
National Adaptation Planning: Lessons from OECD Countries

Michael Mullan, Nicolas Kingsmill, Shardul Agrawala, and
Arnoldo Matus Kramer

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Abstract

National governments have a crucial role to play in facilitating preparations for the effects of climate change. This chapter provides an overview of adaptation planning and implementation at the national level in member countries of the Organisation for Economic Co-operation and Development (OECD). It compares different approaches and discusses emerging lessons learnt and challenges

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M. Mullan (✉) • N. Kingsmill • S. Agrawala • A. Matus Kramer
Climate, Biodiversity and Water Division, Environment Directorate, Organisation for Economic Co-operation and Development (OECD), Paris CEDEX 16, France
e-mail: michael.mullan@oecd.org; nicholas.kingsmill@oecd.org; shardul.agrawala@oecd.org; arnoldo@ithacaev.com

based on a survey of OECD countries' National Communications to the United Nations Framework Convention on Climate Change and discussions at a workshop with adaptation policy-makers from 25 developed countries, held by the OECD in 2012.

Finland was the first OECD country to publish its strategy in 2005 and, since then, a further 17 OECD countries have published national strategies to coordinate and communicate their approach to climate change adaptation. Of the remaining OECD countries, eight have plans or strategies under development. The OECD workshop revealed three emerging challenges faced by countries as they move from planning to implementation: addressing capacity constraints, securing adequate financing, and measuring the success of adaptation interventions. Addressing these challenges will be essential to ensure that progress in planning translates into being better prepared for the effects of climate change.

Keywords

Adaptation • Climate change • National planning • Risk management

Introduction

National governments have a vital role to play in determining their countries' success at preparing for the effects of a changing climate. This can be through action, such as raising awareness of the likely effects of climate change, or inaction in the face of policies that provide the wrong incentives to individuals or businesses. Examples of the latter include insurance schemes that encourage excessive development in high-risk areas or underpricing of resources that will become scarcer in the future. Increasingly, governments are using national adaptation planning to provide an evidence-based, coordinated, and systematic approach to their preparations for climate change.

Much of the policy and academic literature on adaptation to date has focused on developing countries, because of their high socioeconomic vulnerability to climate change. However, a growing body of activity and experience of adaptation planning in OECD countries has shed new light on existing challenges. Finland was the first of the 34 member countries of the Organisation for Economic Co-operation and Development (OECD) to publish a national adaptation strategy. Since then, a further 17 OECD countries have developed national adaptation strategies or plans. These have focused on mainstreaming climate risks into local and national policies but with variation in the policy instruments being used, the role of the state, and the assignment of responsibilities between national, state, and local governments.

This chapter provides an overview of the current status of national planning activities and remaining challenges in OECD countries. These countries have made different choices about the degree of central direction, the balance of public and private provisions, and the arrangements for financing adaptation. National governments in federal countries and those with strong local autonomy face different opportunities and constraints than those with more centralized systems. Given this

variety, this chapter draws upon the experiences of OECD countries to identify emerging lessons. It is intended to help inform the development and refinement of adaptation policies within OECD countries but also to be informative for developing countries as they develop and implement national adaptation plans (NAPs).

This chapter is organized as follows: “[Status of National Adaptation Policies in OECD Countries](#)” examines the record so far in implementing adaptation strategies within OECD countries, drawing on discussions at the *Policy Forum on Adaptation to Climate Change in OECD Countries* in May 2012 and a review of countries’ National Communications to the United Nations Framework Convention on Climate Change (UNFCCC) and complementary sources. “[Emerging Lessons Learnt](#)” builds on the review of OECD-wide progress to identify some of the lessons learnt from the design and implementation of adaptation programs and their implications for the future.

Status of National Adaptation Policies in OECD Countries

At the international level, adaptation has taken its own prominent place alongside mitigation within climate negotiation processes and is likely to be a critical component of the post-2015 international climate regime. Similar signs of progress can be seen at the national level within OECD countries. This section surveys the current levels of activity across the 34 OECD countries, updating and expanding an earlier analysis by Gagnon-Lebrun and Agrawala (2006).

Overview of Relevant Literature

A major element of the adaptation literature has aimed to provide recommendations on what planning ought to consist of and how governments ought to enact adaptation plans. OECD (2009) provides guidance on integrating climate change adaptation into development cooperation at the national, sectoral, and project levels (OECD 2009). Although targeted at developing countries, the underlying approach of applying an integrated approach to adaptation is consistent with that adopted in OECD countries. The World Resources Institute developed a framework for national adaptive capacity that can be used to evaluate countries’ progress and to identify priorities for improvement (World Resources Institute 2009). This framework evaluates institutional arrangements based on their performance in providing five functions: vulnerability assessment, prioritization of measures, coordination, information management, and climate risk management.

These frameworks and guidance have been complemented with analyses of progress to date with respect to national-level planning and implementation of adaptation policies. Gagnon-Lebrun and Agrawala (2006) assessed activity in Annex 1 (developed) countries, largely based on an analysis of National Communications to the UNFCCC. Their review found that adaptation received limited attention relative to mitigation and that countries were at the stage of identifying generic options for responding to climate change rather than formulating comprehensive, mainstreamed adaptation strategies.

More recent studies have looked in greater depth at subsets of OECD countries. These have primarily focused on European countries but some have also included non-European OECD countries, for example, Australia and the United States (Bauer et al. 2011; Preston et al. 2011). Swart et al. (2009) provide an in-depth review of development processes for European countries' national adaptation programs, focusing on six areas: motivating factors for strategy development, research and scientific assessment, communication and awareness raising, multilevel governance, integrating climate change adaptation into sectoral policies, and monitoring and review of adaptation policies. The review identifies several typical strengths and weaknesses in adaptation strategies. The strengths include targeted research and good planning for implementation, review, and funding; weaknesses include a lack of coordination between sectors and unclear allocations of responsibilities between different administrative levels. Preston et al. (2011) further highlight institutional and capacity challenges to implementation.

Other reviews have focused on particular aspects of implementing adaptation policies. Bauer et al. (2011) examines coordination and integration in ten OECD countries, both horizontally across policy sectors and vertically across jurisdictional levels. They find that vertical coordination is usually addressed earlier in federal political systems than in unitary systems but that this difference fades as national adaptation strategies are developed. Westerhoff et al. (2011) analyze the relationships between national-level policies and local-level actions in four European countries. The authors note that national political support and leadership are key factors in the development of national adaptation activities but highlight some regional- and city-level activities that developed in the absence of specific national initiatives. They attribute some of these subnational activities to facilitation through climate change networks.

A common feature of the comparative literature is the emphasis on description rather than evaluation, reflecting both the newness of the field as well as a lack of consensus about the most appropriate approaches for implementation and criteria for judging success. While there is agreement over many of the broad principles for efficient adaptation (such as the need to account for uncertainties), there are still a range of views about how those principles should be put into practice. Swart et al. (2009) stated that it was not possible to provide policy recommendations at the time of their analysis because of the variation between countries' adaptation priorities, climate impacts, and political systems. It cautions that measures that have been successful in one context may not be directly transferable to other countries.

Overview of Progress to Date

This section provides an overview of the status of activities across the OECD as of March 2013, updating the analysis originally undertaken by Gagnon-Lebrun and Agrawala (2006). It uses a survey of National Communications (NCs) to the UNFCCC as the initial source of information on the extent of activity that is underway within OECD member countries.

NCs have three characteristics that make them a useful starting point for this analysis (Gagnon-Lebrun and Agrawala 2006). The first is that they have comprehensive coverage. All OECD member countries have submitted at least one report, and 29 countries published their fifth NCs in 2009 or 2010. For the remaining OECD members – Chile, Israel, Korea, Mexico, and Turkey – the analysis is based on their most recent NCs. Chile, Israel, Korea, and Mexico are the only OECD member countries that are classified as “non-Annex 1” countries under the UNFCCC. This means that they are considered as developing countries and that their NCs are not subject to in-depth expert reviews. Turkey is an Annex 1 country but has only published one NC. The second reason for using NCs is that their format is standardized, which facilitates comparison between countries. The third is that they are official statements and, as such, should reflect the government’s perspectives and priorities.

The approach adopted for this section has been adjusted to address the limitations with using NCs as a sole data source. NCs may not fully reflect the progress to date within their respective countries (Gagnon-Lebrun and Agrawala 2006). Some elements may be missed because the NCs are intended to provide an overview of the main activities underway, rather than an exhaustive account of all the adaptation activities taking place within a country. Additionally, the majority of NCs included in the analysis were published in 2009 or 2010, which means that they may precede some important recent developments. Complementary sources of information were used to identify completed and ongoing activities relating to the establishment of institutional mechanisms for adaptation responses and the formulation of adaptation policies that were not identified in the NCs. These sources of information included: documents available on the Climate-Adapt website for EU member states (<http://climate-adapt.eea.europa.eu/>) and follow-up by email with government officials.

The review, presented in Table 1, is based on a qualitative analysis of every OECD country’s NC, assessing eight components of national adaptation planning with regard to both the *scope* and the *depth* of coverage. The assessment of the scope of discussion is based on the level of attention paid to the topic, classified as: (i) extensive, (ii) limited, or (iii) not included. The assessment of the depth of coverage is based on the quality of the discussion: (i) detailed, (ii) generic, (iii) limited, or (iv) not included.

Where there was no coverage of activities for a specific component within a country’s NC, but complementary sources indicated that actions had been taken or are currently underway, these additional activities have been identified in the table using cross-hatching.






The analysis distinguishes between two different levels of planning: adaptation *strategies* and adaptation *plans*. In this study, adaptation strategies refer to countries’ initial planning or framework documents, which commonly set out governmental approaches to adaptation and communicate general priorities. Adaptation plans refer to more substantive planning documents that identify specific policies and measures to be taken. This division is reflected in Table 1, which groups countries into four subcategories: (i) those that have not published an adaptation strategy, (ii) those that have not published a strategy but have taken significant national action, (iii) those that have published a strategy but not a full adaptation plan, and (iv) those that have published both a strategy and a plan. The distinction

Table 1 Coverage of adaptation in National Communications

		Impact assessments			Adaptation options and policy responses				
		Historical climatic trends	Climate change scenarios	Impact assessments	Identification of adaptation options	Mention of policies synergistic with adaptation	Establishment of institutional mechanisms for adaptation responses	Formulation of adaptation policies/modification of existing policies	Explicit incorporation of adaptation in projects
No adaptation strategy published	Czech Rep. *	●	●	●	●	○		○	
	Estonia *	○	○	●	○	○		▨	
	Greece	●	●	●	●	●			
	Iceland	●	○	●	●				
	Israel *	○	○	●	●	○	○	●	
	Italy *	●	○	●	●	●		○	○
	Japan	○	●	●	●	○		○	
	Luxembourg	●	○	○				○	
	Poland *	○	●	●	○	○		▨	
	Slovak Rep. *	●	●	●	●			▨	
	Canada	○	○	●	●	○		▨	○
	New Zealand	○	●	●	●	○	○	●	
	Norway *	●	●	●	○	○	●	▨	
	Slovenia *	●	○	●	○			○	
	Sweden	○	●	●	●	○		▨	○
United States	●	●	●	●	●		▨	●	
Adaptation strategy published	Australia	○	●	●	●	○	●	●	
	Belgium **	○	●	●	●	●	▨	●	
	Chile **	○	●	●	●	○	▨	○	
	Hungary **		●	○	○		▨	○	
	Ireland **	●	○	○	○	●		○	
	Portugal **	●	○	○	○		●	○	
	Switzerland **	●	●	●	○	○	○	○	
	UK **	○	○	●	●	●	●	●	○
	Austria	○	●	●	○	○		▨	○
	Denmark	●	○	●	○	○	○	▨	●
	Finland	●	○	●	●	●	○	●	○
	France	●	●	●	○	●	▨	●	
	Germany	○	○	●	○	○	▨	●	○
	Korea	●	●	●	●	●	▨	●	
	Mexico	●	●	●	●	●	○	●	
Netherlands	○	○	●	●	○		●	●	
Turkey	●	●	●	○		▨	▨		
Spain	○	●	●	●	●	●	○	●	

(continued)

Table 1 (continued)

<i>Legend</i>			
Coverage in NCs:		Coverage in complementary sources:	
	Extensive discussion		Activities discussed in other sources
	Some mention / limited discussion		Activities currently underway
	No mention of discussion	*	Developing a national adaptation strategy
		**	Developing a national adaptation plan
Quality of discussion in NCs:			
●	Discussed in detail, i.e. for more than one sector or ecosystem, and/or providing examples of policies implemented, and/or based on sectoral/national scenarios.		
○	Discussed in generic terms, i.e. based on IPCC or regional assessments, and/or providing limited details/no examples/only examples of planned measures as opposed to measures implemented.		

Source: Based on National Communications, supporting publications and complementary information, as of March 2013

between strategies and plans is necessarily imprecise; countries' adaptation planning documents vary widely in their coverage and concreteness. Also, the table only includes national-level documents that target the main climate change impacts (the composition of sectors will depend on specific country contexts). Some countries have published subnational adaptation strategies or plans concerning specific sectors or geographic regions, which can contribute to preparations for climate change but are not included in this analysis.

There has been progress since the review undertaken in 2006 by Gagnon-Lebrun and Agrawala. Table 1 shows that all countries provide information on climate change impacts and future scenarios in their NCs, which was not the case in 2006. According to the current review, 31 countries cover adaptation options in their NCs, compared to 16 OECD countries in 2006 (Gagnon-Lebrun and Agrawala 2006). There has also been significant activity in developing adaptation policies – 27 OECD countries mention policies that are synergistic with adaptation (compared with 13 in 2006), and 27 countries discuss specific adaptation policies or the modification of existing policies to include adaptation (compared with five in 2006). The scale of activity in this area becomes even more apparent when additional sources of information are considered. According to this, 8 of the 16 countries without strategies are currently developing them. All but one of the countries with strategies have either developed or are developing plans.

Emerging Lessons Learnt

The previous section provides an overview of the reported level of activity across countries, but countries with similar levels of activity may adopt substantively different approaches. These differences reflect varying political, social, and

geographical contexts, needs, and priorities. Countries with federal systems or strong localized decision-making processes, such as Australia and Norway, have produced overarching strategies for adaptation that establish frameworks within which local adaptation efforts can be implemented. In contrast, unitary states have tended to produce national plans that outline specific adaptation policies and measures for different sectors or geographic areas. Overall, there is a growing volume and a growing diversity of experience to draw upon from OECD countries.

Based on OECD countries' experiences at varying levels of adaptation planning, this section outlines some of the key areas identified by participants at the 2012 workshop.

Evidence Provision

OECD countries have demonstrated significant advances in evidence gathering and in providing tools to assist end users in making use of increasingly sophisticated climate information. Nonetheless, the policy-makers at the 2012 workshop identified two main unresolved issues: developing capacity for adaptation among key decision-makers and reconciling the needs of users with the evidence that can feasibly be supplied.

Capacity for Adaptation

Providing information on climate change and improving decision-makers' capacity to use that information is a central focus of adaptation strategies in OECD countries. Mainstreamed approaches depend upon the relevant decision-makers being aware of the need to consider climate change but also having access to the data and tools required to do so. Investments in climate projections and impact assessments are necessary, but not sufficient, for achieving this (Pfenninger et al. 2010; Swart et al. 2009; Westerhoff et al. 2011).

There is a continuing mismatch between the types of climate information and data available and those required to meet policy-makers' needs (OECD 2012). For example, it is currently very difficult to model the variations in microclimates across mountainous regions, but understanding these variations is essential for disaster risk management. Part of the challenge lies in the tension between the requirements of decision-makers for greater technical sophistication while also ensuring that the outputs are accessible to end users. Progress on the former has been more rapid than on the latter, sometimes reflecting a lack of communication between researchers and end users. In some countries, "boundary organizations," such as the United Kingdom Climate Impacts Programme, have been created to bridge the gap between producers and consumers of knowledge.

OECD countries have adopted a number of approaches to increase capacity for climate change adaptation. For example, Mexico has established a distance learning program to enhance the capacity of subnational-level municipal staff. The United States White House Council on Environmental Quality has issued guidance to United States federal departments to support their development of

adaptation policy statements and departmental plans, while supportive working groups and a practitioner-level community of practice facilitate information sharing and capacity development. The United Kingdom's adaptation program has supported the development of multiple tools to assist private actors in making adaptation decisions. This includes the *Adaptation Wizard* and *Business Areas Climate Assessment Tool* developed under the UKCIP. However, despite these clear examples of measures to build capacity, workshop participants felt that there was a continuing need for OECD countries to apply a systematic approach to capacity development.

Strategic Planning

OECD governments have taken a variety of approaches to the processes of achieving national coordination, mechanisms for soliciting stakeholder input, institutional structures adopted, and approaches to prioritizing measures. A clear lesson from this experience is that a strategy document alone is not enough to direct national adaptation. The structure and components of the document are important, but there also need to be effective mechanisms in place to implement the strategy (OECD 2012).

National-Level Coordination

Improving the coordination of adaptation actions is a central aim of adaptation planning, but adaptation *plans* and *strategies* differ in how this is achieved. Adaptation plans typically contain greater detail on adaptation needs and measures, including responsibilities for different actions. This makes it more comparatively clear to assign roles and identify coordination needs for those specific actions. In contrast, adaptation strategies have a different set of needs for coordination. As strategies tend to describe activities and objectives in broader terms, there is a stronger need for general coordination mechanisms to achieve progress. A common approach taken in OECD countries, both for adaptation strategies and plans, has been to establish a central coordinating mechanism to oversee and direct adaptation. Coordinating units vary across countries in terms of the parties involved, their remits and their powers; they include interministerial committees, working groups, and task forces. Of the 24 OECD countries that have established coordinating units, 21 have been led by environment or climate change departments; the exceptions are Hungary, Norway, and the United States.

In the context of developing countries, OECD (2009) recommended that coordination be led by an executive office, in order to provide adaptation efforts with sufficient convening and leadership powers to effectively coordinate actions across departments or sectors. This recommendation was also made by the Independent Evaluation Group's assessment of the World Bank's interventions to support adaptation (IEG 2012). The rationale being that in many countries the environment or climate change departments may be in a weaker position relative to other departments, such as planning or finance. These imbalances – both in terms of political power and funding – can create barriers to sustaining political support for

adaptation across government. This can make it more difficult to maintain adaptation objectives in the long term and to negotiate sustainable financial support over time within budget allocations.

However, an advantage of coordination by environment or climate change ministries is that they are likely to be the most aware of the technical requirements of national adaptation plans. For example, French government officials reported that relocating the body responsible for adaptation planning from the prime minister's office to the environment ministry in 2007 helped it to address operational issues and to increase collaboration. Additionally, locating responsibility within a central ministry does not in itself guarantee long-term political or financial support. It may well be a lower priority for central ministries themselves than it would be in a dedicated environment department, which can offset some of the benefits of being in a politically stronger ministry. The experience of OECD countries has not demonstrated a consistent relationship between the location of the coordination unit and the effectiveness of adaptation policy.

The existence of high-level formal structures, such as ministerial coordination groups, can be a weak proxy for the degree of on-the-ground coordination. Given the recent implementation of many countries' national adaptation programs, it may be too early to evaluate coordination groups' effectiveness beyond their initial success in convening representatives from different departments. However, the challenges that these mechanisms are intended to overcome – addressing crosscutting issues and managing cross-departmental actions – require a firm grounding in adaptation policy. This issue is especially pertinent for countries with technical adaptation plans that specify required outcomes and measures for different departments and/or sectors. Some OECD member countries have found it valuable to complement high-level coordinating with working-level groups to provide technical direction. For example, the United States adaptation working group and practitioner-level community of practice support the higher-level coordinating efforts of the Interagency Climate Change Adaptation Task Force.

Stakeholder Engagement

There is inevitably a strong technical element to national adaptation planning, but it is not a purely technocratic process. Policy-makers viewed it as essential to involve a broad set of stakeholders at strategic planning and policy design stages to assist the development of national programs (OECD 2012). As well as improving the quality of policy-making, the process of stakeholder engagement can be useful for raising awareness and interest among key groups. A common feature of national adaptation planning has been the establishment of comprehensive consultation processes to solicit input from key stakeholders and the general public. For example, Austria sought additional stakeholder input for its national planning through expert consultation, an extensive round of workshops with relevant organizations and internet-based engagement. Several countries have relied upon umbrella or intermediary organizations to facilitate the consultation process, given the large number of potential stakeholders. The benefits of this approach are particularly marked when interacting with large, dispersed groups of stakeholders such as the

general public or small businesses. The use of intermediary organizations has also been driven by pragmatism, as smaller stakeholders tend to have less capacity to engage with the process (Bauer et al. 2011). In the United Kingdom, the adaptation program partnered with the Confederation of British Industry and the Trades Union Congress to solicit input from employers and employees, while also raising awareness and disseminating guidance.

Identifying and addressing the needs of indigenous groups is a particular concern in some OECD countries. Indigenous groups, who often face significant social and economic challenges, are likely to be at particular risk due to climate change (International Union for Conservation of Nature 2008; Galloway McLean et al. 2009). Indigenous groups may also be less well represented in traditional stakeholder engagement processes (Gardner et al. 2010). In the United States, the Environmental Protection Agency developed a policy statement and plan to ensure consultation and coordination with Indian tribes (Environmental Protection Agency 2011). Although there has been progress made through initiatives such as this, ensuring appropriate engagement and input from indigenous groups remains a challenge for some countries.

Program Structure

In designing their national adaptation programs, OECD countries have had to choose how to organize the delivery of adaptation actions: either mainstreamed within existing departmental portfolios or addressed thematically (e.g., “infrastructure” or “water”). Aligning adaptation to existing departmental responsibilities may help to ensure clear accountability for results but may come at the risk of making cross-departmental interactions less frequent – for example, those between land-use planning and flood risk management. In principle, these interactions should already be addressed by existing policy structures, but in practice this is often not the case. Encouraging integration is particularly important during the development of plans or strategies, as adaptation needs can fall between traditional departmental operations or face overlapping or contradictory approaches from different departments (Bauer et al. 2011). Crosscutting thematic approaches may better enable policy-makers to deal with these critical interactions. This choice is important for setting the direction of both adaptation strategies and adaptation plans. However, the greater level of detail on actions and policies in adaptation plans requires a more thorough examination of organizational responsibilities and greater specificity on responsibilities for implementing actions.

The most common approach in OECD countries has been to combine elements of the two approaches in “sectoral” national programs (though definitions of sectors are flexible and vary across countries). For example, the federal approach in the United States has developed along departmental, regional, and thematic lines. In 2012, federal agencies were required to develop agency-level adaptation plans. In addition to these plans, three national-level strategies that address crosscutting issues (such as the management of freshwater resources) have been developed or are in the process of being developed, and there are a number of other regional initiatives and partnerships. England’s approach initially closely aligned adaptation roles to traditional ministerial responsibilities, with each individual government

ministry responsible for developing Departmental Adaptation Plans. However, the forthcoming national adaptation plan will move towards a more thematic approach (UK Department for Environment, Food and Rural Affairs 2012). Mexico's Special Program of Climate Change is based on a combination of departmental and thematic sectors, including a mix of economic sectors (e.g., "agriculture, cattle, forestry, and fisheries"), social concerns (e.g., "health sector"), and crosscutting issues (e.g., "land-use management and urban development" and "disaster risk management"). A number of other OECD countries are also pursuing mixed sectoral approaches, including Chile, Korea, Poland, and Turkey.

Regardless of whether governments take a departmental, thematic, or sectoral approach, coordinating activities within adaptation programs poses a key challenge. Under a thematic approach, governments have to coordinate measures across departments to ensure that thematic goals are met, generally using central coordination groups or mechanisms. Lessons can be learnt from other fields of public policy that face similar coordination challenges. For example, there is a growing body of work in the water policy domain to address issues such as overlapping and unclear allocations of responsibilities, lack of institutional incentives for cooperation, mismatches between impact areas and administrative boundaries, and competition between different departments (OECD 2011).

Prioritization

The selection and prioritization of adaptation options are an essential part of adaptation planning. Governments need to identify the impacts likely to be most socially and economically significant. They also need to prioritize specific issues or actions to ensure an efficient use of public resources. The specific challenges faced by governments depend upon the planning approach taken. In theory, adaptation strategies do not need to include prioritization of vulnerabilities or responses. The key activities proposed in strategies (such as improving the evidence base, capacity building, and mainstreaming adaptation within government activities) do not depend upon the precise details of the climate change impacts faced by the country. In practice, however, adaptation strategies often include some prioritization, in part to communicate important risks or vulnerable sectors. As adaptation plans include greater detail on specific activities and measures, they require a better understanding of key risks and of the options for addressing them. Prioritization is therefore a critical component of adaptation plans and needs to be more comprehensive and based on firmer technical foundations than in adaptation strategies.

Several promising approaches for prioritization have been developed within OECD countries. The approach used by Switzerland identifies key adaptation challenges within individual sectors. This approach uses three criteria to produce an overall "importance" ranking: (i) whether an issue is sensitive to climate change impacts, (ii) whether the impact is important relative to other impacts within the sector, and (iii) whether there is a need for action to address the issue. This ranking feeds into the identification of action areas and key priorities in their strategy (Office Fédéral de l'Environnement 2012). The United Kingdom

government's prioritization system draws on their Climate Change Risk Assessment study, which enables the government to identify key climate change risks and to prioritize adaptation policy development both geographically and by sector. This information feeds into the high-level adaptation planning process. Thus, policy development, both for the current program and for the national adaptation plan, is geared towards addressing the critical issues identified. Some governments have also established criteria for choosing between individual adaptation policy options. For example, the Netherlands' national adaptation program used a multi-criteria analysis approach to rank a wide range of adaptation policies according to five criteria: (i) the importance of the policy, (ii) the urgency of the policy in terms of timing, (iii) whether it is a "no-regret" policy, (iv) whether the policy has ancillary benefits for non-climate change policies, and (v) the policy's impact on mitigation policies. Each criterion is weighted according to perceived importance to produce a weighted sum value for ranking policy options (Ministry of Housing, Spatial Planning and the Environment et al. 2007; van Ierland et al. 2007).

Countries' prioritization systems vary in their choice of criteria, the level of importance attributed to each criterion, and the extent to which prioritization is based on quantitative or qualitative inputs. Some of this variation is accounted for by different prioritization needs for adaptation strategies versus those for adaptation plans. For instance, the issue of quantitative versus qualitative decision making is particularly salient for adaptation plans. The lack of sufficient or suitable projections of climate impacts is a key challenge for developing adaptation plans (OECD 2012). This poses less of an issue for adaptation strategies, as they tend to be less specific than plans about the measures to be implemented. It was, however, noted that the lack of climate impacts data does not need to delay the development of national adaptation plans. The evidence base will never be perfect and the benefits of waiting for improved information must be balanced against the costs of delay. As with other areas of public policy, the challenge for policy-makers is to make the best decisions given the available evidence.

Implementation

The overview of national adaptation planning in OECD countries in the section "[Status of National Adaptation Policies in OECD Countries](#)" shows that there has been progress in the planning of adaptation but that implementation remains at an early stage. This section examines countries' implementation experiences in two specific areas: financing of adaptation and monitoring of implementation.

Financing the Implementation of Adaptation Measures

There is a choice about how to fund adaptation measures, either through mainstreaming or the use of "ring-fenced" funding. Dedicated funds provide an impetus for action on adaptation but can distort spending decisions and work against coordination with wider government objectives. Conversely, mainstreamed

approaches should allow for a more flexible and efficient use of resources but are much less transparent about where resources are being allocated.

Although estimates vary widely, the global costs of adaptation are likely to be in the order of tens to hundreds of billions of United States dollars per year (Parry et al. 2009). Even at the lower end of this spectrum, funding is likely to be a significant hurdle to implementing effective adaptation policies and measures. Securing financing for adaptation programs is therefore a key concern for policy-makers and a key challenge to be addressed in adaptation programs. As in other policy areas, challenges will differ at different stages of adaptation planning. Given their broad focus on improving the evidence base, building capacity and creating an enabling environment for adaptation, strategies have required relatively modest funding for initial climate information and capacity building activities. Adaptation plans, which set out specific actions and establish responsibilities for implementation, ought to be based on an understanding of the likely costs of measures and their benefits. This ensures that funding is sufficient and that the chosen adaptation options represent good value for money.

Few OECD countries specify how their adaptation programs will be funded or the scale of resources required for implementation. Of those that explicitly mention funding, they predominantly focus on preliminary activities such as vulnerability assessments and climate research, rather than the implementation of measures. England's adaptation program has allocated some core funding for adaptation research but has been designed on the basis that the funding of adaptation measures will be achieved by reallocating existing resources. France has estimated the costs of adaptation measures at €171 million per year, but these are expected to be delivered through the usual budgeting process. Mexico's Special Program on Climate Change identifies investment priority areas, but does not specify how such investments would be funded. The United States' program also does not specify how adaptation should be funded, but leaves the financing to individual departments.

The lack of clarity on financing can, in part, be explained by the short time adaptation has been on the policy agenda. Additionally, the focus on mainstreaming in most strategies and plans reduces the need to discuss specific funding mechanisms, as actions are expected to be funded through existing departmental budgetary processes (OECD 2012). Limited details on the actual costs of many adaptation options can also complicate discussions around financing needs and value for money (Biesbroek et al. 2010). Lastly, given current fiscal pressures, the limited discussion of funding in adaptation plans may be a reflection of the limited scale of public resources that are likely to be made available.

Countries' experiences in implementing adaptation also suggest actions that can increase resource availability and maximize the impact of those resources that are available. These include building government support for adaptation by ensuring that adaptation aims are linked to current government priorities (notably economic growth) and by proposing adaptation options that serve multiple purposes and have multiple benefits (OECD 2012). Additionally, participants recommended adapting policy instruments or regulations that are already in place, rather than starting from

scratch. Financial constraints have also encouraged governments to engage the private sector in adaptation. As a starting point, governments have started to encourage the private sector to secure its own resilience to climate change (Agrawala et al. 2011), which ought to reduce the need for public investments in adaptation.

Monitoring and Evaluation of National Adaptation Strategies

As countries implement adaptation programs, they will also need to track the effectiveness of actions and the outcomes of adaptation interventions. Sophisticated approaches to monitoring and evaluation (M&E) are currently being developed in Finland, France, Germany, and the United Kingdom. A common characteristic of these frameworks is their initial focus on monitoring progress in creating the right enabling environment for adaptation (Swart et al. 2009). In essence, this entails a focus on monitoring processes (e.g., the number of government departments that have assessed their exposure to climate risks) rather than outcomes (e.g., reductions in vulnerability to climate change). However, regular monitoring must be complemented by longer-term evaluations that examine if set objectives have been achieved, whether these objectives are still valid in the light of new evidence, and if the identified results can be attributed to the adaptation actions taken.

Participants at the policy-makers workshop noted the challenges involved in conducting M&E assessments, including generating baselines for use in assessing progress, attributing causality of outcomes to actions, the high costs of data gathering, and the long time horizons of climate change. Given these challenges, most countries are not yet in a position to evaluate the effectiveness of adaptation efforts using outcomes-based approaches. However, certain M&E approaches can help governments to address these issues. Notably, the United Kingdom's approach combined progress and outcome indicators and should help in making the connection between adaptation policies and observed outcomes. The frequent snapshots of vulnerability provided by the United Kingdom's five yearly Climate Change Risk Assessments (CCRA) are expected to help policy-makers assess progress and provide updated baselines against which adaptation interventions can be assessed. Vulnerability assessments such as these may give countries a means of assessing the broad effectiveness of adaptation programs, as a complement to or in support of tracking the effectiveness of specific adaptation measures.

France's M&E strategy provides an alternative approach intended to help overcome technical and financial challenges to evaluation. France's approach uses existing tools and procedures to review progress. It combines comprehensive monitoring of the implementation of measures (using both process and outcome indicators) with targeted evaluation of key sectors using a range of evaluation techniques, such as impact assessment, cost-effectiveness, and cost-benefit analysis. It also includes a qualitative review of climate change preparedness before and after adaptation interventions. This approach should reduce the need to develop new technical evaluation techniques and the associated costs and challenges with gathering data.

While addressing political and technical challenges in the design and implementation of M&E approaches is critical, policy-makers emphasized the importance of ensuring that the results from M&E assessments feed into the development and evolution of national adaptation programs. This requires both continuous learning (such as regular assessments or periodic reviews) and feedback mechanisms that outline how M&E results, and new information will contribute to ongoing planning and implementation processes (Pringle 2011). To facilitate this, some OECD countries have provided a statutory basis for periodic reviews. For example, in the United Kingdom the 2008 Climate Change Act requires a review of the national adaptation program every 5 years. In Finland, the national adaptation strategy underwent a midterm review in 2009, with a more comprehensive review scheduled for the 2011–2013 time frame. Similarly, there will be a midterm review of the French national adaptation plan in 2013, which will feed into the development of the next plan for 2015, and the Danish strategy will be revised before the completion of its implementation phase at the end of 2018, drawing on annual reports produced by a national coordination body (Swart et al. 2009).

Conclusion

Overall, there has been considerable activity since the 2006 stock take of activity in OECD countries. In 2006, the National Communications focused on discussing projected climatic changes and the resulting impacts. There were some examples of stand-alone adaptation projects but limited evidence of coordinated approaches being adopted (Gagnon-Lebrun and Agrawala 2006). As of May 2013, the majority of OECD countries have started the process of national planning for adaptation: 18 countries have implemented strategies or plans, and a further eight are in the process of producing them. Some of the remaining countries have put in place systems for national coordination, as in the United States, or focused on enabling local and regional action, as in Canada, without articulating their strategies in a single document.

OECD countries have made significant investments in providing evidence and tools to inform the national planning process, for example, developing an increasingly sophisticated understanding of the potential risks of climate change and a growing volume of work on possible adaptation options. Several countries are now planning to go further than this and assess the costs and benefits of adaptation options. These investments, and the prior decades of work they build upon, have already proved a useful input into the policy-making process.

The approaches taken have reflected national circumstances, but some common themes have emerged. The first is that the financing of adaptation actions remains an area with limited evidence on the scale of resource requirements and the sources of funding. In part, this is because there is still a gap between high-level global estimates and localized studies. The costs of adaptation at the national level remain largely speculative at this stage.

The second theme is that the development of evidence on adaptation should go hand in hand with efforts to increase the capacity of end users to understand and apply those resources. Efforts to increase the technical sophistication of climate projections (and related tools) are needed to provide data that are tailored to the decisions being made. But this needs to be complemented with efforts to increase the usability of the evidence that is made available.

Finally, an area that has received limited attention to date is assessing the results of the actions that have been implemented. Economic theory provides some indication of the types of approaches that are likely to be efficient or effective, for example, adopting a flexible approach and aiming for “win-win” and “no- or low-regret options.” However, there are different ways of achieving these objectives, and they will not be equally effective. Monitoring and evaluation (M&E) is important for political accountability but also for learning lessons that can be used to inform revisions to the design of programs. Even countries with plans specifying actions, responsibilities, and timescales are at an early stage in their development of M&E strategies. This limited attention to M&E partly reflects the high-level, strategic nature of many adaptation policies, where there is still more work to be done to specify the objectives and trade-offs in ways that are sufficiently detailed to enable assessments of progress.

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