WORLD RESOURCES INSTITUTE

WORKING PAPER

Mainstreaming Climate Change in Ethiopia's Planning Process:

A Path to a Climate-Resilient Green Economy

Abiyot Dagne, Cynthia Elliott, Jan Corfee, and Solomon Tsehay

CONTENTS

Working Papers contain preliminary research, analysis, findings, and recommendations. They are circulated to stimulate timely discussion and critical feedback, and to influence ongoing debate on emerging issues.

Version 1.0, November 9, 2022

Suggested Citation: Dagne, A., C. Elliott, J. Corfee, and S. Tsehay. 2022. "Mainstreaming Climate Change in Ethiopia's Planning Process and the Path to a Climate-Resilient Green Economy." Working Paper. Washington, DC: World Resources Institute. Available online at doi.org/10.46830/wriwp.21.00032.

EXECUTIVE SUMMARY

Highlights

- Current mainstreaming efforts in Ethiopia build on a growing awareness of the importance of mitigating and adapting to climate change, improved methodologies for analysis, and increased participation of stakeholders in planning.
- The 2011 Climate Resilient Green Economy Strategy, which followed a top-down, national government-led process, was the first significant effort to mainstream climate change with development priorities in Ethiopia.
- Although mainstreaming has improved, implementation of planned climate action remains weak and misaligned with other development efforts, partly due to poor institutional capacity and limited expertise and knowledge within government about climate change and development interlinkages.
- Implementation is also hindered by weak monitoring and tracking—characterized by a lack of standardized data and tools — and limited capacity to report and verify climate change interventions.
- Ethiopia's mainstreaming experience highlights the importance of targeted engagement with sector ministries responsible for implementing climate action. This includes exploring how climate action supports good development outcomes and increasing actions that will offer win-win climate and development outcomes.
- Future national planning should ensure that mainstreaming climate change occurs at all levels of government and throughout the policy cycle, spanning the planning process and resource mobilization and institutional arrangements at all administrative levels.

Background: How are climate and development strategies aligned in Ethiopia?

Ethiopia is making strides toward greater alignment between the two policy arenas of climate change and development. It is more than half a century since Ethiopia formulated its first national development plan. Since then, the country has gone through different planning phases and considered climate-change mitigation and adaptation to varying degrees, along with the objectives of reducing chronic poverty and food insecurity in the country. However, the broad mainstreaming of climate-change mitigation and adaptation interventions into Ethiopia's planning efforts was not established until 2011, when its Climate-Resilient Green Economy Strategy (CRGE) was introduced. Since that time, the pursuit of a climate-resilient green economy has been a major pillar in Ethiopian development plans. The development of Ethiopia's CRGE strategy was a pioneering effort to embed transformational climate policies in the overall planning approach for economic growth and development, one that very few developing countries had previously attempted.

The CRGE served as a critical element of Ethiopia's initial Nationally Determined Contribution (NDC). It also served as a foundational input for the recent, first-ever 10-Year Development Plan (10YDP) and the subsequent update and enhancement of the country's NDC. Although the CRGE document has not been updated, the underlying analysis, including the greenhouse gas (GHG) emission modeling framework, has seen several improvements over the initial iteration, benefitting from the CRGE assessment. Following the assessment and the submission of the updated nationally determined contribution to the United Nations Framework Convention on Climate Change (UNFCCC) by the end of 2020, refinements were made to the sectoral analyses and assumptions to better reflect the latest national development targets and validate the updated modeling results. These supplemental efforts helped ensure that intervention options were fully vetted with government stakeholders and well-aligned with the new 10-year development plan.

Currently, Ethiopia is in the midst of preparing a long-term low-carbon GHG emission development strategy (LT-LEDS) the formulation of which requires assessing how climate actions were mainstreamed in previous national development plans and the strengths and weakness of the mainstreaming process.

About This Working Paper

Several studies have examined Ethiopia's national planning process in the context of climate change as well as the successes and failures of the CRGE strategy. However, no studies to date have examined questions around the mainstreaming process and the extent to which climate change and development are well integrated in policy and planning. This study seeks to address this gap in the literature by examining two key questions:

- How has Ethiopia tackled mainstreaming and what experience does it have in integrating considerations of climate change into national development plans to support the achievement of objectives in both policy arenas?
- What are the lessons learned to improve mainstreaming of climate change into development planning, policy design and implementation, and tracking efforts?

This paper explores the experience in Ethiopia and is a resource for policymakers and planners who are considering mainstreaming climate actions into their development strategies. The paper highlights practices, challenges, and lessons learned from Ethiopia's planning experience. It narrates Ethiopia's experience of integrating climate change within national development planning and its evolution along the policy cycle [planning, implementation, and monitoring and evaluation (M&E)]. The paper further summarizes how the Ethiopian CRGE strategy mainstreaming process has evolved to become a core pillar of the national development agenda. The paper assesses the extent to which previous development plans, including the 10YDP and the updated NDC, were designed to consider long-term climate-change impacts and to identify priority areas for action. It also recommends approaches for effective mainstreaming of the CRGE strategy and means for effective M&E of its implementation.

Key Findings and Recommendations

The study finds that climate-change mainstreaming is relatively strong during the planning process but remains weak during implementation. Climate action is generally siloed from more traditional economic and development endeavors, for example, energy and land-use planning. Beyond this, many persistent challenges impede the alignment of climate and development objectives in implementation, including the presence of weak institutional capacity; lack of technical capacity of experts at the national, regional, and woreda (local district) levels; and weak monitoring and tracking systems.

We recommend that climate change mainstreaming be better designed to benefit from both bottom-up and top-down approaches. Appropriate baselines and targets could be set at national and lower administrative levels of governance. Mainstreaming and integration of climate change should also be guided and informed by the long-term development vision of the country, drawing on established milestones set to guide the development pathway.

Measuring, Reporting, and Verification (MRV) and M&E mechanisms for tracking climate action, including the means of implementation, should be integrated and aligned with national development and economic tracking systems. Implementation progress could then easily be tracked across all areas of climate action. This procedural alignment should be supported by strengthened technical and analytical capacity.

Finally, we strongly recommend that climate action should be mainstreamed not only at planning phases but also routinely during implementation of climate and development plans. Greater stakeholder engagement at various regional and local levels in the planning phases could be expected to enhance buy-in and ownership of the actions to be taken, ultimately supporting the execution and implementation of climate actions and their chances to succeed.

INTRODUCTION

Several studies to date have explored Ethiopia's national planning process.[1] Other studies have also examined particular aspects of the CRGE strategy and its early successes and failures.[2] However, there are still gaps in the research as none of these efforts fully explores how Ethiopia has approached climate and development planning at a broader level and how climate efforts are being integrated into different national plans. This paper builds on previous studies to provide more in-depth insight into Ethiopia's planning processes related to mainstreaming and integration of its CRGE strategy into the national development planning process. It also reviews the more recent progress related to the 10YDP, the update of Ethiopia's NDC (or NDC update), and the ongoing government-led effort to prepare a 2050 LT-LEDS. Therefore, the study seeks to address two key questions:

- What has been the planning process and experience of mainstreaming climate change into Ethiopia's national development plans to support the mutual achievement of both climate and development objectives?
- What lessons can be learned for future planning to help improve mainstreaming of climate change into national planning, implementation, and results tracking?

A Brief Background of Planning in Ethiopia

It has been more than half a century since Ethiopia formulated its first development plan, which marked the start of national integrated development planning. Prior to 1950, the country was a feudal state where formal economic, environmental and climate-change plans and policies did not exist. Some sectoral planning endeavors existed, notably in the areas of agriculture, industry, forestry, transportation and telecommunications, education, and water resources; but these sector plans were so fragmented they could not provide an adequate framework for donors or for national planning.

In the immediate aftermath of World War II, separate programs and plans were again drawn up by various government agencies and served as the bases for government policy. These sectoral plans and programs were not aligned and focused on allocation and schedules for public expenditure (Asfaw 1992). The limitations and weaknesses of such a fragmented sectoral planning approach paved the way for the establishment of the National Economic Council of Ethiopia in 1955, which thereafter led the preparation of Ethiopia's development plans.

Ethiopia's first Five-Year Development Plan (1957–61) and its Second Five Year Plan (1962–67) emphasized economic transformation for the country (Bigsten and Gebreeyesus 2009). While these were more or less "economy first" plans, some early endeavors contributed indirectly to environmental protection. The first formal legislation on forest resources was introduced in 1965. The aim of the legislation was to ensure protection of forest resources and the state revenue that they provided, following a period of extensive deforestation (Dessalegn 2001; Eshetu 2013). Several national parks and reserves were also established in the second half of the 1960s and the early 1970s (Dessalegn 2001). The third Five Year Plan (1968–73) again emphasized economic growth, focusing on derived per capita growth (Eshetu 2013). Tackling land degradation to reduce poverty was a major objective in the 1970s and 80s.

After the downfall of the imperial regime in 1974, the Derge regime adopted a socialist agenda. The new regime maintained a strong focus on economic growth and paid little attention to environmental issues. The only notable endeavor on the environment was the Forest and Wildlife Conservation and Development Proclamation, legislated in 1980. During this period, natural forests were expanded through the establishment

of state-managed commercial and nonindustrial timber plantations, sometimes at the expense of neighboring landowners. The emphasis was again on forest protection primarily because of the economic value to the national government (Eshetu 2013). Despite waves of widespread and dramatic famine in 1973–74 and again in 1984–85, national development planning did not advance any key goals of food security or poverty reduction. The period 1973–91 was characterized by conflict and significant loss of life due to civil war, political turmoil, and eventually regime change.

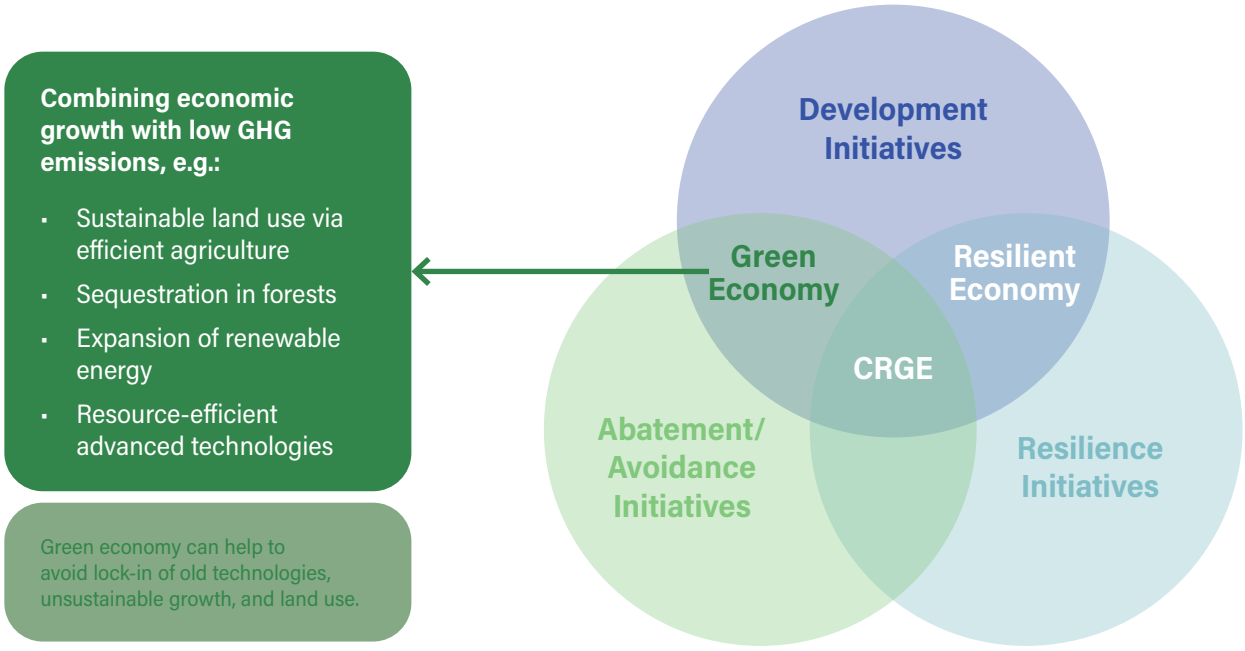
In 1991, under new leadership, a market-based economic system was introduced to replace the former socialist system. In the early 2000s, Ethiopia's government began to consider social aspects of development alongside economic growth in its planning efforts. Ethiopia developed and implemented the Plan for Accelerated and Sustained Development to End Poverty (PASDEP) from 2005 to 2010; this was Ethiopia's medium-term plan for achieving the Millennium Development Goals (MDGs) (MOFED 2006). The prime focus of the PASDEP was to reduce poverty by enhancing agricultural productivity and strengthening the link between industries and the agricultural sector. Even though climate change was not specifically addressed in the plan, many endeavors for nature conservation and forestry were introduced through the PASDEP; the area of rehabilitated land during PASDEP increased more than threefold, from 0.82 million ha in 2004–05 to 3.77 million ha in 2009–10.

Ethiopia's Climate-Resilient Green Economy

The first attempt to recognize and mainstream climate mitigation and adaptation considerations into national planning efforts or within key sector plans came in 2011 when Ethiopia's CRGE strategy was introduced. Pursuit of a climate-resilient green economy has thus been a major pillar of Ethiopian development efforts over the past decade.[3]

The CRGE strategy emerged at a time when only a few other least developed countries were exploring low-carbon resilient development, and the concept of transformational climate policy was gaining prominence (Fisher 2013; Jones and Carabine 2013). The strategy provided a detailed framework expanding on the CRGE strategy's vision to transform Ethiopia into a carbon-neutral, middle-income country by 2025 (Jones and Carabine 2013). The strategy aimed to pursue and combine three overlapping and dynamic objectives: pursuing economic growth; avoiding future emissions; and improving resilience to climate-change impacts (Figure 1).

Figure 1 | **Developing a green economy requires the integration of economic development, a GHG abatement, or avoidance**



Source: FDRE 2011.

The CRGE was designed to be closely linked to the country's five-year Growth and Transformation Plan (GTP), the primary national planning framework of 2010–15, and to support greater alignment of climate and development efforts. However, the CRGE itself was less successful at integrating climate mitigation with adaptation efforts, which remained separate from the key components of the CRGE strategy. Adaptation is the subject of the more recent Climate Resilience Strategy. The CRGE focuses heavily on low-emission development opportunities, while the Climate Resilience Strategy focuses on managing risk and building resilience to climate-change impacts (Simane and Bird 2017).

A recent national assessment of progress to implement the CRGE showed mixed results (EFCCC 2020). A major deficit in monitoring and tracking was noted during the assessment across mitigation, adaptation, and financial and budgetary tracking. This made it challenging to determine how much progress has been made on climate-action implementation or what has been achieved. Later efforts to mainstream the CRGE into the GTP II (2016–20) did not include any meaningful efforts to track progress on climate-change interventions in Ethiopia. Furthermore, the CRGE assessment of 2020 was a one-off process, and no further reviews are currently planned; so it is unclear how these findings will be followed up.

Despite challenges in implementation, the CRGE has had a lasting impact on Ethiopia's national planning process. The CRGE was a critical element of Ethiopia's initial NDC, adopting the overall GHG emissions-reduction target, and serving as a foundational input for the subsequent update and enhancement of the NDC in 2021, which benefitted from the 2020 CRGE assessment. In addition, the legacy of the CRGE has enabled Ethiopia to prepare the LT-LEDS. The formulation of the LT-LEDS in Ethiopia requires assessing how to mainstream climate actions into long-term development pathways. It will build on previous national development plans, on the NDC update, and on the CRGE strategy. The LT-LEDS will call for continued assessment of the strengths and weakness of the mainstreaming process of climate actions into national development plans.

METHODS AND DATA COLLECTION

This study uses a qualitative research approach with a range of methods to examine how mainstreaming of climate change is occurring in national development planning processes. We also consider how development objectives are integrated in climate-change planning in Ethiopia. The authors conducted a literature review of studies examining the concept of mainstreaming climate considerations into national planning and development policies (see Appendix A).

A framework for analysis was then adapted from an approach described in Chuku (2010) as a basis for a qualitative assessment of how climate change has been mainstreamed into Ethiopia's key national development plans. We assessed each plan against a qualitative set of questions to determine how well the plan met the four criteria for effective mainstreaming as described by Chuku: long-term environmental effectiveness (assessed *ex-ante*), equity considerations, cost-effectiveness, and institutional compatibility. The results of this assessment reflect the authors' subjective expert views.

We collected data and information via a desk review of primary planning documents; data were also gathered through key informant interviews and focus group discussions to shed new light on mainstreaming efforts and national planning processes.

We reviewed key national planning and report documents to assess how climate change was mainstreamed in the national development planning process. Table 1 provides a summary of details of the plans examined in this study. We reviewed the text of each plan for specific examples that answered key questions for each of the four framework criteria (see Section 3.1).

In addition to the qualitative assessment of the plans, we interviewed three key informants to collect primary data about the perceived integration of climate change adaptation and mitigation into Ethiopia's national planning. The interview questions were prepared and asked by the authors with follow-up questions as needed depending upon the interviewees' responses (see Appendix B). The interviewees were identified and selected based on their extensive experience working with the CRGE and development planning process, their level of engagement

in the planning process, and their role in climate monitoring and evaluation processes. The interviewees included one expert from the Environment, Forest and Climate Change Commission (EFCCC); one expert from the Planning and Development Commission (PDC); and one expert from Addis Ababa University who used to work as adviser to the PDC, the Ministry of Finance (MOF), and the EFCCC.

We also used focus group discussions to gain more information about Ethiopia's mainstreaming experience. Two principal researchers (both coauthors of this study) conducted the focus group discussion, with 10 expert participants from the three main planning and coordination entities of the government (PDC, MOF, and EFCCC) as well as from the respective CRGE planning departments of sector ministries. The aim was to fairly capture a wide representation of views related to the climate and development planning process. A list of questions on the topic was developed to frame the discussions (see Appendix B). Discussions began by thoroughly examining the local and international context related to climate action and the green economy and then continued to look at the planning, implementation, and evaluation phases of climate mainstreaming in Ethiopia over different periods of time.

Given the limited number of interviewees and participants in the focus group discussions, and the fact that differing views from outside government were not represented, the observations and findings of this study are necessarily limited. While the experts consulted are highly knowledgeable on climate change and development planning processes in Ethiopia, their experiences may be anecdotal, and their responses provide a personal perspective. The results are thus qualitative in nature but still provide useful insights into how mainstreaming of climate change into development planning is evolving in Ethiopia.

RESEARCH FINDINGS AND DISCUSSION

Table 1 summarizes the plans reviewed in this study. To better understand Ethiopia's policy landscape, Figure 2 provides a visual overview of the relevant plans and processes related to climate-change planning in the country since 1994. Dotted lines show Ethiopia's key climate policy developments, while solid arrows indicate how national development plans have evolved and are interconnected.

This section discusses the findings from the desk-based literature review, key informant interviews, and focus group discussions. Our analysis reveals how Ethiopia's development planning process is evolving to address climate change, revealing different phases and how these evolve over time.

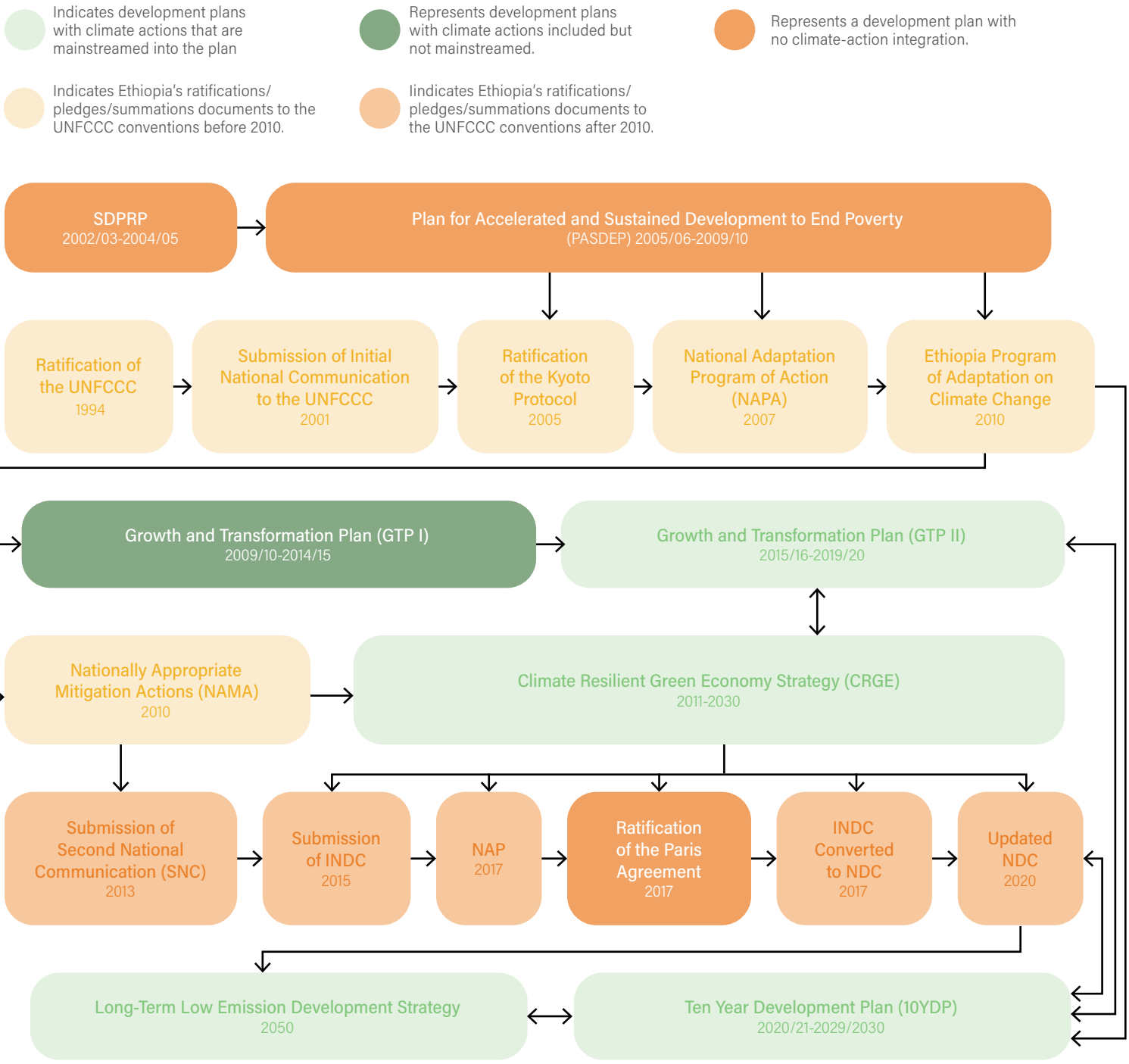
Section 3.1 provides an overview of how climate change has been mainstreamed into national plans. Sections 3.2 through 3.6 explore more detailed findings for each distinct climate and development planning period, in chronological order.

Table 1 | **Summary of Scope and Time Frames of Recent Climate and Development Plans in Ethiopia**

NAME OF PLANNING DOCUMENT	YEAR FINALIZED	YEAR(S) OF COVERAGE (IF APPLICABLE)	LEAD ENTITY IN PREPARING THE DOCUMENT	CLIMATE-CHANGE MITIGATION INCLUDED (Y/N)	CLIMATE-CHANGE ADAPTATION INCLUDED (Y/N)
NDC Update	2021	2020–30	EFCCC	Y	Y
Ten-Year Development Plan	2021	2020/21–2029/30	PDC	Y	Y
The Climate Resilient Green Economy Strategy (CRGE)	2011	2011–30	FDRE	Y	N
The First Growth and Transformation Plan (GTP I)	2010	2010/11–2014/15	MOFED	Y	N
The Second Growth and Transformation Plan (GTP II)	2016	2015/16–2019/20	PDC[8]	Y	N
The Plan for Accelerated and Sustained Development to End Poverty (PASDEP)	2006	2005/6–2009/10	MOFED	N	N
Sustainable Development Plan to End Poverty (SDPRP)	2003	2002/03–2004/05	FDRE	N	N

Source: Authors computation.

Figure 2 | **Ethiopia's Climate and Development Planning Nexus**



Source: Authors.

3.1 Mainstreaming in the Climate and Development Planning Experience in Ethiopia

Ethiopia is experiencing firsthand the adverse effects of climate change and has recognized the disadvantages of a "grow now and clean later" development path. The country has signed various international commitments since 1994 to mitigate the negative impacts of climate change. Ethiopia demonstrated its support for international climate-change action by submitting its Initial National Communication to the UNFCCC in 2001 (Ministry of Water Resources 2001) and submitting its Second National Communication in 2015 (Ministry of Environment and Forest 2015). As for many countries with limited domestic systems for monitoring GHG emissions and climate-change efforts, the national communications and other reports under the UNFCCC framework provide a foundation for policymaking and planning that is informed by climate change relevant data.

Throughout Ethiopia's planning history, climate change has been mainstreamed to varying degrees. As Ethiopia has advanced its planning processes over time, key national plans have met more of the four criteria for successful mainstreaming: long-term environmental effectiveness (assessed *ex-ante*), equity considerations, cost-effectiveness, and institutional compatibility (Table 2). This suggests that improved mainstreaming of climate change and development objectives has occurred over time.

Table 2 | **Assessment of Climate-Change Mainstreaming in Key National Plans**

CRITERIA	QUESTIONS	PLANS						
		SUSTAINABLE DEVELOPMENT PLAN TO END POVERTY	PLAN FOR ACCELERATED AND SUSTAINED GROWTH TO END POVERTY	GROWTH AND TRANSFORMATION PLAN	CRGE (AND INITIAL NDC)	SECOND GROWTH AND TRANSFORMATION PLAN	UPDATED NDC	10-YEAR DEVELOPMENT PLAN
1. Long-term environmental effectiveness[a]	Does the plan explicitly recognize long-term (e.g. mid-century) environmental impacts,[b] including the long-term effects of specific policy interventions?	No[c]	No	Somewhat[d]	Yes[e]	Somewhat	Yes	Yes
	Does the plan explicitly recognize long-term (e.g. mid-century) climate-change impacts of implementation?	No	No	No	Somewhat	Somewhat	Yes	Yes
	Were long-term (e.g. mid-century) environmental or climate-change impacts (including the long-term effects of policy interventions) considered during planning process, if not explicitly included in the document?	No	No	Somewhat	Yes	Somewhat	Yes	Yes
2. Equity considerations	Does the plan explicitly recognize distributional impacts and/or possible negative outcomes for specific stakeholders and seek to address them?	No	No	No	Somewhat	Somewhat	Yes	Yes
	Does the plan explicitly recognize the needs of disadvantaged communities and stakeholders?	No	No	Somewhat	Somewhat	Yes	Somewhat	Yes
	Were key stakeholders that may be impacted by the plan engaged in the planning process?	No	Somewhat	Yes	Somewhat	Yes	Somewhat	Yes
3. Cost-effectiveness	Does the plan estimate the financial costs of implementation (e.g. cost-benefit analysis)?	Somewhat	Somewhat	Somewhat	Yes	Yes	Yes	Yes
	Does the plan estimate the financial cost-benefit of overall environmental, social, and other development impacts?	No	No	No	Somewhat	No	Yes	No
	Does the plan consider the full scope of costs required domestically and the need for international support?	No	No	No	No	Yes	Yes	Yes

Table 2 | **Assessment of Climate-Change Mainstreaming in Key National Plans (Cont'd)**

CRITERIA	QUESTIONS	PLANS						
		SUSTAINABLE DEVELOPMENT PLAN TO END POVERTY	PLAN FOR ACCELERATED AND SUSTAINED GROWTH TO END POVERTY	GROWTH AND TRANSFORMATION PLAN	CRGE (AND INITIAL NDC)	SECOND GROWTH AND TRANSFORMATION PLAN	UPDATED NDC	10-YEAR DEVELOPMENT PLAN
4. Institutional compatibility	Does the plan describe institutional arrangements and recognize capacity or coordination challenges to implementation?	No	No	Yes	Somewhat	Yes	Yes	Yes
	Are roles and responsibilities of key government institutions and government ministries clearly described?	No	No	Somewhat	Somewhat	Somewhat	Somewhat	Yes
	Does the plan consider compatibility with legal, political, and socio-cultural systems?	No	Yes	Yes	No	Yes	Somewhat	Yes
	The quality of the workforce and capacity of stakeholders to fully implement the plan?	No	NO	No	No	Somewhat	Somewhat	Somewhat

Notes:

Effectiveness may be impossible to assess ex-ante, so to address this challenge, the authors explore whether long-term considerations (10 or more years, including climate-change impacts and global emissions reductions) were considered during planning, which may yield a more effective outcome over the long term.

[b] Environmental impact is considered broadly across all natural systems (water use and conservation, land use and forests, air pollution, etc).

[c] No represents that the plan does include this concept and does not fulfill the criteria.

[d] Somewhat represents that the plan partly fulfills the criteria, for example, by mentioning a key word, but doesn't include a detailed description of how this aspect was considered or would be taken forward.

[e] Yes represents that the plan fulfills the criteria by recognizing and integrating this concept as part of the planning process or a key aspect to be implemented.

Source: Authors.

3.2 Early Planning Experience

Sustainable Development Program to End Poverty

In mid-2002, the Ethiopian government introduced a short-term plan called the Sustainable Development Program to End Poverty (SDPRP) to implement the tenets of Agricultural Development Lead Industrialization Strategy. The plan covered the period 2002/03 to 2004/05 and gave huge emphasis to agriculture and education. Although it did not meet any of the four criteria for effective climate mainstreaming, it laid the foundation for the medium-term Plan for Accelerated and Sustained Development to End Poverty.

A Plan for Accelerated and Sustained Development to End Poverty

PASDEP was the first national plan to include environmental considerations at a national level. During the PASDEP era (2005/06–2009/10), environmental aspects of development were treated separately; the lack of integration into sectors precluded the possibility of leveraging any synergies or avoiding potential counter-productive efforts. The focus of the plan was to prevent environmental degradation, including land degradation, soil erosion, biodiversity loss, declining soil fertility, expanding salinization, and soil compaction, as well as desiccation through hydrological cycle disruption (MOFED 2006). These interventions were mainly confined to the agricultural sector and, given the short-term nature of the plan, did not meet the criteria for long-term effectiveness. However, PASDEP partially meets two of the four criteria for effective climate mainstreaming as its process was enriched with stakeholders' participation at the national and subnational level and was able to set out the estimated financing needs for implementation. The interviewees also pointed out that PASDEP raised the agenda of climate change and signified the need for building a climate-resilient economy. PASDEP thus paved the way for future plans to consider environmental concerns and climate change in the next planning cycle.

GTP I (2010/11–2014/15) sought to integrate the MDGs into the broader national plan. Although the MDGs covered environmental sustainability, they didn't specifically address climate change or GHG emissions reduction.[4] Therefore, GTP I also did not include explicit consideration of climate change

or GHG emissions-reduction targets. Special focus during the GTP I period was given to agricultural and rural development, industry, infrastructure, social and human development, good governance, and democratization. Given that the MDGs span 15 years (long-term), a partial recognition of the first criteria is noted "somewhat" but could not be "yes" as the GTP I spans only the last five years of the MDGs.

Interviewees explained that environmental and climate-change issues were treated as a "cross-cutting" sector in GTP I. In this regard, the primary objective for addressing the environment and climate change was "to formulate and effectively implement policies, strategies, laws, and standards, that will foster social and green economy development so as to enhance the welfare of citizens and environmental sustainability" (MOFED 2010). GTP I included specific targets for generating renewable energy, minimum forest cover, and designated parkland area, among others. Although these areas relate to climate change, they were not long term and were not specifically aimed at mitigating GHG emissions.

3.3 Climate Resilient Green Economy Strategy

It was not until 2011 that Ethiopia began serious efforts to mainstream climate change through its CRGE strategy, which spanned a 20-year time horizon. The CRGE was a national initiative to address climate change while simultaneously pursuing economic development and establishing the national vision for achieving middle-income status by 2025. Following a climate-resilient green economy pathway was intended to result in no net increase in GHG emissions from 2010 levels by 2030 (FDRE 2011). Although the CRGE was a breakthrough planning exercise, focus group discussants and interviewees highlighted several important factors affecting its effectiveness in mainstreaming climate change.

The CRGE strategy is considered to be comprehensive and exhaustive in terms of identifying sector-level mitigation interventions and actions, according to focus group discussions. However, the CRGE was overwhelmingly biased toward mitigation actions and initially gave little emphasis to adaptation to climate change. However, in the later stages of CRGE implementation, this gap was notably rectified through the development of climate-resilience strategies in the agriculture and forestry sectors, water and energy sectors, and the transportation sector.

Although launching the CRGE was a good opportunity for Ethiopia to get recognition and support from the international community and development partners (interviewees), the mainstreaming of climate actions into the Ethiopian development plan came with its own challenges, according to focus group discussions. There was no solid experience or best practice in mainstreaming climate policy into the national development planning from other developing countries that could guide necessary action.

Unlike PASDEP, the CRGE was heavily focused on climate change in a development context. It identified 60 mitigation components across many sectors: agriculture (livestock and soil), forestry, power, transportation, industry, and building. This introduced a new paradigm, expanding on the previous environmental protection-based planning, and adopting a wider approach to consider climate-sensitive sectors in a green economic transition. Sectoral climate-resilient strategies were prepared in 2015 to promote sector-level implementation. For instance, the climate-resilience strategy for agriculture and forestry conducted sector-specific analysis, identified frequent risks and hazards in different parts of the country, and identified 41 promising options using a number of criteria to create a climate resilient green agriculture and forest sector (FDRE 2015).[5] Advancements in adaptation planning have continued since then (see also GTP II below).

The CRGE was implemented through a "fast-track project implementation" approach, which was challenging to fully integrate with sector-level goals and targets, according to interviewees. To support implementation, the CRGE facility was established within the Ministry of Finance, and CRGE implementation guidelines were prepared. One key lesson from the fast-track approach was that it created an implementation process that was separate from sectoral implementation of national development plans. This weakened the overall implementation of the CRGE, especially at lower administrative levels of government (from the federal level down to the woreda level), according to focus group discussions. Ambiguity in roles and responsibilities led to a lack of ownership for the full mainstreaming effort, which in turn created implementation difficulties. Beyond this, the CRGE was not accompanied by a detailed implementation plan at sectoral, regional, or lower administrative levels, which inhibited its full integration and implementation, according to focus group discussions. Part of the problem appears to be that the integration of the CRGE was limited to sector-level thinking, and no effort was made to further integrate or embed it at lower levels of government where much of actual implementation needs to be carried out, according to interviewees. The CRGE fairly captures some key aspects of the four criteria for effective climate mainstreaming

with broader stakeholder participation and was informed by the long-term goal of net-zero emissions and development vision of the country.

Tracking and reporting was reported to be another salient weakness of the CRGE, according to focus group discussions. Reports on CRGE implementation are not comprehensive and do not give sufficient information about implementation of climate actions. Instead, the implementation reports capture only the activities of the national government and not what is going on at the subnational level or through initiatives led by the private sector or civil society. This potentially underestimates the level and performance of climate action in Ethiopia. Significant coordination problems among different line ministries have been observed both in implementation and reporting, according to focus group discussions. The EFCCC also has limited capacity, which contributes to mainstreaming coordination failures and weak tracking and reporting of CRGE implementation and progress.

The lack of adequate data and indicators exacerbates planning, tracking, and reporting, particularly at lower administrative levels. For example, no agreed baselines were set for each sector at lower administrative or regional levels, according to interviewees, making it impossible to assess progress over time. In addition, GHG emissions data and information are not compiled and organized systematically in a useful way. There is also limited effort or capacity for generating and compiling evidence, best practice, and lessons learned from the implementation of CRGE.

3.4 The Second Growth and Transformation Plan and the National Adaptation Plan

The CRGE was a significant turning point in climate and development planning in Ethiopia, as the framework has since been used to guide and further strengthen the integration of climate-change issues into other national plans. Unlike GTP I, environmental concerns and climate change were featured as an integral part of the second five-year national development plan, GTP II (2015/16–2019/20). This change indicates a shift in prioritization and attention from the government to climate change. Additionally, the plan strongly refers to the CRGE, which was also included as one of its seven strategic pillars (NPC 2016). The preparation and the mainstreaming of CRGE with the GTP II followed a top-down approach, and through the GTP II climate change was mainstreamed in the sectoral development plans, according to focus group discussions and interviewees.[6.]

The Ministry of Environment, Forest and Climate Change led the mainstreaming effort, working in close coordination with the National Planning Commission (NPC), which later became PDC, and now the Ministry of Planning and Development). Because the ministry had the mandate to lead and coordinate the overall climate-aligned national development strategy, a greater degree of mainstreaming of climate change occurred. The ministry adopted a participatory planning approach that linked environment, society, and economy using a single framework of analysis. This process made it possible to see the synergies, trade-offs and interplay between biophysical and socioeconomic elements of the economy, as well as their effect on development outcomes. The NPC also supported mainstreaming through an operational implementation manual, which provides guidance on how to mainstream the CRGE into sectoral implementation plans, according to interviewees and focus group discussions. In the GTP II, the CRGE was formally mainstreamed at the target level (unlike in the GTP I), and some indicators and targets from the CRGE were included in the plan, including the GHG emissions-reduction target.

The main objective of mainstreaming the CRGE strategy into the GTP II was to address climate change induced challenges by reducing GHG emissions through a number of targeted actions that would also yield development benefits. The main strategies of building a climate resilient green economy included enhanced crop and livestock production that improves food security and raises the income of farmers and pastoralists; natural resource development, forest protection, and reforestation programs that enhance the economic and ecological advantages of forests; expanding electricity power generation from renewable sources of energy for domestic and regional markets; and leapfrogging to modern and energy-efficient technologies in transportation, industry, and construction. Less attention was paid to adaptation, with only a few indicators included in the policy matrix, and they were without baselines and targets; so it was unclear how to approach implementation and tracking. The strategy reasonably fulfills the four main criteria of effective climate mainstreaming with less emphasis on the cost-benefit analysis of the proposed interventions.

Parallel to the development of GTP II, the CRGE initiative was also enhanced and strengthened in 2017, when the NAP was introduced. To complement the CRGE, Ethiopia's NAP focused on the key sectors of agriculture, forestry, health, transportation, power, industry, water, and the urban environment. It identified

18 adaptation interventions for implementation, recognizing the considerable diversity in context and vulnerability across Ethiopia's regions and social groups (FDRE 2017). While adaptation planning has typically advanced one step behind mitigation, the situation is improving with greater alignment during the development of the 10YDP, and a concerted effort to integrate adaptation into the LT-LEDS is ongoing.

3.5 Ten-Year Development Plan

The experience of mainstreaming the CRGE in the GTP II informed the approach taken for the 10YDP, according to interviewees and focus group discussions. The 10YDP was prepared in 2021 and provides a strategic vision for the country to 2030. The CRGE was included as one of the 10 pillars of the 10YDP, signifying the extent to which it continues to guide the direction of the country's development over the medium term and not only in the five-year plans (PDC 2021). Ethiopia also leveraged the preparation of the 10YDP and the NDC update process. The formulation of the two national planning documents occurred in parallel, and it was thereby possible to fully align and integrate climate action with the overall development objectives of the country. The mainstreaming process improved in this period, building on the experience gained from the previous planning process, according to interviewees.

Participatory, integrated modeling and analytical work informed the 10YDP. In 2019, as a new initiative, the PDC established a unit to lead empirical economic analysis and modeling to support the mainstreaming of climate and development planning. The modeling unit was supported by an intragovernmental steering committee that coordinated planning. Participation from EFCCC ensured that climate change was covered during the 10YDP planning process. The 10YDP almost meets the four criteria of effective climate mainstreaming, though less emphasis is placed on equity considerations and considerable national and subnational participation. As part of the work of that committee, also in 2019, a participatory Green Economy Model (GEM) for Ethiopia was developed in consultation with and under the leadership of the PDC and EFCCC to allow early exploration of mid-century climate and development pathways.

Box 1 provides an overview of the Ethiopia GEM, which was developed with support from the World Resources Institute (WRI). Initial modeling of long-term climate and development pathways occurred in parallel with completion of the 10YDP.

The Ethiopia GEM was employed in 2020 to examine and update the GHG mitigation contributions and goals of the NDC in line with the 10YDP (Section 3.6). This laid the groundwork for the update of the NDC (see below). The GEM modeling exercise also built on a review of sector-level and other national development plans and strategies. A steering committee oversaw the work, including government expert members as well as experts from international entities, including WRI, the New Climate Economy, the World Bank, Pegasys, and Knowledge SRL. All data, underlying assumptions, technical documentation, and GHG emissions scenarios were shared openly among partners and government experts. Final data sets and materials were delivered to government counterparts to be used in future work.

One key development that grew out of the modeling effort was the integration of the SDGs into the 10YDP (PDC 2021) in the form of climate-related indicators and targets and specified indicators considering the national context. Between integration of the CRGE as a key pillar and the inclusion of the SDGs, the 10YDP was able to include an extensive list of climate-mitigation and adaptation interventions and indicators. The aim now is to further mainstream these interventions into sectoral plans to ensure that green economic growth is delivered.

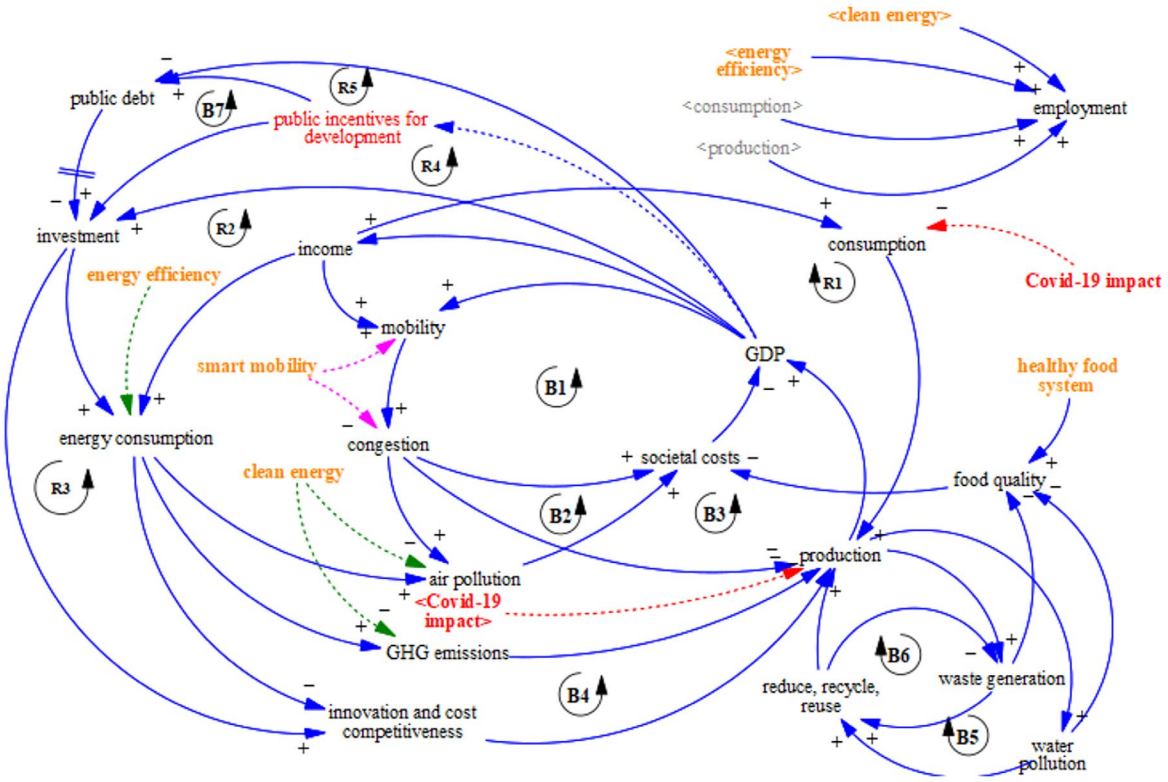
In another development, better coordination among sector ministries was achieved during the 10YDP planning process, according to focus group discussions. For the first time, it was empirically shown, through the GEM results, that the green economic path yields better economic development than the conventional economic growth path, leading to greater interest in implementing climate action in tandem with development policy. All in all, political buy-in for mainstreaming climate change into national plans has thus improved during the time from the first GTP to the 10YDP.

In the end, the 10YDP was produced based on an integrated green planning conceptual framework (Figure 3) that integrates both economic and environmental goals. The framework depicts how climate actions were mainstreamed into priority areas of the 10YDP. It shows how mitigation and adaptation interventions were integrated within and across sector priorities and their linkages with growth corridors. The framework recognizes that economic development, climate planning priorities, and sectoral composition of the economy will vary over time. For instance, in the coming 10 years, Ethiopia envisions an increase in the share of its manufacturing industries from 6.9 percent of total GDP in 2020 to 17.2 percent in 2030. This share will tend to increase over time, which may increase the demand for renewable energy to avoid more conventional carbon-intensive sources of electricity (PDC 2021). Thus, the model and vision of the future needs to be a dynamic one so as to align mitigation and adaptation with the ever-changing structure of the country's economy.

Box 1 | GEM Overview

The Ethiopia GEM is based on systems-thinking principles and system-dynamics modeling and was customized and refined to capture the key drivers of change triggered by green economy interventions in Ethiopia. Causal links or feedback loops increase model transparency by highlighting system interactions and allow for the possibility of co-creating the models with the participation of local stakeholders (Figure B-1). The Ethiopian GEM was developed with the participation of government experts from CRGE sectors. The simulation output from the GEM model includes projected GHG emission pathways, economic growth pathways, impacts on Gross Domestic Product (GDP), and employment estimates, among others.

FIGURE B-1. SCHEMATIC OVERVIEW OF CAUSAL LOOP STRUCTURE OF GEM



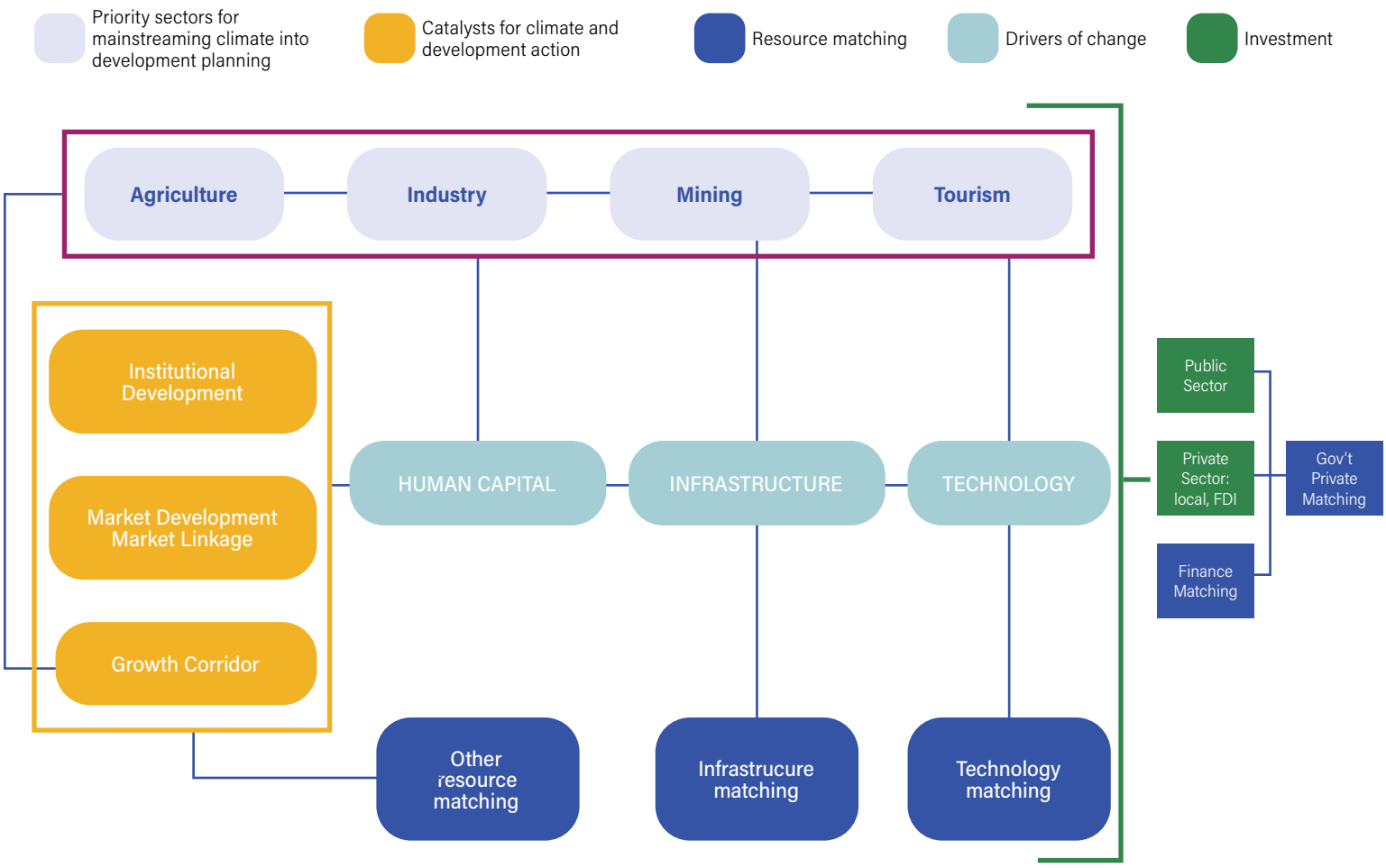
Source: Knowledge SRL (Andrea Bassi) and Authors.

Together, through a participatory modeling process, the GEM was refined to reflect Ethiopian expert views, build on existing data and knowledge, and identify options to align mitigation outcomes with other goals of the 10YDP. Model scenarios were constructed and simulation results shared and examined following careful verification of input assumptions. In short, modeling results were fully codeveloped and vetted by sector ministry experts under the guidance and leadership of the EFCCC and PDC.

WRI organized capacity-building training for line ministries to support modeling and preparation of the 10YDP. One element focused on how to approach mainstreaming relating not only to climate change, but also to aligning the 10YDP with other development commitments such as the SDGs and Africa Agenda 2063. The capacity-building plan was jointly developed but demand-driven as it was based on consultation with the PDC and developed at its request. It was then agreed to with participating ministries prior to being put in place.

Source: Authors.

Figure 3 | **Green Economic Planning Framework**



Source: Authors' own depiction.

3.6 Ethiopia's Nationally Determined Contribution Update and LT-LEDS

Building on the process established under the 10YDP, Ethiopia recently updated its NDC (2021) with a process that began in 2020. Following on from the successful experience with the 10YDP, the NDC update planning process used the GEM model to simulate baseline emissions and policy scenarios with a focus on mitigation. This process extended the participatory modeling approach to provide empirical evidence as input to the NDC update. The NDC update draws heavily from both the 10YDP and the CRGE strategy (which, as noted above, is also one of the key pillars of the 10YDP (EFCCC 2021). It starts by considering the overarching climate-compatible economic development national objective set under the 10YDP.

The 10YDP and the updated NDC were deliberately formulated using the same model to support more direct alignment between the economic trends and outlooks embedded in the two documents (EFCCC 2021). In updating the NDC, GHG emissions-reduction scenarios were designed based on inputs from engagement with government stakeholders. The GEM was updated as needed and used to generate a robust evidence base for identifying and prioritizing mitigation and adaptation interventions and to establish intermediate indicators against which to measure progress.

As noted earlier, the GEM development actually predated the NDC update planning process. In fact, the origin of the Ethiopia GEM was prior to the 10YDP or the NDC update, with its initial development and application being to support the Ethiopian government in developing its LT-LEDS (2050).

The LT-LEDS strategy has not yet been finalized, as planning effort and attention was diverted away to complete the 10YDP and later the NDC update. However, this delay means that the LT-LEDS process, which was restarted in 2022, is building on the NDC update and 10YDP, including all initial data sets, policy options, and modeled pathways. This positive evolution in the climate and development planning processes in Ethiopia, strengthened by the use of the Ethiopia GEM, is expected to support better integration, alignment, and harmonization of Ethiopia's long-term development and climate planning and policy. The mainstreaming process has met all the criteria of effective climate mainstreaming with the objective of achieving triple development goals: zero poverty, net-zero emissions, and a low unemployment rate.

Conceptual Framework for Integrated Green Economic Planning in Ethiopia and Lessons for Other Countries

The green economic planning framework (Figure 3) was developed through the GEM modeling exercises. The GEM helps to establish such a framework by considering the details of socio-economic and environmental systems simultaneously and by showing how they relate to each other. Greater understanding of these relationships will help to identify actions that address climate change alongside development policy and the planning process so that the economy can grow along a sustainable pathway. Because resources are scarce, developing countries like Ethiopia need to focus development and mainstreaming efforts in sectors that advance economic growth while maximizing resource efficiency.[7] Appropriate growth corridors—priority sectors with high growth potential that are given priority access to strategic material and human resources—are identified. Roads and other infrastructure, housing and building materials, and energy are priority resources to be prioritized in supporting of such growth corridors. In addition, in selected sectors, policies are tested to incentivize or support deployment of state-of-the-art technology (green technology), such as renewable energy, to promote achievement of both climate and development goals.

One of the main purposes of employing an integrated green economic planning framework was to help the government identify priority sectors and activities that can promote both environmental and economic development goals. This is vital to the policymaking process and implementation, particularly when resources are constrained. Sectors that are green, environmentally friendly, and have strong economic multiplier effects on the development outcomes are identified and prioritized as they could help achieve multiple objectives at the same time.

CONCLUSION AND WAYS FORWARD

Building a climate-resilient green economy is one of the top policy agendas for Ethiopia. This study explored how climate-change mainstreaming has become an integral part of the medium- and long-term development vision of Ethiopia. Mainstreaming climate action into national development planning has improved over time. Improvements are noted across several procedural and institutional dimensions of the planning process: the participation of stakeholders and line ministries to increase awareness around the national prioritization of climate change, the level of integration with the national plan, the coverage of mitigation and adaptation options, and the inclusion of more climate-related indicators and targets in development plans. The planning process has also improved mainstreaming of core national development objectives into climate plans. This was illustrated when the last round of climate planning occurred to update the NDC (2021), using the 10YDP as a starting point. This progress to improve engagement and alignment, in particular, helps to ensure that there will be institutional compatibility of endorsed policies and measures and thus greater potential for effective policy implementation that meets mutual climate and development goals.

Mainstreaming is also being advanced through use of improved analytical methodologies in Ethiopia. In particular, the development of a robust country-owned modeling framework for cross-economy, integrated climate and development analysis allows experts and decision-makers to identify trade-offs and synergies among policy options and select those that achieve multiple climate and development objectives. This supports improved decision-making by projecting performance across two of the four criteria for effectiveness in mainstreaming; that is, on long-term environmental effectiveness and cost-effectiveness of alternative policies or scenarios. Beyond this, modeling results from the GEM model can also provide inputs for in-depth distributional analysis that can estimate impacts on equity and social equity, one of the four effectiveness criteria. The transparent and open sharing of data sets, assumptions, and modeled pathways can also facilitate continuous improvement and support new implementing partners that do not need to start from scratch to support the Ethiopian government.

Improvements in mainstreaming have nevertheless been gradual throughout the different planning phases. Many persistent challenges are identified here. The most salient factors limiting alignment of climate and development policy and limiting policy implementation are

- a tendency toward top-down planning approaches with limited engagement of subnational actors;
- a lack of technical capacity of experts at the national, regional, and woreda levels; and
- weak tracking and monitoring systems.

However, progress has occurred in part due to continued commitment by the government to build a climate-resilient economy. To address these challenges, this study makes the following recommendations:

Centrally, climate-change mainstreaming should use both bottom-up and top-down approaches. Appropriate baselines and targets should be set at the national and subnational levels of government, which is where the actual implementation and monitoring and evaluation need to occur. Mainstreaming and integration of climate change and development planning and policies should be guided and informed by the overall ambition and long-term development vision of the country, accompanied by measurable benchmarks and milestones that are developed in collaboration with subnational and sectoral partners, as well as with civil society.

Both MRV and M&E mechanisms for tracking climate action should be strengthened. These mechanisms should be integrated and automated, following the same protocols and using the same data management system used for national development and economic tracking. Additional efforts are needed to enrich the existing dataset, including baseline data for climate related indicators. Appropriate specific, measurable, achievable, and time-bound (SMART) indicators should be identified, updated, and revised periodically. Experts also signaled the importance of conducting regular surveys to gather disaggregated data across different agro-ecology regions to accommodate variation. Monitoring and evaluation could also be usefully designed to capture mitigation and adaptation components equally.

Internal technical capacity of the government in MRV, M&E, and analytical capacity should be strengthened to enable better planning, implementation, and tracking. Sectoral CRGE units, for example, should have sufficient expertise, staff resources, and capacity and also the authority and mandate to instruct regional and other subnational CRGE units in data-collection practices.

During the planning process, the central government should consider developing and incorporating green components into national datasets and the traditional social accounting matrix. The government could then identify and prioritize sectors for climate and development action based on their socioeconomic and environmental co-benefits.

Better platforms should be created to include the private sector and civil society in the plan formulation, implementation, and evaluation processes. Further, better awareness could be created at different administrative levels to help develop and implement various technologies that are suited to different agro-ecology zones and to effectively tap the mitigation potential from the agricultural sector, according to focus group discussions.

There is also a need to ensure that mainstreaming efforts do not stop once planning is complete but continue through implementation. This study strongly recommends that climate actions should be mainstreamed throughout implementation with a strong accountability framework. And future plans, including the forthcoming LT-LEDS, should ensure that proposed actions achieve both climate and development objectives simultaneously. Where there are trade-offs, they should be identified and managed. This study also suggests the need for wider and more extensive stakeholder engagement, including at regional and local levels, in the planning phases, which, in turn, will help ensure better ownership and buy-in of resulting plans. Co-ownership of climate and development plans across many different stakeholders will help deliver lasting climate action.

In summary, if mainstreaming of climate change considerations is to support effective implementation, it must occur at all levels of governance and cover all aspects of the policy cycle from the planning process to resource mobilization (e.g., budget planning and allocation), and institutional arrangements across administrative levels and boundaries. Mainstreaming must be a dynamic process with frequent review and assessment built in, leading to regular updates of plans. Ultimately the aim of the mainstreaming process must be to build knowledge and evidence about how to shape climate action so that it becomes more effective in driving both economic transformation and sustainable development.

APPENDIX A. THE CONCEPT OF MAINSTREAMING CLIMATE: LITERATURE REVIEW

The concept of mainstreaming is commonly used to refer to a range of ideas related to incorporation and may be used interchangeably with the term *integration* (Gupta and van der Grijp 2010). According to Gupta and van der Grijp (2010), mainstreaming is at the far end of a spectrum going beyond integration, whereby climate change mitigation and adaptation considerations are proactively applied to reframe development with a clear objective of addressing climate change. For the purposes of this paper, mainstreaming can be understood as a process that brings climate change into the center of conventional development and economic planning and implementation. In particular, this paper examines the mainstreaming of long-term climate actions necessary to meet the temperature goals of the Paris Agreement to limit warming to well below 2°C and pursuing efforts to limit the increase to 1.5°C above pre-industrial levels.

Climate-change impacts undermine planned development outcomes in many developing countries and pose significant challenges for the resilience of livelihoods and ecosystems. Empirical evidence shows that improved environmental management, particularly in developing economies, can reduce the impact of climate change and improve recovery from extreme weather events (Reinman 2012). In addition, research shows that ambitious climate action and economic growth go hand-in-hand and could, in fact, yield a tremendous economic gain, compared to business-as-usual development (New Climate Economy 2018). Cognizant of this, and the shifting discourse on climate policy toward more integrated planning processes, many countries have begun mainstreaming climate change into their development plans (Am et al. 2013; Dalal-Clayton and Bass 2009; Jones and Carabine 2013; Vincent and Colenbrander 2018). Agrawal and Lemos (2015) and Reid and Huq (2014) assert that mainstreaming climate change into development plans is likely to be more successful than addressing it in isolation through sectoral climate-change policies or plans. They indicate that mainstreaming climate actions into development plans not only ensures that development gains will not be hindered by climate risk, but also offers the opportunity to build adaptive capacity and resilience. A review of a joint UNDP and UNEP initiative operating in 28 countries (not including Ethiopia) by Benson et al. (2014) asserts that mainstreaming climate change into policy, planning, and budgeting increases awareness, changes perceptions, and improves the way inter-sectoral decisions are made, especially in climate adaptation, and supports countries in achieving their sustainable development ambitions.

However, mainstreaming is not without challenges and limitations. Boehm et al. (2021) highlight how dramatically the world needs to shift current practice to meet the scale of the climate crisis, requiring transformational change across all critical sectors of the economy. Such a massive systemic overhaul is extremely challenging on a political level because it scrutinizes and calls for reform of the vested interests of powerful lobbies in industry and energy and the lifestyle patterns to which people are accustomed (Gupta and van der Grijp 2010).

A review of existing literature related to Ethiopia's experience bringing climate change into the mainstream paints a picture of previous and current practices, challenges and trends in the country's planning and policy-making process, and yields four main findings. First, one notable step for Ethiopia highlighted in the literature was the establishment of a central entity in 2012 to manage international finance flows for climate change across all sectors. The CRGE Facility was fully operationalized in 2013. Bhandary (2021) assesses the experience of Ethiopia's CRGE Facility and finds that the government sought to achieve mainstreaming through national climate funds engaging with sectoral ministries.

A second finding is that climate-change mitigation efforts have received more attention than efforts to address climate vulnerability and adaptation. Hirpha et al. (2021), for example, conducted a qualitative assessment on the integration of climate-change adaptation into the national development planning of Ethiopia, finding that climate-change impacts and national responses to them are not given sufficient attention. At the same time, there is evidence to suggest that there are benefits to mainstreaming climate change within sectoral plans, particularly for adaptation. Oates et al. (2011) reveal that current water-sector policies and strategies have the potential to address climate risks. Joosten and Grey (2017) find that integrated watershed management in water-related planning is linked to the livelihoods of people and must provide opportunities for improved incomes and increased resilience to climate change. There have been efforts to help address this specific issue such as the 2005 Community Based Participatory Watershed Development Guidelines.

Third, efforts to mainstream climate change are often undermined by poor institutional arrangements and capacity constraints. Jones and Carabine (2013) identify failings inherent in the design of the CRGE, including a lack of internal capacity to prepare technical inputs such as development of baselines, policy scenarios, and alternative intervention options using integrated modeling approaches. Redda and Roland (2016) show that units established to lead efforts to support a climate-resilient green economy within sector ministries are mostly organized as ad hoc entities lacking the formal authority and resources required to carry out CRGE activities. They further illuminated that weak institutional capacity at the regional level also impairs mainstreaming of climate efforts in Ethiopia.

Fourth, another critique of the mainstreaming process has been the lack of consultation and engagement with nongovernmental

stakeholders. Jones and Carabine (2013) note that the development of the CRGE lacked meaningful engagement with stakeholders at all levels of society, which inhibits the realization of integrated, transformative climate policy. This is particularly important in sectors where climate and development goals are deeply intertwined, such as in the energy sector.

Building on these earlier studies, this paper explores the way climate change has been mainstreamed in different planning processes over time to draw out the strengths and weakness of the planning approach in Ethiopia and provide recommendations to further strengthen the process.

APPENDIX B. QUESTIONS AND PARTICIPANTS IN INTERVIEWS AND FOCUS GROUP DISCUSSION

I. Questions for a Focus Group Discussion

Engagement Questions:

- What were the consequences of previous "economic first" planning on GHG emissions and environment in Ethiopia?
- Do you think that mitigation and adaptation options in the CRGE sectors are able to reduce GHG emissions in Ethiopia since 2010? If not, why?
- Could you tell us about the major strengths and weaknesses of Ethiopia's previous plan in light of the mainstreaming, implementation, and monitoring and evaluation process of CRGE since 2010? What improvements do you suggest for the mainstreaming of CRGE in the planning, implementation, and evaluation process?
- Do you think that CRGE is fully mainstreamed into the national development planning process and aligned with the goals, targets and KPIs indicated under the 10-year plan? What further improvement do you suggest?

Exploration Questions:

- What are the main challenges that need to be addressed to effectively integrate climate change and environmental drivers of change in light of Ethiopian long-term development pathways?
- To what extent does the CRGE manifest itself in the planning process and is thereby integrated to the monitoring, reporting, and evaluations of the national M&E framework?
- What challenges did you face related to baseline data and indicators of CRGE? Did the absence of baseline data deter you from considering more indicators in the CRGE?
- What should be improved to effectively strengthen the tracking, monitoring, and reporting mechanism of climate action in the future?
- Are there any coordination failures among key stakeholders on the implementation, planning, and financing of CRGE in Ethiopia?
- Do you think that the existing institutional arrangement and commitment is sufficient to run overall all climate actions? If not, what are your views for further improvement or transformative changes?
- Is there anything else you would like to say about the mainstreaming, MRV, institutional arrangement and implementation of climate change in light of the national planning process?

Attendance: Focus Group Discussion—Ethiopia Planning Experience

NO	NAME	ORGANIZATION
1	Mensur Dessie	EFCCC
2	Mohammed Andoshe	EFCCC
3	Getachew Shiferaw	MUDC
4	Semere G/Tsadik	MoUDC
5	Berhanu Assefa	MoA
6	Mechael Hordofa	EFCCC
7	Asaye Ketema	EFCCC
8	Muluneh G. Mariam	EFCCC

II. Key Informant Interview Guiding Questions

- How was the Ethiopian planning experience in the past?
- In which planning epochs have you realized that the Ethiopian development plans started considering climate change in light of the country's national planning framework?
- What was the motive to consider climate change in the national planning process?
- How was the climate change considered?
- In the recent past planning periods, such as PASDEP, GTPI and GTPII, was the climate-resilient green economy strategy considered? How has it been positioned in these planning periods?
- How have the respective stakeholders or responsible entities been involved in the mainstreaming process of the CRGE in these planning periods?

- Do you think that was sufficient?
- Ethiopia has now prepared its 10-year development plan and also updated it Nationally Determined Contribution this year.
- How is the CRGE mainstreamed in the 10-year development plan?
- To what extent do you think that the CRGE is fully mainstreamed in the 10-year plan? (At goal, target, indicator level)
- To what extent are the revised NDC and 10-year development plan integrated?
- What do you suggest for better integration for future works including LTS?
- To what extent is the progress of the implementation of the CRGE monitored and evaluated against the targets set during the mainstreaming process?
- Does the CRGE have SMART indicators identified in the mainstreaming process?
- Does the CRGE have sufficient baseline data and targets set for M&E?
- What must to be done to improve the M&E system of CRGE implementations?
- Do you think that the existing institutional arrangement and commitment are sufficient to run overall climate actions? If not, what is your view for further improvement or transformative changes?
- Is there anything else you would like to say about the mainstreaming, MRV, institutional arrangement, and implementation of climate change in light of the national planning process?

Interviewees:

- **Tamiru Terefe Cherinet**, policy and program implementation monitoring and evaluation directorate director, Planning and Development Commission of Ethiopia
- **Gebru Jember Endalew**, Global Green Growth Institute, Supporting the Environment Forest and Climate Change Commission of Ethiopia
- **Tadele Ferede**, associate professor of economics, Department of Economics

ABBREVIATIONS

CRGE	Climate-Resilient Green Economy
EFCCC	Environment Forest and Climate Change Commission (now Environmental Protection Authority)
GHG	Greenhouse Gas
GTP	Growth and Transformation Plan
PASDEP	A Plan for Accelerated and Sustained Development to End Poverty
MDG	Millennium Development Goals
MOA	Ministry of Agriculture
PDC	Planning and Development Commission (now Ministry of Planning and Development)
SDG	Sustainable Development Goals
SDPRP	Sustainable Development and Poverty Reduction Program

ENDNOTES

1. See for example, Hirpha et al. 2021, Oates et al. 2011, Santos-Paulino and Urrego-Sandoval 2013, and Welteji 2018.
2. See Christopher and Weinthal 2019, EFCCC 2020, Fikreyesus et al. 2014, Fisher 2013, Jones and Carabine 2013, and Simane 2017.
3. Recognizing that following the conventional development path would, among other adverse effects, result in a sharp increase in GHG emissions and unsustainable use of natural resources, the government of Ethiopia developed a strategy to build a green economy, which is loosely defined as a development approach that will "protect the country from the adverse effects of climate change and … help realize its ambition of reaching middle income status before 2025" (CRGE 2011).
4. Goal 7 aimed to ensure environmental sustainability, although this did not specifically cover the issue of climate change.
5. These criteria were feasibility, contribution to economic growth, contribution to equity and distributional issues, and extent to which they address the current weather variability and future impacts of climate change.
6. CRGE sectors include agriculture, industry, transportation, water, energy, and irrigation.
7. In other words, backward linkages imply additional demand generated by sectors when they purchase intermediate inputs from other sectors. While the output utilization or forward linkage effects will induce attempts to utilize outputs as inputs in some new activities (Hirschman 1958, p. 100). Sectors that optimize both forward and backward linkages act as engines to drive economic growth even with relatively limited resources available.
8. Then called the National Planning Commission.

REFERENCES

Agrawal, A., and M.C. Lemos. 2015. "Adaptive development." *Nature Climate Change* 5 (3): 185–187.

Asfaw, T. 1992. "An Overview of Ethiopia's Planning Experience." *The Ethiopian Economy: Structure, Problems and Policy Issues*. https://eea-et.org/sites/default/files/publications/Tesfaye%20Asfaw_%20An%20Overview%20of%20Ethiopia%E2%80%99s%20Planning%20Experience.pdf.

Am, P., E. Cuccillato, J. Nkem, and J. Chevillard. 2013. "Mainstreaming Climate Change Resilience into Development Planning in Cambodia." *IIED Country Report*. https://ncsd.moe.gov.kh/sites/default/files/phocadownload/POLICYFRAMEWORK/NATIONALPOLICIES/mainstreaming%20climate%20change%20resilience%20into%20development%20planning%20in%20cambodia.pdf.

Benson, E., A. Forbes, M. Korkeakoski, R. Latif, and D. Lham. 2014. "Environment and Climate Mainstreaming: Challenges and Successes." *Development in Practice* 24 (4): 605–614.

Bhandary, R.R. 2021. "Climate Mainstreaming via National Climate Funds: The Experiences of Bangladesh and Ethiopia." *Climate and Development* 14 (4) 1–10.

Bigsten, A., and M. Gebreeyesus. 2009. "Firm Productivity and Exports: Evidence from Ethiopian Manufacturing." *The Journal of Development Studies* 45 (10): 1594–1614.

Boehm, S., K. Lebling, K. Levin, H. Fekete, J. Jaeger, R. Waite, A. Nilsson, et al. 2021. *State of Climate Action 2021: Systems Transformations Required to Limit Global Warming to 1.5°C.* Washington, DC: World Resources Institute: https://doi.org/10.46830/wrirpt.21.00048. Accessed January 11, 2022.

Christopher, John Paul, and Erika Weinthal. 2019. "The Development of Ethiopia's Climate-Resilient Green Economy 2011–2014: Implications for Rural Adaptation." *Climate and Development* 11 (3): 193–202, DOI: 10.1080/17565529.2018.1442802.

Chuku, C.A. 2010. "Pursuing an Integrated Development and Climate Policy Framework in Africa: Options for Mainstreaming." *Mitigation and Adaptation Strategies for Global Change* 15 (1): 41–52.

Dalal-Clayton, D.B., and S. Bass. 2009. "The Challenges of Environmental Mainstreaming: Experience of Integrating Environment into Development Institutions and Decisions." No. 1. In *Environmental Governance No. 3*, edited by Rosheen Kabraji. London, UK: International Institute for Environment and Development.

Dessalegn, R. 2001. "Environmental Change and State Policy in Ethiopia: Lessons from Past Experience. *Forum for Social Studies Monograph Series* 2: 10–108.

EFCCC (Environment Forest and Climate Change Commission). 2020. *Overview Report: Ethiopia's Climate Resilient Green Economy (CRGE) Strategy (2011–2019). Implementation Progress Assessment Report.* Addis Ababa, Ethiopia: EFCCC.

EFCCC. 2021. Ethiopia's Updated Nationally Determined Contributions. Addis Ababa, Ethiopia: Federal Democratic Republic of Ethiopia.

Eshetu, Amogne Asfaw. 2013. "Forest Resource Management Systems in Ethiopia: Historical Perspective." *International Journal of Biodiversity and Conservation* 6 (2): 121–131.

FDRE (Federal Democratic Republic of Ethiopia). 2011. *The CRGE (Climate-Resilient Green Economy Strategy)*. Addis Ababa, Ethiopia: FDRE. 2011.

FDRE. 2015. *Ethiopia's Climate-Resilient Green Economy: Climate Resilience Strategy for Agriculture and Forestry*. http://extwprlegs1.fao.org/docs/pdf/eth169528.pdf.

FDRE. 2017. Ethiopia's National Adaptation Plan. Addis Ababa, Ethiopia: FDRE.

Fikreyesus, D., N. Kaur, M. Kallore, and L. Ayalew. 2014. *Public Policy Responses for a Climate-Resilient Green Economy in Ethiopia*. London, UK: International Institute for Environment and Development.

Fisher, Susannah. 2013. "Low-Carbon Resilient Development in the Least Developed Countries: Emerging Issues and Areas of Research." IIED Issue Paper. London, UK: International Institute for Environment and Development.

Gupta, J., and N.M. van der Grijp. 2010. *Mainstreaming Climate Change in Development Cooperation: Theory, Practice and Implications for the European Union*. Cambridge, UK: Cambridge University Press.

Hirpha, H.H., S. Mpandeli, A.B. Dagnew, T. Chibsa, and C. Abebe. 2021. "Assessing the Integration of Climate Change Adaptation and Mitigation into National Development Planning of Ethiopia." *International Journal of Climate Change Strategies and Management* 13 (3): 339–351.

Hirschman, A.O. 1958. "The Strategy of Economic Development." *Yale Studies in Economics* 10: 217.

Jones, Lindsey, and Elizabeth Carabine. 2013. *Exploring Political and Socio-economic Drivers of Transformational Climate Policy: Early Insights from the Design of Ethiopia's Climate Resilient Green Economy Strategy*. London, UK: Overseas Development Institute.

Joosten, K., and S. Grey. 2017. "Integrating Climate-Change Adaptation and Mitigation into the Watershed Management Approach in Eastern Africa." Discussion Paper. Addis Ababa, Ethiopia: Food and Agriculture Organization of the United Nations.

Ministry of Environment and Forest. 2015. Ethiopia's Second National Communication to the United National Framework Convention on Climate Change. Addis Ababa, Ethiopia: Federal Democratic Republic of Ethiopia.

MOFED (Ministry of Finance and Economic Development). 2002. Sustainable Development and Poverty Reduction Program. Addis Ababa: Federal Democratic Republic of Ethiopia.

MOFED. 2006. Building on Progress: A Plan for Accelerated and Sustained Development to End Poverty. Addis Ababa: Federal Democratic Republic of Ethiopia.

MOFED. 2010. The Growth and Transformation Plan (GTP I) (2005/06-2009/10). Addis Ababa, Ethiopia: Federal Democratic Republic of Ethiopia.

Ministry of Water Resources. 2001. Initial National Communication of Ethiopia to the United Nations Framework Convention on Climate Change. Addis Ababa: Federal Democratic Republic of Ethiopia.

NCE (New Climate Economy). 2018. *Unlocking the Inclusive Growth Story of the 21st Century: Accelerating Climate Action in Urgent Times*. Washington, DC: World Resources Institute. https://newclimateeconomy.report/2018/wp-content/uploads/sites/6/2019/04/NCE_2018Report_Full_FINAL.pdf.

NPC (National Planning Commission). 2016. The Second Growth and Transformation Plan (GTPII) (2010/11–2014/15). Addis Ababa, Ethiopia: Federal Democratic Republic of Ethiopia.

Oates, N., D. Conway, and R. Calow. 2011. "The 'Mainstreaming' Approach to Climate-Change Adaptation: Insights from Ethiopia's Water Sector." Background Note. London, UK: Overseas Development Institute.

PDC (Planning and Development Commission). 2021. The 10 Years Development Plan (2020/21–2029/30). Addis Ababa, Ethiopia: Federal Democratic Republic of Ethiopia.

Redda, R., and R. Roland. 2016. *Becoming a Climate-Resilient Green Economy: Planning for Climate-Compatible Development in Ethiopia*. Addis Ababa, Ethiopia: CDKN (Climate and Development Knowledge Network) and CDIT (Centre for International Development and Training at the University of Wolverhampton, UK.

Reid, H., and S. Huq. 2014. "Mainstreaming Community-Based Adaptation into National and Local Planning." *Climate and Development*. 6 (4): 291–292.

Reinman, S.L. 2012. "Intergovernmental Panel on Climate Change (IPCC)." *Reference Reviews* 26 (2): 41–42.

Santos-Paulino, A.C., and C. Urrego-Sandoval. 2015. "Integrating Trade into National Development Strategies and Plans: The Experience of African LDCs Integrating Trade into National Development Strategies and Plans." In *Trade and Poverty Paper Series No. 3*. Geneva, Switzerland: United Nations Conference on Trade and Development.

Simane B., and N. Bird. 2017. "Enhancing Adaptation and Mitigation Activities through Effective Climate Change Financing Policy in Ethiopia." In *Climate Change Adaptation in Africa. Climate Change Management*, edited by W. Leal Filho, S. Belay, J. Kalangu, W. Menas, P. Munishi, and K. Musiyiwa. 435–445. eBook. Cham, Switzerland: Springer International Publishing AG.

Tadege, A. 2001. *Initial National Communication of Ethiopia to the United Nations Framework Convention on Climate Change*. Addis Ababa, Ethiopia: National Meteorological Services Agency.

Tessama, Z., M. Davis, P.V. Tella, and F. Lambe. 2013. *Mainstreaming Sustainable Energy Access into National Development Planning: The Case of Ethiopia*. Stockholm, Sweden: Stockholm Environment Institute.

Vincent, K. and W. Colenbrander. 2018. "Developing and Applying a Five-Step Process for Mainstreaming Climate Change into Local Development Plans: A Case Study from Zambia." *ClimateRrisk Management* 21: 26–38. doi: 10.1016/j.crm.2018.04.005.

Welteji, D. 2018. "A Critical Review of Rural Development Policy of Ethiopia: Access, Utilization and Coverage." *Agriculture & Food Security* 7 (1): 1–6.

ACKNOWLEDGMENTS

We are pleased to acknowledge our institutional strategic partners that provide core funding to WRI: the Netherlands Ministry of Foreign Affairs, Royal Danish Ministry of Foreign Affairs, and Swedish International Development Cooperation Agency. This working paper is part of the New Climate Economy Ethiopia project. This research effort was made possible with support from Norway's International Climate and Forest Initiative (NICFI).

We would like to thank the following expert peer reviewers for their critical insight, advice, and guidance: Juan Carlos Altamirano, Margaret Barihaihi, Francesca Battistelli, John Heermans, Ramya Ma, Katie McCoshan, George Mwaniki, Saul Pereyra, David Waskow, Muluneh Hedeto, and Arief Wijaya. We are immensely grateful to Billie Kanfer, Renee Pineda, Rebekah Shirley, Caroline Taylor, Laura Malaguzzi Valeri, and Romain Warnault for their research guidance and editorial support.

Errors, if any, are the responsibility of the authors alone.

ABOUT THE AUTHORS

Abiyot Dagne is a Research Associate (II) at the World Resources Institute Africa. He has led Tracking and Strengthening National Climate Actions (TASCA) Initiative Projects supporting the Development of Ethiopian Updated Nationally Determined Contribution and the 10YDP. In addition, he is Leading the Green Economy Modeling Work for the Ethiopian Long Term Low Emission Development Strategy under the New Climate Economy Ethiopia Project. Abiyot's area of expertise and research relates to green economy modeling using system thinking and system dynamics modeling approaches, economic and climate policy analysis, and planning.
Contact: abiyot.dagne@wri.org/abiyoda1@gmail.com

Cynthia Elliott is a Senior Climate Policy Associate for the Global Climate Program. She supports WRI's research and capacity building efforts to advance long-term climate change planning and enhance accountability and transparency of climate action.
Contact: cynthia.elliott@wri.org

Jan Corfee-Morlot is Senior Advisor to the New Climate Economy project. She was the technical lead of the NCE 2016 report—The Sustainable Infrastructure Imperative—and is playing a similar role for the forthcoming 2018 Report.

Dr. Solomon Tsehay is an Associate Professor at Addis Ababa University. He previously worked at WRI to support the NCE Ethiopia, Kenya, and Nigeria work. Solomon's areas of research and expertise relate to CGE modeling, macroeconomics, impact evaluation, and poverty analysis, among others.
Contact: tsehaysol2015@gmail.com

ABOUT WRI

World Resources Institute is a global research organization that turns big ideas into action at the nexus of environment, economic opportunity, and human well-being.

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.

CHANGE IT

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.

SCALE IT

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.