

National climate change governance

Topic guide
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About this Topic Guide

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1. Overview

1.1 Background and context

The full brunt of cumulative greenhouse gas (GHG) emissions will be felt over the years to come but climate change impacts are already here. Fifteen of the 16 warmest years on record (since 1880) have occurred since 2001 (NASA, 2016). At the same time, Hallegatte et al. (2016) estimate that, without the rapid implementation of pro-poor, climate-informed development policies, climate change impacts could result in 100 million more people in extreme poverty by 2030. The world's poor are more vulnerable to loss of critical assets, health risks and food insecurity from drought or price shocks. To address these risks, development policies must consider climate risk scenarios while expanding 'no-regrets' social protection programmes that provide benefits to vulnerable populations under different climate scenarios.

This Topic Guide looks at climate change governance and the political economy of climate policy development and implementation at the national scale. Its primary purpose is to help Department for International Development (DFID) staff better support country partners in implementing climate and sustainable development policy that is equitable, effective and coherent and that can adapt to changing circumstances. It highlights national procedural, policy, institutional, political, economic and social-behavioural challenges and identifies potential entry points for addressing them. It is intended for both climate change and governance advisors, hence covers issues and concepts that will be very familiar to one group but not necessarily the other.

The 2015 Paris Agreement at the United Nations Framework Convention on Climate Change (UNFCCC) Conference of Parties 21 (COP21) reflects a new international governance model that seeks to balance ambition, accountability and transparency in commitments with fairness, equity, justice and sustainable development goals. The Agreement was formally ratified in November 2016, with over 55% countries signing up to its provisions. While the Agreement was hailed as a historic achievement¹ (United Nations, 2016) for having secured nationally determined contributions (NDCs) from 189 countries representing nearly 99% of global carbon emissions,² these contributions are also widely recognised as insufficient to achieve the goal of keeping warming well below 2°C or efforts to limit it to 1.5°C. Many operational rules must be determined at subsequent meetings, but the Agreement establishes a 'global stocktake' every five years to review progress towards meeting the global goals and has regular five-year intervals for countries to increase their level of action (Dagnet et al., 2016). Critical to the success of these commitments is the rapid mobilisation of \$100 billion a year annually until 2025 to build resilience and aid in the transition to a low-carbon economy. To build trust and accountability in the process, countries will need to demonstrate they are meeting their commitments and, in many cases, increasing their ambition and updating their adaptation plans. Without effective institutions and political commitment at the national level, this is unlikely to happen (Robinson, 2015).

1.2 Structure of the Topic Guide

Section 2 summarises a selection of key literature on political economy approaches to environment and development, drawing key insights relevant to climate governance. It argues that, in any discussion of potential policy options, national climate governance must consider prevailing political narratives, economic incentives and relationships of power. Building on this, the Guide investigates different types of 'commitment devices'³ that will be important for both developed and developing nations in setting credible long-term signals that policies and plans will be upheld.

¹ The Paris Agreement also has its critics; see Harvey (2015).

² <http://cait.wri.org/indc/>

³ A law, regulation, executive order, policy or other action that shapes future choices in order to meet a long-term policy objective – in this case carbon mitigation, low-carbon development or climate-resilient sustainable development. A commitment device must be credible to achieve this.

Section 3 summarises the literature on the institutional capacities needed to develop and implement cross-cutting policy changes in a way that enables vertical and horizontal information flows and is responsive to diverse societal needs. Here, it draws on climate and development governance literature, considering common challenges to institutional change, as well as those presented by wicked problems – notably, how institutions can support decision-making that is robust in the context of uncertainty. This section also explores ways to address the disproportionality of climate impacts through gender-inclusive decision-making and enabling a more engaged and effective role for civil society. It does this specifically in the context of climate vulnerability and adaptation and through the governance of climate finance.

Section 4 draws on recent case studies from different countries to discuss the political and institutional contexts in which multi-sectoral coalitions have been effective in shifting towards more sustainable energy policies. Finally, Sections 5–8 look, respectively, at the role of the private sector; key sectors, including agriculture and the rural economy and electricity; city and subnational climate change governance; and, finally, fiscal reform, in particular the issue of fossil fuel subsidies.

The discussion draws examples from both developed and developing countries to illustrate how different institutional and political settings are responding to challenges ranging from emissions reduction to the building of adaptive capacity to respond to climate impacts. There is, of course, no ‘best practice’ formula that can be applied across all countries. National context matters, and the political ideologies and narratives, capacity needs, influential stakeholders and incentive structures will vary not only by country but also within countries over time.

As this Topic Guide shows, the degree to which climate policies are implemented and receive sustained public and political support depends on a range of factors. Critically, national institutions will need to coordinate, share information, enable learning and be adaptive to new feedback on climate impacts and social, economic, and ecological system responses. Climate policy development and implementation should also be gender-responsive. All this requires opening up data and providing enabling conditions for its effective use by non-state actors, including accountability mechanisms.

Political economy approaches can assess ways to frame proposed policies to catalyse new coalitions or address vested interests. Creative climate policy design can help by providing innovative ‘commitment devices’ that can promote decision-making for the long term, enabling future flexibility in implementation while still providing protection from quick shifts in political support.

As many practitioners and policymakers are well aware, it is critical to conduct a political economy analysis (PEA) before engaging at the country level in any type of development policy. It is arguably even more so with climate policy, as this requires systemic transformations involving a wide range of actors working under uncertainty, with costs that are often acute and benefits that are more diffuse. For mitigation, these benefits are primarily global, whereas for adaptation they tend to be more concentrated. The costs and benefits for mitigation are more easily comparable (tons of CO₂, avoided costs, etc.), whereas adaptation benefits are dependent on the specific context in which interventions are implemented (Asselt et al., 2015).

1.3 A note on the scope

This Guide reflects on how the 2015 Paris Agreement is likely to alter the incentives for domestic actors but does not attempt to cover international climate governance. Nor is it able to comprehensively cover the many sector-specific governance issues, especially those related to land use and forests. Meanwhile, although the political economy of development has received significant attention in recent years – including from DFID – there has been less analysis of the political economy of national climate policy, particularly adaptation, and the literature is much less abundant. On certain areas that receive brief summaries in this Guide (e.g. gender, public financial management, climate change and social development), GSDRC has previously produced Topic Guides and Reading Packs, which can be found at gsdrc.org/publications.

2. Addressing political economy barriers to climate change decision-making

National policy-makers have been enacting climate-related laws and policies with increasing frequency. Even prior to Paris, a near-global assessment of climate change laws and policies in 2015 found that 804 existed, nearly double the number in 2009. More importantly, at least 58 countries have enacted framework legislation that addresses both emissions mitigation and adaptation (Nachmany et al., 2015). This means it is critical to understand the political economic power structures, relationships and incentives of different domestic actors and institutions.

2.1 Political economy of climate change decision-making

Political Economy Analysis has gained renewed prominence in recent years among bilateral and multilateral organisations, as a way to better understand how political narratives, economic incentives, informal rules and relationships shape the distribution and contestation of power and resources between individuals and groups (McCloughlin, 2014). Tanner and Allouche (2011) have argued that political economy approaches to climate change are critical because of:

- The added complexity of interests and actors resulting from the issue's cross-sectoral nature;
- An historical bias towards global approaches that may not be sufficiently flexible for national or subnational conditions;
- Problems of rent-seeking that are likely to accompany the increase in climate finance and resource transfer; and
- An overreliance on an apolitical understanding of the policy process and solutions framed through a technical or managerial lens.

Advocates of 'politically smart, locally led' development have argued that 'best practice' approaches should be abandoned in favour of 'best fit' options that are selected by local actors, whom donors enable to experiment with solutions that are technically sound and politically feasible (Booth & Unsworth, 2014; Faustino & Booth, 2014; Fritz et al., 2014; Rocha Menocal, 2014). This is closely related to the concept of problem-driven iterative adaptation (see Box 1).

These lessons are relevant for climate policy implementation: low-carbon development will not take off at the pace required unless domestic political support and adaptation needs are closely linked to development priorities. Some of the regions that are the most exposed to climate change, and which also have the most vulnerable populations, are in sub-Saharan African countries. Cammack (2007) has described many of these as following a 'patrimonial logic', whereby political allegiances, informal rules and personal relationships determine access to power and resources. While much has been written about these approaches with regard to development generally and public service delivery specifically, there has been less attention to these approaches in the climate policy and governance literature (Lockwood, 2013). However, experience on adaptation planning dovetails with the importance of finding 'best fit' solutions that are flexible and adaptive to local contexts. 'Robust' decision-making requires an understanding that decisions should avoid locking in potentially harmful, or 'maladaptive', investments in infrastructure that may exacerbate vulnerabilities and be costly to undo. There is still a knowledge gap on how to best operationalise these concepts in a way that is 'politically smart' – in this case by understanding where resources for adaptation are controlled and whose interests different policy choices may affect.

Box 1: Problem-driven iterative adaptation

PDIA is an approach developed by Andrews et al. (2013) to improve the performance of development outcomes by developing ‘best fit’ solutions through iterative experimentation with local partners. The authors criticise policy reform approaches oriented around best practices that are ‘unlikely to fit particular developing country contexts’ and that create ‘capability traps’ whereby ‘governments constantly adopt “reforms” as signals to ensure ongoing flows of external financing and legitimacy yet never actually improve’ (Andrews et al., 2013: 235). At the heart of the authors’ critique is the idea that governance interventions have wasted resources prioritising ‘form over function’ – that laws, procedures and rules have changed while function (e.g. public service delivery) has not. The authors present PDIA as a synthesis of multidisciplinary and multi-sectoral scholarship and practice that aims to:

- Solve particular problems in local contexts, as nominated and prioritised by local actors;
- Create an authorising environment for decision-making that allows for positive deviation and experimentation;
- Involve active, ongoing, and experiential learning and iterative feedback of lessons into new solutions; and
- Engage broad sets of agents to ensure reforms are viable and relevant (i.e. have political support and can be implemented) (Andrews et al., 2013).

Elements of this approach have can be seen in adaptive collaborative management, which has been employed over the past few decades in various settings – particularly in forested communities – as a way of enabling iterative learning and building informal institutions for more effective collaboration between governments and communities (CIFOR, 2008). Still, the lessons may be an important reminder, especially as governments and international processes may feel pressure or be presented with incentives to rapidly develop and implement climate policies without fully assessing implementation challenges.

Box 2: Summary of differences between mitigation and adaptation

Responses to the climate change crisis often distinguish between *mitigation* – reducing or preventing GHGs and increasing carbon sinks and reservoirs – and *adaptation* – ‘changes in processes, practices and structures to moderate potential damages or take advantage of opportunities associated with climate change’. From a governance perspective, these are not entirely discrete issues. For instance, low-carbon technologies to expand and secure energy access prevent emissions while also building resilience through sustainable development.

There are common issues of power, rent-seeking/benefit capture and institutional capacity to implement new policies. Developing countries will receive finance to address both issues, though the finance has historically been heavily weighted towards mitigation. Within adaptation, there are lively debates over how to balance ‘hard’ adaptation solutions (e.g. climate-resilient infrastructure) with ‘soft’ ones (e.g. strengthening redistributive social protection policies or land tenure reforms), and political actors may be incentivised to promote one over the other.

The actors (state and non-state) involved in adaptation and mitigation policy are likely to vary to an extent. Energy ministries are likely to be more involved in mitigation policies, whereas planning agencies figure more prominently in adaptation. Where vulnerabilities are highly localised, subnational governments may play a larger role in adaptation. Finally, the politics of mitigation are often more contentious, as there are often more obvious ‘losers’, particularly when there are politically embedded extractive energy industries.

With respect to mitigation in countries with larger per capita emissions, a major cause of this political inertia has been the distributional inequality of the costs and benefits of action over space and time. The opportunity costs of investing in the development and deployment of low-carbon technology and infrastructure will be incurred in the near term, whereas it is future generations who will more fully appreciate an avoided climate catastrophe. High- and upper-middle-income countries responsible for the vast majority of cumulative emissions are less vulnerable to its impacts than lower-income countries of the Global South.⁴ Rather than arguing that others (such as future generations or the poor) should bear the cost, policy-makers in developed economies often defend inaction by appealing to scientific, technical or economic uncertainty.

In democratic countries where lawmakers face re-election every few years, this may be attributed to risk-averse behaviour, or 'blame avoidance'. However, even in the US, where public opinion has been more divided in much of Europe on policy responses to climate change than, polls have often found support for renewable energy investment and carbon pricing (Stokes et al., 2015). While a 2015 study of 500 climate laws around the world found no difference, on average, in the likelihood of enactment under right- or left-leaning governments, major exceptions include the US, Canada and Australia (Fankhauser et al., 2014). The US has thus far had to rely on executive measures to reduce emissions, which, while significant, are not economy-wide. Canada joined the Kyoto Protocol but then dropped out in 2011 during the Stephen Harper administration. Australia enacted a carbon tax in 2012 only to have it repealed by parliament in 2014. To date, these three major developed nations have found it more difficult to enact climate legislation or create sufficient institutional and political commitment for legislation to stick through challenges by vested interests.

Section 4 provides country examples of how it is possible to create constituencies through the design of climate policies, and how, under the right conditions, these can form multi-stakeholder coalitions that can help create political windows of opportunity.

2.2 Credibility and commitment in national climate governance

The credibility of policy-making institutions and regulatory bodies is likely to influence the decision-making of affected entities, such as businesses or subnational governments. Perceptions of low credibility may delay compliance or decisions to invest in low-carbon technology or infrastructure. Political leaders can signal their level of commitment to climate action through a variety of legal, policy and institutional mechanisms. Credible policies and institutions will be key to building trust in and supporting improved commitments through the international process following the Paris Agreement (Averchenkova & Bassi, 2016). Kydland and Prescott (1977: 487) define commitment devices as 'institutional arrangements that make it a difficult and time-consuming process to change the policy rules in all but emergency situations'.

While economy-wide framework legislation is often the aspiration, this may not be politically feasible, and is not a guarantee of reaching commitments. Poor rule of law may mean laws are flouted or easily overturned. What is most important is that the signal is credible; that there exist adequate institutional capacity and well-designed policies that balance ambition and equity while carefully considering feedback effects; and that supportive coalitions are engaged in the process.

The literature provides complementary definitions of credibility. In assessing how private sectors may perceive credibility, Brunner et al. (2012) propose that, if the expected gains of compliance outweigh the expected gains from deviating, the policy is perceived as credible. A government's track record for making good on long-term commitments is one reputational measure. However, commitment devices for climate policy must be 'heteronomous': they must provide future governments with sufficient incentives (or disincentives) to maintain the commitment (ibid.). Setting long-term targets for carbon reductions with near-term incentives is an important element of a carbon mitigation commitment device as it can frame choices around energy options, land-use planning, transport and other sectors, to guide these

⁴ index.gain.org

sectors down a low-carbon path. A transparent governance structure for setting, implementing and updating carbon policy, including carbon budgeting, and the redistribution of revenues to consumers can enhance visibility and public scrutiny, raising the political costs of backsliding.

Averchenkova and Bassi (2016) evaluate the credibility of countries' NDCs5 using a framework of 1) rules and procedures, 2) players and organisations, 3) norms and public opinion and 4) past performance in implementing international commitments and domestic policy. While not using these criteria to rank countries, they sort their findings into three tiers, finding mostly G20 countries in the first tier, with the notable exceptions of the US and Australia. Within the first category, the authors assess whether the country has a coherent and comprehensive legislation and policy framework and whether decision-making is transparent, inclusive and effective, with sufficient constraints to limit policy reversal. In the second category, they consider whether countries have dedicated public bodies with supporting mechanisms, as well supportive private actors. In the third, they assess whether the country has a history of engaging actively at the international level on environmental issues and there is evidence of domestic public opinion support for climate action. Finally, the paper assesses past UNFCCC performance and whether the country has a history of reversing past policies. This framework provides a helpful, though simplified, approach. Notably, the level of influence of different actors is key, and will depend on the institutional context for implementation. These factors are also dynamic, with new political leadership, climate-related events, economic shocks and shifts in public opinion all potentially shifting the likelihood of timely implementation.

Developed and developing nations are enacting novel legal frameworks; creating new institutions or empowering existing ones; and reinterpreting existing laws to enable greater credibility around efforts to meet national climate change goals. Here we list some examples: these are not intended to suggest best practices but rather give insight into how countries are creating commitment devices within their institutional and political contexts, in chronological order.

The UK's 2008 Climate Change Act was the world's first long-term, legally binding framework law to address climate change. It commits the UK to reducing its carbon emissions by 80% from 1990 levels by 2050. The law also provides a five-year carbon budget that is guided by the Committee on Climate Change to advise on cost-effective, long-term solutions. This independent committee monitors progress, informs Parliament and sets long-term goals that serve as policy signals to markets for low-carbon investment decisions. Commitment is elevated by a legal requirement for government to regularly obtain and respond to the committee's advice (Brunner et al., 2012). These signals can help accelerate the scale and pace of transformative change while protecting against backsliding (Global Commission on the Economy and Climate, 2014).

In 2012, Mexico enacted the General Law on Climate Change: a comprehensive, framework climate law, which includes GHG emission targets as well as renewable energy goals and incentives. However, the targets are voluntary and conditional on international support. The law does mandate GHG emissions reporting across sectors and creates a public emissions registry. It also establishes an emissions trading system, an Inter-Ministerial Commission on Climate Change with representation across ministries and a climate change fund to collect and channel climate finance. The National Institute of Ecology's mandate is expanded to include technical and policy work on climate change and it, along with the Commission, federal legislators and state and municipal governments form the National Climate Change System to coordinate and implement activities across national, state and local government (LSE, 2012). Encouragingly, the law passed easily, winning support from both sides (McCain, 2012). The success of implementation will rest on the ability of new institutional arrangements to coordinate effectively, manage finance, engage the public and stakeholders in implementation and maintain political support to ramp up ambition in future policies.

⁵ (Intended) Nationally Determined Contributions (INDCs) are the communications submitted by parties to the UNFCCC leading up to and following COP21 in Paris to facilitate the 'clarity, transparency, and understanding' of their national contributions towards meeting a global climate agreement.

Kenya enacted the Climate Change Act in May 2016, after several years of political negotiation, including a presidential veto in 2013. The Act applies across the economy and subnational levels with the overall intent of providing mechanisms to build resilience and low-carbon development. It seeks to establish important functions to ensure coherence and to mainstream climate change considerations into decision-making at all levels. It provides incentives and obligations for private sector contributions to low-carbon development, prioritise civil society capacity-building and participation as well as gender equity and promotes technology transfer, mobilisation and transparent management of climate finance. To facilitate coherence and implementation, it establishes a National Climate Change Council, chaired by the president with cabinet secretaries representing the environment, economic planning, treasury and energy, as well as representation from civil society, the private sector, marginalised communities and academia. It also establishes a Climate Change Directorate to implement the law, enforce compliance and coordinate activities (Republic of Kenya, 2016).

Box 3: Legislative ‘pre-commitment strategies’ to prevent backsliding in the US

In the context of the US, environmental law scholar Richard Lazarus (2010) argues that ‘pre-commitment strategies’ could be embedded within the law itself to prevent lawmakers in the near term from undoing legislation meant to benefit future generations. Emphasising the fragmentation of authorities (e.g. committees and subcommittees within Congress) and a structural bias for incrementalism, he notes that this is especially the case for environmental laws that have redistributive impacts. These institutional design features, Lazarus argues, should also be balanced with provisions to allow for flexibility to adapt to new information. Drawing from a range of historical precedents, the author recommends various asymmetric mechanisms that would favour those who are seeking to protect and strengthen law but not repeal it, including:

- Requirements for independent analysis of any amendment designed to weaken the law’s goals or using revenues to support the law and insulate it from the congressional appropriations process;
- Insulating appointees to chair climate commissions or head new departments through term length and protections against removal;
- Interagency consultation requirements to build capacity for implementation and ensure transparency and accountability (making this public record so that citizens may file lawsuits if laws are not enforced);
- Creating a new expert governmental entity (similar to UK’s Committee on Climate Change) to oversee implementation;
- Special participatory rights for historically disempowered groups in implementation processes;
- Mechanisms to ensure the executive branch cannot derail implementation, such as separation of policy goals and implementation strategies between the congressional and executive branch; and
- Limiting certain types of judicial review and promoting others.

When national laws are not in place, subnational instruments may become tenuous under shifting economic and political conditions. A study of the durability of subnational cap-and-trade regimes in the US and Canada found that more than half the states and three-quarters of the provinces had abandoned their commitments to regional cap-and-trade regimes (Rabe, 2015). In the Western Climate Initiative, only California remains a partner with the four Canadian provinces, only two of which have enacted regulations. The most politically durable has been the Regional Greenhouse Gas Initiative (RGGI) in the north-eastern US. This was more successful in part because the policy was designed in ways that developed new constituencies; others were more vulnerable to political shifts, particularly at the gubernatorial level. By implementing a full auction of permits, RGGI created revenue streams that could

be invested in clean energy programmes or social welfare, or redistributed to citizens in some form – and how the revenue is used is left to the state’s discretion.

The credibility of commitments will also depend on how effective civil society is in using domestic accountability mechanisms to hold governments accountable, such as courts and tribunals. This will depend on judicial costs, duration of court procedures, independence and impartiality of the judiciary and civil society capacity – including the ability to access relevant information. In 2015, The Hague District Court in the Netherlands provided an historic precedent in *Urgenda Foundation vs. The State of the Netherlands* when it ruled that the government’s current emissions reduction trajectory was below the norm for a country and declared that it must increase reductions to 25% below 1990 levels. This was unprecedented: it represented the first successful climate suit founded in tort law. Previously, this had been attempted in the US against polluting energy industries but the courts had ruled that the executive or legislative branches had to determine the issue (Cox, 2015). To date, this approach has not been tested in a developing country context, even though there is clearly scope for doing so.

2.3 Overcoming psychological barriers and discounting

Understanding how different actors and social groups conceptualise and act on climate risk can help development professionals and policy-makers develop strategies to shape political positions. As the success of adaptation programmes depends also on the decisions individuals and households make (e.g. on crop selection or disaster risk management), adaptation managers must consider how best to contextualise climate risk information. At the political level, the human tendency to discount the future has been a challenge in implementing climate policy with long-term time horizons that requires investments in the present (Chapman & Elstein, 1995).

If the strength of scientific evidence were sufficient to create the groundswell of collective action needed to shift decision-maker priorities towards ambitious climate action, we might not be facing an impending climate crisis. However, better access to information on the climate crisis has failed to produce this result. Rather, research finds prevailing ideologies, values and social networks influence social group behaviour more (Bulkeley & Newell, 2015). Social groups typically filter out information that does not come from a ‘trusted messenger’ or a member of that group. In research that is particularly revealing for the US, individual support for social hierarchy versus equality is a greater predictor of perception of temperature change than actual temperature change (World Bank, 2015c). Even among those with greater scientific literacy, groups that value social hierarchies and oppose redistributive policies will adamantly oppose climate policies. Certain arguments and messages can trigger this attachment to key groups, such as ‘tax’ versus the more benignly perceived “offset”. Media framing of social and political problems can shape where blame is placed and the perceived solutions.

Looking at the psychology of adaptation, Grothmann and Patt (2005) found farmers in Zimbabwe altered crop options only when forecasts were at the extremes of the spectrum. Linking probability forecasting and complex weather patterns to culturally relevant concepts has proved effective in Zimbabwe and Uganda (Orlove & Kabugo, 2005).

Discount rates are conventionally understood as being determined by revealed⁶ time preferences and opportunity costs, whereby the former refers to the degree to which individuals prefer present benefits⁷ over future benefits and the latter refers to the rewards of one investment against other options. In basic terms, choosing a higher discount rate would mean making less present investment⁸ in future outcomes. This has special implications for climate change, given the approximate 50-year time lag between GHG emissions and temperature increases. Climate economists and policy-makers have vigorously debated the socially optimal discount rate, with economists like Nicholas Stern arguing for a 1.4% social discount rate to account for the ethical dilemma of a future climate catastrophe (Stern, 2006). On the other hand,

⁶ As revealed through investment and savings decisions.

⁷ Monetary benefits, in a traditional financial sense.

⁸ Including a lower social cost of carbon.

William Nordhaus has argued that the discount rate should be descriptive, rather than prescriptive, in order to more accurately represent the revealed time preferences across society – in the range of 3-5% (Nordhaus, 2007). However, this reduces the value of life of generations well into the future to nearly nothing (Rehmer, 2010). While psychology supports the discounting phenomenon, it nuances it by showing risk is perceived emotionally as a feeling rather than as a probability. Additionally, there is still (and will continue to be) significant uncertainty and complexity in the timing, location and scale of climate impacts, which make estimates highly variable.

An increasing number of economists are arguing that this debate should not delay investment on the grounds that the costs of climate impacts are increasing as warming becomes 'locked in' and that climate investments have many co-benefits (and thus should be seen as 'no-regrets' policies) (Global Commission on the Economy and Climate, 2014). The 2014 New Climate Economy Report, which was produced through the collaboration of over 100 organisations, heads of state, finance, economists and business leaders, makes the case to economic and financial decision-makers that climate action is both compatible and critical for long-term economic prosperity (ibid.).

One consequence of future discounting is that it may magnify risk-averse behaviour in politics, particularly for political leaders who are more vulnerable to shifts in public opinion (i.e. in more representative democracies). This may be particularly true in countries where public opinion is more divided on whether and how governments should take action. This may be addressed in part by increasing the visibility of climate change impacts (as opposed to just conveying scientific evidence), their costs and the co-benefits of policy actions (Howlett, 2014).

Surveys of public opinion around the world suggest public opposition is not the primary barrier to action. A 2015 Pew Research Center poll of 40 countries – including major emitters just as the US, China and Russia, as well as emerging economies in the global south – found that a majority in all 40 countries considered climate change a serious problem (Stokes et al., 2015). A median of 78% approved of their country limiting GHG emissions as part of the Paris Agreement. This was the case even in the US and China. What is more, these results show the general public is not discounting all future climate impacts, as 51% believe they are already being harmed by climate change and 28% believe they will be harmed in the next few years. Latin American (n=6) and sub-Saharan African (n=9) countries registered the most concern about climate change.

While polls can help us understand how climate policies and messages are perceived, they should be considered within the political context of policy-making. Ideological narratives that align closely with social values can be powerful in shaping public opinion towards a particular policy, regardless of views on the issue. Additionally, passive public support for an issue may not overcome organised opposition from vested interests – thus the intensity of support also matters.

3. Building effective institutions to implement climate policies

North (1991: 97) describes institutions as ‘humanly devised... informal constraints (sanctions, taboos, customs, traditions, and codes of conduct) and formal constraints (constitutions, laws, property rights)... that structure political, economic, and social interaction’. While institutional capacity is often used to refer to the means and ability for government bodies to carry out key functions, more recent studies emphasise the role of informal institutions (norms and unwritten rules) in determining whether and how policies are implemented. In relation to climate change, this can refer to effective planning, coordination, prioritisation, responsiveness, information collection and management and implementation of rules, regulations, programmes and policies, primarily through the lens of institutional development rather than political economy. The ability to carry out these functions depends on a range of factors, including financial and human resources, clear mandates, incentives that match expectations, leadership and oversight to prevent corruption.

The UNFCCC has described institutional arrangements with regard to adaptation as the ‘structures, approaches, practices, or rules, set in place by stakeholders at all levels to steer adaptation action including for: assessing impacts, vulnerability and risks, planning for adaptation, implementation of adaptation measures, and monitoring and evaluation’ (UNFCCC Adaptation Committee, 2014).

In an analysis of what makes a capable ministry of finance, Krause et al. (2016) caution against conflating capacity with capability. They suggest four key capabilities for ministries of finance to perform their functions:

- Analytical (the ability to analyse information to inform decisions);
- Delivery (the ability to produce goods and services);
- Coordinative (the ability to orchestrate activities of different actors around a common objective); and
- Regulatory (the ability to control production of services provided by others).

The World Resources Institute’s National Adaptive Capacity Framework (Dixit et al., 2012) identifies five key functions for government institutions for implementing adaptation plans and policies:

- The ability and willingness to assess available, relevant information iteratively to guide decision-making;
- A transparent and stakeholder-driven prioritisation process to identify issues, areas, sectors and populations that deserve special attention (e.g. food security, social protection, coastal livelihoods, etc.);
- Coordination across governance scales and bodies and in collaboration with non-governmental actors in a way that leads to better working relationships and information-sharing and addresses power imbalances in decision-making where possible;
- Information management to ensure not only that information relevant to decision-making⁹ is collected and analysed but also that it is shared and used to inform decision-making; and
- Sector-specific assessments to ensure effective climate risk management.

⁹ This can and should include non-climate information such as demographic, livelihood and public service information that is spatially situated.

Box 4: Joint Principles on Adaptation (Southern Voices on Adaptation)

Civil society networks from Africa, Latin America and Asia have joined under the umbrella *Southern Voices on Adaptation* to develop the Joint Principles on Adaptation with the intent of 1) influencing policy, 2) strengthening capacity (of government and civil society) and 3) promoting dialogue between government and civil society (Southern Voices on Adaptation, 2014). The Principles (each with accompanying criteria) include:

- The formulation, implementation and monitoring of adaptation policies and plans is participatory and inclusive;
- Funds for adaptation are used efficiently, and managed transparently and with integrity;
- All government sectors and levels of administration have defined responsibilities and resources to fulfil them;
- Local adaptation plans are developed through approaches that build resilience of communities and ecosystems;
- The resilience of groups who are most vulnerable to climate change is promoted;
- There is appropriate investment in building the skills and capacities for adaptation, as well as in physical infrastructure;
- Plans and policies respond to the evidence of current and future manifestations and impacts of climate change (Southern Voices on Adaptation, 2014).

While drivers of vulnerability may be as granular as at the individual level,¹⁰ the direction, magnitude and rate of climate impacts are still characterised by significant uncertainty at the national and local levels (USAID, 2014). For instance, while there is a high level of certainty of long-term trends of increasing frequency of extreme weather events at certain scales, when and to what degree a locality will experience severe flooding, drought or heat is uncertain. In turn, these how climate impacts will trigger changes in social, economic, physical or biological systems is also uncertain. For example, the diminishing productivity of a particular crop may have cascading effects on commodity markets, local diets and trade. These changes will cut across sectors and governance scales. Climate change is also non-linear, with system tipping points and feedback effects that may make certain change irreversible (e.g. polar ice melting and the albedo effect or the permanent loss of an ecosystem).

For government institutions, this means developing the capacity and capability to be flexible, as new information becomes available that may cause strategic or tactical shifts in policy and planning. Given that adaptation is occurring now, but that uncertainty exists regarding future impacts, adaptation experts have called for a paradigm shift towards robustness in decision-making as opposed to optimisation, meaning that present decisions should promote 'low-regret' options that minimise the risk of maladaptations¹¹ that would be costly or impossible to undo (Wilby & Dessai, 2010).

¹⁰ Drivers of vulnerability include not only exposure and sensitivity to climate impacts but also capacities that can vary at the individual level, such as education or awareness of available resources, social networks, age, income and exposure to social-cultural biases, to name a few.

¹¹ Maladaptation is a contested term in the literature but there is general consensus that is an adaptation action taken that increases vulnerability in the present or future or limits future options to respond to climate risk. There is less consensus on evaluating benefits and costs between groups and the temporal dimension of evaluating when an action is maladaptive or not. See Juhola et al. (2016) and Jones (2015).

3.1 Policy coherence and integration

While climate policy cuts across economy and society, different sectors will require responses that are more narrowly defined. While some countries are establishing institutions designed to coordinate and direct economy-wide climate policies (such as the UK and Kenya, as described earlier), the effects of economy-wide climate policies cannot be contained to one institution (Asselt et al., 2015). There have been calls for climate policy integration (CPI) to ensure that climate policies are compatible with sustainable development, are synergistic and are not contradictory with sectoral policies or development plans (Ahmad, 2009).

Environment ministries are often the focal point of low-carbon policy development and implementation, but they rarely wield significant clout within central governments. Lateral influence over ministries of finance, planning and development, trade or industry is a key issue (Bailey & Preston, 2014). These ministries may see low-carbon development as a barrier to reducing unemployment or stagnant gross domestic product (GDP). Much of the literature reflects on lessons learnt from environmental policy integration during the past few decades, and identifies the following strategic approaches to integration:

- **Procedural tools and instruments**, such as checklists and environmental policy appraisal, to build awareness and integrate considerations of climate impacts in sectoral policies;
- **Administrative coordination and organisational change** to align incentive structures and shift organisational culture by internalising climate objectives, improving coordination and introducing audit/accountability functions; and
- **Expressions of high-level political will**, such as high-level visions and objectives or strategies (see Kenya's Climate Change law as an example) (adapted from Asselt et al., 2015, citing Lafferty & Hovden, 2003 and Persson, 2007).

Achieving policy coherence across sectors and with national planning processes is one of the goals of climate policy mainstreaming. The European Commission has provided incentives for CPI through its 2014–20 Multi-Annual Financial Framework by earmarking 20% of its budget (€200 billion) for climate-related activities while proposing that it come mostly through mainstreaming (Asselt et al., 2015). Alam et al. (2011) have argued that an insistence by donors on monitoring aid effectiveness may create parallel planning processes that are inefficient and less inclusive. Tanner and Allouche (2011) note that India's decision to dedicate strategic management of the renewable energy sector to a single ministry has helped it avoid problems of overlapping and duplicated mandates and responsibilities.

While coordinating structures and procedures may help policy integration, they will not necessarily insulate climate policy implementation from vested interests, particularly if they stand to lose from new donor requirements. Policy-makers will have to evaluate and negotiate trade-offs between adaptation and mitigation and between sectoral policies (such as agriculture and water). In some cases, these trade-offs may become politically contentious. At what scale these are resolved will depend on institutional relationships and context at the country level (Asselt et al., 2015).

Despite the convergence of interests and approaches, climate resilience and disaster risk reduction responses are often still fragmented and incoherent at the country level (World Bank, 2013). In a report on disaster risk reduction and climate-resilient development, the World Bank asserts that, 'getting the institutions and incentives right is often the most important issue' (ibid.: 39). Particularly in developing countries where decision-making power or enabling resources may be situated outside of the formal institution, gaining buy-in from politically powerful leaders is likely to be important (WRI et al., 2011). Faustino and Booth (2014) recommend prioritising actions that 'lock in' new behaviours by altering the incentives of individuals and organisations without requiring them to change their interests or values in major ways.

Countries are addressing this institutional challenge in different ways:

- China's creation of National Energy Commission, which has 'super ministry' status and can influence other ministries and reports directly to state council (Bailey, 2014). At the same time, China's government has given significant autonomy to provincial governments to experiment with policies to achieve the targets and goals.
- The Zambian climate change technical committee, responsible for cross-coordination on climate policy, is located in the ministry of finance, which is typically a locus of power and influence.
- Ethiopia has established its Environmental Protection Authority directly under the prime minister. While structure does not dictate functional success, experience suggests that a central coordinating locus where political power is located improves the chances of being adequately resourced. Ethiopia has also created a Climate Resilient Green Economy strategy that links its economic development goals of becoming a middle-income nation by 2025, while limiting GHG emissions through greater use of renewables, energy efficiency and forest restoration. Importantly, the strategy includes a strong emphasis on institutional setup, both by situating it under the prime minister and by involving 50 experts from 20 government institutions in its development and implementation (Federal Republic of Ethiopia, 2011).
- In the past few years, Vietnam has created a Committee on Climate Change to help guide its National Green Growth Strategy and coordinate efforts across the government. While these bodies are at risk of being rendered ineffectual if key political players do not participate or are actively opposed, the approval of the Action Plan on the Green Growth Strategy sends a strong signal that the plan will receive budgetary support, according to Zimmer et al. (2015).

3.2 Information-sharing and public engagement¹²

The collection, management, dissemination and use of different types of information is central to climate governance. Climate governance requires the institutional capacity to effectively manage information as well as the mandate and incentive to make it public and involve outside stakeholders in its production. While some capacity barriers related to meteorological and climate modelling information are technical, others – such as the fragmentation of information across agencies, or whether relevant information is actually used to inform plans and policies – are more institutional. The 2010–11 World Resources Report¹³ identified the following characteristics to effective information in climate decision-making:

- User-driven, with consideration of cultural factors and applicability to communities, civil society, the private sector and others;
- Sufficient scope and scale to create effective plans and policies while clarifying uncertainties, limits and available opportunities;
- Sufficiently accurate to support risk and vulnerability assessments and help define acceptable risk levels;

¹² The discussion of transparency and participation must distinguish between their intrinsic and instrumental values. An intrinsic standpoint is closely linked to a rights-based approach – in other words, that, at a minimum, potentially affected groups have the right to access information about environmental health and quality, pollution sources and decision-making processes, and should have meaningful opportunities to participate in decisions that impact the environment. The UN Special Rapporteur on Human Rights and the Environment has affirmed that procedural rights to the environment are human rights (Knox, 2014). An instrumental argument refers to the degree to which processes affect outcomes. These can range from 'better-informed' policy, improved implementation, greater legitimacy of decisions to the public, reduced conflict and reduced corruption, among others. This wide range of potential outcomes, the difficulty in measuring them (often because of long causal chains) and an often muddled theory of change has garnered criticism and spurred a more deliberate consideration of institutional contexts, state–civil society relationships and collective action capacity (Fox, 2014; Grandvoinet et al., 2015).

¹³ A partnership of the World Resources Institute, the United Nations Environment Programme, the United Nations Development Programme and the World Bank.

- Backed by institutional infrastructure to support rapid dissemination to enable preventative action during extreme weather events;
- Accessible to those who need it so they can adjust their actions and behaviour;
- Given long-term institutional support and frequently updated given the timeframe of climate impacts and new information;
- Cost-effective, given resource constraints;
- Targeted to specific risks, vulnerable populations and ecosystems (to avoid overload and fatigue) (adapted from WRI et al., 2011).

In addition to informing individual and group decision-making, information access has long been at the centre of transparency initiatives, including right to information law campaigns,¹⁴ transparent budgeting¹⁵ and public procurement, disclosure of natural resource revenues¹⁶ and open decision-making processes.¹⁷ These ‘governance by disclosure’ approaches are notably reflected in the legally binding United Nations Economic Commission for Europe’s Aarhus Convention on Access to Information, Public Participation and Access to Justice, as well as free, prior and informed consent, eco-labelling to influence consumer behaviour and the Publish What You Pay campaign for greater disclosure of extractive industry revenues (Gupta, 2008). Notably, however, China has dramatically increased environmental information disclosure as part of larger environmental regulatory and legal reforms since 2008 (Zhang et al., 2016). More recent environmental governance applications have focused on proactive disclosure and open data, with an emphasis on timeliness, relevance and usability of information for audiences (such as communities impacted by local pollution sources) who are affected. The Open Government Partnership (OGP) – a multilateral initiative of 70 participating governments and civil society that collaborates to develop and implement legal, regulatory and institutional reforms for transparent, participatory and accountable governance – could be venue for expanding commitments and building institutional capacity for open and participatory climate policy implementation.¹⁸ OGP leadership is encouraging its members to use its collective resources and experiences to make commitments to transparent and participatory climate governance (Dagnet et al., 2015).

There is well-established body of evidence on the importance of public engagement in adaptation and low-carbon development planning and implementation. Adaptation is context-specific, and solutions require addressing multiple drivers of vulnerability, including socioeconomic, political and health-related. In its 5th Assessment Report, the Intergovernmental Panel on Climate Change included among its principles of effective adaptation with high confidence: ‘Adaptation planning and implementation at all levels of governance are contingent on societal values, objectives, and risk perceptions. Recognition of diverse interests, circumstances, social-cultural contexts, and expectations can benefit decision-making processes’ (Field et al., 2014: 85). In other words, it is difficult to address structural inequalities without involving those who have been left behind. But expanding the decision-making body to include the public is also important in determining an acceptable level of risk, prioritising actions, monitoring results and providing feedback (WRI et al., 2011).

In a recent assessment of the potential for scaling of adaptation projects in rain-fed agricultural areas of India, ‘community ownership of project’ was one condition that tended to increase the likelihood (Appadurai et al., 2015). However, communities are not monoliths – different members are likely to have varying levels of access to power and influence, depending on their socioeconomic level, gender, political affiliation, age or ethnicity. Civil society and communities may also face collective action problems – viewing public engagement as costly, unproductive or not relevant to their immediate interests – which may lead to low levels of engagement (Booth, 2012).

¹⁴ See, for instance, www.article19.org

¹⁵ See <http://www.internationalbudget.org/> for example

¹⁶ <http://www.resourcegovernance.org/>

¹⁷ www.accessinitiative.org

¹⁸ <http://www.opengovpartnership.org/>

With regard to mitigation, climate policy may be more likely to be perceived as legitimate if civil society is involved (Bernauer & Gampfler, 2013), but high levels of public awareness do not appear to be a necessary precondition for climate policy implementation (Rhodes et al., 2014). Past PEAs of national climate change policy development in Bangladesh, Brazil and Mozambique have found that a strong sense of urgency to rapidly develop policies may be adversely impacting coordination and public engagement opportunities (Tanner & Allouche, 2011). Public awareness may increase as more policies regarding energy efficiency, renewable energy and mitigation come online. The degree to which these receive widespread public support is likely to depend on problem framing, policy design and feedback, interest group influence on the public discourse and the relative visibility and political power of pro-climate coalitions. Bernauer and Gampfler (2013) found the public was more supportive of climate change policies if civil society was involved in the process. Development partners may be able to support greater engagement by supporting civil society and community capacity-building around climate policy development, co-benefits and impacts, and opportunities to engage effectively with the government.

3.3 Gender and climate governance

While responses to climate change informed by gender analysis often focus on differentiated vulnerabilities, there is evidence that women and men have different consumption patterns (leading to different emissions), use energy and transport differently and may have different attitudes and perceptions towards climate policies (EIGE, 2012).

To address gender-based inequalities and vulnerabilities from climate change, the development and implementation of adaptation plans and programmes should include the participation of women's groups as well as gender specialists. The 5th Assessment Report of the Intergovernmental Panel on Climate Change cited robust evidence for 'increased or heightened [gender inequality] as a result of weather events and climate-related disasters intertwined with socioeconomic, institutional, cultural, and political drivers that perpetuate differential vulnerabilities' (UNFCCC, 2016). The GSDRC Topic Guide¹⁹ on Gender notes that climate change can exacerbate existing inequalities by making natural resource-based livelihoods – on which women are more likely to rely – more difficult through scarcity. Natural disasters also kill more women than men. For political and cultural reasons, women often have unequal access to mobility, knowledge and money – owing to lower-paying jobs and less access to loans. Finance targeting resilience should target not only socioeconomic and public service vulnerabilities but also the gendered access to adaptation responses. Men are more likely to be able to migrate to new locations to find new livelihoods, for instance (Kangas et al., 2015).

Where necessary, national institutions may need mandates as well capacity-building, incentives and personnel to enable the full participation of women's groups – across ages and ethnicities – in climate change planning and implementation. 'Gender mainstreaming' refers to assessing the implications on women and men of policies, legislation, programmes or any other actions equally and considering their different experiences and needs through design, implementation, monitoring and evaluation so as to not perpetuate gender inequality (UNFCCC, 2016).

A 2016 technical paper by the UNFCCC Secretariat draws on tools and guidelines developed by UN bodies and international organisation to mainstream gender into climate change policies and programmes. These various tools seek to build knowledge and capacity for countries to develop and implement gender-responsive climate policies. The technical note²⁰ identifies the following sequence to gender mainstreaming in common among the approaches:

- **Gender analysis:** Considered a cornerstone of gender mainstreaming, gender analysis draws on quantitative and qualitative data to understand 'if, how, and why, women and men are affected differentially in a particular context or sector' (UNFCCC, 2016: 7). In theory, it reveals potential

¹⁹ For more resources and the full Topic Guide, see www.gsdr.org/topic-guides/gender/gender-and-climate-change/

²⁰ See more specific tools and approaches: <http://unfccc.int/resource/docs/2016/tp/02.pdf>

institutional, socioeconomic and cultural barriers that prevent equitable adaptation to climate change impacts. Beyond the programme or project level, it should also assess the political and institutional landscape to identify constraints, entry points and key actors who could affect the integration of gender considerations into planning, budgeting and other decision-making around resilience and low-carbon development.

- **Design and preparation of policies, programmes and projects:** Merely achieving a gender balance is insufficient; capacity-building and awareness-raising are often also required. A gender goal backed by clear commitments should be integrated. Disaggregating groups make it possible to determine differential impacts, and so to design programmes to more specifically meet gendered capacity-building needs. This can then serve to identify specific areas to allocate resources to ensure the project/programme/policy addresses gender inequalities instead of reinforcing them. Finally, gender indicators should track progress along the lines of inclusion and access to resources.
- **Gender-responsive budgeting:** The process of translating gender commitments into public budgeting commitments starts with ensuring the budgeting process is transparent and decision-makers are made accountable to their commitments. It also requires building the capacity of civil society and other gender advocates to engage with budgetary processes. Institutionally, this process is likely to be more impactful if located within the ministry of finance, which typically has more political influence than the ministry of environment. Having high-level representatives of multiple ministries at the table can also enable mainstreaming.
- **Implementation:** Implementing agencies and personnel will need training in gender expertise, enabling systems and the collaboration of civil society.
- **Monitoring and evaluation:** Gender-responsive indicators should be developed early in the process to provide a baseline for measurement of future progress. Indicators should be linked to gender goals and targets.

3.4 Governance of climate finance²¹

The effectiveness of climate finance mechanisms in promoting low-carbon development and building resilience will depend on the capacity of national institutions to prioritise and coordinate effectively, and to monitor and ensure the distribution of costs and benefits does not reinforce vulnerabilities or exclusion (Sovacool et al., 2015). Through the UNFCCC, developed countries have committed to mobilising \$100 billion annually through public and private sources by 2020. On a lesser scale, but still notable, developing countries such as Bangladesh, Gambia, Kenya and Rwanda have started mobilising domestic sources of finance (Rai et al., 2015). Another report showed that Ethiopia had dedicated 15% of its budget, or \$440 million, to climate-related activities (Nakhooda & Watson, 2015). Climate finance governance is by nature an international affair, as donors have a role in providing transparency and coordinating effectively. But institutional capacity and arrangements, and willingness to track and disclose financial flows, are all key national governance issues. As with development assistance generally, recipient countries need to feel ownership of the prioritisation, management, and distribution of financial flows in order to gain sustainable political support and respond to needs identified through domestic planning processes (Brown et al., 2013).

A 2015 report by the Adaptation Finance Accountability Initiative (AFAI)²² found civil society can and should play an important role in ensuring adaptation finance is deployed accountably (i.e. reaches its intended targets), but enabling conditions are crucial (Terpstra et al., 2015). These include publicly available information related to adaptation finance flows and decisions, sufficient training of civil society

²¹ For a thorough examination of this issue in Topic Guide form, see Rai et al. (2015).

²² AFAI is a network of international non-governmental and civil society organisations from the Philippines, Nepal, Zambia and Uganda: policy-practice.oxfamamerica.org/work/climate-change/adaptation-finance-accountability-initiative-afai/

organisations, adequate and ongoing public engagement opportunities, working relationships between governments and non-governmental actors, citizen collective action and willingness and ability of public officials to respond to civil society and citizens. Transparency in the budgeting cycle can improve monitoring of how adaptation finance is allocated to meet its intended target. The authors draw from Fox (2014), concurring that accountability requires willing government and non-governmental actors, and is most effective through multipronged strategies that intervene at different levels and through different means.

Multiple multilateral funding financing mechanisms provide climate finance, including the Global Environment Facility, Climate Investment Funds, the Adaptation Fund and, more recently, the Green Climate Fund (GCF), which is expected to be the main vehicle going forward (Nakhooda & Norman, 2014). Global climate finance reached \$391 billion in 2014, owing to new highs in private renewable energy investment and an increase in public sector financing (Buchner et al., 2015). While the vast majority of climate finance is being directed towards mitigation, particularly renewable energy projects, once fully operationalised the GCF is expected to dedicate 50% of its funds to adaptation – an increase from 24% currently (Trujillo et al., 2015).

Bird (2015) highlights important considerations in how climate finance is managed at the national level. These include the issue of the capacity and appropriateness of national budgetary processes for climate finance. Lack of guidance on integrating climate finance into budgets usually requires ministries of finance to play more active roles. Climate-related expenditures also must go beyond annual budget cycles (Bird, 2015). When the line between development assistance and resilience-building becomes blurred, it can be difficult to identify climate finance. Potential alternatives include national climate funds and provision of direct access to multilateral funds.

4. Coalitions and policy framing

Most countries face huge political challenges to decarbonise their economies while addressing structural and societal drivers of vulnerability. Increasingly visible climate impacts may open windows of political opportunity, but the brief timeframe within which to operate intensifies the challenge. Effective responses will require building new coalitions and strengthening existing ones to take on incumbent fossil fuel interests as well as those that hinder effective allocation of adaptation finance. Constituencies will likely need to be diverse, given the complexity of the issue and its impacts, and also to be more politically salient to a wider range of decision-makers.

The first set of political and governance challenges will be breaking or avoiding path dependency on high-carbon sources while ensuring adaptation finance is mobilised, planned for and allocated effectively. In the years to come the political battles may shift – Meadowcroft notes there are likely to be repeated cycles of interactions, and we must understand:

... how political actors (understood broadly) can construct linkages between economic, social, and environmental reform agendas; how sustainability transitions can exploit the ups and downs of the economic cycle; which strategies are most successful for building impetus for reform in specific societal subsystems; what forms of political alliance are most conducive to encouraging sustainability transitions, which kinds of reform create positive feedbacks driving further reform; what resistance strategies are most popular with transition opponents...how they may be countered by proponents (Meadowcroft, 2011: 73).

Kenya's Climate Change Act appears to provide a solid legal foundation to implement its climate change response strategy, but it is still critical to understand the interests and relationships of those involved and what this may mean for the law's implementation. A PEA by Newell and Phillips (2016) of Kenya's low-carbon energy transition to date concludes that decisions about how this transition occurs have mostly benefited entrenched energy interests, and are shaped by donor interests and state elites; the interests of the energy-poor are not as clearly represented. While energy transitions are taking place, the interests of transnational energy companies, state elites and external actors obscure the interests of Kenyans lacking a reliable electricity supply.

Schmitz (2016) claims that national transformations to a low-carbon economy require multiple groups of actors across government, business and civil society and that each sector will have proponents and opponents to the change. Reviewing political science scholarship, he finds a well-founded body of evidence that coalitions, particularly multi-sectoral ones, can be effective in addressing collective action problems. A 2008 World Bank evaluation of its own work emphasises the importance of broad coalitions as one of its key takeaways in understanding the political economy of policy reform.

4.1 The role of coalitions in renewable energy policy reform

Schmitz (2016) summarises how constituencies have gathered and aligned around climate-relevant policies in China, India, Brazil and South Africa. These cases highlight that framing renewable energy policy around non-climate co-benefits – such as more abundant energy supply and electricity access, the growth of domestic manufacturing of renewable energy components and job creation – are often effective in widening the coalition in support of climate policy. When energy demand exceeds supply, windows of opportunity for renewable energy are created and, based on these cases, incumbent energy industries are less likely to be organised in opposition.

These incumbent interests are historically more likely to be carbon-based fuel sources. However, the case of hydropower in Brazil shows that renewable incumbents may oppose policies that benefit more nascent renewable energies seen as competitors.

China

China, which overtook the US as the world's largest emitter in 2006, also leads the world in installed wind capacity, reaching 100GW in 2015 (Schmitz, 2016). To date, its most climate-relevant policies have focused on increasing renewable energy production to meet increased energy demand. Its INDC pledges to reduce carbon intensity²³ by 60–65% below 2005 levels, increase non-fossil fuel energy sources to 20% by 2030 and increase its carbon stocks through reforestation (People's Republic of China, 2015).

China's Renewable Energy Law of 2006 established the legal foundation and national strategic importance of renewable energy, while assigning responsibility for regulation and policy incentives such as feed-in tariffs, grid connections and research and development (Schmitz, 2016). Renewable energy goals have also been part of China's five-year strategic plans (Henderson et al., 2016). While the Renewable Energy Law has succeeded in increasing the renewable energy supply, Spratt et al. (2014) find carbon reductions did not play a major motivating role. Instead, the development of the policy was driven by aligned government and business interests in energy security and by developing the manufacturing sector around renewable energy components. Local governments were incentivised to support implementation through opportunities for local economic development, jobs and increased public revenue (Dai, 2015). According to Shen (2016), a coalition of the state and business actors has pushed renewable energy policy in China, including the Energy Bureau of the National Development and Reform Commission, state-owned utility companies and wind and solar parts manufacturers. Notably, they did not encounter political resistance from fossil fuel companies because of China's rapidly growing energy demand creating a 'growing pie' scenario whereby new markets were less contested. Grid companies, local governments and investors have also played intermediary and implementing roles.

While these analyses show that renewable energy policy in 2006 was not driven by climate concerns, environmental concerns – specifically air pollution – were major reasons for China's 2014 amendments to its Environmental Protection Law (EPL). The amendments removed a cap on fines for polluters, enabled established non-governmental organisations (NGOs) to bring environmental suits against polluters and increased accountability measures for local governments. China's central government has declared a 'war on pollution' (Worland, 2015) in response to increasing evidence of the human health (Rohde & Muller, 2015) and economic costs (Crane & Zhimin, 2015) of air pollution.

The institutional aspects of the EPL amendments and their implementation have relevant implications for climate policy. From an emissions standpoint, older coal plants are being shut down as part of efforts to meet air quality targets (McGarrity, 2015). China's coal production fell for the first time in 2014 and 2015 (Wong, 2016). The amendments also sent local governments and other implementing authorities a signal that the Ministry of Environment was serious about enforcing pollution standards, both through the increased fines and, somewhat remarkably for an autocratic country, through promoting bottom-up accountability from civil society (Tianjie, 2015). The appointment of Chen Jining as Minister of Environmental Protection marks the first time an environmental scientist has held this position. The *Under the Dome* documentary produced by a Chinese journalist was ultimately censored by the Chinese government but not before it was viewed at least 150 million times and was publicly praised by Minister Chen (Gardner, 2015). The reaction demonstrates that the Chinese government is sensitive and increasingly responsive to public frustration over the continuing air quality crisis. But it is also a reminder of competing objectives and interests within the central government, where observers perceive the Ministry of Environmental Protection as striving to shift priorities towards greater environmental enforcement. However, the effectiveness of enforcement at the local level will depend on national and local institutional capacity, incentives for local authorities and the technical capacity and independence of courts that hear environmental cases.

²³ Carbon intensity refers to GHG emissions per unit of GDP.

India

In recent years, India's climate-relevant policies have been driven by concerns over climate change adaptation, secure energy access and job creation (Schmitz, 2016), with emission reductions considered a co-benefit. Chaudhary et al. (2014) and Spratt et al. (2014) document the political support that the solar energy sector has attained at both the state and central government levels, as well as from businesses and investors. This can be seen in the creation of the National Solar Mission, part of the National Action Plan on Climate Change. Political support for wind energy has a central role in India's Action Plan on Climate Change. Key institutional actors in support include the National Ministry of New and Renewable Energy, but the framing of energy security, growing a domestic solar manufacturing industry and job creation were widely attractive to the state and private sector. While wind energy has not gathered the same level of political momentum, neither has been strongly opposed by incumbent fossil fuel interests, given unmet demand for energy to provide electricity access.²⁴ In this sense, the energy security narrative has critical implications for increasing resilience as well.

Brazil

Unlike China and India, Brazil's GHG emissions have come predominantly from land use change, particularly deforestation. For decades, Brazil has met its energy needs with a high share of renewables – primarily large hydropower and ethanol – which account for nearly 45% of energy demand today (IEA, 2015). According to Schaeffer et al. (2015) and Viola and Franchini (2014), the government's support for climate-relevant policies was motivated in part by a desire to be viewed internationally as a progressive rising power. While the majority of emission reduction goals focused on reducing deforestation, more recent climate policies have cut across additional sectors, creating power struggles and conflicts between ministries and rent-seeking industries (Schmitz, 2016). Wind and solar have not taken off in Brazil, despite considerable resources. Wind and solar proponents have found adversaries in the more established hydropower and ethanol producers, demonstrating that the political dynamic is more complex than low-carbon versus high carbon sources, skewing more towards incumbent energy supply interests versus new entrants (Schaeffer et al., 2015). In 2007, Brazil discovered offshore oil reserves, which have been in production since 2011, creating more pressure on the space for renewables. Brazil's NDC does call for non-hydro renewables to increase to 23% of the energy supply by 2030; however, its overall renewable goal for 2030 is just 45%—which it has already met (Romeiro & Biderman, 2015).

South Africa

The political economy of renewable energy policy in South Africa is heavily influenced by its longstanding coal reserves, which dominate its energy supply (Schmitz, 2016). Referred to as the 'minerals and energy complex', a coalition of business, government and trade unions has supported coal power, with the most prominent actor being the vertically integrated state-owned monopoly Eskom (Baker et al., 2015). However, when Eskom was unable to adapt to rapidly growing electricity demand, it created political space for renewables to enter (Morris & Martin, 2015). Morris and Martin describe a heavily contested space that has divided governmental ministries and the private sector, with civil society mostly on the sidelines. The following actors, with their adjacent interests, have supported renewable energy growth:

- The Clean Energy Branch of the Department of Energy and the Department, which supports greater choice and reliability in energy supply as well as the Department of Treasury, which is also supportive of greater reliability;
- The Department of Environmental Affairs, concerned with climate action;
- Portions of the Department of Trade and Industry and independent power producers and associated businesses that stand to benefit from a greater market for wind and solar.

²⁴ The 2015 World Energy Outlook estimates 234 million people without electricity access in India based on 2013 data.

This multi-sectoral constituency is aligned under the Renewable Energy Independent Power Producer Procurement Programme (RE-IPPPP), which is inter-ministerial. The main opposition to renewables comes from Eskom and its allies in the Departments of Public Enterprises and of Minerals and Energy. Morris and Martin (2015) note that the political space was pried open by the international spotlight of COP17, the electricity crisis and the inability of Eskom to promptly respond. A 2013 case study of renewable energy projects procured through RE-IPPPP found that only 4% of potential jobs in operations would go to South Africans, despite RE-IPPPP criteria for local economic development (McDaid & Wood, 2013). Ensuring that green growth benefits actually do reach local populations can be essential in building resilience through poverty alleviation and strengthening political constituencies for implementation.

Vietnam

Zimmer et al. (2015) investigate the political drivers of Vietnam's recent commitments to decarbonise its economy and find economic restructuring and modernisation, energy security and access to new pools of available international finance are much more salient than carbon mitigation or air quality improvements. The roles of different actors supporting and opposed to climate policies within Vietnam's Communist Party were not apparent; however, interest group opposition weakened previous environmental policies, such as the Environmental Protection Tax. Vietnam's Green Growth Strategy includes gradual liberalisation of the power sector and the phase-out of fossil fuel subsidies, which, while ultimately necessary, may present political risks in a country where a sizable portion of the population is vulnerable to electricity price increases.

These cases illustrate that renewable energy policy implementation can become more achievable when multi-stakeholder coalitions recognise their interests are aligned and they can act collectively to strengthen institutions and foster a better enabling environment for implementation. This suggests development partners can work to clarify anticipated impacts from different implementation outcomes to a wider range of actors. Coalitions may need support to seize windows of opportunity when vested interests are politically vulnerable because of energy price volatility, new political narratives or external pressure. Additional factors are emerging that may shift the political landscape and provide opportunities – and risks – for such coalitions. The first is availability of significant increases in climate finance, which will create new incentives (or strengthen existing ones). On the other hand, as climate impacts become more pronounced, they may disrupt existing political narratives and destabilise institutional arrangements.

5. The private sector

Businesses are widely seen as the non-state actors with the most influence on climate policy decisions, given their role in economic development, including direct investments, public revenue expansion and ability to innovate and create greater economic power and influence for the state. The private sector contributes significantly through the development of technology and infrastructure for renewable energy and energy efficiency, for example. Many world business leaders understand climate risk, as evidenced by the 2013 World Economic Forum, which named climate change one of the top five risks facing companies (WEF, 2013).

However, voluntary corporate action to reduce emissions has not been ambitious, absent national policy frameworks. At least 175 companies have voluntarily adopted science-based targets for carbon reduction in their sustainability strategies. Yet most companies still set targets according to what they see as feasible based on current technology and practice – as opposed to what needs to be done based on the best available science (Del Pino et al., 2016). Okereke (2015) raises important questions about this incongruity, such as:

- whether businesses are deliberately not deploying the resources necessary for a low-carbon transition, or whether they are generally supportive of low-carbon transitions but constrained by structural forces;
- to what extent different actors (managers, market forces, governments, stakeholders) are responsible when businesses do not do what is necessary; and
- where greater momentum for change can be activated.

In countries with mature energy industries, such as the US, coal and oil companies lobbied vigorously and effectively for decades, either directly or by proxy, to exaggerate uncertainty and stifle regulatory response. Okereke describes the current era as one of ‘ambivalence and incongruity’: renewable energy costs are dropping, but energy companies have yet to curb carbon-intensive activities such as shale oil exploration.

However, the private sector is not monolithic, and certain industries, such as tourism and insurance, and forward-thinking companies have been outspoken in support of climate policy. Several large corporations from different industries, such as IBM, General Electric and Dupont, have self-regulated their carbon emissions for over a decade by setting internal reduction targets (Zokaei, 2013). Private sector visibility has increased in UNFCCC and other international fora in support of climate action as well. At the Bali COP in 2007, 150 major corporations called for a comprehensive, legally binding agreement on climate change (Bulkeley & Newell, 2015). Eight years later, at COP21, the private sector was more broadly represented than it had ever been in the past, with 65 major corporations committing to 100% renewable energy for their operations.²⁵ The private sector is also the largest source of climate finance, with \$243 billion dedicated in 2014, according to the CPI. Twenty-one governments and 95 companies have joined the Carbon Pricing Leadership Coalition, with the mission to ‘expand the evidence base for the most effective carbon pricing systems and policies’.²⁶

Clearly, many major multinational corporations are engaged in international and national climate dialogues, ostensibly to support action. The role of the private sector in climate finance for low-carbon development and resilience-building is critical, since public sector resources are inadequate to address the scale of the challenge. Policy-makers can support the investment climate for low-carbon development and mitigation through carbon pricing and a more stable regulatory environment that reduces risk for investors (UN, 2015). At the national level, it will be increasingly important for companies that support climate policies to leverage their political clout, especially since industries that stand to lose will seek to minimise their losses by weakening or delaying regulation.

²⁵ <http://there100.org/companies>

²⁶ <http://www.carbonpricingleadership.org/leadership-coalition>

6. Key sectors

6.1 Agriculture, the rural economy and land tenure

Governance issues are central to the resilience of rural economies, agriculture and food security to climate change, particularly in developing countries with more vulnerable populations. Many rural economies are already subject to non-climate stressors such as insecure land tenure, underinvestment in agriculture and global shifts and shocks in commodity prices (IPCC, 2014). Governance priorities may include:

- Ensuring adaptation and development policies are robust across a range of climate impacts, given the degree of uncertainty of impacts at the local level;
- Assessing coherence and monitoring the effects of mitigation and adaptation policies on the ability of vulnerable groups to protect livelihoods, make informed decisions and secure land tenure (see Box 5);
- Strengthening vertical coordination and providing resources (such as information, subsidies, training) to build adaptive capacity of farmers to experiment with new practices and crops in response to a changing climate; and
- Ensuring social protection programmes are informed by and responsive to impacts on agricultural livelihoods in order to support transitions when necessary.

Box 5: Land rights and climate change

A 2014 report by the World Resources Institute and the Rights and Resources Initiative assessed the impact of secure community land rights on deforestation and climate change, concluding that legal protections and government enforcement of community land rights tends to lower deforestation rates and associated carbon emissions (Stevens et al., 2014). The authors recommend:

- Ensuring community forest rights are legally protected;
- Supporting communities through technical assistance (such mapping), enforcement and ensuring coherent policies by not granting concessions on community lands;
- Engaging communities in decision-making; and
- Compensating communities for the benefits they provide so as to provide a livelihood incentive.

Agriculture both contributes to climate change through land use change and agricultural inputs and is adversely impacted through warming temperatures, greater extremes and greater rainfall variability. An assessment of 162 country commitments to the Paris Agreement found that 119 countries – including 78 developing countries – included agriculture in their mitigation actions and 126 developing countries included agriculture in their adaptation actions (CGIAR, 2016).

Building adaptive capacity for agriculture systems is likely to require new crop varieties; wider access to information and communication technology for farmers to receive forecasts and make farming decisions; and improved access to markets and crop insurance. ‘Climate-smart agriculture’ is a core part of the World Bank response, which includes adaptive management, improved information systems and safety nets for poor farmers (World Bank, 2015b). Flexible and responsive institutions are particularly key given the level of uncertainty of climatic factors affecting food production. Besides being vulnerable to climatic shocks, farmers connected to global commodity markets are also vulnerable to economic shocks, which

produce maladaptive responses and further vulnerability. A national household survey in Tanzania showed households experienced more systemic shocks – such as sudden food price increases, drought or floods – than idiosyncratic health shocks, such as disease outbreaks (World Bank, 2014).

Institutions, both formal and informal, and politics, as before, cannot be ignored. Coordination across institutions, mainstreaming of climate into agriculture and rural development policy and a cross-sectoral approach to address poverty and build resilience for farmers are important. In an assessment of the political economy of adaptation in Africa, Lockwood (2012) argues that much of the adaptation literature ignores the importance of politics and informal institutions, and patrimonial systems still pervade. The author recommends strengthening accountability frameworks for public service delivery, building community capacity for adaptation and working with local institutions whenever possible (i.e. going with the grain).

National governments will need to mobilise climate finance (see previous section), while also dedicating sufficient national budgets to invest in agricultural resilience. This is especially likely to be the case in sub-Saharan Africa: Lockwood (2012) draws a comparison between South-east Asia and sub-Saharan Africa, noting a chronic underinvestment in the agriculture sector of the latter.

6.2 Energy

Energy sector politics and decision-making have traditionally involved policy-makers, energy providers (including energy companies and utilities) and energy users (Scarse & Smith, 2009), as well as domestic and international financing institutions (Wood & Martin, 2016). However, as the energy landscape shifts in response to renewable energy policies, new technologies and financial incentives, new actors are becoming more prominent in domestic energy governance, especially around energy access. These include clean energy entrepreneurs, new investors and telecommunications and banking stakeholders, and also greater civil society involvement (ibid.). Engagement in power sector decision-making is typically oriented around 1) decisions on whether and how to implement laws and policies, 2) new investment decisions or changes to existing ones and 3) consumer grievance redressal (ibid.). Past assessments of politics in the power sector have found that energy and finance ministries have dominated reform decisions, excluding civil society and other relevant ministries (Dubash, 2002). Reforms through the 1990s were driven primarily by financial turmoil in the power sector, not by issues of energy access or a sustainable development agenda (ibid.).

Lockwood (2015) explores how policy design, as well as underlying institutions and policy feedback mechanisms, shapes renewable energy transformation pathways, drawing on examples from Germany and the UK. As a general rule, policy-makers seek to balance the perceived interests of energy providers (especially those that are well established) with energy users. While users tend to prioritise affordability and lack of volatility in price and supply, narratives on clean energy and climate protection may also influence users, particularly as renewable energy prices have become more affordable. On the other hand, the incentives and regulations policy-makers establish shape energy provider investment decisions. Large, energy-intensive users may exert political influence, while other stakeholders may see opportunities for low-carbon products. The policy design will determine who benefits and to what extent. These feedback cycles help reinforce the policy (applying stickiness) or spur organised opposition.

Germany and the UK's policy design differences have created different domestic political economic incentives. The UK produced 25% of its electricity through renewable sources in 2015 (UK Department of Energy and Climate Change, 2016), while Germany produced 31% from renewables (EIA, 2016). Germany has offered a guaranteed market to renewable generators and has a long running feed-in tariff that has dispersed benefits across households, cooperatives, schools and small businesses, strengthening a constituency around co-benefits (Lockwood, 2015). The political economy of renewable energy in Germany was bolstered throughout the 1990s and 2000s through renewable energy associations, a stronger Green Party and increased employment in renewable manufacturing. Renewable energy in

Germany had negative feedbacks as well, through higher overall energy prices and resistance from existing large energy companies, but these have not derailed the country's renewables path.

According to Lockwood (2015), for many years the benefits of renewable energy policy in the UK were reaped almost exclusively by large developers and utilities, because of a design and supporting institutions that did not facilitate access for less established actors. This served to reinforce the existing energy political structure. Overall, the supply chain for renewable energy has not been incentivised through a strong industrial policy. Lockwood argues that the capture of financial benefits of renewables policy by large energy firms has created more negative feedback than in Germany, which has had benefits diffused to a broader share of the public and smaller energy cooperatives.

7. City and subnational climate governance

Subnational and urban policy-making can serve as a useful experiment and piloting opportunity for policies that may be developed nationally, as well as for underpinning climate commitments by mobilising resources and political support. Half of the world's population now lives in cities and accounts for 80% of the world's economic output and 70% of its energy use (Tsay & Herrmann, 2013). In many countries, rapid urbanisation is occurring because urban areas offer greater economic opportunities, especially in countries where rural livelihoods have declined.

However, without inclusive urban planning that considers the needs of the urban poor and the cross-sections therein (by gender, ethnicity, age, disability, etc.), the needs of certain populations may be promoted over others, potentially increasing existing vulnerabilities. Poorer urban populations are typically more vulnerable to extreme climate events such as storms or heatwaves because of greater exposure and fewer resources to take preventative actions or recover (Corfee-Morlot et al., 2009). In cities where the urban landscape and infrastructure are more conducive to flooding, lower-lying land is likely to be the least expensive. If disaster risk managers do not effectively make use of demographic and census data to better target early warning systems, these populations may also be disadvantaged by not receiving equitable access to timely information.

Issues of access extend beyond public services to include access to decision-making processes that shape planning, allocation of finance and disaster risk management. Urban mobility planning that does not emphasise equity and inclusion may result in transport options that do not prioritise non-motorised options or that are not safe, practical or affordable for poorer urban residents, who need to access jobs, healthcare, schools and other basic public services. This acts as a barrier to increasing adaptive capacity. Thus cities play huge and growing role in reducing GHG emissions, addressing structural drivers of vulnerability and implementing adaptation plans.

Cities are often more willing and able to experiment with climate policies, enabling adaptive learning and offering lessons that may be translated to the national level (Corfee-Morlot, 2009). Many cities have joined networks of city and subnational leaders to share learning, collaborate and exert greater influence on national and global scales. These include C40, Local Governments for Sustainability, United Cities and Local Governments and the Compact of Mayors. However, the degree to which municipalities are autonomous from the state or country and able to create and enforce policies governing energy, transport, land use, etc., varies by country. Cities with less direct power may still be able to influence national policy-makers.

As an example, the Compact of Mayors, which formed in 2014, seeks to directly influence national strategies by demonstrating success at the urban level. In June of 2016, it joined the EU Covenant of Mayors to form the Global Covenant of Mayors, encompassing 7,100 cities in 119 countries. The Covenant's charter includes commitments to generate comprehensive plans, make key data available for reporting and develop 'institutional political processes that make effective action possible by embedding climate action into municipal processes, structures, and policies'.²⁷

In evaluating the institutional response capacity of Mexico City and Santiago, Romero-Lankao et al. (2013) define the key components as level of cooperation and coordination between actors, effectiveness of the legal framework, availability and use of information and mechanisms through which actors participate in decision-making. They find presence of scientific and international organisations in urban policy-making contexts helps place climate on the policy agenda. Participation in transnational networks (like those listed above) has provided urban leaders with access to resources, knowledge and international visibility.

²⁷ www.bbhub.io/mayors/sites/14/2016/06/Charter-for-the-Global-Covenant-of-Mayors-for-Climate-and-Energy-FINAL.pdf

However, fragmentation and lack of horizontal and vertical coordination within the country still constrain city leaders (ibid.).

While this study finds some conflict at the urban level between climate and economic development goals, Gouldson et al. (2015) find that cities could make short-term economic gains from implementing carbon mitigation policies, particularly energy efficiency. The authors suggest the primary reasons these gains have not been realised have been lack of information, lack of supporting national policies and inadequate finance. A recent New Climate Economy report suggests international institutions can help cities establish integrated municipal authorities to address cross-cutting challenges and develop investment-ready projects (Global Commission on the Economy and Climate, 2015). Krause's (2011) assessment of cities in the US that participated in the Mayor's Climate Protection Agreement found the primary determinants of participation were population, education level, political orientation and economic structure, but also whether neighbouring cities joined the agreement, indicating some influence of social and political networks.

Climate action at the subnational level is not confined to cities. State and provincial governments have established policies, including California and Quebec's cap-and-trade-mechanism and the Compact of States and Regions, that have committed to reduce absolute emissions by 55% by 2050, or a projected 44.7GtCO₂e.²⁸ As of 2016, the Compact counts 44 members from 18 countries.²⁹

As shown above, subnational governments – both state and city, in developed and developing countries – have acted as climate policy innovators and created networks to increase ambition, share learning and tools and elevate their influence in global dialogues. They may be more successful than their national counterparts in some cases, given fewer constituencies and greater political homogeneity, a more streamlined policy-making process and more sensitivity to the threat of extreme climate events in densely populated areas that often have high asset values. At the same time, enabling national policy that provides coherence across governance scales, assistance in accessing climate finance and coordination with national and other subnational institutions are widely viewed as critical to more effective urban climate governance.

²⁸ 44.7 gigatons of carbon dioxide equivalent.

²⁹ <https://www.theclimategroup.org/Compact>

8. Fiscal policies

8.1 Carbon pricing

While this Topic Guide cannot cover the subject comprehensively, carbon pricing is generally viewed as an essential instrument in the toolbox of fiscal reforms for climate action, albeit primarily through an economic lens. Through either a tax or a cap-and-trade system, carbon pricing places a price on carbon emissions to account for social and environmental costs. As of 2015, there were 38 carbon pricing instruments implemented or scheduled for implementation in 40 national jurisdictions and 20 cities, states and regions amounting to 7 gigatons of CO₂e,³⁰ or 12% of global emissions (World Bank, 2016). Carbon pricing revenues can be used to create positive policy feedbacks in order to offset negative feedback from increased prices of carbon-intensive goods. The distribution of revenues from a carbon price to low-income households vulnerable to socioeconomic shocks can help alleviate the burden of the increased costs related to products and services that are carbon-intensive. These can include the lowering of payroll and income taxes, job training, reducing government deficits, direct dividends to households, investing in clean technology innovation or adaptation and addressing regional disparities and inequities (Kennedy et al., 2015).

In countries where carbon pricing is likely to impact the livelihoods of workers in fossil fuel energy production (such as coal in the US), a portion of revenues can be distributed to provide or strengthen an array of socioeconomic, health and infrastructural assistance mechanisms to support the transition to alternative livelihoods (Kaufmann & Krause, 2016). An analysis of \$28.3 billion in global revenue from carbon pricing in 2013/14 found 36% was returned to corporate or individual tax payers through tax cuts or direct rebates, 27% was used to subsidise green spending (i.e. energy efficiency or renewable energy) and 26% went to state general funds³¹ (Carl & Fedor, 2016).

8.2 Fossil fuel subsidy reform

The global problem of fossil fuel subsidies is one of the most salient areas of incoherence with low-carbon development and carbon mitigation policy, and it generates significant political challenges. Estimates of fossil fuel subsidies vary considerably, based primarily on whether they include only the cost of lowering the price to customers or if they also internalise environmental cost estimates. The International Monetary Fund has referred to these as 'pre-tax' and 'post-tax', respectively, and estimates \$4.9 trillion in post-tax subsidies in 2013 (Coady et al., 2015). By comparison, renewable energy is subsidised by \$100 billion.³² In 2009, the G20 agreed to phase out fossil fuel subsidies by 2020. However, a 2015 report of G20 fossil fuel subsidies put the total at \$444 billion, suggesting progress towards the 2020 goal has been lacking (Bast et al., 2015).

Examples of fossil fuel subsidies on the supplier side include tax breaks, loans and guarantees at favourable rates and access to government land or water at below-market rates. On the demand side they come through price controls, vouchers or grants and other ways of increasing consumption. Fossil fuel subsidies are economically inefficient, reduce tax revenues, increase environmental impacts, are regressive (in that the rich benefit more) and contribute to path dependency on fossil fuels through the development of infrastructure and long-term contracts (Global Commission on the Economy and Climate, 2014). There are – particularly in developing countries where energy access is still a major problem – legitimate governance concerns of ensuring energy access that are given as the rationale for these subsidies.

³⁰ Carbon dioxide equivalent.

³¹ These numbers are the combined average of carbon tax and cap-and-trade systems. The same paper found cap-and-trade systems (which are less in number and produce less overall revenue) tend to allocate a far greater proportion of revenue towards 'green programmes', whereas carbon tax systems tend to direct revenues to state general funds or refund the revenue through different paths.

³² Global Subsidies Initiative: www.iisd.org/gsi/fossil-fuel-subsidies/fossil-fuels-what-cost

While multiple studies have shown that government funds would be more efficiently and effectively dedicated to social protection programmes, removing subsidies has proven very challenging, given opposition from energy companies and the risk (perceived or real) of public backlash. Reform attempts have been unsuccessful because of stiff public backlash after subsidies were phased out too quickly (Bolivia) and the lack of an effective public communication strategy (Nigeria). The Indonesian government has faced public pressure despite a compensation scheme, but has progressively managed to lower subsidies from \$36 billion in 2012 to \$4 billion in 2016 (ADB, 2015). This more recent success has been credited to the expansion of social assistance programmes, which amounted to \$1 billion per year in 2015 (ibid.). This demonstrates how programmes that address climate vulnerability can also shift the political economy to be more amenable to low-carbon policies.

Despite the political challenge, many countries have attempted to implement subsidy reforms, with varying degrees of success. Ghana successfully reduced subsidies starting in 2006 following an impact assessment and communications campaign, establishing a new authority and using revenues to compensate poor households to help make the reforms more politically palatable. Tunisia successfully shifted consumer use of fossil fuel water heaters to solar water heaters by using the additional revenues to subsidise the new technology, building public awareness, developing a supply chain and using a state utility to be a debt collector, guarantor and enforcer (Global Commission on the Economy and Climate, 2014).

Several organisations have produced resources to help governments address these challenges. The International Monetary Fund (2013) suggests embedding subsidy reforms within more comprehensive fiscal reforms, providing targeted and credible protection measures for the poor, phasing in price increases appropriately, improving efficiency of state-owned enterprises and delivering a clear communications strategy. Many countries that face serious equity issues also lack social welfare nets for those who need it, so fossil fuel subsidy reform is part of larger structural reforms.

9. Conclusion

This Topic Guide has drawn from a wide body of literature to gather insights for development professionals on the drivers, opportunities and constraints for national governments in effectively developing and implementing climate change policies that support sustainable development. Despite the relevance of PEAs in understanding how different actors, incentives and ideas may impact the feasibility of different policy solutions, these approaches are more common in the development field generally than in the literature on climate change governance. Few countries, particularly in the Global South, have implemented economy-wide climate change laws or policies, which means there are limited opportunities to assess successes and adapt from failures.

However, this is beginning to change, with new laws and strategies that seek to realign institutions and incentives around low-carbon development and resilience. These involve encouraging cooperation and coordination across government – and in some cases with civil society (e.g. Mexico, Kenya, and Ethiopia).

The now-ratified Paris Agreement and the universal Sustainable Development Goals, along with accompanying finance and international assistance, may create the political space for reformers to build effective coalitions for climate action. An emphasis on policy coherence to ensure these two agendas can be implemented with minimal trade-offs and maximum synergies will require institutional coordination and information-sharing, and an understanding of key actors' institutional and political relationships. While research on the impact of transparency and accountability initiatives has largely neglected the climate change field, civil society and the private sector have been shown to be effective as part of reform coalitions. Whether they can be major players in a wider range of countries will likely depend on the availability of relevant, timely and usable information, a safe and secure space for civil society to operate and the effectiveness of formal and informal accountability mechanisms.

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