Ethiopia's Climate Resilient Green Economy Strategy

Wondwossen Sintayehu
Environmental Protection Authority

GMI, Vancouver, Canada
15 March 2013

Outline

- Introduction
- CRGE vision
- GE – mitigation
- CR – adaptation
- CRGE Facility
- CRGE Registry

1. Introduction

Global climate change is affecting Ethiopia.

- **Average temperature rise causes disruptions across sectors**
- **Rainfall patterns changing**
- **extreme weather events (such as floods and droughts) recurring.**

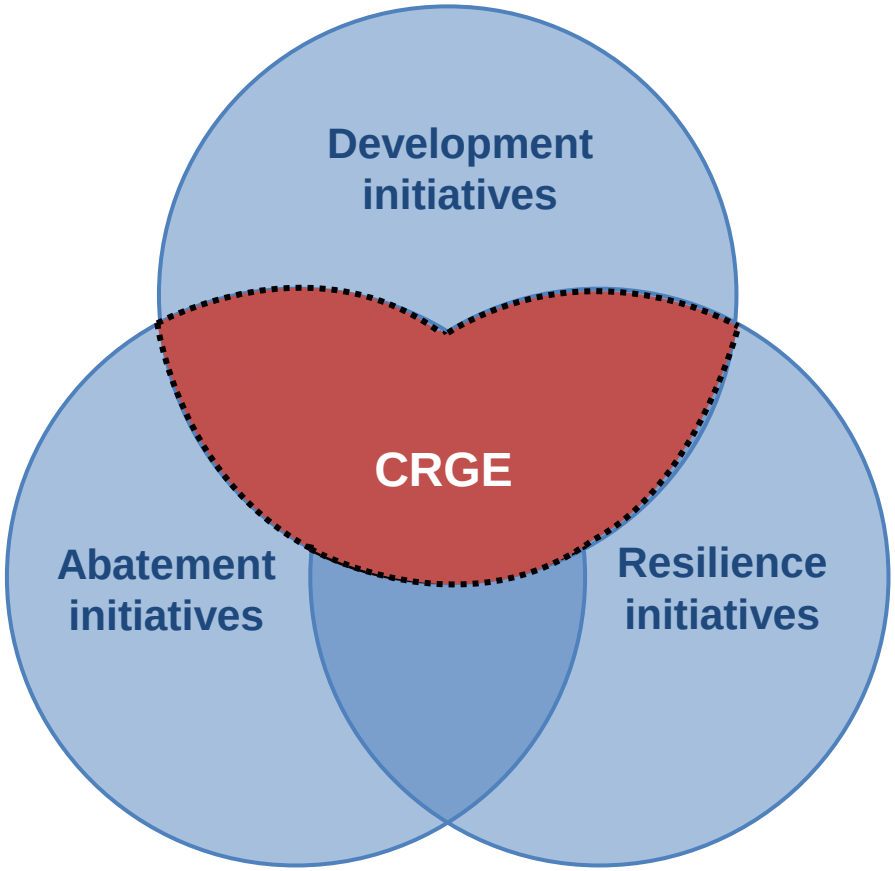
1. Introduction

- **GDP growth of Ethiopia has direct correlation with rainfall availability.**
- **Therefore, for Ethiopia, development and implementation of a holistic CRGE strategy is imperative.**

It is key to address poverty, enhance economic growth & ensure sustainable development of the country

1. CRGE Vision

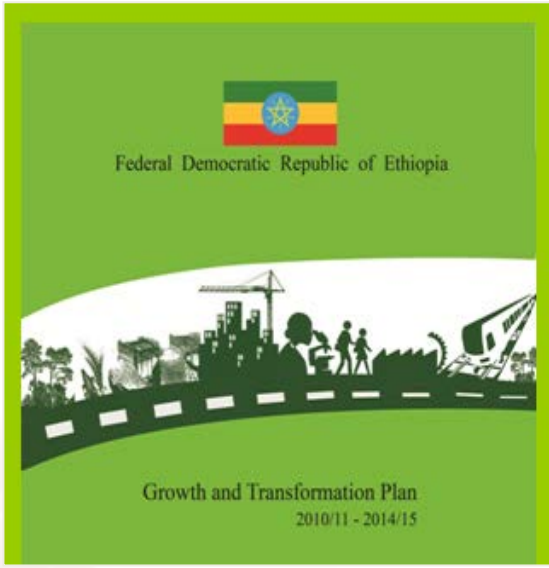
Conceptual framework



Developing a Climate Resilient Green Economy requires the integration of economic development, adaptation and mitigation

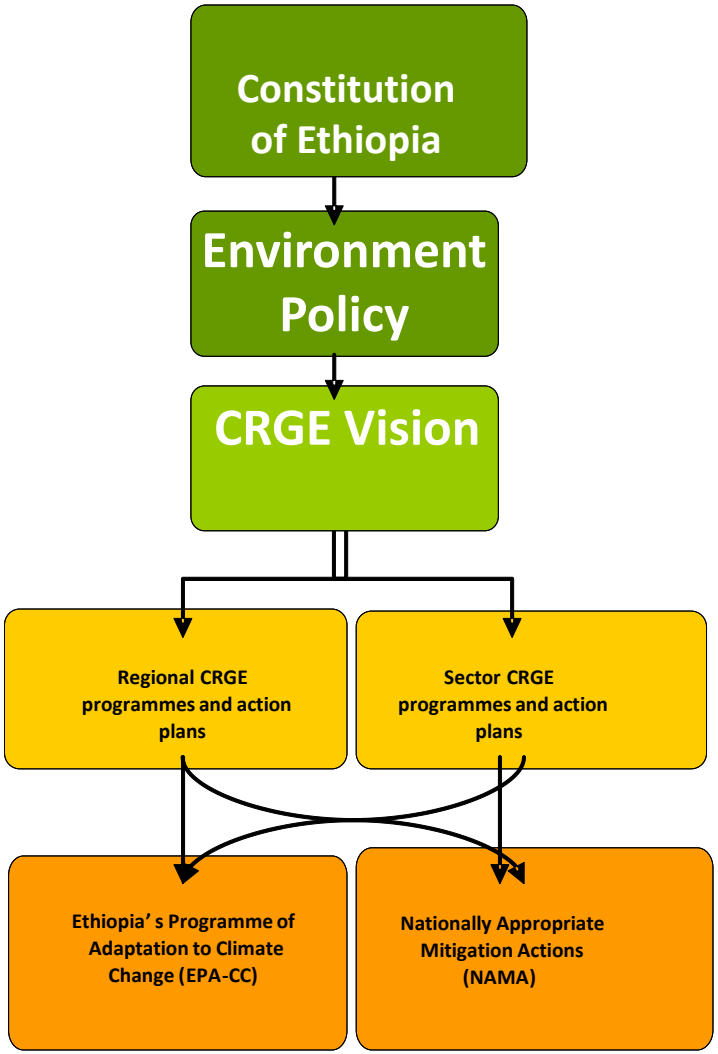
Source: CRGE

Setting the vision

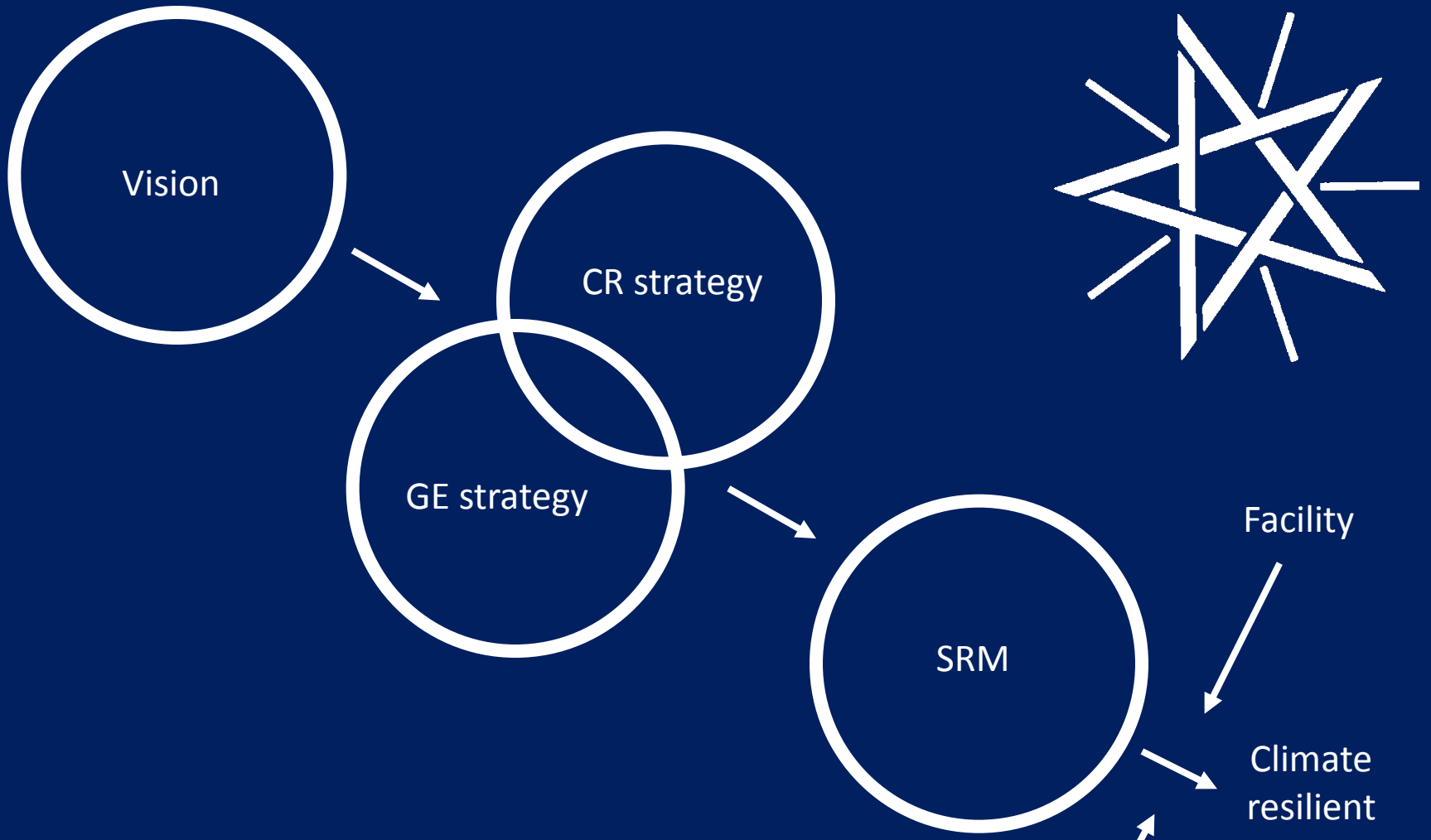


- **Ethiopia: a middle income country by 2025**
- **Net emission of GHGs to become zero/ neutral**

CRGE… policy alignment



Ethiopia- CRGE by 2025



roadmap for achieving CRGE

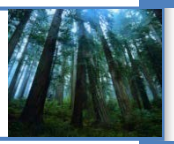
CR GE

Justifications for a GE

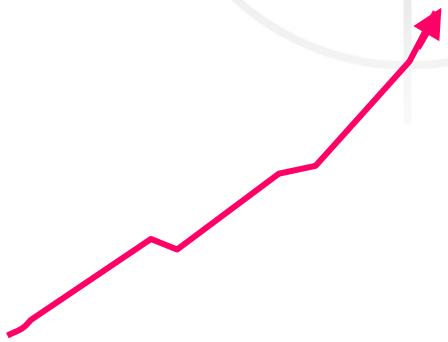
- natural resource assets
  - necessary to arrest agro-ecological degradation (70 % of Ethiopia is arid…)
  - Carrying capacity
- huge low carbon potential – (ex: rich in forests, hydro, solar, wind & geothermal energy.)
- co-benefits (for health, wellbeing, economic growth and natural resource conservation)
- Deviation from lock-in in old technologies
- global carbon finance
- Ethiopia is well positioned to become a regional and global leader in low carbon growth which will have legacy and commercial benefit long into the future.

Identified GE potentials

Goal of the sectors and implications

1. **Power** 
2. **Buildings/ Gr. Cities** 
3. **Forestry** 
4. **Soil** 
5. **Livestock** 
6. **Transport** 
7. **Industry** 

- Build generation capacity to satisfy growing demand
- Reach economic growth targets as planned in the GTP
- Economic growth of each sector will lead to higher emissions

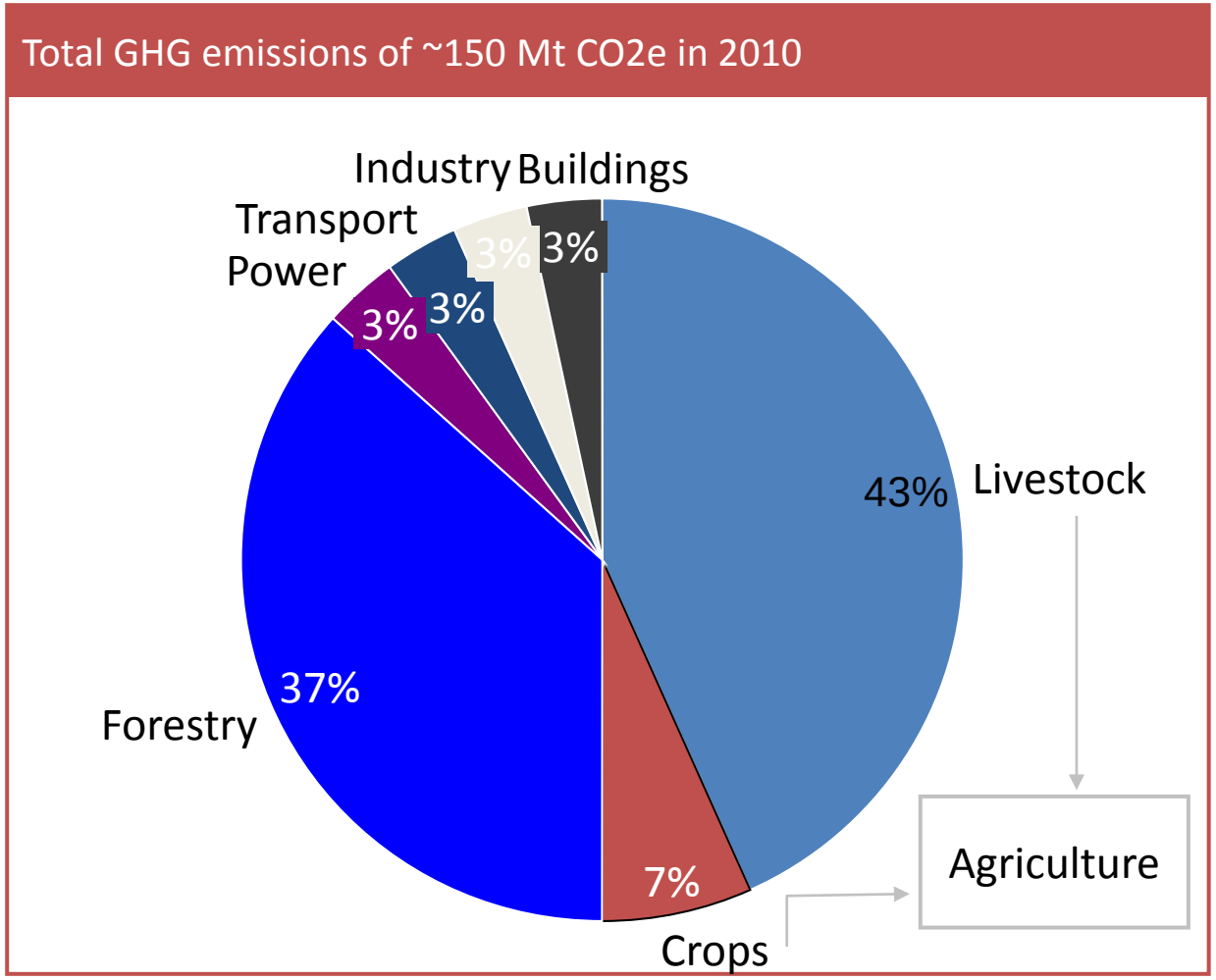


Contribution of CRGE

- **Enable** infrastructure development by developing strategy to **obtain financing**
- Develop green growth initiatives to **achieve GTP targets** while **reducing emissions**
- Provide essential analytics required to **secure carbon funding**
  - Estimate business-as-usual (BAU) emissions
  - Develop list of green growth interventions
  - Estimate abatement, growth contributions and feasibility of interventions
  - Develop implementation plans

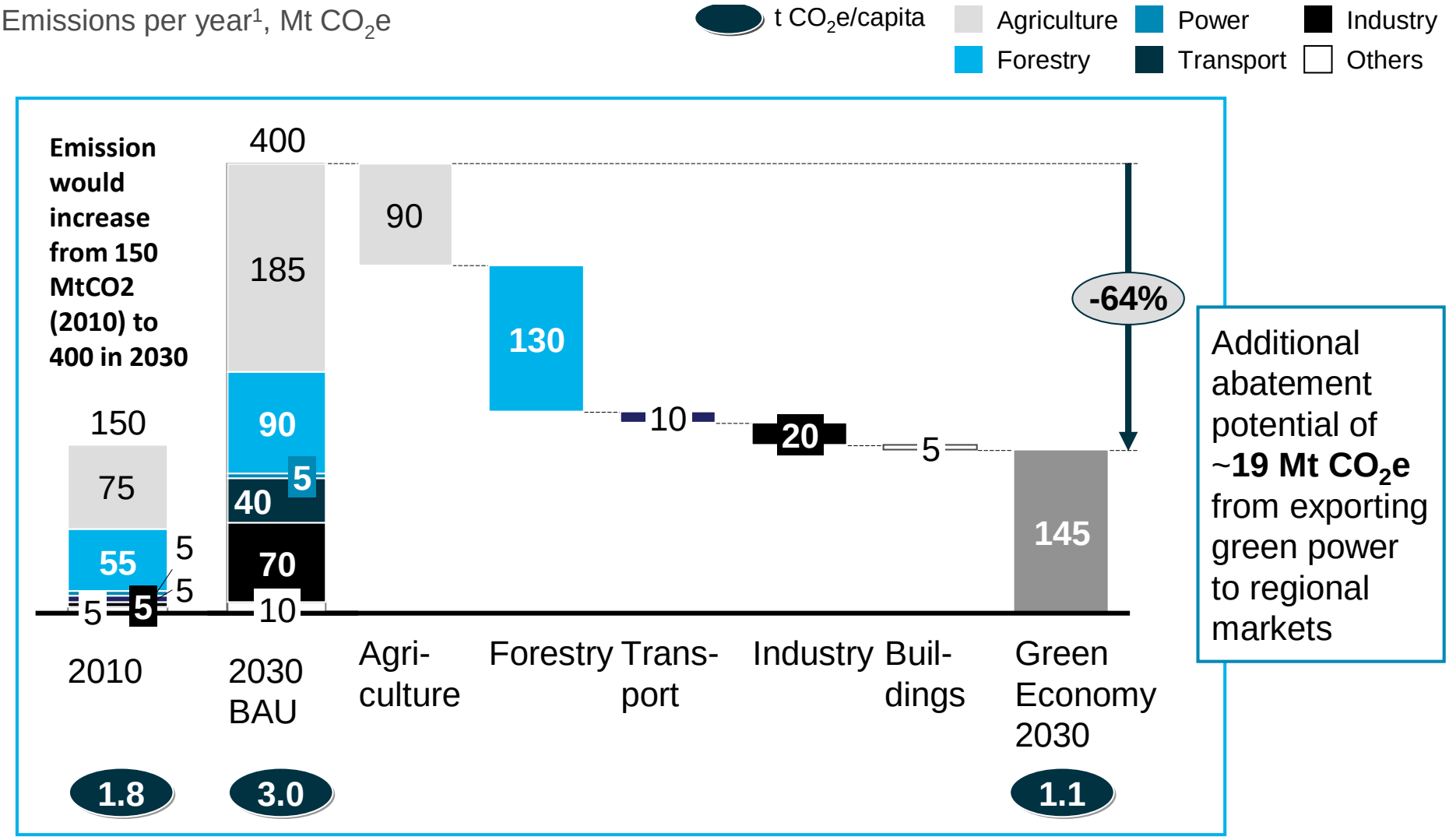
More than 85% of GHG emissions in Ethiopia come from forestry and agriculture

Share of GHG emissions, 2010



Source: CRGE

Emissions per year[1], Mt CO_2e



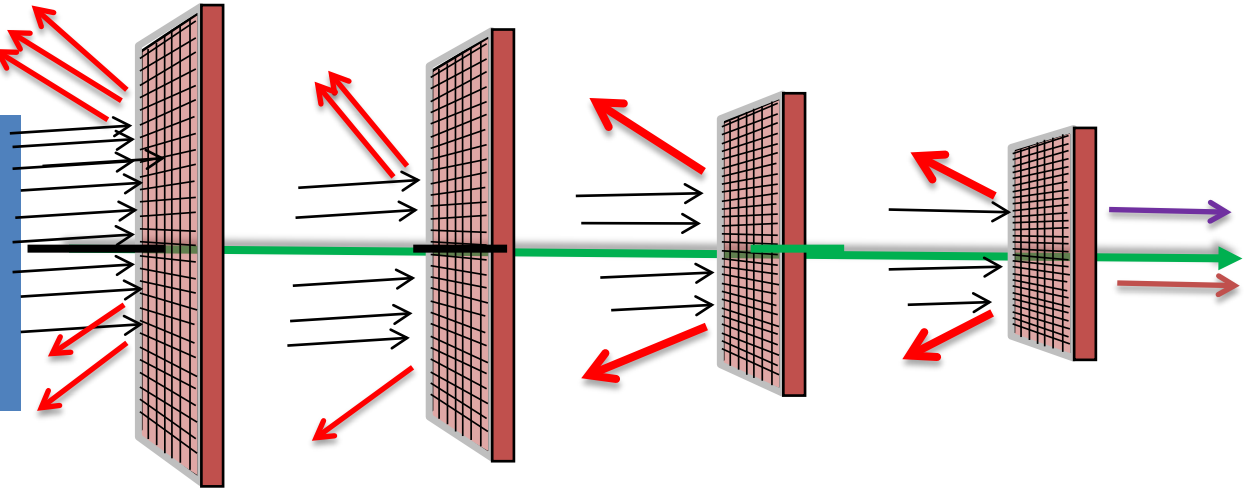
Additional abatement potential of **~19 Mt CO_2e** from exporting green power to regional markets

1 Rounded numbers
2 Currently estimated emissions form buildings and waste

Ethiopia has shortlisted >60 green economy initiatives

Power | Buildings | Forestry | Soil | Livestock | Transport | Industry

Long list of potential green growth initiatives – **150+ initiatives**



Prioritized measures for inclusion into strategy- **>60 initiatives**

Feasibility of the initiatives in local context – technological availability, technical and institutional implementability

GTP effects – potential to contribute to reaching targets as outlined in GTP

Abatement potential – GHG emissions reduction in case of implementation as compared to BAU

Cost effectiveness – costs to reduce one t of CO_2e

Source: CRGE

The strategy for a green economy is based on four pillars

Mt CO_2e abatement potential in 2030

Middle income country in 2025

Agriculture – Improving crop and livestock practices

- **Reduce deforestation by agricultural intensification and irrigation of degraded land**
- **Use lower-emitting techniques**
- **Improve animal value chain**
- **Shift animal mix**
- **Mechanize draft power**

90

Forestry – Protecting and growing forests as carbon stocks

- **Reduce demand for fuel-wood via efficient stoves**
- **Increase sequestration by afforestation/ reforestation, forest management and area closure**

130

Power – Deploying renewable and clean power generation

- **Build renewable power generation capacity and switch-off fossil fuel power generation**
- **Geothermal is a high priority**
- **Export renewable power to substitute for fossil fuel power generation abroad**

19[1]

Industry, transport and buildings – Using advanced technologies

- **Improve industry energy efficiency**
- **Improve production processes**
- **Tighten fuel efficiency of cars**
- **Construct electric rail network**
- **Substitute fossil fuel by biofuels**
- **Improve waste management**

35

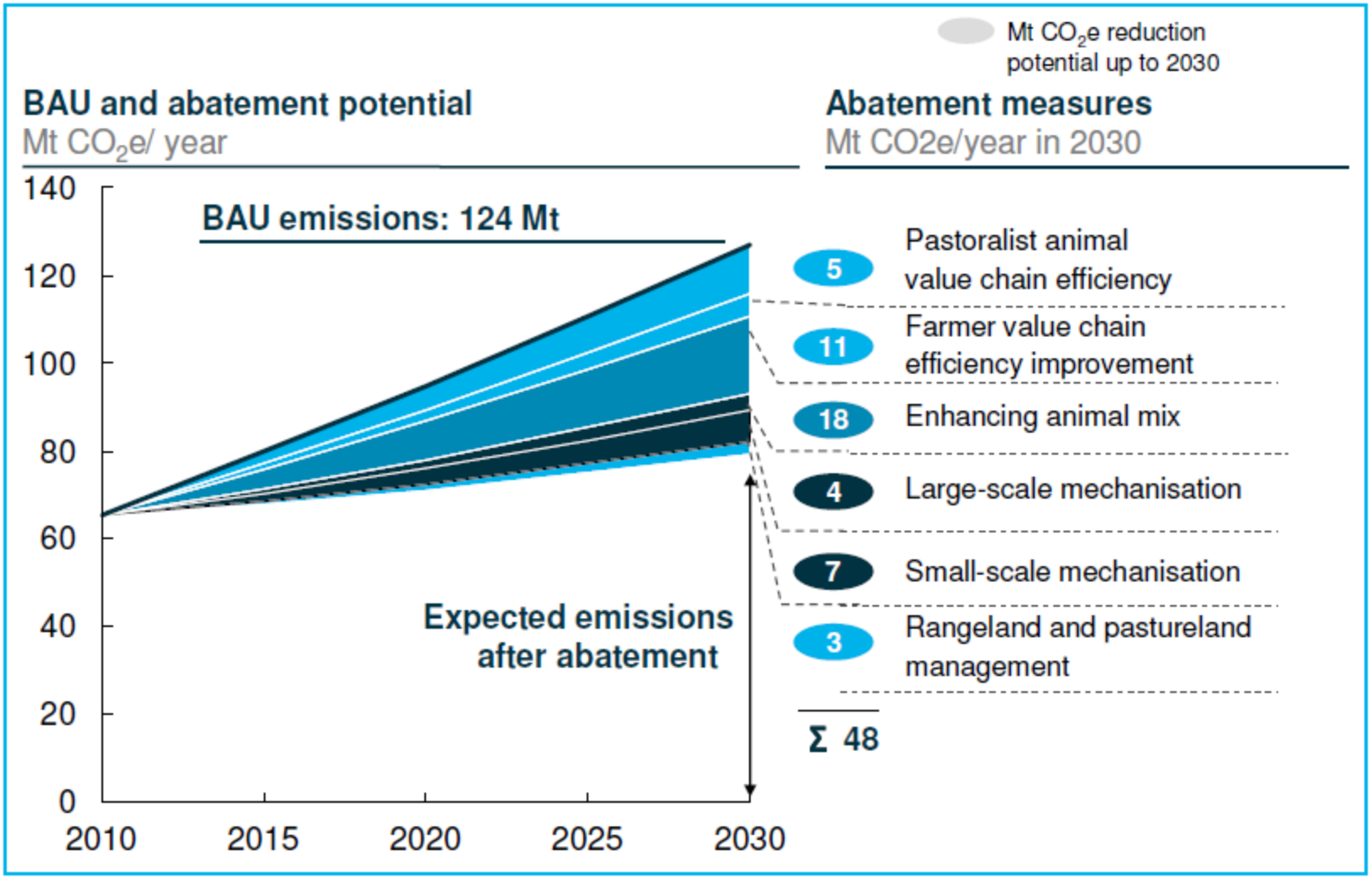
Climate resilient green economy strategy

1 Non-domestic abatement potential from power exports

Source: CRGE

Identified abatement levers and specific examples

Livestock – Abatement potential until 2030 is 48 Mt CO_2e per year



`Livestock`- List of identified abatement levers

Levers quantified

Levers	Description
▪ Increase animal value chain efficiency to improve productivity	▪ Interventions aimed at improving GDP output per cattle via — Higher production per animal — Increased Off take rate, let by better health and marketing
▪ Support consumption of lower emitting sources of protein	▪ Support the increase in poultry consumption (objective of 30% of meat consumption by 2030) by acting both on supply and demand aspects
▪ Mechanization of draft power	▪ Introduction of mechanic equipment for plowing/tillage in substitution of ~50% of animal draft power
▪ Grazing land management and pasture improvement	▪ Introduction of techniques to increase soil carbon content and productivity of pasture land
▪ **Manure management**	▪ Wide range of activities including manure storage and utilization (e.g., for electricity generation through biogas)
▪ **Modify rumine ecology**	▪ Additives, diet mix ▪ Manipulating rumine flora ▪ Vaccines to stop activity of methane producing organisms
▪ **Low emitting cattle breeds**	▪ Select low emitting breeds

Source: Livestock STC analysis

`Forestry` – List of identified levers

Macro levers	Levers	Description
▪ **Reduce pressure from agriculture on forests**	▪ Agriculture intensification on existing land	▪ Decrease requirements for new agricultural land by increasing yield and value of crops
	▪ Prepare new land for agriculture through medium and large scale irrigation	▪ Shift of new agricultural land from forest to degraded land brought into production thanks to irrigation
	▪ Prepare new land for agriculture through small scale irrigation	▪ Shift of new agricultural land from forest to degraded land brought into production thanks to irrigation
▪ **Reduce demand for fuelwood**	▪ Fuelwood efficient stoves	▪ Reduce wood requirements thanks to efficient stoves (in rural areas mostly)
	▪ Electric stoves	▪ Switch to electric stoves (in urban areas mostly)
	▪ LPG stoves	▪ Switch to LPG stoves
	▪ Biogas stoves	▪ Switch to biogas stoves (in rural areas)
▪ **Increase sequestration**	▪ Afforestation and reforestation	▪ Large scale afforestation and reforestation degraded areas
	▪ Forest management	▪ Large scale forest management programs

Source: Forestry STC analysis

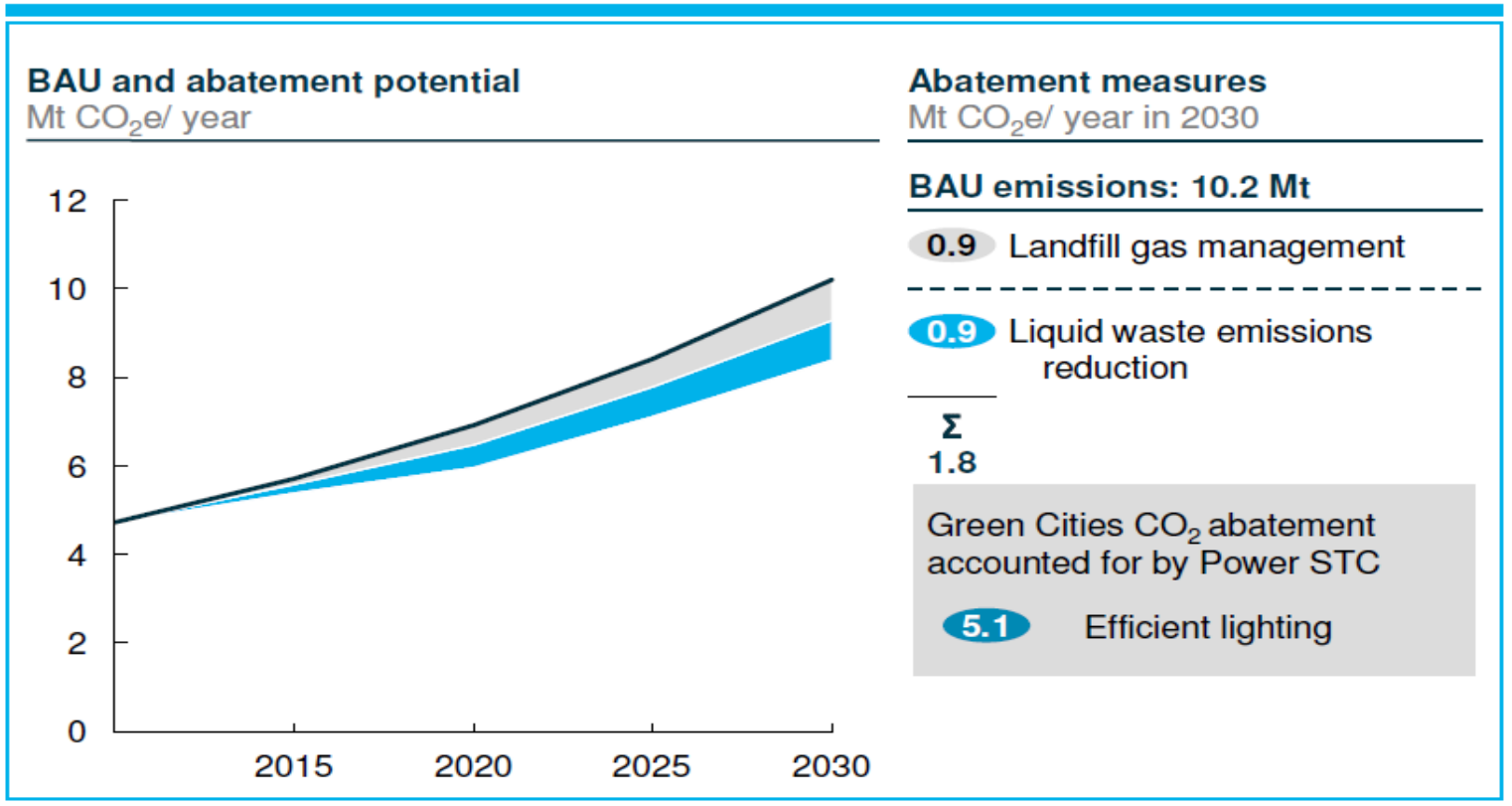
`Soil` – List of identified abatement levers

Lever Categories	Example Levers	Description
▪ **Introduction of Lower Emitting Techniques *(includes 10+ levers)***	▪ **Promote use of organic fertilizers** ▪ **Conservation agriculture** ▪ Use crop cultivars known for carbon and nitrogen use efficiency ▪ Adjust fertilizer rates to crop needs (e.g., precision farming) ▪ Integrated use of high value tree crops on degraded land	Increase soil stock of C per unit of area; decrease N volatilization, percolation, leaching and improve plants N absorption
▪ **Agriculture Intensification *(includes 10+ levers)***	▪ Improved inputs usage ▪ Residue management	Decrease requirements for new agricultural land (coming primarily from forests)
▪ **Creation of New Land through Irrigation**	▪ Small scale irrigation ▪ Large scale irrigation	Decrease requirements for new agricultural land (coming primarily from forests)

Source: Soils STC analysis

‘Green cities’ – landfill mgt, liquid waste mgt and efficient lighting

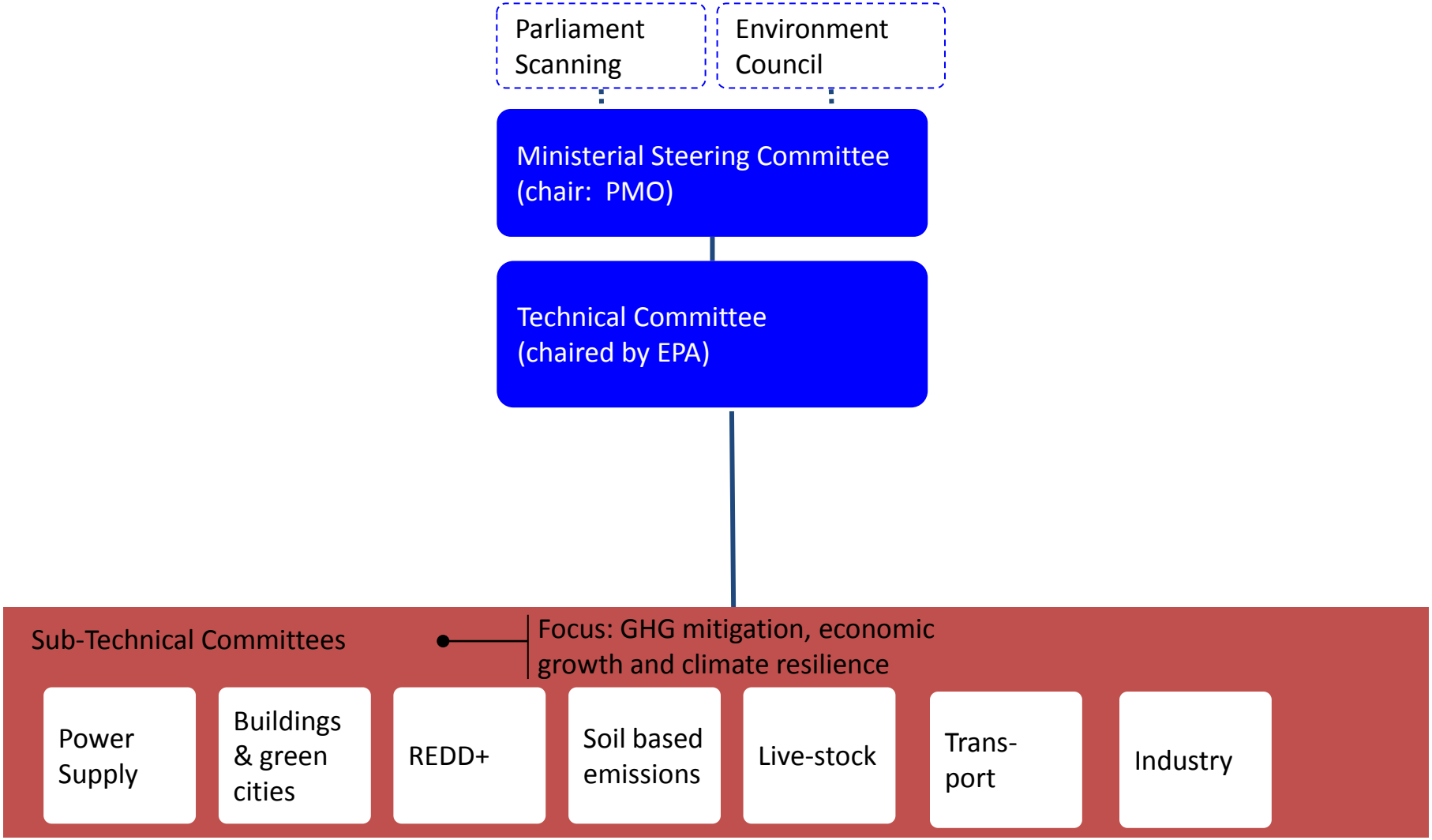
Green cities – Abatement and sequestration potential reaches 1.9 Mt CO_2e per year in 2030



CRGE - Organization

- **inter- sectoral collaboration**
  - **PMO led the inter-ministerial committee**
  - **EPA led the technical committee**
- **National launch – 16 November 2011**
- **launch (international community) – 07 December 2011**

CRGE - Organization



SOURCE: EPA

Finance for GE implementation

US$: 150 Billion

1.Government budget- **by mainstreaming the Green Economy initiatives into existing development programmes**

2. Supported - **Development partners**

3. Credited - International Carbon Finance Mechanisms – ex:- JCM, CDM

CRGE Facility

CRGE Facility Objectives

1. To support the implementation of the priorities set out in the CRGE Strategy through:
   - Mobilizing; accessing and combining domestic and international, public and private sources of finance

2. To improve environmental management for a climate resilient green development
   - by providing grants, loans or ex-post rewards for capacity building, technology generation, transfer, or for a combination thereof

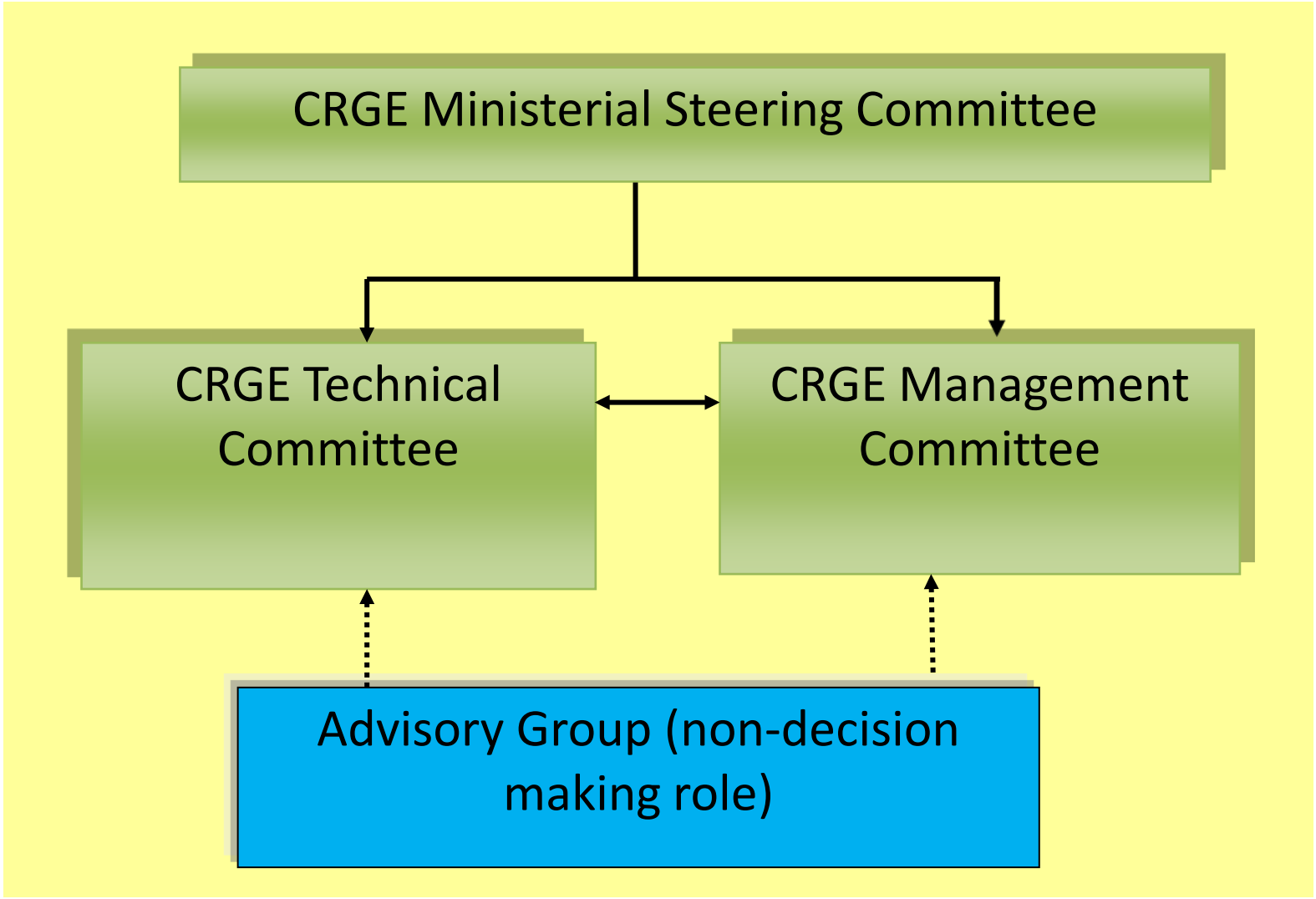
Financial Sources

- Budgetary support from government – 2% of GDP this year
- Private finance
- Carbon credits
- Development partners
- Financial mechanism of MEAs
- Innovative sources – PES, CSER, taxes

Structure of the CRGE Facility

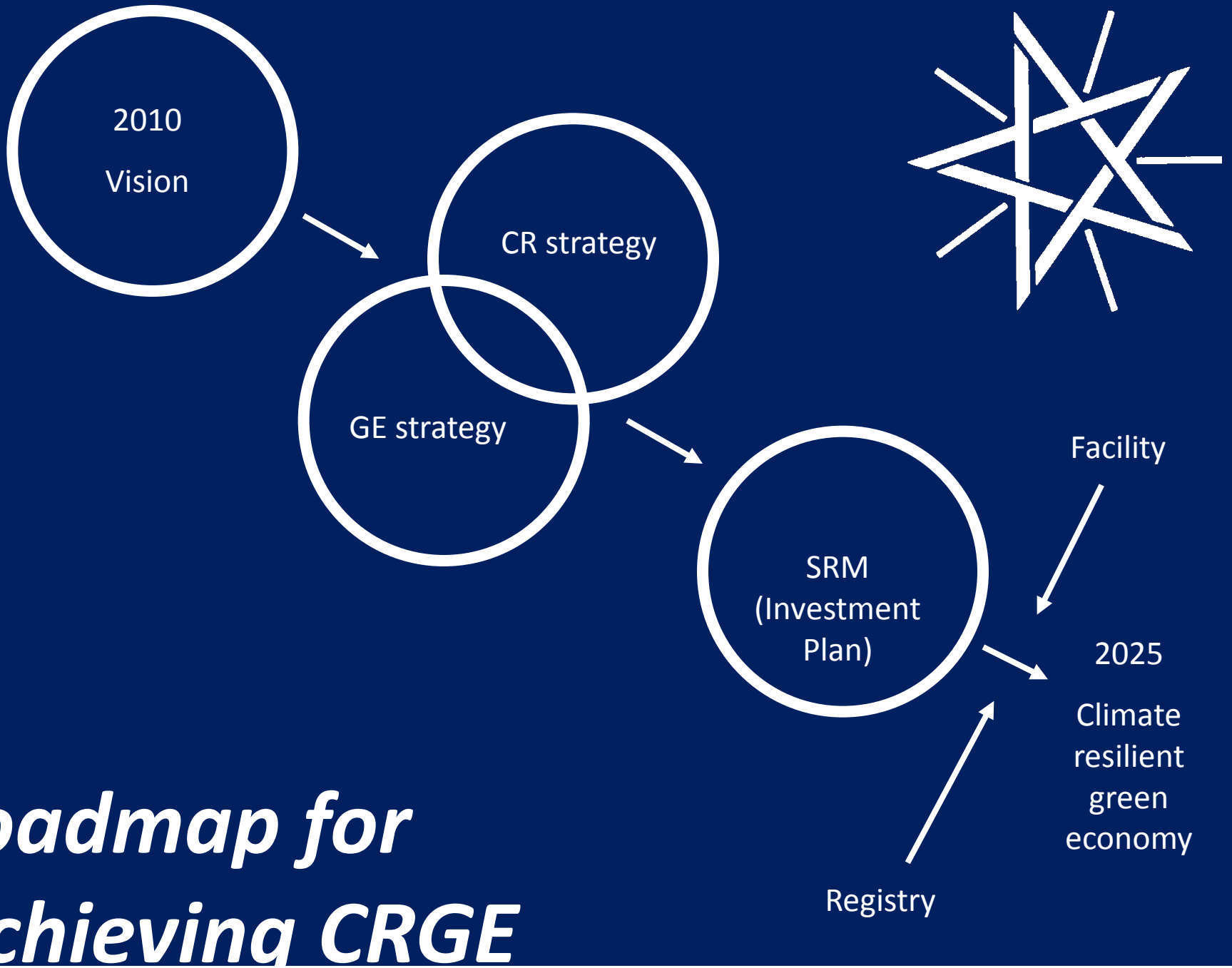
- Two windows:
  - a **Strategic window**-exclusively provide support for implementation of activities that have been identified through a strategic process (the SRM) and
  - a **Responsive window**-provide demand-driven support for implementation and institution-building activities

CRGE Facility Governance Structure



CRGE Facility

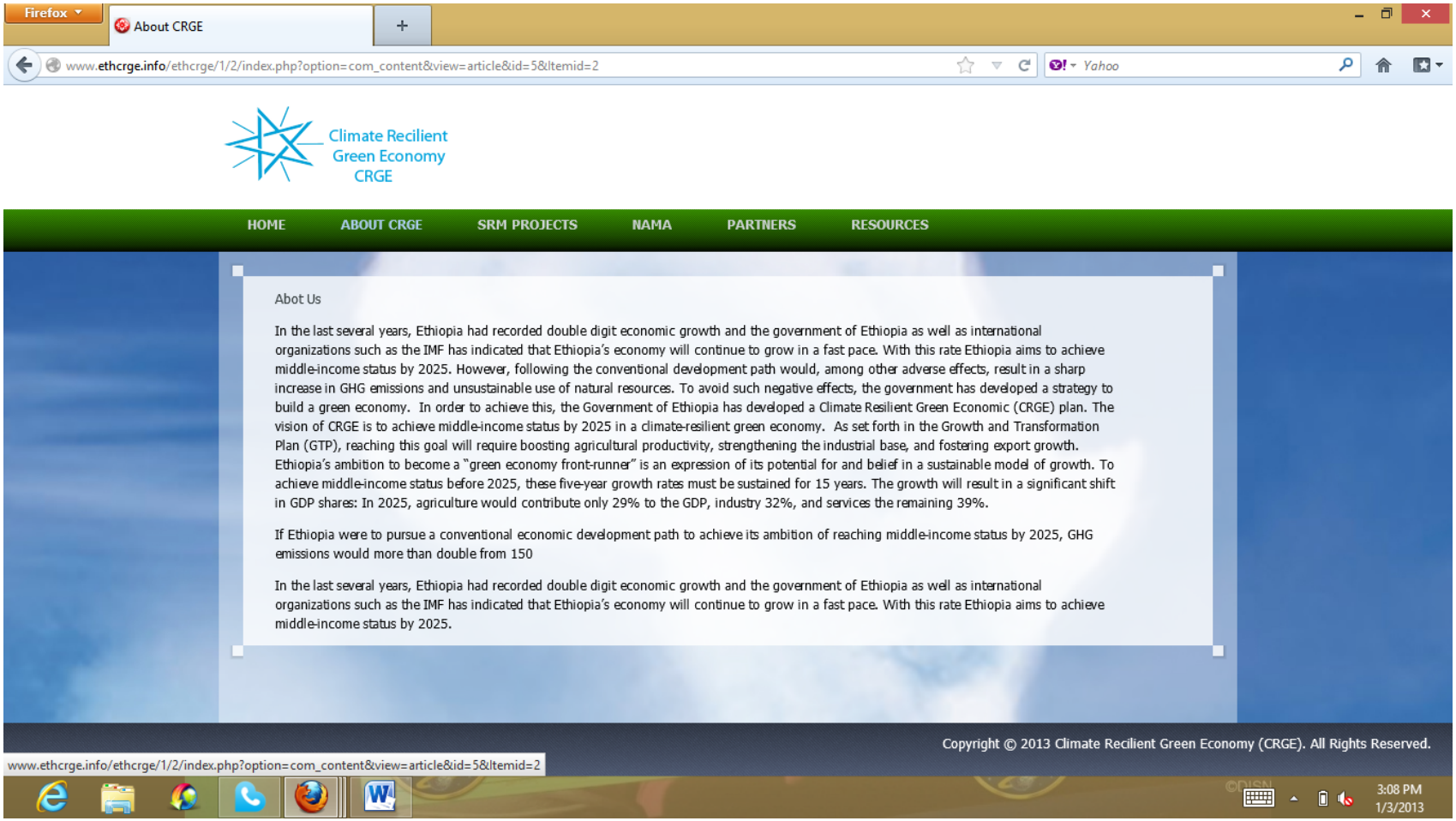
- **Launched on 21 August, 2012**
- **Hosted by MoFED**
- **Initial financial flow …**
  - **Government budget**
  - **Donors – Austria, UK, Norway, Denmark…**



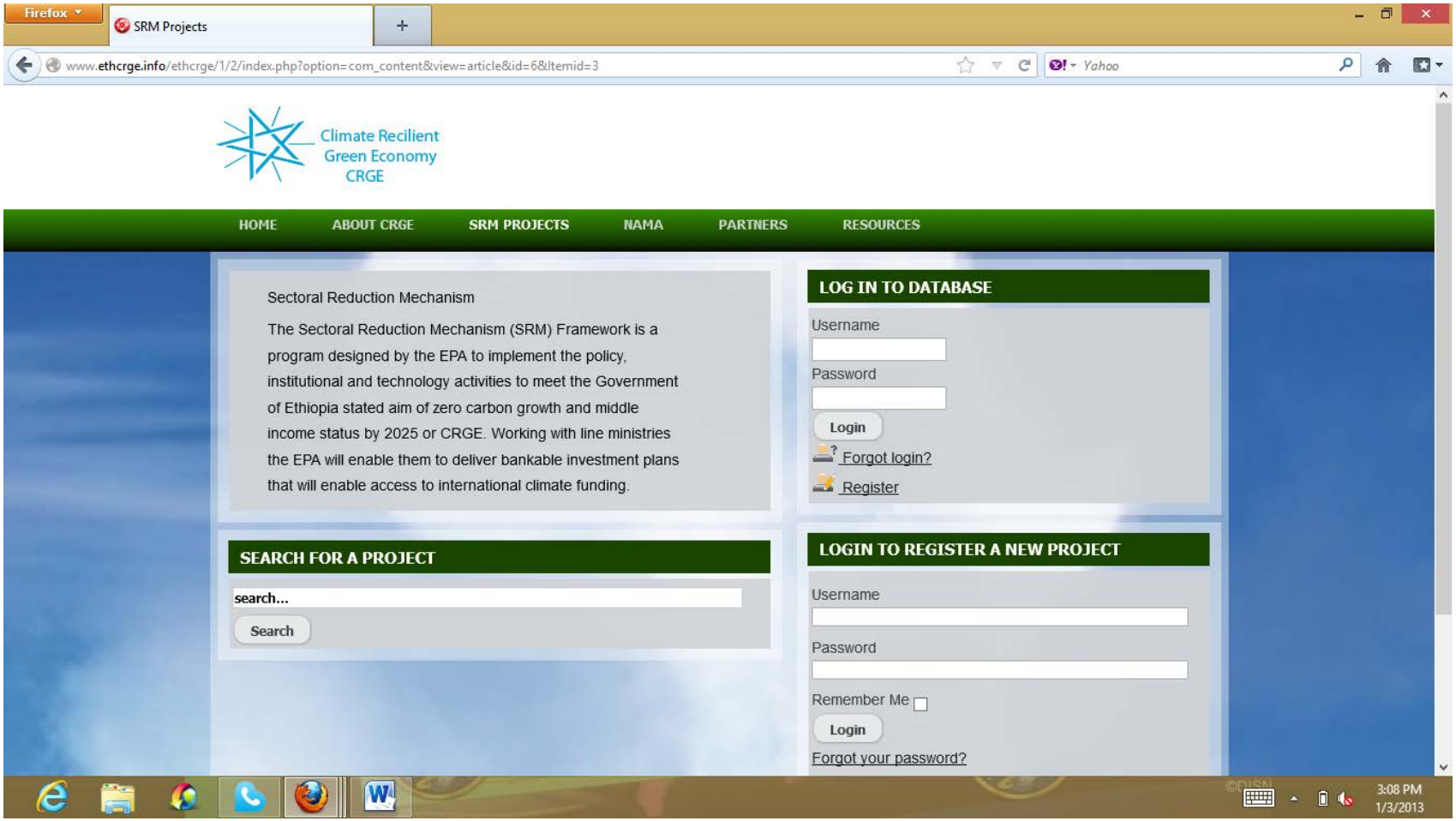
roadmap for achieving CRGE

CRGE Registry

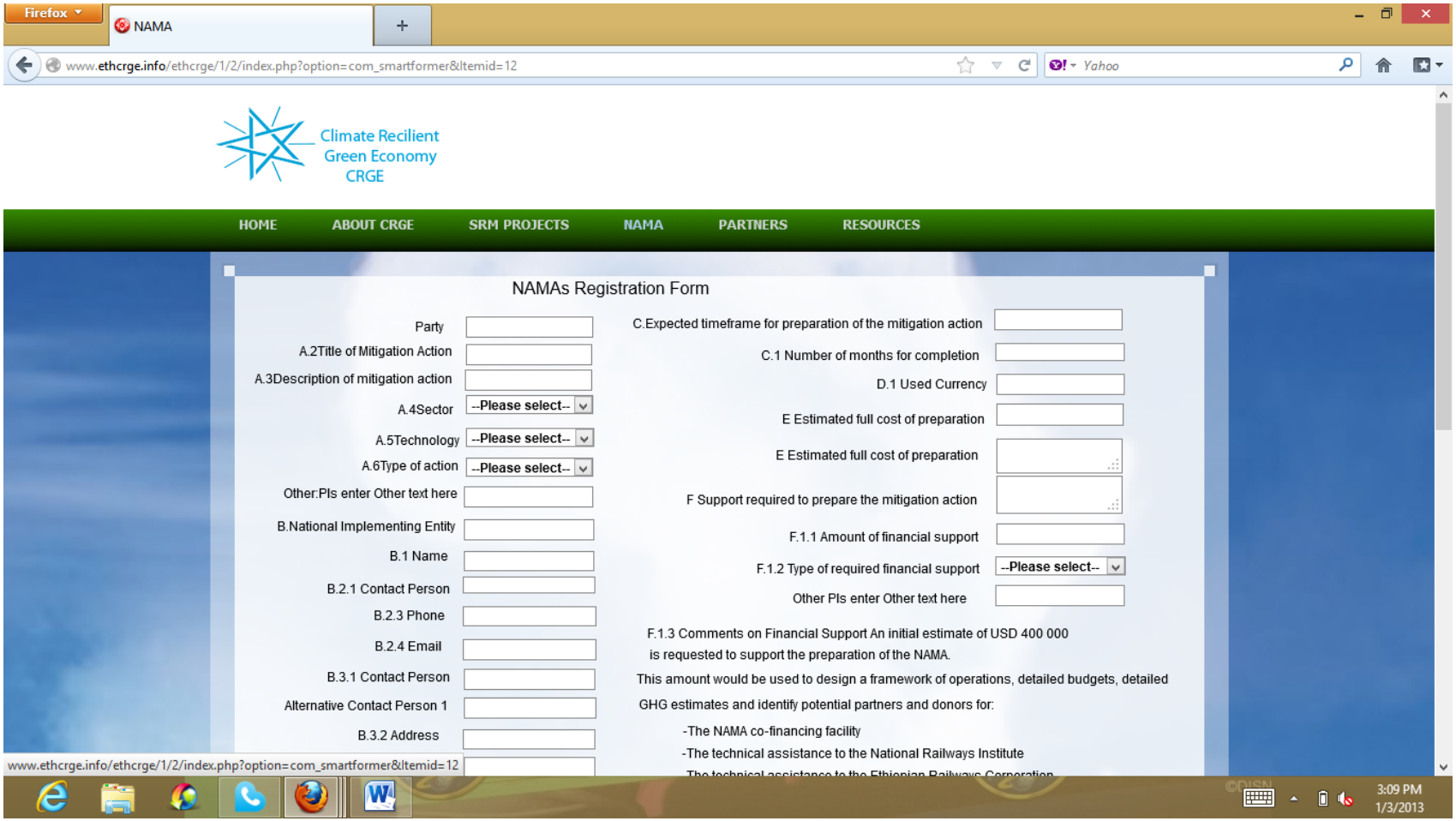
CRGE Registry – to track progress, transparency, interact…



CRGE Registry underway



CRGE Registry



Thank you!