shaping individual incentives can be demanding, but they are not impossible. Many of these changes can be accomplished without technological

Key messages

Achieving results in tackling the climate challenge requires going beyond the international mobilization of finance and technology, by addressing the psychological, organizational, and political barriers to climate action. These barriers stem from the way people perceive and think about the climate problem, the way bureaucracies work, and the interests shaping government action. Policy change requires shifting political incentives and even organizational responsibilities. And it requires the active marketing of climate policies, tapping into social norms and behaviors, in order to translate the public's concern into understanding and understanding into action—starting at home.

breakthrough or additional finance. More important, many of these interventions fall within the realm of national or even local policy—there is no need for a global climate deal to enhance press freedom, for example, or the voice of civil society.[4]

This chapter discusses the behavioral, organizational, and political determinants of the institutional inertia hindering climate-smart development. It shows how these forces affect the implementation of new policies and hamper their success in both developed and developing countries. And it argues that overcoming inertia requires reconsidering the scope and quality of government's role. We start with individuals' minds.

Harnessing individuals' behavioral change

Understanding the drivers of human behavior is essential for climate-smart development policy. First, myriad private acts of consumption are at the root of climate change. As consumers, individuals hold a reservoir of mitigation capacity. A large share of emissions in developed countries results directly from decisions by individuals—for travel, heating, food purchases. U.S. households account for roughly 33 percent of the nation's carbon dioxide (CO_2) emissions—more than U.S. industry and any other country bar China

Figure 8.1   The direct actions of U.S. consumers produce up to one-third of total U.S. CO_2 emissions

Sources: EIA 2009; EPA 2009.
Note: LPG = liquified petroleum gas.

(figures 8.1 and 8.2).[5] If fully adopted, existing efficiency measures for households and motor vehicles could produce energy savings of almost 30 percent—10 percent of total U.S. consumption.[6] Second, individuals drive the larger processes of change in organizations and political systems. Particularly in democratic countries, much government action is the result of citizen and voter pressures to act. Third, when designing and implementing policy, decision makers apply the same mental processes as other individuals.

The debate about changing individual behavior has focused on market mechanisms. Better pricing of energy and costing of scarce resources can steer individuals away from carbon-intensive consumption and encourage them to preserve endangered habitats and manage ecosystems better. But the drivers of consumption by individuals and groups go beyond prices. Many cost-effective energy-efficient technologies have been available for years. "No-regret" investments such as improving building insulation, addressing water leaks, and limiting building in flood-prone areas yield benefits beyond mitigation and adaptation. So, why haven't they been adopted? Because concern does not mean understanding, and understanding does not necessarily lead to action.

Concern does not mean understanding

Over the past decade, awareness of climate change has grown without translating into widespread individual action.[7] Indeed, flying, driving, holidaying abroad, and using household appliances have increased globally.[8]

What explains the disconnect between perception and action? Concern about climate change does not necessarily mean understanding its drivers and dynamics or the responses needed. Polls show that the public admits to remaining confused over climate change's causes and solutions.[9] This "green gap" in public attitudes stems partly from how climate science is communicated and how our minds (mis)understand climate dynamics (box 8.1).[10]

Standard information-deficit models assume that when people "know" more, they
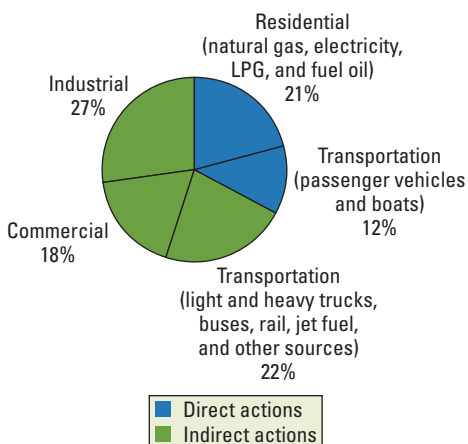
act differently.[11] People today are exposed to lots of information on the causes, dynamics, and effects of climate change. This information has clearly increased concern, but it has not led to action.[12] Why? Because information can produce misleading feelings of "empowerment," which then turns into ambivalent powerlessness when paired with more "realistic" messages. Conveying urgency by stressing the unprecedented nature and scale of the problems can result in paralysis.[13] Similarly, playing up the multistakeholder nature of mitigation and adaptation is a reminder that the solution rests with no single actor, resulting in a general feeling of helplessness and disempowerment.[14] This might explain why, in developed countries where information on climate change is more readily available, people are less optimistic about a possible solution (figure 8.3).

To produce action, awareness needs to be grounded in clear information from trustworthy sources. The way climate change science is communicated to the public can complicate things. Scientific debate evolves through testing and cross-checking of theories and findings. News coverage can veer from one extreme to another, resulting in more confusion for the public, which may perceive the debate not as scientific progress but as a proliferation of contradictory opinions.[15] Moreover, the media's need to present "balanced" stories has given disproportionate coverage to climate science contrarians lacking scientific expertise and standing.[16]

Figure 8.2   Small local adjustments for big global benefits: Switching from SUVs to fuel-efficient passenger cars in the United States alone would nearly offset the emissions generated by providing energy to 1.6 billion more people

Emissions (million tons of CO$_2$)
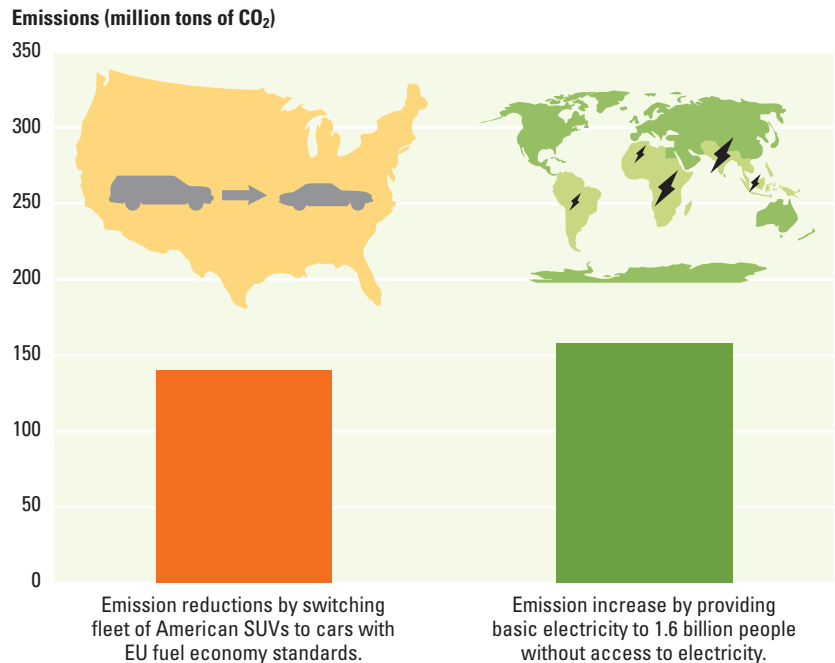
Source: WDR team calculations based on BTS 2008.

Note: Estimates are based on 40 million SUVs (sports utility vehicles) in the United States traveling a total of 480 billion miles (assuming 12,000 miles a car) a year. With average fuel efficiency of 18 miles a gallon, the SUV fleet consumes 27 billion gallons of gasoline annually with emissions of 2,421 grams of carbon a gallon. Switching to fuel-efficient cars with the average fuel efficiency of new passenger cars sold in the European Union (45 miles a gallon; see ICCT 2007) results in a reduction of 142 million tons of CO$_2$ (39 million tons of carbon) annually. Electricity consumption of poor households in developing countries is estimated at 170 kilowatt hours a person-year and electricity is assumed to be provided at the current world average carbon intensity of 160 grams of carbon a kilowatt-hour, equivalent to 160 million tons of CO$_2$ (44 million tons of carbon). The size of the electricity symbol in the global map corresponds to the number of people without access to electricity.

BOX 8.1   *Miscommunicating the need for climate action*

Reporting on climate change can have the counterproductive effect of immobilizing people. A linguistic analysis of media coverage and environmental groups' communications on climate change found that the more people are bombarded with words or images of the devastating, quasi-biblical effects of climate change, the more likely they are to tune out and switch off. Depicting climate change as "scary weather" can set up a pernicious set of reaction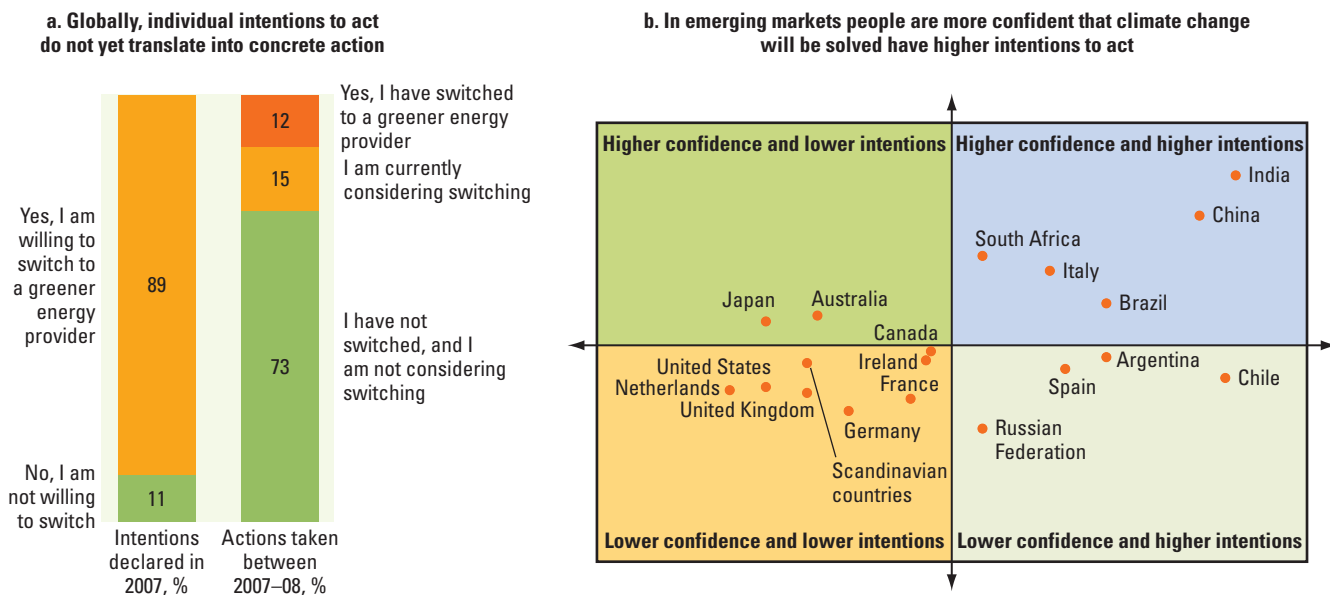s, because people tend to see weather as being outside human control. They cannot prevent or change it. They prepare for it, adjust to it, or move away from it. And focusing on the long time lines and scale of climate change encourages them to think "it won't happen in my lifetime" and "there's nothing one can do."

Stressing the large scale of climate change while telling people they can solve it through small actions (like changing a light bulb) creates a disconnect that undermines the credibility of the messages and encourages people to think that action is meaningless. A typical global warming news story—outlining the scientific proof, stressing the severe consequences of inaction, and urging immediate steps—can lead people to think that preventive action is meaningless.

Source: Retallack, S., www.opendemocracy .net/globalization-climate_change_debate/ ankelohe_3550.jsp (accessed July 17, 2008).

Figure 8.3 Individuals' willingness to respond to climate change differs across countries and does not always translate into concrete actions

a. Globally, individual intentions to act do not yet translate into concrete action

b. In emerging markets people are more confident that climate change will be solved have higher intentions to act

Source: Accenture 2009.

Note: The 2009 Accenture Climate Change Survey was conducted with a sample of 10,733 individuals in 22 developed and emerging economies. The sample was representative of the general population in developed countries and urban populations in developing countries. Panel a: Respondents were asked about their willingness to switch to a greener energy provider if the provider offered services that help reduce carbon emissions. Intentions did not translate into action, with most respondents staying with their old energy provider. Panel b: Based on the questionnaire, countries were ranked on two criteria—confidence and intention. Confidence measured the individual's optimism about the ability of individuals, politicians, and energy providers to find a solution. Respondents in emerging economies generally were more optimistic about humankind's ability to take action to solve global climate change.

The media, in search of punchy stories, tend to shy away from the scientific community's careful wording to express uncertainty. Readers then face messages lacking scientific caution and containing strong appeals that might then be refuted by other similarly strongly worded statements, hampering the perceived reliability of the information source. In addition to confusing the public (and policy makers) about causes, impacts, and potential solutions, different types of framing can antagonize individuals and induce a sense of guilt, and even of being vilified, when the problem of consumption is characterized as a problem of consumers.[17] This can lead people to reject the message rather than act on it.

An added challenge in moving from concern to understanding has to do with how the mind perceives the problem. The dynamics of climate change stretch our mental capacities in several ways.[18] Psychological research shows that individuals are ill equipped to deal with multiple-cause problems.[19] Simplifying problems by adopting single-cause explanations in turn leads to searching for individual solutions and

focusing on (often nonexistent) technological silver bullets. The inertia affecting our responses can be linked to a limited understanding of stock-and-flow relationships, which characterize the concentration, removal, and stabilization of greenhouse gases. The fact that even the most drastic and sudden emission reductions will not prevent further warming, or make the need for adaptation disappear in the short and medium term, is something we struggle with and, without careful explanation, simply do not understand (box 8.2).[20]

Understanding does not necessarily lead to action

Knowledge is mediated through value systems shaped by psychological, cultural, and economic factors that determine whether we act or not. Again the idea here is not that we are irrational but that we need to understand better how we make decisions. Our evolution as a species has shaped the way our brains work. We are particularly good at acting on threats that can be linked to a human face; that present themselves as unexpected, dramatic, and immediate; that involve obvious

links to human health; that challenge our moral framework, provoking visceral reactions; or that evoke recent personal experience.[21] The slow pace of climate change as well as the delayed, intangible, and statistical nature of its risks, simply do not move us (box 8.3).

Behavioral economics shows that features of human decision making under uncertainty constrain our natural instinct to adapt.[22] We tend to underestimate cumulative probabilities (the sum of the probabilities of an event occurring over a period of time), which explains why building continues in areas prone to fires, flooding, and earthquakes. People strongly favor the status quo and prefer to make only small incremental adjustments to it. They are at a loss when measuring achievements is difficult, as in disaster preparedness, where there are no clear counterfactuals. We are "myopic decision makers" who strongly discount future events and assign higher priorities to problems closer in space and time. For instance, the public tends to be mobilized by visible environmental problems (urban air pollution) but not by less visible ones (species extinction). Individuals rank climate change lower than other

environmental issues perceived as closer to home (figure 8.4).[23]

Even if people were indeed fully rational, knowledge would not necessarily lead to action. Their "finite pool of worries" might prevent them from acting on existing information because they prioritize basic needs such as security, shelter, and the like.[24] They

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BOX 8.2 *Misunderstandings about the dynamics of climate change encourage complacency*

Support for policies to control greenhouse gas emissions is hampered by people's limited understanding of climate change's dynamics. Experiments show that a majority of people misunderstand the basic stock-and-flow nature of the problem: they believe that stabilizing emissions near the current rates would stabilize concentrations of greenhouse gases in the atmosphere and halt climate change. Instead the flow of emissions is best compared to the flow of water entering a bathtub: as long as the inflow is greater than the outflow, the level of water in the tub will rise. As long as emissions exceed the amounts that can be taken up by terrestrial and aquatic systems, concentrations of greenhouse gases will rise. Even for those who consider climate change a priority, a misunderstanding of the stock-and-flow process favors wait-and-see policies, limiting public pressure and political will for active policy to stabilize the climate. These misperceptions can be corrected through communication strategies that use analogies, such as the bathtub example.

Sources: Sternman and Sweeney 2007; Moxnes and Saysel 2009.

BOX 8.3 *How risk perceptions can sink policies: Flood risk management*

The impulse to address risk is fundamentally related to perceptions of the seriousness and likelihood of impacts.

The perception of probabilities and the methods people tend to use to estimate those probabilities can be misleading. For example, people evaluate the likelihood of an event occurring in a given place based on how similar the latter is to locations where such events normally occur.[a] The availability of recent and vivid memories of an event also leads people to overestimate its probability. It has been observed that often people overestimate the likelihood of low-probability events and underestimate the likelihood of high-probability events. People are notoriously more scared of sitting in a plane than in a car (although the risk of a deadly car accident event is significantly higher). Similarly, rare natural disasters such as tsunamis, generate more concern than more frequent events such as storm surges.[b]

These behavior patterns were identified among farmers and policy makers in Mozambique after the 2000 floods and during the subsequent resettlement program implemented by the government. Farmers (more than policy makers) showed a bias toward the status quo: for farmers, actions to adapt to climate factors are often weighted against risks of negative outcomes. The decision to move to a safe area on higher ground, for example, entails the risk of losing one's livelihood or community. The decision to plant a drought-tolerant crop can lead to the risk of having a lower harvest, if the rains are plentiful. Farmers wanting to avoid personal responsibility for negative outcomes will avoid making new choices. By contrast, policy makers can gain personal credit for avoiding a negative outcome, but only if they take visible action—say, by helping farmers survive through resettlement.

Different stakeholders view probabilities differently. Policy makers in Maputo tend to associate the Limpopo River floodplain with flood risk alone. For the people living there, however, life in the floodplain is defined by many other factors in addition to climate risks. Relative to local farmers, these policy makers have a propensity to overestimate climate-related risks. Unless risk analysis and communication are adequately factored in, major differences in perceptions of risk can impede successful policy design and implementation.

Sources: Patt and Schröter 2008.
a. Tversky and Kahneman 1974.
b. Kahneman and Tversky 1979.

also assess both the market and nonmarket costs of decisions. The nonmarket costs of acting on information that challenges core value systems (such as calls for resettlement and migration or for limiting consumption patterns) can be high. Indeed, the very act of interpreting or mediating additional information is costly. For a household having to decide whether to keep rebuilding on a flood-prone area, or for a local official designing and enforcing building codes in low-lying coastal areas, the transaction costs can be substantial. Moreover, both mitigation—and, very often, adaptation—present themselves as tragedies of the commons requiring collective action. Rational and self-interested individuals face structural disincentives to cooperate in solving these problems.[25] Cooperation in these conditions requires the payoffs to be clear—obviously not the case with climate-change impacts and responses.[26]

Understanding barriers to behavior change also requires going beyond psychological explanations based on the individual as a unit of analysis—and embracing the way social factors influence perceptions, decisions, and actions. People naturally tend to resist and deny information that contradicts their cultural values or ideological beliefs. This includes information that challenges notions of belonging and identity as well as of rights to freedom and consumption. Notions of needs and the priorities deriving from them are socially and culturally constructed.[27] This might explain why awareness of environmental problems normally increases with wealth, but concern about climate change does not (figure 8.5).[28] Individuals (and nations) with higher incomes (and higher carbon dioxide emissions) may disregard global warming as a way to avoid incurring the potential costs of solutions associated with lower levels of consumption and lifestyle changes.[29]

People also construct and reconstruct information to make it less uncomfortable, leading to strategies of socially organized denial that shape the way societies and governments interpret and respond to climate change.[30] The evolution of standard narratives about climate change provides an example. Focusing on country emissions rather than per capita emissions can lead people living outside the big emitters to minimize their responsibility and rationalize their failure to act. Drastic calls for the need for an international response tend to play down the fact that domestic action will be required in any case. And uncertainty about dynamics and impacts can be overplayed to justify inaction.

These forms of denial are not abstract—nor are they confined to climate policy. Similar processes operate at various levels of day-to-day decision making, and addressing them is part of solving crucial development challenges, such as reducing the spread of HIV-AIDS or the incidence of common water- and sanitation-related diseases. Rather than an aberration, denial needs to be considered a coping strategy deployed by individuals and communities facing unmanageable and uncomfortable events. Resistance to change is never simply the result of ignorance—it derives from individual perceptions, needs, and wants based on material and cultural values.

Figure 8.4   Climate change is not a priority yet

Percentage of respondents concerned a great deal or fair amount about each problem
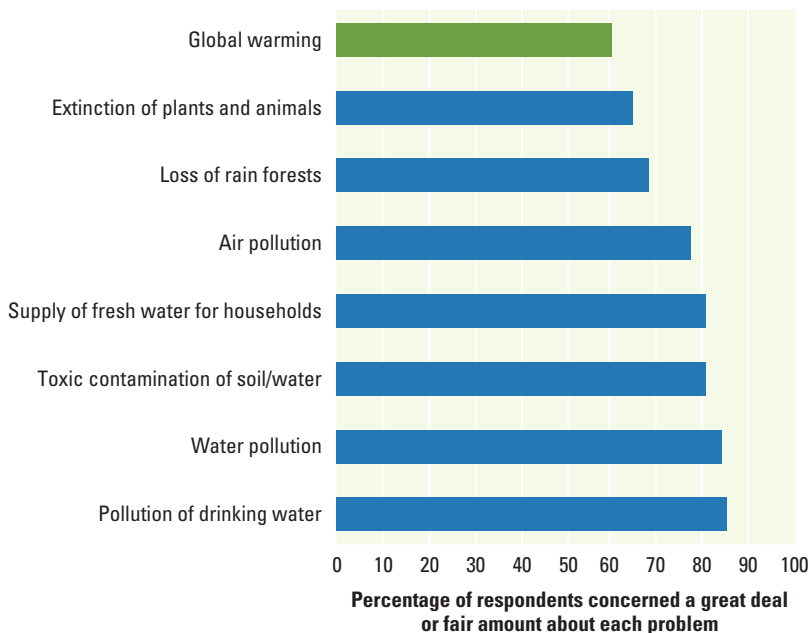
Source: Gallup Poll, www.gallup.com/poll/106660/Little-Increase-Americans-Global-Warming-Worries.aspx (accessed March 6, 2009).

Note: Respondents were asked the following question: " I'm going to read you a list of environmental problems. As I read each one, please tell me if you personally worry a great deal, a fair amount, only a little, or not at all." Results are based on phone interviews on March 5–8, 2009. The sample comprised 1,012 U.S. citizens aged 18 and older.

Encouraging behavioral change

Policy makers need to be aware of these barriers to action and treat policy options accordingly. Three policy areas are relevant here: communications, institutional measures, and social norms.

From information to communication. Information, education, and awareness raising, as carried out so far, are at best not enough to spur people to action and at worst counterproductive. This calls for a different approach to providing information about climate change.[31] First, the information-driven approach must shift to an audience-centric one in communicating climate change. Both scientists and the media need to work together to enhance the salience of their messages. Second, as in other policy areas, such as AIDS prevention, this shift should entail a marketing approach to communication, where the individual is considered not merely the passive receiver of information but an active agent in both causes and solutions (box 8.4).

Well-designed communication campaigns that address individuals as members of a local community—and not as powerless members of an unmanageably large group—can empower them to act. This treatment can help make a global phenomenon personally relevant and immediate, and accentuate the local and individual ownership of the solutions. It is important to limit "greenwash" in business and government—the gap between agreeing publicly on the reality of climate change while doing nothing about it—to avoid confusion and public backlash (box 8.5).

A controversial question is whether detailed public understanding of highly complex issues such as climate change is feasible, even necessary, for effective policy making. The answer is no, or at least not always. Much policy making is based on technicalities fully ignored by the public. Few people understand the intricacies of trade policies affecting the price of the food they buy and eat, or produce and sell. Where buy-in is necessary, it is often encouraged through other means.

Yet discounting information and public awareness as unnecessary would be a

Figure 8.5   Concern about climate change decreases as wealth goes up

Percentage of respondents who consider climate change a serious problem
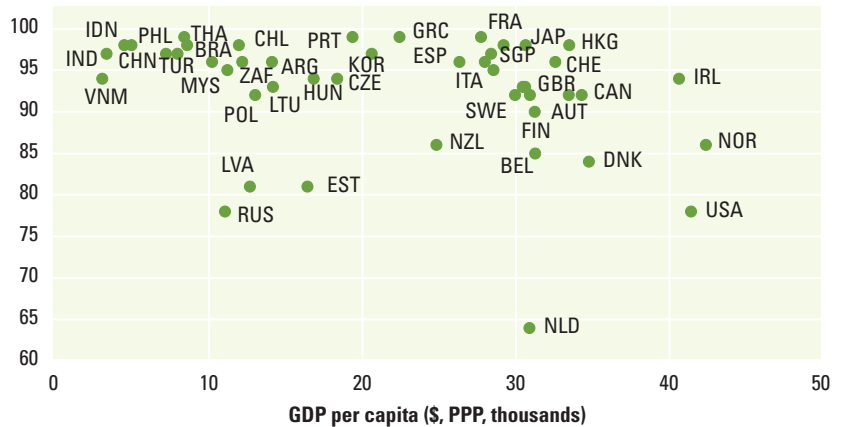
Source: Sandvik 2008.

Note: Public concern about global warming is expressed as percentage based on respondents who consider climate change a serious problem. It was taken from a global online survey conducted by ACNielsen in 2007 on consumer attitudes toward global warming. Respondents from 46 different countries were asked how serious a problem (on a scale from 1 to 5) they thought global warming was. The base population is respondents who have heard or read about global warming.

mistake. Recent work has highlighted that information is key for the public to back costly measures. The benefits of providing more accurate information about people's consumption decisions—say, through

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BOX 8.4   *End-to-end community engagement for landslide risk reduction in the Caribbean*

A new way of delivering real landslide-risk reduction to vulnerable communities was piloted by MoSSaiC, a program aimed at improving the management of slopes in communities in the eastern Caribbean. MoSSaiC identifies and implements low-cost, community-based approaches to landslide-risk reduction, in which community residents indicate areas of perceived drainage problems before assessing options for reducing landslide risk by managing surface water.

The activities? Managing surface water in all forms (roof water, grey water, and overland flow of rainfall water), monitoring shallow ground-water conditions, and constructing low-cost drain systems. All the work is bid out to contractors in the community. This end-to-end community engagement encourages participation in planning, executing, and maintaining surface water management on high-risk slopes. It produces a program owned by the community rather than imposed by the agency or government.

MoSSaiC has lowered landslide risk by offering the community employment and risk awareness—and has taken a participatory approach to rolling out the program to other communities. The program shows that changing community views of hazard mitigation can enhance community perceptions about climate risks. It also establishes a feedback loop between project inputs and outputs, with more than 80 percent of funds spent in the communities, allowing communities and governments to establish a clear link between risk perceptions, inputs, and tangible outputs.

Source: Anderson and Holcombe 2007.

BOX 8.5   *Communicating climate change*

How an issue is framed—the words, metaphors, stories, and images used to communicate information—determines the action. Frames trigger deeply held world views, widely held assumptions, and cultural models in judging the message and in accepting or rejecting it accordingly. If the facts don't fit the frames, the facts are rejected, not the frame.

Based on that understanding, it can be decided whether a cause is best served by repeating or breaking dominant discourse, or by reframing an issue using different concepts, languages, and images to evoke a different way of thinking and facilitate alternative choices.

Applying this approach to communications on climate change could take many forms:

- Place the issue in the context of higher values, such as responsibility, stewardship, competence, vision, and ingenuity.
- Characterize mitigation actions as being about new thinking, new technologies, planning ahead, smartness, farsightedness, balance, efficiency, and prudent caring.
- Simplify the model, analogy, or metaphor to help the public understand how global warming works—a

conceptual hook to make sense of information and set up appropriate reasoning (instead of the "greenhouse gas effect" call it a "heat trap").

- Refocus communications to underscore the human causes of the problem and the solutions that exist to address it, suggesting that humans can and should act to prevent the problem now.
- Evoke the existence and effectiveness of solutions upfront.

Source: Lorenzoni, Nicholson-Cole, and Whitmarsh 2007.

carbon labeling and smart meters—have long been proven. A U.S.-based survey found that one of the main factors responsible for the public's negative perceptions of cap-and-trade schemes is not the fear of additional costs but the limited knowledge of their effectiveness, reducing public trust in them.[32] Similarly, opposition to environmental taxes seems to fall once the public fully understands that they are a way not simply to raise money but to change behavior.[33]

Institutional measures. Beyond communication, a key issue for climate policy is designing interventions that take into account the social and psychological constraints to positive action. Effective adaptation interventions should reduce the transaction costs for individuals in making decisions and enhance the ownership of the information available. This requires that adaptation strategies be informed by community perceptions of risk, vulnerability, and capacity (see box 8.5). Institutionalizing participatory self-assessments for national and local disaster preparedness, adaptation planning, and mitigation can be useful here.

Limiting the tendency of individuals to discount the value of the future is another area for action. Although discounting the future is an innate mental propensity, it

varies with social characteristics and external pressures. Evidence from Peru shows that farmers with limited access to credit and insurance and with weak property rights have higher discount rates—and that steeper discounting increases individuals' incentives to deforest.[34] Institutional reforms to improve credit access and property rights can affect inner behavioral drivers of discounting. So can education (box 8.6).

Similarly, interventions that rely on individuals and businesses facing up-front costs but gaining long-term benefits (such as those deriving from energy-efficiency investments) should consider providing immediate payoffs in tax rebates or subsidies. Giving private actors a sense of long-term policy direction is also useful. An international survey of business leaders conducted in 2007 found that 81 percent of those polled believed that the government needs to provide clear long-term policy signals to help companies find the incentives to change and plan investments.[35] (Ways for government to signal long-term direction are explored below.)

Climate policy should also heed the tendency of individuals to favor local, visible, and privately securable outcomes. Mitigation actions produce benefits that are global and diffuse, and the direct benefits of adaptation measures may or may not be

immediately apparent, based on the type of climate event under consideration and on the rate of change. The public at large may perceive these benefits as distant and uncertain. It is the role of institutions to communicate clearly the direct benefits and co-benefits of both adaptation and mitigation, particularly emphasizing those that involve human health, a subject that moves people.

Improved cost-benefit tools can encourage public and private decision makers to act more decisively. The estimation of costs and benefits of energy-efficiency projects often does not include nonenergy co-benefits. These include the public health benefits from cleaner air and water, the possibly greater comfort of building occupants, and higher labor productivity.[36] Switching from fossil to renewable energy can create jobs.[37] Case studies in manufacturing conclude that these benefits can be considerable, sometimes equivalent to the value of the energy savings alone.[38] So the time frame for investment paybacks can be substantially shortened, providing better incentives to invest. Similarly, earmarking revenues from carbon or energy taxes can increase the visibility of benefits of mitigation. Although fiscal earmarking is deemed economically inefficient, it can increase political acceptance of new taxes, because the public sees clearly where the money goes.

Social norms.   Social norms are the patterns of behavior that most people approve of—the yardsticks they use to assess the appropriateness of their own conduct. In shaping human action, social norms can achieve socially desirable outcomes, generally at a fairly low cost. The basic idea is that people want to act in a socially acceptable way and tend to follow the lead of others, particularly when the others are numerous and are perceived as similar.

Social norms have a particularly strong impact under conditions of uncertainty.[39] When looking for clues about how to behave, people rely on what others do. Appeals for proenvironmental behavior based on social norms are superior to traditional persuasion. Not littering is an example.

BOX 8.6   *Inserting climate education in school curricula*

Education can help drive behavioral change. In the Philippines the president signed into law the National Environmental Awareness and Education Act of 2008, which promotes the integration of climate-change education in school curricula at all levels. The 1998 education reforms in Lebanon incorporated environmental studies, including climate change, into science, civic, and geography classes. In 2006 the U.S. Environmental Protection Agency created a climate-change-based educational resource for high school students, allowing them to calculate emissions inventories. In 2007 Canadian provinces committed to include climate change in their school curricula. Under Australia's Third National Communication on Climate Change the government provides support and develops material to promote climate change education, such as a school resource kit developed by the Australian Greenhouse Office.

Incorporating climate change education in school curricula is a first step. Developing a new cadre of professionals to tackle the complex problems posed by climate change is equally important (see chapter 7). Finally, an educated citizenry is essential to facilitate change. Research shows that students and the general public hold onto misunderstandings about various aspects of climate change, the greenhouse effects, and ozone layer depletion.[a] To address these shortcomings, the public must be informed about climate change accurately and systematically.

Sources: Hungerford and Volk 1990; Kastens and Turrin 2006.
a. Gautier, Deutsch, and Rebich 2006.

A climate-relevant example comes from a psychological experiment on California residents to test the impact of social norms on energy consumption.[40] The average household energy consumption was communicated through energy bills to one group of high-energy households and two groups of low-energy households. This set the social norm. One group of low-energy households received positive feedback for their energy consumption statement (a smiley face), conveying approval of their energy footprint. High-energy households were shown their use coupled with negative feedback (a sad face) to convey disapproval. The result: high-energy households reduced consumption, and low-energy ones maintained their lower-than-average consumption. The third group—low-energy households initially exposed to the social norm but receiving no positive feedback about their behavior—increased their consumption to reach the average. Utilities eager to reduce energy use have adopted the approach in 10 major metropolitan areas in the United States, including Chicago and Seattle.

Harnessing the power of social norms implies increasing the visibility of behavior and its implications. Individual decisions and actions that have a bearing on energy consumption today are largely invisible to the public and even to restricted circles of family and friends. In these cases human action cannot benefit from patterns of reciprocity, peer pressure, and group behavior normally at play in more visible cases of behavior change and compliance, such as compliance with traffic control.

Research on cooperation leads to the same conclusion. Unless information about other players' behavior is available, people tend not to cooperate.[41] Farmers within a river basin should receive information not only about their water use but also about whether they are below or above the standard set by their peers. Residents of flood-prone areas can be encouraged to adopt protection measures by exposing them to the rapid uptake of such measures by others in their community. Conversely, appeals stressing that too many people have not yet installed basic energy-efficiency measures are bound to lead to even less adoption of such measures, not more.

Social norms can complement traditional public policy approaches and measures, such as regulation, taxation, and pricing. Thinking about group behavior can ameliorate the impact of these measures, opening opportunities for combining different instruments. But some policies based on economic incentives might do more harm than good by weakening the effect of social norms. Pricing pollution or emissions might give polluters the impression that it is all right to pollute, as long as they pay their fair share. Similarly, imperfectly enforced regulation, or perceptions that formal rules can be eluded, can favor more self-interested behavior and weaken cooperation.[42]

More radical calls for social norms focus on alternative parameters of progress, such as stressing a shift toward notions of well-being decoupled from consumption.[43] And political opposition to instruments such as green taxes can be overcome through tax-rebate schemes—in Sweden, for example, very high tax rates on nitrogen oxide emissions from power producers were politically acceptable because taxes were fully rebated to producers on the basis of how much electricity they produced.[44]

These measures are obviously not enough to ensure the success of climate policy. But they might well prove necessary. Encouraging behavior change for mitigation and adaptation goes beyond providing additional information, finance, or technology. Traditional measures can be complemented by alternative interventions, often at low cost. Rather than simply treat these social and psychological drivers of behavior as barriers to adaptation and mitigation, policy makers can use them to build more effective and sustainable policy.

Bringing the state back in

Over the past 30 years the role of the state has been cut back in various domains key to addressing the climate challenge, such as energy research. The retreat from direct intervention occurred with a switch from "government" to "governance" and an emphasis on the state's role in steering and enabling the private sector.[45] This general trend hides a complex picture. Twentieth-century Europe saw various forms and degrees of state capitalism. The rise of East Asian economies, including China's, demonstrated the preeminence of the state in "governing the market" to deliver the most successful example of accelerated development.[46] Most recently, the 2008 financial crisis showed the pitfalls of deregulation and unrestrained markets—and triggered renewed emphasis on bringing back the state.

Climate change requires public interventions to address the multiple market failures driving it—the failures of pricing; of research and technology development; and of coordination and collective action, global, national, and local.[47] As providers of public goods and correctors of externalities, governments are expected to address these market failures. But there are more specific drivers of government intervention.

First, the private sector's role in solving the climate challenge is crucial, but overplaying it would be unwise. Despite the enthusiasm for the private sector's

contribution to major investment projects in the 1980s and 1990s, private participation in infrastructure remains limited. Although the bulk of the additional investment and financing needed for climate-change mitigation and adaptation is expected to come from the private sector, government policies and incentives will be fundamental.[48] Moreover, energy providers and electric utilities are usually government-owned or government-regulated private corporations. Changing the mix of generation facilities may require subsidies and up-front fixed-capital investments. Business certainly has an incentive to secure the attractive returns from investments in energy efficiency, but, as discussed in chapter 4, market barriers are likely to require government action. Where high costs of new technology (low-emission vehicles or solar electricity generation, for example) are constraining supply and demand, a range of government incentives may be required to expand markets.

Second, mitigation and adaptation are both likely to increase public spending. Auctioning emission permits or taxing carbon generates revenues. Keeping expenditure flat would require government to deliver complete tax rebates or full revenue recycling. But such fiscal neutrality might be perceived as a luxury in countries looking for cash to fund new public investments for adaptation and for new energy infrastructure while containing their fiscal deficits. As chapter 7 highlights, governments need to expand their already significant role in technology research, development, and demonstration. Governments can change incentives, either by subsidizing investments with wider social benefits that markets tend to undersupply (such as risky energy R&D) or by taxing or regulating actions that are socially harmful.

Third, the greater frequency and severity of extreme weather events will pressure governments to enhance their insurance function. As chapter 2 notes, insurance markets can go only so far in securitizing climate risks. Developed-world insurance systems are already stretched in dealing with rising hazards along the U.S. and Japanese coasts, in upper-middle-income Caribbean islands, and on floodplains in northern Europe.

Climate change is expected to exacerbate insurability problems, requiring renegotiation of the boundary between private and public insurance systems. Governments will face pressures to become insurers of last resort for more of the population and for more damages. In parallel, they will need to address the moral hazards inducing people to make bad choices because of insurance.

Fourth, governments will have to do more as knowledge and learning platforms, particularly around adaptation.[49] As chapter 7 argues, this will require more investments in R&D and more effective markets for technology innovation. It will also require transforming meteorological services into climate services, overseeing the distribution of information at different levels, and using international regimes and organizations as policy-learning arenas for governments to learn from each other and adapt policy to local circumstances.

Fifth, as the prime repositories of political legitimacy, governments will be expected to steer the private sector, facilitate community action, and establish the optimal decentralization of adaptation and mitigation decision making and action. On top of steering, governments will be expected to play an "ensuring" function: guaranteeing that targets and goals are achieved through new emphasis on regulation, taxation, long-term planning, and communication.[50]

None of this means that the size of the state needs to expand—government size is not always associated with better provision of public goods.[51] Instead, it is about recognizing, as chapter 2 points out, that the added challenges of climate change will also increase the cost of government failures. Addressing these challenges will require broadening government objectives and agendas and stepping up the type, scope, and quality of government interventions.

Toward climate-smart government

Governments will need to review the way they operate if they are to successfully address the climate challenge. As attention shifts from identifying the causes and impacts of climate change to devising responses, government setups will need rearranging.[52]

In most countries no single government agency can fully control climate-change policy; relevant mandates, responsibilities, and constituencies are spread over different ministries. Yet few governments have an agency capable of enforcing carbon budgets. In addition, the time frames of climate impacts and required responses go well beyond those of any elected administration. And bureaucracies are not quick learners.[53] Because of the novelty of climate change as a public policy domain and because of the urgency of action, policy makers need to prepare for a degree of failure—and to learn from it. These problems have been identified in the literature as the main drivers of failures to act in organizations.[54]

Government effectiveness will be critical to leveraging the impact of adaptation funding. As chapter 6 notes, most adaptation activities today are implemented through stand-alone and disconnected projects. Fragmented adaptation finance hampers mainstreaming and scaling up in planning and development processes, increases transaction costs for recipients and donors, and diverts the time and attention of politicians and government officials away from domestic priorities to manage aid-related activities. The tens of billions of dollars required for adaptation may put additional pressure on developing countries' already limited absorptive capacity. Many of the developing countries most in need of adaptation support are those with weaker capacity to manage and absorb funding. When a recipient's capacity to manage funds is limited, donors engage in tighter controls of funds and project-based modalities, putting further strains on country systems and leading to vicious cycles of lower capacities, fiscal shortfalls, and fragmentation.[55]

Enhancing the capacity of central government

When political leaders take an active interest, focusing the minds of officials, public opinion, and external stakeholders, countries move forward. Conversely, when leaders fail to act, countries lag behind. This is hardly surprising. Decision makers are individuals, and the failures in the way individuals make decisions also affect the way organizations, including governments, work.[56] However, leadership is not just an individual issue; it is also institutional and has to do with the way responsibility, coordination, and accountability for climate policy are organized (figure 8.6).

Assigning responsibility for climate policy. In most countries climate change is still the preserve of the environment ministry. But climate policy spills over into domains that transcend the boundaries of environmental protection and include trade, energy, transport, and fiscal policy. Environment agencies are normally weaker than departments such as treasury, commerce, or economic development. They tend to have fewer resources and to be represented in cabinets by junior politicians.

Although there is no single recipe for assigning the climate remit, reconsolidating responsibility is key (box 8.7). Bureaucratic consolidation—based on budgetary independence, expert personnel, and the authority to propose and enforce legislation—concentrates authority and avoids diffusion of responsibility that can lead to failures to act. The creation of ministerial-level agencies led by senior cabinet ministers, or the inclusion of climate policy on the agenda of already-established key

Figure 8.6   Effective governance goes hand in hand with good environmental performance

Environmental performance
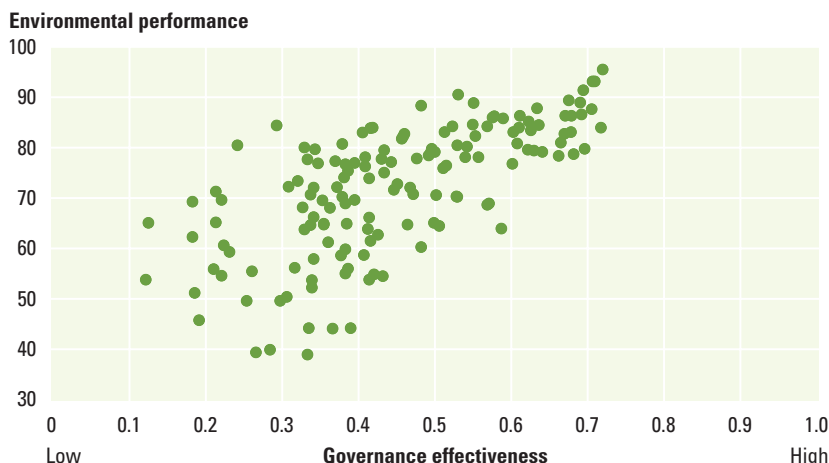
Sources: Kaufman, Kraay, and Mastruzzi 2007; Esty and others 2008.

Note: Environmental performance is measured by an environmental performance index (http://epi.yale.edu/). Governance effectiveness ranges between 0 and 1 and is derived using log transformation of the governance effectiveness indicator from the World Governance Indicators database for 212 countries for 1996–2007. It combines the views of a large number of enterprise, citizen, and expert survey respondents in high-income and developing countries.

agencies are signs of a trend toward bureaucratic consolidation.

Facilitating integration and interagency coordination. Bureaucratic consolidation, though important, may not be enough. And the mere creation of a separate agency might even be counterproductive. Policy coherence throughout an administration requires integrating climate planning across government. Here, the challenge is the typical compartmentalization of government work and the tendency to treat multidimensional problems in organizational silos. Approaches for integration include establishing climate units in each ministry or agency complemented by sectoral plans at national and local levels for mitigation and adaptation. In addition to a revision of their mandates, relevant public agencies—such as those involved in public health, energy, forestry and land-use planning, and natural resource management—can coordinate their work under a lead climate-change agency. Achieving this type of coordination is likely to require rethinking the role of hydrometeorological services (see chapter 7).

New coordination bodies—a cabinet committee on climate change, one explicitly linking climate with an already recognized and critical issue area such as energy, or an intragovernmental coordinating committee chaired by the lead agency—can bring together officials working on climate change across government. Coordination of climate policy can also be the prime minister's remit—say, by creating an advisory function directly within the prime minister's office.

For both integration and coordination, particular attention should go to developing sector policies and strategies. As chapter 4 shows, energy policy in many countries emphasizes market reform and pricing, introducing competition to the energy sector, and developing regulatory institutions to deliver low prices and reliable supplies to consumers.[57] Until very recently, mitigation was not even a tangential preoccupation of energy policy. As climate change moves up the political agenda, the mandates of energy agencies and the policies and strategies

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BOX 8.7 *China's and India's path to institutional reform for climate action*

China shows how responsibility for climate policy has moved from the fringes to the core of government activity. The government initially set up special institutions to address climate change in 1990. Recognizing the relevance and intersectoral nature of the issue, it established a National Coordination Committee on Climate Change in 1998.

In 2007 the committee was transformed into the National Leading Group to Address Climate Change. Headed by the Chinese premier, the leading group coordinates strategies, policies, and measures among 28 member units within government agencies. During the 2008 government reform, the general office of the leading group was placed within the National Development and Reform Commission, which undertakes the general work on climate change, supported by an expert committee providing scientific information to inform decision making.

India is another developing-country example. Its Council on Climate Change is chaired by the Prime Minister. It developed the National Action Plan on Climate Change and is responsible for monitoring its implementation. The Plan encompasses eight National Missions that span sectoral ministries since they include Solar Energy, Enhanced Energy Efficiency, Sustainable Habitat, Conserving Water, Sustaining the Himalayan Ecosystem, the creation of a "Green India," Sustainable Agriculture, and the establishment of a Strategic Knowledge Platform for Climate Change. The vision of the National Action Plan is a graduated shift from fossil fuels to non-fossil fuels and renewable sources of energy.

Similar institutional reform measures have already been adopted by a range of other countries, developed and developing.

Source: WDR team.

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guiding them will be updated to include low-carbon supply and energy-efficiency as core responsibilities.

Strategy documents can increase the coordination of adaptation activities. Consider the National Adaptation Programs of Action (NAPAs) of least developed countries. Born as a technical priority-setting exercise, NAPAs determine country-specific impacts and design locally tailored responses by engaging different agencies and levels of government as well as broad constituencies of business and civil society actors. In this sense, they can provide an institutional framework for placing adaptation at the center of government's priorities. But to consolidate their strategic function, they will require more attention from internal and external stakeholders (box 8.8).

Reinforcing government accountability. Governments can fail to act on specific policy issues when accountability lines are not clear, either because of the nature of the

BOX 8.8   *National adaptation programs of action*

National Adaptation Programs of Action (NAPAs), the most prominent national efforts by the least developed countries to identify priority areas for adapting to climate change, have been subjected to three criticisms. First, the NAPA process puts in place similar projects across different countries, without paying attention to their specific adaptation needs. Second, many adaptation projects are difficult to distinguish from standard development projects. Third, the NAPA process fails to involve the major ministries and decision makers in the country or to pay enough attention to subnational and local institutional requirements.

In light of these criticisms, the World Development Report team sponsored two meetings of high-level NAPA officials in Asian and African countries, one in Bangkok in October 2008 and one in Johannesburg in November 2008. The meetings showed a more complicated picture and suggested that some criticisms may be misplaced.

Although adaptation needs and projects may appear similar when viewed collectively, they vary substantially across countries depending on the climate hazards and threats identified as most relevant. The standard NAPA guidelines explain some of the similarities in the language used to defend the identified projects as the most urgent adaptation needs. The preponderance of agricultural, natural resource, and disaster management projects reflects the fact that the impacts of climate change will be felt first in sectors related to primary goods and disaster management. Finally, the NAPAs were prepared on a shoestring, so the planning could not extend beyond the national level or across multiple ministries and decision makers.

But there is another side to the criticisms—the way the least developed countries view the NAPAs that they have prepared.

Little financial support: The total cost of all projects identified as urgent in 38 NAPA documents is less than $2 billion.

Despite this low price tag, little financial support has been available, raising valid concerns about donor assistance and widening the trust gap.

Poor architecture: Institutional arrangements for adaptation need to be more permanent and better linked to different ministries with support from ministries of finance and planning and stronger connections to provinces and districts. A dedicated body can do the planning, but implementation will have to be undertaken through existing institutional and governmental structures because many projects are sectoral.

Low capacity: Capacity for adaptation planning and implementation continues to be very low in most of the least developed countries. Improvements are needed in technical capacity, knowledge, training, equipment, and modeling; some capacity in these areas could be gained from experts in universities and civil society.

Source: WDR team.

issue or because of institutional flaws. Take responses to natural disaster. Unless a country is regularly hit by severe weather events, disaster avoidance and response usually fall through the cracks of the government agenda. Leaders find it unlikely they will be scrutinized, rewarded, or sanctioned for actions that the public did not even know their governments were supposed to take (avoiding disasters). If the relationship between efforts and outcomes is not clear to the public, governments lack clear incentives for action.

Government accountability for climate policy can be enhanced by making line agencies more accountable to core government ministries, such as the treasury or the prime minister—and by making the entire government more accountable to parliament, the public, and autonomous bodies (box 8.9). Parliaments can conduct hearings, monitor performance, educate the public, and require government to engage in regular reporting on climate objectives, policy, and achievements. Inscribing climate policy targets and objectives into law

can be a potent tool for greater government accountability—and to ensure continuity of action beyond a government's short time frame. An independent expert advisory body can make recommendations to government and report to parliament.

Leveraging local government action

Local and regional governments can provide political and administrative space closer to the sources of emissions and the impacts of climate change. Charged with implementing and articulating national policies, they have policy-making, regulatory, and planning functions in sectors key to mitigation (transportation, construction, public service provision, local advocacy) and adaptation (social protection, disaster risk reduction, natural resource management). Closer to citizens, subnational governments can raise public awareness and mobilize nonstate actors. And because they are at the intersection of government and the public, they become the space where government accountability for appropriate responses plays out.[58]

Probably for these reasons, local authorities often precede national governments in taking climate action. As chapter 2 shows, the regional and local levels are often more appropriate for the design and implementation of adaptation measures in agriculture, infrastructure planning, training, and water management. But local governments can also lead in mitigation. States on both U.S. coasts have developed locally owned strategies and targets and then coalesced to pilot regional carbon markets (box 8.10). Cities worldwide have their own climate action plans and strategies, adopting Kyoto targets to compensate for the inaction of national governments and becoming active members of national and transnational city initiatives, such as the C40 network of the world's largest cities committed to tackling climate change.

The relevance of local governments requires their inclusion in climate policy. Decentralizing climate policy has pros and cons, and its optimal level and scope are context specific.[59] Local governments suffer from the same limitations as central governments, though usually more severely. The climate policy remit at the local level is usually with an environment unit, with integration and coordination problems. Subnational governments usually face resource and skill gaps and have less fiscal power, which prevents them from using environmental taxes. Despite their proximity to citizens, local governments often lack the same legitimacy as national governments, because of low turnouts in local elections and weak electoral mandates or weak capacities to deliver. All this makes devolution of climate policy particularly tricky.

To enhance vertical collaboration, national governments can engage in enabling, provision, and authority measures. Enabling measures include transferring knowledge and best practice. Of interest are benchmarking initiatives linked to competition and awards for the best-performing local authorities—the provincial competitiveness index in Vietnam is a good example of such subnational benchmarking. Provision measures include performance-based public sector agreements that link funding

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BOX 8.9 *Enhancing government accountability for climate change in the United Kingdom*

By restructuring and establishing the institutional machinery for climate action, the United Kingdom has also deployed measures that increase the government's accountability for delivering results. The United Kingdom

- Passed a climate change bill that provided a statutory foundation for the official UK CO_2 emissions targets in the short, medium, and long terms, through five-year carbon budgets that set annual levels for permissible emissions. Three budgets spanning 15 years will be active at any given time, presenting a medium-term perspective for the evolution of carbon emissions throughout the economy.

- Designated a lead agency for climate change—the Department of Energy and Climate Change.

- Formalized in Public Sector Agreement 27 the accountability of the

Department of Energy and Climate Change to the Treasury for various policy objectives and set delivery targets to measure performance in implementing them. The targets include specific steps to reduce the total U.K. emissions, increase the sustainable withdrawal of water, reduce the CO_2 intensity of the U.K. economy.

- Established a committee on climate change as an independent expert advisory body that can recommend to government ways to achieve targets. The committee reports annually to Parliament, and government is required to reply formally. Every five years the committee will offer a comprehensive assessment of the country's overall progress toward the long-term targets.

Source: WDR team.

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not only to the number of inhabitants and geographical coverage of the authority but also to the achievement of targets. Authority measures include national laws requiring local governments to develop strategic plans in relevant sectors or regulation schemes to make local government officials accountable to central government, as with land-use planning.

Thinking politically about climate policy

Shaping the design and outcomes of any public policy are the strength, density, and extent of civil society; the bureaucratic culture and budget laws; and the factors driving the articulation and organization of political interests.[60] Fossil fuels, in addition to powering the economies of developed and developing countries, feed some of the special interests driving their politics. In many developing countries, carbon is not only unpriced, it is subsidized (see chapter 4). At the end of 2007 roughly a fifth of countries were subsidizing gasoline, and

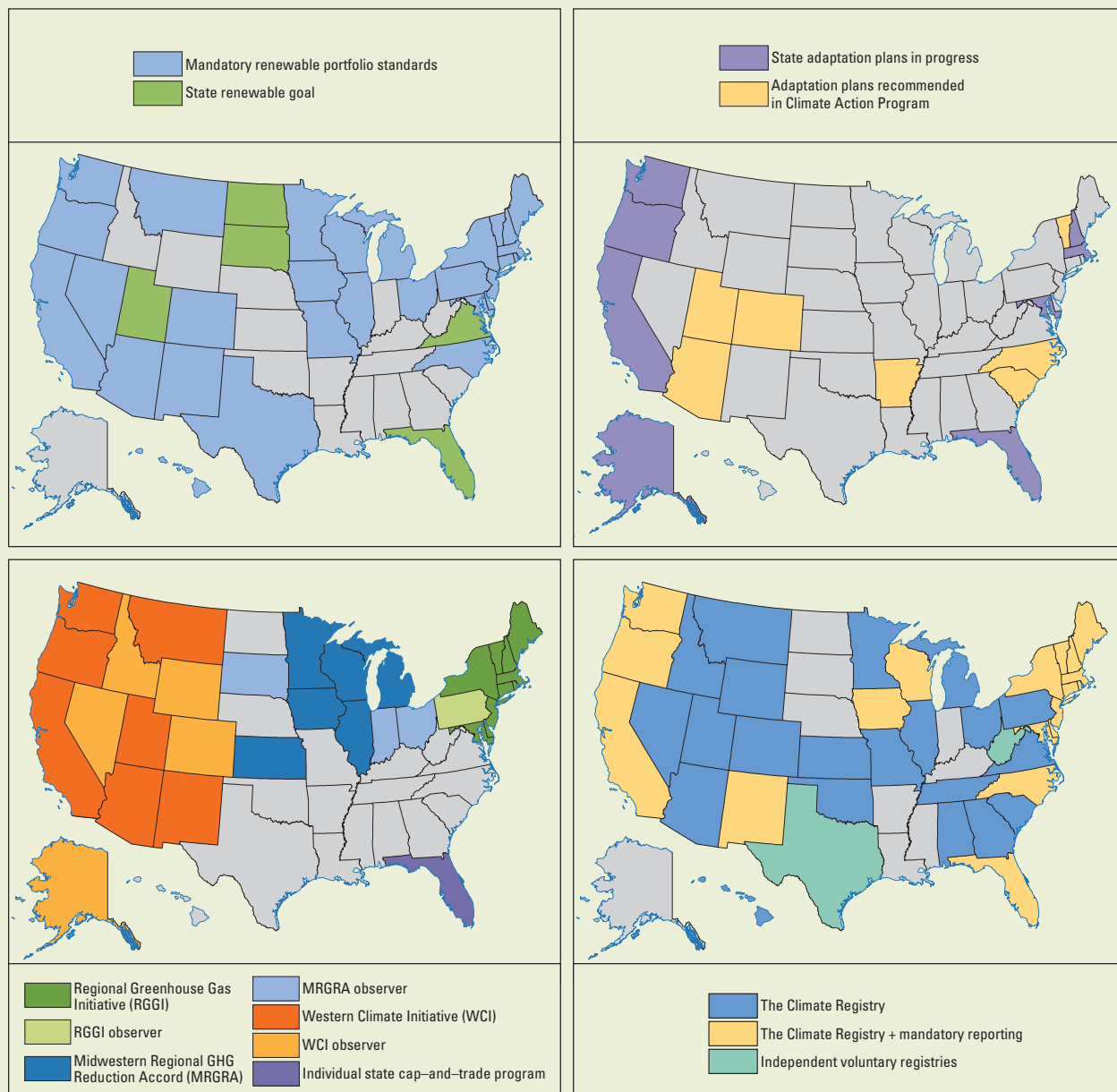**BOX 8.10**   *Green federalism and climate change policy*

Subnational jurisdictions in federalist systems have long been recognized as laboratories of policy experimentation and reform.[a] State, provincial, and local governments have had varying degrees of success when it comes to efficiency and effectiveness of "green federalism" policies—those environmental policies where subnational governments take the lead.[b]

Arguments supporting green federalism include the ability of lower-level governments to tailor policies to their unique resources and demographics, as well as the opportunity to drive slower-moving national policy with innovative subnational experimentation and learning.[c] Critics of green federalism cite risks of carbon leakage, as well as the incentive for businesses to relocate in less restrictive jurisdictions. This process is often termed the race to the bottom, since it reduces environmental quality and underprovides public goods and services.[d]

But for climate policy, green federalism has shown promising results. One of the most visible examples is the United States (box map). Despite the national government's decision not to ratify the

Green federalism in the United States: State and regional action

Mandatory renewable portfolio standards
State renewable goal

State adaptation plans in progress
Adaptation plans recommended in Climate Action Program

Regional Greenhouse Gas Initiative (RGGI)
RGGI observer
Midwestern Regional GHG Reduction Accord (MRGRA)
MRGRA observer
Western Climate Initiative (WCI)
WCI observer
Individual state cap–and–trade program

The Climate Registry
The Climate Registry + mandatory reporting
Independent voluntary registries

(continues)

Kyoto Protocol, and in the absence of overarching federal climate-change policy, subnational governments have taken the lead.[e] Many regions have greenhouse gas monitoring and registering programs as well as emissions reduction goals. And dozens of individual states have crafted and implemented mitigation and adaptation plans or instituted renewable portfolio standards and reduction targets. Cities and municipalities have also initiated comprehensive climate change auditing and planning programs, setting emissions reduction goals of their own.

These actions add up to significant reductions, and some claim that such efforts have led to a race to the top.[f] If the handful of states with firm emissions targets achieve their 2020 goals, U.S. national emissions could be stabilized at 2010 levels by 2020.[g]

Source: State actions are tracked by the Pew Center on Global Climate Change (www.pewclimate.org).

a. Osborne 1988.
b. Oats and Portney 2003.
c. Lutsey and Sperling 2008.
d. Kunce and Shogren 2005.
e. Rabe 2002.
f. Rabe 2006.
g. Lutsey and Sperling 2008.

slightly more than a third were subsidizing diesel fuel. More than two-thirds of low- and lower-middle-income countries were subsidizing kerosene.[61] Clearly, countries with large fossil-based energy sectors or highly energy-intensive economies face major resistance to change.[62] The result is that worldwide the sources and drivers of carbon emissions are often tied to governments' political legitimacy.

Each political system presents advantages and obstacles in addressing climate change. Take democracy. Strong evidence shows that democracies outperform autocracies in environmental policy.[63] Political freedoms improve environmental performance, particularly in poorer nations.[64] Greater civil liberties are linked with better air and water quality, such as reduced sulfur dioxide and particulates in air and lower coliform and dissolved oxygen levels in water.[65] Democracies are more likely to join international environmental regimes and treaties, are generally faster at ratifying them, and have a track record of solving global commons problems such as ozone depletion.[66]

Yet democracies sometimes do better in policy outputs (signing up to international commitments) than policy outcomes (actual emission reductions), as with Kyoto.[67] As with individual consumers and voters, democracies prove more responsive in committing to solving a problem than in actually solving it, with the "green gap" in consumer attitudes translating into a words-deeds gap in government behavior (figure 8.7).[68] There are several reasons for this. Despite rising public concern about climate change, politicians keep fearing the electorate, assuming that voters are likely to be less supportive of climate action once policies affect them personally through direct and visible personal costs (carbon and energy taxes, price increases, job losses).[69] This might explain why it is harder to achieve emissions reductions through restrictions that affect individual choices. Intervening in personal mobility choices is politically tougher than targeting power plants.[70]

In political terms, climate action faces a "proximity limit." People's tendency to first address visible and direct concerns translates into a political bias favoring the solution of local environmental problems (sanitation infrastructure, water and air quality, risks associated with toxic releases, and local habitat protection) over transboundary issues (such as biodiversity loss, overfishing, or climate change).[71] The proximity limit has a temporal dimension too. Problems with long time horizons, particularly those involving public goods, are tricky to resolve. Climate change is no exception.[72] Intergenerational problems require long-term policy frameworks at odds with government time frames and electoral cycles.

When policy issues are left without a public to champion them, shortsightedness can produce perverse incentives. Disaster risk management is an example of how standard adaptation measures can fail because the public (the voter) often fails to think in preventive terms. So decision makers neglect prevention and preparedness because these issues do not win votes. In turn, decision makers' realization that

Figure 8.7   Democracies do better in climate policy outputs than policy outcomes

Output: policies, laws, and international agreements
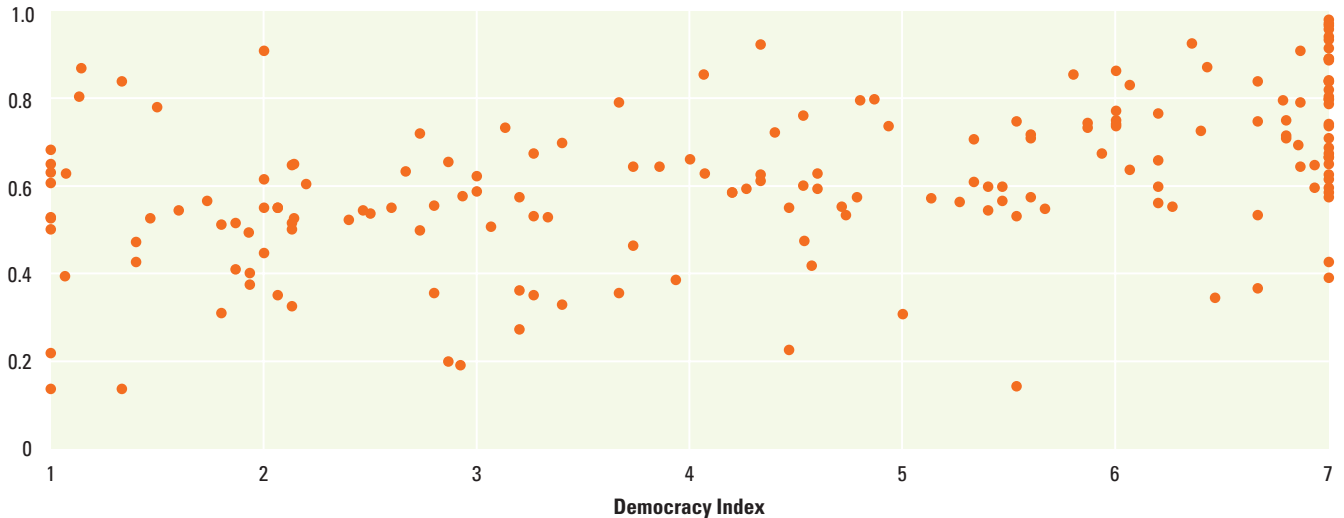
Outcome: emission reductions
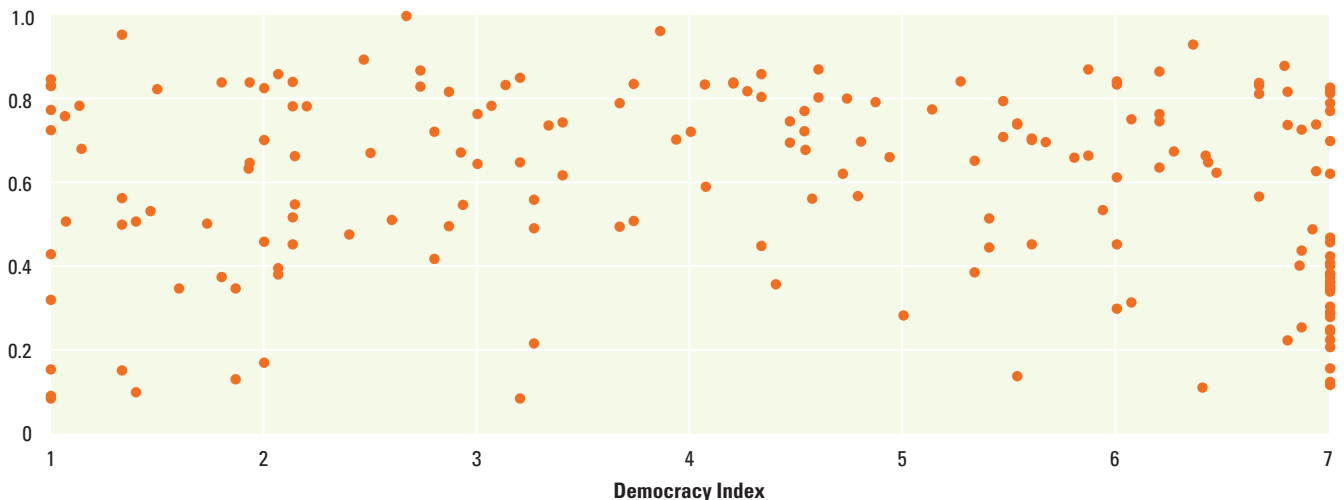
Source: Bättig and Bernauer 2009.

Note: Output is an index of cooperative behavior in climate change policy, spanning ratification of agreements, reporting, and financing—it ranges between 0 and 1, with higher values indicating more cooperation. Outcome is an index of cooperative behavior in climate change policy, spanning emission trends and emission levels—it ranges between 0 and 1, with higher values indicating more cooperation. The Political Rights Index by Freedom House is a measure of democracy encompassing the degree of freedom in the electoral process, political pluralism and participation, and functioning of government. Numerically, Freedom House rates political rights on a scale of 1 to 7, with 1 representing the most free and 7 representing the least free. However, in this figure the scale of original data has been inverted and higher values indicate a higher level of democracy. Data are 1990–2005 averages. The figure shows that there is a positive relationship between output and level of democracy, as represented by the Freedom House political rights index; democratic countries have, in general, better output. Conversely no significant relationship has been found between level of democracy and climate outcomes in the form of emission reductions (using emissions reductions in 2003 compared to 1990 levels).

disaster relief has higher political payoffs than preparedness closes the circle of moral hazard. This is far from purely theoretical. If the costs of disasters have increased dramatically, it is partly because governments realize that providing compensation to groups and areas struck by severe weather events provides major electoral benefits.[73] This realization works against policy change and reinforces bad policies.

Government crop insurance reduces farmers' incentives to avoid weather damage. Disaster relief leads citizens and local governments to expect compensation as an entitlement rather than take preventive measures.[74]

Climate reforms depend on political support. Any policy change generally meets resistance, particularly when it involves visible costs to large and diverse actors. Climate

policy is a perfect example, because its costs are going to be clearly visible to various economic groups and the population at large. Building public support for climate policy can take many avenues.

Devise interventions that a maximum number of (key) political actors can agree on

Design policies that yield co-benefits. Countries abiding by and implementing international environmental obligations tend do so because of local incentives: air pollution, water quality degradation, direct and visible environmental threats.[75] Individuals contribute to public goods more easily when they see a direct benefit. Actively seeking overlapping goals and benefits should be a core part of a politically sustainable climate policy.[76] Not all climate-smart development policies are climate specific, and a range of actions can overcome the (perceived) tradeoffs between economic development and climate action. The challenge is to frame climate action in terms of local, private, and near-term goals and co-benefits—such as energy security, energy efficiency, public health, pollution abatement, and disaster risk reduction.

Target key constituencies. The co-benefits of climate policy can win over opposing vested interests. Take labor. Where the short-term employment effect of climate policy is negative, offsetting payoffs for organized labor should be made clear. Unions can be brought round by demonstrating to them how a low-carbon economy is more labor intensive than a conventional one; how energy savings can be turned into higher, labor-intensive expenditures; how investments in technology development and deployment will create jobs; and how the revenues from energy taxes can offset taxes on labor, increasing the demand for workers. It is important to carefully assess whether policies are perceived to be unduly favorable to one key group or the other. Support for climate policy is strong among groups that see a low-carbon economy as a business opportunity, but legacy industries remain opposed. Grandfathering emission

permits is often cited as a strategic measure to get the longer-term buy-in of business, but the scheme also generates public resistance (box 8.11).

Rely on consensus processes and instruments. Obtaining the prior agreement of the main stakeholders on specific measures can reduce political damage. In addition to identifying co-benefits, consensus policies involve setting up consultative systems and voluntary schemes that bind key actors such as industry groups to the principles of climate policy. Consultative political systems seem to be more effective in environmental policy.[77]

Increase the public's acceptance of reforms

Pursue equity, fairness, and inclusion. A decision maker's aversion to inequity is a product of both ethics and politics, because redistributional outcomes normally lead to political payoffs or sanctions by voters. The public is more likely to accept policy change if it is seen as tackling a severe problem and if its costs and benefits are perceived as equitably distributed. This calls for designing progressive and equitable climate policies involving transparent compensatory measures for the poorest. Green fiscal policies can be progressive and play a strong equity role.[78] Revenue recycling from carbon taxes or auctioned permits can support tax cuts and provide economic stimulus. Earmarking the proceeds of carbon permits and taxes for social protection schemes can increase

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BOX 8.11 *Garnering support for cap-and-trade*

The European Union recently created an emissions trading system to meet its Kyoto obligations. Overall, the system has many good features. One peculiarity is that EU countries are required to grandfather credits (give them freely) to firms despite the potentially huge rents associated with them and the clear economic gains to be had from auctioning credits. In part because of this grandfathering rule and the implicit recognition of the large rents associated with it, the allocation

mechanism is set only for five-year periods.

These short allocation periods avoid giving away too much wealth through rent creation and capture. But the massive windfalls for major polluters drew media attention and alienated the public. The five-year system also created perverse incentives for strategic behavior to influence the next allocation rule and was protested by firms aiming to enter the industry.

Source: WDR team.

the acceptance of energy-pricing reforms. In several European countries revenues raised from charges on air pollutants, hazardous wastes, and toxic chemicals reduce income taxes and social security contributions.

Lead by example.   Policy makers can set social norms by changing the behavior of government. The greening of government can play an important communication role in addition to providing immediate benefits in reducing emissions and catalyzing research and investments in new technologies. Where feasible, government can also revise instruments such as public procurement to support green objectives.

Use weather-related natural disasters as teaching moments.   Disasters can provide "focusing events" that lead to rapid policy change, although the window of opportunity is usually short.[79] The 2003 heat wave in Europe, Hurricane Katrina in 2005, and Australia's 2009 wildfires all increased attention to climate change. Such events can provide an opening for government to take actions unpopular in normal times.[80] Postdisaster reconstruction also provides opportunities to depart from past practices and build more resilient communities and societies.

Increase the acceptability of policies.   Swift and sudden government actions can circumvent groups that want to maintain the status quo and create a feeling of inevitability, if momentum is maintained.[81] But gradualism can also increase the acceptability of policies, because incremental policy changes usually draw less attention and resistance. This could explain why major economies have been slow in starting to reduce emissions. Small, incremental changes can establish platforms for advancing larger changes later on. Here, establishing predictability— setting the long-term orientation of government policy—allows stakeholders (in and outside government) to identify the incentives they need to reorient their activities.[82]

Improve communication.   Well-designed communication strategies not only can help change behaviors—they can also mobilize political support for reform. Pub-lic information campaigns have been key to successful subsidy reforms, even where groups capturing the subsidies were better organized and more powerful than the beneficiaries of reform (consumers and taxpayers). Communication should focus on filling the knowledge gap and addressing what can be rationally based opposition to reforms. For instance, demystifying some of the unsubstantiated perceptions of the negative sides of climate policies can reduce uncertainty and opposition. Research shows that fears of racing to the bottom and losing competitiveness are exaggerated and that investing in new green technology can lead to the development of markets for environmental goods and services.[83] Similarly, stressing that environmental taxes are not simply a source of revenue for the state but a key to changing behavior is central to enhancing public acceptability.

Address structural deficiencies of political systems

Reinforce political pluralism.   Vested interests, including those that fear climate policies would harm their business or industry, may have a stake in limiting the scope and impact of climate policy. Measures to reduce interest group activity aimed at capturing or hijacking climate policy include reinforcing political pluralism. This can have varying impacts on policy change. A large number of veto players can produce a policy gridlock.[84] But political pluralism generally reduces behind-closed-door lobbying and corruption by giving access and voice to countervailing interests.[85] Environmental interests have overwhelmed business interests trying to curtail the stringency of environmental policies in food safety, renewable portfolio standards, and waste regulation.[86] Political pluralism can also foster coalitions of environmental and business interests as drivers of change.

Promote transparency.   Clarifying the cost of energy and its components (production, imports, distribution subsidies, and taxes) can build support for reform of energy markets. In mitigation policy one major advantage of transparent reporting of the cost of energy is that the additional cost of carbon is

BOX 8.12   *The private sector is changing practices even without national legislation*

Private sector actors have stepped up their actions to reduce greenhouse gas emissions, even in countries lacking comprehensive climate-change legislation. An increasing number of firms have developed voluntary emissions targets and reporting standards. In 2008 a record 57 climate-related shareholder resolutions were filed in U.S. boardrooms—double the number five years earlier. Support for these measures averaged more than 23 percent among shareholders—another all-time high.

Carbon-intensive firms have also come together to discuss strategy for mitigating climate change. In early 2009 the U.S. Climate Action Partnership, an alliance of more than two dozen major greenhouse-gas-emitting companies and several nongovernmental organizations, put forth a unified plan for federal legislative action that calls for an 80 percent reduction of 2005 emission levels by 2050. The Business Roundtable, an association of leading U.S. companies, has mapped ways to improve conservation, efficiency, and domestic energy production between now and 2025. The Prince of Wales International Business Leaders Forum, an independent organization that supports more than 100 of the world's leading businesses, launched the Business and the Environment program in recognition of the impact of climate change on business operations and liabilities.

This drive is pushing entire industries to shift their practices. In March 2009 the U.S. insurance association implemented a first-of-its-kind requirement that all insurers must evaluate the climate-change risks posed to the companies they insure and disclose their plans for managing such risks. These include direct risks posed by climate-change impacts and indirect risks posed by policy initiatives to mitigate climate change. Similarly, the financial investment industry is moving to increase the disclosure of climate risks in publicly traded companies, while promoting climate-smart investments.

Source: WDR team.

put in relative terms. Transparency has been particularly useful in raising public awareness about the costs of energy subsidies, assessing the tradeoffs, and identifying winners and losers. Some countries have subsidy reporting systems to enhance public understanding of their costs and benefits.[87]

Make it difficult to reverse policy.   Political and institutional arrangements can help avoid shifting action on climate change from the living to the unborn by making it difficult to reverse climate policy. Such arrangements could include constitutional amendments and climate-change laws.[88] But they can also involve the establishment of independent institutions that take a longer-term view, in the same way that monetary institutions control inflation.

Climate-smart development starts at home

The quest for appropriate responses to climate change has long focused on the need for an international agreement—a global deal. Although important, a global deal is only a part of the answer. Climate change is certainly a global market failure, but one articulated according to locally defined causes and effects and mediated by context-specific circumstances.

This means that climate policy—for both mitigation and adaptation—has local

determinants. A study on the adoption of renewable portfolio standards across U.S. states shows that political liberalism, renewable energy potential, and concentrations of local air pollutants all increase the probability that a state will adopt such standards. On the other hand, carbon intensity tends to decrease this probability.[89] International regimes influence domestic policies, but the reverse also holds. A country's behavior in shaping, adhering to, and implementing a climate deal depends on domestic incentives. Political norms, institutional structures, and vested interests influence the translation of international norms into domestic political dialogue and policy, while shaping the international regime by driving the national actions.[90] A country's wealth, its energy mix, and its economic preferences—such as the propensity for state-driven or market-driven responses—will shape mitigation policy. Cultural and political traditions are added to economic and administrative considerations in choosing taxes or cap-and-trade. And because of the lack of an international sanctioning mechanism, the incentives for meeting global commitments need to be found domestically, through concentrated local benefits such as cleaner air, technology transfer, and energy security.

Climate action is already taking place. Countries have shown different levels of

commitment and performance in reducing emissions. Small countries—which in theory should have incentives to free ride, given their negligible role in global emission reductions—have so far undertaken more aggressive actions than the big players. In some countries subnational measures and homegrown policy responses are already affecting national policy and the position of countries in the international arena. And the private sector is showing that old practices can give way to new visions (box 8.12).

Reversing the institutional inertia that constrains climate policy requires fundamental changes in interpreting information and making decisions. A range of actions can be taken domestically by national and subnational governments as well as by the private sector, the media, and the scientific community. Although establishing an effective international climate regime is a justified preoccupation, it should not lead to a wait-and-see attitude, which can only add to the inertia and constrain the response.

Notes

1. North 1990.
2. Soderholm 2001.
3. Sehring 2006.
4. Foa 2009.
5. Gardner and Stern 2008.
6. Gardner and Stern 2008.
7. Bannon and others 2007; Leiserowitz 2007; Brechin 2008; Sternman and Sweeney 2007.
8. IPPR 2008; Retallack, Lawrence, and Lockwood 2007.
9. Wimberly 2008; Accenture 2009.
10. Norgaard 2006; Jacques, Dunlap, and Freeman 2008.
11. Bulkeley 2000.
12. Kellstedt, Zahran, and Vedlitz 2008.
13. Immerwahr 1999.
14. Krosnick and others 2006.
15. Boykoff and Mansfield 2008.
16. Oreskes 2004; Krosnick 2008.
17. Miller 2008.
18. Bostrom and others 1994.
19. Bazerman 2006.
20. Sternman and Sweeney 2007.
21. Ornstein and Ehrlich 2000; Weber 2006.
22. Repetto 2008.
23. Moser and Dilling 2007; Nisbet and Myers 2007.
24. Maslow 1970.
25. Olson 1965; Hardin 1968; Ostrom 2009.
26. Irwin 2009.
27. Winter and Koger 2004.
28. Sandvik 2008.
29. O'Connor and others 2002; Kellstedt, Zahran, and Vedlitz 2008; Norgaard 2006; Moser and Dilling 2007; Dunlap 1998.
30. Norgaard 2009.
31. Ward 2008.
32. Krosnick 2008.
33. Kallbekken, Kroll, and Cherry 2008.
34. Swallow and others 2007.
35. Clifford Chance 2007.
36. Romm and Ervin 1996.
37. Roland-Holst 2008.
38. Laitner and Finman 2000.
39. Cialdini and Goldstein 2004; Griskevicius 2007.
40. A. Corner, "Barack Obama's Hopes of Change Are All in the Mind." *The Guardian*, November 27, 2008.
41. Irwin 2009.
42. Irwin 2009.
43. Layard 2005.
44. Sterner 2003.
45. World Bank 1992; World Bank 1997; World Bank 2002.
46. Wade 1990.

"Ever think of emigration outside the world? To the Moon, Mars, or Venus? But our Earth is known to be the most beautiful planet of all. I still want to live in this wonderful place—with birds singing everywhere, the aroma of flowers in the air, green mountains, and blue icebergs. So everybody, please start to work together to conserve the beauty of Mother Earth. Join me now in making the world better."

—Giselle Lau Ching Yue, China, age 9

47. Stern 2006.

48. Haites 2008.

49. Janicke 2001.

50. Giddens 2008.

51. Bernauer and Koubi 2006.

52. Meadowcroft 2009.

53. Birkland 2006.

54. Bazerman 2006.

55. OECD 2003.

56. Bazerman 2006.

57. Doern and Gattinger 2003.

58. Alber and Kern 2008.

59. Estache 2008.

60. Kunkel, Jacob, and Busch 2006.

61. IMF 2008.

62. Kunkel, Jacob, and Busch 2006.

63. Congleton 1992; Congleton 1996.

64. Barrett and Graddy 2000.

65. Torras and Boyce 1998.

66. Congleton 2001; Schneider, Leifeld, and Malang 2008.

67. Rowell 1996; Vaughn-Switzer 1997.

68. Bättig and Bernauer 2009.

69. Compston and Bailey 2008.

70. Bättig and Bernauer 2009.

71. Bättig and Bernauer 2009.

72. Sprinz 2008.

73. Schmidtlein, Finch, and Cutter 2008; Garrett and Sobel 2002.

74. Birkland 2006.

75. Dolsak 2001.

76. Agrawala and Fankhauser 2008.

77. Compston and Bailey 2008.

78. Ekins and Dresner 2004.

79. Birkland 2006.

80. Compston and Bailey 2008.

81. Kerr 2006.

82. "A Major Setback for Clean Air," *New York Times*, July 16, 2008.

83. Janicke 2001.

84. Tsebelis 2002.

85. Dolsak 2001.

86. Vogel 2005; Bernauer and Caduff 2004; Bernauer 2003.

87. IMF 2008.

88. Kydland and Prescott 1977; Sprinz 2008.

89. Matisoff 2008.

90. Davenport 2008; Kunkel, Jacob, and Busch 2006; Dolsak 2001; Cass 2005.

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