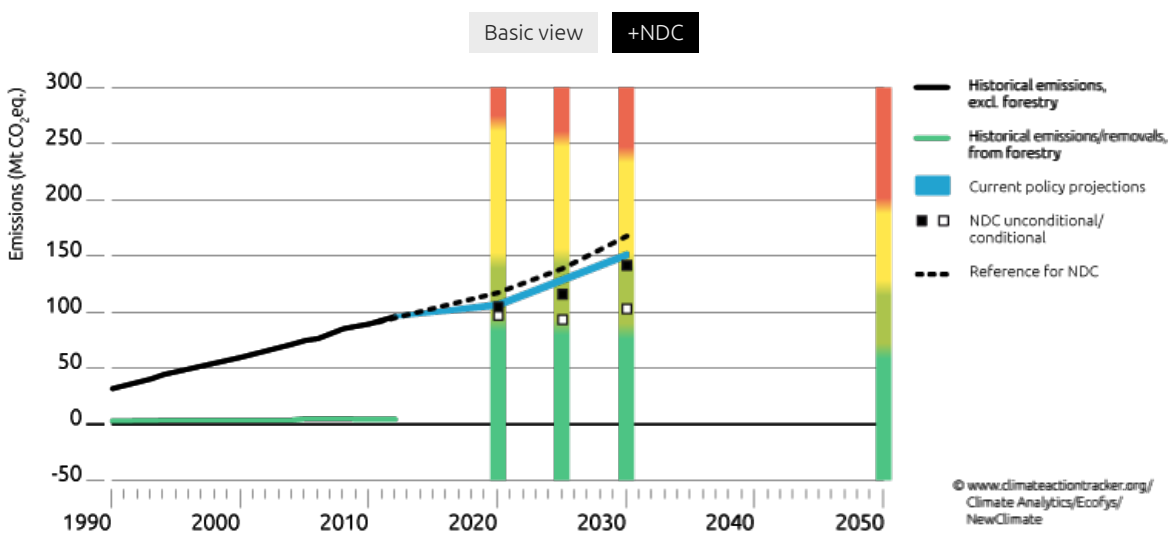
Morocco

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

While Morocco's unconditional NDC begins to slow the growth of emissions, Morocco conditionally proposes to go much further, namely to stop its emissions growth and implement an ambitious target of 42% renewable electricity generation by 2020, and of 52% by 2030. We rate Morocco's NDC as 'Sufficient,' as it is doing its "fair share" of global efforts to hold warming below 2°C.

On 19 September 2016, Morocco ratified the Paris Agreement, and submitted its Nationally Determined Contribution (NDC), with a target of reducing GHG emissions including land use, land use change and forestry (LULUCF) by 17% below business as usual (BAU) by 2030. [1] With sufficient international support, Morocco aims to further decrease emissions by 42% below BAU by 2030.[2]

We calculate the absolute GHG emissions level, excluding LULUCF emissions, resulting from the unconditional and conditional NDC emission reduction targets in 2030 to be 142 $MtCO_2e$ and 103 $MtCO_2e$, respectively. Our "sufficient" rating indicates that Morocco'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.

Morocco's NDC submission includes detailed information on activities currently under implementation and planned measures to achieve its unconditional and conditional NDC targets. Most prominently, Morocco pursues an ambitious target to increase the share of renewable electricity capacity to 42% in 2020 and to 52% in 2030 under its National Energy Strategy. The CAT has assessed the impact of mitigation actions currently under implementation in detail for Morocco. We find Morocco very close to meeting its unconditional NDC targets under current policies due to the ambitious capacity extension of solar, wind and hydro energy. However, it would certainly need to implement additional policies to reach its conditional INDC target by 2030.

In comparison to Morocco's INDC submitted on 5 June 2015 (Government of Morocco, 2015), the NDC raises ambition in intended emissions reductions—both under the unconditional and conditional target—by explicitly including additional emissions reduction contributions from agriculture, forestry and other land use (AFOLU). The NDC further specifies which measures will be undertaken to achieve its unconditional (24 measures) and conditional (additional 31 measures) NDC targets and thus increases transparency on Morocco's emissions reduction efforts. Interestingly to note, both NDC and INDC refer to the exact same BAU emissions projections until 2030, although the 1st Biennial Update Report and the 3rd National Communication both slightly revised the BAU scenario downward in the meantime (Government of Morocco, 2016a; Government of Morocco, 2016b).

Footnotes

[1] Excluding emissions reduction contributions from agriculture, forestry and other land use (AFOLU), Morocco targets to unconditionally reduce GHG emissions by 13%.

[2] Excluding emissions reduction contributions from agriculture, forestry and other land use (AFOLU), Morocco targets to conditionally decrease GHG emissions by 34%.

Pledges and targets

In September 2016, Morocco ratified the Paris Agreement, and submitted its NDC to the UNFCCC (Government of Morocco, 2016c). It aims to unconditionally reduce GHG emissions including land use, land use change and forestry (LULUCF) in 2030 by 17% below business as usual (BAU) projections.

Conditional upon access to new sources of finance, and to additional support compared to that received in the past, Morocco would increase its GHG emissions reductions including LULUCF to 42% below business as usual (BAU) in 2030.

In its NDC submission, Morocco included projections for the BAU emissions trajectory from 2010 to 2030. The BAU emissions projections provided in the NDC are in line with the projections previously provided in Morocco's INDC (Government of Morocco, 2015). BAU emissions projections, however, had been slightly revised downward in the 1st Biennial Update Report and the 3rd National Communication, both of which were submitted in April 2016 (Government of Morocco, 2016a; Government of Morocco, 2016b).

Copenhagen pledge	
None	
Paris Agreement target	
Ratified	Yes
2030 target	Unconditional: -17% below reference in 2030 incl. LULUCF (446% above 1990 excl. LULUCF) Conditional: -42% below reference in 2030 (incl. LULUCF) (324% above 1990 excl. LULUCF)
Coverage	Economy-wide incl. LULUCF
LULUCF	Includes LULUCF and specifies intended emissions reductions from AFOLU for both the unconditional and conditional NDC target
Long term goal(s)	
None	

The NDC reports unconditional and conditional target emission levels, both including and excluding intended emissions reductions from agriculture, forestry and other land use (AFOLU). To recalculate NDC targets only excluding emissions from LULUCF but including agriculture, we subtract projections of LULUCF emissions under the NDC from the NDC targets including LULUCF. We derived these projections by taking the BAU emissions projections for the LULUCF sector provided in the 3rd National Communication and accounting for targeted emissions reductions from the LULUCF sector under the NDC. The absolute GHG emission level excluding LULUCF emissions resulting from the unconditional NDC emission reduction target in 2030 is 142 $MtCO_2e$ excluding LULUCF. The conditional target would lead to additional reductions and a lower emissions level of 103 $MtCO_2e$ in 2030 excluding LULUCF.

In its NDC submission, Morocco included a detailed list of actions which it expects are necessary to achieve the unconditional and conditional targets. Many of these actions are already anchored in national legislation, for example the target to increase the share of renewable electric capacity to 42% by 2020. It further illustrates in which sectors the conditional target would trigger additional reductions, through a total of 31 measures. The 1st Biennial Update Report and the 3rd National Communication (Government of Morocco, 2016a; Government of Morocco, 2016b) further outline these identified mitigation actions, providing detailed descriptions and respective emissions reduction estimates. To implement these actions, Morocco requires an overall investment of 50 billion USD for the time period between 2010 and 2030. Of this, 24 billion USD are expected to come from access to new sources and to additional support, compared to that received over the past years. (Government of Morocco, 2015).

Fair share

We rate Morocco's NDC "sufficient." The "sufficient" rating indicates that Morocco'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. Morocco's contribution is more ambitious, or in line with most effort sharing approaches. Most approaches would allow a further increase of absolute emission levels, mostly because Morocco has very low historic and current per capita emissions. Only approaches that focus on the Human Development Indicator as an indication of capability would require more stringent reductions.

Current policy projections

The current policy projections indicate that Morocco's GHG emissions in 2030 range between 150 and 152 $MtCO_2e$ excluding LULUCF (respectively, 201% and 204% above 2005 levels and 471% and 478% above 1990 levels).

The Moroccan Climate Change Policy (MCCP) coordinates and aligns various sectoral and cross-sectoral national policies against climate change, mainly in the energy, waste, transportation, agriculture and forestry sectors. At the core of Morocco's current emission reduction efforts stands the National Energy Strategy, which aims to extend the share of renewable electricity capacity to 42% by 2020 and to 52% by 2030 (Government of Morocco, 2015). The National Energy Strategy mainly focuses on the capacity extension of wind, solar and hydro-electric electricity generation.

The Morocco Integrated Wind Energy Program aims to increase the capacity of national wind farms from 797 MW in 2015 to 2,000 MW by 2020 in two different tranches (Government of Morocco, 2016a). Under the Morocco Solar Plan (Noor), Morocco plans to extend installed solar power capacity (PV and CSP) to 2,000 MW by 2020, starting from 180 MW of installed capacity at the end of 2015. Most recent, the first phase of the Ouarzazate concentrated solar power plant with a capacity of 160 MW commenced operations in February 2016. After the completion of the second and third construction phase, the Ouarzazate plant will have a total capacity of 580 MW. Uncertainty remains as to whether the entire capacity of all five planned solar plants under the Morocco Solar Plan (Ouarzazate, Ain Bni Mathar, Foum Al Ouad, Boujdour and Sebkhat Tah) will be installed before 2020. As an extension of the Morocco Hydro-Electric Plan, Morocco plans to install an additional hydro-electric capacity of 775 MW, adding to the already-installed capacity of about 1,300 MW. While the two plants (El Menzel and Station de Transfert d'Energie par Pompage (STEP) Abdelmoumen) are currently under construction, uncertainty remains around the installation of remaining planned capacity extension of 300 MW by 2020.

Besides the extension of renewable electricity capacity, Morocco has energy efficiency programmes in the building sector, public lighting and the industry sector. The latter, however, excludes large energy consuming industries (Government of Morocco, 2016a). Tramways in Rabat and Casablanca are currently being extended by 10km by 2020 and 45km by 2025, respectively. Similar extensions are planned for the cities of Marrakech, Fès, Tanger and Agadir, although actual implementation has not been started.

Assumptions

Historical emissions

For historical emissions, we used national GHG inventory data provided by Morocco's 1st Biennial Update Report for 1994 until 2012 (Government of Morocco, 2016a). All reported values are based on Global Warming Potentials (GWP) from the IPCC's Second Assessment Report. Inventory emissions data is provided for the years 1994, 2000, 2004–2006, 2008, 2010 and 2012. Linear interpolation is used to fill the data gaps between these years. For the historic years before 1994, we used a linear backward extrapolation of the trend between 1994 and 2010.

INDC pledge

The targeted emissions levels (incl. LULUCF) for both the unconditional and conditional 2030 pledge are provided in Morocco's NDC submission (Government of Morocco, 2016c). To exclude emissions from LULUCF, NDC targets are recalculated by subtracting projections of LULUCF emissions under the NDC from the NDC targets including LULUCF. We derived these projections by taking the BAU emissions projections for the LULUCF sector provided in the 3rd National Communication and accounting for targeted emissions reductions from the LULUCF sector under the NDC, based on the reported sectoral breakdown of total emissions reduction contributions between 2020 and 2030 in the NDC (see Figure 2 in Government of Morocco, 2016c).

Current policy projections

Current trend projections are based on BAU emissions projection provided in the 3rd National Communication (Government of Morocco, 2016b). In addition to the BAU scenario, the current policy projections consider several sectoral policies currently under implementation. For each of these sectoral policies, the 1st Biennial Update Report (Government of Morocco, 2016a) provides emissions reduction estimates, which were used to model the current policy emissions pathway.

The current policy scenario considers the extension of national wind farms to a total capacity of 2,000 MW by 2020 under the Morocco Integrated Wind Energy Program, energy efficiency programs in the building sector, public lighting and the industry sector (excluding large energy consuming industries) as well as the extension of Rabat and Casablanca tramways. Due to uncertainty regarding the full implementation of the Morocco Solar Plan and the extension of the Morocco Hydro-Electric Plan, the current policy analysis considers two different scenarios.

The at the lower end of the range, all five power plants in the Morocco Solar Plan (Ouarzazate, Ain Bni Mathar, Foum Al Ouad, Boujdour and Sebkhat Tah) with a total capacity of 2,000 MW are assumed to be under operation by 2020 and the entire capacity extension of 775 MW under the Morocco Hydro-Electric Plan is assumed to be developed by 2020. At the higher end of the range, only two power plants currently under operation/construction in the Morocco Solar Plan (Ouarzazate and Ain Bni Mathar) with a total capacity of 920 MW are assumed to be under operation by 2020 and only two power plants currently under construction in the Morocco Hydro-Electric Plan (El Menzel and Station de Transfert d'Energie par Pompage (STEP) Abdelmoumen) with a total capacity of 475 MW are assumed to be developed by 2020.

Sources

Government of Morocco (2015). Morocco's Intended Nationally Determined Contribution

Government of Morocco (2016a). Premier Rapport Biennal Actualisé du Royaume du Maroc

Government of Morocco (2016b). 3ème Communication Nationale du Maroc à la Convention Cadre des Nations Unies sur les Changements Climatiques

Government of Morocco (2016c). Morocco's Nationally Determined Contribution under the UNFCCC

UNFCCC (2015). Greenhouse Gas Inventory Data - Detailed data by Party

UN Department of Economic and Social Affairs (2012). World Population Prospects: The 2012 Revision

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