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EPCC
ETHIOPIAN PANEL ON CLIMATE CHANGE

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FIRST ASSESSMENT REPORT

VII

AN ASSESSMENT OF ETHIOPIA'S POLICY AND INSTITUTIONAL FRAMEWORKS FOR ADDRESSING CLIMATE CHANGE

ETHIOPIAN ACADEMY OF SCIENCES

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ETHIOPIAN ACADEMY OF SCIENCES

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Financed by the SCIP Fund: The SCIP Fund is supported by DFID UK, Aid, The Royal Norwegian Embassy and The Royal Danish Embassy

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Printed in Addis Ababa, Ethiopia
ISBN: 978 - 99944 - 918 - 3 -4

Citation- This document may be cited as follows:

Ethiopian panel on Climate Change (2015), *First Assessment Report, - An Assessment of Ethiopia's Policy and Institutional Frameworks for Addressing Climate Change,* Published by the Ethiopian Academy of Sciences

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The Ethiopian Academy of Sciences (EAS) was launched in April 2010 and recognized by an act of parliament (Proclamation No. 783/2013) as an independent institution mandated to provide, inter alia, evidence-based policy advice to the Government of Ethiopia and other stakeholders. Its major activities include undertaking consensus studies, conducting convening activities such as public lectures, conferences, workshops and symposia on issues of national priority; as well as promoting science, technology and innovation.

Acknowledgements

This book is part of the First Assessment Report of the Ethiopian Panel on Climate Change (EPCC). The EPCC, established under the auspices of the Ethiopian Academy of Sciences (EAS), primarily to, inter alia, produce periodic assessments of climate change issues in Ethiopia, is a sub-project of the "Environment Service and Climate Change Analyses Program (ESACCCAP)" project jointly run by the Ethiopian Academy of Sciences, the Climate Science Centre (CSC) and the Horn of Africa Regional Environment Centre and Network (HoA-REC&N) of Addis Ababa University. The Ethiopian Academy of Sciences gratefully acknowledges the Department for International Development (DFID) UK, the Danish Government and the Norwegian Government for their support to the Project through the Strategic Climate Institutions Programme (SCIP).

The book was produced through exemplary collaboration between lead authors, authors, reviewers and editors indicated on the publisher's page (copy-right page) of the book. EAS gratefully acknowledges them for their dedicated service. The First Assessment Report has also benefited from the validation workshop conducted on 20 and 21 November 2014. The Academy gratefully acknowledges the participants for their input.

Masresha Fetene (Prof.)
Executive Director, Ethiopian Academy of Sciences

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List of Acronyms

AAU	Assigned Amount of Unit
CBDR	Common but Differentiated Responsibilities
CDM	Clean Development Mechanism
CER	Certified Emission Reduction
COP	Conference of the Parties
CRGE	Climate Resilient Green Economy
CSE	Conservation Strategy of Ethiopia
ERU	Emissions Reduction Unit
FDRE	Federal Democratic Republic of Ethiopia
GDP	Gross Domestic Product
GHGs	Greenhouse Gases
GTP	Growth and Transformation Plan
INDCs	Intended Nationally Determined Contributions
IPCC	Intergovernmental Panel on Climate Change
MDGs	Millennium Development Goals
NAMA	Nationally Appropriate Mitigation Action
NAPA	National Adaptation Programme of Action
PSNP	Productive Safety Net Program
SBI	Subsidary Body for Implementation
SBSTA	Subsidiary Body for Scientific and Technological Advice
SLMP	Sustainable Land Management Program
UN	United Nations
UNFCCC	United Nations Framework Convention on Climate Change

Executive Summary

This assessment maps Ethiopia's historic and current policy and institutional responses to challenges of climate change. It provides an assessment of these responses for their effectiveness and fairness. The assessment is deliberately kept at a higher level and suggests areas where further analytical works could be carried out. Finally it outlines ideas that could be taken up by the state with a view to strengthening its responses to challenges of climate change.

Considering that national policy and institutional frameworks cannot be seen in isolation from an existing global regime, the assessment briefly outlines elements of the global framework governing climate change. The global climate regime is in flux. Since 2012, negotiation has been going on a new climate agreement, expected to be adopted in 2015 and be in force in 2020. One major decision so far is that passed by the Warsaw Conference of the Parties in 2013. This decision called for the parties to submit their Intended Nationally Determined Contributions (INDCs). The Lima climate conference at the end of 2014 adopted a decision on elements of the INDCs. It is not clear, however, how INDCs will fit into the new agreement.

In the negotiations towards the new agreement, there are several major issues that will need to be resolved. The legal form of the new agreement is not yet clear. The place of adaptation in the new agreement is also expected to be one of the thorny issues. Developing parties, feeling that adaptation has not been accorded the necessary focus and importance, argue that the new agreement must consist of strong provisions dealing with adaptation. Likewise, on means of implementation (finance, technology and capacity building), developing countries would like to see a future agreement which is balanced in its focus and argue that institutions such as the Green Climate Fund should be supplemented by substantive commitments on the part of developed countries to provide adequate means of implementation with targets and milestones. Another issue is on how the new agreement could operationalize the principle of Common but Differentiated Responsibility. Developed countries do not want to continue with the rigid classification of countries into Annex I, Annex II and Non-Annex I parties on the ground that this classification is based on a reality of 1992 which is now markedly different.

In international law, there is this phenomenon called jurisdictional fragmentation, where several alliances and coalitions are formed to deal with common problems. The same phenomenon is being observed in the area of climate change. UNFCCC is now not the only place where climate change is being addressed. There are several other places and coalitions which are being formed.

Ethiopia has adopted and established a number of policies, laws, programs and institutions which have bearings on climate change mitigation and adaptation. Some of these may not necessarily be established with explicit focus on climate change and its impacts. In 2011, the federal government of Ethiopia adopted what it called the Climate Resilient Green Economy (CRGE) vision. This vision consists of building a climate resilient middle income green economy by 2025. This is not meant to distract the country from its middle income vision. On the contrary, it is made clear in several places in the green economy strategy document that the green economy vision improves the opportunities of achieving the middle income target.

Ethiopia is one of these few countries in the least developed world, or even in the world generally, which has adopted a comprehensive climate policy. It must be noted that the comprehensiveness is only limited at general policy objectives level. In addition, sequential development of green economy strategy and climate resilience strategies limited synergies and informed decisions on trade-offs. One remark, by way of assessment, that is emerging in the limited literature on Ethiopia's policy response to challenges of climate change is the fact that winners and losers of such a transition to a green economy are not identified and addressed.

Having a policy framework is important, but it is also equally important to have a framework for monitoring the implementation of policies. The institutional framework for the development and implementation of the climate resilience and green economy strategies could be reformed in a way that also mitigates the capacity and knowledge problems identified. The technical committee and the sub-technical committees established during the development of the green economy strategy could be expanded in terms of members and serve as an advisory council for the further development and implementation of climate policies. This could also serve as a platform for learning and the state

could tap into dispersed expertise within the country by allowing non-civil servants being a member of this council.

Instruments by which policy objectives are realized is as important as the policies themselves. In Ethiopia, it can safely be argued that public expenditure is the predominant instrument. This might be explained by the particular dominant political economy narrative. This is, however, without losing sight of other instruments which are currently being used. The use of other policy instruments is very limited.

It is important to experiment on the use of other instruments. The need for experimenting and using additional policy instruments is supported by the fact that public expenditure is not necessarily an appropriate tool for every situation. In addition, the use of other tools could support the policies of the government to control inflation. Not least, the sustainability of some instruments such as tree planting campaigns can be questioned.

Literature and studies on Ethiopia's policy and institutional response to challenges of climate change is limited. In relation to policy instruments, the original purpose of this assessment was to attempt to extract the use of different policy instruments in similar settings. However, that original purpose could not be achieved, owing to serious dearth of published materials on the experience of countries from which we can draw lessons. This is an important gap. Policy researchers could embark on comparative studies along these lines. Deliberate diversification and experimentation of policy instruments is possible only when information about alternatives is available in a way that is easily understandable by decision makers. A key task for policy researchers and think tanks is to embark on studies along these lines and package the results in a way that enhances the usability of the information. Choices are systematically made on the basis of a set of criteria and assessment of the various alternative policy instruments. Often the assessment is ex ante. Even for this ex ante assessment too different researchers such as lawyers, economists, and sociologists could provide important inputs. In addition to the ex ante assessment, policy implementation and outcomes ought to be investigated and serve as an input to policy review. Policy researchers are expected to generate adequate and sound analysis on the outcomes of policy implementation.

1. Introduction

The term 'policy' often refers to general objectives which a state/government strives to achieve using a range of instruments or tools (Lasswell and Kaplan 1970; Friedrick 1963). As such, it is different from laws, regulations, strategies, plans, projects and programs which are meant to translate the general objectives into concrete results. However, for the purpose of this assessment, the term is employed loosely to refer to all conscious responses by the state (including laws, strategies, plans, projects and programs) to challenges of climate change; conscious in the sense that the response is deliberate and contributes to the adaptation and mitigation of climate change. Consciousness does not necessarily mean that the climate change properly understood forms parts of the objectives of a particular state response. It does not also necessarily mean that a particular state response is expressly targeted at addressing climate change. A loose definition of policy is employed here in order to have a comprehensive view of state responses to challenges of climate change. In addition, in reality, the term 'policy' is loosely and broadly used.

This assessment also focuses on institutions. Strictly employed, the term 'institution' refers to rules, norms, facilitating and regulating behavior of individuals and groups (North 1990). It also includes the processes by and organizations which formulate and enforce such rules and norms. Institutions, as such used, is general enough to include policies as loosely defined above, and but narrow enough to exclude organizations and processes. In order to avoid redundancy, for the purpose of this paper, institutions refer to processes and organizations which formulate and enforce policies as loosely and generally defined.

This assessment maps Ethiopia's historic and current policy and institutional responses to challenges of climate change. It provides an assessment of these responses for their effectiveness and fairness. The assessment is not, however, based on independent assessment initiatives. It does not also pretend to be empirical and complete. The assessment is deliberately kept at a higher level and suggests areas where further analytical works could be carried out. Finally it outlines ideas that could be taken up by the state with a view to strengthening its responses to challenges of climate change.

2. The global framework for addressing climate change

2.1. Global climate framework or frameworks?

Considering that national policy and institutional frameworks cannot be seen in isolation from an existing global regime, this section briefly outlines elements of the global framework governing climate change. The global climate regime is in flux. This section provides an indication, from the authors' analysis, of what shape this evolving global regime is likely to assume post-2020.

The first major response at the international level is the establishment of the Intergovernmental Panel on Climate Change (IPCC) in 1988 as a scientific body under the auspices of the United Nations. It reviews and assesses the most recent scientific, technical and socio-economic information produced worldwide relevant to the understanding of climate change. Each of the assessment reports of the IPCCC resulted in renewed calls for cooperative international actions. Following the first report, the United Nations General Assembly established a committee with the mandate to produce a negotiating text for a convention on climate change in 1990. The result of the committee's work, the UNFCCC, was opened for signature at the United Nations Conference on Environment and Development in Rio de Janeiro in 1992 (Barratt-Brown et al 1993, discussing the negotiating history of the convention). As a framework convention, the UNFCCC provides for few directly and immediately enforceable commitments. Rather it provides the objectives, principles and processes of international climate cooperation, through which parties work to enrich, refine and strengthen the international climate regime. The following paragraphs provide a general introduction to the international legal regime for climate change. The UNFCCC is still the main legal instrument governing international cooperation and regulation to overcome climate change. There is also a fragmentation of international climate regime, with parallel international cooperation and regulation framework emerging. Even if there are many international climate frameworks, UNFCCC can be regarded as the broadest, involving greater number of parties, and single-minded, others having other non-climate objectives. Hence, the section focuses on the UNFCCC.

2.2. The UNFCCC

2.2.1. Objective of UNFCCC

One important provision of the convention relates to its purpose. The objective of the UNFCCC is to 'stabilization of atmospheric concentrations of greenhouse gases at a level that would prevent dangerous anthropogenic interference in the climate system. Such a level should be achieved within a time frame sufficient to allow ecosystems to adapt naturally to climate change, to ensure that food production is not threatened and to enable economic development to proceed in a sustainable manner' (UNFCCC 1992, Art.2). That means, the objective of the international collaboration on climate change is prevention of dangerous climate change. This is through the stabilization of atmospheric concentration of greenhouse gases (GHGs).

At what level and during what time frame the concentration of GHGs should be stabilized is not precisely provided. The UNFCCC only prescribes that it should be stabilized during a time frame and at a level that would help prevent dangerous climate change. It is not also clear what dangerous climate change means. What the convention provides is that climate change is dangerous if the rate of climate change does not give ecosystems time to adopt naturally, threatens food production and does not enable economic development to proceed in a sustainable manner.

It is now generally accepted that atmospheric concentrations of GHGs must be stabilized at 450 parts per million (ppm) to give humanity a flip-of-the coin chance of containing temperature increase below 2oC above pre-industrial level. To put this in perspective, it is worth noting that the current concentration is 400 ppm; the pre-industrial level was 280ppm.

2.2.2. Principles of the convention

UNFCCC also consists of principles that are meant to govern and guide the international actions on climate change.

- The first of such principles, known as the principle of common but differentiated responsibilities (CBDR), reads: "The parties should protect the climate system for the benefit of present and future

generations of humankind, on the basis of equity and in accordance with their common but differentiated responsibilities and respective capabilities. Accordingly, the developed country Parties should take the lead in combating climate change and the adverse effects thereof" (UNFCCC 1992, Art. 3(1)). This principle is incorporated expressly or impliedly in several international law instruments (Matsui 2004). Cullet (1999) traced its origin to international trade agreements. In the area of environmental regulation, the Montreal Protocol on Substances that Deplete the Ozone Layer to the Vienna Convention for the Protection of the Ozone Layer contains some differential treatments of developing countries without expressly providing for CBDR (see, for example, Freestone 1994). It is, however, the Rio Declaration that has for the first time expressly recognized this principle (Rajamani 2002). The premises for this principle have already been laid down in the preamble wherein the parties recognized that climate change and its adverse effects as common concerns of human kind and yet that the largest share of the historical and current global emissions of greenhouse gases has originated in developed countries (UNFCCC 1992, Peamble and Bodansky 1993). It is, therefore, a logical outcome of these acknowledgements and as well as a matter 'grounded in shared notions of fairness' that developed countries should assume the leading responsibility (Harris 1999; Rajamani 2002). This view of CBDR is more explicitly provided in Principle 7 of the Rio Declaration on Environment and Development (UN 1992). This is further bolstered by the level of technological and financial resources they command; in fact this is the only reason, according to some developed parties (in particular the United States), that they agreed to take the lead (Bodansky 1993; Matsui 2004). CBDR is also used to induce the participation of countries in international regulatory regimes (Rajamani 2002). As opposed to domestic legal systems, there is not authoritative lawmaking organ in international forum; laws are rather made by the agreement of the parties. Hence, international agreements "provide more fertile ground for differentiations because no nation can be compelled to join…dangling 'softer' commitments before marginally motivated Parties is one way to broaden participation" (Stone 2004, 281). CBDR generally or as it is embodied in international environmental law instruments such as the Kyoto Protocol has been criticized as inefficient and ineffective (see, for example, Stone 2004; Weisslitz 2002). It should be noted that the principle is not legally binding. In addition, the principle does not require any specific measure; it

does not specify how the responsibilities could be differentiated. It is an open-ended statement making it only a principle of aspiration that has to be transformed into specific formats to be legally binding (Rajamani 2002). The principle was also reaffirmed in the RIO+20 declarations titled The Future We Want (UN 2012) and will continue to hold sway as it reflects the universal consensus not to reopen negotiations on norms (Bernstein 2012).

- Second, parties should give full consideration to "the specific needs and special circumstances of developing country Parties, especially those that are particularly vulnerable to the adverse effects of climate change, and of those Parties, especially developing country Parties, that would have to bear a disproportionate or abnormal burden under the Convention" (UNFCCC, Art.3(2)). This is an important principle for two reasons. First, the distribution of the adverse effects of climate change is asymmetrical in the sense that some Parties may be affected substantially more than others. The moral implication is significant when these countries are also developing countries with reduced capacity to deal with the problem. Second, the commitments under the convention and obligations and decisions developed within the frameworks of the convention might impose disproportionate burdens on developing countries. The same commitment or obligation could impose different burdens on two different countries. This principle does not mandate any specific measure; it only requires parties to take these into account.

- Third, parties "should take precautionary measures to anticipate, prevent or minimize the causes of climate change and mitigate its adverse effects. Where there are threats of serious or irreversible damage, lack of full scientific certainty should not be used as a reason for postponing such measures, taking into account that policies and measures to deal with climate change should be cost-effective so as to ensure global benefits at the lowest possible cost" (UNFCCC, Art.3(3)).

- Fourth, parties "have a right to, and should, promote sustainable development. Policies and measures to protect the climate system against human-induced change should be appropriate for the specific conditions of each Party and should be integrated with national development programmes, taking into account that economic development is essential for adopting measures to address climate change" (UNFCCC, Art.3(4)).

- Fifth, parties "should cooperate to promote a supporting and open international economic system that would lead to sustainable economic growth and development in all parties, particularly developing country parties, thus enabling them better to address the problems of climate change. Measures taken to combat climate change, including unilateral ones, should not constitute a means of arbitrary or unjustifiable discrimination or a disguised restriction on international trade" (UNFCCC, Art.3(5)).

2.2.3. General commitments

UNFCCC provides for two kinds of commitments: general and specific. The general commitments apply to all parties, while the specific commitments apply to Annex I and Annex II parties. Article 4(1) lists these general commitments, some of which are discussed here.

- First, all state parties are required to "develop, periodically update, publish and make available to the Conference of the Parties…national inventories of anthropogenic emissions by sources and removals by sinks of all greenhouse gases…using comparable methodologies to be agreed" (UNFCCC, Art.4(1)(a)).
- Second, all state parties are required to "formulate, implement, publish and regularly update national and, where appropriate, regional programmes containing measures to mitigate climate change by addressing anthropogenic emissions by sources and removals by sinks of all greenhouse gases…and measures to facilitate adequate adaptation to climate change" (Ibid, Art.4(1)(b)).
- Third, all state parties are required to "promote and cooperate in the development, application and diffusion, including transfer, of technologies, practices and processes that control, reduce or prevent anthropogenic emissions of greenhouse gases….in all relevant sectors, including the energy, transport, industry, agriculture, forestry and waste management sectors" (Ibid, Art.4(1)(c)).
- Fourth, all state parties are required to "promote sustainable management, and promote and cooperate in the conservation and enhancement, as appropriate, of sinks and reservoirs of all greenhouse gases…including biomass, forests and oceans as well as other terrestrial, coastal and marine ecosystems" (Ibid, Art.4(1)(d)).
- Fifth, all state parties have to "cooperate in preparing for adaptation

to the impacts of climate change; develop and elaborate appropriate and integrated plans for coastal zone management, water resources and agriculture, and for the protection and rehabilitation of areas, particularly in Africa, affected by drought and desertification, as well as floods" (Ibid Art.4(1)(e)).

- Sixth, all state parties are required to incorporate, as far as feasible, climate change considerations into various relevant policies and actions; in addition, mitigation and adaptation projects and measures should be evaluated, with a view to minimizing adverse economic, public health and environmental effects, by employing nationally formulated and determined methods such as impact assessments (Ibid, Art.4(1)(f)).

It should be noted that though these general commitments apply to all parties to UNFCCC, the scope of their commitment takes into consideration "their common but differentiated responsibilities and their specific national and regional development priorities" (Ibid, Art.4(1)). In relation to developing countries, it is specifically stated that "the extent to which developing country Parties will effectively implement their commitments under the Convention will depend on the effective implementation by developed country Parties of their commitments under the Convention related to financial resources and transfer of technology and will take fully into account that economic and social development and poverty eradication are the first and overriding priorities of the developing country Parties" (Ibid, Art.4(7)).

2.2.4. Specific commitments for Annex I and Annex II parties

There are two principal commitments for Annex I countries in the UNFCCC. First, Article 4(2) (a) calls on Annex I countries to "adopt…policies and take corresponding measures on the mitigation of climate change, by limiting its anthropogenic emissions of greenhouse gases and protecting and enhancing its greenhouse gas sinks and reservoirs". The policies thus adopted and measures taken "will demonstrate that developed countries are taking the lead in modifying longer-term trends in anthropogenic emissions consistent… recognizing that the return by the end of the decade to earlier levels of anthropogenic emissions…would contribute to such modification" (UNFCCC, Art. 4(2)(a)). The terms 'return' and 'earlier' are said to be intentionally ambiguous compromise terms inserted to weaken the legal force of the convention with the view to soliciting the United States sign up to it

(Bodansky 1993; Barratt-Brown et al 1993). Second, Article 4(2) (b) requires these countries to "communicate…detailed information on its policies and measures…as well as on its resulting projected anthropogenic emissions by sources and removals by sinks of greenhouse gases…with the aim of returning individually or jointly to their 1990 levels of these anthropogenic emissions".

Annex II parties have also assumed specific financial commitments. In this regard, Article 4(3) stipulates that these parties "shall provide new and additional financial resources to meet the agreed full costs incurred by developing country Parties" in discharging their reporting obligations under the UNFCCC. Annex II parties are also called on to "provide such financial resources, including for the transfer of technology, needed by the developing country Parties to meet the agreed full incremental costs of implementing [mitigation and adaptation] measures…that are agreed between a developing country Party and the international entity or entities [entrusted with the implementation of the financial mechanism established by UNFCCC]". Article 4(3) also provides that the implementation of these finance-related commitments should take into consideration "the need for adequacy and predictability in the flow of funds and the importance of appropriate burden sharing among the developed country Parties".

UNFCCC also calls upon Annex II countries to "assist the developing country Parties that are particularly vulnerable to the adverse effects of climate change in meeting costs of adaptation to those adverse effects" (UNFCCC, Art.4(4)). These countries have also committed themselves to "take all practicable steps to promote, facilitate and finance, as appropriate, the transfer of, or access to, environmentally sound technologies and know-how to other Parties, particularly developing country Parties, to enable them to implement the provisions of the Convention" (UNFCCC, Art.4(4)).

2.2.5. Institutional framework

The UNFCCC also provides institutional framework for the further strengthening of the international collaborative and regulatory framework on climate change. These include

- The Conference of the Parties (COP): The supreme body of the Convention (UNFCCC, Art.7). Parties to the convention meet once a year to review the Convention's Progress and adopt decisions for

the further refining of the international policy response to climate change. The 1st COP took place in 1995 in Berlin. In 2014, the 20th COP took place in Lima, Peru. The 21st COP is scheduled to take place in Paris, France at the end of 2015.

- The Subsidiary Body for Implementation (SBI): It is a subsidiary body under the Convention established to assist the Conference of the Parties in the assessment and review of the effective implementation of the Convention (UNFCCC, Art.10)..
- The Subsidiary Body for Technological and Scientific Advice (SBSTA): It is another subsidiary body under the Convention established to provide the COP and other subsidiary bodies with timely information and advice on scientific and technological matters relating to the Convention (UNFCCC, Art.9).
- Secretariat: The secretariat is mandated inter alia to make arrangements for sessions of the Conference of the Parties and its subsidiary bodies, to compile and transmit reports from Parties and facilitate assistance to developing countries. The secretariat is located in Bonn, Germany (UNFCCC, Art.8).

Through time, other technical bodies were also established under the Convention. These include: Adaptation Committee; Standing Committee on Finance; Green Climate Fund; Warsaw International Mechanism for Loss and Damage; Technology Executive Committee; and Climate Change Technology Centre and Network.

2.3. The Kyoto Protocol

Immediately after the adoption of UNFCCC, it was clear that the convention need to be supplemented with protocol to strengthen and supplement the convention. Although, in the UNFCCC, Annex I parties agreed to limit anthropogenic emissions of GHGs to 1990 levels, this undertaking is not legally binding. In addition, some of these countries were in fact increasing their emissions further indicating the need to have strong and binding reduction commitments (Nordhaus and Boyer 1998). In addition, the stabilization commitment in the convention did not go beyond 2000. The good thing is that the UNFCCC embodies provisions to bolster the commitments which it provides for. In particular, Article 4(2)(d) states that the task of the first COP would be reviewing the adequacy of the stabilization commitments, assumed

by Annex I parties.

The first COP which met in 1995 in Berlin passed what is called the Berlin Mandate, which specified that, by 1997, the parties to the convention would draft a protocol that included additional commitments for industrialized countries for the post-2020 period but imposed no new commitments on developed countries (UNFCCC 1995). The Berlin Mandate reflected widespread support for supplementing the UNFCCC with a more detailed, binding framework for achieving requisite levels of GHGs. The group which was tasked with the preparation of a new legal instrument produced a draft text that served as the basis for negotiations among high-level officials at COP-3 in Kyoto, Japan. COP-3, after 11 days of intense negotiations, adopted the Kyoto Protocol (see Breidenich et al 1998 for discussion of the most significant features and the background to the negotiation of the protocol).

Kyoto Protocol provided quantified economy-wide emissions reductions and limitation commitments on Annex I parties with a view to reducing human-induced greenhouse gas emissions to an average of 5.2% below 1900 emissions levels by 2012.

In addition to individual economy-wide quantified emission reduction and limitation targets for Annex II parties, the protocol established three flexibility mechanisms. The purpose of these flexibility mechanisms is to enable Annex II parties achieve their targets with least cost. From climate perspective, the place where emission reductions are carried out is not important. However, reducing emissions has different costs in different places. So the idea of the flexibility mechanisms is to enable Annex II parties achieve their targets by allowing them reduce emissions in places outside their national boundaries (Kram and Hill 1996; Brander 2003). The flexibility mechanisms are: emissions trading, joint implementation and clean development mechanism. A proper use of flexibility mechanisms that effectively take advantage of differences in marginal costs of emissions reductions is believed to reduce overall emission reduction costs by about 80% (Richels et al 1996).

Emissions trading: This is a trade among Annex II parties (UN 1998, Art.17). These parties are given what are called Assigned Amount Units (AAU). AAUs are units of emissions that a country is allowed to emit within the first commitment period of the protocol, 2007-2012. At the end of the period,

each Annex II party is required to surrender AAUs which are equal to what they have actually emitted during that period. If a party has emitted less than they are allowed to emit, it means it has surplus AAUs. If a party has emitted more than they are allowed to emit, it will face shortage of AAUs. Emission trading is a transaction between a party which has surplus AAUs on the one hand and another party which has a shortage of AAUs.

Joint implementation: If a given party found it expensive to reduce its emissions domestically, it will finance an emission reduction project in another Annex II country. The project will be awarded Emission Reduction Units (ERU) equivalent to the level of emissions reduced by the project. It will then be able to use the ERUs to fulfill its emission reduction and limitation commitments (UN 1998, Art.6). Joint implementation offers Parties a flexible and cost-efficient means of fulfilling a part of their Kyoto commitments, while the host Party benefits from foreign investment and technology transfer.

Clean Development Mechanism (CDM): If a given party found it expensive to reduce its emissions domestically, it will finance an emission reduction project in a Non-Annex I country. The project will be awarded Certified Emission reductions (CER) equivalent to the level of emissions reduced by the project. It will then be able to use the CERs to fulfill its emission reduction and limitation commitments (UN 1998, Art.12). Developing countries also expect to benefit from the CDM in terms of job creation, afforestation, and improved access to energy, health, foreign exchange and transfer of technology.

Adaptation Fund is a financing mechanism established under the protocol in order to finance concrete adaptation projects and programs in the most vulnerable developing countries. And the protocol regulates the emissions of six greenhouse gases.

2.4. Evaluating the protocol

Kyoto is so far the only international agreement that embodies legally binding and quantified emission reduction targets and commitments on the part of developed parties. To this extent, therefore, it may be regarded as a landmark climate change instrument. Its effectiveness is, however, limited by several factors.

- Second, the overall emission reduction targets agreed is not sufficient to make a meaningful contribution to the mitigation of climate change. Nordhaus and Boyer (1998, 22) remarked in this connection that "[t]he approach of freezing emissions at a given level for a group of countries is not related to a particular goal for concentrations, temperature, or damages".
- Third, leading developing countries like China and India do not have emission reduction and limitation commitments under the Protocol. Not only these countries have been increasing their emissions, but they also provide an excuse for United States and Australia not to sign up to any reduction targets restricted to Annex I countries on the ground that carbon intensive companies will be forced to move to countries which do not have binding reduction commitments.
- Fourth, there are also criticisms that the achievement of the Kyoto targets by some developed countries will not show real sacrifice on their part. There are accusations that the selection of 1990 level as a baseline, the acceptance of a burden sharing arrangement among members of the European Union, and the Russian 'hot air' are structural elements of the Protocol that should favour members of the European Union; that any emissions reductions on the part of these countries would not qualify as 'additional' (Boehmer-Christainsen and Kellow 2002). In addition, Canada, for example, is expected to be in breach of its commitment to reduce greenhouse gas emissions (Bohringer and Rutherford 2010)
- Finally, there are a number of criticisms associated with the flexibility mechanisms of the Protocol, in particular the CDM. A damning criticism is that many of the registered projects are not additional in the sense that they might have happened even without the mechanism (Castro and Michaelowa 2008; Michaelowa and Purohit 2007; Schneider 2007; and Schneider 2009). For example, after analysing 93 registered projects, Schneider (2009) came to the conclusion that in a significant number of cases the additionality of emission reductions is questionable. One purpose of the CDM is to enable host countries to achieve sustainable development. Whether a given project is desirable from this perspective is a matter to be decided by the host state. However, there are studies, which questioned the effectiveness of current projects in this regard as well (Olsen 2007; Gupta et al 2008; Castro and Michaelowa 2010; Vasa and Neuhoff 2011; and Sutter and Parreno 2007).

2.5. The Montreal and Bali Mandates

At the Montreal Conference of the Parties in 2005, a working group was established to negotiate additional emission reduction targets for Annex II parties under the Kyoto Protocol (UNFCCC 2005). It must be noted that the Kyoto Protocol works in the form of commitment periods. The first commitment period ran between 2007 and 2012. The purpose of this working group was therefore to negotiate commitments for the subsequent commitment periods. But it was already clear that subsequent commitment periods would not be adequate to deal with the problem of climate change as the United States refuse to ratify the Kyoto Protocol and several big emitters, among developing countries, do not have reduction commitments. Because of this, in the Bali Conference of the Parties in 2007, another working group was launched to negotiate an agreed outcome with legal force that will cover all countries (UNFCCC 2007). It is in light of this background that the parties met in 2009 in the Copenhagen climate conference. There was huge expectation that parties would adopt on a new agreement on climate change. But that did not happen.

Instead the Copenhagen climate conference introduced what is called pledge-and-review or bottom-up model. The conference called on all countries to report on what mitigation actions they will be taking to reduce emissions by 2020 and this will be followed by a review of performance.

It was agreed that the parties would consider the establishment of the Green Climate Fund. Developed countries agreed to provide a total of 30 billion USD to developing countries between 2010 and 2012 and agreed to mobilize a total of 100 billion USD by 2020.

The Copenhagen conference also adopted a temperature goal. From the UNFCCC, it is clear that the ultimate objective is to prevent dangerous climate change. But dangerous climate change was not clear. In Copenhagen, the parties agreed to limit the rise in temperature increase to below 2oC above the pre-industrial level by the end of the century. The idea is that if the temperature rises by more than 2oC above pre-industrial level, it would be considered dangerous in the sense that it will not enable ecosystems to adapt naturally, food production will be threatened and economic development

will be adversely affected.

Negotiations under the two working group continued for two years and the second commitment period of the Kyoto Protocol was finally agreed in 2011 in the Durban Climate Conference (UNFCCC 2011). However, by this time, the Kyoto protocol was weakened further by the withdrawal of Japan, Canada and Russia. The two working groups finalized their work in the Doha climate conference in 2012.

2.6. The Durban mandate

2.6.1. The mandate for new climate agreement

One major outcome of the Durban climate conference in 2011 is the decision to establish yet another working group to negotiate a new agreement by 2015. This working group is known as the Ad Hoc Working Group on the Durban Platform for Enhanced Action. The form and nature of this new agreement is not clear. The decision talks of three alternative forms: 'protocol, another legal instrument or agreed outcome with legal force. The decision also says that the new agreement will come into force by 2020 (UNFCCC 2011).

2.6.2. Current state of negotiations on the new climate agreement

Since 2012, negotiation has been going on the new climate agreement. Parties have been negotiating on mitigation, adaptation, means of implementation (technology, finance and capacity building), and transparency.

One major decision is that passed by the Warsaw Conference of the Parties in 2013. This decision called for the parties to submit their Intended Nationally Determined Contributions (INDCs) (UNFCCC 2013). The Lima climate conference at the end of 2014 adopted a decision on elements of the INDCs (UNFCCC 2014). It is not clear how INDCs will fit into the new agreement expected to be adopted in the Paris climate conference in 2015.

2.6.3. Major issues

In the negotiations towards the new agreement, there are several major issues that will need to be resolved. The legal form of the new agreement is not yet clear. The Durban decision talks of three alternatives: 'protocol, or another legal instrument or agreed outcome with legal force'. It is not clear when the decision says 'another legal instrument or agreed outcome with legal force. The form of the new agreement is therefore going to be one of the major issues in the run up to the Paris climate conference.

The place of adaptation in the new agreement is also expected to be one of the thorny issues. The Kyoto Protocol is mainly a mitigation legal instrument. Developing parties, feeling that adaptation has not been accorded the necessary focus and importance, argue that the new agreement must consist of strong provisions dealing with adaptation. The African Group calls, for example, for what it calls an adaptation goal. On the other hand, developed countries feel that there are enough institutional frameworks for adaptation and hence there is no need for additional provisions of adaptation.

Likewise, on means of implementation (finance, technology and capacity building), developed countries point to several institutions, established in the negotiation up to 2012, dealing with means of implementation. Such institutions include the Green Climate Fund, the Standing Committee on Finance, the Cancun Technology Mechanism and so on. Developed countries thus argue that these institutions are adequate. On the other hand, developing countries would like to see a future agreement which is balanced in its focus and argue that these institutions should be supplemented by substantive commitments on the part of developed countries to provide adequate means of implementation with targets and milestones.

Another issue is on how the new agreement could operationalize the principle of CBDR. Developed countries do not want to continue with the rigid classification of countries into Annex I, Annex II and Non-Annex I parties on the ground that this classification is based on a reality of 1992 which is now markedly different.

The role of markets (like the flexibility mechanisms of the Kyoto Protocol) in meeting commitments of countries to reduce emissions is also going to be another issue.

There are two general models of cooperation on climate actions. These are known as top-down and bottom-up. In top-down approach, commitments are imposed on countries from the top and their performance is reviewed internationally. In the bottom-up approach, individuals are required to report what actions they take and these will be reviewed internationally. It is highly likely that the new agreement would be a hybrid. However, the exact details of this hybrid form of collaboration and regulation will be fleshed out in the negotiations. How the INDCs process fits into the new agreement will also need to be agreed.

2.7. Fragmentation of international climate law and the Paris climate agreement

In international law, there is this phenomenon called jurisdictional fragmentation, where several alliances and coalitions are formed on voluntary basis to deal with common problems (Koskenniemi and Leino 2002). So a global challenge is not discussed and acted upon in one exclusive place; it is often discussed in several platforms.

The same phenomenon is being observed in the area of climate change (Van Asselt et al 2008). UNFCCC is now not the only place where climate change is being addressed. There are several other places and coalitions which are being formed. International institutions outside of the UNFCCC include other multilateral institutions, such as the regimes established by several multilateral environmental agreements (e.g., the Convention on Biological Diversity and the Montreal Protocol), human rights instruments and mechanisms, the world trading system, as well as "minilateral" institutions, initiatives by small group of countries to tackle specific aspects of climate change (e.g., the Major Economies Forum, the Climate and Clean Air Coalition, and the REDD+ Partnerhsip) (see Weischer 2012, Kllovesi 2012 for further readings).

There are those who feel that this is undesirable on the ground that these platforms and processes would not be governed by the principles

of the UNFCCC. On the other hand, others believe that climate change is such a complex problem that solutions should be sought, developed and implemented everywhere and anywhere.

3. Policy responses to climate change in the pre-CRGE Period

3.1. Conservation strategy

The different regimes of the Ethiopia have designed and implemented environmental and natural resources protection policies. Furthermore, Ethiopia has actively participated in different international response of environmental and natural resources protection conference. Among which are the 1972 United Nations Conference on the Human Environment (UNCHE) also known as the Stockholm Conference and the 1992 United Nations Conference on Environment and Development. These global initiatives have influenced national policies and increased public awareness with regards to sustainable development in the country.

The 1992 Rio Conference on Environment and Development led to the design of the National Conservation Strategy also referred to as the Conservation Strategy of Ethiopia (CSE) in 1993. The CSE is among the initial and broad environment policies. The CSE has five volumes, including evaluation of the state of the natural resources and environment, policy and strategy framework to ensure sustainable use and management of natural resources, institutional frameworks for implementation, prioritized actions to promote sustainable development and the last section of the strategy provides a listing of projects being implemented and proposed projects with estimated costs. CSE is the basis for the designing different natural resource and environment policies and strategies including climate change.

3.2. The Constitution

The 1995 Constitution of the Federal Democratic Republic of Ethiopia, the supreme law of the country, provides for environmental rights and a policy of promoting sustainable development. Article 43, on the right to development, states “All international agreements and relations concluded, established or conducted by the State shall protect and ensure Ethiopia’s right to sustainable development”. Environmental right are stipulated under Article 44 (1), it states “all persons have the right to clean and healthy environment.

Chapter ten of the Constitution provides National Policy Principles

and objectives which includes political, economic, social, cultural and environmental objectives (Arts 89-92). These provisions deal with national policy principles and objectives which either establish important guarantees or have relevance to the interpretation of the environmental rights (Art 92) as well as that of the fundamental rights (Abebe 2011). The Environmental Objectives under Art 92 reinforces the right to a clean and healthy environment under Article 44(1) and also brings the government and citizens together as having the duty to protect the environment (Arts 92(4) cum 91(2)). While the right of all persons to a clean and healthy environment under Article 4(1) implies obligation on the State to protect the environment, the Ethiopian Constitution expressly requires the government to "ensure that all Ethiopians live in a clean and healthy environment under Article 92(1). Article 92(4) reiterates obligation of the government to protect the environment and extend obligations to citizens. Article 90 deliberating on Social Objectives also deals with environmental issues indicating that to the extent the country's resources permit, policies, shall, aim to provide all Ethiopians access to health and education, clean water, housing, food and social security. Furthermore, Art 85 of the Constitution clearly indicates that the objectives are obligations to be observed by deferral and state governments when implementing the Constitution, other laws and policies. The government has taken several legislative measures, which include laws relating to the establishment of institutions concerned with protection of the environment, pollution control, and environmental impact assessments.

Furthermore, the Constitution mandates the House of Peoples' Representatives and the Council of Ministers to formulate policies and strategies to ensure the implementation of the above mentioned rights. The House of Peoples' Representative, the legislative body of the government, has the power of legislation in all matters to the Federal jurisdiction including utilization of land and other natural resources as stated in Article 55. Article 77, states the Council of Ministers, the executive organ of the government is responsible for the formulation and implementation of economic, social and development policies and strategies. Therefore, these bodies have formulated different legislation and policies on use and management of natural resources and environmental protection.

3.3. Ratifying the UNFCCC and its Protocol

It can be said that the first and earliest response of Ethiopia to climate change is its decision to sign and ratify the convention on climate change. The government of Ethiopia signed the UNFCCC during the 1992 United Nations Conference on Environment and Development Conference. The Convention was ratified on 31th May 1994 by Proclamation No. 97/1994. Ethiopia is also Party to Kyoto Protocol to the UNFCCC, the government of Ethiopia ratified the Kyoto Protocol on 21th February 2005, Proclamation No. 439/2005. Through ratification both international agreement are integral part of the law of the country as provided in Article 9 of the 1995 Constitution of Ethiopia. Furthermore, Ethiopia has signed a number of international and regional environmental agreements including the two other Rio Conventions on biodiversity and desertification, which have several elements, related to climate change.

3.4. The First National Communication

According to Article 4 and 12 of the UNFCCC, all Parties have responsibilities to develop, periodically update, publish and make available national inventories of anthropogenic emissions by sources and removals by sinks of all greenhouse gases. Ethiopia as Party to the UNFCCC submitted the First National Communication to the UNFCCC Secretariat in 2001 (FDRE 2001). Ethiopia undertook an inventory of national greenhouse gas emissions and sinks in 1994, which was the basis for the Initial National Communication that was submitted to the UNFCCC Secretariat in 2001. According to the Initial National Communication of Ethiopia, total greenhouse gas (GHG) emission from Ethiopia was 48 million tCO2e in 1994. This was just 0.9tCO2e per capita. The major greenhouse emission sectors are Agriculture and Energy. The agriculture sector contributes 80% of the total greenhouse gas emission from Ethiopia. The main greenhouse gas from the agriculture sector is methane emitted from enteric fermentation of cattle. Ethiopia's contribution to global GHG is thus negligible.

3.5. The 2007 NAPA

At its seventh sessions, the Conference of the Parties to the UNFCCC decided that Least Developed Countries be given support to identify their most urgent and immediate adaptation needs. Accordingly, Ethiopia has prepared and submitted its National Adaptation Programme of Action (NAPA) in June 2007 (FDRE 2007). The NAMA was prepared under the leadership of the National Meteorological Agency which was then the focal point for the UNFCCC. In the preparatory process, about 37 adaptation options were identified which were then subjected to prioritization exercise resulting in 11 projects. A Multi-Criteria Analysis was carried out in order to come up with the short-list. About five criteria have been used in prioritizing the first set of adaptation options. These include: impact on economic growth of the poor (poverty reduction potential) (0.20); complementarities with national and sectoral plans (0.15); climate change risk (losses avoided by poor people) (0.30); synergy with actions plans under multilateral environmental agreements (0.15); and cost-effectiveness (0.20). These criteria were then weighted for their importance.

The following table provides the short-listed projects.

Title of project	Average standard score	Rank	Estimated project implementation cost (Million USD)	Estimated project design cost (Million USD)
Promoting drought/crop insurance program in Ethiopia	1.00	1	8	0.1
Strengthening/enhancing drought and flood early warning systems in Ethiopia	1.00	2	10	0.1
Development of small scale irrigation and water harvesting schemes in arid, semi-arid, and dry sub-humid areas of Ethiopia	0.99	3	30	0.5
Improving/enhancing rangeland resource management practices in the pastoral areas of Ethiopia	0.95	4	2	0.05
Community based sustainable utilization and management of wet lands in selected parts of Ethiopia	0.95	5	2	0.05

Capacity building program for climate change adaptation in Ethiopia	0.85	6	3	0.1
Realizing food security through multi-purpose large-scale water development project in Genale-Dawa Basin	0.80	7	700	2
Community based carbon sequestration project in the Rift Valley System of Ethiopia	0.78	8	1	0.05
Establishment of national research and development (R&D) center for climate change	0.78	9	2	0.2
Strengthening malaria containment program (MCP) in selected areas of Ethiopia	0.78	10	6	0.5
Promotion of on-farm and homestead forestry and agro-forestry practices in arid, semi-arid and dry-sub humid parts of Ethiopia	0.76	11	5	0.1
Total cost			770	3.75

Source: FDRE 2007

3.6 NAMA

It is to be noted that the Copenhagen Accord, the political document which captures the outcomes of the Copenhagen climate conference, among others, invited developing countries to submit their Nationally Appropriate Mitigation Actions (NAMAs). Countries submit their NAMAs to the UNFCCC for different purposes. It could be so that their self-financed efforts are recognized by the international community. It could also be with a view to finding a source of finance for those identified actions. Ethiopia is one of those countries which submitted a document following this invitation. The document lists about 88 hydropower, windpower, solar, geothermal, electric railway, and urban waste management projects. For those power projects the generating capacity and the target date for completion is indicated. Other than that there is no additional information. It does not also indicate which of these projects are currently under implementation and for which the country seeks support.

In successive climate conferences, a registry system for NAMAs has emerged. Accordingly, countries could get registered two kinds of proposals. They could register proposals seeking financial and technical support for preparation of NAMAs. Second, they could also get registered NAMAs that are ready for implementation and which might require financial and technical support from develop countries. Ethiopia has not so far submitted any kind of proposal relating to NAMAs for registration.

3.7. Productive Safety Net Program and associated schemes

Having an economy highly dependent on rain-fed agriculture, Ethiopia suffered a lot from climate variability and weather extremes. Despite remarkable achievements in economic growth, it is yet to eradicate the close association of Ethiopia and famine in the international media. For long, emergency food aid was the principal response to challenges of food insecurity in the country. Though necessary, because of several design and implementation shortcomings, food aid does not sustainable resolve the problem. It saves lives but not livelihoods. Food aid as an emergency response addressed transitory but not chronic food insecurity. Gilligan et al (2008) outline the problem as follows:

Since the 1983-84 famine, the policy response to this threat has been a series of ad hoc emergency appeals on a near annual basis for food aid and other forms of emergency assistance which are then delivered either as payment for public works or as a direct transfer. While these measures succeeded in averting mass starvation, especially among those with no assets, they did not banish the threat of further famine, nor did they prevent asset depletion by marginally poor households affected by adverse rainfall shocks. As a result, the number of individuals in need of emergency food assistance rose from approximately 2.1 million people in 1996 to 13.2 million in 2003 before falling back to 7.1 million in 2004. Further, the ad hoc nature of these responses meant that the provision of emergency assistance—often in the form of food-for-work programs—was not integrated into ongoing economic development activities.

It is this observation, among others, which influenced the launching of a program called Productive Safety Net Program (PSNP) in 2005, corresponding

to the base year of PASDEP. It might be noted here that PSNP is part of a larger program called Food Security Program which also include resettlement program, Household Asset Building Program (HABP) and Complementary Community Investment (CCI).

The main objective of PSNP is to protect food consumption of chronically food insecure rural households in a way that prevents asset depletion at household level and build assets at community level. The program operates in 319 districts in 8 regional states. PSNP has a public works element which has contributed to the creation of important community assets including roads, schools, and clinics and soil and water conservation measures. The PSNP provides direct grants for those who cannot work. The cash and food transfer provides coverage to beneficiary households for six months of the year, amounting to 40 percent of their annual food needs. In many cases, households are provided cash transfers enough to purchase 15 kg of cereal per month for each member of the household and in some cases food transfer is made instead. There is no distinction in terms of the quantity of transfer between those who participated in public works and those who do not. But it might be noted that about 90% of all PSNP transfers are for those who participate in public works (Coll-Black et al 2013).

The program has an in-built mechanism to allow it to expand and contract depending on rainfall patterns. This means that the program has also mechanism of addressing transitory food insecurity through its Contingency Budget and Risk Financing Mechanism For example, by 2009, the program was supporting 7.6 million chronically food insecure people. In 2011, when parts of the country were suffering from a serious drought, the beneficiaries of the program have grown to 9.6 million people.

The program is financed by donor contributions but managed by the government. Outside of South Africa, the PSNP is currently the largest social protection program operating in Sub-Saharan Africa (Gilligan et al 2008), amounting to 1.2% of the gross GDP (World Development Report 2014).

The PSNP is evaluated to have several benefits compared to traditional emergency responses. By building essential community assets and helping households building their assets, it builds their resilience to climate variability and weather extremes. It helps to avoid the need for taking mal-adaptation

measures such as selling of cattle and other asset forms. It is observed that the PSNP reduce distress sales of assets from 51% of beneficiary households at the start of the programme to 34% by 2010. It is also reported that those households receiving PSNP transfers for five years have been associated with an increase of food security for 1.05 months a year compared to those which have received no transfers. The difference grows to 1.53 when the beneficiary of the PSNP is also a beneficiary of another complementary program called Household Asset Building Programme (HABP). This complementary program provides micro-credit, agricultural extension, and business advice to help PSNP recipients to improve their asset base so that eventually they can manage without aid.

In addition, PSNP is credited for improvements in natural resource management and environment through the soil and water conservation measures carried out by the beneficiary households: reduced surface runoff and soil erosion; increased infiltration; raised groundwater levels and enhanced spring yields; increased stream base flows; increased vegetation cover and biomass; improved production and productivity and livelihood diversification. There is also some evidence to the effect that PSNP might have contributed in stimulating rural economic growth by addressing pervasive credit and insurance market failures: "farmers are liquidity constrained (and therefore, for example, find it difficult to purchase fertilizer) and farmers are reluctant to take risks (for example, to adopt new crops). By providing liquidity and a reliable source of income, social protection addresses both types of market failures" (Gilligan et al 2008).

There is currently a related national project called Climate Smart Initiative which aims to strengthen the contribution of PSNP and HABP to climate resilience through: improving existing public works and livelihood activities and making them more climate smart; enhancing early warning information low and local decision making; identifying and leveraging climate funding opportunities; and informing future programs (World Bank 2013).

3.8. Sustainable Land Management Program

This project was launched in 2008 and the first phase was completed by the end of September 2013. At the moment an agreement for the second phase

has been signed between the World Bank and the Government of Ethiopia. The project had the principal objectives of reducing land degradation in agricultural landscapes and improving the agricultural productivity of smallholder farmers. It had several components including scaling-up of best practices in watershed management, strengthening land tenure through land certification and knowledge management. The second phase of the project aims to reduce land degradation and improve land productivity of smallholder farmers through the provision of capital investments, technical assistance and capacity building at national and sub-national levels. In addition, the second phase has explicitly climate-related objectives and components; that is, it aims to introduce measures to address climate change/variability related risks and to maximise GHG emission reductions with a view to meeting the GTP and CRGE targets. The project will be implemented in 90 new and 45 existing woredas/watersheds in six of the regions such as Oromia, Amhara, Tigray, SNNP, Gambela and BenishangulGumuz.

3.9. Removal of fuel subsidies

The country's transport and industries use diesel, where as gasoline is used by private smaller vehicles and automobiles and kerosene is only used for household purposes. The Ministry of Trade is the mandate institution to follow the international market and adjust the price accordingly.

The government of Ethiopia removed fuel subsidies in 2008 through a council of ministries decision. The government of Ethiopia stated the objective of the removal of fuel subsidies is to develop alternative transport system and develop effective transport policies; focus priority development activities and needs (food security, health and infrastructure) ; and greener path and militating effort.

In order to control the price of fuel the government introduced Ethanol Blending. In 2008 the blending 5% ethanol and 95 % gasoline and in March 2011 the ethanol reached 10 % ethanol and 90% gasoline.

3.10. Environmental policy

The Government of the Federal Democratic Republic of Ethiopia (FDRE)

has established a macroeconomic policy and strategy framework. Sectoral development policies and strategies have been, or are currently being, formulated. Environmental sustainability is recognized in the constitution and in the national economic policy and strategy as a key prerequisite for lasting success. However, there had had not been as yet overall comprehensive formulation of cross-sectoral and sectoral issues into a policy framework on natural resources and the environment to harmonize these broad directions and guide the sustainable development, use and management of the natural resources and the environment. Therefore, the government designed a comprehensive environmental policy on natural resources and the environment (FDRE 1997). The environmental policy predates the Constitution itself. The EEP is an output of the Conservation Strategy of Ethiopia, a policy document initiated in 1989 and approved in April 2, 1997 by the Council of Ministers. The policy aims at improving the quality of life of the people through sustainable development of natural as well as cultural resources. The policy had been prepared with a view to amplifying the constitutional provisions on the environmental protection. The policy explained and broadened the principles within the Constitution.

The Environmental Policy of Ethiopia was approved on April 2, 1997 by the Council of Ministers. The Environmental Policy of Ethiopia has embraced the concept of sustainable development. As its goal, the Environment Policy of Ethiopia states "to improve and enhance the health and quality of life of all Ethiopians and to promote sustainable social and economic development through the sound management and use of natural, human-made and cultural resources and the environment as a whole so as to meet the needs of the present generation without compromising the ability of future generations to meet their own needs". The specific policy objectives include adopting preventive measures of land, air and water pollution, ensuring people's participation in environmental management, and raising public awareness about the environment amongst others. Once can clearly state that the Ethiopian Environmental Policy is a direct outcome of the constitution and a tool for the implementation of the principles enshrined in the constitution.

The Policy outlined key principles, ten sectoral and ten cross-sectoral policies. Regarding atmospheric pollution and climate change, it identifies five areas of interventions:

- To promote a climate monitoring programme as the country is highly sensitive to climate change;
- To recognize that even at an insignificant level of contribution to atmospheric greenhouse gases, a firm and visible commitment to the principle of containing climate change is essential and to take appropriate control measures for a moral position from which to deal with the rest of the world in a struggle to bring about its containment by those countries which produce large quantities of greenhouse gases;
- To recognize that Ethiopia's environmental and long-term economic interests and its energy prospect coincide with the need to minimize atmospheric inputs of greenhouse gases as it has a large potential for harnessing hydro, geothermal and solar energy, none of which produce pollutant gases in significant amounts and to develop its energy sector accordingly.
- To recognize that the continued use of biomass for energy production makes no net contribution to atmospheric pollution as long as at least equal amounts of biomas are produced annually to compensate this and to maximize the standing biomass in the country through a combination of reforestation, agroforestry, the rehabilitation of degraded areas, a general revegetation of the land and the control of free range grazing in the highlands and to seek financial support for this from industrialized countries for offsetting their carbon dioxide.

3.11. Forestry policies, laws

The Ethiopian Policy and Strategy on the development, conservation and use of forests, adopted in 2006 (FDRE 2006). The strategy is developed to bring sustainable development through community participation. The basic aim of the policy is to meet public demand in forestry products and foster the contribution of forests in enhancing the economy of the country; through appropriately conserving and developing forestry resources. The specific objectives of the policy and Strategy are:

- to encourage sustainable forestry development by rendering

professional and technical assistance to farmers/ pastoralists, investors and institutions engaged in forestry resource development,

- to adequately meet the forestry and forest product demands of the public through sustainably enhancing the production of forestry resources in areas that are suitable for forest and forestry resource development,
- to foster the contribution of forestry resources to food security and industrial development through the identification, rejuvenation, multiplication and distribution of forest plant species that are suitable for our country and capable of giving diverse utilities,
- to lay the foundation wherein forestry resources deliver all-embracing services to the country in a sustainable manner, through the prevention of threats as well as the conservation and development of forestry resources,
- to ensure maintenance of the natural ecological balance through adequately conserving and developing the forestry resources of the country;

The preamble of the Forest Development, Conservation and Utilization Proclamation No 542/2007 states that the sustainable utilization of the country's forest resources is possible through ensuring the participation of, and benefit sharing by the concerned communities. Article 9(3) of the same Proclamation stipulates that forest development; conservation and utilization plans shall be formulated to allow the participation of local communities in the development and conservation and also in the sharing of benefits from the development of state forest. Some aspects of benefit sharing modalities are envisaged under this law. For instance, Article 10 (3) of the law puts that the local community may reap grasses, collect fallen woods and utilize herbs from a state forest in conformity with the management plan developed for the forest. Article 18 of the Forest Proclamation discussing on powers and duties of regional states stipulates under sub-article (3) that regional governments shall encourage forest development programs, which involve the participation of farmers and semi-pastoralists, and provide technical support.

3.12. National development plans

Ethiopia's development activities have been led by a series of development plans. The first one last for three years (2002/03-2004/05) and it is called Sustainable Development and Poverty Reduction Program (SDPRP). This was followed by the Plan for Accelerated and Sustained Development to End Poverty (PASDEP), 2005/06-2009/10. PASDEP had aimed "at ensuring accelerated, sustained and broad based economic development as well as preparing the ground for the full achievement of Ethiopia's MDG targets by 2015". The plan was built on eight strategic pillars: building all-inclusive implementation capacity; a massive push to accelerate economic growth; creating the balance between economic development and population growth; unleashing the potentials of Ethiopia's women; strengthening the infrastructural backbone of the country; strengthening human resource development; managing risk and volatility; and creating employment opportunities. During this period of time, the economy grew on average at 11 percent per annum. This is more than the rate envisaged in the plan in relation to the high case scenario. See the table below for the sectoral breakdown of the economic growth during PASDEP.

Sector	Average growth target planned		Average growth achieved	Percentage share of Real GDP
	Base Case	High Case		
Real GDP	7.0	10.0	11.0	100
Agriculture	6.0	6.4	8.4	41.6
Industry	11.0	18.0	10.0	12.9
Services	7.0	10.3	14.6	45.5

(Source: FDRE 2013)

During PASDEP, not only the economy has grown in size, some structural changes have also been observed, albeit not in the direction of charted in the plan: "The planned targets were 43.9%, 16.5% and 39.6% for agriculture, industry and services respectively. The actual shares were not as planned, as services achieved a higher, and industry a lower share of GDP than planned. In terms of structural change the PASDEP assumed that a decline in the agricultural sector's share of GDP would be taken up by the industrial sector. However, underperformance of the industrial sector was more than

compensated by increased growth in the service sector, indicating that the structural shift was not, as yet, in the desired direction". The following are some of the achievements registered during the PASDEP period and which have relevance to the subject matter under consideration:

- Degraded land rehabilitated by water and soil and conservation measures increased from 0.82 million ha to 3.77 ha
- Forest coverage increased from 4.1 million ha to 8.8 million ha
- Hydropower generation capacity increased from 714 MW to 2,000 MW
- 4.6 million energy saving bulbs were distributed
- Towns and rural villages having access to electricity increased from 648 to 5,163
- 3 million improved energy savings biomass ovens distributed as a result of which an estimate 26,176 ha of deforestation has been avoided, an equivalent of 36,575 tons of carbon dioxide emissions avoided
- Home solar systems distributed to 10,081 rural families and 238 rural health stations and first cycle schools provided with solar electric power

The current five year development is known as the Growth and Transformation Plan (GTP). It aims not only increase the size of the economy but also change its structure. The vision is: "To become a country where democratic rule, good governance and social justice reign, upon the involvement and free will of its peoples, and once extricating itself from poverty to reach the level of a middle-income economy as of 2020-2023". This general vision is given specific form in relation to the economic sector: "building an economy which has a modern and productive agricultural sector with enhanced technology and an industrial sector that plays a leading role in the economy, sustaining economic development and securing social justice and increasing per capita income of the citizens so as to reach the level of those in middle-income countries". GTP is built on seven pillars: sustaining rapid and equitable economic growth; maintaining agriculture as major source of economic growth; creating conditions for the industry to play key role in the economy; enhancing expansion and quality of infrastructure development; enhancing expansion and quality of social development; building capacity and deepen good governance; and promote gender and youth empowerment and equity.

During GTP, the agriculture sector is expected to continue to be the main driver of economic growth. In the words of the plan itself: "…agriculture will shift to a high growth path in order to meet the food security needs of the country, to curb inflationary pressures on agricultural products, and broaden the export base of the country. The sector will serve as a spring board for structural transformation in the long-run by adequately supplying inputs necessary for industrial growth". Towards that the plan outlines a number of strategies. In order to better adapt to climate variability, the plan calls for an intensive use of the country's water and natural resources; scaling up of best technologies and practices of model farmers; multiple cropping; expansion of watershed management; carry out effective water and moisture retaining work; and strengthening the conservation and management of natural resources.

Other relevant targets include: laying out an electric railway network of 2395 km; expanding electricity coverage from 41% to 75%; increasing power generating capacity from 2,000 MW to 8,000MW; and decreasing power loss during transmission from 11.5% to 5.8%. The GTP also states that measures will be taken to enhance conservation of electricity and energy efficiency.

The GTP has a section entitled "Environment and Climate Change". It partly reads: "Building a green economy and ongoing implementation of environmental laws are among the key strategic directions to be pursued during the plan period. In building a green and climate change resistant economy there are two key issues, adaptation to climate change and mitigation to green house gases". The GTP outlines the case for building a climate resilient economy in the following terms: "Even though Ethiopia's greenhouse gas emissions rate is minimal, the country is affected by climate change. There are agro-ecological zones (dry land and semi-dry land areas) and economic sectors which are more vulnerable to climate change. Research findings show that Ethiopia annually loses 2% to 6% of its total production due to the effects of climate change. In Ethiopia climate change causes sporadic distribution of rainfall in dry and rainy reasons. In some cases excessive surface water runoff results has catastrophic effects, for instance very rapid filling and

emptying of ground water reservoirs has been witnessed, as had biodiversity degradation. The evidence of these impacts shows how very critical it is that climate change adaptation strategies are put in place during the plan period and thereafter".

When it comes to reducing emissions and/or increasing sequestration of greenhouse gases, the plan adverts to the negligible contribution of the country to the problem and by doing so located the primary responsibility in those industrialized countries. Having provided that, the plan finds a self-interested reason in embarking upon a greener path of development. The relevant section is reproduced here:

> …in Ethiopia there are indigenous knowledge, practices and systems which reduce biogas [greenhouse gas] emissions. In the agriculture sector farmers use biologically based inputs like cow dung and compost as fertilizers. Ethiopia's contribution to creating a stable and more beneficial climate is very clear. In addition, energy generated from wind and geothermal sources can meet Ethiopia's energy demands, as well as those of neighbouring countries and further contribute to climate conservation. Without putting pressure on farm land, ethanol production can be doubled. The forest coverage in the northern part of Ethiopia has been recovering since the past 20 years. There are practices in Ethiopia which can be adopted for mitigation of the adverse impacts of climate change.
>
> Focusing on economic development which mitigates climate change effects is very important from the point of view of the country's economic interests, its capacity to develop renewable energy sources and the prospects for its future energy consumption. The economic development direction pursued by the Ethiopian government contributes to climate change mitigation and so may generate new and additional environmental support funds from developed nations. According to the Copenhagen Accord and the Kyoto Protocol, technological and financial support has been put in place for climate change mitigation works carried out by developing nations. For this reason it is timely to build climate mitigation capacity so as to benefit from international financial support for environmental activities.

The GTP includes about 18 environment and climate change targets. These are provided in the following table.

Description of Targets	2014/15
Energy generated from renewable energy resources (MW)	8,000
Sales of ethanol and biodiesel (mlnliter)	35
The minimum area covered by forest (km^2)	2,000
Area of productive forest developed (km^2)	25,000
Area of natural forest developed (km^2)	2,876
Area of forest trees that shed leaves (km^2)	4,390.6
Area of designated park land (km^2)	60,360
Area of designated wetland (km^2)	51,496
The area of farmland to which compost will be applied (km^2)	40,000
Land area utilise by mixed farming and forestry for bio gas emission mitigation (km^2)	261,840
The amount of urban waste used to produce methane gas (mln m^3)	20
The climate change resistant green economy will be strengthened and measures will be taken by all tiers of government for preparation and implementation of environmental action plans in all regions.	
Policies, laws, strategies and actions plans will be put in place to address climate change mitigation	
Dams, roads and infrastructure facilities which contribute to poverty reduction but are vulnerable to impacts of climate change will be identified and mitigation measures will be put in place	
Measures will be taken to mitigate climate change impacts to conserve the biological resources	
Regions and cities/towns pass and implement laws to build a measurable and achievable green economy	
Establish a national system for environmental NGOs to assist them in the efforts to build green economy	
A dry waste management law will be implemented at all federal and regional levels	
The law on biogas emissions rate by the 8 high emission rate industries will be fully implemented	
To make environmental policy effective prepare a proposal for 5 additional environmental protection law	
Reporting to the public on the performance of the 5 year environment development plan will be timely	
A national system will be built to help Ethiopia build a carbon free economy by 2025 and qualify for additional global environment fund support	

Source: FDRE 2013

3.13. Energy policy, laws

The 1994 Energy policy of Ethiopia was prepared during the period of transitional government of Ethiopia (1991-1994) and issued in May 1994. The Energy policy was prepared at a time when nearly 94% of the country's energy demand was met by traditional energy sources such as fuel wood, charcoal, branches, dung cakes and agricultural residues. The general objective of the policy includes increasing energy utilization efficiency and reducing energy wastage and ensuring that development and utilization of energy is benign to the environment.

4. CRGE as a response to climate change

4.1. The process

Ethiopia launched a process often referred to as the Climate Resilient Green Economy Initiative in 2010, in the aftermath of the Copenhagen Climate Conference. This was an initiative supported and driven by the highest executive office, the Office of the Prime Minister. It might be noted that the then Prime Minister of Ethiopia, the late MelesZenawi, was an active participant of the last days of the Copenhagen conference. He was credited for being instrumental in the development of the Copenhagen Accord. The Prime Minister participated not only as a head of government of the country but as a spokesperson for Africa. He was the chairperson of the Committee of the African Heads of State and Government on Climate Change (CAHOSCC). In November/December 2011, the country officially adopted its climate resilient green economy vision and green economy strategy (FDRE 2011). The CRGE vision builds on the long-term development vision of the country; that is, the vision to become a middle income country by 2025. The CRGE adds another dimension to this development vision: to become a middle income country by building a climate resilient green economy. Ethiopia adopted in 2011 its strategy in achieving the green economy part of its vision. At the moment, the technical work has been finalized on the resiliency strategy of the agricultural sector and the last consultation workshop was held in October 2013. At the same time, the technical work for the development of the resilience strategy of the water and energy sector has started.

The economic advisor to the Prime Minister, NewayGebreab, chaired a Ministerial Steering Committee established for this purpose. Below the ministerial steering committee, there is a Technical Committee, chaired by the deputy director general of the then Environmental Protection Authority. The Technical Committee consists of chairpersons of sectoral sub-technical committees. Seven sub-technical committees for seven of the sectors identified to have high relevance for the sustainability of Ethiopia's growth model were formed. These sectors were selected on the basis of the GTP and findings of previous studies on the sustainability of Ethiopia's development path—in particular the "Green Growth" study conducted by EDRI and the

Global Green Growth Institute (GGGI). The two criteria for the selection of these sectors were (a) the importance of the sector for the economy and (b) the sector's current/expected future GHG emissions.

The seven STCs were charged with 'the core analytic work'. According to the green economy strategy, the sub-technical committees were responsible for:

- Developing a BAU projection of economic growth and associated emissions for their respective sectors on the basis of the GTP targets and long-term economic objectives. This projection extends to 2030 to allow enough time to include long-term infrastructural investments and achieve the middle-income status the country aspires to.
- Identifying and analyzing the potential of green economy initiatives or levers. It was understood from the outset that potential initiatives have to contribute to growth and development targets as well as to the reduction of GHG emissions as compared with BAU development. Abatement potential was chosen as a main criterion for selecting the green growth initiatives as it is a prerequisite for tapping funds available in the context of the international negotiations on climate change.
- Evaluating the initiatives in terms of abatement cost (expressed in USD/t CO_2e), investment and finance requirements, feasibility, and other implementation requirements. The initiatives were then prioritized accordingly.
- Documenting and summarizing the findings as well as to draft the preliminary green economy strategy

A global consulting company, McKinsey & Co, is known to have been involved in the development of the green economy strategy. The strategy itself does not mention this consulting company and hence is difficult to determine the degree and mode of involvement of this company.

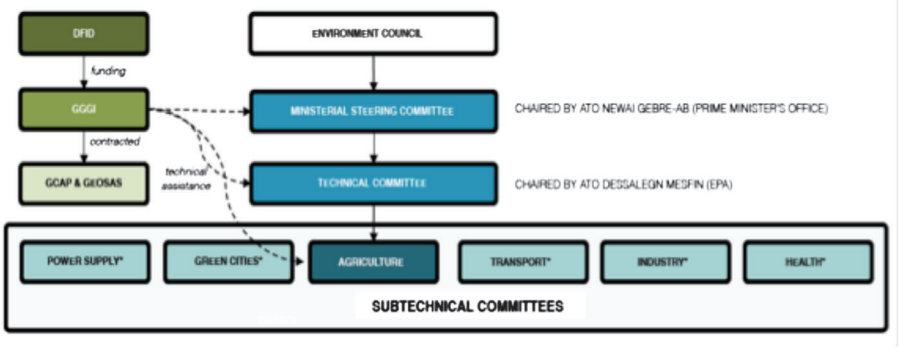
The development of Ethiopia's green economy strategy can therefore be considered as an iterative process where analysis and decisions were made every step of the way from the sub-technical committee level to the ministerial steering committee. Political choices and decisions were made at the highest level.

It might be noted that the green economy strategy document is an economy wide strategy, though the initiatives and elements are presented sectorally

and the technical work was carried out sectorally by sub-technical committees. The fact that these sub-technical committees carried their work almost at the same time helped to carry out cross-sectoral scrutiny mainly at the technical committee and ministerial steering committee levels.

When it comes to developing the climate resilience strategy, however, the work is being carried out sectorally and in a sequential manner. This might hinder maximization of sectoral synergies and tradeoffs.

At the moment, the climate resilience strategy for the agriculture sector has been substantially complete. And work has commenced for the development of the resilience strategy for the water and energy sectors.



(Source: Climate Resilient Strategy: Agriculture (Draft)

As it is stated earlier, though the vision is to become a middle income country by following a green path of development and building a resilient economy, priority was given to the development of the green economy strategy over those of climate resilient. Here are three possible reasons. First, by the time of this initiative, some work has already been carried out in identifying adaptation options. Note that the country had already developed its NAPA. The second possible reason is the imperative to be ready in accessing climate finance. It might be noted that following the Copenhagen climate conference, the country submitted its 'NAMA', more a wish list of projects. Third, considering that many of the green economy initiatives are also big development projects and hence the urgency.

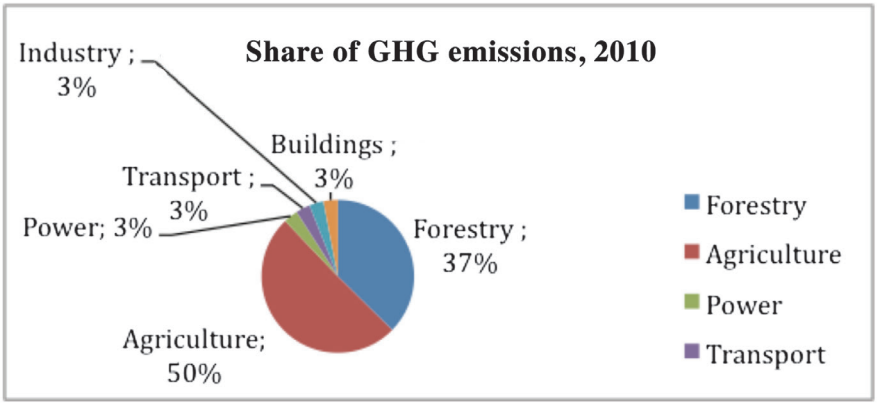
In the development of resilience strategies, the agriculture sector was prioritized. By the time of the writing, the agriculture sector has a draft resilience strategy. The impacts of climate change on the agriculture sector and the role of this sector to the general economy and economic development are two principal reasons for this prioritization. The process for the development of the climate resilience strategy for the water and energy sector is also launched.

4.2. Elements of the green economy strategy

Before the CRGE initiative, the country already set the target to become a middle income country before 2025. Now a political decision has been made to ensure that the middle income country is achieved by building a green economy. This is not meant to distract the country from its middle income vision. On the contrary, it is made clear in several places in the green economy strategy document that the green economy vision improves the opportunities of achieving the middle income target.

The green economy strategy development followed the following steps: estimation of sectoral and national emissions of greenhouse gases at 2010, projections of emissions by 2030, identification and assessment of initiatives.

Ethiopia's contribution to the global annual emissions is relatively low. In 2010, it is estimated that the country releases 150 $MtCO_2e$ to the atmosphere. Much of this comes from the land-use sector. The following provides the sectoral breakdown of the national emissions in 2010. Forestry and agriculture (crop and livestock) account for 87% of the national emissions. In the agriculture, much of the emissions come from the livestock sub-sector. The strategy states that "Ethiopia currently has a cattle population of more than 50 million and nearly 100 million other livestock. Livestock generate GHG mainly in the form of methane emissions arising from digestion processes and nitrous oxide emissions arising from excretions".



If no deliberate actions to reduce emissions are taken, according to the strategy, the growth targets and projected increase of population is such that Ethiopia's emissions will increase to 400 MtCO2e by 2030 and per capita emissions will increase from 1.8 tons to 3 tons in 2030. In absolute terms, the highest increase will come from agriculture (adding around 110 MtCO2e), followed by industry at 65 Mt and forestry at 35 Mt. It is projected that the cattle population will increase from about 50 million in 2010 to 90 million in 2030, increasing emissions from 65 to 125 MtCO2e. Crop production is also expected to rise from 19 million tons in 2010 to more than 71 million tons in 2030, requiring increased fertilizer usage and expansion of agricultural land, increasing emissions from 12 to 60 MtCO2e. In relative terms, the merging industrialization of Ethiopia will manifest itself in an annual emission increase of more than 15 percent from the industrial sector and around 11 percent from transport. Industry emissions are therefore projected to increase more than 12-fold, while transport emissions are projected to increase 7-fold.

Once the baselines and projections have been estimated, the sub-technical committees were tasked with identification and assessment of green economy initiatives. The idea is to come up with list of projects that would enable the country achieve its growth target while maintaining its emissions at 2010 levels. About 150 initiatives that could help to ensuring that the country deviates from the BAU development trajectory were identified. These initiatives were then subjected to an assessment and prioritization process resulting eventually in about 60 prioritized initiatives. Four general criteria were used in this appraising these initiatives. These include: abatement

potential; cost-effectiveness; potential to contribute to reaching targets as outlined in the GTP; and technical and institutional feasibility. Among these, abatement potential is considered to be 'a critical component of the evaluation of the initiatives'. It appears from the strategy that abatement potential and cost-effectiveness were given prominent role as they were also quantified. For the other two criteria, a kind of rapid qualitative assessment was carried out. When initiatives were appraised for their potential in helping reach the GTP targets, the following were considered: impact on poverty reduction; food security; increase in real GDP; increase in domestic capital formation; increase in exports; and benefit to public finance. Being a criterion that is easily amenable to quantified expression and as it is also expressly stated in the strategy, abatement potential is given much weight but how much more weight is given is not made explicit. This can, for example, be contrasted to the prioritization exercise made during the preparation of the country's NAPA.

The following are some of the initiatives short-listed by the green economy strategy:

- Power sector
  - Export of power to neighbouring countries
- Green cities and buildings
  - Reducing electricity demand through efficient lighting in urban residential and commercial sectors
  - Improving landfill gas management by capturing and flaring
  - Capturing and flaring gas from liquid waste
- Forestry
  - Reducing deforestation by lowering the pressure that the need for agricultural land exerts on existing forests, through for example agricultural intensification
  - Reducing forest degradation by reducing the demand for fuel-wood through dissemination of efficient cooking and baking technologies
  - Increased sequestration through afforestation/reforestation/ area closures and forest management of woodlands and forests

- Livestock
  - Supporting the production and consumption of low-emitting animals such as poultry, sheep, goat and fish
  - Value chain efficiency improvements by introducing more productive breeds, providing high-quality feed and other essential inputs, improved technology and public infrastructure, and a higher off-take rate
  - Mechanisation of agriculture
  - Rangeland and pastureland management
- Soil
  - Enhancing the use of lower-emitting techniques, including soil conservation activities
  - Enhancing the use of yield-increasing techniques
  - Creating new agricultural land in arid areas through irrigation
- Industry
  - Energy efficiency measures
  - Alternative fuels
  - Alternative production fuels
  - Carbon capture and supply to other industries which use carbon as an input into their production process
- Transport
  - Improving Addis Ababa public transport by building a light rail transit system, and a bus rapid transit system
  - Improving vehicle efficiency by enacting fuel efficiency standards
  - Changing the fuel mix
  - Shifting freight transport from road to an electric rail network

5. Implementation of CRGE

5.1. Development of resilience strategies

As it was stated earlier, for the development of resilience strategies, the agriculture sector was prioritized. By the time of this writing, a draft resilience strategy for the agriculture sector was opened for consultation. The impacts of climate change on the agriculture sector and the role of this sector to the general economic development are two principal for prioritization. Agriculture accounts for 41% percent of the national GDP, employs 85% of the population and nine of the ten largest export items are agricultural commodities. For the purposes of the draft resilience strategy, agriculture consists of crops, livestock and forestry.

Being largely dependent on raid-fed agriculture, the economy is highly vulnerable to weather variability and climate change. Temperature is expected to increase, although there is uncertainty as to the extent of its increase, with range of projections indicating between 0.5^{oC} to 2oC by 2050 relative to today. It might be noted that average temperature has already increased by 1oC since the 1960s. The uncertainty is magnified with respect to projected rainfall patterns, estimates ranging from 25% to +30% by 2050. There is evidence that rainfall has decreased by 20% in the south central region.

Even a slight change in temperature could have disastrous implications for the economy by affecting the production of coffee Arabica, the top export commodity for the country. At the moment, this type of coffee grows 'within tight temperature thresholds'. It is estimated that climate change could cost 10% of GDP in the hotter drier scenario.

In the course of preparation of the draft climate resilience strategy, 350 response options were identified. A short-list of 41 responses has come by subjecting the long-list to a multi-criteria prioritization assessment. The criteria used are: does the option pass an initial assessment of relevance and feasibility to be implemented in the local context? Does the option provide a positive contribution to reaching the targets of the GTP? Does the option help to alleviate poverty, and address distributional and equity issues (women, children, people with disabilities), and ensure food security? Does the option

provide significant reductions to the current costs of weather variability and future climate change? Two approaches are used to determine where and when these short-listed options should be carried out. These approaches are multi-attribute analysis and iterative risk management approach.

What must be noted here is that the how short-list has come about from the long-list is not adequately clear. Apart from indicating the four criteria used, it does not provide additional information. It is not clear how much weight is given to each of the criterion. And it is not also clear how rigorous was the analysis. There is similarity in the set of prioritization criteria used in the resilience strategy for agriculture and green economy strategy. The following are some of the resilience options identified in the strategy:

- Climate information, research and enhanced co-ordination: e.g. training and the use of networks to coordinate resilience responses between community's and delivery agencies; research on climate, future climate change and responses
- Meteorological and agro-meteorological data: e.g. ensuring the collection and communication of data to farmers and communities
- Agricultural research and development: e.g. research programs to develop new seed varieties, test promising options, to monitor changes
- Crop switching and new varieties: e.g. more heat resistant and drought tolerant crop varieties in addition to changing planting dates
- Fertilizer use: e.g. additional fertiliser to increase productivity including composting organic manure and residues

5.2. Institutional reforms

Notable developments since the adoption of the green economy strategy include the upgrading of the Environmental Protection Agency into a Ministry of Environment and Forestry. This is significant for a number of reasons. First it demonstrates the importance given to environmental and climate issues. The Ministry of Environment and Forestry is the focal person for climate change matters. Now environmental and climate change issues are represented in central government decision-making, mainly in the Council of Ministers. Second, the Council of Ministers can serve as a platform for

inter-ministerial coordination, avoiding inconsistencies, duplication of work maximizing synergies and so on.

Another institutional development is the establishment of the CRGE facility under the Ministry of Finance and Economic Development. The facility is designed to mobilize financial resources from different sources and channel it to line ministries and regions where much of the implementation of CRGE is carried out. Finally the former Ethiopian Electricity Energy is now re-established as Ethiopian Energy Agency, with increased mandate.

5.3. Implementation of projects and programs

It might be noted that though the green economy strategy came later that the GTP, many of the abatement initiatives in the former are already identified as development potentials and hence the GTP embodies projects and programs and targets on energy production and access, railway development, distribution of improved cook stoves, rehabilitation of degraded land, and afforestation and reforestation. To the extent that these projects and programs are therefore being implemented it can be submitted that the country has already gone into implementing CRGE.

5.4. Integration of CRGE with GTP II

At the moment, the country is also developing GTP II and there is now policy direction towards the integration of CRGE ad GTP II.

6. Climate policies, instruments and institutional arrangements: lessons from others

6.1. Climate policies

The purpose of this section is to draw lessons from the experience of other countries. These other countries from which lessons are to be extracted are mainly low-income or lower middle-income countries.

As far as climate policymaking in low-income countries is concerned, it can be observed that there have been remarkable changes over the last few years. Originally the emphasis was on developing projects of adaptation and mitigation to be supported by international climate finance sources and funds. There had been an emphasis on adaptation, instead of mitigation. This is because of the perception that there are no significant abatement potential in these countries; their economy has not grown and hence little emissions. The other reason for less emphasis given to mitigation issues in national responses to challenges of climate change has to do with the issue of responsibility; that the responsibility for mitigating climate change is said to belong to developed countries. In addition, the burden of climate change on this group of countries is heavier than others.

Since 2009, there have been some changes observed as far as climate policymaking in low income countries is concerned. Fisher (2013) discusses LDCs which have adopted comprehensive climate resilient low carbon development policies. The table below provides some general information about these countries:

COUNTRY	DATE	STRATEGY/PLAN NAME
Bangladesh	2009	Bangladesh Climate Change Strategy and Action Plan (BCCSAP)
Bhutan	2012/13	National Strategy for Low-Carbon Development
Cambodia	2010 2012 In development	National Green Growth Roadmap Green Growth Master Plan for Cambodia National Climate Change Strategic Plan
Ethiopia	2011	Ethiopia's Climate-Resilient Green Economy (CRGE) Strategy
Lao PDR	2010	Strategy on Climate Change of the Lao PDR
Mozambique	2012	National Strategy for Climate Change Adaptation (ENAMMC)
Nepal	2011 Forthcoming (2013)	Climate Change Policy Low-carbon Economic Development Strategy (LCDS)
Rwanda	2011	National Strategy on Climate Change and Low-Carbon Development
The Gambia	2012 2012	Programme for Accelerate Growth and Employment (PAGE) Priority Action Plan for Climate Change

These low-income countries have a number of motivations/political reasons for embarking on an integrated approach to adaption, mitigation and development (Fisher, 2013). Motivations relate to climate finance, development and ensuring the continuity of development gains and the need to be seen as a leader and/or as contributing to global public goods. Different motivations might means that different countries may focus on certain aspects of this integrated development (Fisher 2013). Countries also use different terminologies to describe their integrated climate policies (Fisher 2013). The following table provides for common terminologies and focus of integrated climate policies in low-income countries.

TERMINOLOGY	FOCUS
Low-emission development strategies/ low-carbon growth policies	Economic growth and low emissions being combined into one agenda
Climate-compatible development	Development-first approach that minimises harm from climate impacts while maximising development opportunities
Low-emission climate-resilient development	Combines climate-compatible development and low-emission climate development strategies—with equal emphasis on all three agendas
Green growth	Priorities 'greening' the economy by transforming the energy and other key sectors, aiming to achieve poverty reduction through economic growth

Source: Fisher 2013

Three things distinguish these integrated climate change policies in low-income countries from earlier responses in the form of NAMAs and NAPAs (Fisher 2013). First, in terms of scale, it might be observed that earlier responses are project-based, sectoral at best. Second, earlier responses were driven and influenced by priorities and needs of the global UN process. The recent responses are however a result of national development planning. Third, earlier policy responses are divided along the lines of adaptation and mitigation; whereas the recent ones aim to cut across these elements of climate policy. The expectation is that, by integrating adaptation and mitigation considerations into development responses and plans, win-wins or co-benefits might be maximized and costs reduced (Fisher 2013). While this aim is worthwhile, it has also been pointed out that the challenges of practical integration (the fact that adaptation and mitigation have different temporal and spatial scales and difference in their amenability to quantified expression) should not be overlooked and trade-offs and regrets must not be obscured (Fisher 2013).

Despite proliferation of national-level and economy-wide integrated climate policies in low-income countries, it is said that instances of actual implementation has been piecemeal and "rhetoric is greater than the actions" (Fisher 2013). In his connection, it has been suggested that low-income countries could proceed through learning-by-doing and paying

particular attention to distributional concerns and trade-offs (Fisher 2013). Another conclusion emerging from early studies is that although few low-income countries are leading by adopting comprehensive climate policies, the comprehensiveness is limited to general policy objectives level; that is, there are no integrated and specific policy instruments, projects and programs (Fisher 2013).

6.2. Policy instruments

6.2.1. Command and control regulatory approaches

The previous sections mapped the policy and institutional responses of the country to challenges of climate change. In this section, an attempt will be made to map policy instruments and institutional arrangements used generally across the world. Policy instruments are tools the state uses to deliver on its climate objectives. The purpose is to extract lessons that can be used to enrich the climate policy framework in Ethiopia.

Generally speaking, there are five categories of policy instruments. These are fiscal instruments, market-based approaches, information instruments, command and control and public expenditure.

A state could choose to adopt command and control regulatory tools in order to deliver on its public policy objectives. These are prescriptions to individuals and companies to follow certain course of action, lest they will be sanctioned. The idea is to use its legal monopoly of the use of force to compel individuals and companies follow certain courses of actions, calculated to achieve the public policy objective. These include licensing regimes which require individuals and companies to secure licenses before embarking on specified activities. In order to acquire these licenses, they will be required to fulfill certain requirements. It also includes standards, set by the state, which individuals and companies will be required to comply with. Generally standards can be technology/process or output/product standards. Product/output standards prescribe results that individuals and companies ought to fulfill but it will be up to the regulated to choose means of achieving these results. On the other hand, technology/process standards specify processes or technologies that the regulated ought to use.

Examples of command and control regulatory approaches in climate adaptation and mitigation include:Ban on landfill disposal of organic materials

- Compulsory recycling of recyclable materials
- Energy efficiency standards for cars and utensils
- Renewable targets for power utilities
- Zoning regulation

Command-and-control approach to implementing climate objectives is said to suffer from several shortcomings, especially when compared to market-based and fiscal instruments. First, it is submitted that they are not cost-effective as some firms use unduly expensive means to achieve policy objectives (Aldy and Stavins 2011). Second, standards (whether they are performance or technology standards) do not provide incentives for over-compliance (Aldy and Stavins 2011). Third, technology standards provide no dynamic incentive for the development, adoption and diffusion of superior technologies (Aldy and Stavins 2011). Fourth, technology standards provide opportunities for rent-seeking behavior by both the regulated and the regulatory (Aldy and Stavins 2011).

6.2.2. Public expenditure

Another tool of delivering on climate objectives is to use the spending power of the state. While by the use of other tools the state attempts to compel or encourage individual behaviors which are calculated to deliver on the public policy objective, through its spending power it tries to achieve the objective by itself. This can be done in a number of ways. For example, it could use its productive assets to produce the public policy objective and make it available free at the point of consumption. Or it can hire private contractors to actually produce the public policy objective. Or it can use its purchasing power to encourage individuals and companies adopt a form of behavior which is necessary for the public policy objective.

Examples of public expenditure include:

- Construction of infrastructure by the state itself or through private contractors. Such infrastructures could be irrigation schemes, flood protection works, water storage facilities, exploitation of renewable

energy projects

- State/government provision of services that help reduce emissions and/or vulnerabilities such as insurance to climate risks, and meteorological services
- State/government could use the footprint of companies in awarding contracts
- greening government activities

6.2.3. Market instruments

Market instruments take different forms. They basically involve some kind of trading. For example, emissions trading and crediting mechanisms are examples. In relation to the Kyoto Protocol, these mechanisms were discussed. In emissions trading, entities which found it expensive to reduce their emissions by the required amount could purchase credits from those which reduced their emissions by more than they are required by law. In Sweden, for example, electricity producers who use renewable sources get certificates from the government. All electricity suppliers are required to have a certain quota of certificates. But they can fulfill their quota by acquiring it from others. This creates a market for green certificates (see Finnveden et al 2013). Another example is the trading of recycling credits in the UK (Finnveden et al 2013). Recycling credits awarded to manufacturers which use recycled materials in the production of new products. They are required to meet a specific share. But they can fulfill their share by acquiring credits from others.

6.2.4. Fiscal instruments

In fiscal instruments, the state uses its financial resources to channel the behavior of individuals and companies in climate friendly manner. For example, taxes could be imposed on activities to the extent that of its effect on the climate. The Swedish landfill tax can be an example (Finnveden et al 2013). Removal of distortionary subsidies is also examples of fiscal instruments. Certain subsidies could encourage the production and consumption of fossil fuels. By doing that, these subsidies put renewable energy sources at

competitive disadvantages. In such cases, removal of such subsidies can be regarded as fiscal policy instrument. Finally, subsidies could be provided to activities which help reduce emissions and climate vulnerabilities. Subsidies are not often preferred instruments. Subsidies require taxing other economic activities in order to raise revenue for subsidies; underline incentives for efficiency and conservation; and pick technology winners, no incentive for development of better incentives and these winners will prevent change of policies (Aldy and Stavins 2011).

Payment for environmental services is also a species of fiscal instruments. For example, the payment for ecosystem services in Costa Rica a program initiated in 1997 providing direct payments to farm and forest owners for their contributions to carbon sequestration, watershed protection, biodiversity conservation and scenic beauty (Zbinden and Lee 2005).

Another way the state could use fiscal instruments is by providing guarantees for extension of finance to climate compatible activities.

6.2.5. Information instruments

Information can be used as policy instrument in three different ways. First, the state could require disclosure of certain types of information by producers to consumers. For example, the state could require all vehicle manufacturers to disclose to consumers the fuel-efficiency performance of all vehicles in a particular way, often designed to make it easily understood and useful to make decisions. Doing that helps to improve the quality of decisions made by consumers. Second, the state could require companies to provide certain types of information relating to their activities to the regulator. This way information is used as a sub-instrument of command-and-control regulatory approaches. Third, the state could provide certain types of information and educational services on its own. The purpose is to inform and/or persuade the public into certain types of behavior.

Production and dissemination of relevant climate information can help the emergence of market for climate adaptation services such as index-based insurance in low income countries. Insurance is identified as one of the options for enabling farmers adapt to climate hazards. Compared to ex-post

humanitarian relief, insurance is seen as preferable as it provides clear market signals concerning the level of risk and hence channel new infrastructure investments into places and forms that make climate-sense (Meze-hausken et al 2009). However, when it comes to low-income countries, private financial institutions have been reluctant to provide insurance services to farmers and pastoralists for risks of climate hazards. There are a number of reasons. First is the lack of sufficient risk capital reserves and the difficulty of developing insurance products affordable to small and poor households. Second, the transaction costs associated with the determination and assessment of the extent to which the insured risk has materialized compared to the amount of the insurance will discourage such services. Third, not unique to climate insurance in low income countries, is the problem of moral hazard. However, there has been recently some experimentation with the use of index-based insurance where payouts are triggered by threshold climate variables without the need to actually verify the extent of the loss actually suffered by the insured. Such kind of insurance will help address the problems of transaction cost and moral hazard. Index-based insurance serving few thousand farmers has, for example, been piloted in Malawi (Osgood and Warren 2007; Meze-Hausken et al 2009; Hochrainer et al 2007). The first problem can also be addressed by pooling risks across larger geographic area. Index-based insurance is essentially an adaptation service provided by private sector actors. But the state can play an important role in supporting it. It could for example provide the relevant and location specific hydrological and meteorological data which will be used by the insurance companies for payouts.

Likewise properly packaged and processed hydrological and meteorological information will help farmers and other households to be better prepare to climate hazards and mitigate impacts of weather variability and climate change. It promotes responsible individual behavior, messages encouraging reduction of wastes, efficient utilization of energy and promoting recycling.

6.3. Choice of instruments

The taxonomy of policy instruments presented above is a general classification. The particular shape and content of policy instruments will be different depending on the context and the institutional set up. The following table taken from the IPCC Fifth Assessment Report provides the different forms the above major types of policy instruments take in different sectors in the area of mitigation policy.

Policy Instruments	Energy	Transport	Buildings	Industry	AFOLU	Human Settlements ad Infrastructure
Economic Instruments—Taxes (Carbon taxes may be economy-wide)	Carbon taxes	Fuel taxes; congestion charges, vehicle registration fees, road tolls; vehicle taxes	Carbon and/or energy taxes (either sectoral or economy wide)	Carbon tax or energy tax; waste disposal taxes or charges	Fertilizer or Nitrogen taxes to reduce nitrous oxide	Sprawl taxes, impact fees, exactions, split-rate property taxes, tax increment finance, betterment taxes, congestion charges
Economic Instruments—Tradable Allowances (may be economy-wide)	Emissions trading; emissions credits under the Kyoto Protocol's Clean Development Mechanism; tradable green certificates	Fuel and vehicle standards	Tradable certificate for energy efficiency improvement (white certificates)	Emissions trading; emission credits under CDM; tradable green certificate	Emissions credits under CDM; compliance schemes outside Kyoto Protocol; voluntary carbon market	Urban-scale Cap and Trade

Policy Instruments	Energy	Transport	Buildings	Industry	AFOLU	Human Settlements ad Infrastructure
Economic Instruments—Subsidies	Fossil fuel subsidy removal; feed-in-tariffs for renewable energy; capital subsidies and insurance for 1st generation Carbon Dioxide Capture and Storage	Biofuel subsidies; vehicle purchase subsidies; feebates	Subsidies or tax exemptions for investment in efficient buildings, retrofits and products; subsidized loans	Subsidies (e.g. for energy audits); fiscal incentive (e.g., for fuel switching)	Credit lines for low carbon agriculture, sustainable forestry	Special Improvement or Redevelopment Districts

Policy Instruments	Energy	Transport	Buildings	Industry	AFOLU	Human Settlements ad Infrastructure
Regulatory Approaches	Efficiency or environmental performance standards	Fuel economy performance standards; fuel quality standards; GHG emissions performance standards; regulatory restrictions to encourage modal shifts; restriction on use of vehicles in certain areas	Building codes and standards; equipment and appliance standards; mandates for energy retailers to assist customers invest in energy efficiency	Energy efficiency standards for equipment; energy management systems (also voluntary); voluntary agreement (where bound by regulation); labelling and public procurement regulations	National policies to support REDD+ including monitoring, reporting and verification; Forest law to reduce deforestation; Air and water pollution control GHG precursors; Land-use planning and Governance	Mixed use zoning; Development Restrictions; Affordable housing Mandates; Site access controls; Transfer development rights; Design codes; Building codes; Street codes; Design standards

Policy Instruments	Energy	Transport	Buildings	Industry	AFOLU	Human Settlements ad Infrastructure
Information Programmes		Fuel labelling; Vehicle efficiency labelling	Energy audits; Labelling programmes; Energy advice programmes	Energy audits; Benchmarking; Brokerage for industrial cooperation	Certification schemes for sustainable forest practices; Information policies to support REDD+ including monitoring, reporting and verification	

Policy Instruments	Energy	Transport	Buildings	Industry	AFOLU	Human Settlements ad Infrastructure
Government Provision of Public Goods or Services	Research and Development; Infrastructure expansion (district heating / cooling or common carrier)	Investment in transit and human powered transport; Investment in alternative fuel infrastructure; Low emission vehicle procurement	Public procurement of efficient buildings and appliances	Training and education; Brokerage for industrial cooperation	Protection of national, state, and local forests; Investment in improvement and diffusion of innovative technologies in agriculture and forestry	Provision of utility infrastructure such as electricity distribution, district heating / cooling and wastewater connections, etc.; Park improvements; Trail improvements; • Urban rail
Voluntary Actions			Labelling programmes for efficient buildings; Product eco-labelling	Voluntary agreements on energy targets or adoption of energy management systems, or resource efficiency	Promotion of sustainability by developing standards and educational campaigns	

Source: Somanathan et al 2015

Policy instruments have limited substitutability. Each of the policy instruments has advantages and disadvantages and as a result a careful choice has to be made. The advantages and disadvantages of each instrument has generally been indicated in the above section but a detailed and careful analysis will have to be carried out when decision makers actually make the choice. Even if the decision maker is interested only in one criterion in the choice of instruments (e.g. the effect on innovation), choice cannot depend on the general attributes of policy instruments; it also depends on the particular way a given instrument is designed. For example, Kemp and Pontoglio (2010) found that the impacts of environmental policy instruments on innovation may depend more on design features (stringency, predictability, timing, enforcement etc) than on the types of instrument chosen.

In practice, instruments are not always systematically chosen. There are biases in the choice of instruments, for example past choices determine future choices. Interest groups might influence the choice of instruments. A number of criteria can be used in making this choice. These include: efficiency; cost effectiveness; distributional issues; social acceptability; environmental impacts; and appropriateness.

In many cases, depending on the policy objective, a mix of instruments will have to be used. For example, in order to promote the development and diffusion of technologies, a range of instruments can be used. These include subsidies, taxes, trading mechanisms, and performance standards. However each of these instruments may be appropriate, a combination of them will have to be used and used simultaneously. If subsidy alone is used, the state will have to spend a lot of resources.

6.4. Institutions

Another focus of this assessment paper is the issue of institutions, organizations and processes by which policies are formulated and implemented. Policies are as strong as the institutions and processes by which they are formulated, implemented, evaluated and reviewed.

Again taking the case of the nine low-income countries which are said to be pioneers in comprehensive and integrated climate planning, it might be

noted that a range of institutional options and processes are employed (Fisher 2013). In most of these countries, ministries of environment are expected to play a key coordinating role, while much of the implementation will be carried out by line ministries and local government units (Fisher 2013). However, it has been observed that environment ministries are traditionally less powerful within national government, and hence are less able to influence the integration and implementation of climate policies (Fisher 2013). It has also been submitted that these ministries are often under staffed and have limited capacity or evidence to make strong case for synergies (Tompkins et al. 2013).

Countries such as Nepal and Lao PDR have created some form of cross-sectoral mechanisms (such as climate change council) for coordination and oversight (Fisher 2013). In China, for example, an organization called National Leading Group on Climate Change is set up under the apex National Development and Reform Commission, chaired by the premier, tasked with direct executive action and supervision of the fulfillment of targets set in development plans. On the other hand, in the United Kingdom, a dedicated climate change body independent of the executive is charged with the tasks of analyzing, public reporting and providing advice to the government (UK 2008, Stallworthy 2009).

Also relating to institutions is financial mechanisms. Four low-income countries (Bangladesh, Ethiopia, Nepal and Rwanda) have developed national institutional mechanisms for their comprehensive climate policies (Fisher 2013). The particular approach to allocation of financing (for example, whether windows are dedicated to adaptation and mitigation and whether line ministries apply for funding to projects) determine the extent to which unified objectives (climate resilience low carbon development) in comprehensive climate policies will actually be delivered and possible synergies and trade-offs are accounted for (Fisher 2013).

7. Assessment of the policy and institutional frameworks for climate change in Ethiopia

7.1. Comprehensive policy but distributional issues

Ethiopia is one of these few countries in the least developed world, or even in the world generally, which has adopted a comprehensive climate policy in the form of the Climate Resilient Green Economy Strategy, though this document needs to be supplemented with sectoral climate resilient strategies (Watsonet al2013). In opting for a comprehensive climate response, the country could expect to maximize on opportunities for synergy. However, this approach is also said to obscure trade-offs involved (Fisher 2013). It must also be noted that the comprehensiveness is only limited at general policy objectives level. In addition, sequential development of green economy strategy and climate resilience strategies limited synergies and informed decisions on trade-offs (Fisher 2013).

One remark, by way of assessment, that is emerging in the limited literature on Ethiopia's policy response to challenges of climate change is the fact that winners and losers of such a transition to a green economy are not identified and addressed (Cesarand Ekbom 2013; Fisher 2013).

7.2. Monitoring the implementation of the strategy and achievement of the vision

Having a policy framework is important, but it is also equally important to have a framework for monitoring the implementation of policies. In this regard, it is submitted that there is a problem of implementation and enforcement capacity, mainly MRV capacity and absence of indicators is a key challenge (Cesar and Ekbom 2013). Monitoring capacity in the sense of following what other countries adopting similar approaches are doing will also be useful to learn from others (Fisher 2013).

7.3. On climate institutions and processes

On the process by which the green economy strategy was develop, it is remarked that "Consultation was not extensive; essentially a top down initiative, which built on the previous consultations of the GTP (Cesar and Ekbom 2013). It is true that technical and sub-technical committees were established; however, it was an ad hoc process. In this connection, it might

be useful to reform and institutionalize the process for the continuous input through a climate resilience and green economy advisory council.

The institutional framework for the development and implementation of the climate resilience and green economy strategies could be reformed in a way that also mitigates the capacity and knowledge problem identified above. The technical committee and the sub-technical committees established during the development of the green economy strategy could be expanded in terms of members and serve as an advisory council for the further development and implementation of climate policies. This could also serve as a platform for learning and the state could tap into dispersed expertise within the country by allowing non-civil servants being a member of this council.

7.4. On policy instruments

Instruments by which policy objectives are realized is as important as the policies themselves. In Ethiopia, it can safely be argued that public expenditure is the predominant instrument. This might be explained by the particular dominant political economy narrative.

This is, however, without losing sight of other instruments which are currently being used. For example, popular campaigns that aim to mobilize individual and institutional actions in afforestation programs and financing of big infrastructures are one such instrument. In addition, payments to households in the PSNP and SLMP can be regarded as rudimentary forms of fiscal instruments. There is a limited use of weather-indexed insurance in the country.

The use of other policy instruments is very limited. It is important to experiment on the use of other instruments. The re-establishment of Ethiopia's Energy Authority, with a mandate for the regulation of energy efficiency, is an opportunity for the use of these other policy instruments. Another instrument is feed-in-tariff. PES is also identified as one approach to experiment in the country as it creates the link between communities and ecosystems (Cesar and Ekbom 2013).

The need for experimenting and using additional policy instruments is supported by the fact that public expenditure is not necessarily an appropriate tool for every situation. In addition, the use of other tools could support the policies of the government to control inflation. Not least, the sustainability of some instruments such as tree planting campaigns can be questioned.

8. Conclusions

This policy and institutional assessment paper has provided a picture of both the global climate change regime as well as Ethiopia's policy and institutional response to challenges of climate change. One key conclusion that is drawn is that several of Ethiopia's development and sectoral policies and programs already deal with climate change, even if climate change as such is not identified as the principal objective. For example, the PSNP helps reduce climate vulnerabilities as well as contribute to mitigation of emissions, despite the fact that these are not necessarily framed as climate interventions. The CRGE initiative has now taken this further by raising the ambition of the country's development and climate actions. It demonstrates the case that taking climate actions is not necessarily counter to development objectives. On the contrary, it demonstrates that taking climate actions can in fact assist in realizing development vision. The country has already started implementation of some of the key CRGE components. The policy framework is not yet complete. The climate resilience strategies of sectors, in addition to that of agriculture, water and energy, should be developed. Efforts to mainstream CRGE into the next development plan should be enhanced. This is only logical, after all CRGE is not separate, parallel or in addition to the country's development policies and plans. Hence it should be a crucial component of the development policies and plans. As a result, the country could only have one development plan incorporating measures to reduce emissions and vulnerabilities.

One other conclusion emerging from this assessment relates to the choice of policy instruments. In Ethiopia, implementation of CRGE so far involves the direct role of the government. Public expenditure and public provision of goods and services is the predominant instrument. PSNP and SLMP demonstrate rudimentary forms of fiscal instruments. It might be noted that fiscal instruments are not the only policy instruments used in these programs. This might not be surprising after all in low-income countries. However, as the country moves on the road to a middle income economy, deliberate actions to experiment with a range of policy instruments should be taken and encouraged. There is a risk that policy instruments chosen today affect choice of policy instruments in the future. The country will not all of a sudden start using other policy instruments at some point in the future. Decision

makers always prefer familiar ways of doing things. Therefore, it is important that other policy instruments, mainly command-and-control regulation, information instruments, market-based and fiscal instruments be used.

Literature and studies on Ethiopia's policy and institutional response to challenges of climate change is limited. In the section on policy instruments, the original purpose of this assessment was to attempt to extract the use of different policy instruments in settings similar to use. However, that original purpose could not be achieved, owing to serious dearth of published materials on the experience of countries from which we can draw lessons. This is an important gap. Policy researchers could embark on comparative studies along these lines. One fact about both individual and institutional decision making that is now accepted is that decisions are highly and unduly influenced by information which is accessible and understandable. It was already pointed out those choices about policy instruments that we currently make affect the choices to be made in the future, just as current choices are influenced by past decisions. Hence, the deliberate diversification and experimentation of policy instruments was urged. The point here is that such experimentation and diversification is possible only when information about alternatives is available in a way that is easily understandable by decision makers. A key task for policy researchers and think tanks is to embark on studies along these lines and package the results in a way that enhances the usability of the information.

Choices are systematically made on the basis of a set of criteria and assessment of the various alternative policy instruments. Often the assessment is ex ante. Even for this ex ante assessment too different researchers such as lawyers, economists, and sociologists could provide important inputs. In addition to the ex ante assessment, policy implementation and outcomes ought to be investigated and serve as an input to policy review. Policy researchers are expected to generate adequate and sound analysis on the outcomes of policy implementation.

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ISBN 978-99944-918-3-4