COUNTRY REPORT

Climate Change and Green Low carbon Development

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Presented by:
Yamelakesira Tamene Bekele, Director, Technology Transfer and Technical Support
Ministry of Environment, Forest and Climate change
Ethiopia
Profile

- **Ethiopia** is a **landlocked country** located in the Horn of Africa.

- Officially known as the **Federal Democratic Republic of Ethiopia**.

- The capital is **Addis Ababa**. Ethiopia is bordered by **Eritrea** to the north, **Sudan** to the west, **Djibouti** and **Somalia** to the east, and **Kenya** to the south.
CLIMATE

Rainfall

- Altitude below 1,500 (low land) receives 500mm or more (in some low land areas - erratic)
- Mid altitude 1,500-2,400m receives 500-1500mm
- High land 2400m and above receives 1300-1800mm
- The principal rainy season occurs between mid-June and end of September, some areas receive bimodal rainfall
Believed to be the origin of mankind

*Australopithecus afarensis* (Lucy)

The last ancestor common to humans and chimpanzees living from 3.9 to 3 million years ago

Dated at 3.3 mya, approximately 120,000 years older than "Lucy"
Facts....

- Ethiopia, the birthplace of coffee, is Africa’s leading Arabica coffee producer and exporter.

- The name coffee derived from the Kaffa region where the coffee plant is believed to have originated.

- Legend indicates that coffee was discovered in Ethiopia in 850 A.D. when a herdsman noticed his goats hanging around a red berry bush and chatting happily.
Organic coffee in Ethiopia

Collecting ripened coffee

Cleaning

Roasting
Ethiopian Great Runners
Abebe B.  Haile  Derartu
Some of the Beijing Olympic Heroes

Meseret Defar    Kenenisa Bekele    Tirunesh Dibaba
Effects of Climate Change
Ethiopia is affected by the adverse impacts of climate change brought by the “carbon-intensive development paths” linked with fossil fuel uses and land use changes.

**Introduction...**

- Population Pressures
- Ethiopia: Highly Vulnerable to adverse impacts of CC
- Environment: land degradation, desertification, flooding, fragile
- Low autonomous adaptive capacity
- Dominance of climate-sensitive sectors (e.g., Agriculture-rain fed)
Unless steps to build resilience are effective, climate change will reduce Ethiopia’s GDP growth between 0.5 and 2.5% each year.

Source: World Bank 2008, Economics of Climate Change in Ethiopia
• As set forth in the national GTP, Ethiopia has embarked upon the development of a CRGE strategy- addresses both adaptation and mitigation objectives
As Climate Change has become inevitable, developing and implementing a CRGE strategy requires the integration of economic development, adaptation and mitigation.

1 Reduction in emissions from deforestation and forest degradation + sequestration from afforestation/reforestation
CRGE implementation could ensure a low-carbon economic development pathway, decreasing per capita emissions by 60%

Additional abatement potential of ~19 Mt CO₂e from exporting green power to regional markets

1 Rounded numbers
2 Currently estimated emissions form buildings and waste
The strategy for a green economy is based on four pillars

**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

**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

**Power – Deploying renewable and clean power generation**
- Build renewable power generation capacity and switch-off fossil fuel power generation
- Export renewable power to substitute for fossil fuel power generation abroad

**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

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1 Non-domestic abatement potential from power exports

Source: CRGE
The example of fuel efficient stoves shows that green economy initiatives will foster growth...

Estimated effects of fuel efficient stove usage in 2015

**Fuel efficient stoves help to achieve GTP targets in several dimensions**

- **GHG emissions**
  - Reduction from forest degradation,
  - It would save USD 270 million, increasing rural household income by 10%.

- **Creating an industry**
  - Worth USD 15 million value add p.a. and employing 35,000 people

- **Producing additional benefits**
  - By improving health and gender equality

Source: CRGE strategy
<table>
<thead>
<tr>
<th>Description</th>
<th>Increase health and safety</th>
</tr>
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<tbody>
<tr>
<td></td>
<td>Reduce indoor air pollution and severe health risks from smoke inhalation</td>
</tr>
<tr>
<td></td>
<td>▪ Toxic smoke and indoor air pollution causing more than 50,000 deaths p.a</td>
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<table>
<thead>
<tr>
<th>Description</th>
<th>Empower women</th>
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<tr>
<td></td>
<td>Decrease hours spent on gathering fuelwood (typically by women and children, often in risky areas)</td>
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<tr>
<td></td>
<td>▪ Increases participation in productive activities (e.g. stove production)/ Increase opportunities for education/Decrease health risk and vulnerability</td>
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<table>
<thead>
<tr>
<th>Description</th>
<th>Enable education</th>
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<tbody>
<tr>
<td></td>
<td>▪ Increase of available time for education by reducing the time of collecting and purchasing fuelwood</td>
</tr>
<tr>
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<td>▪ Better nutrition increases learning capacities</td>
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The investment plan includes programs to improve production, distribution, and financing, ideally via access to carbon credits.
Implementing the CRGE Strategy
Like most countries, Ethiopia is experiencing the effects of climate change.

Ethiopia is one of the first developing countries to develop a strategy to comprehensively address climate change implications.

Ethiopia’s Climate Resilient Green Economy (CRGE) strategy aims to build a green economy and create resilience to the adverse impacts of climate change.

Ethiopia is currently faced with serious challenges arising from climate change which include erratic rainfall, severe and recurrent droughts and floods.
Flood damage on infrastructures and villages in Dire Dawa
Cont...

Animal Diseases

Road destruction
Climate Resilient Green Economy Strategy

- The strategy is built on a 5 year plan developed in 2010 aiming at the ambition of reaching a middle income status before 2025.

- Net emission of GHGs to become zero/neutral

- CRGE strategy- addresses both climate change adaptation and mitigation objectives
Developing a Climate Resilient Green Economy combines development, abatement and resilience initiatives.

**Economic development**
- Achieving middle income status by 2025

**Abatement**
- Keeping emissions constant by applying abatement measures in sectors such as forestry, agriculture and industry
- Becoming a “green economy frontrunner” by investing into low-carbon infrastructure

**Resilience**
- Reducing vulnerability to climate-change-associated risks:
  - Gradual hazards (e.g., vector-borne disease)
  - Event-driven hazards (e.g., landslides and flooding)
For pursuing a green economic model, comparisons of emissions were made between a business as usual growth and a low carbon growth model across potential emitting sectors.

It was found that under current practices, green house gases emissions would more than double from 150 Mt Co2e in 2010 to 400 Mt Co2e in 2030.
2.1. Green Growth Strategy of Ethiopia
Five Steps - followed to develop GGS of Ethiopia

1. Identify Priority Growth sectors

2. Develop Baseline and BAU Reference Scenario

3. Identification of abatement levers: Enlist and elaborate measure to reduce or avoid emissions and to enhance sequestration from afforestation/ reforestation and management of existing forests

4. Prioritize measures: Feasibility Assessment and Cost Benefit Analysis

5. Develop Implementation Plans
More than 85% of greenhouse gas emissions in Ethiopia came from forestry and agriculture.

Total GHG emissions of ~150 Mt CO2e in 2010

Share of GHG emissions, 2010:
- Agriculture: 37%
- Forestry: 43%
- Crops: 7%
- Livestock: 3%
- Power: 3%
- Industry: 3%
- Transport: 3%

Source: CRGE
The power sector in Ethiopia is an exception as it is the only sector in which emissions will stay very low.

- Ethiopia has ample potential in renewable energy generation, most prominently in hydroelectric power, as well as other renewable such as wind and geothermal power generation.
- Wind Energy – There are major investments in this sector.
- Emissions are projected to remain below 5 Mt CO2e in the BAU scenario.
The total power demand is projected to grow from 4 TWh in 2010 to more than 75 TWh in 2030.

If the installed electric power generation capacity exceeds domestic demand as planned, Ethiopia will have capacity to export electricity generated from renewable energy to countries in the region (up to 28 TWh).

This will substitute for their conventional electric power generation and hence decrease GHG emissions by nearly 20 Mt CO2e.
The Ashegoda Wind Farm

- The largest investment in the wind energy in Sub-Saharan Africa, 290 Million USD
• **Geothermal Energy** – This includes – The agreement between the Ethiopian Government and a U.S.-Icelandic firm to develop a 1,000 MW geothermal power plant, Africa's largest, in the Ethiopian Rift Valley, with 4 billion USD investment

• **Methane Capture and Flaring from Addis Ababa Rupi Land Fill**
The value for Electricity production from coal sources (kWh) in Ethiopia was 0.00 as of 2011.

However, some coals have so far been imported from South Africa and Sudan for cement and metal industries.
TRANSPORT Sector

The Addis Ababa light rail transit network – which involves the construction of the 34.25 km double track electrified light rail transit to provide transportation service to 60,000 people per hour.

The Sebeta-Miezzo-Dewelle electric rail network – which will be the main rail network to Djibouti.
• Shows Ethiopia’s commitments to address adverse impacts of CC to the nations of the world

• Negotiations - H.E. former Ethiopian PM. Meles Zenawi: Global leader of international climate change negotiations

• Lessons – Ethiopia also shows other countries how green growth can be achieved

CRGE strategy, it welcomes all supports from development partners and concerned stakeholders that promote the implementation of the CRGE strategy.
THANK U!

Yamelakesira Tamene Bekele
Director, Technology Transfer and Technical Support
Email: yamelakesira5@yahoo.com
Tele: 251-9-21320915