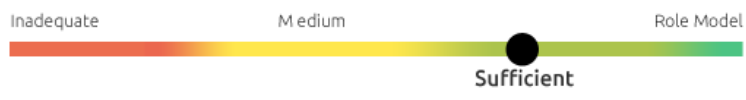
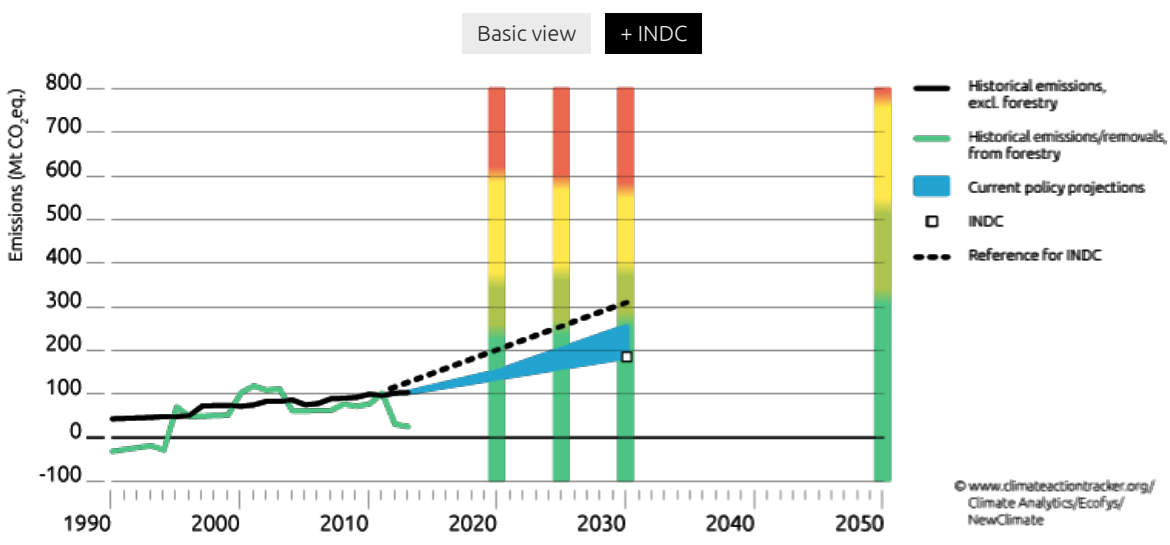
Ethiopia

Page last updated: 2nd November 2016

Rating





Note: Hover over the coloured bars for a pop-up with the fair emissions range per effort sharing category. More information here.

Assessment

Ethiopia's Intended Nationally Determined Contribution (INDC) is one of the few the Climate Action Tracker rates as "sufficient." While Ethiopia hasn't yet ratified the Paris Agreement, its resulting NDC, if it fully reflects the INDC, would lead to a reduction of at least 64% below the Ethiopian business-as-usual (BAU) scenario by 2030, where emissions including LULUCF are projected to reach 400 $MtCO_2e$. The corresponding GHG emissions reduction target for 2030, excluding LULUCF, is 40% below BAU, or 185 $MtCO_2e$, which is the emissions level used to rate the emissions reduction target. Full implementation of the INDC implementation is conditional on finance, technology transfer and capacity building support under the framework of Ethiopia's Climate Resilient Green Economy Strategy (CRGE) strategy, which is integrated in its national development plan GTP II (Second Growth and Transformation Plan).

The mitigation efforts will focus primarily on the forestry sector, which is expected to contribute with a reduction of 130 $MtCO_2e$. The forestry sector, however, is not included in our rating as it is difficult to analyse it with effort sharing approaches (due to data uncertainty and dependency on country-specific circumstances). Ethiopia intends to use international carbon credits to meet its target.

The "sufficient" rating indicates that Ethiopia's climate plans are at the most ambitious end of its fair contribution. This means it is consistent with limiting warming to below 2°C without requiring other countries to make much deeper reductions and comparably greater effort. We will assess in 2017 whether this target is in line with the Paris Agreement's stronger 1.5°C limit.

Ethiopia's INDC is based on the Climate Resilient Green Economy Strategy (CRGE) strategy, which is integrated in its national development plan GTP II (Second Growth and Transformation Plan). If policies are successfully implemented, the INDC target could be achieved in 2030. Uncertainty remains on the effectiveness of current policies in place, which is reflected in a range of current policy projections.

Post-2020 contribution

Paris Agreement targets

According to its INDC, Ethiopia intends to limit the country's GHG emissions in 2030 to 145 $MtCO_2e$ including LULUCF (185 $MtCO_2e$ excluding LULUCF) or lower, which represents a reduction of at least 64% (40% excluding LULUCF) under the BAU. In the long term, Ethiopia aims to become a carbon-neutral economy while attaining the status of a middle-income country. The INDC does not specify a target year for the carbon neutrality goal.

The full implementation of the INDC is subject to an ambitious multilateral agreement that enables Ethiopia to receive international support. Ethiopia intends to use international carbon credits to achieve its Green Economy Strategy. The INDC does not state the size of expected support, nor the amount of carbon credits.

Copenhagen pledge	
2020 target	List of NAMAs
Conditions	None
Paris Agreement target	
Ratified	No
2030 target	145 $MtCO_2$ in 2030, incl. LULUCF [330%above 1990 by 2030 excl. LULUCF]
Coverage	economy-wide, incl. LULUCF
Long term goal(s)	
Long-term goal(s)	Carbon neutrality

2020 Pledge

Under the Copenhagen accord, Ethiopia proposed several Nationally Appropriate Mitigation Actions (NAMAs) that focus primarily on the electricity and transport sector.

Fair share

We rate Ethiopia "sufficient." The "sufficient" rating indicates that Ethiopia's climate plans are at the most ambitious end of its fair contribution. This means it is consistent with limiting warming to below 2°C without requiring other countries to make much deeper reductions and comparably greater effort. In 2017, we will assess whether this target is in line with the Paris Agreement's stronger 1.5°C limit. While Ethiopia's INDC falls in the "role model" range, we rate Ethiopia "sufficient," given the conditionality of its target. Ethiopia could be rated "role model", if its target were unconditional.

Current policy projections

Under current policy projections, GHG emissions in Ethiopia are expected to be in the range of 185–255 $MtCO_2e$ in 2030 (excluding. LULUCF), compared to historic emission levels of 100 $MtCO_2e$ excluding LULUCF in 2010 (from +85% to +155% relative to 2010 levels). This emissions range reflects uncertainty around the implementation of climate-related policies. For example, Ethiopia's Second National Communication provides a new BAU scenario where the emissions level in 2030 is significantly lower than the one in the INDC. We assume this new BAU scenario to include policies put forward under the First Growth and Transformation Plan (GTP I)– which is a five-year plan put forward by the government to enhance the economy—and we use this projection as the basis for the upper end of the range of our current policy scenario. Conversely, the Second Growth and Transformation Plan (GTP II) reiterates the targets put forward in the INDC (based on the CRGE strategy) to be achieved by 2020 (Federal Democratic Republic of Ethiopia, 2016), which represents the lower-end of the range of our current policy projections.

Ethiopia is experiencing high economic growth, with rising per capita incomes, and falling poverty rates. On average, GDP grew at a rate 11% during the period 2004–2013, and projections from the Government's Second National Communication envision sustained economic growth up to 2030 (set at 8.4% per year). Ethiopia's long-term vision focuses on eradicating poverty, with the aim of it becoming a middle-income economy. In such a context, the agricultural sector is pivotal for reducing poverty (Diao and Pratt 2007). The aim of the government is to build an economy based on a modern agricultural sector, with the industrial sector also playing a leading role in the economy. An agricultural sector resilient to climate change impacts is important for the future of the economy (Evangelista et al. 2013; Mideksa 2010, Robinson et al. 2012).

Access to electricity is 27% today (2012 data – WDI). Measures have been adopted to increase energy access in the country: Ethiopia participates in the SREP Scaling-Up Renewable Energy Program (SREP) Investment Plan, which is embedded in the Growth and Transformation Plan (GTP). The aim of the SREP is to increase power generation capacity up to 10 GW in 2015 and 22 GW in 2030. This also entails additional investments to expand the transmission and distribution system.

The key goal of GTP 1 was to enhance access to grid connections up to 75% in 2015 and to nearly 100% by 2020. The government also plans to become an exporter of electricity and a green hub in East Africa in the near future (REEP policy database, 2014). This goal hinges on new hydropower projects, including the Grand Renaissance, the Gilgel Gibe III and the Gilgel Gibe IV dams, with an estimated capacity of 9.4 GW (WEO 2014).

In order to facilitate the investments in new renewables, a feed-in-tariff scheme is under discussion, although not implemented yet (Climate Scope, 2014). The government is fostering the development of wind turbines. The aim was to reach a five-fold increase in renewable energy production during the period 2011–2015 (Asress et al. 2013).

According to Ethiopia's Second National Communication, the largest contributors to future GHG emissions will be agriculture (emissions are expected to reach 70-160 $MtCO_2e$ in 2030) and the industry sector (50-70 $MtCO_2e$ in 2030). Emissions from buildings are likely to increase (because of the rise in waste and off grid-energy), along with the forestry sector (mainly as a consequence of deforestation and degradation).

The majority of the population still relies on biomass to fulfil its energy needs (Mulugetta 2008), albeit a fuel-transition towards modern sources of energy seems promising (Guta 2014). The biomass use puts high pressure on forests, where emissions from deforestation have increased significantly over recent decades. Indeed, the most efficient way of reducing emissions is to reduce fuel-wood consumption, by using efficient stoves and modern (e.g. electricity based) cooking technologies. Emissions from forestry are projected to reach 90 $MtCO_2e$ in 2030.

Emissions from the Forestry sector can be tackled via REDD (Reducing Emissions from Deforestation and Forest Degradation) initiatives, and Ethiopia has already put in place the second-largest afforestation and reforestation programme in the world (CRGE 2010).

Assumptions

Historical emissions

The historical dataset is based on the UNFCCC GHG inventory data for 1990 and 1994 and the GHG inventory provided in the Second National Communication for 1994–2013. CO_2 equivalent emissions of CH_4 and N_2O were recalculated with the Global Warming Potentials (GWPs) of the IPCC 2nd Assessment Report (SAR). F-gases are only partially reported and their contribution is negligibly small. As a consequence, F-gases are not included in the reported historical emissions for 1994–2013.

Current policy projections

Due to uncertainty regarding the effective implementation of policies, we show a range of projections for the period 2014-2030.

The upper end of the range of our current policy analysis assumes that GHG emissions will grow according to the BAU scenario projections provided by the Second National Communication submitted to the UNFCCC (The Federal Democratic Republic of Ethiopia, 2015). We assume this baseline scenario includes all the policies listed in First Growth and Transformation Plan (GTP I) (Federal Democratic Republic of Ethiopia, 2010), including the renewable energy capacity extension to 8 GW and 20,000 biogas plants to come online between 2014–2017 as part of the National Biogas Programme (NBP). Since the base year for the baseline scenario is 2010, some differences emerge when comparing the projections with the inventory data already in 2013. This difference remains even after harmonising the assumptions on GWP (Global Warming Potentials): we harmonise the projections by applying baseline growth rates to 2010 historical values. To reconcile this issue, we use inventory data until 2013 and then apply a linear interpolation for the data in between 2013 (inventory data) and 2020 (harmonized baseline projections).

The lower end of the range of our current policy projections, assumes an effective implementation of the CRGE strategy as referenced in the INDC. This lower-bound scenario is based on the Second Growth and Transformation Plan (GTP II), which reiterates that Ethiopia's Climate Resilient Green Economy strategy is fully implemented until 2020 (Federal Democratic Republic of Ethiopia, 2016).

Sources

Asress, M.B., A. Simonovic, D. Komarov, S. Stupar (2013). "Wind energy resource development in Ethiopia as an alternative energy future beyond the dominant hydropower". Renewable and Sustainable Energy Reviews Volume 23, July 2013, Pages 366–378.

Bekele, G., G. Tadesse, L. Hogan (2012). "Feasibility study of small Hydro/PV/Wind hybrid system for off-grid rural electrification in Ethiopia". Applied Energy Volume 97, September 2012, Pages 5–15.

Climate Scope (2014): Policy Database, Ethiopia - Summary.

Diao, X., A.N. Pratt (2007). "Growth options and poverty reduction in Ethiopia – An economy-wide model analysis". Food Policy Volume 32, Issue 2, April 2007, Pages 205–228.

Evangelista, P., N.Y. Youn, J. Burnett (2013). "How will climate change spatially affect agriculture production in Ethiopia? Case studies of important cereal crops". Climatic Change August 2013, Volume 119, Issue 3-4, pp 855-873.

Federal Democratic Republic of Ethiopia (2011): Ethiopia's Climate-Resilient Green Economy - Green economy strategy.

Federal Democratic Republic of Ethiopia, Ministry of Water and Energy (2012): Scaling - Up Renewable Energy Program Ethiopia Investment Plan (Draft Final).

Guta, D.D. (2014). "Effect of fuelwood scarcity and socio-economic factors on household bio-based energy use and energy substitution in rural Ethiopia". Energy Policy Available online 11 October 2014.

International Monetary Fund (2014), World Economic Outlook Database, April 2014, accessed on 19th November 2014.

Mideksa, T.K. (2010). "Economic and distributional impacts of climate change: The case of Ethiopia". Global Environmental Change Volume 20, Issue 2, May 2010, Pages 278–286."

Mulugetta, Y. (2008). "Human capacity and institutional development towards a sustainable energy future in Ethiopia". Renewable and Sustainable Energy Reviews Volume 12, Issue 5, June 2008, Pages 1435–1450.

REEP policy database (2014): Renewable Energy & Energy Efficiency Partnership, accessed on 19th November 2014.

Robinson, S., D. Willenbockel, K. Strzepek (2012). "A Dynamic General Equilibrium Analysis of Adaptation to Climate Change in Ethiopia". Review of Development Economics, Special Issue: Climate Change and Economic Development. Guest Editors: Channing Arndt, Paul Chinowsky, Ken Strzepek, Finn Tarp, and James Thurlow. Volume 16, Issue 3, pages 489–502

The Federal Democratic Republic of Ethiopia (2010): Growth and Transformation Plan (GTP) 2010/11-2014/15.

The World Bank (2014), World Development Indicators, accessed on 19th November 2014.

The Federal Democratic Republic of Ethiopia (2016): Growth and Transformation Plan II (GTP II) 2015/16-2019/20.

The Federal Democratic Republic of Ethiopia (2015): "Intended Nationally Determined Contribution (INDC) of The Federal Democratic Republic of Ethiopia". Submitted to UNFCCC on 10th June 2015.

The Federal Democratic Republic of Ethopia (2015): Second National Communication to the United Nations Framework Convention on Climate Change (UNFCCC).

WEO (2014), "Africa Energy Outlook – a focus on energy prospects in sub-Saharan Africa" World Energy Outlook, special report – OECD / IEA 2014.

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