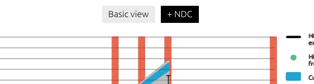
CLIMATE ACTION TRACKER

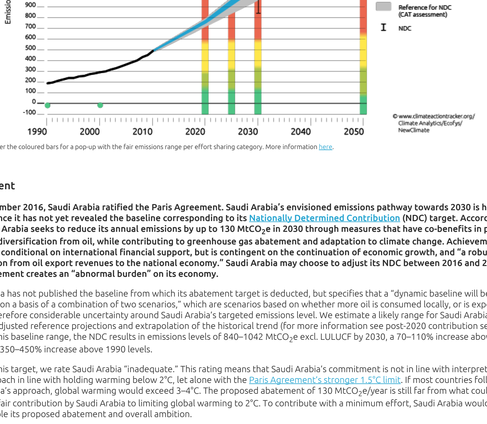
Saudi Arabia

History: 2017 | 2016

Page last updated: 23rd March 2017

Rating





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

Assessment

On 3 November 2016, Saudi Arabia ratified the Paris Agreement. Saudi Arabia's envisioned emissions pathway towards 2030 is highly unclear, since it has not yet revealed the baseline corresponding to its Nationally Determined Contribution (NDC) target. According to its NDC Saudi Arabia seeks to reduce its annual emissions by up to 130 $MtCO_2e$ in 2030 through measures that have co-benefits in pursuing economic diversification from oil, while contributing to greenhouse gas abatement and adaptation to climate change. Achievement of this goal is not conditional on international financial support, but is contingent on the continuation of economic growth, and "a robust contribution from oil export revenues to the national economy." Saudi Arabia may choose to adjust its NDC between 2016 and 2020 if the Paris agreement creates an "abnormal burden" on its economy.

Saudi Arabia has not published the baseline from which its abatement target is deducted, but specifies that a "dynamic baseline will be developed on a basis of a combination of two scenarios," which are scenarios based on whether more oil is consumed locally, or is exported. There is therefore considerable uncertainty around Saudi Arabia's targeted emissions level. We estimate a likely range for Saudi Arabia's BAU based on adjusted reference projections and extrapolation of the historical trend (for more information see post-2020 contribution section). Based on this baseline range, the NDC results in emissions levels of 840–1042 $MtCO_2e$ excl. LULUCF by 2030, a 70–110% increase above 2010 levels, or a 350–450% increase above 1990 levels.

Based on this target, we rate Saudi Arabia "inadequate." This rating means that Saudi Arabia's commitment is not in line with interpretations of a "fair" approach in line with holding warming below 2°C, let alone with the Paris Agreement's stronger 1.5°C limit. If most countries followed Saudi Arabia's approach, global warming would exceed 3–4°C. The proposed abatement of 130 $MtCO_2e$/year is still far from what could be deemed a fair contribution by Saudi Arabia to limiting global warming to 2°C. To contribute with a minimum effort, Saudi Arabia would need to at least triple its proposed abatement and overall ambition.

Saudi Arabia's target is highly inconsistent with the fact that Saudi Arabia is very sensitive to climate change. Average warming for 2040 in Saudi Arabia is projected to be higher than the global average and, in a 3–4°C world, three quarters of the country will suffer from excessive dryness by the end of the century (Presidency of Meteorlogy and Environment, 2011). Equally alarming is the fact that previously important planned policies aiming at diversifying the energy mix and to achieve 54 GW of renewable and 17 GW of nuclear energy by 2032, have recently—following an initial delay of eight years—been downscaled. In the "Vision 2030" the renewable power plans are lowered to 9.5 GW in 2023 and nuclear power is no longer mentioned. Based on our calculations this would lead to additional emissions of 74–135 $MtCO_2$ in 2030.

Pledges and targets

On November 3rd 2016, Saudi Arabia ratified the Paris Agreement and its Intended Nationally Determined Co

ntribution (INDC) became its NDC. Its NDC aims to annually abate up to 130 $MtCO_2e$ by 2030 through contributions that have co-benefits in diversifying the economy and mitigate greenhouse gas (GHG) emissions (Kingdom of Saudi Arabia, 2015).

The target does not refer to a baseline projection, as it is unclear whether to allocate the production of oil to domestic consumption or export, which impacts the economy of the country and its greenhouse projection in opposite ways.

The NDC mentions that in a scenario with high exports, greenhouse gas emissions would be lower, and the economy would grow faster, compared to a scenario where oil is consumed locally. The target outlined in the NDC is contingent on the high export scenario, and Saudi Arabia reserves the right to adjust its NDC between 2016 and 2020 if the proceeds from oil exports were to decrease.

In a scenario of high exports, Saudi Arabia would achieve its target through measures in energy efficiency, renewable energy, carbon capture and storage, increasing use of gas and methane recovery and flare minimisation. The measures remain unquantified in the NDC.

As Saudi Arabia has not yet communicated the BAU for its NDC target, we quantified the target based on our estimates of the BAU. The lower end of the BAU range represents extrapolation of Saudi Arabia's 2005–2010 emissions trend. The upper end of the range represents a baseline projection, assuming no further expansion of renewable and nuclear power generation. We based our scenario on adjusted projections from KAUST (2014) for energy-related emissions, complemented by US EPA (2012) projections for non-CO_2 emissions and extrapolation of the historic trend for other CO_2 emissions. Based on this BAU range, we project Saudi Arabia's NDC emissions level to be around 840–1042 $MtCO_2e$ in 2030, representing a 12-15% reduction from the estimated BAU range.

Fair share

We rate Saudi Arabia's NDC "inadequate." This implies that the projected emissions levels are not in line with interpretations of a "fair" approach in line with holding warming below 2°C, let alone with the Paris Agreement's stronger 1.5°C limit: if all countries adopted this level of ambition, global warming would likely exceed 3–4°C in the 21st century. Saudi Arabia would need to at least triple its pledge to enter the "medium" range. This would mean that the target is at the least ambitious end of what would be a fair contribution. Other countries would need to make much deeper reductions and comparably greater effort than Saudi Arabia to limit warming to below 2°C.

Current policy projections

Under current policy projections, we expect Saudi Arabia's emissions to be at 1,091–1,153 $GtCO_2e$ by 2030 [1], an almost six-fold increase from the 1990 level.

As the world's leading oil exporter, oil extraction has been the backbone of Saudi economy, with proceeds from exports covering 90% of total government revenues, and contributing more than 35% of GDP since 1970 (Al-Rushaid, 2010; Alshahrani & Alsadiq, 2014). Given the current policy framework in the energy supply sector, Saudi Arabia is projected to follow baseline levels using fossil fuels to supply its energy needs.

However, facing an oversupply in the market with the recovery of supply production from Iran, Iraq and Libya, the development of new, unconventional, oil supplies, a less energy-intensive phase of Chinese and East-Asian growth and the gradual commercial viability of renewables, Saudi Arabia is increasingly steering its focus towards diversification from oil dependence (Alsweilem, 2015).

In addition to international pressure, Saudi Arabia has one of the world's highest rates of per capita energy consumption, forecast to triple by 2030 compared to 2010 levels (Al-Ghabban, 2013). This issue presents two hitches: it will significantly reduce Saudi Arabia's capacity to export oil because of increased domestic needs, and it will increase government spending because oil is heavily subsidised for domestic consumption.

In light of these developments, the government has prioritised energy efficiency as a key energy policy to reduce local oil consumption. The government has introduced measures such as fuel economy standards for imported vehicles by 2020, insulation standards for new buildings, and tightened minimum energy performance standards for air conditioners (IEA, 2014a).

In 2013, the government announced its plan to build 54 GW of renewable power and 17 GW of nuclear power by 2032 to cover 40–45% of future electricity production (Al-Ghabban, 2013). After already announcing an eight-year delay of these plans in 2015, Saudi Arabia has further revised the renewables energy targets in 2016. In the "Vision 2030" the target is cut down to an 'initial phase' of only 9.5 GW in 2023 (Kingdom of Saudi Arabia, 2016; Borgmann, 2016). Targets for the period post-2023 have not yet been announced. In this "Vision 2030" there is no further mention of the nuclear power target. Our current policy projections reflect a range of assumptions regarding the development of both renewable and nuclear power up to 2030. Compared to the initial plans, we project the new "Vision 2030" will result in additional emissions of 73–135 $MtCO_2$ in 2030.

Footnotes

[1] Even though Saudi Arabia down-scaled its low-carbon power generation targets in the last year, our current policy projections here are slightly lower than in our 2015 assessment. This is due to a calculation error in last year's CAT assessment which has been corrected for our 2016 assessment.

Assumptions

Historical emissions

Historical emissions up to 2010 were obtained from the IEA (2014b) for energy-related CO_2 emissions, EDGAR (2012) for other CO_2 emissions and US EPA (2012) for non-CO_2 emissions, with interpolation for the years in between for the data from EDGAR and from US EPA. LULUCF values for 1990 and 2000 were taken from UNFCCC (2014).

Current policy projections

The current policy projection is based on growth rates from KAUST (2014) for energy-related emissions, US EPA (2012) projections for non-CO_2 emissions and extrapolation of the historical trend for other CO_2 emissions.

Since the KAUST projections assume the plan of installing 54 GW of renewables and 17 GW of nuclear was going to be executed by 2032, we additionally quantified the recent downscaling of the renewable and nuclear power targets. For the lower end of the range we assume renewable power to continue to grow at a similar rate post-2023 and the 17 GW nuclear power target is achieved in 2040. For upper end of the range we assume renewable power remains at 9.5 GW post-2023, with no nuclear capacity additions. Based on the emission factor of fossil power generation from the IEA (2014b) and (weighted) full load hours for renewable and nuclear power (taken from the KAUST projections) we calculated the additional emissions caused by the lowered renewables downscaled targets to be 74–135 $MtCO_2e$ in 2030.

Even though Saudi Arabia downscaled its low-carbon power generation targets in the last year, our current policy projections here are slightly lower than in our 2015 assessment. This is due to a calculation error in last year's CAT assessment, which has been corrected for our 2016 assessment.

NDC

Since Saudi Arabia has not yet communicated the BAU for its NDC target, we quantified the target based on our estimates of the BAU. The lower end of the BAU range represents extrapolation of Saudi Arabia's 2005–2010 emissions trend. The upper end of the range represents a baseline projections assuming no further expansion of renewable and nuclear power generation. We based this our scenario on adjusted projections from KAUST (2014) for energy-related emissions, complemented by US EPA (2012) projections for non-CO_2 emissions and extrapolation of the historic trend for other CO_2 emissions.

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