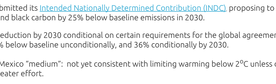
Mexico

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Rating



Assessment

On 28 March 2015, Mexico submitted its Intended Nationally Determined Contribution (INDC) proposing to unconditionally reduce its emissions of greenhouse gases (GHGs) and black carbon by 25% below baseline emissions in 2030.

Mexico also proposed a 40% reduction by 2030 conditional on certain requirements for the global agreement and international support. Mexico aims at reducing GHG's by 22% below baseline unconditionally, and 36% conditionally by 2030.

Based on this target, we rate Mexico "medium": not yet consistent with limiting warming below 2°C unless other countries make much deeper reductions and comparably greater effort.

Mexico's progress in policy planning and institution building over recent years has been remarkable, including the April 2012 adoption of the General Law on Climate Change (LGCC in Spanish), one of the world's first climate laws in 2012 - and the first in a developing country. Under this law, Mexico aims to reduce its emissions by 50% from 2000 levels by 2050. The INDC proposal is consistent with this objective.

Further positive elements of Mexico's INDC include the specification that it includes economy-wide emissions reduction goal and the specification of an unconditional and a conditional reduction. The INDC is based around a comprehensive accounting of all sources and gases, including land use change and forestry. A significant issue is the baseline emission projections, which are rather uncertain, and Mexico could consider setting its targets with respect to a fixed base year.

Under the UNFCCC for 2020, Mexico pledged in 2010 to reduce GHG emissions by 30% below business-as-usual, conditional on international support. Currently-implemented policies are projected to result in emissions above the INDC target by 2030. Mexico needs to take more action to meet its 2020 and 2030 emissions reduction targets.

The INDC targets include black carbon, whose reductions have substantial co-benefits for human health, however the effects on climate are highly uncertain and the climate benefits of black-carbon reductions are - at best - partly additional compared to measures that reduce emissions of the greenhouse gases covered under the Kyoto Protocol.

Land use activities are included in Mexico's INDC goal, however they do not make up a significant component of emissions in 2030.

Mexico would need to consider putting forward a 2025 goal to be consistent with the call by many countries for a five-year cycle of commitments.

Post-2020 INDC and 2020 Pledge

In March 2015, Mexico submitted its Intended Nationally Determined Contribution to the UNFCCC (Mexico, 2015). It aims to unconditionally reduce GHG emissions in 2030 by 22% below baseline.

Under a number of conditions (a global agreement addressing international carbon price, carbon border adjustments, technical cooperation, access to low cost financial resources and technology transfer), Mexico would increase the greenhouse gas reductions to 36%.

The submission also includes reductions of black carbon (51%/70% reduction below baseline of 124 MtCO2e BC in 2030 unconditionally/conditionally). While health and environmental benefits of such reductions would be immediate and clear, the effects on global warming are likely to be close to zero, not additional and extremely uncertain, as opposed to the effects of reductions in greenhouse gas emissions.[1]

GHG and black-carbon reductions together would reflect reductions of 25%/40% total, according to the INDC document; but we note that the actual reduction would be close to the impact of GHG reductions alone - 22/36%.

Mexico includes numbers for the baseline in its submission, both for greenhouse gases, for black carbon and the total. Based on this baseline, the absolute values of the unconditional/conditional target for greenhouse gas reductions would be 759 MtCO2e/ 623 MtCO2e in 2030. The reported baseline is higher than what we estimate as the current trend with implemented policies. The resulting target for 2030 is lower than the current trend - its fulfilment therefore requires additional policies.

Additionally to the 2030 target, Mexico mentions in its INDC submission "a net emissions peak starting from 2026," which we interpret as starting a decline of emissions in 2026 – which means peaking emissions in 2025. The level of this peak is unclear. Mexico does not clarify either, how the (conditional) 2020 pledge relates to the post-2020 contribution.

Convention	
Copenhagen pledge:	-30%
Reference for pledge:	BAU
Conditions	Provision of adequate financial and technology support
INDC	
Unconditional target for 2030:	-22% GHG, -51% black carbon, total -25%
Conditional target for 2030:	-36% GHG, -70% black carbon, total -40%
Reference for INDC:	Baseline For 2030 provided in INDC document.
Economy wide GHG coverage	(including land use change and forestry)
Peak emissions in 2025/2026	
National goals	
Long term goal(s)	-50% by 2050
Reference:	2000 GHG emissions

The 2020 pledge would require a much earlier peaking, as its emissions level is already below today's level. We therefore assume that the unconditional post-2020 contribution is independent of the 2020 target. The conditional target would be roughly in line with a linear development between today, 2020 and 2050. Given this situation it would appear the status of Mexico's 2020 pledge needs to be clarified. The long-term target for 2050 is explicitly mentioned in the INDC document and remains, as in earlier communications.

In its submission under the Copenhagen Accord, Mexico "aims at reducing its GHG emissions up to 30% with respect to the business-as-usual (BAU) scenario by 2020, provided the provision of adequate financial and technological support from developed countries as part of a global agreement." Former President Felipe Calderón announced this target during the Copenhagen conference in 2009.

Mexico has a detailed national plan up until 2018, which includes 28 mitigation measures and their effects on emissions. These measures are defined in the "Programa Especial de Cambio Climático 2014-2018" (PECC) (Special Programme on Climate Change). This programme is the follow up of the first PECC, which ran from 2008 - 2012. The first PECC was an initial unconditional step in national implementation, the second PECC confirms this step. The plan is accompanied by an overall strategy to reduce emissions by 50% by 2050 compared to 2000 levels, which assumes moderate reductions in the early years and more ambitious reductions later.

With the General Law on Climate Change from 2012 and the National Climate Change Strategy published in June 2013, Mexico has confirmed these targets and made them binding at the national level, subject to international support. The National Climate Change Strategy includes a BAU scenario, which replaces the BAU scenario in the first PECC, to which the pledge previously referred.

The new scenario is higher than before, so the emissions levels resulting from the pledge were corrected upwards by 8.7% to 672 MtCO2e in 2020, from 618 MtCO2e under the previous projection. The second PECC originally included an additional BAU with 2020 emissions levels different from the previous two. However, the Government withdrew this scenario due to its inconsistency with the climate strategy.

Black Carbon and the INDC

Mexico's INDC targets include black carbon, whose reductions have substantial co-benefits for human health. From the climate perspective, however, there is no established scientific method to compare the climate benefits of black-carbon reductions to those of CO2 and other greenhouse gases. The IPCC has not provided calculations of Global Warming Potential for black carbon in its most recent Fifth Assessment Report (AR5) comparable to those provided for greenhouse gases, merely noting the inherent difficulties in doing so and limiting itself to just displaying estimates from the pre-AR5 literature.

The INDC does specify a metric to compare with CO2 (GWP of 900), but this is based on a single literature source (pre-dating IPCC AR5), which itself notes the very large uncertainties (around 100%). Even more importantly, the authors of this paper emphasise this estimate does not take into account the current *cooling* effects of other air pollutants emitted by the same sources. Emissions of these would also be reduced by measures to reduce black carbon, so that the net effect of reductions in emissions of black carbon and co-emitted species together would be smaller, or, depending on the emission source, even be of opposite sign.

Finally, reductions in black carbon are generally not additional to reductions in CO2 emissions, because large fractions of black-carbon emissions stem from the same emission sources as CO2. Emission-reduction policies reduce therefore CO_2 and black carbon simultaneously, and this is already included in calculations of the emission reductions in greenhouse gases required to hold warming below 2°C globally, like the "emissions gap" and "fair share" reductions (the next section).

Fair share

We rate Mexico's mitigation targets "medium" throughout all years. If Mexico were to lift the conditions of its more ambitious end of its 2030 reductions, we would rate it sufficient.

For Mexico, the individual effort sharing categories spread over large ranges of emissions allowances, and there are no effort sharing categories that stand out and require specifically stringent or lenient reductions for Mexico. This reflects the fact that Mexico's per capita emissions and wealth are close to the global average.

Current policy projections

According to our assessment, Mexico's current policies will lead to emissions of between 785 and 799 MtCO2e in 2020, a reduction of between16.8% and 18.2 % below BAU and between 820 and 888 MtCO2e in 2030, including LULUCF.

Historically, emissions have been increasing since 1990. GHG emissions have increasingly shifted away from agriculture and LULUCF towards energy-related emissions. While, in 1990, agricultural and LULUCF emissions represented almost 24% of Mexico's GHG emissions, their share had declined by 2010 to 19%. In the same time period, energy-related emissions increased substantially - by more than 50%.

The basis for climate policy in Mexico is its 'General Law on Climate Change', which translates the overarching targets into strategies and plans, and provides the institutional framework for implementation. The law does not include concrete political instruments, rendering it impossible to quantify future effects.

The National Strategy on Climate Change (NSCC), published in June 2013, implements one of the requirements of the General Law. The NSCC is designed towards a long-term strategic development, but only provides very general guidance. How this will be translated to concrete action remains to be seen.

The 2nd Special Programme on Climate Change (PECC 2014-2018) published in 2014, includes the most relevant mitigation measures to 2018. The programme summarises 23 quantified mitigation-relevant measures that lead to a reduction in emissions by 83.2 MtCO2e in 2018 compared to the baseline. In addition the National renewable energy program (Government of Mexico 2014) was put forward in 2014, and includes indicative targets for RE development by technology for the years 2018 and 2024 of 22.81%, and 24.61% (Government of Mexico 2014) respectively.

Assumptions

Pledge for 2020

With the 5th National Communication Mexico has, for the first time, provided a GHG inventory for all years between 1990 and 2010 (SEMARNAT, 2012). The upper reference level is taken from the technical annex to Mexico's National Climate Change Strategy from 2013 (Government of Mexico, 2013).

INDC Post-2020 contribution

To calculate the absolute emissions level resulting from the INDC, we use the baseline provided in the INDC document. The document specifically states that the values are based on Global Warming Potentials from the 5th Assessment Report of the IPCC. The Climate Action Tracker uses the values from the Second Assessment Report as a common reference. We were not able to convert the emission levels, as the distribution of gases in the given baseline levels are unknown.

The approach taken in relation to Black Carbon is described in a separate section below.

Current policy projections

We show the BAU as reported in the National Climate Change Strategy from 2013 (Government of Mexico, 2013). The range for the current policy scenario is based on calculations around the PECC and the Renewable Energy Programme.

For the upper end of the emissions range in 2020 we assumes that all measures under the PECC are implemented until 2018 but that no further reductions are achieved until 2020. This leads to a reduction of 16.8% % below BAU.

For the lower end of the range we assumes that additionally the RE targets as laid out in the Renewable Energy Programme are reached, assuming that the RE target in 2018 will be reached in 2020 (this allows 2 additional years for implementation). This leads to a reduction of 18.2 % below BAU.

For the upper end of the emissions range in 2030, we assume that, percentage-wise, reductions below BAU achieved through the measure in the PECC (see above) remain the same as in 2020.

For the lower end of the range we assume that that the 2024 target as laid out in the Renewable Energy Programme will be reached by 2030 (allowing 6 additional years for implementation). We have taken conservative assumptions on the RE target achievements as there are strong signals from the government that the Renewable Programme will be revised soon with unclear outcome.

Black Carbon

We estimate the net effect of black carbon emission reductions additional to those resulting as co-benefit form reductions in CO_2 to be negligible. There is no established scientific method to compare the climate benefits of black-carbon reductions to those of CO_2 and other greenhouse gases. IPCC has not provided such estimates even in its most recent Fifth Assessment Report. Although the INDC does specify a metric to compare with CO_2 (GWP of 900), this value is unsuitable to use in this policy context and the single literature source (Bond et al. 2013) to which the INDC refers to writes:

- "… the summed climate forcing of all species for a source category emitting in a particular region (or season) may have a different magnitude than the global average, or even a different sign."
- "The 100-year global-warming-potential (GWP) value for black carbon is 900 (120 to 1800 range) with all forcing mechanisms included. The large range derives from the uncertainties in the climate forcings for black carbon effects."
- "Co-emission effects … are not captured by BC metrics presented here …"
- "These and other differences raise questions about the appropriateness of using a single metric to compare black carbon and greenhouse gases."

This paper to which the INDC refers to (Bond et al. 2013) finally estimates the global warming effect by black carbon and its co-emitted species together to be slightly negative and notes "Reduction of aerosol concentrations by mitigating BC-rich source categories would be accompanied by small to no changes in short-term climate forcing."

Note: this is not generally the case for certain other air pollutants (e.g. reductions in sulphate aerosols would lead to warming), so that while measures to reduce black carbon do not generally help to combat climate change, these are highly welcomed as a climate-neutral measure to improve local air quality, thereby reducing health impacts.

Sources

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