



FEDERAL
DEMOCRATIC REPUBLIC
OF ETHIOPIA

The path to sustainable development

Ethiopia's Climate-Resilient Green Economy Strategy



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**Ethiopia's Climate-
Resilient Green
Economy Strategy**



The government of the Federal Democratic Republic of Ethiopia is striving to ensure a swift yet equitable and truly sustainable response to economic development and climate change. In this spirit, we welcome support from the public and private sectors that will assist in generating appropriate knowledge, skills, and concrete improvements to promote low-carbon growth and enable us and the world to reap the benefits far into the future.

Foreword by the Prime Minister

For Ethiopia, green growth is a necessity as well as an opportunity to be seized. It is an opportunity to realize our country's huge potential in renewable energy and a necessity so as to arrest agro-ecological degradation that threatens to trap millions of our citizens in poverty.

We have therefore embarked upon the development of a Climate-Resilient Green Economy (CRGE) strategy addressing both climate change adaptation and mitigation objectives. We have now completed the preparation of the green economy strategy, which will be fully integrated into our five-year Growth and Transformation Plan. Our goal is quickly to improve the living conditions of our people by reaching a middle-income status by 2025 based on carbon-neutral growth. We are committed to effectively transforming Ethiopia into an early adopter of a low-carbon growth path by 2013, and our CRGE initiatives are already being translated into investment-ready projects in the four key sectors.

One important green resource that will help us reach our goals is hydroelectric power. We plan to increase our generation capacity fivefold over the next five years to support green growth at home and potentially export to neighbouring countries, both as a source of income and as a concrete contribution to development and sustainability in Eastern Africa. Ethiopia has the natural resources to generate all the clean energy it needs and to decouple its economy from the fluctuating prices and unsustainable nature of the oil-based economy. At the same time, carbon finance could play an increasingly important role in the global economy and one that Ethiopia and its neighbours can benefit from.



Meles Zenawi
*Prime Minister of the Federal
Democratic Republic of Ethiopia*

The positive impact of sustainable development on health, social justice, economic growth, and natural resource conservation is significant. There are enormous untapped opportunities for action on climate change in Ethiopia and, for that matter, Africa as a whole that we can now begin to seize with international support on financing, infrastructure, and execution capacity. Our country is well positioned and moving fast to contribute to developing a green global economy, the environmental legacy and commercial benefits of which will endure long into the future.

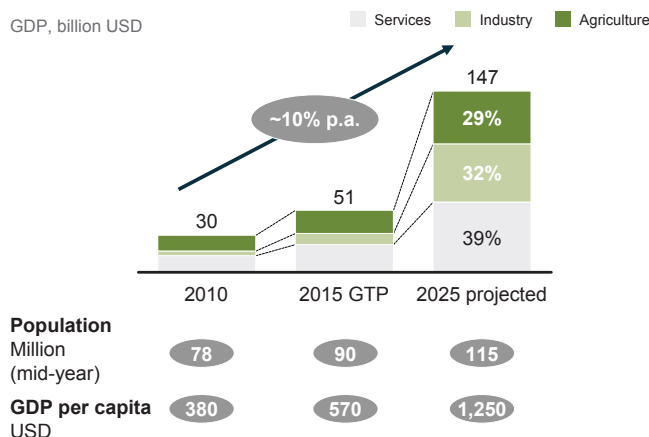


The challenge: Achieving economic development goals in a sustainable way

Ethiopia aims to achieve carbon-neutral middle-income status before 2025. As set forth in the national Growth and Transformation Plan (GTP), this leap will require increasing agricultural productivity, strengthening the industrial base, and fostering export growth. Economically, it means growing fast enough to increase the current gross domestic product (GDP) per capita of around USD 380 to USD 1,000 (the lower threshold of middle-income status), decreasing the share of GDP contributed by agriculture from more than 40% to less than 30%, and migrating from farming and herding to jobs in the services and industry sectors.

Ethiopia has good prospects for growth. The International Monetary Fund forecasts that Ethiopia will achieve real GDP growth of more than 8% annually over the next five years. Of the countries with more than 10 million inhabitants, only China and India are expected to grow at a faster pace. Furthermore, Ethiopia's recent track record demonstrates that it can achieve double-digit growth rates. Between 2005 and 2010, the real GDP grew by 11% p.a. In the past five years, 40% yield increase in agriculture was achieved.

The Growth and Transformation Plan (GTP) and long-term targets aim at transforming the Ethiopian economy



Ethiopia is the world's tenth-largest producer of livestock, and its major exports are coffee, sesame seed, leather, flowers, and gold. From 2005 to 2010, it improved its infrastructure, more than doubling electric power generation capacity, expanding the telecommunication network from 0.5 million users to 25 million, and adding over 11,000 kilometres to the existing road network.

To support growth, Ethiopia is attracting more foreign investment, which is up from around

USD 820 million in 2007/08 to more than USD 2 billion in the first half of the 2010/11 fiscal year. Among other factors, this success reflects a comparably good investment climate. The World Bank's 2011 Doing Business report ranks Ethiopia's overall business environment as better than that of many other countries. Ethiopia also received higher marks on its business tax rate and enforcement of contracts.

Ethiopia must continue to grow: it is still one of Africa's poorest and most vulnerable countries. Over 7 million people still face food insecurity, making food security a critical objective for the government. Most people rely on agriculture for their livelihoods, and increasing droughts and flooding are causing major rural crises. In particular, droughts in 2003, 2009, and 2011 showed once again how vulnerable the population is: Ethiopia's agricultural system is primarily rainfed, but parts of the country are prone to droughts and flooding. While changes in the severity and frequency of drought and flood events are difficult to project, uncertainty about the exact nature of future climate change and its effects must not be interpreted as uncertainty about the need to act now to minimise future environmental damage that could derail economic progress.

Ethiopia wants to avoid the traps of business-as-usual development. Like other developing countries, Ethiopia faces a critical challenge in achieving its development goals: financing. Capital constraints could lead to investments in conventional solutions that require a low initial expenditure but result in high inefficiencies – making them less sustainable than alternatives that cost more at the start but also offer more economic, social, and environmental benefits in the long run. If Ethiopia were to pursue a conventional economic development path – represented in a business-as-usual scenario – greenhouse gas emissions would more than double to 400 million tonnes of CO₂ equivalents (Mt CO₂e) in 2030. Conventional economic growth could lead to other challenges as well, such as depleting the very natural resources that Ethiopia's economic development is based on, locking it into outdated technologies, and forcing it to spend an ever-larger share of GDP on fossil fuel imports. In addition to lower public health due to diseases related to indoor air pollution, further forest degradation and soil erosion would also occur, diminishing food security and destroying sources of drinking water.

It is to avoid such foreseeable problems that the government of Ethiopia has embarked on a path to achieving economic development in a sustainable way.





The plan: Building a climate-resilient green economy

The green power of more efficient stoves

Replacing open fires and rudimentary stoves for cooking and baking with stoves that need only half as much fuelwood or stoves that use other fuels holds an estimated 20% of Ethiopia's total potential for emission reduction or about 50 Mt CO₂e annually in 2030. The government has prioritised plans to deploy 9 million more efficient stoves by 2015. This would have a massive impact. On top of decreasing greenhouse gas emissions from forest degradation, it would save USD 270 million in opportunity costs for fuelwood, increasing rural household income by 10%. It would also create many more jobs in making stoves. Using better stoves would not only save energy, hence reducing emissions, but would also reduce severe health risks from smoke inhalation ("black carbon") and decrease hours spent on gathering fuelwood (typically by women and children, often in risky areas). The government has therefore developed an investment plan to support the scale-up. The plan includes programmes to improve production, distribution, and financing, ideally via access to carbon credits.

Ethiopia is committed to building a climate-resilient green economy. Its plan to do so comprises actions to reduce greenhouse gas emissions while safeguarding economic growth ("green economy") as well as adaptation initiatives to reduce vulnerability to the effects of climate change ("climate resilience"). To develop a green economy, 150 initiatives have been identified and 60 prioritised based on their local relevance, feasibility, contribution to reaching GTP targets, and significant potential for emission reduction at a reasonable cost for the relevant sectors. If all the emission reduction initiatives that have been identified were fully implemented, Ethiopia would limit emissions to current levels in absolute terms and reduce per capita emissions from 1.8 to 1.1 t CO₂e while achieving middle-income status before 2025.

In parallel, those sectors of the economy most vulnerable to the hazards of climate change have been identified for prioritised regional adaptation plans: agriculture, health, water and energy, buildings, and transport. Ethiopia is already pursuing large-scale afforestation and reforestation and is developing further adaptation initiatives to increase climate resilience through support for natural ecosystems and a "green cities" approach to urbanisation.

Sectors identified as most vulnerable to climate change hazards

Of 9 regions ...

<2 regions perceive as relevant
 3-6 regions perceive as relevant
 >6 regions perceive as relevant

Climate change hazards	Sector						
	Agriculture	Health	Water and Energy	Buildings	Transport	Industry	Service
Flooding							
Droughts							
Diseases (human, animal, and crop)							
Wind damage							
Earthquakes							

Regional adaptation planning survey, 2011

Ethiopia is planning to develop the green economy strategy based on four pillars:

- Improving crop and livestock production practices to increase food yields, hence food security and farmer income, while reducing emissions
- Protecting and re-establishing forests for their economic and ecosystem services, including as carbon stocks
- Expanding electric power generation from renewable sources of energy fivefold over the next five years for markets at home and in neighbouring countries
- Leapfrogging to modern and energy-efficient technologies in transport, industry, and buildings.

Through detailed analyses, initiatives have been selected in each pillar to enable Ethiopia to meet the economic development goals outlined in its Growth and Transformation Plan while reducing emissions and strengthening climate resilience. In addition, with the technical, technological, capacity-building, and funding support from development partners, the government aims to identify and develop further initiatives to achieve the ambitious goal of a zero net emissions economy by 2025.

Over half of the cost of emission reduction is projected to have positive economic returns within five to ten years. The green economy initiative has quantified the economic impact of selected carbon emission reduction opportunities, including estimating the cost (USD/t CO₂e abatement) of sector-specific initiatives. More than 45% of the emission reduction potential comes at zero or negative cost. These initiatives would not only lower emissions, but would also save costs over conventional alternatives (i.e., the net present value of their cash flows is positive) and have only short-term financing requirements (less than five years).

For more than 80% of the emission reduction potential, the costs are less than USD 15/t CO₂e and would thus still be more attractive than the current average market price for CO₂ emission certificates traded via the European Trading Scheme. Even the green economy initiatives that are more cost-intensive than conventional alternatives have substantial emission reduction potential and would therefore be eligible for international environmental funding in the form of grants and payments for performance.

Abundant clean electricity for markets at home and in neighbouring countries

Electric power based on renewable energy sources is a fundamental enabler of green growth, powering green cities, industrial operations, and crop irrigation. Ethiopia is endowed with ample natural resources to meet these demands and already generates 90% of its electricity from renewable sources. It has a master plan to exploit its vast potential for hydro, geothermal, solar, and wind power to increase supply capacity fivefold over the next five years – and then to double it again, to 67 TWh, by 2030, and achieve zero emissions even sooner. Furthermore, due to the expected impact of energy-saving measures, Ethiopia foresees having a surplus of clean power, which it could export. In 2030, such exports could replace up to 19 Mt CO₂e per year of neighbouring countries' generation from fossil fuels while contributing positively to Ethiopia's trade balance. The total investment required over the next 20 years for the planned generation capacity expansion is USD 38 billion. Commitments for about half this amount have been received. Financing the remainder, about USD 1 billion annually, is crucial and could be realised by adjusting tariffs and attracting private capital, sovereign wealth funds, and climate finance. The latter could be obtained by negotiating with countries that import Ethiopia's hydroelectric power to share the monetisation of their reduced emissions or by mobilising international assistance in the form of grants.





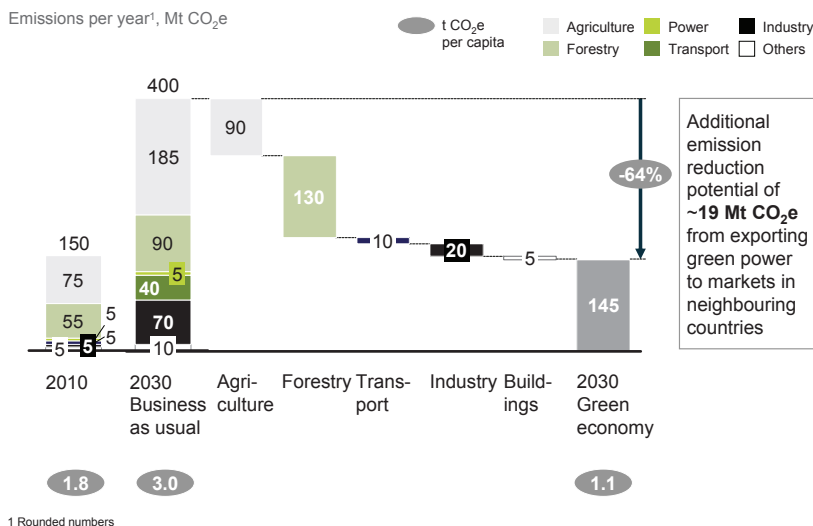
The impact: Ethiopia's green economy strategy will unlock economic growth, create jobs, and deliver wider socio-economic benefits

The transition to a green economy will have a large beneficial impact. It will transform current economic development practices and will touch most sectors. Ethiopia has the domestic potential to contribute to the global effort to mitigate climate change by reducing around 250 Mt CO₂e emissions a year in 2030 as compared to conventional development practices, 60% less than estimated for a business-as-usual approach and near-zero net emissions. Given the projected population growth to nearly 130 million, emissions on a per capita basis would fall from 1.8 t CO₂e in 2010 to 1.1 in 2030 – a decrease of nearly 40% – while GDP per capita would reach middle-income level before 2025.

The highest emission reduction impact is concentrated in agriculture and forestry. Under business-as-usual assumptions, agriculture and forestry would contribute around 45% and 25% respectively to projected greenhouse gas emission levels and, together, account for about 80% of the total emission reduction potential identified.

The most powerful initiative overall is the use of more efficient stoves to reduce the burning of fuelwood for cooking, with the potential to reduce forestry-related emissions by a rate of 50 Mt CO₂e emissions a year in 2030. In agriculture, higher livestock productivity has the potential to reduce 45 Mt CO₂e emissions a year in 2030. In the industry sector, the highest potentials for reducing emissions have been identified in modernising cement production to achieve higher efficiency (16 Mt CO₂e) and in generating electric power from renewable sources (already planned before the green economy effort and therefore part of the business-as-usual scenario), possibly including exports of hydroelectric power, which could translate into emission reduction potential of an additional 19 Mt CO₂e a year in 2030. The transport and buildings sectors contribute emission reductions totalling around 15 Mt CO₂e a year in 2030 from a combination of efficiency improvements in the use of fuel and electric power for vehicles, lighting, and home appliances along with more efficient urban waste management.

Building a green economy will keep Ethiopia on a low-carbon path, approaching zero net emissions growth



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The green growth path will have a measurable impact on around two-thirds of the economy by 2030. Adopting green economy practices on this large a scale will unlock economic growth, create jobs for the growing population, and deliver wider socio-economic benefits. Most green economy initiatives directly support new business opportunities for the private sector.

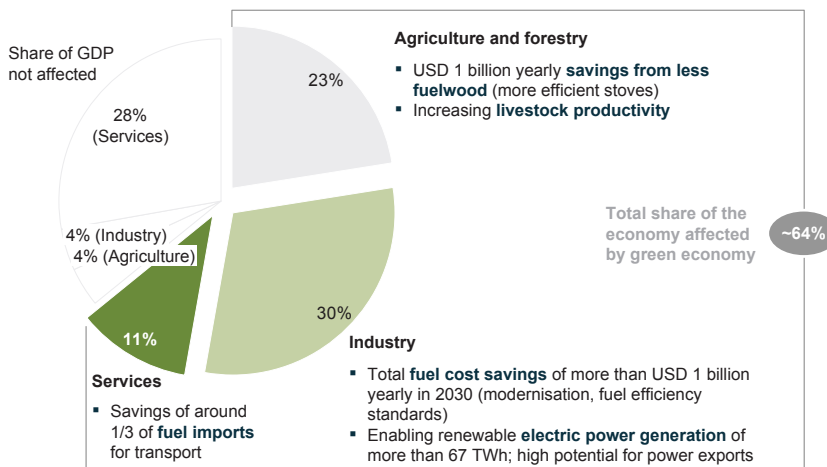
As an example, one prioritised initiative to improve agricultural efficiency is the increased use of professional farmer cooperatives, which creates jobs across the value chain in supplying inputs, aggregating production, and marketing. Such cooperatives can capitalise on the impact of related initiatives to increase crop and livestock productivity. In dairy farming, for example, cross-bred cows produce two to five times more milk than pure-bred indigenous cattle. Increasing the share of cross-bred cattle could thus dramatically increase marketable dairy yields with a lower cattle population – raising incomes while reducing livestock-related emissions.

Green economy initiatives will create macroeconomic benefits. By establishing a more secure electric power supply, an essential prerequisite for sustainable economic development, and increasing energy efficiencies in the transport, industry, and buildings sectors, Ethiopia can reduce its current dependency on fossil fuel imports by about one-third. This effect alone could improve the balance of payments by several billion dollars in 2030. Furthermore, low carbon emissions can be marketed as a competitive advantage for Ethiopia’s exports. Finally, the decision to commit to sustainable economic development opens the door to international environmental support, such as the Clean Development Mechanism carbon credits. Such support could complement Ethiopia’s own green growth budget and other sources of funds that have already been earmarked for development.

The green economy strategy also entails wider socio-economic benefits. Public health will improve with better water and air quality. Green growth will accelerate rural development by reducing soil erosion and increasing soil fertility, hence food security, and rural employment. Households will benefit from higher energy efficiency – especially from more efficient cooking/baking and transport. This should increase domestic savings and thus the capacity to invest in improving labour and land productivity and to participate more profitably in domestic and export markets. These tangible benefits for local communities should stimulate a virtuous cycle of mutually reinforcing effects in support of green growth.

Green growth will have impact on around two-thirds of the economy

Share of GDP affected (2030) and examples of economic impact/benefits from green economy





Making it happen: Progress so far and a look ahead

Ethiopia is putting in place the building blocks necessary to implement the Climate-Resilient Green Economy strategy. The government's action plan includes setting up a permanent financial mechanism, continuing the stakeholder engagement process, and prioritising and sequencing sector-specific initiatives in detail. The government is using significant resources to develop and implement the green economy strategy and welcomes partnerships with development partners engaged in combating climate change as well as contributions by the private sector.

Institutions are in place to enable the successful implementation of the strategy. Led by the Prime Minister's Office, the Environmental Protection Authority (EPA), the Ethiopian Development Research Institute (EDRI), six ministries, and several other government agencies, the government has dedicated significant resources and has organised a robust and participatory process to put the green economy initiative into practice effectively. The Ministerial Steering Committee – comprising the State Ministers and senior officials from the participating institutions – is the most senior body in the CRGE strategy development effort and has decided on the overall direction and sector-specific initiatives.

Consultations have taken place throughout Ethiopia with hundreds of stakeholders in order to raise awareness of the new strategy, and the process of enlisting public- and private-sector support for the CRGE development initiatives has begun.

Development of investment plans has been initiated. Initiatives to kick-start implementation of the CRGE strategy include electric power generation from renewable sources, scaling up the use of more efficient stoves, and increasing the efficiency of the livestock sector.

Pilot projects are under way. Ethiopia already has one of the world's largest afforestation and reforestation programmes. One of the projects – in the Great Rift Valley – is Africa's first large-scale Clean Development Mechanism project in forestry. The development of a CDM for fuel-efficient stoves is nearing its final stage, and studies are under way to devise a similar mechanism to support the reduction of emissions from livestock.

Ethiopia welcomes partnerships to pursue several of its highest-potential initiatives. The government welcomes international support for its ambitious green growth agenda, particularly in harvesting the country's vast potential for generating hydroelectric power, promoting more efficient rural cooking techniques, improving the efficiency of livestock value chains, and reducing emissions from deforestation and forest degradation (REDD).

Restoring the Great Rift Valley's lush green forest at Humbo

Africa's first large-scale forestry Clean Development Mechanism project registered under the UNFCCC in December 2009 is located in south-western Ethiopia in the area around Humbo Mountain. Under the Clean Development Mechanism of the Kyoto Protocol, countries can earn carbon credits for projects to plant and restore forests. The Humbo Regeneration Project allows for the sale of more than 338,000 tonnes' worth of carbon credits by 2017. Run by seven local communities and sponsored by World Vision and the World Bank, this project is restoring some 2,700 hectares of degraded land, replanting the forest, and also reducing threats to drinking water from erosion caused by flooding and landslides. According to the World Bank, the Humbo project is expected to sequester over 880,000 t CO₂e over 30 years.





Ethiopia *At a glance*

Population In 2010: 80 million; in 2030: 130 million (estimated)

GDP per capita 2010 Around USD 380 (least developed country status); 40% of GDP from agriculture, which employs 80% of the population

Geography Roughly four times the size of the UK, located in the horn of Africa, landlocked; highlands and lowlands divided by the Great Rift Valley of Eastern Africa

Government Federal Democratic Republic, currently led by the Ethiopian People's Revolutionary Democratic Front (EPRDF) party. Prime Minister Meles Zenawi was re-elected for a five-year term in 2010

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