



FROM PLANNING TO ACTION: MAINSTREAMING CLIMATE CHANGE ADAPTATION INTO DEVELOPMENT

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EXECUTIVE SUMMARY

Highlights

- Mainstreaming adaptation into development efforts has the potential to improve the resilience of development outcomes, contribute to the more efficient use of resources, and avoid investments that unintentionally lead to maladaptation.
- Policymakers and development practitioners increasingly recognize the need to anticipate and prepare for the impacts of climate change and are incorporating adaptation objectives into sectoral policies and development plans.
- Many tools exist to support these efforts, but mainstreaming plans and policies has been slow to translate into robust action on the ground.
- This paper describes enabling factors in the areas of policy frameworks, leadership, coordination mechanisms, information and tools, and supportive financial processes that can help bridge the implementation gap. Real-world examples demonstrate how they can come together to support implementation.

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Climate Change Threatens Development Progress

The impacts of climate change—increasing temperatures, shifting rainfall patterns, extreme weather events, and sea level rise—have significant implications for human well-being and economic growth. They directly affect development strategies and investments in sectors as diverse as infrastructure, agriculture, water, urban planning, and health.

Policymakers and development practitioners are increasingly recognizing the need to anticipate and prepare for the impacts of climate change.

A growing number of countries are including adaptation objectives in their national and subnational development policies, as well as working across sectors and ministries to integrate resilience strategies into planning. More than 30 developing countries describe in their Nationally Determined Contributions (NDCs) efforts to incorporate adaptation into national development plans or sectoral policies, and more than half of the adaptation actions described by 41 developed countries in their National Communications were incorporated into broader strategies rather than stand-alone adaptation initiatives. The National Adaptation Plan (NAP) process and climate finance institutions are also helping accelerate the mainstreaming of adaptation.

Mainstreaming adaptation objectives into development plans and sectoral policies pays dividends. Mainstreaming can increase the likelihood of success of development under a changing climate. It can lead to enhanced results across programmatic objectives, contribute to more efficient use of financial and nonfinancial resources, and improve the sustainability and scale of adaptation efforts. Countries ignore climate risks at their peril: According to one analysis (GCEC 2014), US\$90 trillion needs to be invested in infrastructure by 2030 to achieve projected growth. Without adequate consideration of the impacts of climate change, such investments are at risk.

Tools Exist, but Action Is Lagging

Numerous tools have emerged in recent years to support mainstreaming. They can help planners and sectoral experts assess vulnerability; draw up plans that increase resilience; protect investments from climate risks; conduct economic and feasibility analyses

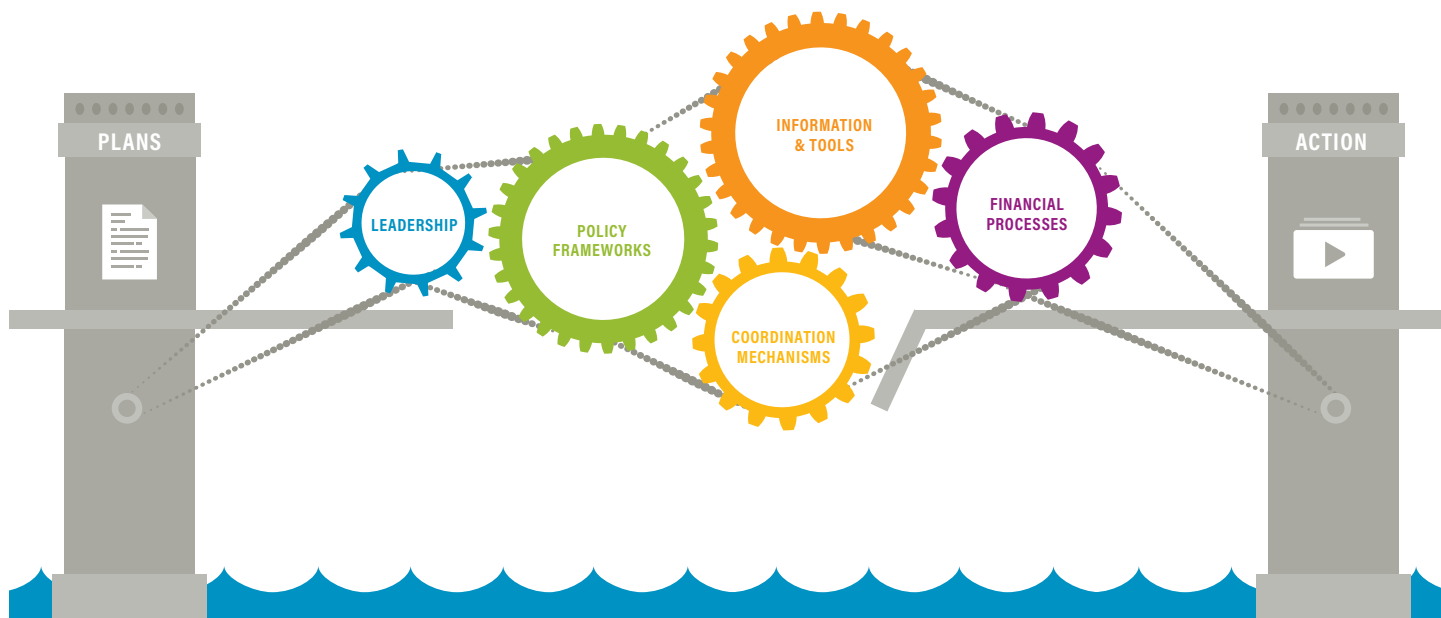
of adaptation efforts; and implement, monitor, and evaluate these initiatives. Although the uptake of tools for vulnerability assessment is increasing, few governments are using the full range of mainstreaming tools in their day-to-day functioning. Greater effort is needed to incentivize, support, and otherwise build the capacity of line ministries to move beyond vulnerability assessment to the planning, implementation, and evaluation of mainstreaming efforts.

Despite growing political attention and technical tools to support mainstreaming, an implementation gap persists. Efforts to mainstream adaptation into development plans and policies have been slow to translate into robust action at national or subnational levels, undermining the ability to prepare the world's most vulnerable communities for the climate impacts that lie ahead. A review of more than 100 published cases of mainstreaming efforts finds that although most addressed mainstreaming in policies and plans, only half reported concrete projects and activities (Runhaar et al. 2017). Because mainstreaming requires coordination among multiple actors, institutions, and processes, the journey from a plan on paper to action on the ground can be a slow one. Research suggests that key barriers to implementing mainstreaming efforts include lack of cooperation and coordination among stakeholders and sustained political will and commitment.

Multiple Factors Enable the Move from Intention to Implementation

This working paper suggests ways countries can close the implementation gap. Drawing on published literature, case examples, and expert insights, it identifies five factors that can work together, like a set of gears, to help accelerate the move from commitments and plans to implementation (Figure ES-1):

- **Policy frameworks**, including political commitments, mandates, and laws that support the integration of adaptation objectives into development planning and sectoral strategies. Policy frameworks are more likely to catalyze implementation when they contain mechanisms for accountability or enforcement.
- **Sustained, persistent leadership**, from inside or outside government, including by political leaders, bureaucrats, and civil society organizations.

Figure ES-1 | **Five Gears That Can Help Bridge the Implementation Gap**

Such leadership can manifest itself by heads of state launching new strategies that encourage mainstreaming, ministries creating new institutions, or citizens championing innovative initiatives that accelerate implementation of mainstreaming commitments.

- **Coordination mechanisms** across sectors and between government departments, such as interministerial steering committees or task forces, that support shared mainstreaming goals. These systems can cut across policy levels, encompass public and private institutions, and encourage ongoing public engagement.
- **Information and tools**, including learning initiatives, training, or access to technical expertise that enables mainstreaming. Knowledge brokers—players that can facilitate information sharing across sectors and policy domains—are critical in bridging the implementation gap.

- **Supportive financial processes** that encourage decision-makers to consider climate risks as well as identify, track, and cover costs to adapt. These processes could include expenditure-tracking initiatives, budget-tagging efforts, and special funds governments establish to support mainstreaming.

There is a pressing need for ongoing documentation of success in bridging the implementation gap. The challenges of mainstreaming are likely to grow as shifts in governance structures continue to reshape institutional arrangements for policymaking and budgeting. These shifts create new challenges and opportunities for awareness raising, capacity building, and civil society engagement that can support mainstreaming. Analyses and case studies of implementation can provide insights into the innovations that will be needed to strengthen and expand mainstreaming efforts.

1. INTRODUCTION

As climate change intensifies, so too will the consequences for the world's poorest communities: The World Bank estimates that the impacts of climate change could force 100 million people into extreme poverty by 2030 (Hallegatte et al. 2016).

Policymakers and planners increasingly recognize the need to integrate climate change adaptation into broader development objectives. The Sustainable Development Goals (SDGs), for example, include a discrete goal on climate action (SDG 13), but targets and indicators across multiple goals refer to the need to prepare for climate impacts (Northrop et al. 2016). Many governments have committed to integrating adaptation considerations into development plans and sectoral strategies within the national climate change plans linked to the Paris Agreement (UNFCCC 2016).

In this paper, *mainstreaming adaptation* refers to the incorporation of climate change adaptation objectives into sectoral policies and plans. It is distinct from a dedicated adaptation approach, which involves policies or programs designed to achieve adaptation objectives as a core function.

At a minimum, mainstreaming requires an assessment of climate information and the risks posed to sectoral objectives and identification of strategies to reduce those risks (OECD 2009, Runhaar et al. 2017). It can also imply adjustments to sectoral objectives and activities to reduce vulnerability and increase efforts to build adaptive capacity (Huxtable and Yen 2009).

Mainstreaming takes place at the national, subnational, and local levels. Optimally, it is an iterative process that adjusts based on the assessment of outcomes and builds on multistakeholder input from a range of governmental and nongovernmental actors (Olhoff and Schaer 2010, UNDP and UNEP 2011). In some cases, mainstreaming implies a cultural shift within institutions, so that consideration of climate risks and strategies becomes embedded in everyday decision-making (Parry and Taylor 2012).

This paper is intended for decision-makers and practitioners in government roles, the private sector, and civil society interested in incorporating climate change adaptation considerations into their work. It encourages readers to assess the complex mechanics of their own mainstreaming processes and consider possibilities that could strengthen and accelerate implementation. The paper examines approaches to mainstreaming climate change adaptation into development policies and

highlights factors that can drive implementation. It shows that mainstreaming efforts must begin with sound planning processes that incorporate robust analysis of climate information and engage multiple actors, institutions, and processes.

The paper focuses on implementation, in recognition of a growing evidence base that describes an “implementation gap” in mainstreaming efforts. It draws on academic literature, project documents, and published reports as well as insights from policymakers and practitioners to describe the factors that can help drive action after decision-makers have committed to mainstreaming and planners have assessed risks and developed plans to address them. The paper is part of a broader effort by the World Resources Institute (WRI) to advance and support efforts to integrate adaptation into development, including case studies that document lessons learned (e.g., Dinshaw et al. forthcoming) and additional analyses.

The paper is organized as follows. Section 2 overviews the benefits of mainstreaming and describes the tools and guidelines available to support mainstreaming efforts. Section 3 describes the implementation gap and identifies a set of enabling factors—or “gears” working together—that can help bridge it. Section 4 provides examples of how the set of gears have worked together to help bridge the implementation gap for mainstreaming efforts in four countries. Section 5 draws conclusions and recommendations for accelerating mainstreaming.

2. WHY AND HOW TO MAINSTREAM ADAPTATION

A growing body of literature and experience demonstrates the rationale and value of incorporating adaptation into development plans and actions. Numerous tools have emerged to support these efforts.

Building the Case: Benefits of Mainstreaming

Both mainstreaming and dedicated approaches to adaptation are needed to reduce vulnerability and build capacity to adapt to the impacts of climate change. This paper focuses on the value and importance of mainstreaming, which can improve development results and the sustainability and scale of adaptation and development efforts over time.

Dedicated adaptation approaches also play a vital and ongoing role in adaptation action and learning (see Box 1).

Box 1 | The Ongoing Importance of Dedicated Approaches to Adaptation

Although efforts to ensure the mainstreaming of climate change adaptation into sectoral plans and policies are gaining momentum, policies and programs that have adaptation outcomes as the central objective will continue to play a critical role in advancing the practice and effectiveness of adaptation action. Dedicated approaches can help catalyze mainstreaming, by placing experts within ministries to initiate or adjust strategies and programs to meet adaptation-related objectives, for example. The line between mainstreaming and dedicated adaptation approaches is not always distinct.

Dedicated adaptation approaches offer the following benefits:

Clarity of purpose: Unlike mainstreaming efforts, which may lack clarity on the relative weight and priority of adaptation objectives, dedicated policies and projects prioritize adaptation outcomes. Mainstreaming efforts aim to reduce climate risk, but the trade-offs inherent in assigning weight and priority to the multiple objectives of mainstreaming efforts can leave open questions about the levels of risk that are acceptable in pursuing sectoral goals (Runhaar et al. 2017).

Reduced vulnerability to shifting socio-political context: The success of mainstreaming can depend on how much political fuel it receives, a level that fluctuates in response to the issue attention cycle, the changing of governments, and support from environmental actors (Jordan

and Lenschow 2010). Although these factors may also affect dedicated adaptation efforts, the lack of a clear owner of mainstreaming processes can make it more difficult to maintain the required momentum (Storbjörk and Isaksson 2014).

More direct path to implementation: Effective mainstreaming requires awareness raising, buy-in, and capacity building of multiple actors and institutions. It requires persistence and a long-term commitment, as it involves coordination of various sectors, knowledge and capacity building, and continued political momentum (Parry and Taylor 2012). Because many dedicated adaptation projects have more limited institutional requirements, they may be easier to implement.

Greater issue visibility: When adaptation becomes integrated into broader policies and plans, the urgency and political importance of the issue can become internalized in a bureaucracy and therefore less visible (Persson, Eckerberg, and Nilsson 2016). Monitoring and evaluation of dedicated adaptation projects demonstrate results that flow directly from adaptation efforts and therefore offer clearer and more discrete opportunities for communicating the needs and values associated with adaptation action. In some circumstances, such projects may provide clearer and more compelling opportunities for attracting adaptation-related donor funds. Mainstreaming pilot projects that clearly demonstrate benefits can also help bring visibility and support to mainstreaming approaches, however.

Improved Development Results

If current development trends continue to 2030, many communities could lose 1–12 percent of their GDP as a result of climate change.¹ In a scenario with high degrees of climate change, these losses could increase by up to 200 percent as early as 2030 (Economics of Climate Action Working Group 2009). Mainstreaming adaptation has the potential to protect development efforts from these types of negative impacts of climate change.

Because climate change will put landscapes, resources, and livelihoods at risk and undermine or reverse development progress, adaptation needs to be integrated in all relevant sectors. Incorporating responses to climate risk in development plans is particularly important for economic sectors upon which large portions of the population depend and landscapes that are highly sensitive to climate change, such as deltas (see Box 2).

By ensuring that development activities account for climate change, mainstreaming can improve development results over the long term. For example, the Department of Animal Husbandry (DoAH) in the Indian state of Madhya Pradesh is altering its livestock programs in response to climate change impacts. It used to breed and promote

Box 2 | Mainstreaming through Shared Learning: The Delta Coalition

The Delta Coalition is the world's first international coalition of governments aimed at making deltas more resilient and stimulating their sustainable and inclusive economic development. Founded in 2015 by the governments of Colombia, Japan, and the Netherlands, it now includes 13 countries (both developed and developing). Its efforts underscore the importance of mainstreaming adaptation into development endeavors in landscapes that are particularly vulnerable to climate change and offer insights into the ways in which mainstreaming efforts can be advanced and supported on a large scale. Transitioning from disaster response to prevention is critical, given the important economic and environmental function of deltas; rapid population growth; and the growing problems of coastal flooding, loss of wetlands, retreat of shorelines, and loss of infrastructure. An assessment of climate risks must be incorporated into all responses if solutions are to be effective and sustainable. Adaptation solutions are context specific; generic answers do not address problems adequately.

In 2017 Egypt, the chair of the Delta Coalition at the time, submitted a project to the Green Climate Fund that aims to reduce coastal flooding threats to important urban, industrial, and food-production areas. The project aims to apply best practices for mainstreaming adaptation into development in deltas. It will provide detailed documentation, so that progress and experiences can be shared, both nationally and internationally.

exotic species of cattle that produced substantially more milk than indigenous species. After observing that the output and reproductive rate of these breeds were decreasing, it reached out to experts, who explained that the problem reflected increased temperatures as a result of climate change. In response, DoAH is shifting away from exotic breeds toward indigenous breeds that produce substantially less milk but have a higher tolerance for heat stress. This gradual shift will help ensure that climate change impacts will not adversely affect development (Dinshaw et al. forthcoming).

Mainstreaming also has the potential to reduce trade-offs or policy conflicts between adaptation and development that might exist if they were addressed separately (Lebel et al. 2012, Alhassan and Hadwen 2017). In Cambodia, for example, agriculture policy strongly emphasizes irrigation as a means to increase productivity, especially for rice. Irrigation increases stability during the wet season, which can have erratic rainfall, and supports dry-season production, allowing Cambodian farmers to cultivate two rice crops a year. Although irrigation has great potential for increasing Cambodia's agriculture sector output, there is uncertainty about how much water is available, or can be made available affordably in the future, to justify investments in irrigation (de Silva, Johnston, and Sellamuttu 2014). If irrigation continues unbridled, in the medium to long term, farmers will be dependent on irrigation infrastructure that cannot support their crops, their yields will drop, and they will be more vulnerable to climate change impacts and other non-climate stressors. Integrating climate impacts and adaptation actions into Cambodia's irrigation policies and plans can help avoid this tradeoff.

Enhanced Efficiency and Scale

It is more efficient to mainstream adaptation into development than to do both separately, because institutional structures, policies, and practices that are already in place provide a solid basis for integrating adaptation into a sector (IIED 2008, Lebel et al. 2012). This benefit is likely to be especially salient given that the resources for adaptation—although growing—are still dwarfed by the need (Dougherty-Choux 2015). Using existing institutions and processes whenever possible can help deliver results more efficiently than creating new ones.

Mainstreaming can also allow governments to leverage larger financial flows for adaptation in climate-sensitive sectors when compared with the amounts available for stand-alone adaptation interventions (Lebel et al. 2012). When adaptation is integrated into ongoing development processes, it can be added into large-scale investments, policies, and plans in ways that dedicated adaptation efforts cannot. For instance, to keep pace with projected growth, the world needs to invest an estimated US\$90 trillion in infrastructure between 2015 and 2030 (about \$6 trillion a year) (GCEC 2014). Mainstreaming adaptation into the infrastructure sector will influence these large investments more than efforts outside of the business-as-usual functioning of the sector.

An example of an opportunity to leverage larger financial flows for resilience is the funding of the U.S. Federal Emergency Management Agency (FEMA), which rebuilds infrastructure after natural disasters. FEMA's policy is to provide funding to replace infrastructure to the same standard as before, even if climate change is altering the relevance of those standards. In 2011 Tropical Storm Irene destroyed infrastructure in the town of Sharon, Vermont, including an 80-year-old bridge that was important for accessing schools and medical centers. The town wanted to replace the bridge with a design that could withstand the effects of the increased severity and frequency of weather events as a result of climate change. FEMA insisted that government funds could be used only to restore the bridge to its previous state. After three years of negotiation, FEMA agreed to replace the bridge with a more climate-resilient design. In the wake of Hurricane Sandy, in 2012, FEMA announced a new policy that allows communities to consider sea level rise in using federal funds to rebuild after disasters (Shrogen 2015). This amended policy-making can ensure that more money supports climate-resilient infrastructure in the future.

Critically, mainstreaming adaptation into development produces results at scale, which is greatly needed to meet the magnitude of the climate change challenge (UNDP and UNEP 2011). Mainstreaming can integrate adaptation into the day-to-day functioning of society, building sustained capacity to withstand climate change shocks and stresses. It can change the ways in which development takes place and help move toward a culture in which planners and practitioners strategically and systematically anticipate the impacts of climate change and make decisions that take those impacts into account (GIZ 2013).

Tools for Supporting the Mainstreaming Process

Mainstreaming adaptation requires policymakers to consider current and future climate risks and opportunities for reducing them at every stage of the decision-making process (Gogoi et al. 2017). In recent years, there has been a proliferation of tools and guidelines to support this endeavor. Tools have been designed to guide planners and practitioners through various stages of the mainstreaming process, from the initial assessment of climate risks to the tracking and evaluation of results.² Tools can range from step-by-step guidebooks for planning to interactive web-based platforms that identify projected climate hazards to well-established practices such as cost–benefit analysis. This section overviews the broad categories of tools that can be used to support mainstreaming, as well as tools and initiatives that can strengthen institutions and the capacity to implement mainstreaming processes.

Assessment Tools

Assessment tools enable planners to screen for risks posed by climate change and identify the most vulnerable sectors or regions. Most vulnerability assessments compile indicators that define vulnerability (i.e., exposure, sensitivity, and adaptive capacity). National and local governments (see Box 3) and the private sector make wide use of these tools.

Box 3 | Assessment Tools in Action in India

In 2009 India's central government issued a directive to all states to initiate the State Action Plan on Climate Change. The directive represented the first large-scale attempt to create action plans for adaptation in India. As data on impacts of climate change and resulting vulnerability were lacking, most states commissioned climate risk and vulnerability assessments to help identify and prioritize sectors and regions for immediate actions to address the effects of climate change and build resilience of vulnerable populations and sectors. These initial assessments helped governmental and nongovernmental stakeholders design sector-specific adaptation actions. In Madhya Pradesh, for example, the vulnerability assessment allowed sectoral planners to start the conversation about how each sector is affected and the changes that are needed (SKMCCC 2013). The livestock sector has already made modifications to its programs based on these assessments (Dinshaw et al. forthcoming).

Tools for Analysis and Prioritization

After screening for risk and assessing vulnerability, practitioners can use a variety of tools to identify, analyze, and prioritize options for adaptation action. Such tools help decision-makers choose economically viable and socially acceptable options for achieving development or sectoral objectives while tackling climate-related risks.

Tools includes traditional cost–benefit analyses as well as newer tools designed to aid decision-making under conditions of climate uncertainty. They include robust decision-making, an analytic framework used in situations of deep uncertainty (i.e., the absence of probabilistic information on scenarios and outcomes), and real options analysis, which quantifies the investment risk associated with uncertain future outcomes.

Several tools have emerged to help decision-makers assess the financial and economic repercussions of climate change. The Global Innovation Lab for Climate Finance developed the Oasis Platform for Catastrophe and Climate Change Risk Assessment and Adaptation, which helps decision-makers quantify the potential economic consequences of extreme events. It allows users to “plug-and-play” a range of standardized hazard, exposure, vulnerability, economic, and insurance data to calculate the potential economic losses and financial risk associated with catastrophic events (Trabacchi and Tonkonogy 2016).

Tracking Tools

Tracking tools help planners and implementers follow the progress of adaptation objectives within development efforts. Tracking tools can help filter out unsuccessful or maladaptive actions, in order to generate more robust and effective adaptation options. Tracking tools can also help practitioners and advocates identify and follow financial flows related to adaptation objectives, from allocation to disbursement to utilization.

Tools for monitoring and evaluation (M&E) are among the most common tracking tools. With the growth of adaptation finance, use of these tools has surged. Approaches such as those outlined in *Making Adaptation Count* (Spearman and McGray 2011) and *Tracking Adaptation and Measuring Development* (Brooks et al. 2011) provide step-by-step guidance, a detailed framework, log-frame development, and examples of indicators.

Awareness and Capacity-Building Tools

Some tools are designed to raise awareness of climate trends and risks, strengthen institutions in ways that can support mainstreaming, or otherwise build capacity for effective and lasting mainstreaming processes. South Africa's *Let's Respond* toolkit (Sustainable Energy Africa and Palmer Development Group 2012) shows how to integrate climate change into municipal planning processes. It includes step-by-step instructions on assessment, planning, and stakeholder engagement and climate response plan templates.

Learning from and involving local communities is an important element of mainstreaming adaptation in development. Tools that focus on community engagement can be vital for raising awareness and building capacity; they can also yield insights into assessment, prioritization, and tracking. Approaches include participatory scenario development (see Box 4) and many other approaches outlined in *Participatory Methods Toolkit: A Practitioner's Manual* (Elliott et al. 2005).

Visualizations of complex climate data and findings from analysis and assessments can improve both decision-making and awareness (Thomas et al. 2008), benefiting communities, academics, and decision-makers. Platforms such as the Partnership for Resilience and Preparedness, Aqueduct, Global Forest Watch, Climate Explorer 2.0, and city-specific tools such as Melbourne's Integrated Climate Adaptation Mode provide live indicator tracking.

Box 4 | Capacity-Building Tools in Action: Participatory Scenario Development

Scenarios are narratives of potential futures that focus attention on relationships between events and decision points. Scenario construction can be particularly useful in situations in which the past or present is unlikely to be a guide to the future, the problem is complex, the probability of significant change is high, the dominant trends are unfavorable, and the time horizon is relatively long (Slocum 2003).

Scenario development supports the mainstreaming of adaptation by providing participants with information on the current state of climate impacts and future projections, so that they can deliberate on goals and strategies for achieving them (Bachofen et al. 2012). Workshops on participatory scenario development methods in Bangladesh, Ethiopia, Ghana, Mozambique, and Vietnam helped participants make sense of projections of changes in climate variables by collectively exploring sectoral and regional impacts and preferred adaptation pathways, using both locally relevant and expert knowledge (Bizikova et al. 2014).

Box 5 | Sectoral and Scale-Specific Tools

The Coastal Hazard Wheel helps users identify the characteristics of a coastline, its hazard profile, and possible management options. This low-tech tool can be used in areas with limited data availability and institutional capacity. It is therefore especially well-suited for local, regional, and national hazard screening and management in developing countries (Appelquist and Halsnæs 2015).

The Dairy Climate Toolkit, created by Dairy Australia and the Australian government, describes practices that support adaptation by dairy farmers and the entire dairy industry. Embedded in the context of everyday farm management decisions, it helps users understand regional climate impacts and define farm-level adaptation actions for responding to changes in pasture and heat stress affecting cows and overall farm management (Dairy Australia 2017).

Sectoral and Scale-Specific Tools

Some tools provide guidance on mainstreaming adaptation into specific sectors (e.g., forestry, coastal management, agriculture, health care, and water management) and at various scales (including the city and community level) (see Box 5). Some are comprehensive; others focus on a single dimension of the mainstreaming process, such as risk assessment, prioritization, or tracking. Tools such as the Adaptation Policy Framework of the United Nations Development Programme (UNDP) provide guidance on the full process of mainstreaming, including awareness raising, climate change screening, climate risk assessment, identification of adaptation options, prioritization and selection, implementation, and M&E (Olhoff and Schaer 2010).

Conclusions on the Use of Tools for Mainstreaming

The tools described in this section help shape how development planners and sectoral specialists understand climate risk and plan and implement adaptation actions. National and regional governments have used vulnerability assessment tools to identify the sectors and regions most at risk. Doing so is only a first step in opening discussions about mainstreaming adaptation activities; their use does not imply that effective mainstreaming plans will be developed or implemented.

Tools for analysis and prioritization, tracking, and capacity building have been used in demonstration projects; evidence of their broad application in the day-to-day operation of sectoral planning and implementation is limited. Governments often lack the capacity to identify

an appropriate tool and adapt it to their local context. As a result, external agencies or consultants may select and apply tools for specific activities over a limited timeframe, with limited involvement of government ministries, missing opportunities to mainstream their application more broadly within government operations.

To support mainstreaming initiatives, greater effort is needed to adapt existing tools for use beyond the project level, so that they can be more easily incorporated into the regional and national operations of ministries. International funding agencies and coalitions can encourage or incentivize countries to use tools that support mainstreaming. The Green Climate Fund and the Adaptation Fund, for example, have mandated the use of M&E tools.

Government officials need better understanding of where and how tools can be applied to achieve mainstreaming goals. Tools that address part of a process or a particular sector need to be applied in conjunction with tools that support the entire process of mainstreaming, from understanding data to M&E results.

3. THE IMPLEMENTATION GAP

Effective mainstreaming requires broad governance, institutional, and cultural shifts. This section explores barriers to and enabling factors for mainstreaming, with a focus on moving from commitment to action.

Background

Commitments to mainstreaming adaptation into development and sectoral plans and policies have been growing worldwide. Information provided by countries in their NDCs—the documents that contain national climate change commitments to the Paris Agreement—highlight this increasing intention to mainstream. More than 30 developing countries describe efforts to incorporate adaptation into national development plans or sectoral policies (Climate Watch 2018, UNFCCC 2016). An analysis of adaptation actions reported in National Communications³ from 41 developed countries indicates that most adaptation efforts were mainstreamed into existing instruments rather than stand-alone initiatives (Lesnikowski et al. 2016).

Mainstreaming is a central objective of the NAP process. Launched in 2011, Parties to the United Nations Framework Convention on Climate Change (UNFCCC)

established the NAP process to support and initiate comprehensive medium- and long-term adaptation planning, particularly in least developed countries. NAPs are intended to (a) reduce vulnerability to the impacts of climate change by building resilience and adaptive capacity and (b) “facilitate the integration of climate change adaptation, in a coherent manner, into relevant new and existing policies, programmes and activities, in particular development planning processes and strategies, within all relevant sectors and at different levels” (UNFCCC 2011).

A growing number of countries have launched the NAP process with these objectives in mind. As of 2018, 47 countries had submitted proposals for the formulation of NAPs or other adaptation planning processes to the Green Climate Fund which offers support for NAP development under its readiness program (GCF 2018).

Climate finance institutions also support mainstreaming efforts, through various channels. The Pilot Program for Climate Resilience aims to support national governments in integrating adaptation into development planning (PPCR 2018). Major bilateral donors, including the U.S. Agency for International Development (USAID 2012) and the United Kingdom’s Department for International Development (DFID 2014) have made mainstreaming a central part of their adaptation strategies. Almost a decade ago, the Organisation for Economic Co-operation and Development (OECD 2009) developed policy guidance for integrating adaptation into development cooperation.

Implementation of commitments to mainstream is lagging. In its Fifth Assessment Report, the Intergovernmental Panel on Climate Change (IPCC) notes that mainstreaming has resulted in limited implementation, despite documentation of plans at the national, subnational, and community levels (Mimura et al. 2014). National action to “join up” climate change and development objectives has been limited. A recent analysis of implementation of NDCs and the SDGs indicates that efforts generally proceed on different tracks, led by different government ministries, despite growing recognition of opportunities for synergies (Bouye et al. 2018). A review of more than 100 published cases of mainstreaming efforts in both developed and developing countries finds that although the vast majority addressed mainstreaming in sectoral policy documents and plans, only half reported concrete projects and activities (Runhaar et al. 2017). This “implementation gap” in mainstreaming efforts is common across both developed and developing countries.⁴

Multiple factors contribute to this gap. First, mainstreaming efforts involve a large set of actors, institutions, and processes. Accordingly, the transition from planning to implementation requires overcoming numerous resource, institutional, and capacity barriers (Gogoi et al. 2018, Mimura et al. 2014). Barriers to implementation include a lack of sustained political commitment, a lack of effective cooperation and coordination between key stakeholders, the absence of clear mandates, conflicting political interests, and inappropriate organizational structures and practices; access to information and expertise are not significant barriers to implementation (Runhaar et al. 2017).

“Gears” That Can Help Bridge the Implementation Gap

The process of mainstreaming is multifaceted and challenging. It involves multiple actors, institutions, processes, and resources; requires accessing, processing, and analyzing technical and complex information; and takes place over long timeframes, requiring ongoing effort and political will.

Several publications describe the “enabling factors,” “ingredients,” or “building blocks” that can support mainstreaming processes (Runhaar et al. 2017, Bickersteth et al. 2017, Pervin et al. 2013, UNDP and UNEP 2011). This section builds on this base to focus on the implementation of mainstreaming processes. It combines the factors identified in this literature with expert and practitioner insights to identify enabling factors that can help bridge the implementation gap.

Five factors—policy frameworks, leadership, coordination mechanisms, information and tools, and supportive financial processes—can help accelerate the move from mainstreaming commitments and plans to implementation. Not all five are necessary for bridging the implementation gap in every case; they can work together in various combinations, like a set of gears (see Figure 1). In working together to bridge the implementation gap, aspects of one gear can catalyze or accelerate action in others. The gears need not work in a linear fashion; they can turn in different directions, with dimensions of one gear fitting into one or more other gears at varying points in time.

The enabling factors identified reflect lessons learned from a broader analysis of countries’ climate change and development agendas (Bouye et al. 2018). In examining national experiences with implementing the SDGs and the climate goals set out in NDCs, Bouye et al. (2018) conclude that advancing the two agendas in a consistent and integrated way requires greater attention to linking institutional, policy, financial, and monitoring instruments that support implementation. They highlight dimensions that can support such efforts, including leadership and coordination mechanisms, incentives that are incorporated into budget processes, and mutually reinforcing monitoring and reporting frameworks that provide accountability. Many of these dimensions are reflected in the gear descriptions presented here.

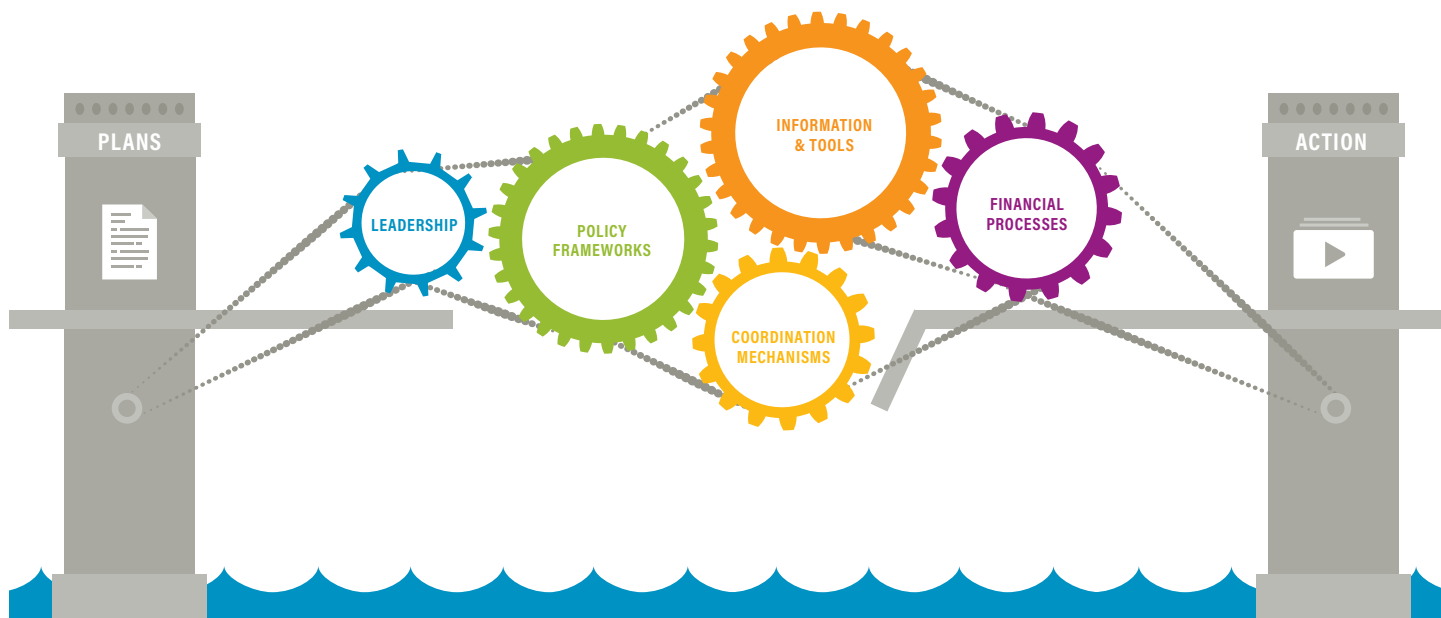
The rest of this section describes the dimensions of each gear. Section 4 provides real-world examples of the gears in driving implementation of mainstreaming plans.

Policy Frameworks

Political commitments, mandates, or laws or legislation—“policy frameworks”—are a critical factor in embedding mainstreaming into planning and moving it from planning to action. This category includes commitments made by the government to mainstream climate considerations into national development plans or sectoral plans. These commitments can come in the form of publicly available documents, such as Poverty Reduction Strategy Papers (required by the International Monetary Fund and World Bank) or NDCs; they can also take the form of legislation or executive orders.

Policy frameworks are more likely to accelerate implementation if they contain mechanisms for accountability and/or enforcement. These mechanisms can be in the form of embedded reporting requirements or codified through formal interministerial documents, such as gazettes or circulars. Policy frameworks also offer an opportunity to institutionalize the flexibility that can be critical for effective mainstreaming, in the form of commitments to revise policies at preidentified times (UNDP and UNEP 2011). Actively soliciting and incorporating public participation and feedback through continued stakeholder engagement can enhance the ownership and accountability of these frameworks.

Figure 1 | Five Gears That Can Help Bridge the Implementation Gap



Leadership

Initiatives or efforts introduced and supported by individuals or groups often drive mainstreaming efforts. This type of leadership includes strong actions launched and prioritized by heads of state or other political leaders, such as members of Parliament. Influential ministries or nonstate actors, such as academics, representatives of civil society, or actors from the private sector, can also play this role, contributing knowledge or marshalling political attention. Judicial leadership, in the form of interpretation of laws or mandates related to mainstreaming, can also be important. In many cases, a “focusing event,” such as an episode of extreme weather or other economic shock, can provide a trigger or platform for leadership (Runhaar et al. 2017).

To bridge the implementation gap, leadership must be sustained and persistent. The role of “champions” who are committed to carrying forward a long-term vision—individuals who hold formal leadership positions or people who are less visible but motivated and creative in finding pathways to effect implementation—can be key to bridging the gap.

Coordination Mechanisms

Mechanisms for coordination across sectors or government departments—such as interministerial steering committees or task forces designed to support integration or mainstreaming efforts—can help mainstream efforts. They can support coordination across policy levels (vertical integration) and sectors (horizontal integration) and facilitate public-private coordination.

Moving the coordination of mainstreaming efforts into a central body with strong convening and/or decision-making powers (such as ministries of finance or planning or the office of the president or prime minister) can help drive implementation (UNDP and UNEP 2011). Multi-stakeholder mechanisms that bring together representatives from the government, private sector, and civil society may be well-suited to fostering implementation, particularly if they are guided by a party with skills in facilitation, convening, communications, and brokering (Fowler and Biekart 2017).

Information and Tools

The application of specific tools and guidelines for mainstreaming climate change—including learning initiatives, training, or access to knowledge and expertise—can enable and support the implementation of mainstreaming. “Knowledge brokers” can play an important role in generating relevant information and ensuring its appropriate translation and use for implementation. The provision of sustained technical assistance, capacity building, and secondments can be essential, as in-house capacity is often limited (Bickersteth et al. 2017). Efforts to learn and incorporate the language and terminology of other sectors in strategies and plans can smooth the path for implementation.

Integrating adaptation measures into national monitoring systems to track trends as well as the impact of policies can provide a degree of accountability that can be critical to implementation (UNDP and UNEP 2011). Effective civil society engagement requires that such information be accessible and transparent.

Supportive Financial Processes

National or subnational budget processes can encourage efforts to incorporate climate risk considerations and identify, track, or cover costs associated with efforts to adapt to those risks. These processes include expenditure-tracking initiatives, budget-tagging efforts, and special funds set up by government to support mainstreaming efforts. They can also include devising and adopting

sustainable and resilient procurement policies or encouraging financial institutions to take into account or report on climate risks (e.g., the Task Force on Climate-Related Financial Disclosures, which develops voluntary financial risk disclosures for use by companies in providing information to investors, lenders, insurers, and other stakeholders). Parliaments can use their oversight role to make sure that adaptation mainstreaming mandates are translated into the budget process.

Finance ministries can provide specific guidance on incorporating climate change in budget planning and allocation. They can also use national government performance monitoring and budgeting systems to ensure that sector officials are incentivized to request and implement budgetary support for mainstreaming efforts. Policies often set up the supportive national or subnational budget process for adaptation. It is important to consider the processes and institutions that are in place to support implementation, accountability, and enforcement of budget guidelines.

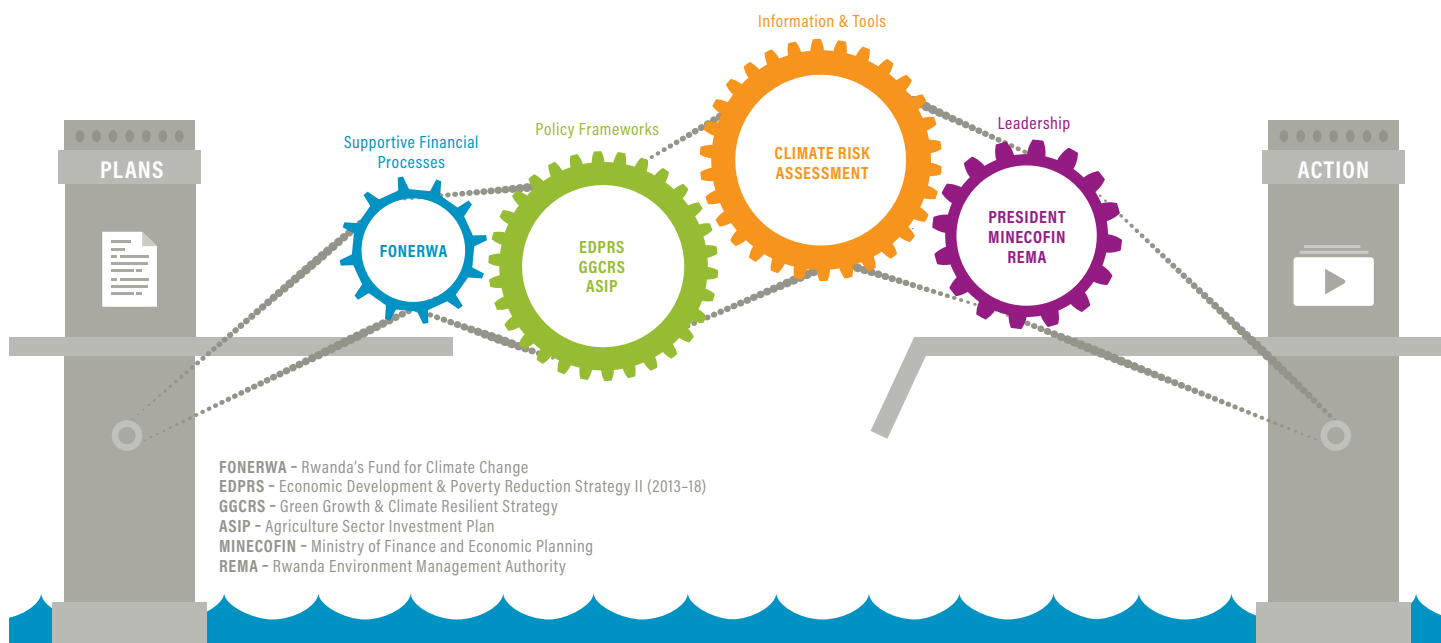
4. EXAMPLES OF MAINSTREAMING GEARS

This section showcases four mainstreaming efforts that have bridged the implementation gap. The first three examples describe how the “gears” worked together to support implementation and achieve mainstreaming outcomes in the form of concrete projects and activities (see Table 1). The fourth example showcases mainstream-

Table 1 | **Gears That Helped Bridge the Implementation Gap in Mainstreaming Efforts in Rwanda, Nepal, Germany, and Colombia**

EXAMPLE	IMPLEMENTATION GEARS	MAINSTREAMING OUTCOMES
Safeguarding tea and coffee production in Rwanda	<ul style="list-style-type: none"> ■ Policy frameworks ■ Leadership ■ Information and tools ■ Supportive financial processes 	<ul style="list-style-type: none"> ■ Planting shade trees and intercropping ■ Using climate information in site selection for tea production ■ Investing in monitoring systems for pests and resilient crop varieties
Implementing local adaptation plans of action in Nepal	<ul style="list-style-type: none"> ■ Policy frameworks ■ Leadership ■ Coordination mechanisms ■ Supportive financial processes 	<ul style="list-style-type: none"> ■ Taking local adaptation actions in the agriculture, water, forest, health, and infrastructure sectors
Creating a regional network for climate change adaptation in Germany	<ul style="list-style-type: none"> ■ Policy frameworks ■ Leadership ■ Coordination mechanisms ■ Information and tools ■ Supportive financial processes 	<ul style="list-style-type: none"> ■ Putting in place early-warning systems for heat waves ■ Creating a “Climate Adapted” quality seal for nursing homes that have taken steps to reduce the risks of heatwaves to their residents
Strengthening institutions for mainstreaming in Colombia	<ul style="list-style-type: none"> ■ Policy frameworks ■ Leadership ■ Coordination mechanisms ■ Information and tools ■ Supportive financial processes 	<ul style="list-style-type: none"> ■ To be determined

Figure 2 | Safeguarding tea and coffee production in Rwanda



ing efforts in Colombia that have not yet delivered projects or activities but nevertheless demonstrate the value of the enabling factors.

Example 1: Safeguarding Tea and Coffee Production in Rwanda

The tea and coffee sectors contribute significantly to Rwanda's exports and are a key component of the country's agriculture development strategy. Both crops are sensitive to climate change. Rising temperatures are reducing coffee yields and quality and leading to more pests and diseases. Heavy precipitation and associated floods and landslides are increasingly affecting tea plantations. Climate change will exacerbate these impacts by increasing extremes and shifting agro-climatic zones.

The Ministry of Agriculture & Animal Resources (MINAGRI) developed an approach to mainstream climate change into the sector with three core building blocks. The first component identifies "low-regret" strategies that could build climate resilience into existing agricultural development and extension services. They include activities such as planting shade trees and intercropping with bananas to address climate variability and diversifying the cash crop base. The second component seeks to make new development plans "climate smart." It

includes using climate change information to help choose suitable site locations for new tea production. A third component seeks to start preparing the sector for future risks, by, for example, investing in early monitoring of pests and developing new resilient varieties (CDKN 2015).

Rwanda is one of the early champions of mainstreaming climate change. With technical support from UNDP's Poverty Environment Initiative, the Rwanda Environment Management Authority (REMA) spearheaded efforts to mainstream climate and environment into the Second Economic Development and Poverty Reduction Strategy (EDPRS) (2013–18) and accompanying sector development plans. Actions undertaken in the tea and coffee sector represent some of the first successes in implementing these plans.

Leadership: There has been political momentum and leadership at the highest level in support of environment and climate policy, with the president as well as senior powerful ministries, including the Ministry of Finance & Economic Planning (MINECOFIN), championing the cause. The importance of having strong cross-ministerial linkages was highlighted by President Kagame, in 2009, when he said, "The environment is our life-blood. Indeed, the real surprise is not that ministries of finance are now talking to ministries of environment but that it has actu-

ally taken this long. Even when we look beyond agriculture, tourism, mineral wealth and fisheries, our economies depend critically on good environmental stewardship” (Byamukama et. al. 2010). Within this conducive and supportive political environment, REMA was able to push forward the mainstreaming agenda.

Supportive financial processes: In the context of this supportive leadership, meaningful cross-ministerial linkages evolved in Rwanda’s mainstreaming narrative. The law for the Fund for Environment and Climate Change (FONERWA), endorsed by Parliament in 2011, was the result of a strong strategic partnership and coordination by REMA, MINECOFIN, and the Ministry of Natural Resources (MINIRENA) (REMA 2015a). FONERWA has a funding window dedicated to sector-specific adaptation and mitigation and provides support for implementing cross-sectoral integrated plans and strategic environmental and climate assessments.

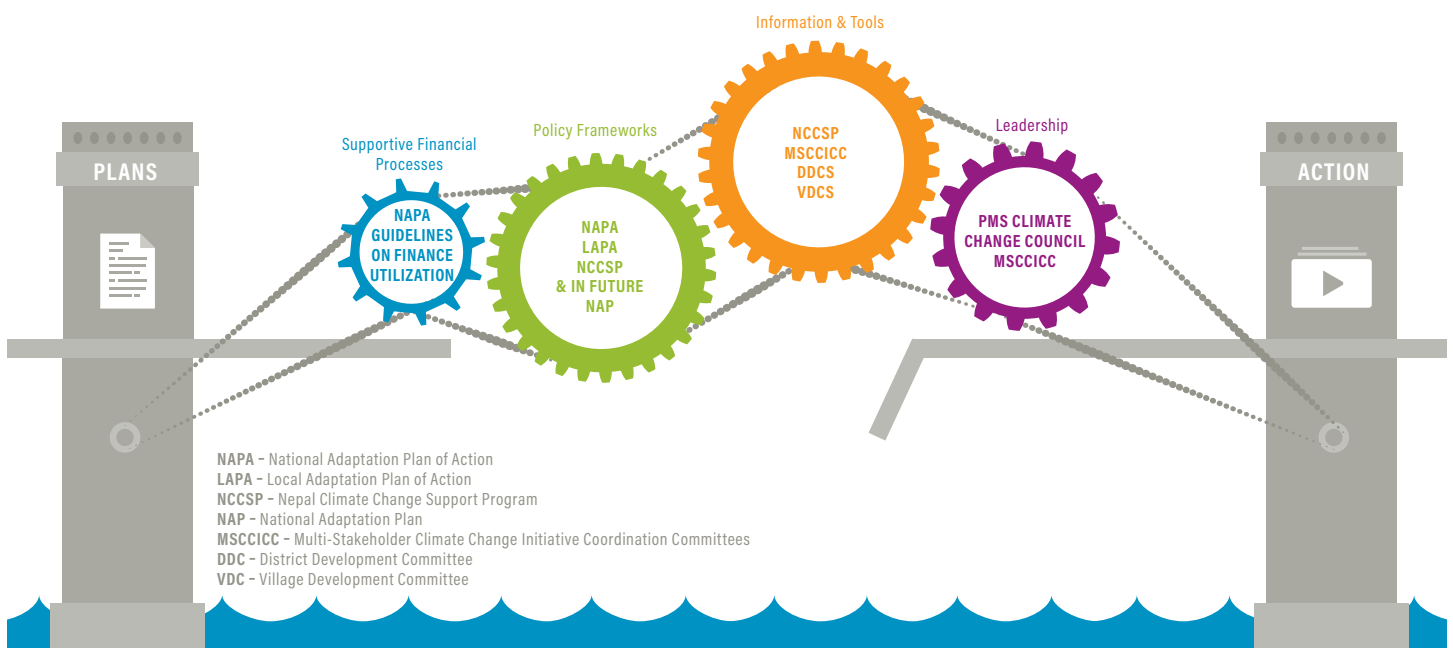
Policy frameworks: The government of Rwanda launched the Green Growth and Climate Resilience National Strategy (GGCRS) for Climate Change and Low Carbon Development in 2011. Its recommendation to create a national fund for climate change in the country led to the establishment of FONERWA, illustrating how strongly linked policy frameworks and financial support can incentivize the uptake of mainstreaming. Multiple national and sector development plans include climate-related objectives, sup-

ported by sector mainstreaming guidance and indicators (REMA 2015b) as well as a checklist of climate indicators in the budget circular. Finance for mainstreaming has thus been organically included in Rwanda’s policy frameworks.

Information and tools: Building on these policy frameworks, the Economic Development and Poverty Reduction Strategy (EDPRS) II and sector development plans incorporated mainstreaming into their agendas. To help translate the mainstreaming commitments into action on the ground, MINAGRI, in consultation with various technical experts, carried out a climate and risk assessment for the Agriculture Sector Investment Plan. Based on that assessment, MINAGRI chose the tea and coffee sector for the mainstreaming pilot initiative. Using the latest global climate model predictions and an iterative risk-management approach, MINAGRI identified and implemented specific adaptation interventions (described above). Technical assistance played a key role in the successful application of information and tools and aided in compiling data, applying the risk-management approach, and identifying concrete adaptation actions (CDKN 2015).

Rwanda has now embarked on a second round of climate mainstreaming, in both the national and sector medium-term planning process (2018–24). In agriculture, for example, the lessons learned from the tea and coffee pilot have been used to mainstream climate risks and opportunities

Figure 3 | Implementing “Local Adaptation Plans of Action” in Nepal



into specific programs of the Fourth Strategic Plan for Agriculture Transformation. As a result, climate considerations have been integrated into the plan's results framework, using the sector working group as a forum for consultation (Watkins and Bisangwa, 2018). In this new approach, demonstration projects are facilitating the uptake of scientific information and tools into sector planning. Rwanda has also been working to mobilize funds, including from sources such as the Green Climate Fund, to build a strong pipeline of finance to carry forward its mainstreaming agenda.

Example 2: Implementing “Local Adaptation Plans of Action” in Nepal

Nepal is a landlocked Himalayan country that is extremely vulnerable to climate change. It is exposed to a range of water-related hazards, which are often triggered by rapid snow- and ice-melt in the mountains and torrential rainfall in the foothills during the monsoon season (USAID 2017). Vulnerable sectors include agriculture, infrastructure, water, and human and ecosystem health.

These sectors are the focus of Nepal's National Adaptation Plan of Action (NAPA), which is incorporated into the country's development objectives (Government of Nepal 2010). The country is now formulating its National Adaptation Plan (NAP), which aims to integrate climate change adaptation into policies, programs, and activities across sectors. In 2010 Nepal created a national framework of Local Adaptation Plans of Action (LAPAs) to strengthen and implement the adaptation actions prioritized in the NAPA (Bahadur et al. 2017).

LAPAs were designed not with an explicit focus on mainstreaming adaptation into sectoral policies but rather to facilitate the implementation of adaptation actions. However, the mechanisms for involving sectoral agencies and coordinating with development agencies led to a patchwork of mainstreaming outcomes, such as the creation of cross-sectoral coordination committees that support sharing of responsibilities during implementation.

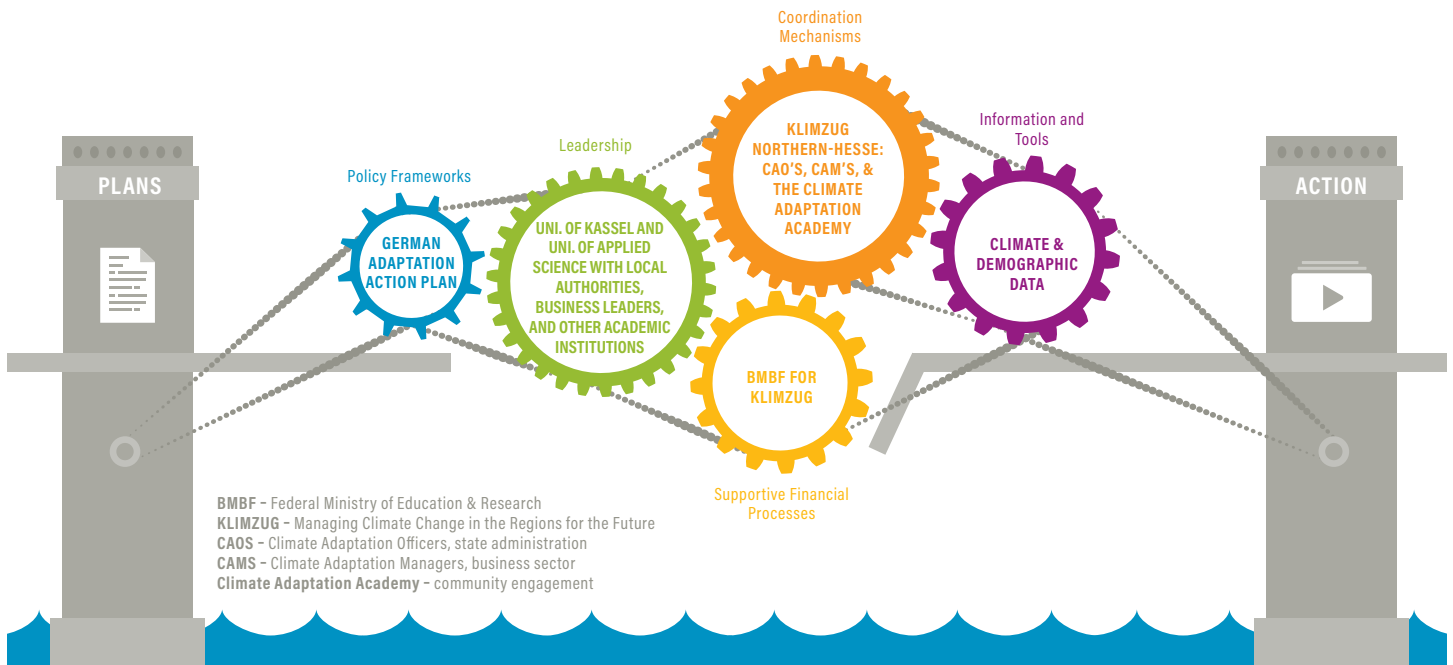
By 2017, 87 Village Development Committees (VDC) were implementing multisectoral LAPAs, with support from various local NGOs and international development agencies (UNDP 2017). LAPA activities were prioritized based on the needs of communities, effectiveness, cost efficiency, and integration of women and other vulnerable groups identified during stakeholder workshops facilitated by members of the VDC trained by District Development Committees (DDC) (Watts 2012).

Supportive financial processes: Nepal's NAPA indicated the government's intention to disburse at least 80 percent of national adaptation funds for implementation of adaptation activities at the local level (Watts 2012).

Policy frameworks: A robust and interconnected set of policies supports the implementation of LAPAs. Key among them are the National Framework on LAPAs (2011) and the Climate Change Policy (2011). The LAPA framework provides guidance on the preparation and implementation of local adaptation plans and the integration of adaptation options into sectoral and development plans (CFAS 2016). The Climate Change Policy provides the mandate for the Nepal Climate Change Support Program (NCCSP), which builds the capacity of sectoral agencies and line departments as well as nongovernment institutions to implement the LAPAs (UNDP 2016). By 2017 the NCCSP had implemented 2,431 LAPA actions to address the most urgent and immediate adaptation needs, benefiting more than 600,000 vulnerable people (UNDP 2017).

Coordination mechanisms: The NCCSP also plays a critical role in ensuring coordination among national ministries, line departments, and other stakeholders for LAPA implementation. DDCs coordinate the implementation of LAPAs by VDCs and municipalities. At the national level, the NCCSP helped establish the Multistakeholder Climate Change Initiative Coordination Committee, which ensures regular dialogues between various thematic working groups at the national and local level and has supported revisions of climate policies and programs (Kaur 2014). The committee plays an important role in supporting functional coordination to avoid duplication and local capacity building to understand climate impacts and design relevant projects (Ministry of the Environment 2011). The committee has been crucial in the establishment of accountability mechanisms that help define the roles of every governmental and nongovernmental organization involved (Nightingale 2015). Established in 2010, these committees are made up of government representatives, associations of local bodies, NGOs and community-based organizations, academia, and development partners (Uprety 2016). They are tasked with developing a coherent and unified response to climate change issues and coordinating different climate change programs and projects (UNDP 2016). As of 2018, Nepal was formulating its NAP, which will replace the NAPA. The coordination committees created under the NCCSP will continue to support the NAP process (Uprety 2017).

Figure 4 | **Creating a Regional Network for Climate Change Adaptation in Germany**



Leadership: Implementation of LAPAs has benefited from a strong push from influential and prominent political actors. The effectiveness of NAPAs and LAPAs reflects large-scale consultation processes organized by the Multi-stakeholder Climate Change Initiative and a prime minister’s council across ministries, which created strong government ownership. The government’s commitment to use 80 percent of funds in all climate change projects for local adaptation indicates political support for localized planning and implementation (Watts 2012). Implementing bodies of LAPAs regularly report to a Climate Change Council chaired by the prime minister (Bahadur et al. 2017).

Example 3: Creating a Regional Network for Climate Change Adaptation in Germany

The impacts of climate change on the health sector are a growing concern in the German state of Hesse, where heat waves are posing a growing threat to at-risk groups, such as the elderly. Mainstreaming adaptation into the health sector has resulted in early warning systems that alert citizens and organizations before heat waves hit the area and provide recommendations on handling heat stress and reducing other health risks. A quality seal—“Climate Adapted”—indicates that nursing homes have taken steps to reduce the risk of heat waves to their residents (Riehm 2017).

The German Strategy for Adaptation to Climate Change of 2008 laid the groundwork for a progressive, medium-term process for addressing vulnerability to the impacts of climate change across all its regions and increasing the adaptive capacity of its systems (German Federal Government 2008). This strategy provided the platform for the mainstreaming gears to address research and development needs and increase institutional capacity that led to these adaptation-related actions in the health sector.

Policy frameworks: In 2011 the German Federal Cabinet approved the German Adaptation Action Plan to extend and execute the 2008 strategy. The 2008 strategy endorsed the prioritization of actions and selected measures. The action plan noted the government’s inability to do so, as a result of knowledge gaps, and instead identified the expansion and improvement of its knowledge base as a precondition to achieving other actions of the strategy (German Federal Government 2011). The action plan’s commitment to fund adaptation research led the Federal Ministry of Education and Research (BMBF) to formulate a research project called KLIMZUG (Managing Climate Change in the Regions for the Future), with the goal of understanding the specific climatic needs of seven regions and producing intersectoral, innovative, adaptive strategies and actions that would further the objectives of the strategy.

Leadership: Researchers from the University of Kassel and the University of Applied Science secured funding through the KLIMZUG project and presented the Northern Hesse region with an opportunity for institutional innovation. They worked with local and regional authorities, academics from other institutions, and business leaders to propose a Regional Network for Climate Change Adaptation. By connecting resources from academia to governments and business, KLIMZUG–Northern Hesse aimed to enhance regional capacity and execute research-informed programming. Its efforts drove the successful implementation of regional adaptation objectives, eventually increasing the region’s economic competitiveness (Stiller and Meijerink 2016).

Supportive financial processes: Once the federal government approved KLIMZUG–Northern Hesse, it provided financial support to appoint five Climate Adaptation Officers (CAOs). These technical experts, housed in regional and district-level departments, seek to ensure that academic research informs practice relevant programming. Concurrently, three Climate Adaptation Managers (CAMs) were selected to act as their counterparts, working with the Regional Management Agency (a coordinating body focused on boosting economic growth and employment) to engage stakeholders and facilitate implementation. Together these roles manifest the institutional innovation the researchers hoped to achieve.

Coordination mechanisms: The functioning of this innovative network relies heavily on the coordination roles of CAOs serving a political-administrative function, CAMs as business and economy liaisons, and a Climate Adaptation Academy to engage and educate the general public. The mechanism knits science, local administration, enterprises, and the civic community, generating buy-in for the implementation of local adaptation projects (Buth 2014). By coordinating various actors in the health sector—including the health department, medical professionals, owners of nursing homes and pharmacies, and citizens—the mechanism was able to strengthen the sustainability of their objectives (Climate ADAPT 2017).

Information and tools: KLIMZUG–Northern Hesse filled knowledge gaps and identified and prioritized adaptation-related actions for the health sector. It analyzed climate and demographic data to identify high-risk areas, provided measures for adaptation, and established a Network for Heat Prevention that executed the program. It worked with the Health Department of Kassel, the Mother House

of the Deaconship, the elderly community, and other nonstate actors (Climate ADAPT 2017).

Thanks to the leadership of the regional network, the integration of intersectoral adaptive measures was achieved and continues to flourish. In addition to the health sector, KLIMZUG–Northern Hesse addressed climate concerns in areas such as energy, natural resources, and mobility. Although the network was phased out after five years (at the end of the funding cycle provided by the federal government), two of the five CAOs stayed on to continue their efforts to mainstream adaptation.

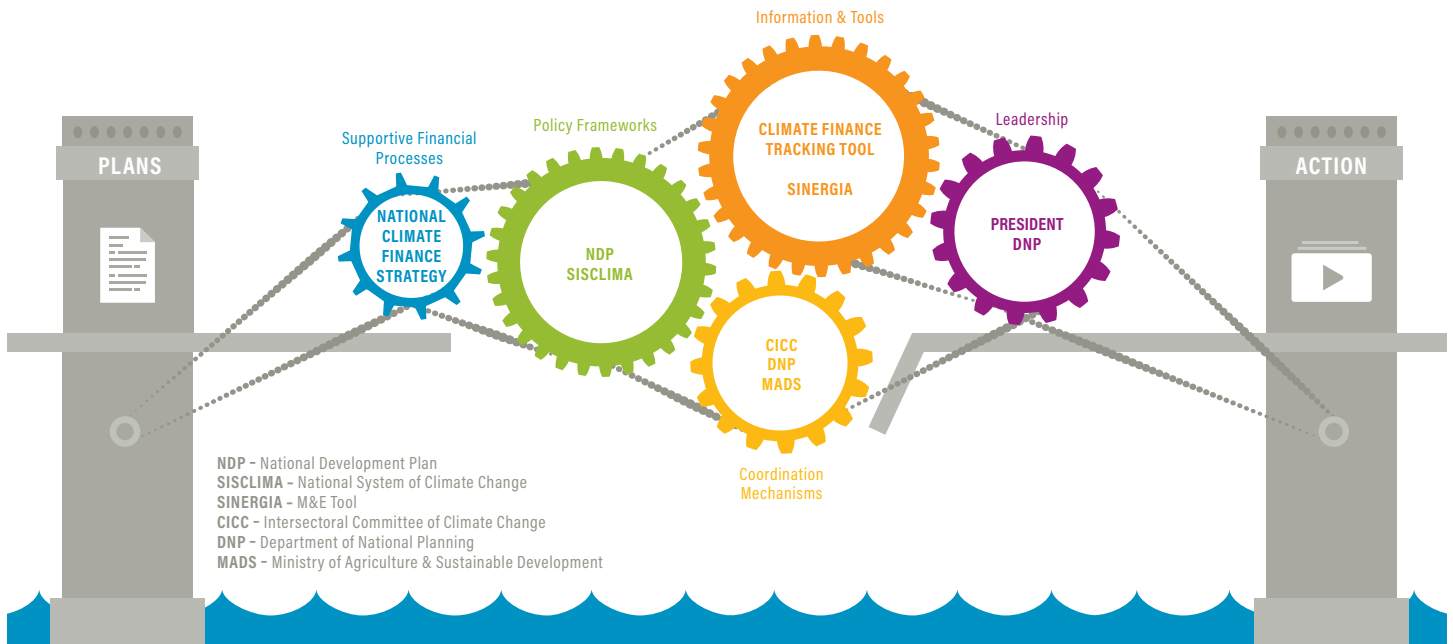
Example 4: Strengthening Institutions for Mainstreaming in Colombia

The devastating La Niña floods and landslides in Colombia in 2010–11 resulted in about \$7.8 billion worth of damage, much of it to agriculture and infrastructure (Hoyos et al. 2013). These powerful events catalyzed action on climate change. Colombia introduced climate change as one of four development objectives in its National Development Plan (NDP) (OECD 2014). Adoption of the Cancun Adaptation Framework and the NAP during the UNFCCC negotiations in 2010 coincided with Colombia’s national interests and informed its decisions on mainstreaming adaptation.

Since 2011 Colombia has focused on creating a strong institutional framework within which climate change can be mainstreamed into its national policies and procedures. The country is still in early stages with respect to achieving mainstreaming outcomes, but the intention with which mainstreaming efforts have been initiated indicates that multiple gears are working together to provide a strong foundation for implementation.

Leadership: Actively led by then President Juan Manuel Santos, the government pushed forward the climate agenda and ensured that climate change objectives receive sustained prominence at the national level. In 2011 the government moved responsibility for coordinating climate action from the Ministry of Environment to the Department of National Planning. This shift was important because it ensured that climate change was not seen as a discrete issue but was considered along with overall development objectives; it allowed the planning department to take the steps necessary to integrate climate change into development policies (OECD 2014). Following Presidential Decree N°

Figure 5 | **Strengthening Institutions for Mainstreaming in Colombia**



298 of 2016, Colombia placed responsibility for coordinating climate action under the Intersectoral Committee of Climate Change (CICC), the high-level decision-making body of the National Climate Change System (SISCLIMA), Colombia’s institutional framework to address adaptation and mitigation. This intersectoral collective is enabling different ministries to come together and make decisions on climate action. It issues sector-specific mandates for departments to mainstream climate change into their relevant policies and programs (NDC Partnership 2017).

Policy frameworks: Colombia created SISCLIMA, the official national institution that coordinates and integrates action on climate change across sectors, in 2011. The same year, the CICC adopted the Climate Change National Policy, which mainstreams climate change actions in five strategic dimensions: rural development, urban development, infrastructure development, energy, and the environment. Ministries will craft sectoral and territorial plans to implement adaptation objectives in their programs.

Coordination mechanisms: SISCLIMA is composed of two dimensions: an intersectoral committee, on which ministers make decisions with respect to climate change, and nine climate change “nodes” (regional structures spread

across the country). These nodes are intended to bring together various stakeholders and sectors to facilitate better regional coordination. SISCLIMA is intended to ensure that existing structures can embed climate concerns into their activities and to promote better coordination among the various entities and sectors to propel climate action.

The organizational scheme was updated with Decree N° 298 of 2016. It now has four committees (on information, technical issues, finance, and international affairs). Responsibilities for coordination and action are dispersed across a range of ministries, strengthening the likelihood of implementation.

Colombia also places high value on coordination with local communities, to ensure sufficient capacity and sustainability of adaptation efforts. Representatives of the government’s climate office intend to capture lessons from dedicated adaptation projects that have benefited from working closely with local communities to strengthen the implementation of mainstreaming initiatives.

Supportive financial processes: Under SISCLIMA, the Climate Finance Committee mobilizes financial resources to achieve the identified climate change policy objectives.

The committee adopted the National Climate Finance Strategy, which seeks to mainstream climate change in public investment projects, access private and international finance, and develop suitable financial instruments. To respond to the consequences of the 2011 La Niña and the compelling need for rapid investment mechanisms, the government created an Adaptation Fund. It initially focused on risk-management projects but is now set to expand to cover broader adaptation objectives.

Information and tools: The NDP is monitored through SINERGIA, Colombia’s tool for tracking policy performance and implementation. Operated by the Department of National Planning, it is one of the most advanced M&E tools in the world, highlighting Colombia’s commitment to accountability (World Bank 2015). SINERGIA tracks how strategies, objectives, and targets included in the NDP are being implemented.

Working with WRI, Colombia has also developed a climate finance tracking system, which helps monitor, report, and verify climate funding. This user-friendly online platform is intended to help both government officials and citizens understand climate finance flows at the sector, state, and other levels, to help improve their decision-making and accountability (WRI 2017).

Colombia has developed a robust institutional structure for mainstreaming climate change adaptation, aided by strong leadership with a focus on policy frameworks that establish thoughtfully designed coordination mechanisms, financial processes, and effective use of monitoring and tracking tools. The objectives laid out in Colombia’s NDP are legally binding, providing a degree of accountability in ensuring that climate change objectives are achieved. Although a new leader, Iván Duque Márque, was elected in August 2018, the country intends to continue to focus on implementation. Successful projects carried out with international assistance have highlighted the necessity of working closely with local communities from the conceptual stages, including conducting social vulnerability assessments and designing adaptation-related strategies.

5. CONCLUSIONS

The impacts of climate change threaten to unravel decades of development progress. The need to integrate consideration of climate change risks into development plans, sectoral policies, and budgets grows more urgent every year.

Mainstreaming adaptation into development and sectoral plans can improve development results over the long term, improve efficiency, and increase sustainability and scale.

Several countries have taken important steps to garner political support, assess appropriate entry points in the institutional and sectoral landscape, and apply tools to accelerate mainstreaming of adaptation, as demonstrated in the examples presented in this paper.

Effective use of existing tools can guide decision-makers, planning experts, and practitioners in developing robust plans and policies that can reduce climate risks and build adaptive capacity. But mainstreaming efforts cannot end with a simple assessment of risks and the development of informed plans and policies. Greater attention is needed to accelerate implementation and ensure that mainstreaming efforts result in real outcomes for vulnerable people.

Leadership and coordination of government agencies can play a critical role in implementation. Policy frameworks that incorporate accountability mechanisms can lay the foundation for catalyzing implementation and linking to financial processes that support the transition from planning to action. Information and tools can help accelerate the mainstreaming process (although existing tools are often tailored to meet the needs of project-based efforts and may not be sufficient for cultivating the institutional shifts needed for the long-term, scaled-up, cross-sectoral collaboration that mainstreaming requires).

The challenge of bridging the implementation gap is likely to grow as shifts in governance structures continue to reshape institutional arrangements for policy-making and budgeting, creating new challenges as well as opportunities for awareness raising, capacity building, and civil society engagement. This working paper encourages decision-makers and practitioners to assess the complex mechanics of their mainstreaming processes and consider ways to strengthen and accelerate implementation. The examples of mainstreaming efforts provided offer insights into the ways in which enabling factors can work together to achieve desired outcomes and clearly demonstrate that there is no “one size fits all” approach for mainstreaming.

Lessons shared through communities of practice and case studies—such as the ones documented by Dinshaw et al. (forthcoming) and the WRI studies planned for release in 2019—can offer new perspectives on combinations of enabling factors that can accelerate the drive to implementation. The limited literature on the outcomes of mainstreaming indicates the pressing need for documentation and the sharing of successes in bridging the implementation gap.

ENDNOTES

1. A working group comprising the Climate Works Foundation, the Global Environment Facility (GEF), the European Commission, McKinsey & Company, the Rockefeller Foundation, Standard Chartered Bank, and Swiss Re studied the following locations as part of a report on the economics of climate change: north and northeast China; Georgetown, Guyana; Maharashtra, India; Mopti, Mali; Samoa; central Tanzania; Hull, the United Kingdom; and South Florida, the United States.
2. In the context of this paper, tools comprise approaches, strategies, and instruments that support the mainstreaming process.
3. National Communications are documents submitted in accordance with the UNFCCC by which a Party informs other Parties of activities undertaken to address climate change. Developed country Parties typically submit National Communications every four years.
4. Some relevant projects and activities may be taking place that are not labeled as “adaptation” or are not visible because of long lag times (or lack of resources) for monitoring, documentation, and communicating mainstreaming outcomes (Huq 2018).

REFERENCES

- Alhassan, S., and W.L. Hadwen. 2017. "Challenges and Opportunities for Mainstreaming Climate Change Adaptation into WaSH Development Planning in Ghana." *International Journal of Environmental Research and Public Health* 14 (7): 749.
- Appelquist, Lars Rosendahl, and Kirsten Halsnæs. 2015. "The Coastal Hazard Wheel System for Coastal Multi-hazard Assessment & Management in a Changing Climate." *Journal of Coastal Conservation* 19: 157–79.
- Bachofen, Carina, Pablo Suarez, Margot Steenbergen, and Natasha Grist. 2012. "Can Games Help People Manage the Climate Risks They Face? The Participatory Design of Educational Games." The Hague: Red Cross Red Crescent Climate Centre.
- Bahadur, Tejendra, Anju Air, Batu Uprety, and Nish Midha. 2017. *Nepal's Approach to Climate Change Adaptation with Local Adaptation Plans for Action (LAPAs): A Water Resource Perspective*. Stockholm: Global Water Partnership.
- Bickersteth, S., M. Dupar, C. Espinosa, A. Huhtala, S. Maxwell, M.J. Pacha, A.T. Sheikh, and C. Wesselink. 2017. *Mainstreaming Climate Compatible Development*. London: Climate and Development Knowledge Network.
- Bizikova, Livia, Dale S. Rothman, Samantha Boardley, Simon Mead, and Anne T. Simon. 2014. *Participatory Scenario Development and Future Visioning in Adaptation Planning: Lessons from Experience, Part I*. Working Paper. Winnipeg: International Institute for Sustainable Development.
- Bouye, M., S. Harmeling, and N.S. Schulz. 2018. *Connecting the Dots: Elements for a Joined-Up Implementation of the 2030 Agenda and Paris Agreement*. Washington, DC: World Resources Institute.
- Brooks, N., S. Anderson, J. Ayers, I. Burton, and I. Tellam. 2011. *Tracking Adaptation and Measuring Development*. London: International Institute for Environment and Development.
- Buth, Mareike. 2014. "Germany's Current Projects." *Umweltbundesamt*, March 7. <http://www.umweltbundesamt.de/en/topics/climate-energy/climate-change-adaptation/adaptation-at-the-federal-level/germanys-current-projects>.
- Byamukama, B., C. Carey, M. Cole, J. Dyszynski, and M. Warnest. 2010. *National Strategy on Climate Change and Low Carbon Development for Rwanda: Baseline Report*. Oxford: Smith School of Enterprise and the Environment, University of Oxford.
- CDKN (Climate Knowledge and Development Network). 2015. *Mainstreaming Climate Information into Sector Development Plans: The Case of Rwanda's Tea And Coffee Sectors*, 2nd. ed. <http://www.futureclimateafrica.org/wp-content/uploads/2016/01/Paul-Watkiss-report-Rwanda.pdf>.
- CFAS (Climate Finance Advisory Service). 2016. *Mobilizing Adaptation Finance: Learning from Nepal's LAPA Implementation*. Fact sheet. <https://www.cfes.info/en/publication/mobilizing-adaptation-finance-learning-nepals-lapa-implementation>.
- Climate ADAPT. 2017. "Heat Hotline Parasol. Kassel Region." European Climate Adaptation Platform. <https://climate-adapt.eea.europa.eu/metadata/case-studies/heat-hotline-parasol-2013-kassel-region>.
- Climate Watch. 2018. *NDC Content*. Interactive database hosted by World Resources Institute. <https://www.climatewatchdata.org/ndcs-content>. Accessed August 12.
- Dairy Australia. 2017. *Dairy Climate Toolkit*. <http://www.dairyclimate toolkit.com.au/adapting-to-climate-change/adapting-your-farm>.
- De Silva, S., R. Johnston, and S. Sellamuttu. 2014. "Agriculture, Irrigation and Poverty Reduction in Cambodia: Policy Narratives and Ground Realities Compared." Working Paper AAS-2014-13, CGIAR Research Program on Aquatic Agricultural Systems, Penang, Malaysia.
- DFID (Department for International Development). 2014. *Operational Plan 2011–2016: Climate and Environment Department*. London: DFID. https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/388888/Climate-and-Environment-department.pdf.
- Dinshaw, A., N. Ginoya, P. Preethan, N. Appadurai, and M. Gutiérrez. Forthcoming. *Mainstreaming Adaptation in Action: Case Studies from Two States in India*. Washington, DC: World Resources Institute.
- Dougherty-Choux. 2015. "The Cost of Climate Adaptation, Explained in 4 Infographics" (blog) April 23. Washington, DC: World Resources Institute. <http://www.wri.org/blog/2015/04/costs-climate-adaptation-explained-4-infographics>.
- Economics of Climate Adaptation Working Group. 2009. *Shaping Climate Resilient Development: A Framework for Decision-Making*.
- Elliott, J., S. Heesterbeek, C.J. Lukensmeyer, and N. Slocum. 2005. *Participatory Methods Toolkit: A Practitioner's Manual*. Brussels: King Baudouin Foundation and Flemish Institute for Science and Technology Assessment.
- Fowler, A., and K. Biekart. 2017. "Multi-stakeholder Initiatives for Sustainable Development Goals: The Importance of Interlocutors." *Public Administration and Development* 37 (2): 81–93. <https://onlinelibrary.wiley.com/doi/full/10.1002/pad.1795>.
- GCEC (Global Commission on the Economy and Climate). 2014. *Better Growth, Better Climate: The New Climate Economy Report. The Global Report*. Washington, DC: GCEC. http://static.newclimateeconomy.report/wp-content/uploads/2014/08/BetterGrowth-BetterClimate_NCE_Synthesis-Report_web.pdf.
- GCF (Green Climate Fund). 2018. "Adaptation Planning Vital in Helping Countries Weather Change." <https://www.greenclimate.fund/-/adaptation-planning-vital-in-helping-countries-weather-change>.
- German Federal Government. 2008. "German Strategy for Adaptation to Climate Change—Executive Summary." Berlin: German Federal Cabinet. http://www.bmu.de/fileadmin/bmu-import/files/english/pdf/application/pdf/das_zusammenfassung_en.pdf.
- German Federal Government. 2011. "Adaptation Action Plan of the German Strategy for Adaptation to Climate Change." Berlin: German Federal Cabinet. http://www.bmu.de/fileadmin/bmu-import/files/pdfs/allgemein/application/pdf/aktionsplan_anpassung_klimawandel_en_bf.pdf.

- GIZ (Deutsche Gesellschaft für Internationale Zusammenarbeit). 2013. *A Closer Look at Mainstreaming Adaptation*. Eschborn: GIZ. http://www.adaptationcommunity.net/?wfb_dl=39.
- Gogoi, E., A.V. Bahadur, and C. Rumbaitis del Rio. 2017. "Mainstreaming Adaptation to Climate Change within Governance Systems in South Asia: An Analytical Framework and Examples from Practice." Learning Paper. New Delhi: Action on Climate Today.
- Government of Nepal. 2010. *National Adaptation Programme of Action (NAPA) to Climate Change*. Kathmandu: Ministry of Environment.
- Hallegatte, S., M. Bangalore, L. Bonzanigo, M. Fay, T. Kane, U. Narloch, J. Rozenberg, D. Treguer, and A. Vogt-Schilb. 2016. *Shock Waves: Managing the Impacts of Climate Change on Poverty*. Washington, DC: World Bank.
- Hoyos, N., J. Escobar, J.C. Restrepo, A.M. Arango, and J.C. Ortiz. 2013. "Impact of the 2010–2011 La Niña Phenomenon in Colombia, South America: The Human Toll of an Extreme Weather Event." *Applied Geography* 39: 16–25.
- Hug, Saleem. 2018. "Updating Bangladesh's Climate Change Strategy and Action Plan." *Daily Star (Dhaka)*, April 11. https://www.thedailystar.net/opinion/politics-climate-change/updated-bangladeshs-climate-change-strategy-and-action-plan-1560916?amp&__twitter_impression=true.
- Huxtable, J., and N. Yen. 2009. *Mainstreaming Climate Change Adaptation: A Practitioners Handbook*. Hanoi: CARE International in Vietnam.
- IIED (International Institute for Environment and Development). 2008. *Taking Steps: Mainstreaming National Adaptation*. Briefing Paper. London: IIED.
- Jordan, A., and A. Lenschow. 2010. "Environmental Policy Integration: A State of the Art Review." *Environmental Policy and Governance* 20 (3): 147–58.
- Kaur, Nanki. 2014. *GGBP Case Study Series: Climate Change Planning in Nepal*. Geneva: Green Growth Best Practices Initiative.
- Lebel, L., L. Li, C. Krittasudthacheewa, M. Juntopas, T. Vijitpan, T. Uchiyama, and D. Krawanchid. 2012. *Mainstreaming Climate Change Adaptation into Development Planning*. Bangkok: Adaptation Knowledge Platform; Stockholm: Stockholm Environment Institute.
- Lesnikowski, A., J. Ford, R. Biesbroek, L. Berrang-Ford, and S.J. Heymann. 2016. "National-Level Progress on Adaptation." *Nature Climate Change* 6 (March): 261–64.
- Mimura, N., R.S. Pulwarty, D.M. Duc, I. Elshinnawy, M.H. Redsteer, H.Q. Huang, J.N. Nkem, and R.A. Sanchez Rodriguez. 2014. "Adaptation Planning and Implementation." In *Climate Change 2014: Impacts, Adaptation, and Vulnerability. Part A: Global and Sectoral Aspects*. Contribution of Working Group II to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change. Cambridge: Cambridge University Press.
- Ministry of the Environment. 2011. *Climate Change Policy, 2011*. Kathmandu: Government of Nepal.
- NDC Partnership. 2017. *NDC Country Outlook: Colombia*. Washington, DC: NDC Partnership Support Unit. https://ndcpartnership.org/sites/all/themes/ndcp_v2/docs/country-engagement/countries/NCDP_Outlook_Colombia_v6a.pdf.
- Nightingale, A.J. 2015. "A Socionature Approach to Adaptation: Political Transition, Intersectionality, and Climate Change Programmes in Nepal." In *Climate Change Adaptation and Development: Transforming Paradigms and Practices*, ed. T.H. Inderberg, S. Eriksen, K. O'Brien, and L. Sygna, 219–34. London: Routledge.
- Nocke, Thomas, Till Sterzel, Michael Böttinger, and Markus Wrobel. 2008. "Visualization of Climate and Climate Change Data: An Overview." In *Digital Earth Summit on Geoinformatics 2008: Tools for Global Change Research*, ed. M. Ehlers et al., 226–32. Heidelberg: Wichmann.
- Northrop, E., H. Biru, S. Lima, M. Bouye, and R. Song. 2016. "Examining the Alignment between the Intended Nationally Determined Contributions and Sustainable Development Goals." Working Paper. Washington, DC: World Resources Institute.
- OECD (Organisation for Economic Co-operation and Development). 2009. *Integrating Climate Change Adaptation into Development Co-operation: Policy Guidance*. Paris: OECD Publishing.
- OECD. 2014. *Climate Resilience in Development Planning: Experiences in Colombia and Ethiopia*. Paris: OECD Publishing.
- Olhoff, A., and C. Schaer. 2010. *Screening Tools and Guidelines to Support the Mainstreaming of Climate Change Adaptation into Development Assistance: A Stock Taking Report*. New York: United Nations Development Programme.
- Parry, J., and S. Taylor. 2012. *Mainstreaming Adaptation to Climate Change into National Policy: An Overview for Adaptation Practitioners*. Winnipeg: Adaptation Partnership/International Institute for Sustainable Development.
- Persson, Å., K. Eckerberg, and M. Nilsson. 2016. "Institutionalization or Wither Away? 25 years of Environmental Policy Integration under Shifting Governance Models in Sweden." *Environment and Planning C: Politics and Space* 34 (3): 478–95.
- Pervin, M., S. Sultana, A. Phirum, I. Camara, V. Nzau, V. Phonnasane, P. Khounsny, N. Kaur, and S. Anderson. 2013. *A Framework for Mainstreaming Climate Resilience into Development Planning*. London: International Institute for Environment and Development.
- PPCR (Pilot Program for Climate Resilience). 2018. "Climate Resilience: Championing Big Ambitions." Fact sheet. https://www.climateinvestmentfunds.org/sites/cif_enc/files/knowledge-documents/ppcr_factsheet.pdf.
- REMA (Rwanda Environmental Management Authority). 2015a. *Lessons from National Climate Compatible Development Planning in Rwanda*. Kigali: REMA. <http://cidt.org.uk/wp-content/uploads/2015/05/Rwanda-print-final.pdf>.
- REMA. 2015b. *Sector Assessment Report for Environment & Climate Change, 2013–2014, 2014–2015*. Kigali: REMA.
- Riehm, Peter. 2017. "Sensibilisieren, identifizieren, initiieren, kooperieren: Die Rolle von Klimaanpassungsbeauftragten." Presentation by the Kassel Regional Council. https://www.umweltbundesamt.de/sites/default/files/medien/382/dokumente/04_presentation_stakeholderdialog_klimaanpassung_in_kommunen_riehm_0.pdf.

- Runhaar, H., B. Wilk, A. Persson, C. Uittenbroek, and C. Wamsler. 2017. "Mainstreaming Climate Adaptation: Taking Stock about 'What Works' from Empirical Research Worldwide." *Regional Environmental Change* 18 (4): 1201–10.
- Shrogen, Elizabeth. 2015. "First as Tragedy, Then as Farce: FEMA Still to Adapt to Climate Change." Al Jazeera America. <http://america.aljazeera.com/articles/2015/8/11/first-as-tragedy-then-as-farce-fema-still-to-adapt-to-climate-change.html>.
- SKMCCC (State Knowledge Management Center on Climate Change). 2013. *Madhya Pradesh State Action Plan on Climate Change*. Bhopal, India: SKMCCC.
- Slocum, Nikki. 2003. *Participatory Methods Toolkit: A Practitioner's Manual*. King Baudouin Foundation, Flemish Institute for Science and Technology Assessment (viWTA), and United Nations University.
- Spearman, Margaret, and Heather McGray. 2011. *Making Adaptation Count: Concepts and Options for Monitoring and Evaluation of Climate Change Adaptation*. Eschborn: Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) and World Resources Institute.
- Stiller, Sabina, and Sander Meijerink. 2016. "Leadership within Regional Climate Change Adaptation Networks: The Case of Climate Adaptation Officers in Northern Hesse, Germany." *Regional Environmental Change* 16 (6): 1543–55. <https://doi.org/10.1007/s10113-015-0886-y>.
- Storbjörk, S., and K. Isaksson. 2014. "Learning Is Our Achilles Heel: Conditions for Long-Term Environmental Policy Integration in Swedish Regional Development Planning." *Journal of Environmental Planning and Management* 57 (7): 1023–42.
- Sustainable Energy Africa and Palmer Development Group. 2012. *Let's Respond: A Toolkit to Assist in Integrating Climate Change Risks and Opportunities into Municipal Planning*. Johannesburg: Department of Environmental Affairs, Department of Cooperative Governance, and South African Local Government Association, in partnership with Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ).
- Trabacchi, Chiara, and Bella Tonkonogy. 2016. *Oasis Platform for Catastrophe and Climate Change Risk Assessment and Adaptation*. The Lab: Global Innovation Lab for Climate Finance.
- UNDP (United Nations Development Programme). 2016. *National Climate Change Support Programme: Annual Progress Report*. New York: UNDP.
- UNDP. 2017. *Nepal Climate Change Support Programme*. New York: UNDP. http://www.np.undp.org/content/nepal/en/home/operations/projects/environment_and_energy/nccsp/home.html.
- UNDP (United Nations Development Programme) and UNEP (United Nations Environment Programme). 2011. *Mainstreaming Climate Change Adaptation into Development Planning: A Guide for Practitioners*. Nairobi: UNEP-UNDP Poverty-Environment Facility.
- UNFCCC (United Nations Framework Convention on Climate Change) 2011. "Decision 5/CP.17. National Adaptation Plans." https://unfccc.int/files/adaptation/cancun_adaptation_framework/national_adaptation_plans/application/pdf/decision_5_cp_17.pdf.
- UNFCCC. 2016. "Aggregate Effect of the Intended Nationally Determined Contributions: An Update." UN Doc FCCC/CP/2016/2. <https://unfccc.int/sites/default/files/resource/docs/2016/cop22/eng/02.pdf>.
- Upriy, Batu. 2016. "Examining Climate Change Adaptation: Adaptation Is the Option Left to the Poor and Climate Vulnerable Communities of Nepal." *Spotlight* 9 (22). <https://www.spotlightnepal.com/2016/06/02/examining-climate-change-adaptation/>.
- Upriy, Batu. 2017. "Advancing NAP Process." *Spotlight* 10. <https://www.spotlightnepal.com/2017/01/20/advancing-nap-process/>.
- USAID (U.S. Agency for International Development). 2012. *USAID Climate Change Adaptation Plan*. Washington, DC: USAID. <https://www.usaid.gov/sites/default/files/documents/1865/Agency%20Climate%20Change%20Adaptation%20Plan%202012.pdf>.
- USAID. 2017. "Climate Risk Profile: Nepal." Washington, DC: USAID.
- Watkiss, P., and I. Bisangwa. 2018. "Mainstreaming Climate Adaptation into the National Agricultural Development Plan of Rwanda." Presentation at Adaptation Futures, Cape Town, South Africa. June 18–21.
- Watts, Robbie. 2012. *Linking National and Local Adaptation Planning: Lessons from Nepal*. Brighton, UK: Institute of Development Studies.
- World Bank. 2015. "Colombia Strengthens Its Monitoring and Evaluation Tools of the Public Sector." Washington, DC: World Bank. <http://www.worldbank.org/en/results/2015/12/15/colombia-strengthens-its-monitoring-and-evaluation-tools-of-the-public-sector>.
- WRI (World Resources Institute). 2017. "Colombia's Climate Finance Tracking System Registers \$6 Billion Worth of Actions" (blog), November 28. Washington, DC: WRI. <http://www.wri.org/blog/2017/11/colombias-climate-finance-tracking-system-registers-6-billion-worth-action>.

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ABOUT WRI

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Natural resources are at the foundation of economic opportunity and human well-being. But today, we are depleting Earth's resources at rates that are not sustainable, endangering economies and people's lives. People depend on clean water, fertile land, healthy forests, and a stable climate. Livable cities and clean energy are essential for a sustainable planet. We must address these urgent, global challenges this decade.

Our Vision

We envision an equitable and prosperous planet driven by the wise management of natural resources. We aspire to create a world where the actions of government, business, and communities combine to eliminate poverty and sustain the natural environment for all people.

Our Approach

COUNT IT

We start with data. We conduct independent research and draw on the latest technology to develop new insights and recommendations. Our rigorous analysis identifies risks, unveils opportunities, and informs smart strategies. We focus our efforts on influential and emerging economies where the future of sustainability will be determined.

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We use our research to influence government policies, business strategies, and civil society action. We test projects with communities, companies, and government agencies to build a strong evidence base. Then, we work with partners to deliver change on the ground that alleviates poverty and strengthens society. We hold ourselves accountable to ensure our outcomes will be bold and enduring.

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We don't think small. Once tested, we work with partners to adopt and expand our efforts regionally and globally. We engage with decision-makers to carry out our ideas and elevate our impact. We measure success through government and business actions that improve people's lives and sustain a healthy environment.



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