REPORT

NEW CLIMATE INSTITUTE

PROGRESS OF MAJOR EMITTERS TOWARDS CLIMATE TARGETS

2024 update

OCTOBER 2024

PROGRESS OF MAJOR EMITTERS TOWARDS CLIMATE TARGETS

2024 update

Authors

NewClimate Institute
Leonardo Nascimento, Jan-Luka Scheewel, Takeshi Kuramochi, Ana Missirliu, Santiago Woollands, Norah Zhang, Jamie Wong, Markus Hagemann, Hanna Fekete, Gustavo de Vivero, Natalie Pelekh, Catrina Godinho, Maria Jose de Villafranca Casas

PBL Netherlands Environmental Assessment Agency
Ioannis Dafnomilis, Elena Hooijschuur, Michel den Elzen, Astrid Bos

International Institute for Applied Systems Analysis
Nicklas Forsell, Zuelclady MF Araujo Gutiérrez, Mykola Gusti

Disclaimer
The views and assumptions expressed in this report represent the views of the authors and not necessarily those of the client.

This report was prepared under contract to the European Commission, DG CLIMA (EC service contract CLIMA/2023/OP/0027 Analytical capacity for international climate action. Contract number: 090203/2023/SER/917231/CLIMA.A.2).

Recommended citation
Nascimento, L., Scheewel, J-L, Kuramochi, T., Dafnomilis, I., Hooijschuur, E., den Elzen, M., Forsell, N., Gutiérrez, Z.A., Missirliu, A., Woollands, S., Zhang, N., Wong, J., Hagemann, M., Salsabila, N. P., Fekete, H., de Vivero, G., Pelekh, N., Godinho, C., de Villafranca Casas, M. J., Bos, A., Gusti, M. "Progress of major emitters towards climate targets: 2024 Update." NewClimate Institute, Cologne, Germany. Available at: https://newclimate.org/https://newclimate.org/resources/publications/progress-of-major-emitters-towards-climate-targets-2024-update

NEW CLIMATE INSTITUTE

PBL Netherlands Environmental Assessment Agency

International Institute for Applied Systems Analysis
IIASA

Acknowledgements

This report was financed by the European Commission's Directorate-General for Climate Action (DG CLIMA). We thank Andreas Fazekas, Katre Kets, Vicky Pollard and the DG CLIMA bilateral desks as well as EU Delegations for their comments.

We also thank NewClimate Institute colleagues Victoria Fischdick, Polina Korneeva and Hyunju (Laeticia) Ock for their support on the communications, design and editing of this report, and PBL colleagues and IMAGE model team members involved, Detlef van Vuuren, Harmen-Sytze de Boer and Vassilis Daioglou.

The project team would especially like to thank the following list of international experts for the valuable comments and feedback concerning key national policies for their specific countries: Luiz Bernardo Baptista and Pedro Luis Barbosa Maia (COPPE Institute, Federal University of Rio de Janeiro), Dr. Isabela Schmidt Tagomori (PBL Netherlands Environmental Assessment Agency), Saswata Chaudhury and Dr. Sanchit Agarwal and Saika Anjum (TERI - The Energy and Resources Institute), Dr. Saritha Vishwanathan and Dr. Jyoti Maheshwari (Indian Institute of Management-Ahmedabad), Dr. Colin Cunliff (Department of Energy, Energy Efficiency and Renewable Energy), Tran Thanh Tu (Ho Chi Minh City International University), and Dr. Cholho Song, Yujeong Jeong and Prof. Woo-Kyun Lee (OJEong Resilience Institute (OJERI) and Korea University).

This report builds on analyses conducted under the Climate Action Tracker project, led by NewClimate Institute and Climate Analytics, and the Horizon 2020 ELEVATE projects (grant no. 101056873).

Download the report

https://newclimate.org/resources/publications/progress-of-major-emitters-towards-climate-targets-2024-update

SUMMARY

The Paris Agreement is the main coordination mechanism for reducing global greenhouse gas emissions. Under this agreement, Parties submit self-determined pledges, or Nationally Determined Contributions (NDCs), that outline emission targets aimed at contributing to global climate goals. These Parties are also expected to adopt and implement policies to meet these targets.

To guide efforts in ensuring that countries remain on track to achieve the climate goal of the Paris Agreement, we have annually evaluated the progress of 25 major emitters towards their self-determined climate change mitigation targets since 2014. In 2024, we modelled greenhouse gas emissions towards 2030 based on countries' policies, as of July 2024, and compared these emissions to countries' current NDC targets to evaluate whether countries are on track to meet them.

GREENHOUSE GAS EMISSIONS OF THE GROUP OF 25 COUNTRIES MAY PEAK IN THE COMING YEARS, BUT THIS IS CONDITIONAL ON THE FULL IMPLEMENTATION OF EXISTING POLICIES

Our analysis shows that emissions under current policies could peak before 2025 — if all countries follow through with their current policies. By 2025, aggregated emissions for the 25 countries, could be 2% below 2019 levels if countries implement policies in line with the lower end of our current policies scenario. By 2030, emissions under current policies in the group are projected to reach 34.2 – 39.8 $GtCO_2e$, which corresponds to a change of between -10% and +4% compared to 2019 levels. This is an improvement compared to last year **(→ Section 3.1)**. However, if other countries follow this trend, the world will not meet the goals of the Paris Agreement, which requires emissions to be 43% below 2019 levels by 2030.

FASTER RENEWABLE UPTAKE AND ADDITIONAL POLICIES RESULT IN EMISSIONS PROJECTIONS SUBSTANTIALLY LOWER THAN PROJECTED IN 2023

Compared to our 2023 update, we project lower emissions under current policies for this group. Our scenario indicates emissions will be approximately 5% lower in 2030 than projected in our 2023 report. In China and India, renewables drive reduced emissions projections through 2030 **(→ Sections 4.5 and → 4.10)**. In Canada, changes are explained by additional support for electric vehicles and improvements in carbon tax schemes **(→ Section 4.4)**. In the United States, tighter

emissions standards for coal-fired power plants and road vehicles accelerate the pace of emissions reductions **(→ Section 4.24)**. In Colombia, policies aimed at addressing deforestation are projected to substantially reduce the country's land-use-related emissions **(→ Section 4.6)**. Although methodological revisions also affected our projections, we observed marked improvements in the policies of many countries analysed.

NO COUNTRIES HAVE UPDATED THEIR NDCS SINCE OUR 2023 UPDATE, BUT SEVERAL ARE WELL-POSITIONED TO INCREASE THE AMBITION OF THEIR 2030 TARGETS

Since our 2023 update, none of the countries analysed have strengthened their NDCs targets. However, based on our latest projections, half of the countries analysed are already likely on track to meet their unconditional NDC targets **(→ Fig. 3)**. Six countries have the full range of emissions of the current policies scenario below the unconditional NDC target while six additional countries have most of the range below their unconditional NDC target. Egypt, the only country analysed without an unconditional NDC target, is also on track to meet its targets. Although all countries should consider increasing the ambition of their NDCs, these twelve countries are in a position to substantially do so.

Given the urgency of the climate crisis, each country has a critical role to play. Countries projected to meet their NDCs are well-positioned to enhance their targets and help close the global ambition gap. Alternatively, countries projected to fall short of their unconditional NDCs should prioritise adopting additional policies or rigorously implementing existing ones to ensure they meet their targets and contribute to closing the global implementation gap.

TABLE OF CONTENTS

LIST OF FIGURES

LIST OF TABLES

/∧ 01 INTRODUCTION

To support efforts to address climate change, the Paris Agreement has served as the primary coordination mechanism for reducing global greenhouse gas emissions (UNFCCC, 2015). Under this agreement, Parties are invited to submit self-determined pledges, or Nationally Determined Contributions (NDCs). These NDCs outline emission targets aimed at contributing to the global climate goal of keeping the global average temperature increase below 2°C and pursuing efforts to limit it to 1.5°C. Parties are expected to adopt and implement policies and measures to meet these national targets.

Despite encouraging broad participation in global emission reduction efforts, the mechanism has led to two significant issues. First, the full implementation of the conditional and unconditional NDC targets is projected to result in global greenhouse gas emissions in 2030 that are roughly 60–70% higher than what is required to meet the 1.5°C goal (den Elzen et al., 2022; Climate Action Tracker, 2023). This indicates that the current targets are not ambitious enough, highlighting the need for more ambitious NDC targets. Second, many countries either lack adequate policies to support their NDC targets or fail to implement existing policies to meet them. This results in a global implementation gap, suggesting that emissions may exceed those projected by the NDC targets under current policies (den Elzen et al., 2022; UNEP, 2023).

To guide efforts in ensuring that countries remain on track to achieve the climate goal of the Paris Agreement, NewClimate Institute, PBL Netherlands Environmental Assessment Agency (PBL) and the International Institute for Applied Systems Analysis (IIASA) have annually evaluated the progress of 25 major emitters **(→ Fig.1)** towards their climate change mitigation targets since 2014. We create two main scenarios: the NDC scenario, which assesses countries' NDC targets as of September 2024, and the current policies scenario, which reflects countries' policies and measures as of July 2024.

The 25 countries***** analysed are **Argentina, Australia, Brazil, Canada, China, Colombia, Egypt, Ethiopia, the European Union, India, Indonesia, Iran, Japan, Mexico, Morocco, the Republic of Korea, the Russian Federation, South Africa, Saudi Arabia, Thailand, Türkiye, the United Arab Emirates, the United Kingdom, the United States of America and Viet Nam**. Together, these countries account for approximately 80% of global greenhouse gas emissions.

In the following chapters, we provide an overview of methods used to assess NDC targets and current policies. This is followed by key findings, which summarise the main results and insights from the analysis of the 25 countries. In the last section, we present detailed projections and analyses for each respective country.

Fig. 1

Countries analysed in the 2024 update report

* We use the term 'country' to refer to both the EU and the remaining 24 economies.

/ ∧ 02

OVERVIEW OF METHODS

In this report, we estimated the effect of current policies on future greenhouse gas emissions and assessed countries' progress towards their climate targets. The methods used in this report are consistent with previous updates (Nascimento, Kuramochi, et al., 2023). Our current policies scenario assumes no additional action beyond currently adopted climate policies as of July 2024 (Nascimento et al., 2022; Roelfsema et al., 2022). Our definition of policies includes legislative decisions, executive orders, or their equivalent but excludes publicly announced plans or strategies, that are not supported by additional policy instruments. We also estimate the absolute emissions associated with countries' NDC targets, as of September 2024, based on the information presented in the official documents.

We then compare the 2030 absolute emissions of the current policies and NDC target scenarios. In this report, we do not evaluate the ambition of the NDC target. We instead compare countries' policies to their self-determined NDC targets to bypass questions regarding the target's ambition while simultaneously provide evidence of progress towards them.

NewClimate Institute current policies scenario for energy and industry sectors is informed by the Climate Action Tracker (Climate Action Tracker, 2022; Nascimento and Höhne, 2023). The calculations use existing scenarios from national and international studies, such as IEA's World Energy Outlook 2023 (IEA, 2023h) and APEC Energy Demand and Supply Outlook (APERC, 2022), and own calculations of the effect of individual policies in different subsectors (Kuramochi et al., 2021).

PBL current policies scenario for energy and industry sectors is prepared using IMAGE integrated assessment modelling framework (Stehfest et al., 2014), including a global climate policy model (FAIR), a detailed energy-system model (TIMER), and a land-use model (IMAGE land). The calculations depart from the latest SSP2 (no additional climate policy) baseline, as implemented in IMAGE (van Vuuren et al., 2021). Current climate and energy policies are identified in the ELEVATE project (2022) and subtracted from the baseline (Roelfsema et al., 2022; Dafnomilis et al., 2023). For countries included as part of a larger IMAGE region (Australia, the Republic of Korea and the Russian Federation), emission projections were downscaled using the country's share of regional emissions in 2022 as a constant scaling factor.

IIASA quantified land-use current policies scenario projections using the global land-use model GLOBIOM (Havlík et al., 2014) and global forest model G4M for all 25 economies analysed (Gusti and Kindermann, 2011). PBL complemented these projections using its global land-use model IMAGE-land (Doelman et al., 2020) for Canada, China, India and Indonesia. IMAGE, GLOBIOM and G4M use the SSP2 baseline (no additional climate policy) as a starting point for the projections (Fricko et al., 2017). However, bioenergy demand is based on the World Energy Outlook 2023 published by IEA (IEA, 2023h). The effect of individual policies is calculated by GLOBIOM and G4M using a country-specific carbon price, which is set at a level to ensure that the policies are successfully implemented by the target date (Kuramochi et al., 2021). The impact of climate change and natural disturbances are not accounted for in the land use projections.

We include a detailed description of models, methods and assumptions in the Methodological Annex accompanying this report. It provides more information about historical emissions data sources and the harmonisation of emissions projections to the historical data **(→ Annex A2)**, quantification of NDC emissions levels **(→ Annex A3)**, general description of calculation methods used by NewClimate Institute, PBL and IIASA to quantify emissions projections under current policies **(→ Annexes A4 to → A6)**, countries' emissions per capita and per GDP **(→ Annex A7)** and a list of the main policies quantified in the projections **(→ Annex A8)**.

/∧ 03 KEY FINDINGS

3.1 EMISSIONS PROJECTIONS UNDER CURRENT POLICIES

Under the Paris Agreement, countries agreed to collectively peak and decline their greenhouse gas emissions to achieve a balance of greenhouse gas emissions sources and sinks before the end of the century (UNFCCC, 2015). Scientific consensus shows that quickly reducing emissions is the most effective way to minimise the global risks associated with increased global warming. In pathways compatible with limiting warming to 1.5°C by the end of the century, global greenhouse gas emissions peak before 2025 and decline by 43% by 2030 compared to 2019 levels (IPCC, 2023). Considering this evidence, countries also recognised that limiting warming to 1.5°C will require deep and fast emission reductions in the coming decade and reaching net zero carbon dioxide emissions by 2050 (UNFCCC, 2023).

In this section, we provide an overview of emissions projections under current policies for the 25 countries analysed. These countries account for approximately 80% of global emissions (Tubiello et al., 2021; Gütschow and Pflüger, 2023). The progress of these countries in reducing greenhouse gas emissions serves as a good, albeit incomplete, indicator of overall progress towards the global climate goal. We present aggregate emissions values and compare them with findings from our 2023 update report. We also discuss general trends in the 25 countries. This annual appraisal informs multilateral processes that aim to support global ambition-raising efforts.

GREENHOUSE GAS EMISSIONS MAY PEAK BEFORE 2030 — IF COUNTRIES FULLY IMPLEMENT POLICIES CURRENTLY IN FORCE

Historically, emissions in this group of 25 countries have not yet peaked and have consistently increased over the past three decades. In 1990, these countries emitted roughly 26.3 $GtCO_2e$. This figure increased by 45% to reach 38.2 $GtCO_2e$ by 2019. Although emissions continued to rise, the rate of increase slowed down in recent years. Between 2000 and 2010, emissions grew at an average rate of 1.8% per year. During this decade, the surge was primarily driven by China's steep increase in emissions right after joining the World Trade Organisation in 2001. However, since 2010, the growth rate of China's emissions has slowed. Combined with additional climate policies from other countries, this has led to a reduced overall growth rate for the group, which averaged 1.2% annually between 2010 and 2019.

However, our analysis shows that emissions under current policies could peak before 2025 — if all countries follow through with their current policies **(→ Tab. 1)**. We project that by 2025, aggregated emissions for the 25 countries, including land use, will reach 37.4 – 40.1 $GtCO_2e$. This means that emissions could be 2% below 2019 levels by 2025 if countries implement policies in line with the lower end of our current policies scenario. By 2030, emissions could decline even further. Emissions under current policies in the group are projected to reach 34.2 – 39.8 $GtCO_2e$ by 2030, which corresponds to a change of between -10% and +4% compared to 2019 levels.

Tab. 1
Comparison of key metrics between 2023 and 2024 update reports
Data refers to aggregated emissions and counts for the 25 countries analysed

Comparison metric	2023 report	2024 report
2025 aggregated emissions	**37.9 to 40.8 $GtCO_2e$**	**37.4 to 40.1 $GtCO_2e$**
2030 aggregated emissions	**36.2 to 41.7 $GtCO_2e$**	**34.2 to 39.8 $GtCO_2e$**
Change between 2015 and 2030	-4% to +10%	-9% to +6%
Change between 2019 and 2030	-6% to +8%	-10% to +4%

SUBSTANTIAL GROWTH IN RENEWABLE ENERGY AND ADDITIONAL CLIMATE POLICIES DRIVE EMISSIONS REDUCTIONS TOWARDS 2030

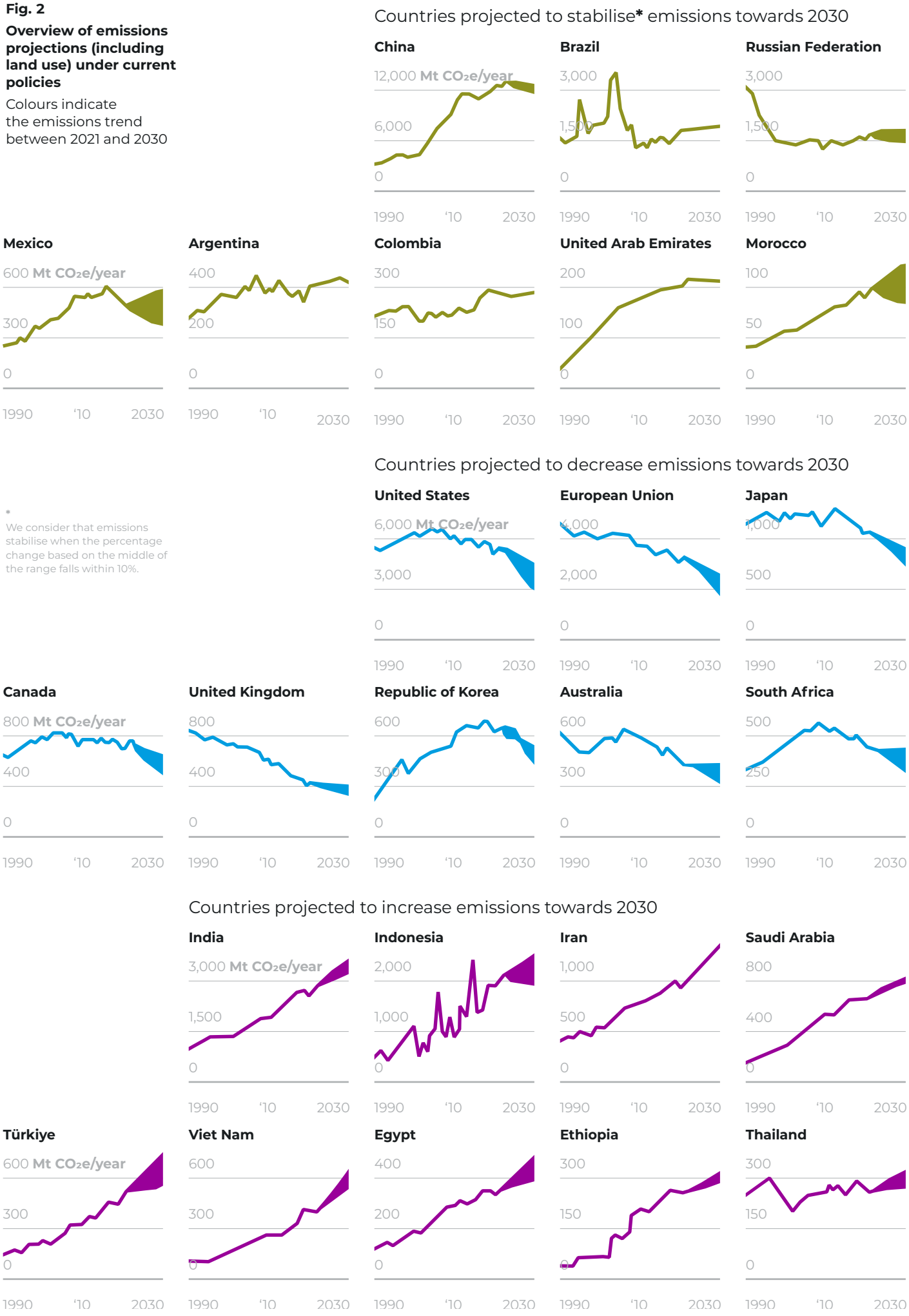
Compared to the analysis from our 2023 report, we project lower emissions under current policies for this group, assuming full implementation of existing policies. **Our current policies scenario indicates emissions will be approximately 2 $GtCO_2e$ lower in 2030 than projected in our 2023 report.** This reduction is equivalent to the total emissions of Brazil or the Russian Federation. Although the upper end of our current policies scenario is still expected to grow by 0.3% per year between 2021 and 2030, the lower end of our scenario is now projected to decline by 1.1% per year. This is a major improvement compared to our previous projections, but it requires a laser focus on implementing the policies currently in force.

This progress is driven by substantial expansion in renewable power and stronger policies in many of the countries analysed. In China and India, revised renewable energy cost forecasts and faster-than-expected growth in historical capacity additions have led to reduced emissions projections through 2030 **(→ Sections 4.5 and → 4.10)**. In Canada, additional support for electric vehicles and improvements in carbon tax schemes are accelerating the pace of emissions reductions **(→ Section 4.4)**. In the United States, tighter emissions standards for coal-fired power plants and road vehicles are also expected to lead to faster reduction in emissions than previously projected **(→ Section 4.24)**. In Colombia, policies aimed at addressing deforestation are now expected to substantially reduce the country's emissions

Fig. 2

Overview of emissions projections (including land use) under current policies

Colours indicate the emissions trend between 2021 and 2030



* We consider that emissions stabilise when the percentage change based on the middle of the range falls within 10%.

by 2030 **(→ Section 4.6)**. Although methodological revisions have also affected our projections, we observe marked improvements in policies and actions of many countries analysed.

As a result, current policies are projected to decrease or stabilise emissions in 16 out of the 25 countries analysed. In eight of these countries, emissions are projected to decrease between 2021 and 2030. In the European Union and the United States, emissions under current policies are projected to fall by almost a third in this period. Japan, the Republic of Korea, Canada, South Africa, the United Kingdom and Australia all show emissions declining by more than 10% in the 2020s. Additionally, in eight countries, current policies are insufficient to curb emissions growth, but they result in emissions roughly stabilising in this decade. In China, the Russian Federation, Mexico and Colombia, emissions are expected to stabilise or slightly decline between 2021 and 2030, while in Argentina, the United Arab Emirates, Brazil and Morocco, emissions are expected to slightly increase. Most countries with stabilising emissions are developing or emerging economies that foresee substantial economic growth in the coming years.

However, despite this progress, emissions are still projected to increase in the remaining nine countries. In Thailand, Indonesia, Saudi Arabia and Ethiopia, emissions are projected to rise by 15–18% between 2021 and 2030. In Türkiye, India, Egypt and Iran emissions are projected to increase by more than 25% during the same period. In Vietnam, emissions are expected to grow by roughly 50% over the next 10 years. Supporting emissions reductions in these countries is key to keeping the climate goal within reach.

Our findings show that together, the 25 countries analysed remain far off track to meet the collective goal of the Paris Agreement, which requires global emissions to be 43% below 2019 levels by 2030 (IPCC, 2023). However, we also identify marked improvements in our current policies scenario — showing that countries are improving their measures to reduce emissions over time. Ensuring that adopted policies are fully implemented is fundamental to realising the emissions peak and decline we project for this group of 25 countries in the coming years.

3.2 PROGRESS TOWARDS NDC TARGETS

Given the urgency of the climate crisis, it is evident that more action is needed, and each Party has a critical role to play. Countries projected to meet their NDCs are well-positioned to enhance their targets and help close the global ambition gap. Conversely, countries projected to fall short of their NDCs should prioritise adopting additional policies or rigorously implementing existing ones to ensure they meet their targets and contribute to closing the global implementation gap (Nascimento, den Elzen, et al., 2023).

Since our latest 2023 report, none of the 25 countries analysed have submitted more ambitious NDC targets. The outcome of the first Global Stocktake — the mechanism aimed at assessing collective progress towards the Paris Agreement — called for countries that did not yet do so to strengthen their NDC 2030 targets before the end of 2024 to align with the climate goal of the Paris Agreement (UNFCCC, 2023). None of the countries analysed have done so since our last update. Before COP30 in 2025, all Parties to the Paris Agreement are expected to submit more ambitious NDCs with targets for 2035. Ideally, these NDCs should also include more ambitious targets for 2030 — as these targets remain insufficient to align with the long-term climate goal of the Paris Agreement.

However, adopting ambitious targets alone is insufficient to reduce emissions. Achieving the climate goal of the Paris Agreement requires not only setting higher targets but also implementing sufficient policies to support them (Nascimento, den Elzen, et al., 2023). In this report, we assess whether countries are making adequate progress towards their current NDC targets. Specifically, we compare countries' emissions projections based on current policies with their NDC targets for 2030.

Due to uncertainty in the formulation of targets and the quantification of current policies, we cannot always state with certainty whether a country is on track to meet their targets (den Elzen et al., 2023). In some cases, this uncertainty is driven by a lack of transparency regarding the NDC target — for example, when a country does not specify the reference used in the formulation of its target. In other cases, this uncertainty is explained by different interpretations of the impact of a policy or varied assumptions regarding macroeconomic drivers. To account for some of this uncertainty, we estimate the effect of policies using different modelling approaches **(→ Section 2)**.

We consider that a country is on track to meet its NDC target when the entire range of its current policies scenario falls below the NDC target **(in blue in → Fig. 3)**. A country is likely on track if most (over 50%) of its current policies scenario range is below the target **(in yellow in → Fig. 3)**. The other countries are considered as being projected to miss their targets **(in purple in → Fig. 3)**. However, in some few cases, when a small share of the policy scenario is below the NDC target, we state that the country is likely off track but could be on track to meet its target. In this latter case, the country would only meet its targets if the implementation of its policies aligned with the most ambitious interpretation of their impact.

TWELVE COUNTRIES ARE LIKELY ON TRACK TO MEET THEIR UNCONDITIONAL NDCS WITH EXISTING POLICIES

Based on our latest projections, twelve countries are likely on track to meet their unconditional NDC targets **(→ Fig. 3)**. Six of these countries are clearly on track since they have the full range of the current policy scenario below the unconditional NDC target. Six additional countries are likely on track because they have most of the

current policy scenario range below the unconditional NDC target. These countries have all or most of their 2030 emissions projections below their unconditional NDC target. They are well-positioned to increase the ambition of their unconditional NDC targets but need to ensure that their current policies are fully implemented.

We find that six countries are on track to meet their unconditional NDC targets based on current policies **(in blue in → Fig. 3)**. These countries have the full range of emissions of the current policies scenario below the unconditional NDC target. This is true for Iran, Vietnam, the Russian Federation, India, Mexico, and Ethiopia. These countries are projected to meet their unconditional targets without adopting additional policies — although they still need to implement the ones already in place. These countries are well-positioned to substantially enhance their unconditional NDC targets and help close the global ambition gap.

Six additional countries are likely on track to meet their unconditional NDC targets **(in yellow in → Fig. 3)**. In these countries, more than 50% of the current policies scenario range falls below the unconditional NDC target. This includes China, Morocco, Türkiye, Saudi Arabia, the EU and South Africa. To ensure they meet their targets, these countries need to fully implement existing policies according to their most ambitious interpretation. In the EU, the range in our projections is explained by policies adopted at different governance levels. The EU is projected to meet its targets based on policies adopted at the EU level, but the policies of member states still result in emissions above the target. The range indicates that further action is necessary in member states to ensure the implementation of EU-level policies.

TWELVE COUNTRIES NEED TO EXPAND POLICY ADOPTION TO MEET THEIR UNCONDITIONAL NDCS

Based on our latest projections, twelve countries are likely off track to meet their unconditional NDC targets. These countries face a national implementation gap and need to adopt additional policies to meet their unconditional NDC targets.

We find that nine countries are off track to meet their unconditional NDC targets based on current policies **(→ Fig. 3)**. In these countries, the full range of emissions projected in the current policies scenario is higher than the unconditional NDC target. This is the case in Colombia, Brazil, the United Kingdom, Canada, Indonesia, the Republic of Korea, Argentina, Japan and the United Arab Emirates. To meet their unconditional NDC targets for 2030, these countries need to adopt additional policies or substantially strengthen existing ones. In Brazil and Colombia, the land use sector contributes significantly to emissions. Swift adoption and enforcement of policies in this sector will be crucial for closing the implementation gap.

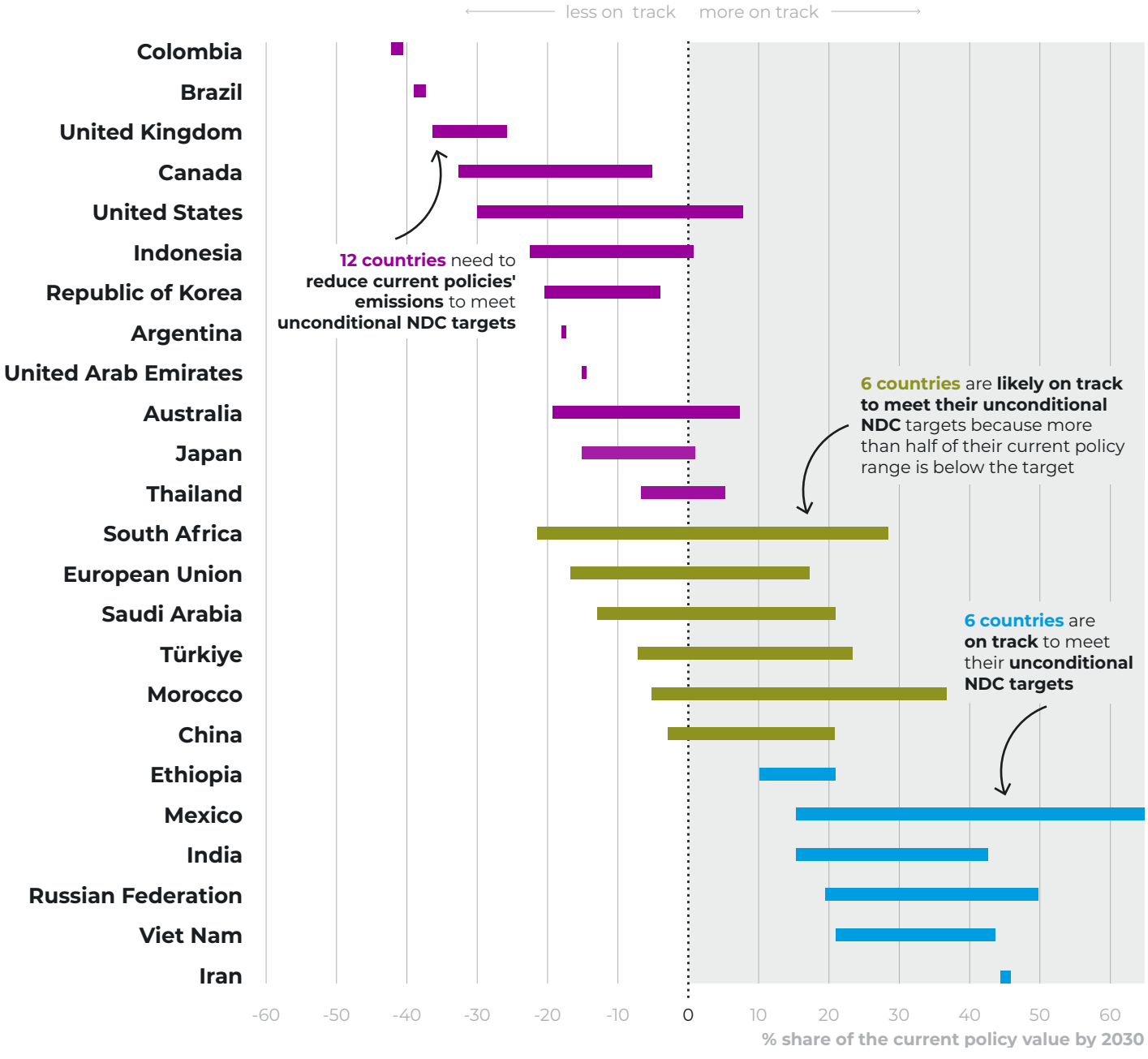
Three additional countries are likely off track to meet their unconditional NDC targets, but they could still meet them if emissions follow the lower end of our current policies scenario. In these countries, only a small portion of the current

Fig. 3

Comparison of economy-wide emissions projections under current policies and unconditional NDC targets in 2030 for all 25 countries, except Egypt which only has a conditional target

The percentages are calculated by comparing the full range of the NDC target and current policies scenarios

policy scenario range is below the unconditional NDC target. In other words, these countries have the potential to meet their targets if national circumstances enable the full implementation of all existing policies in line with the lower end of our assumptions. However, meeting the target is less likely than missing it based on current policies. This is the case for the United States, Australia and Thailand. In Australia, the uncertainty in the current policies scenario is partly driven by policies adopted at different governance levels, particularly those adopted by different subnational territories.



SOME COUNTRIES ARE ALSO ON TRACK TO MEET THEIR NDC CONDITIONAL TARGETS

Nine of the countries analysed have conditional NDC targets, with Egypt being the only country that has committed solely to a conditional target **(→ Fig. 4)**. In all cases, the conditional NDC targets are more ambitious than the unconditional ones and are tied to specific requests for international support.

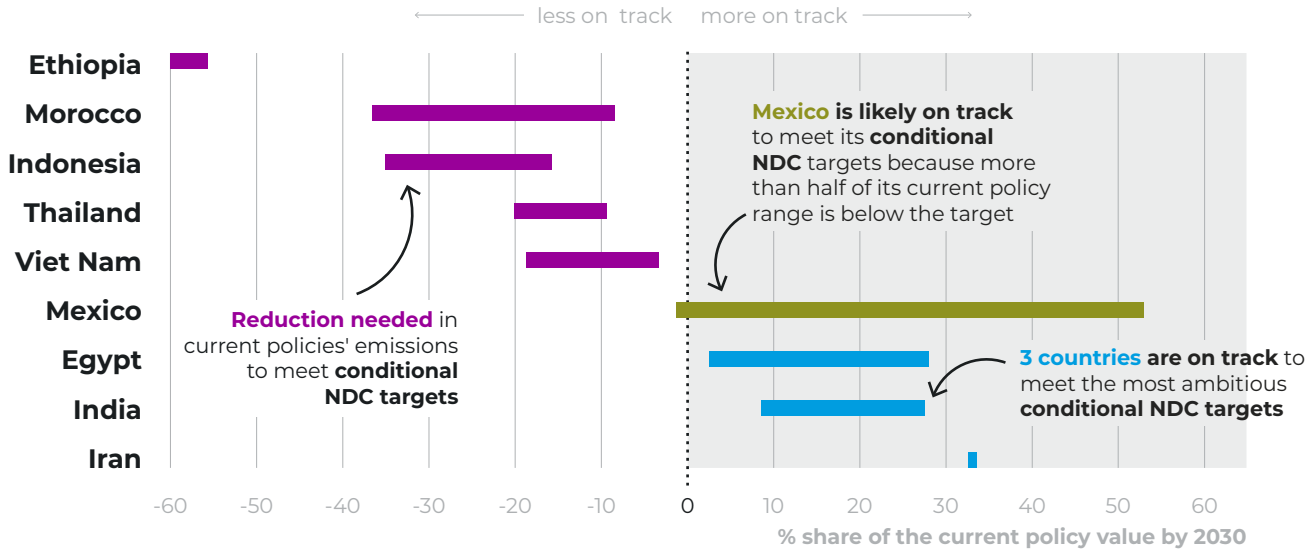
Among these countries, four are likely on track to meet their most ambitious conditional NDC targets, while five are projected to miss theirs. Iran, India, Mexico, and Egypt are on track to meet their conditional NDC targets without adopting any additional measures. These countries could use the next ambition-raising cycle to reconsider the conditionality of their pledges or to substantially increase the ambition of their targets.

In contrast, Ethiopia, Morocco, Indonesia, Thailand, and Vietnam need to adopt additional policies to meet their conditional targets. In these cases, international support will play an important role in supporting the adoption of more ambitious national climate policies. These countries could use the next NDC ambition-raising cycle to concretise the support needed to close the gap between their current policies and the conditional targets (Pauw et al., 2020).

Fig. 4

Comparison of economy-wide emissions projections under current policies and conditional NDC targets in 2030

The percentages are calculated by comparing the full range of the NDC target and current policies scenarios



COMPARING INTENSITY INDICATORS ACROSS SCENARIOS

Absolute emissions vary substantially among scenarios and countries (→ Fig. 2). However, these countries have vastly different populations and economies, making direct comparisons of absolute emissions – such as between China and Egypt – less insightful. Therefore, we present an overview of emissions per capita and per gross domestic product (GDP) for the 25 countries analysed across different scenarios (→ Fig. 5).

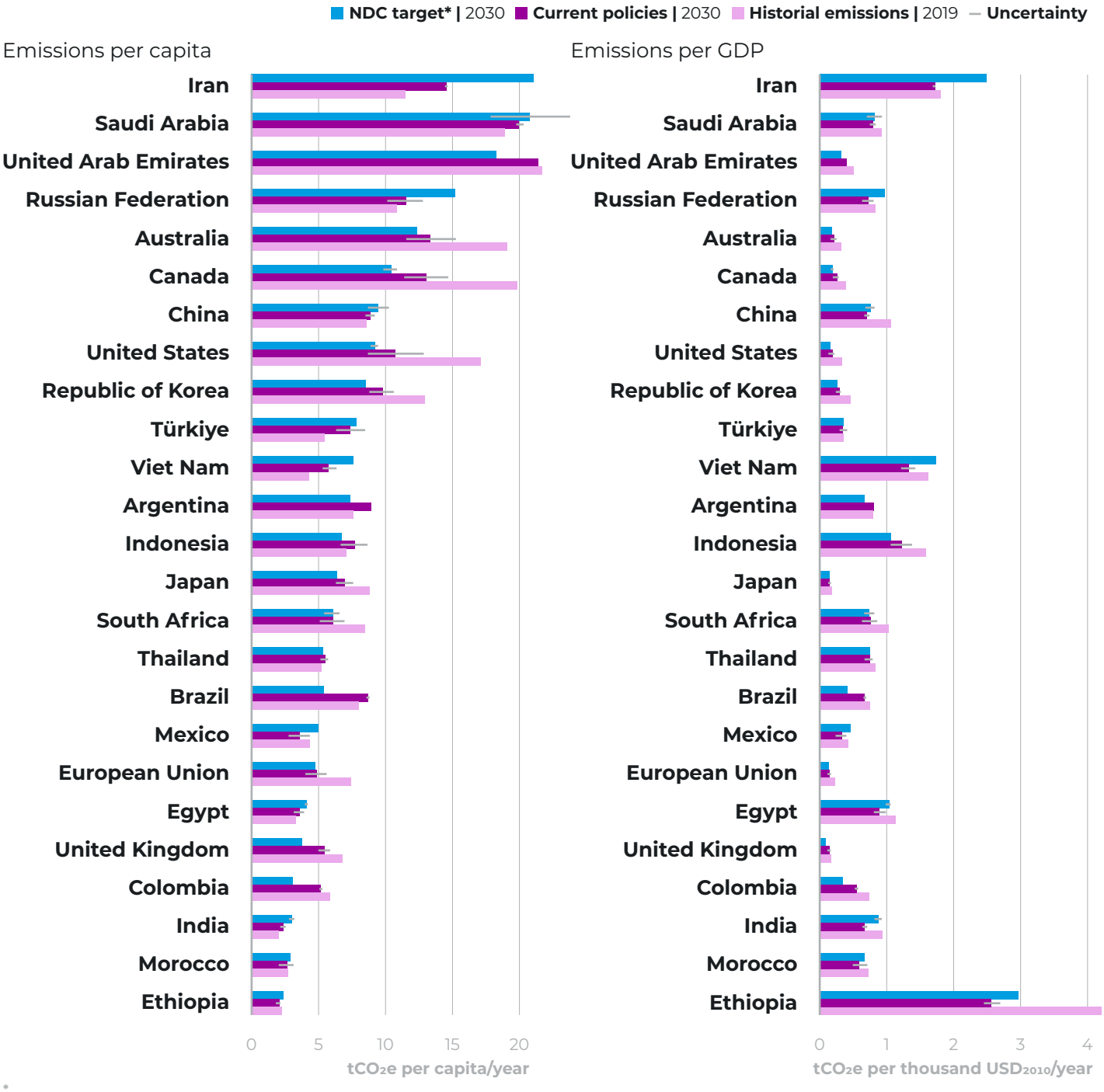
The disparities in per capita emissions among countries are estimated to remain substantial by 2030 (→ Fig. 5). The average per capita emissions in 2030 (calculated as the average of the per capita value for each country) are projected to reach 8.4 tCO_2e (range: 2.0 to 21.4 tCO_2e).

NDC targets do not necessarily translate into reductions in emissions per capita compared to historical values. In Iran and Vietnam, for example, emissions per capita based on their NDC targets are projected to almost double compared to 2019 levels. Alternatively, the NDC targets of many other countries, such as Colombia, Canada, the United States and the United Kingdom, result in emissions per capita that approximately halve between 2019 and 2030. Although this is positive, it is important to note that most of these countries depart from much higher per capita levels.

In both NDC and current policies scenarios, we project that the emissions intensity of the economy will almost halve in many countries: Australia, Canada, the European Union, the Republic of Korea, the United Kingdom and the United States. In several cases, NDC targets imply that emissions intensity will be substantially lower than historical levels, as seen in Brazil and Colombia.

Fig. 5

Emissions intensity per capita and GDP in 2030: comparison between current policies, NDC targets and historical 2019 levels



* The NDC target figures refer to unconditional targets, except for Egypt.

/ ∧ 04

EMISSION PROJECTIONS PER COUNTRY

This chapter summarises the resulting greenhouse gas emission projections per country. In this chapter, we do not evaluate the ambition or adequacy of the NDC targets but assess countries' progress towards these targets based on their adopted policies.

In our report, we express emission values in terms of global warming potentials of the IPCC Fourth Assessment Report (IPCC, 2007). In the target tables, we specify either "GHG" (which refers to all greenhouse gases) or "CO_2" (for carbon dioxide only) to clarify the official scope of the net-zero or NDC target. However, our projections and historical data always encompass all greenhouse gases.

The sectoral coverage for emission indicators in the factsheets is consistent with the NDC targets. In other words, when the NDC target excludes land use, we exclude land use from our historical data and current policy projections. The term 'land use' in the figures refers to LULUCF emissions and removals.

For the calculation of per capita emissions, we use population projections (median variant) from the UN population statistics (United Nations, 2022). For the calculation of emissions per Gross Domestic Product (GDP), we used the GDP projections (based on market exchange rates) from the International Monetary Fund World Economic Outlook (IMF, 2024).

4.1 ARGENTINA

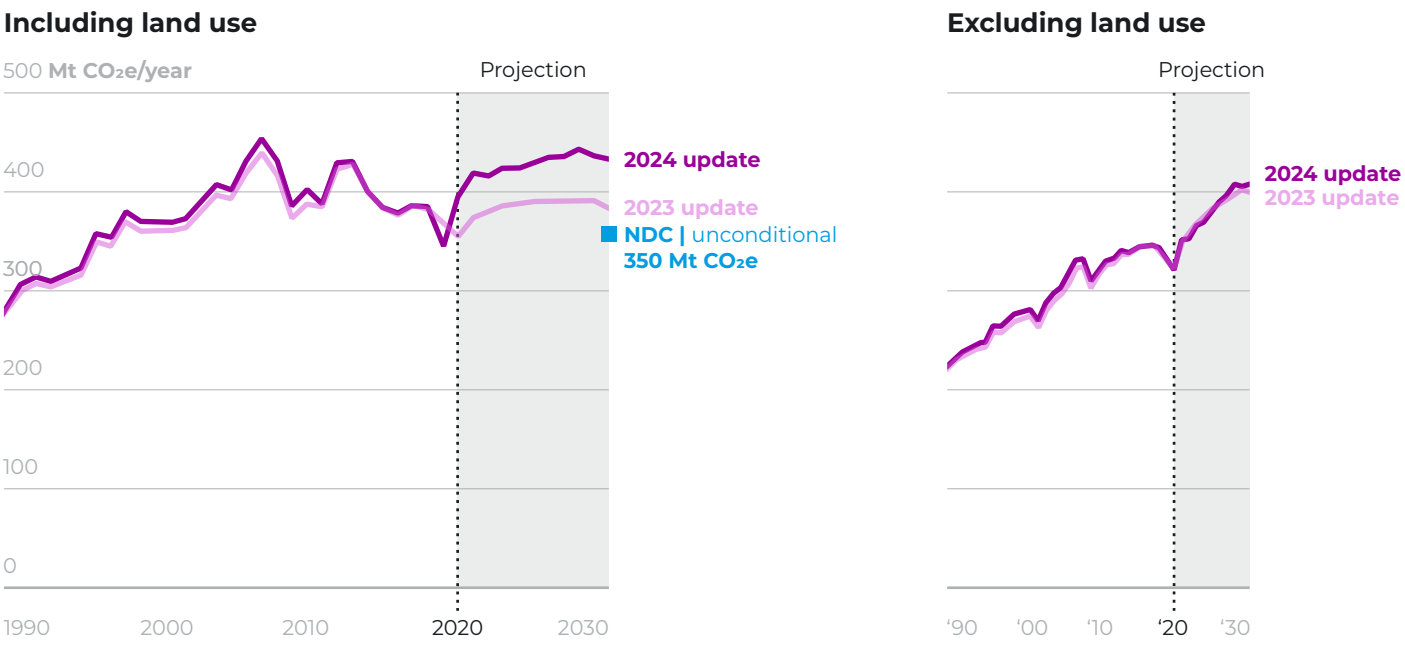
Argentina's NDC and net zero targets

Pledge	Key targets
NDC	Limit emissions to **349 MtCO₂e** by 2030
Net zero	Net zero by **2050** (GHG; LTS submitted)

Argentina is **projected to miss its NDC target with its policies**. We project a substantial decrease in land-use emissions towards 2030. However, due to an increase in historical emissions, the land-use sector is no longer expected to become an emissions sink before 2030. Additionally, land-use emissions reductions remain insufficient to offset the substantial increase in energy and industry-related emissions.

Our 2024 current policies scenario is higher than our 2023 projections, mainly due to the forest fires that increased historical land-use emissions in 2020. New developments in the agriculture sector, where livestock production is projected to increase compared to the previous update, also slightly increase our projections.

Impact of climate policies on emissions in Argentina



Source: NewClimate Institute calculations; IIASA GLOBIOM/G4M model (2024).

TARGETS

Argentina's NDC includes an absolute, economy-wide and unconditional goal of limiting emissions to 349 MtCO₂e by 2030 (Government of Argentina, 2021).

In 2020, the government announced a long-term strategy (LTS) aiming for greenhouse gas neutrality by 2050. Argentina's target covers all emissions and sectors of the economy but does not provide details on the expected contribution per sector nor the land use removals (Government of Argentina, 2022).

RECENT DEVELOPMENTS

Argentina's new government, in power since December 2023, focuses on restructuring and reducing public administration expenses to curb fiscal deficit and inflation. In this process, the former environment ministry has been reduced to the sub-secretary level, under the secretary of sport, tourism and environment (EcoNews Global, 2023). The support for existing climate policies remains unclear in a context where public resources are being sharply reduced (Spring, 2023).

However, several recent policy developments will probably affect greenhouse gas emissions. In June 2024, the new administration adopted the "Ley Ómnibus". This law sets up a Large Investment Incentive Regime (RIGI, in Spanish), which gives fiscal and economic benefits to multiple economic sectors, such as energy and agro-industry. The Regime aims to support large-scale renewable projects, for example, through tax benefits and foreign exchange incentives. Yet, it will also support the continued development of the Vaca Muerta shale gas fields, as well as the gas pipeline and LNG terminal, which were planned in the previous administration (KPMG, 2024). The government also adopted the Decree of Necessity and Urgency 70/2023, which, among other measures, eliminates the Fiduciary Fund for the Development of Distributed Generation — that supported renewable distributed generation systems (Republic of Argentina, 2023). Finally, Argentina is considering a proposal for an Emissions Trading Scheme (ETS), which would initially cover the energy sector and be expanded over time (ICAP, 2024a). The design of the ETS remains under development.

2019 historical and 2030 projections of key emissions indicators for Argentina

Emission values are rounded to the nearest 10

Indicator (incl. land use)	**2019 historical**	**2030 projection**	
		2024 update	**NDC |** unconditional
Absolute emissions (tCO_2e/cap)	**340**	**420**	**350**
	-14% vs 2010	+25% vs 2019	+3% vs 2019
Emissions per capita (tCO_2e/cap)	**7.6**	**8.9**	**7.3**
	-21% vs 2010	+18% vs 2019	-3% vs 2019
Emissions per GDP (tCO_2e/thousand USD)	**0.77**	**0.79**	**0.65**
	-17% vs 2010	+2% vs 2019	-16% vs 2019

4.2 AUSTRALIA

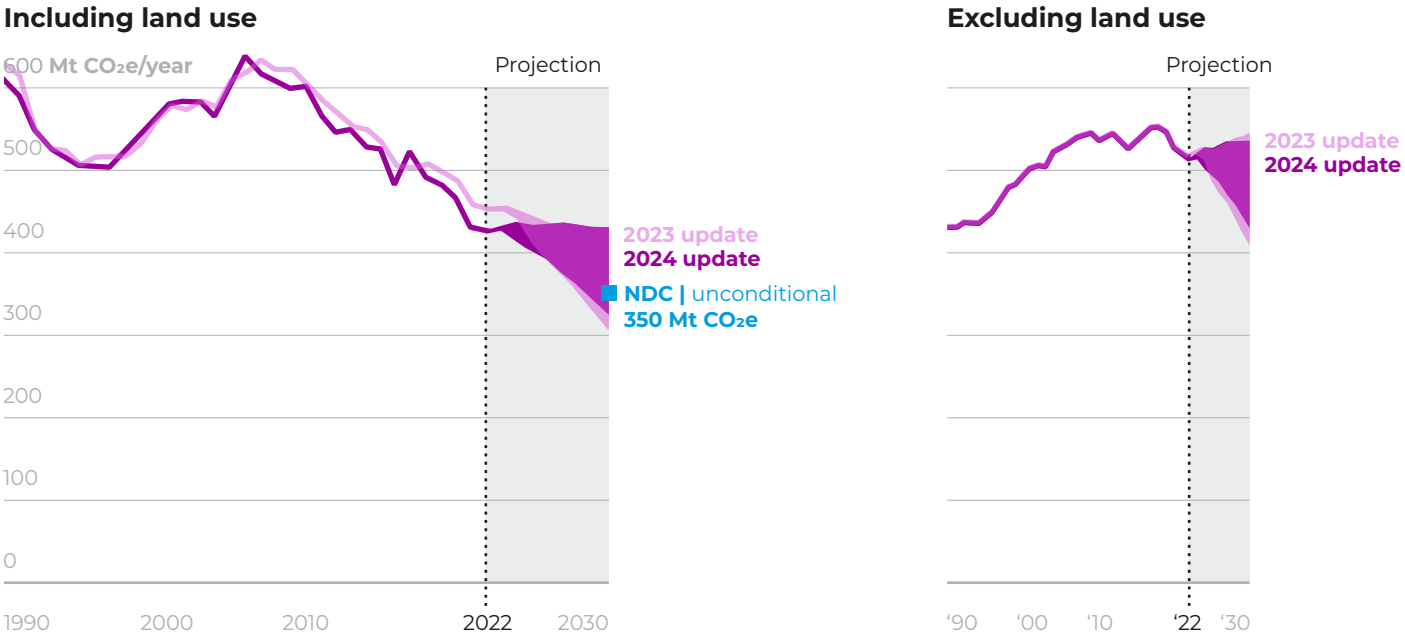
Australia's NDC and net zero targets

Pledge	Key targets
NDC	Reduce emissions by **43% below 2005** by 2030
Net zero	Net zero by **2050** (GHG; LTS submitted)

Australia is **likely to miss but could be on track to meet its NDC target** based on the lower end of the current policy range. However, to meet its target the country needs to ensure full implementation of existing policies under their most ambitious interpretation. Australia expects the net emissions of the land use sector to remain relatively stable or decrease slightly by 2030, while we project a steady increase in the land use sink, mainly due to increased carbon sequestration in newly afforested areas.

Our 2024 current policies scenario is within the range of our 2023 projections. The range in our projections is partially due to the differences between national (upper end) and more ambitious state-level policies (lower end).

Impact of climate policies on emissions in Australia



Source: PBL IMAGE model (upper end); NewClimate Institute calculations (lower end); IIASA GLOBIOM/G4M model (2024).

TARGETS

Australia's NDC sets an unconditional target to reduce emissions by 43% below 2005 levels by 2030 and reiterates Australia's goal to achieve net zero emissions by 2050. The government enshrined these targets into law in 2022 (Parliament of Australia, 2022).

Australia's Long Term Emissions Reduction Plan outlines the country's net zero roadmap for 2050, including the previously published Technology Investment Roadmap Paper and the Low Emissions Technology Statements (DISER, 2020; Australian Government, 2021; Government of Australia, 2021). This plan relies on future technologies for 15% of the reductions needed and a further 10% will depend on international or domestic offsets.

RECENT DEVELOPMENTS

In November 2023, the Australian Government announced an expansion of the Capacity Investment Scheme (CIS) targeting 32 GW of new power capacity. Renewables are expected to represent 23 GW of those and require AUD 52 billion in investment, while the remaining 9 GW are dispatchable capacity (such as utility-scale battery and hydro storage, smart behind-the-meter batteries and, potentially, vehicle-to-grid (V2G) services from EVs) and require AUD 15 billion in investment. The expanded CIS will be rolled out from 2024 to 2027 (DCCEEW, 2024).

Australia's National Electric Vehicle Strategy aims to accelerate the uptake of electric vehicles through a Fuel Efficiency Standard. It encourages initiatives to reduce domestic electric vehicle production costs, increase EV affordability and support the roll-out of EV charging infrastructure across regional Australia (DCCEEW, 2023).

In 2023, the Australian Government also announced it would invest up to AUD 2 billion in the new Hydrogen Headstart Program to fund large-scale hydrogen production projects and accelerate the development of Australia's clean energy industries (ARENA, 2023).

2019 historical and 2030 projections of key emissions indicators for Australia

Emission values are rounded to the nearest 10

Indicator (incl. land use)	**2019 historical**	**2030 projection**	
		2024 update	**NDC |** unconditional
Absolute emissions (tCO_2e/cap)	**480**	**320 to 430**	**350**
	-20% vs 2010	-33% to -11% vs 2019	-28% vs 2019
Emissions per capita (tCO_2e/cap)	**19.2**	**11.5 to 15.3**	**12.4**
	-30% vs 2010	-40% to -20% vs 2019	-35% vs 2019
Emissions per GDP (tCO_2e/thousand USD)	**0.30**	**0.16 to 0.22**	**0.18**
	-36% vs 2010	-46% to -29% vs 2019	-42% vs 2019

4.3 BRAZIL

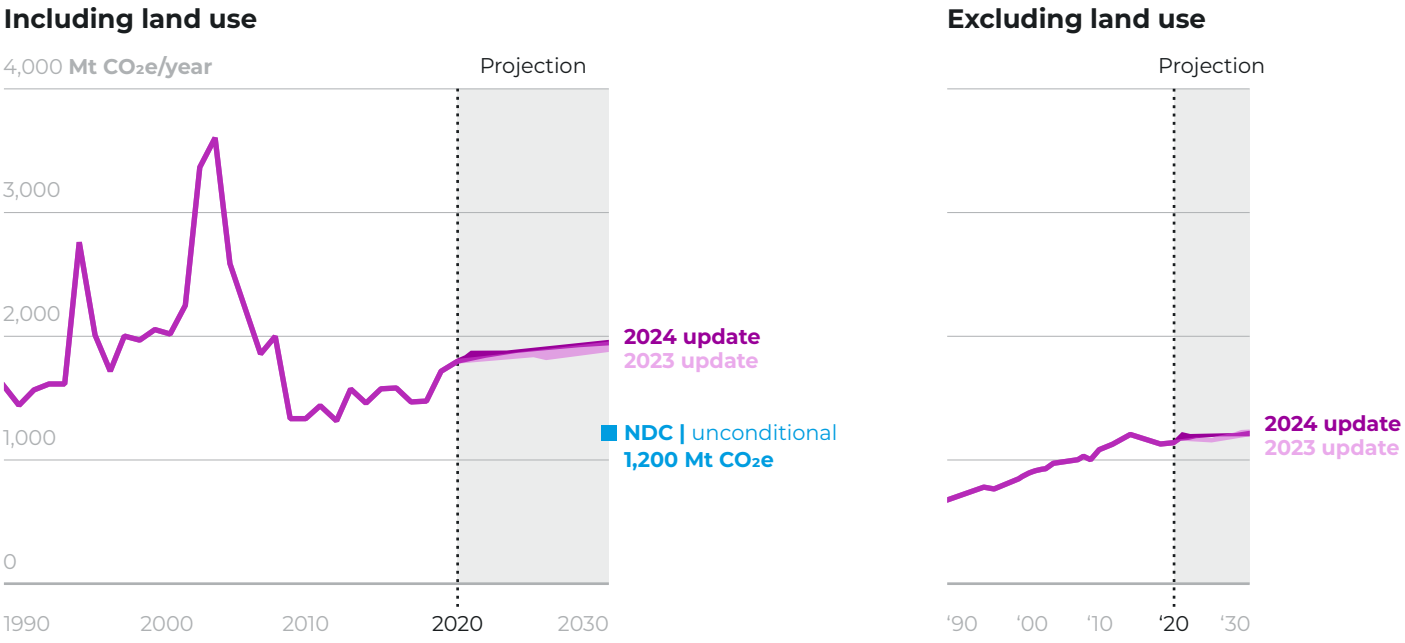
Brazil's NDC and net zero targets

Pledge	Key targets
NDC	Limit emissions to **1.32 GtCO₂e by 2025 and 1.20 GtCO₂e by 2030**
Net zero	Net zero by **2050** (gas coverage unclear; no LTS submitted)

Brazil is **projected to miss its 2030 NDC target** with existing policies. Economy-wide emissions plateau or slightly increase up to 2030. Meeting the NDC target will depend on the enforcement of land-use-related policies and ensuring that fiscal and financial instruments recently adopted translate into additional action in energy and industry sectors.

Our 2024 current policies scenario is within the range of our 2023 projections. Although Brazil adopted several policies in the past year (see recent developments below), their effect on emissions remains unclear.

Impact of climate policies on emissions in Brazil



Source: PBL IMAGE model (higher end); NewClimate Institute calculations (lower end); IIASA GLOBIOM/G4M model (2024).

TARGETS

In its NDC, Brazil sets an unconditional target to limit emissions to 1.32 GtCO₂e in 2025 and 1.2 GtCO₂e in 2030 (Government of Brazil, 2023). The new targets are consistent with emission reductions of 48.4% below 2005 by 2025 and 53.1% below 2005 by 2030.

The NDC also targets ending deforestation in the Brazilian Amazon by 2030 and reiterates the country's commitment to climate neutrality by 2050. However, this long-term target is still not legislated, and the implementation plan remains unspecified. Also, the gas coverage of the target remains unclear.

RECENT DEVELOPMENTS

Brazil has improved its climate policy coordination mechanisms since the beginning of the Lula administration. The Inter-ministerial Council on Climate Change began reviewing the National Climate Change Policy (PNMC), which aims to develop sectoral strategies outlining Brazil's measures up to 2035 and indicative sectoral targets for 2030 and 2035 (TALANOA, 2023). In 2023, almost 90% of Brazil's electricity was provided by renewable sources. Wind and solar installations in the country correspond to a third of the global growth of these technologies in the same year (Rangelova, 2024). The increase in wind and solar helps meet most of the country's increase in electricity demand and supports effective emissions decline in the power sector.

Brazil also adopted different policies that affect the country's emissions. For example, Brazil's Plan of Ecologic Transformation aims to align Brazil's economic development strategy with more sustainable practices (Ministério da Fazenda, 2024). Under this plan, Brazil emitted its first green bonds (sustainable sovereign bonds) and started developing a sustainable finance taxonomy. Brazil has also advanced discussions on its carbon market mechanism and adopted diverse instruments to support low-carbon measures, such as financial instruments to support wind and solar generation and develop its domestic EV industry. Brazil's Novo PAC is another important instrument that sets up a USD 350 billion economic growth programme to stimulate investments in infrastructure, development and environmental projects (Casa Civil, 2023). Although the Novo PAC assigned approximately 30% of its budget to energy transition and security, over 60% of that is earmarked to the oil and gas industries and will not directly contribute to the energy transition in the country.

Brazil also shows a 20% drop in Amazonian deforestation in 2023 compared to 2022 (INPE, 2024). However, the national deforestation rates still remain high due to an increase in other regions, like the Cerrado, where deforestation increased in 2023 (Rodrigues, 2023). At the national level, the total forest cover loss has remained relatively stable from 2018 to 2023 (Global Forest Watch, 2024), calling into question if Brazil will be able to reach its 2030 deforestation targets.

2019 historical and 2030 projections of key emissions indicators for Brazil

Emission values are rounded to the nearest 10

Indicator (incl. land use)	**2019 historical**	**2030 projection**	
		2024 update	**NDC |** unconditional
Absolute emissions (tCO_2e/cap)	**1,710**	**1,920 to 1,960**	**1,200**
	+28% vs 2010	+13% to +15% vs 2019	-30% vs 2019
Emissions per capita (tCO_2e/cap)	**8.1**	**8.6 to 8.8**	**5.4**
	+19% vs 2010	+6% to +8% vs 2019	-34% vs 2019
Emissions per GDP (tCO_2e/thousand USD)	**0.72**	**0.66 to 0.67**	**0.41**
	+20% vs 2010	-9% to -7% vs 2019	-43% vs 2019

4.4 CANADA

Canada's NDC and net zero targets

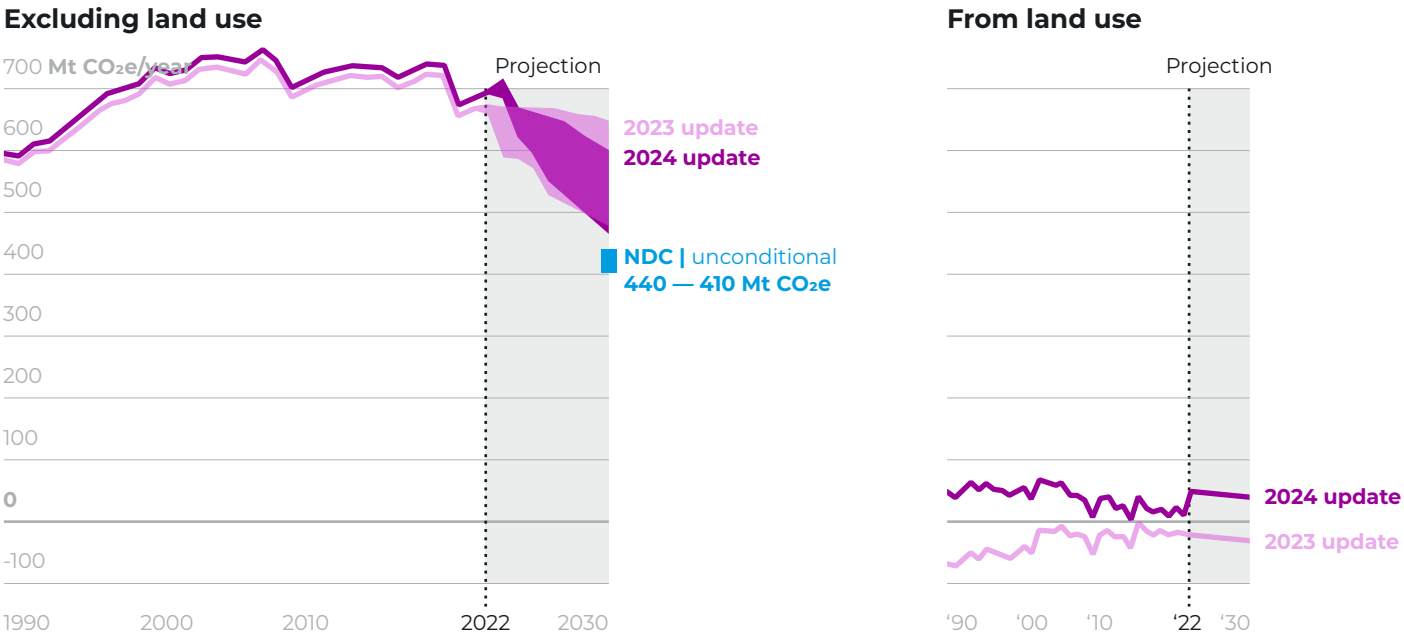
Pledge	Key targets
NDC	Reduce emissions by **40-45% below 2005** by 2030
Net zero	Net zero by **2050** (GHG; LTS submitted)

Canada is **projected to miss its NDC** target with existing policies. Emissions in Canada have been relatively stable in the past decade, except for the drop induced by the COVID-19 pandemic. However, we project a substantial decline in emissions between 2023 and 2030.

Our 2024 current policies scenario is lower than our 2023 projections mostly due to improved policy adoption (see details below). Over the past year, Canada has made progress in legislating several policies, including support for electric vehicles and improvements to the carbon tax schemes.

A revision of historical emissions offsets some of this positive effect on our projections. Canada has updated the methodologies used to estimate historical emissions. The impact of the updated methodology shifts the entire land-use sector from a net sink to a net source over the whole period, with net emissions increasing by approximately 110 $MtCO_2e$ in 1990 and 30 $MtCO_2e$ in 2021.

Impact of climate policies on emissions in Canada



Source: PBL IMAGE model (lower end); NewClimate Institute calculations (upper end); IIASA GLOBIOM/G4M model (2024).

TARGETS

In its NDC, Canada commits to reducing its emissions by 40-45% below 2005 levels by 2030. Under its domestic climate legislation, Canada is expected to submit a new NDC including a 2035 emissions reduction target within 2024 (Government

of Canada, 2021). We assume that Canada uses a net-net accounting approach for the land use sector **(→ Annex A3).** However, the NDC target accounts for credits generated by the land use sector.

In 2022, Canada submitted an updated long-term strategy (LTS) including a net zero emissions by 2050 target (Government of Canada, 2022a). This target had been enshrined into law before the LTS submission. Canada has set out a series of scenarios exploring paths towards net zero, most of which envision a substantial role for land use sinks (up to -100 $MtCO_2e$) and technological CDR (up to -150 $MtCO_2e$).

RECENT DEVELOPMENTS

In the first progress report on the 2030 Emission Reduction Plan (ERP), the Canada's government estimates a 36% reduction in emissions from 2005 levels by 2030, falling short of their lower bound of NDC target (Government of Canada, 2024). This estimate was confirmed by an independent study (Sawyer, Dave; Kanduth, Anna; Bradford, Griffin; Förg, Franziska; Linden-Fraser, Ross; Zhang, 2023). Despite recent policies supporting the implementation of the ERP, the progress report emphasises the need for additional policies and actions.

The Greening Government Strategy of Canada has been expanded with the Standard on the Disclosure of Greenhouse Gas Emissions and the Setting of Reduction Targets (Government of Canada, 2022b). This standard's objective is to induce major suppliers to disclose their greenhouse gas emissions and set reduction targets according to the commitments in the Greening Government Strategy.

Under the new Electric Vehicle Availability Standard (ECCC, 2023), vehicle manufacturers and importers must meet annual zero-emission vehicle (ZEV) regulated sales targets. The targets require that at least 20% of new light-duty vehicles for sale in 2026 are ZEVs. The requirements increase annually to 60% by 2030 and 100% by 2035.

Additionally, according to the Update to the Pan-Canadian Approach to Carbon Pollution Pricing 2023-2030 (ECCC, 2021), Canada's minimum national price on carbon pollution of CAD 65 per tonne of CO_2e emissions in 2023, will increase by CAD 15 per year to CAD 170 per tonne CO_2e in 2030.

2019 historical and 2030 projections of key emissions indicators for Canada

Emission values are rounded to the nearest 10

Indicator (incl. land use)	**2019 historical**		**2030 projection**
		2024 update	**NDC |** unconditional
Absolute emissions (tCO_2e/cap)	**740**	**470 to 600**	**440 to 410**
	+3% vs 2010	-37% to -19% vs 2019	-40% to -45% vs 2019
Emissions per capita (tCO_2e/cap)	**19.9**	**11.5 to 14.7**	**9.9 to 10.8**
	-6% vs 2010	-42% to -26% vs 2019	-50% to -45% vs 2019
Emissions per GDP (tCO_2e/thousand USD)	**0.38**	**0.20 to 0.26**	**0.19 to 0.18**
	-15% vs 2010	-46% to -32% vs 2019	-49% to -54% vs 2019

4.5 CHINA

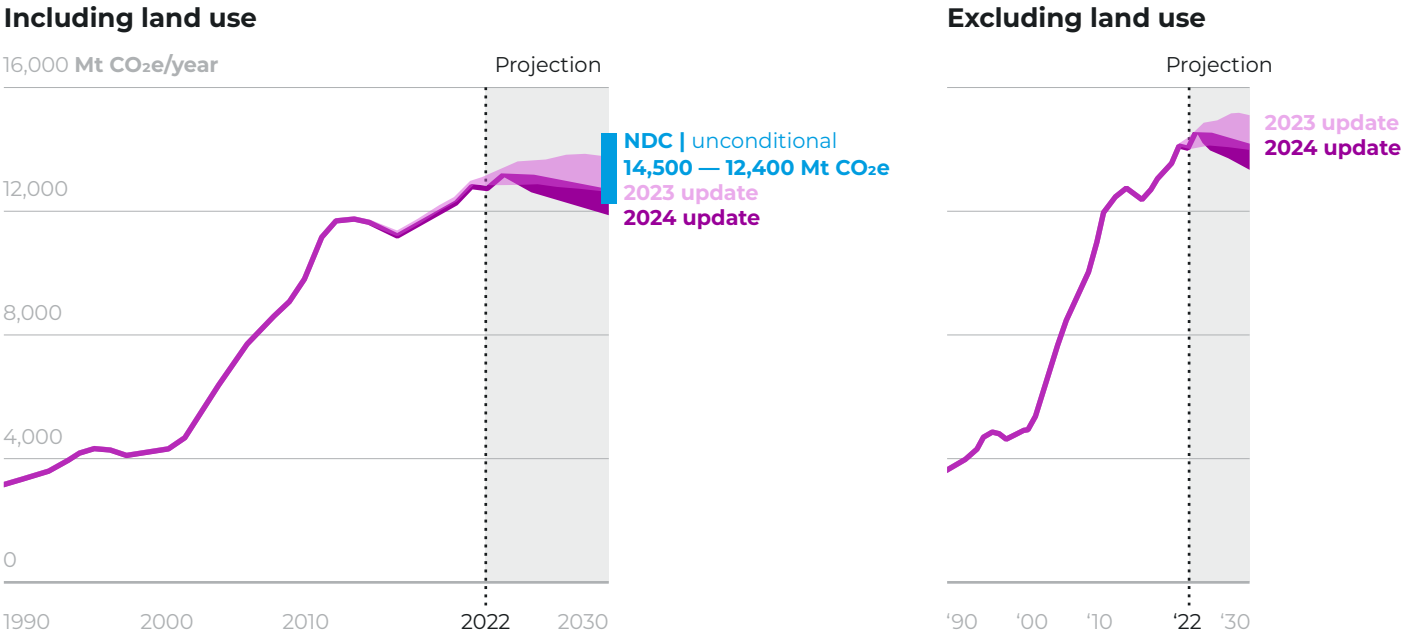
China's NDC and net zero targets

Pledge	Key targets
NDC	Peak carbon dioxide emissions before 2030; lower **carbon intensity by over 65% in 2030 from 2005**; reduce the share of non-fossil fuels in primary energy consumption to around 25% in 2030; increase forest stock volume by around 6 billion cubic metres in 2030 from 2005; and increase the installed capacity of wind and solar power to over 1,200 GW by 2030
Net zero	Net zero **before 2060** (CO_2; LTS submitted)

China is **likely on track to meet its NDC target** with existing policies. The lower end of our emission projections indicates that the country could peak its emissions before 2025, but the upper end of our projections shows emissions plateauing in the coming years. The calculation of the NDC target range is based on several assumptions about socio-economic and energy developments in China. These assumptions are consistent between the NDC and the current policies scenario of each organisation. Our analysis indicates that, under equivalent socioeconomic assumptions, China is likely to meet its NDC target.

Our 2024 current policies scenario is lower than our 2023 projections. This is partly driven by updates in energy policies, including the recent rapid expansion of renewables and policies to reduce the emissions intensity of coal-fired power plants before 2027, as well as new building standards.

Impact of climate policies on emissions in China



Source: PBL IMAGE model (lower end); NewClimate Institute calculations (upper end); IIASA GLOBIOM/G4M model (2024).

TARGETS

China's NDC does not include an economy-wide absolute emissions target but includes an economy-wide intensity and several sectoral targets **(→ Tab. above)**. China also has a target to become carbon-neutral before 2060 (Government of China, 2021b, 2021a).

Both NDC and net zero targets do not clarify the role of key greenhouse gases, especially CH_4 and N_2O. China also does not specify the contribution of each sector to its carbon neutrality target.

RECENT DEVELOPMENTS

China's domestic climate policy is guided by the "1+N" Policy Framework, which effectively integrates long-term strategic goals and immediate actions across various governance levels. The "1" component refers to the Working Guidance for Carbon Dioxide Peaking and Carbon Neutrality, which outlines the overarching long-term strategy for addressing climate change (NDRC, 2022). The "N" component is a range of specific policies and programs developed by ministries and local governments, led by the Action Plan for Carbon Dioxide Peaking Before 2030 (NDRC, 2021).

China's historical emissions continue to rise, driven by increased coal and oil consumption caused partly by weak hydropower output and the economic rebound following the zero-COVID policy. This trend jeopardizes China's domestic goal of reducing carbon intensity by 18% by 2025 compared to 2020 levels (CREA and GEM, 2024; Myllyvirta, 2024).

To help address this, the State Council set targets to reduce fossil energy intensity by 2.5% and emission intensity by 3.9% by 2024 (The State Council of the People's Republic of China, 2024). The government also introduced a low-carbon transformation action plan for 2024-2027, focusing on reducing emissions from existing coal plants through biomass co-firing, green ammonia co-firing, and CCUS technologies (NDRC and NEA, 2024).

China achieved its 2030 renewable energy capacity target six years in advance, reaching 1,206 GW in July 2024, with forecasts predicting 1,310 GW by the year-end – compared to the NDC 2030 target of 1,200 GW (Bloomberg News, 2024; CEC, 2024).

2019 historical and 2030 projections of key emissions indicators for China

Emission values are rounded to the nearest 10

Indicator (incl. land use)	**2019 historical**	**2030 projection**	
		2024 update	**NDC |** unconditional
Absolute emissions (tCO_2e/cap)	**12,130**	**12,040 to 12990**	**14,500 to 12,400**
	+21% vs 2010	-1% to +7% vs 2019	+20% to +2% vs 2019
Emissions per capita (tCO_2e/cap)	**8.5**	**8.5 to 9.2**	**8.8 to 10.2**
	+15% vs 2010	-1% to +7% vs 2019	+2% to +20% vs 2019
Emissions per GDP (tCO_2e/thousand USD)	**1.06**	**0.68 to 0.73**	**0.81 to 0.70**
	-36% vs 2010	-36% to -31% vs 2019	-23% to -35% vs 2019

4.6 COLOMBIA

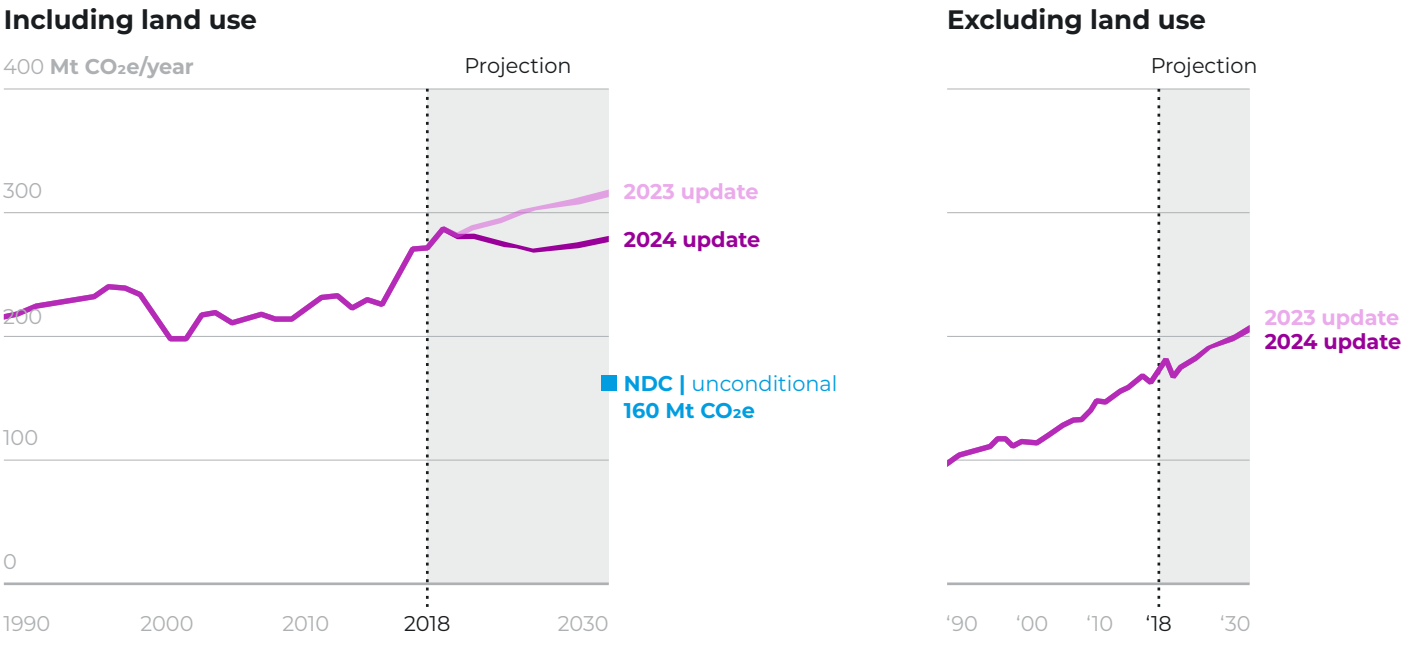
Colombia's NDC and net zero targets

Pledge	Key targets
NDC	Limit emissions to **164 MtCO₂e** in 2030 and to peak emissions by 2027
Net zero	Net zero by **2050** (GHG; LTS submitted)

Colombia is **projected to miss its NDC target** with the existing policies. Emissions in energy end industry sectors are projected to increase substantially towards 2030 and show no sign of peaking before 2027. The land use sector substantially affects Colombia's emission projections as it currently accounts for almost one-third of the country's emissions. A strong political focus on reducing deforestation and active collaboration with local communities resulted in deforestation in the Amazon reaching its lowest level in 23 years (Ministerio de Ambiente y Desarrollo Sostenible, 2024a).

Our 2024 current policies scenario is substantially lower than our 2023 projections. This is driven by the changes in the projected impact of policies to reduce land use emissions. Colombia has adopted different measures to reduce deforestation in recent years. As a result of these efforts, we now project a reduction of deforestation rates from 2020 onwards which would reduce land use emissions over time.

Impact of climate policies on emissions in Colombia



Source: NewClimate Institute calculations; IIASA GLOBIOM/G4M model (2024).

TARGETS

Colombia's NDC sets an absolute emissions limit of 169 MtCO₂e (Government of Colombia, 2020). Colombia also intends to peak emissions by 2027 and achieve an annual national deforestation rate of 50,000 hectares by 2030, with a complementary target using international mechanisms to achieve zero deforestation in natural forests by 2030.

In 2021, Colombia submitted an LTS including a net zero target, which was enshrined in domestic law. The target covers all sectors and emissions. Colombia expects 90% of its emissions to be reduced through mitigation measures, and the remaining 10% to be removed through land-use sinks or technological carbon dioxide removal (Ministerio de Ambiente y Desarrollo Sostenible Colombia, 2021).

RECENT DEVELOPMENTS

Colombia continues implementing its main climate policies, such as the National Development Plan and National Energy Plan. Renewables generate roughly three-quarters of the country's electricity, mostly from hydropower — solar and wind represented approximately 1% of Colombia's power generation in 2023 (IEA, 2023f). However, emissions from the power sector have been slowly increasing since 2015, mostly due to an increase in natural gas for electricity generation (IEA, 2024a).

Colombia has halted new fossil fuel exploration projects and continues to advocate against new fossil fuel exploration. President Petro became the first leader of a large fossil-fuel-producing country to endorse a call for a Fossil Fuel Non-Proliferation Treaty, a proposal so far only endorsed by small island states (Rodríguez, 2023; Worland, 2023). In August 2023 at the Amazon summit, Petro called for an end to the exploration of fossil fuels in the Amazon, but other presidents in the region and other oil producers did not agree (Osborn, 2023). In September 2023, Colombia joined the Powering Past Coal Alliance, committing to halting the development of new unabated coal power plants and phasing out existing plants (Powering Past Coal Alliance, 2023).

Deforestation peaked in 2017 at around 220,000 hectares per year and has since then been reduced to approximately 124,000 hectares per year by 2022 (Ministerio del Ambiente y Desarrollo Sostenible, 2022). Deforestation alerts estimate further reductions for 2023. However, in the first three months of 2024, Colombia recorded a peak in deforestation, with a 40% increase compared to the same period in 2023. This rising trend is attributed to significant coercion by armed groups in the region and the El Niño (Ministerio de Ambiente y Desarrollo Sostenible, 2024b). In 2022, Petro announced that Colombia would set aside USD 200 million a year over the next two decades to protect the Amazon (Villalobos, 2022).

2019 historical and 2030 projections of key emissions indicators for Colombia

Emission values are rounded to the nearest 10

Indicator (incl. land use)	**2019 historical**		**2030 projection**
		2024 update	**NDC |** unconditional
Absolute emissions (tCO_2e/cap)	**290**	**280 to 280**	**160**
	+28% vs 2010	-4% to -2% vs 2019	-43% vs 2019
Emissions per capita (tCO_2e/cap)	**5.8**	**5.2 to 5.2**	**3.0**
	+15% vs 2010	-11% to -10% vs 2019	-48% vs 2019
Emissions per GDP (tCO_2e/thousand USD)	**0.73**	**0.54 to 0.55**	**0.32**
	-7% vs 2010	-26% to -25% vs 2019	-56% vs 2019

4.7 EGYPT

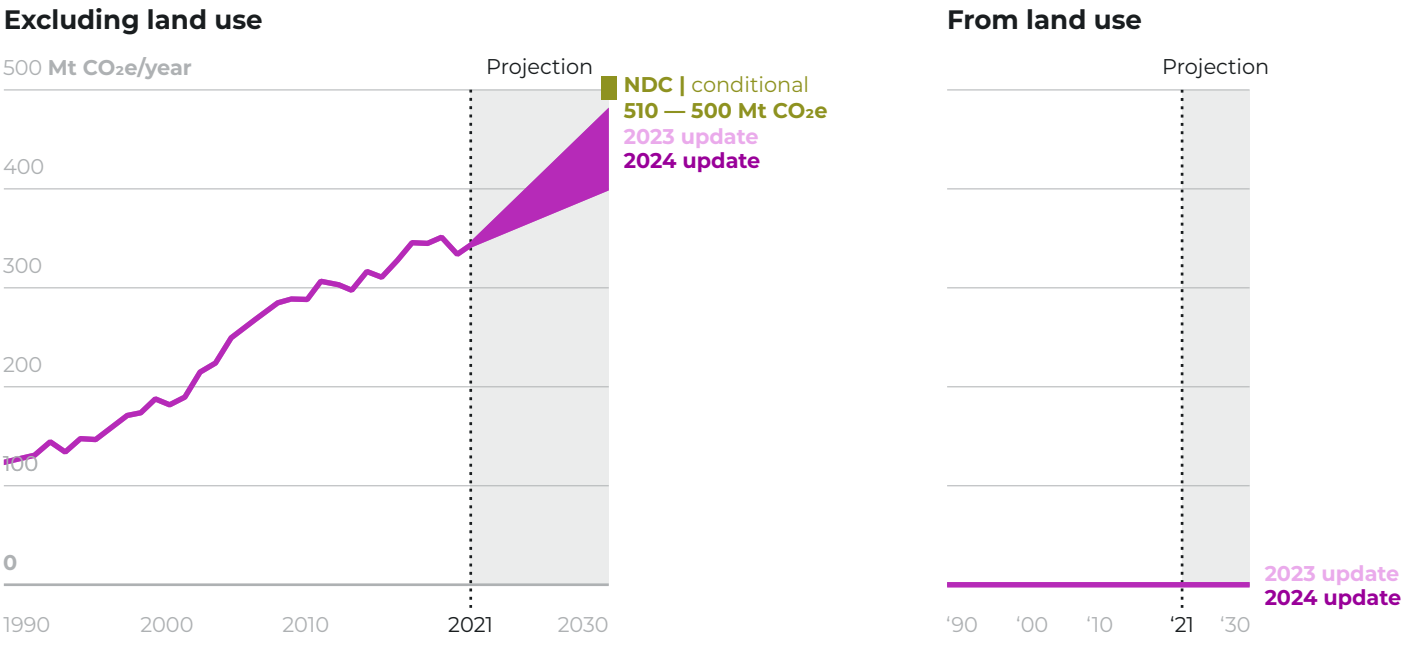
Egypt's NDC and net zero targets

Pledge	Key targets
NDC	Sectoral targets to **reduce emissions compared to BAU in 2030**: Electricity (-37%), Transport (-7%) and Oil & gas (-65%)
Net zero	**No target** (no LTS submitted)

Egypt is well on track **to meet its NDC targets**. This suggests that the country is well positioned to increase the ambition of its targets in the next NDC ambition-raising cycle. Egypt is the only country analysed that presents only conditional targets in its NDC. The NDC targets are fully conditional on international support, do not cover all sectors and result in emissions above our estimates under current policies.

We have not identified any significant policy developments in Egypt since our last update. As a result, our projections are equivalent to those presented in our 2023 update report. Emissions under current policies are projected to increase steadily until 2030, with no sign of peaking before 2030.

Impact of climate policies on emissions in Egypt



Source: NewClimate Institute calculations; IIASA GLOBIOM/G4M model (2024).

TARGETS

Egypt's NDC includes emissions reduction targets for the electricity, transport and oil and gas sectors. The NDC also includes non-quantified measures for the industry, tourism, buildings and waste sectors. Therefore, the quantifiable targets do not cover all sectors of the economy. They are also presented as reductions below a business-as-usual (Government of Egypt, 2022, 2023). As of August 2023, Egypt has no net zero target and has not submitted a long-term strategy to the UNFCCC.

RECENT DEVELOPMENTS

The Integrated Sustainable Energy Strategy to 2035 (ISES 2035), issued in 2015, remains the energy sector's core policy. The strategy maintains the target set in the 2008 National Renewable Energy Strategy of reaching 20% of the electricity generation mix from renewables (IEA, 2008) but postpones the deadline to 2022 and adds the target of 42% by 2035 (IRENA, 2018). This target is now also included in Egypt's NDC, which also sets an interim objective of reaching 40% of renewable energy by 2030 (Government of Egypt, 2022). In 2022, electricity generation from renewable energy stood at 12% — falling short of the 2022 target (IRENA, 2024a).

Egypt's government plans to develop additional fossil gas resources to maximise domestic production, consumption, and exports. It aims to increase the use of fossil gas in various sectors, including transport. In 2020, President al-Sisi announced a plan to convert 450,000 cars to run on compressed natural gas (CNG) by 2023 — which would bring the total number of cars running on CNG to one million (Government of Egypt, 2021). The government also unveiled plans to increase gas exports, particularly to Europe (Bloomberg, 2023). Egypt also aims to become a hub for hydrogen production. At COP27, the government released an outline of its Low-carbon Hydrogen strategy, which set the objective to capture 5% of the global hydrogen market by 2040 (Reuters, 2022).

2019 historical and 2030 projections of key emissions indicators for Egypt

Emission values are rounded to the nearest 10

Indicator (incl. land use)	**2019 historical**	**2030 projection**	
		2024 update	**NDC |** conditional
Absolute emissions (tCO_2e/cap)	**350**	**400 to 480**	**510 to 500**
	+21% vs 2010	+14% to +37% vs 2019	+45% to +41% vs 2019
Emissions per capita (tCO_2e/cap)	**3.4**	**3.2 to 3.9**	**4.0 to 4.1**
	+0% vs 2010	-4% to +15% vs 2019	+18% to +22% vs 2019
Emissions per GDP (tCO_2e/thousand USD)	**1.10**	**0.80 to 0.97**	**1.03 to 0.99**
	-13% vs 2010	-27% to -12% vs 2019	-7% to -10% vs 2019

4.8 ETHIOPIA

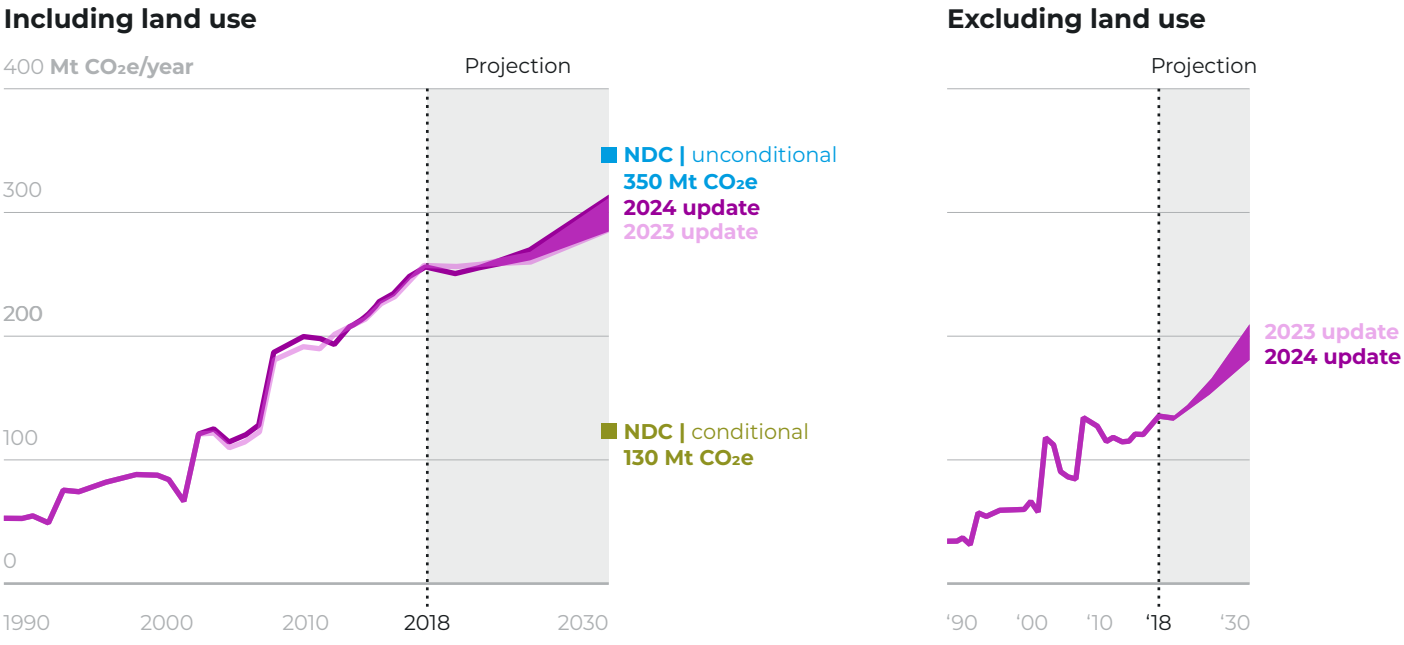
Ethiopia's NDC and net zero targets

Pledge	Key targets
NDC	Reduce emissions by **14% (unconditional)** and by **68.8% (conditional)** below BAU by 2030
Net zero	Net zero by **2050 at the latest** (GHG; LTS submitted)

Ethiopia is **projected to miss its conditional NDC target but is on track to meet its unconditional NDC target** with existing policies. This suggests that Ethiopia is well positioned to increase the ambition of its unconditional target in the next NDC ambition-raising cycle. The NDC relies heavily on the land sector for emissions reductions. However, our projections show that current policies only slightly reduce land-use-related emissions towards 2030 and that this decrease does not offset the projected increase in energy and industry-related emissions.

Since our last update, we have not identified substantial policy developments in Ethiopia. As a result, our projections are equivalent to those presented in our 2023 update report. Emissions under current policies are projected to steadily increase until 2030 and show no sign of peaking before 2030.

Impact of climate policies on emissions in Ethiopia



Source: NewClimate Institute calculations; IIASA GLOBIOM/G4M model (2024).

TARGETS

Ethiopia's NDC includes an unconditional target to reduce emissions by 14% below BAU and a conditional target of 68.8% by 2030. Ethiopia expects to achieve most of its NDC targets through reductions in land use emissions (Government of Ethiopia, 2021).

In 20125, Ethiopia announced its intention to become carbon-neutral (Government of Ethiopia, 2016). In July 2023, Ethiopia submitted its long-term strategy, targeting net-zero emissions by 2050. It covers all greenhouse gases but does not specify the use of offsets, carbon dioxide removal, or the inclusion of aviation and shipping emissions. The strategy emphasises reforestation and forest restoration, aiming to use the land sector as a carbon sink by 2050. Ethiopia's net-zero target is not yet legally enshrined (Government of Ethiopia, 2023).

RECENT DEVELOPMENTS

The 'Climate Resilient Green Economy' (CRGE) policy, first published in 2011, outlining Ethiopia's mitigation efforts, remains under revision as of September 2024. This policy serves as the cornerstone of Ethiopia's climate strategy, which is further supported by the second phase of the Growth and Transformation Plan (GTP II) that aims for full implementation of the CRGE by 2025 (NPC, 2016). Additionally, the 2020 Ten Years Development Plan includes emissions reduction targets; however, it lacks specifics on the climate policies needed to achieve these targets, indicating an area where the ongoing revision of the CRGE could provide further clarity (Government of Ethiopia, 2020).

Ethiopia has advanced key hydropower projects. The Grand Ethiopian Renaissance Dam (5GW) was finished in 2023 and is set to double Ethiopia's renewable energy capacity (Groenendaal, 2020; Gomaa, 2022; Al Jazeera, 2023). Ethiopia also promotes electric vehicles (EVs) by introducing higher taxes on internal combustion engine (ICE) vehicles in 2022, banning new and used ICE passenger vehicle imports in 2024, and expanding EV infrastructure (Kuhudzai, 2024). In 2023, Ethiopia and Kenya agreed to build the 3,000 km Lamu-Addis Ababa electrified Standard Gauge Railway (SGR), with funding efforts underway (Preston, 2023).

The Green Legacy initiative, ongoing since 2019, aims to plant 25 billion seedlings over the next four years, following 25 billion tree seedlings between 2019 and 2022 (Government of Ethiopia, 2024).

2019 historical and 2030 projections of key emissions indicators for Ethiopia

Emission values are rounded to the nearest 10

Indicator (incl. land use)	**2019 historical**			**2030 projection**
		2024 update	**NDC |** unconditional	**NDC |** conditional
Absolute emissions (tCO_2e/cap)	**260**	**290 to 310**	**350**	**130**
	+27% vs 2010	+12% to +23% vs 2019	+35% vs 2019	-51% vs 2019
Emissions per capita (tCO_2e/cap)	**2.3**	**1.9 to 2.1**	**2.4**	**0.8**
	-1% vs 2010	-14% to -6% vs 2019	+3% vs 2019	-63% vs 2019
Emissions per GDP (tCO_2e/thousand USD)	**4.21**	**2.45 to 2.68**	**2.96**	**1.07**
	-44% vs 2010	-42% to -36% vs 2019	-30% vs 2019	-75% vs 2019

4.9 EUROPEAN UNION (EU)

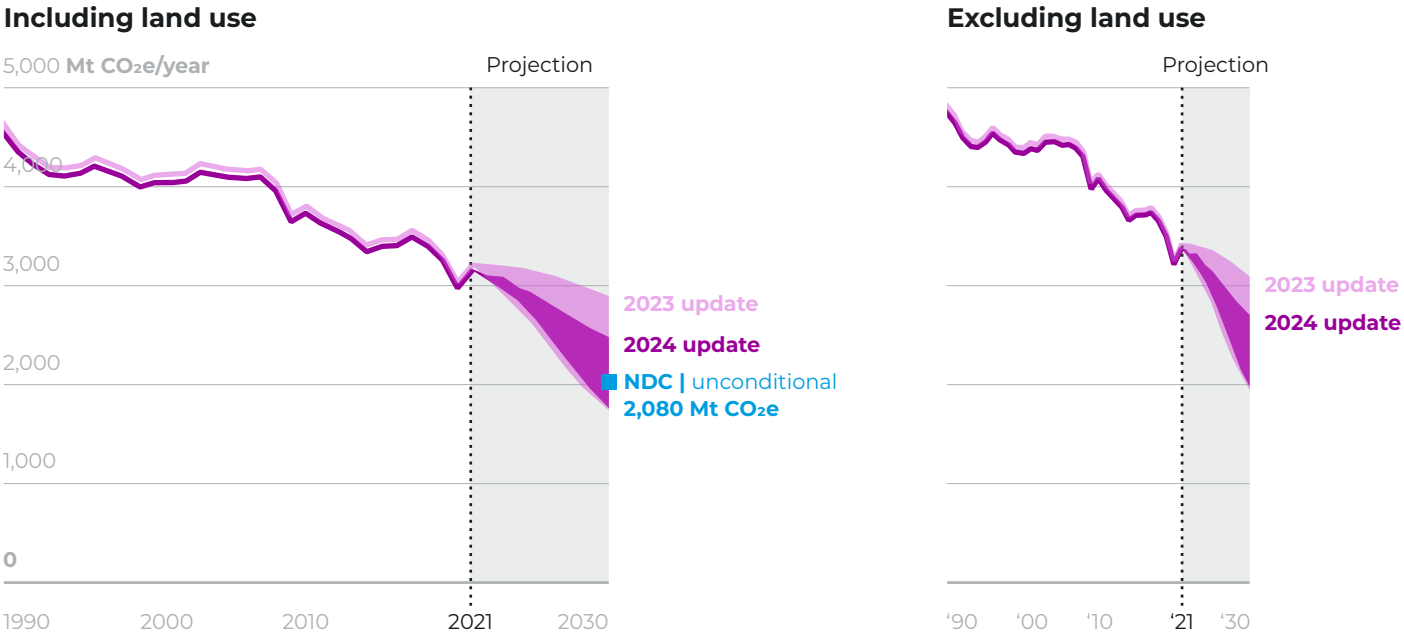
EU's NDC and net zero targets

Pledge	Key targets
NDC	Reduce emissions by at least **55% below 1990** by 2030
Net zero	Net zero by **2050 at the latest** (GHG; LTS submitted)

The EU is likely on **track to meet its NDC target**. The EU is on track to meet its target based on the implementation of policies adopted at the EU level, such as the Fit for 55 package and the REPowerEU plan. However, some EU-level policies have not yet been transposed into national legislation at the Member State level, resulting in the upper end of our projections. The range indicates that further action is necessary in Member States to ensure the implementation of EU-level policies.

Our 2024 current policies scenario is lower than our 2023 projections. Over the past year, the EU has finalised the legislation of the Fit for 55 package (see more below) and Member States have translated additional EU-level policies into their national contexts, for example through their National Energy and Climate Plans.

Impact of climate policies on emissions in EU



Source: PBL IMAGE model (lower end); NewClimate Institute calculations (upper end, member state policies); IIASA GLOBIOM/G4M model (2024).

TARGETS

In 2023, the EU submitted a new NDC that maintained the target of reducing emissions by at least 55% below 1990 levels by 2030 but increased its land sector target to -310 $MtCO_2e$.

In 2024, the European Commission presented a communication on a 2040 climate target, including the recommendation of a 90% net GHG emissions reduction below 1990 levels. The European Climate Law will be amended to include a 2040 climate target, which will be the basis for the next EU NDC.

The EU has set a legal objective to become climate neutral by 2050 under the 2021 European Climate Law (Regulation (EU) 2021/1119). The EU's 2050 climate neutrality target includes all sectors of the economy and all emissions. Although the official submission does not specify the share of emissions removals, the accompanying analysis presents these assumptions more transparently.

RECENT DEVELOPMENTS

The new Energy Efficiency Directive (EU) 2023/1791, which was the final step in the legislative process of the 'Fit for 55' package, entered into force in October 2023 (DG Ener, 2023; European Comission, 2023a). The directive introduces measures to help accelerate energy efficiency. EU Member States have two years to translate the relevant elements of the directive into national law.

The EU's Carbon Border Adjustment Mechanism (CBAM), a tool to put a comparable price on the carbon emitted during the production of carbon-intensive goods that enter the EU, entered its transitional phase in October 2023 (European Comission, 2023b; DG TAXUD, 2024). In this phase, CBAM will apply to imports of certain goods whose production is carbon-intensive and at significant risk of carbon leakage (e.g., cement and fertilisers). Also, importers will only have to report emissions embedded in their imports without the need to exchange certificates. The CBAM will enter its definitive regime in 2026. This gradual introduction of the CBAM is aligned with the phase-out of the allocation of free allowances under the EU Emissions Trading Scheme (ETS).

In April 2024, the EU published its Critical Raw Materials Act to secure access to critical raw materials. The Act sets benchmarks for domestic capacities by 2030 and aims to create secure and resilient supply chains and improve the sustainability of critical raw materials on the EU market (DG GROW, 2024; European Comission, 2024).

2019 historical and 2030 projections of key emissions indicators for EU

Emission values are rounded to the nearest 10

Indicator (incl. land use)	**2019 historical**	**2030 projection**	
		2024 update*	**NDC |** unconditional
Absolute emissions (tCO_2e/cap)	**3,280**	**1,790 to 2,500**	**2,080**
	-13% vs 2010	-46% to -24% vs 2019	-37% vs 2019
	-28% vs 1990	-61% to -45% vs 1990	-54% vs 1990
Emissions per capita (tCO_2e/cap)	**7.4**	**4.0 to 5.6**	**4.7**
	-14% vs 2010	-46% to -24% vs 2019	-36% vs 2019
	-33% vs 1990	-63% to -49% vs 1990	-57% vs 1990
Emissions per GDP (tCO_2e/thousand USD)	**0.20**	**0.09 to 0.13**	**0.11**
	-24% vs 2010	-53% to -34% vs 2019	-45% vs 2019
	-57% vs 1990	-80% to -71% vs 1990	-76% vs 1990

*Although some EU-level policies are not yet translated into national law, resulting in the higher end of our current policies scenario, their rollout is mandatory.

4.10 INDIA

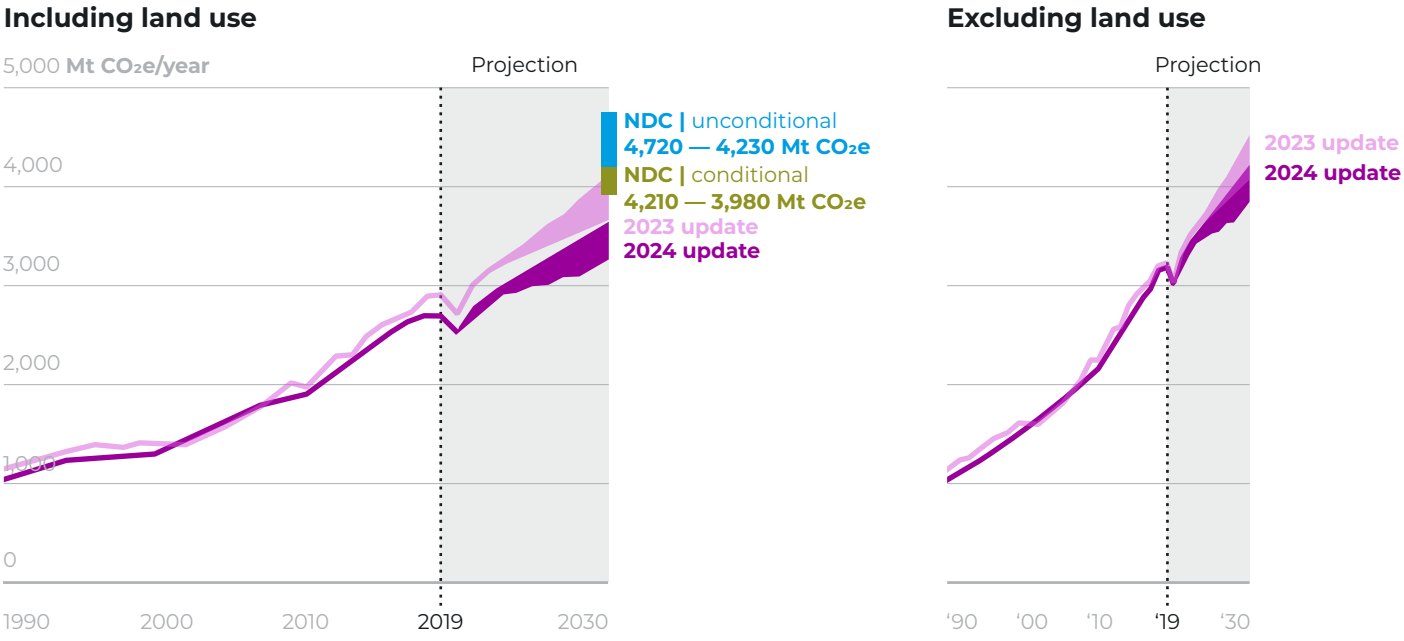
India's NDC and net zero targets

Pledge	Key targets
NDC	Reduce emissions intensity by **45% below 2005** by 2030; increase the share of non-fossil fuel in primary electricity production to 50% (conditional); and create additional (cumulative) carbon sink of 2.5–3 $GtCO_2e$ by 2030
Net zero	Net zero by **2070** (gas coverage unclear; LTS submitted)

India is well **on track to meet both its conditional and unconditional NDC targets** with existing policies. This suggests that India is well positioned to increase the ambition of its targets in the next NDC ambition-raising cycle. However, although India is projected to meet its targets, emissions under current policies are expected to increase roughly as in the last 10 years. Emissions in India show no signs of peaking before 2030.

Our 2024 current policies scenario is substantially lower than our 2023 projections, mostly due to changes in the expected land use sink in 2030, resulting from lower historical land-use emissions, updates in renewable energy policies and changes in our methodological approach to model certain policies (such as the PAT scheme in the industry sector).

Impact of climate policies on emissions in India



Source: PBL IMAGE model (lower end); NewClimate Institute calculations (upper end); IIASA GLOBIOM/G4M model (2024).

TARGETS

India's NDC aims to decrease emissions intensity by 45% below 2005 levels and increase the share of non-fossil energy capacity in the power sector to 50%, both by 2030 (Government of India, 2022b). Targets related to land-use sinks remain unchanged compared to the original NDC **(→ Tab. above)**.

In 2021, India announced its net zero by 2070 target, which was confirmed in its 2022 LTS submission. India has not clarified which gases are covered in its LTS, or to what extent the target is expected to be achieved through land-use sinks (Government of India, 2022a).

RECENT DEVELOPMENTS

Under the updated National Electricity Plan (NEP), renewable energy share is expected to reach 35% of the total energy mix in 2027, and 44% in 2032 — up from a 22% share in 2023. However, fossil fuels are still expected to play a significant role in the country's energy mix, with coal and lignite power plant installations representing 29% of all installed capacity by the end of 2032 (CEA, 2023).

The Green Hydrogen Mission aims to reach at least 5 Mt of green hydrogen production capacity per year, with an associated renewable energy capacity addition of about 125 GW (MNRE, 2023). India's flagship Perform, Achieve, Trade (PAT) scheme has entered its last cycle, ending in 2025, aiming at substantial reductions in the country's fast-increasing energy consumption in the industry sector (Park, 2023).

From April 2022, India has also implemented updated fuel efficiency standards for passenger cars, as well as light and heavy-duty vehicles, in addition to its electric vehicle share target of 30% by 2030 (BEE, 2024; CEM, 2024). Additionally, the 2018 National Policy on biofuels has been amended, to advance the deadline to reach the blending target of 20% bioethanol in petrol, from 2030 to 2025-26 and make additional feedstocks eligible for the production of biofuels (IEA, 2023d).

Finally, the Galvanizing Organic Bio-Agro Resources Dhan (GOBARdhan) initiative of the Indian government includes a wide range of programs and policies designed to facilitate the conversion of organic waste into biogas in 500 new plants (Government of India, 2023).

2019 historical and 2030 projections of key emissions indicators for India
Emission values are rounded to the nearest 10

Indicator (incl. land use)	**2019 historical**			**2030 projection**
		2024 update	**NDC |** unconditional	**NDC |** conditional
Absolute emissions (tCO_2e/cap)	**2,720**	**3,310 to 3,660**	**4,720 to 4230**	**4,210 to 3,980**
	+40% vs 2010	+22% to +35% vs 2019	+73% to +55% vs 2019	+55% to +46% vs 2019
Emissions per capita (tCO_2e/cap)	**2.0**	**2.2 to 2.4**	**2.8 to 3.1**	**2.6 to 2.8**
	+26% vs 2010	+11% to +23% vs 2019	+42% to +58% vs 2019	+33% to +41% vs 2019
Emissions per GDP (tCO_2e/thousand USD)	**0.93**	**0.63 to 0.70**	**0.90 to 0.81**	**0.80 to 0.76**
	-20% vs 2010	-32% to -25% vs 2019	-3% to -13% vs 2019	-14% to -18% vs 2019

4.11 INDONESIA

Indonesia's NDC and net zero targets

Pledge	Key targets
NDC	Reduce emissions by **32% (unconditional)** and by **43% (conditional)** below BAU by 2030
Net zero	Indicative net zero by **2060** (gas coverage unclear; LTS submitted)

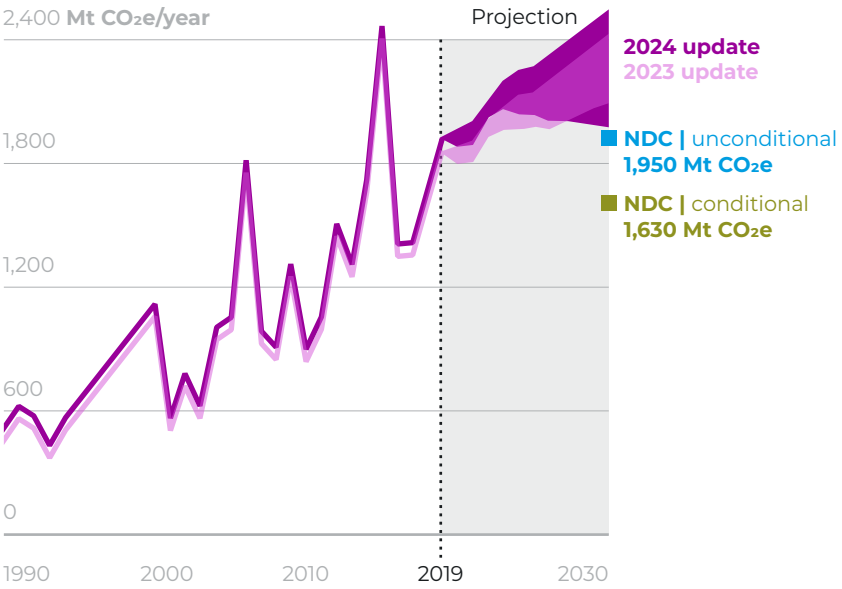
Impact of climate policies on emissions in Indonesia

Land use emission projections do not account for the impact of natural disturbances and peat fires

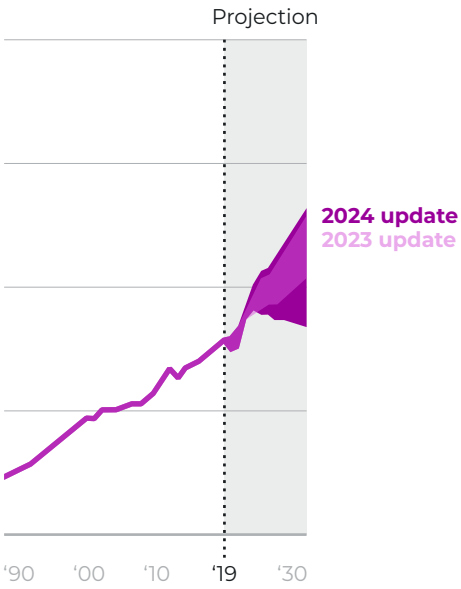
Indonesia is **projected to miss its NDC conditional target but could meet its unconditional NDC target** based on the lower end of the current policy range. To meet its unconditional target Indonesia needs to ensure full implementation of existing policies according to their most ambitious interpretation. The upper end of our current policies scenario remains on an upward trend, mostly due to the inclusion of captive power plants in the country's coal fleet pipeline. Addressing the emissions from captive coal plants is key to meeting Indonesia's unconditional NDC target.

Emissions related to land use play a significant role in Indonesia's emission projections, as they currently represent roughly half of the country's emissions. Emissions from land use are expected to plateau based on current policies, but the NDC expects substantial emissions reductions in this sector before 2030.

Including land use



Excluding land use



Source: PBL IMAGE model (lower end); NewClimate Institute calculations (upper end); IIASA GLOBIOM/G4M model (2024).

TARGETS

Indonesia's NDC sets an unconditional target to reduce emissions by 32% below business-as-usual (BAU) and a conditional target to reduce emissions by 43% below BAU (Government of Indonesia, 2022). Indonesia released a draft updated NDC for consultation. This proposed NDC includes updated 2030 and new 2035 climate targets (Salsabila and Wong, 2024). The government plans to submit the final version before COP29. The proposed targets improve Indonesia's current NDC but still result in

higher emissions compared to today's levels. The unconditional mitigation scenario only projects emissions peaking by 2050. The conditional mitigation scenario includes limited action before 2030, with emissions peaking by 2035. Since these targets remain under consultation, they are not included in our analysis.

Indonesia submitted a long-term strategy (LTS) to the UNFCCC including a scenario that reaches net zero emissions by 2060 (Government of Indonesia, 2021). Indonesia has not communicated an explicit net zero target but is exploring scenarios that could lead to net zero by 2060 or sooner.

RECENT DEVELOPMENTS

Indonesia's Presidential Regulation No. 112/2022 on Accelerated Development of Renewable Energy for Electricity Supply supports the energy transition by accelerating the decommissioning of coal-fired power plants while simultaneously restructuring the renewable energy purchase price and procurement schemes (ABNR Law, 2022). Despite this progress, the New and Renewable Energy (EBET) Bill still promotes carbon-intensive energy sources, including coal-based technologies (PWYP Indonesia, 2024). Similarly, the draft revision of Government Regulation No. 79 of 2014 on the National Energy Policy (KEN), lowers the renewable electricity target from 26% by 2030 to 19–21% (Yustika, 2024). Indonesia imposed stricter guidelines and increased governmental oversight on coal mining activities (IEA, 2023a, 2023c, 2023b) but new support for coal-based energy ultimately undermines the country's Just Energy Transition Partnership (JETP) goals (RECCESSARY, 2024).

To encourage the development of electric vehicles in the country, the government launched an incentive program for two- and four-wheeled vehicles, running until the end of 2024 but likely to be extended until the end of 2025 (Strangio, 2024). In total, the Indonesian government earmarked USD 455 trillion in subsidies for purchasing EVs, by providing cash assistance for every new purchase of an electric motor vehicle (IEA, 2023e).

Indonesia's FOLU Net Sink 2030 program serves as the backbone of Indonesia's emission reductions, envisioning 60% of the total national emission reduction target relying on the Forestry and Other Land Use (FOLU) sector. The overarching objective is to reach the emission level from FOLU at minus 140 $MtCO_2e$ and further reduce it to 340 $MtCO_2e$ by 2050 (Ministry of Environment and Forestry, 2023).

2019 historical and 2030 projections of key emissions indicators for Indonesia
Emission values are rounded to the nearest 10

Indicator (incl. land use)	**2019 historical**	**2030 projection**		
		2024 update	**NDC |** unconditional	**NDC |** conditional
Absolute emissions (tCO_2e/cap)	**1,890**	**1,950 to 2,510**	**1,950**	**1,630**
	+119% vs 2010	+3% to +33% vs 2019	+3% vs 2019	-14% vs 2019
Emissions per capita (tCO_2e/cap)	**7.1**	**6.7 to 8.6**	**6.7**	**5.6**
	+98% vs 2010	-5% to +22% vs 2019	-5% vs 2019	-21% vs 2019
Emissions per GDP (tCO_2e/thousand USD)	**1.57**	**1.05 to 1.35**	**1.05**	**0.87**
	+37% vs 2010	-33% to -14% vs 2019	-33% vs 2019	-44% vs 2019

4.12 IRAN

Iran's NDC and net zero targets

Pledge	Key targets
NDC*	Reduce emissions by **4% (unconditional)** and **12% (conditional)** below BAU by 2030
Net zero	**No target** (no LTS submitted)

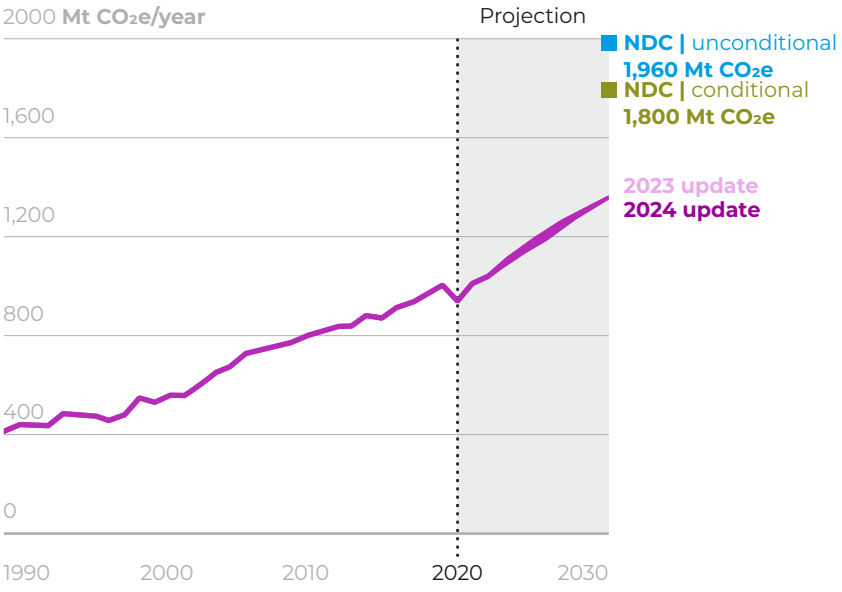
*INDC target. Iran is the biggest emitter to not have ratified the Paris Agreement.

Impact of climate policies on emissions in Iran

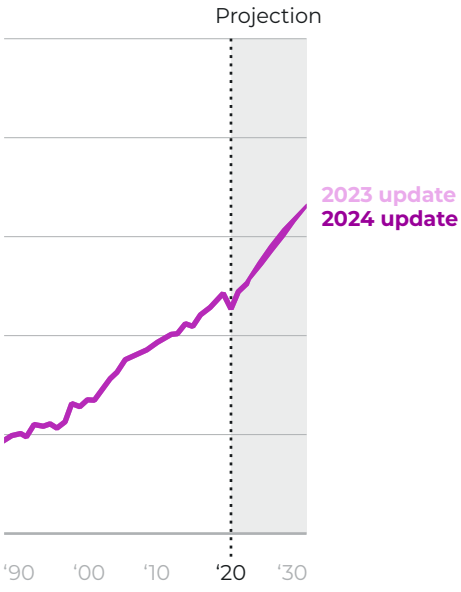
Iran is well **on track to meet both its unconditional and conditional targets** with existing policies. Our projections suggest that Iran is well positioned to substantially increase the ambition of its targets in the next NDC ambition-raising cycle. Iran has not ratified the Paris Agreement and is one of the few countries in the world with emissions above 1,000 $MtCO_2e$ per year. The increase in emissions is driven by emissions in energy and industry sectors.

Since our last update, we have not identified substantial policy developments in Iran. As a result, our projections are equivalent to those presented in our 2023 update report. Emissions under current policies are projected to steadily increase until 2030 and show no sign of peaking before 2030.

Including land use



Excluding land use



Source: NewClimate Institute calculations; IIASA GLOBIOM/G4M model (2024).

TARGETS

Iran is the largest emitter that has not ratified the Paris Agreement. The current Intended Nationally Determined Contributions (INDC) states that Iran's climate targets and mitigation efforts are conditional on the absence of international economic sanctions (Department of Environment of Iran, 2015), which were reimposed in 2018, when the US withdrew from the Iran nuclear deal.

Iran has not set a net zero target nor communicated a long-term strategy to the UNFCCC.

RECENT DEVELOPMENTS

Investments in mitigation measures – renewable energy deployment in particular– have significantly slowed down in the past couple of years, as the government has been prioritising Iran's economic recovery. This is best exemplified by the bill of the Seventh Five-Year Development Plan (2023-2027), a strategic document which serves as a guiding framework for annual budgets and policy developments (The Islamic Republic of Iran, 2023). Unlike the previous edition, the new plan, announced in May 2023, is exclusively focused on addressing Iran's pressing economic challenges and does not include any mitigation measures or renewable energy targets. The government decided to leave out the section on environmental policy, sending a clear signal about its priorities.

Current levels of installed renewable energy capacity remain low, with only 1 GW of installed total renewable energy capacity from wind and solar in 2023 (IRENA, 2024c). Nuclear energy continues to play a small role in Iran's electricity mix, with just 0.9 GW of installed capacity. Another 1.1 GW reactor is currently under construction — initially set to start operation in 2024 but is now delayed until 2028 (World Nuclear Association, 2024).

2019 historical data and 2030 projection of key emissions indicators for Iran

Emission values are rounded to the nearest 10

Indicator (incl. land use)	**2019 historical**	**2030 projection**		
		2024 update	**NDC |** unconditional	**NDC |** conditional
Absolute emissions (tCO_2e/cap)	**990**	**1,350 to 1,350**	**1,960**	**1,800**
	+26% vs 2010	+36% to +36% vs 2019	+97% vs 2019	+81% vs 2019
Emissions per capita (tCO_2e/cap)	**11.5**	**14.5 to 14.6**	**21.1**	**19.4**
	+9% vs 2010	+26% to +26% vs 2019	+83% vs 2019	+68% vs 2019
Emissions per GDP (tCO_2e/thousand USD)	**1.79**	**1.70 to 1.71**	**2.48**	**2.28**
	+17% vs 2010	-5% to -5% vs 2019	+38% vs 2019	+27% vs 2019

4.13 JAPAN

Japan's NDC and net zero targets

Pledge	Key targets
NDC	Reduce emissions by **46% below 2013** by 2030
Net zero	Net zero by **2050** (GHG; LTS submitted)

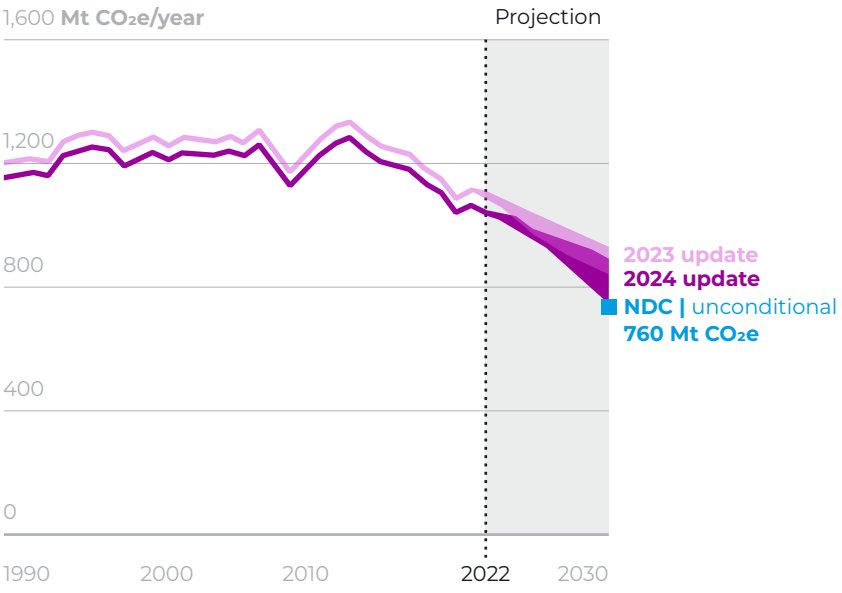
Impact of climate policies on emissions in Japan

See our Methodological Annex on the consideration of land use and overseas credits for the NDC quantification

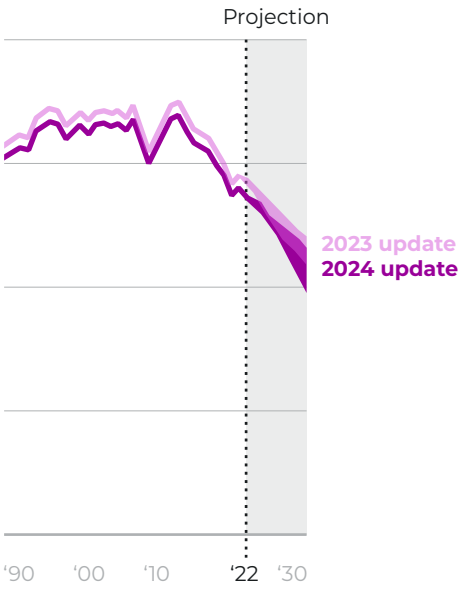
Japan is **projected to miss its NDC target** with existing policies. Although emissions are projected continue to decline, this is not sufficient to meet the target. Japan uses a gross-net approach to account for the land use sector in its NDC. This means that it excludes the land use sector in the base year of its NDC target, but includes it in the target year. Since the land use sector is a sink, this approach makes it easier for Japan to reach its target.

Our 2024 current policies scenario is lower than our 2023 projections. This is partly due to a revision of historical emissions data associated with industrial processes and product use sector. However, we also observe a stronger downward trend towards 2030 due to lower projected renewable cost forecasts. The changes are not driven by additional climate policies.

Including land use



Excluding land use



Source: PBL IMAGE model (lower end); NewClimate Institute calculations (upper end); IIASA GLOBIOM/G4M model (2024).

TARGETS

Japan's NDC sets an emission reduction target of a 46% reduction below 2013 levels. The updated Plan for Global Warming Countermeasures and the updated long-term strategy under the Paris Agreement were adopted simultaneously (MOEJ, 2021).

Japan's 2050 net zero target covers all emissions and economic sectors and is enshrined in domestic law. However, it does not report the expected share of emissions removed through land use sinks, technological CDR and other removal options such as carbon credits (Government of Japan, 2019).

RECENT DEVELOPMENTS

In February 2023, the Japanese government adopted the Green Transformation (GX) Basic Policy, an initiative that lays out Japan's new decarbonisation strategy and is aimed at generating approximately JPY 150 trillion (approximately USD 1 trillion) of public and private investment over the next 10 years. Through the GX Basic Policy, Japan intends to prolong reliance on coal-based technologies, putting a strong emphasis on developing Carbon Capture and Storage (CCS) technologies, and integrating ammonia and hydrogen co-firing in the power sector (METI, 2023).

Japan moved to restart its currently idled nuclear reactors with an extended lifetime and plans to build new generation reactors, as part of the GX Basic Policy (METI, 2023). Despite this reversal, many regulatory and political hurdles remain, and it remains uncertain if nuclear power would help Japan meet its 2030 target in a significant way (Renewable Energy Institute, 2023).

On the energy demand side, a significant policy development is the amendment of the Building Energy Efficiency Act in June 2022 (ECCJ, 2022). As of April 2025, all new buildings are now required to meet the minimum energy efficiency standards; previously the builders didn't need to meet them. The potential impact of this policy update is not quantified in this year's analysis.

2019 historical and 2030 projections of key emissions indicators for Japan

Emission values are rounded to the nearest 10

Indicator (incl. land use)	**2019 historical**	**2030 projection**	
		2024 update	**NDC |** unconditional
Absolute emissions (tCO_2e/cap)	**1,110**	**750 to 890**	**760**
	-6% vs 2010	-32% to -20% vs 2019	-32% vs 2019
Emissions per capita (tCO_2e/cap)	**8.8**	**6.3 to 7.5**	**6.4**
	-4% vs 2010	-28% to -15% vs 2019	-27% vs 2019
Emissions per GDP (tCO_2e/thousand USD)	**0.18**	**0.11 to 0.13**	**0.11**
	-13% vs 2010	-37% to -25% vs 2019	-36% vs 2019

4.14 MEXICO

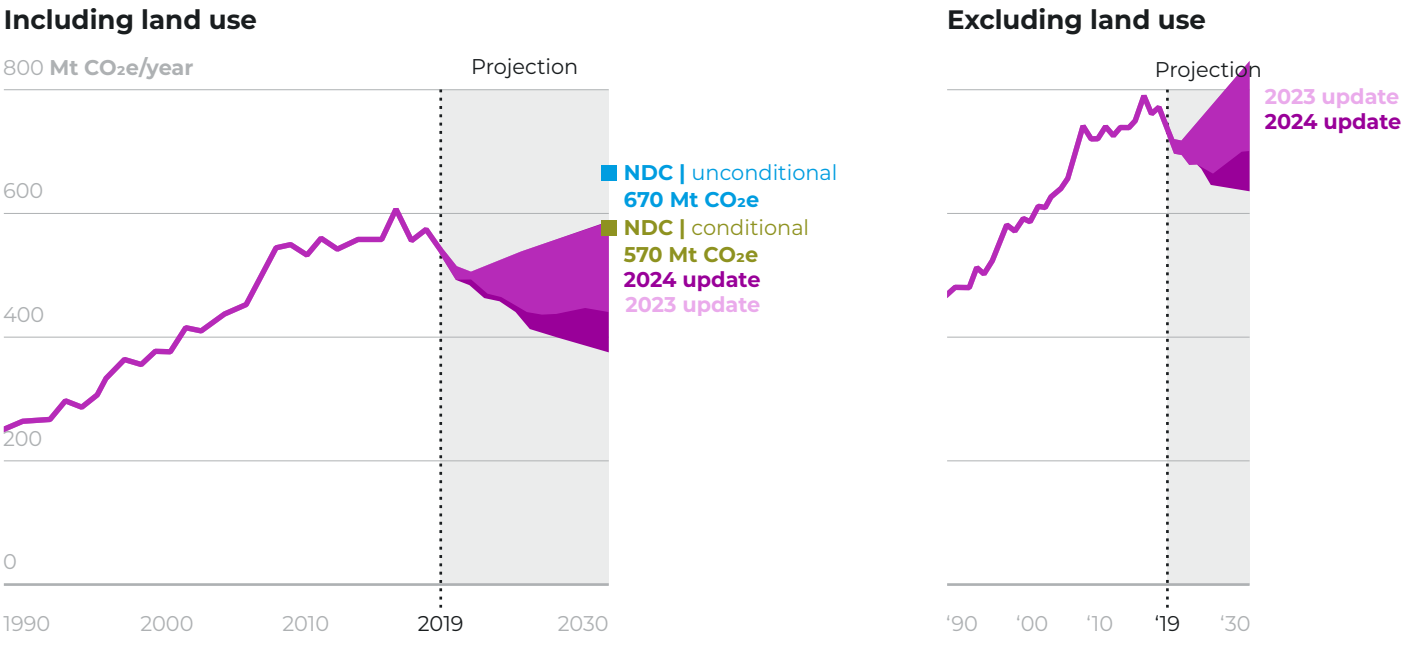
Mexico's NDC and net zero targets

Pledge	Key targets
NDC	Reduce emissions by **35% (mostly unconditional)** and by **40% (conditional)** below BAU by 2030
Net zero	**No target** (LTS submitted)

Based on our analysis, Mexico is **on track to meet its NDC targets** with existing policies. This is largely driven by an increase in projected land use sinks towards 2030. However, our current policy projections show a wide emissions range considering the uncertainty in the implementation of Mexico's policies under the new government, especially related to the deployment of renewables. The land use sector is currently an emissions sink, which is projected to increase steadily towards 2030.

Our 2024 current policies scenario is substantially lower than our 2023 projections. Our upper end has not been updated but in the lower end, we consider the full implementation of the 40% clean electricity target for 2036 — which includes gas-fired power plants.

Impact of climate policies on emissions in Mexico



Source: PBL IMAGE model (lower end); NewClimate Institute calculations (upper end); IIASA GLOBIOM/G4M model (2024).

TARGETS

Mexico's NDC includes a target to reduce emissions by 35% below BAU (including a statement that 5% of the 35% would be met with "previously agreed international support"), and a 5% further reduction conditional on international finance.

As of August 2024, Mexico is the only G20 country without a net zero target. The country submitted a long-term strategy (LTS) to the UNFCCC in 2016. This LTS does not include a net-zero target and has not been updated since.

RECENT DEVELOPMENTS

In September 2023, Mexico's Ministry of Finance launched the Sustainable Finance Mobilization Strategy, which aims to mobilise and redirect up to MXN 15 billion from public and private sources between 2023 and 2030 towards Mexico's sustainable and climate goals (México, 2023).

In January 2024, the Mexican Supreme Court ruled the 2021 reform to the Electric Industry Law (LIE) as partly unconstitutional as it violated the principle of free market and sustainable development (Suprema Corte de Justicia de la Nación, 2024). The 2021 reform prioritised state-owned fossil fuel power plants over more efficient privately owned ones. However, in Mexico's most recent power sector plan PRODESEN 2024-2038, fossil fuel installed capacity additions represent nearly 30% of total additions between 2024-2027 (SENER, 2024). Mexico also built gas pipelines in the north of the country and a new refinery in Dos Bocas, which began commercial operations at the beginning of August 2024 (Urrutia, 2024).

Mexico also advances renewable energy projects in different regions of the country. In Sonora, the first stage of the solar PV Puerto Peñasco project with 120 MW of installed capacity is in operation. In Yucatan, Nachi Cocom's first and second stages are planned to start operation this year, while Mexico City's largest rooftop solar started operation in February 2024. Mexico also acquired around 100 MW of wind installed capacity from the private sector and has announced a floating solar PV project for the north of the country (Iberdrola, 2023; Taborga, 2024).

In October 2024, Claudia Sheinbaum, who prominently integrated the climate and energy transition agendas in her campaign, became the new president of Mexico (Bourke, 2024). President Sheinbaum's track record as a climate scientist and campaign indicates increased attention to climate matters in the country. However, her close alignment with the previous government increases uncertainty on whether the current government will substantially depart from previous policies (Clague, 2024).

2019 historical and 2030 projections of key emissions indicators for Mexico

Emission values are rounded to the nearest 10

Indicator (incl. land use)	**2019 historical**	**2030 projection**		
		2024 update	**NDC |** unconditional	**NDC |** conditional
Absolute emissions (tCO_2e/cap)	**530**	**380 to 580**	**670**	**570**
	+1% vs 2010	-30% to +8% vs 2019	+25% vs 2019	+7% vs 2019
Emissions per capita (tCO_2e/cap)	**4.3**	**2.8 to 4.3**	**5.0**	**4.3**
	-10% vs 2010	-35% to +1% vs 2019	+16% vs 2019	-0% vs 2019
Emissions per GDP (tCO_2e/thousand USD)	**0.40**	**0.24 to 0.37**	**0.43**	**0.37**
	-16% vs 2010	-40% to -8% vs 2019	+6% vs 2019	-9% vs 2019

4.15 MOROCCO

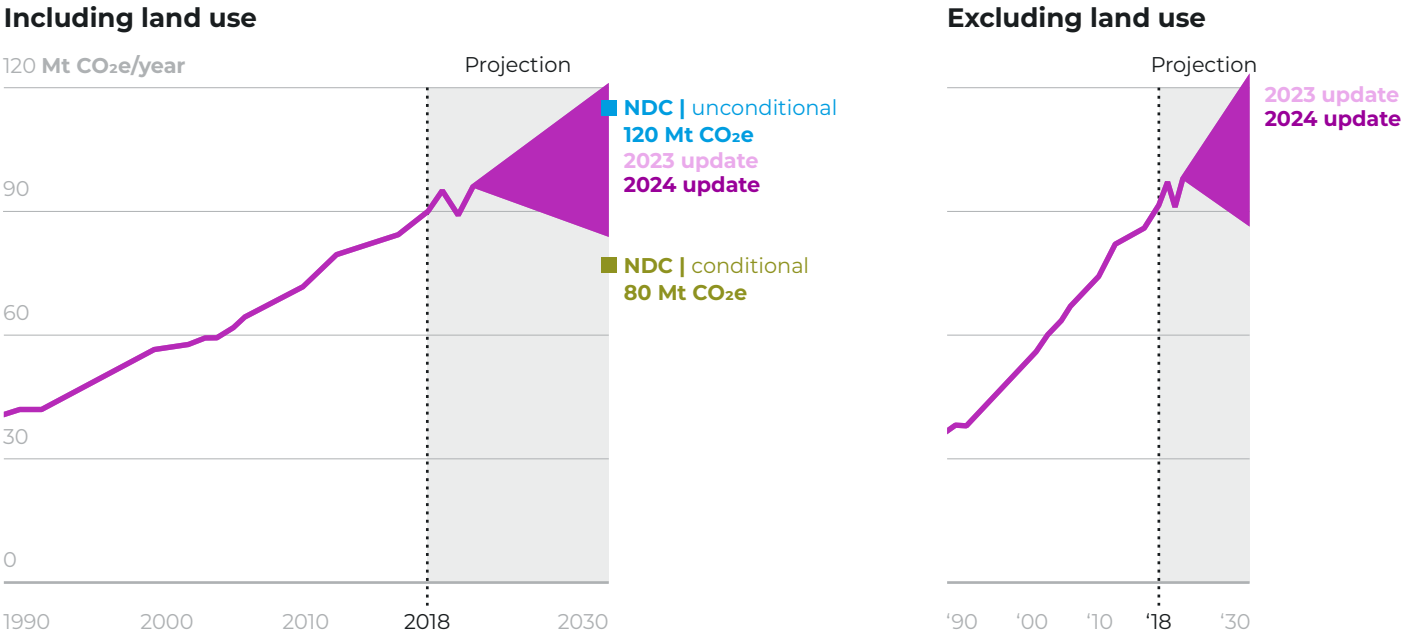
Morocco's NDC and net zero targets

Pledge	Key targets
NDC	Reduce emissions by **18.3% (unconditional)** and by **45.5% (conditional)** below BAU by 2030
Net zero	**No target** (LTS submitted)

Morocco is **projected to miss its NDC conditional target but is likely on track to meet its unconditional NDC target** with existing policies. This suggests that Morocco is well positioned to increase the ambition of its unconditional target in the next NDC ambition-raising cycle. Our current policies scenario shows that emissions in Morocco are highly uncertain. While Morocco has ambitious targets, especially for renewables, policy implementation progress remains slow.

Since our last update, we have not identified substantial policy developments in Morocco. As a result, our projections are equivalent to those presented in our 2023 update report.

Impact of climate policies on emissions in Morocco



Source: NewClimate Institute calculations; IIASA GLOBIOM/G4M model (2024).

TARGETS

Morocco's NDC sets an unconditional emissions reduction target to reduce emissions by 18.3% below business as usual (BAU) and a conditional one to reduce emissions by 45.5% below BAU (Government of Morocco, 2021a).

In its long-term strategy, Morocco announced its intention to reach net zero within the century but did not commit to a specific year for net zero or provide any further details regarding the gas coverage, sector scope, role of land use sinks, technological CDR or international carbon credits of this target (Government of Morocco, 2021b).

RECENT DEVELOPMENTS

Renewable energy continues to drive Morocco's emission reduction efforts. In 2009, Morocco set a target to reach 42% of renewable energy in installed capacity by 2020. Despite failing to meet its 2020 target, Morocco put forward a more ambitious capacity target of 52% by 2030. The share of renewables increased substantially until 2018 but has slowed down recently (IRENA, 2022). As of 2023, renewable capacity stood at 37% of total installed capacity (IRENA, 2024b, 2024c). Large-scale solar and wind projects face significant delays, while the development of small-scale projects, particularly solar PV, continues to take a backseat (IEA, 2024). The government unveiled plans to invest USD 7 billion to add 9 GW of renewable capacity by 2027, nearly doubling its current capacity (Chandak, 2024).

Morocco also aims to position itself as a global leader in green hydrogen. In 2021, the government unveiled its Green Hydrogen Roadmap, outlining its objective to meet 4% of global green hydrogen demand by 2050 (Kingdom of Morocco, 2021). By 2030, Morocco aims to generate 3500 GWh of hydrogen powered by 3 GW of renewable energy projects, primarily from PV (80%) and wind power (20%). In 2022, the country launched its first green hydrogen production system. The planned project consists of a 20 kW unit coupled with solar PV panels (CMS, 2024)

However, Morocco's electricity mix remains heavily dominated by coal, with a lifetime extension recently planned for its largest coal-fired plant. At COP26, Morocco agreed to cease permit issuance and construction of new plants, leading to the cancellation of 1.7 GW of coal pipeline (Global Energy Monitor, 2023).

2019 historical and 2030 projections of key emissions indicators for Morocco

Emission values are rounded to the nearest 10

Indicator (incl. land use)	**2019 historical**	**2030 projection**		
		2024 update	**NDC |** unconditional	**NDC |** conditional
Absolute emissions (tCO_2e/cap)	**100**	**90 to 120**	**120**	**80**
	+32% vs 2010	-11% to +27% vs 2019	+21% vs 2019	-19% vs 2019
Emissions per capita (tCO_2e/cap)	**2.7**	**2.1 to 3.1**	**2.9**	**1.9**
	+18% vs 2010	-20% to +15% vs 2019	+9% vs 2019	-27% vs 2019
Emissions per GDP (tCO_2e/thousand USD)	**0.70**	**0.48 to 0.69**	**0.65**	**0.44**
	-3% vs 2010	-32% to -2% vs 2019	-7% vs 2019	-38% vs 2019

4.16 REPUBLIC OF KOREA

Republic of Korea's NDC and net zero targets

Pledge	Key targets
NDC	Reduce emissions by **40% below 2018** by 2030
Net zero	Net zero by **2050** (gas coverage unclear; LTS submitted)

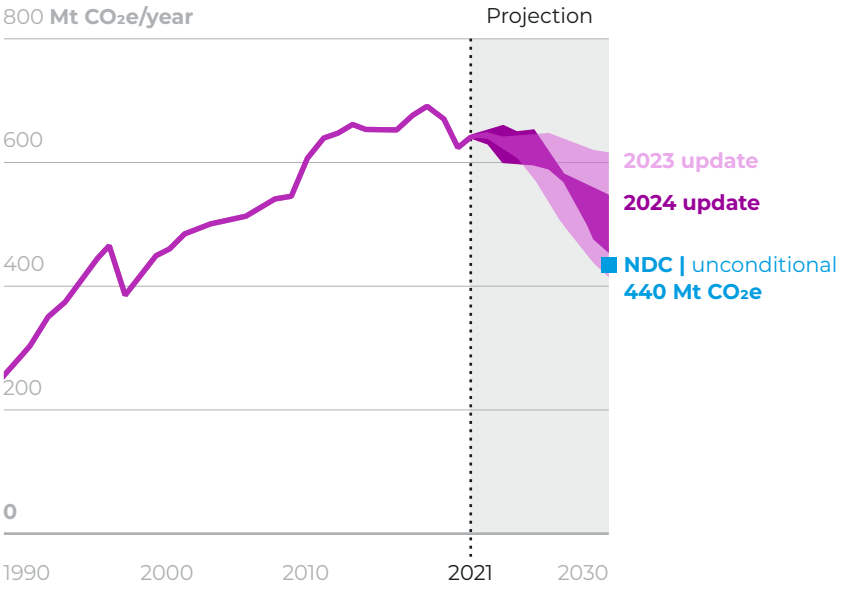
The Republic of Korea is **projected to miss its NDC target** with existing policies. Emissions are projected to decline towards 2030 but not at a sufficient pace to meet the NDC target. Most of the uncertainty in our projections relates to the impact of the Korean Emissions Trading Scheme (K-ETS) on emissions after 2025. The Republic of Korea uses a gross-net approach to account for the land use sector in its NDC. This means that it does not include the land use sector in the base year of its NDC target, but includes it in the target year. Since the land use sector is a sink, this approach makes it easier for the Republic of Korea to achieve its target.

Our 2024 current policies scenario is lower than our 2023 projections, especially due to lower projected renewable cost forecasts. A reduction in the upper end of the scenario is caused by the inclusion of the most recent electricity supply policies, such as the 10th Basic Electricity Plan. The lower end of our projections this year assumes that the Korean ETS will continue running between 2025 and 2030.

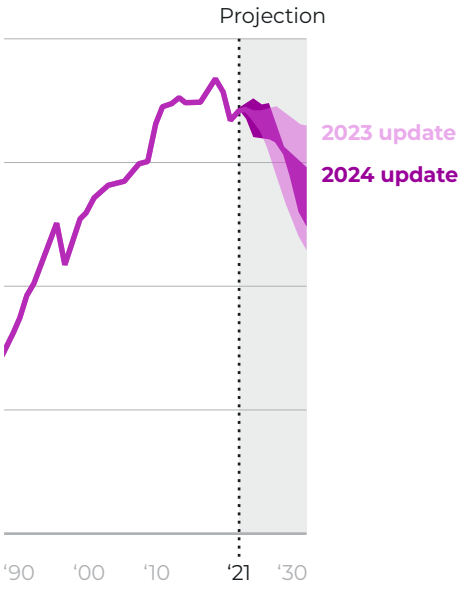
Impact of climate policies on emissions in Republic of Korea

See our methodological Annex A3 on the consideration of land use for the NDC quantification

Including land use



Excluding land use



Source: PBL IMAGE model (lower end); NewClimate Institute calculations (upper end); IIASA GLOBIOM/G4M model (2024).

TARGETS

The Republic of Korea's NDC includes an economy-wide target to reduce emissions by 40% below 2018 levels (Republic of Korea, 2021). The NDC includes emissions reductions from land use and international credits.

The Republic of Korea's long-term strategy includes a carbon neutrality target which was later enshrined in law. It is unclear whether the 2050 target includes all emissions or only carbon dioxide. The Republic of Korea's plan specifies that the carbon neutrality target will be achieved without the use of international carbon credits, and it also specifies the role expected for land use sinks as well as the individual contributions from specific sectors towards the target (Republic of Korea, 2020).

RECENT DEVELOPMENTS

The Republic of Korea's administration sticks to its move away from the country's previous 100% renewables target and towards revitalising the nuclear power industry. The 10th Basic Electricity Plan, published in January 2023 (MOTIE, 2023), revised the renewable energy target, which South Korea submitted as part of its NDC, downwards from 30% of power generation in 2030, to 21.8% (MOTIE, 2020). The draft 11th basic electricity plan, released as a working document in May 2024, confirms similar target levels for renewable energy and nuclear, but increases the role of fossil gas and decreases that of coal (General Committee on the Basic Plan on Electricity Supply and Demand, 2024).

The Republic of Korea continues implementing its plans to reach its carbon neutrality goal. Implementation plans include the incorporation of emissions reduction targets into national budget planning and the creation of a climate response fund to support the transition of carbon-intensive industries (MOE, 2023).

2019 historical and 2030 projections of key emissions indicators for Republic of Korea

Emission values are rounded to the nearest 10

Indicator (incl. land use)	**2019 historical**		**2030 projection**
		2024 update	**NDC |** unconditional
Absolute emissions (tCO_2e/cap)	**670**	**460 to 550**	**440**
	+10% vs 2010	-32% to -18% vs 2019	-35% vs 2019
Emissions per capita (tCO_2e/cap)	**13.0**	**8.9 to 10.6**	**8.5**
	+4% vs 2010	-31% to -18% vs 2019	-34% vs 2019
Emissions per GDP (tCO_2e/thousand USD)	**0.45**	**0.24 to 0.29**	**0.23**
	-15% vs 2010	-46% to -35% vs 2019	-48% vs 2019

4.17 RUSSIAN FEDERATION

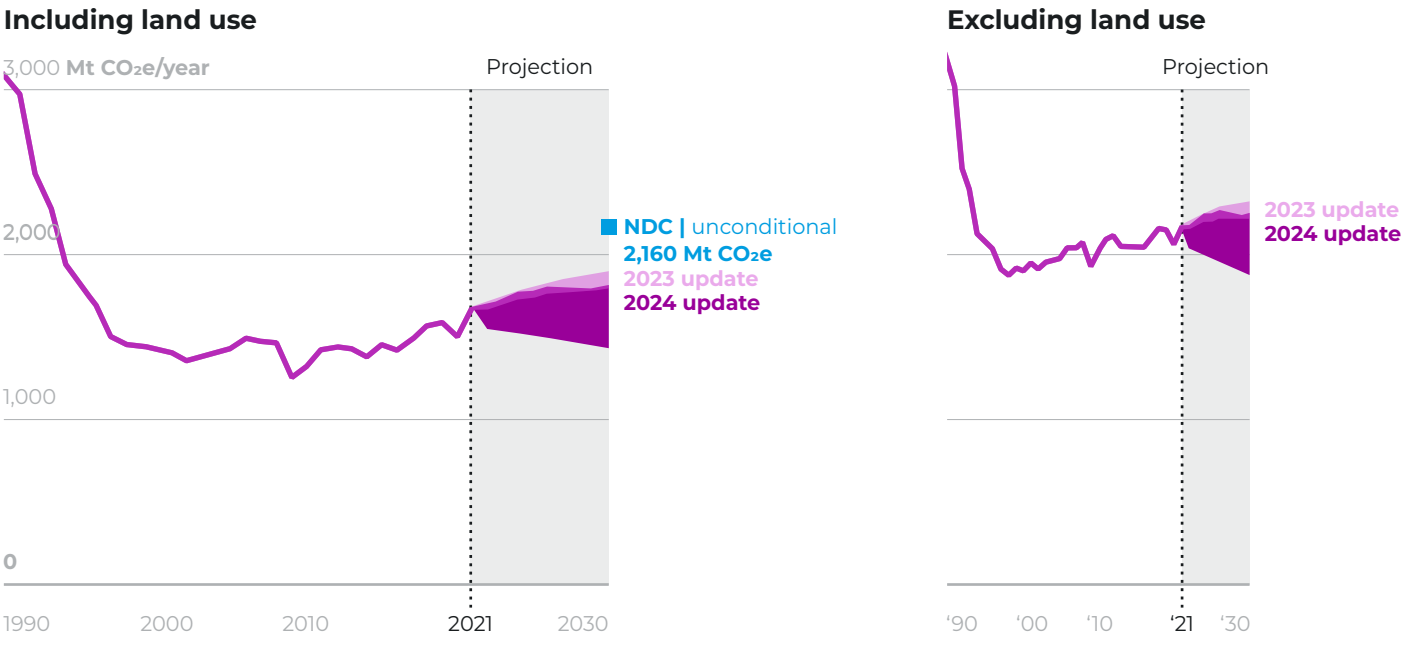
Russian Federation's NDC and net zero targets

Pledge	Key targets
NDC	Reduce emissions by **70% below 1990** by 2030
Net zero	Net zero by **2060** at the latest (GHG; LTS submitted)

The Russian Federation is **on track to meet its NDC target** with existing policies. This suggests that the Russian Federation is well positioned to increase the ambition of its unconditional target in the next NDC ambition-raising cycle. However, our projections include almost 500 $MtCO_2e$ of land use sink by 2030. Therefore, natural disturbances, such as wildfires, can substantially affect the country's emission pathway towards 2030. The lower end of our emission projections indicates that the country starting to decline before 2025, but the upper end of our projections shows emissions still slightly increasing in the coming years.

Our 2024 current policies scenario is lower than our 2023 projections, partially due to revised energy-related emissions up to 2030. The effect of the ongoing invasion of Ukraine is not fully quantified, although some of its implications are quantified in scenarios used in our analysis (IEA, 2023g). The effects of the sanctions on emissions in Russia may be significant (Liu et al., 2023) and add uncertainty to our current policy projections.

Impact of climate policies on emissions in the Russian Federation



Source: PBL IMAGE model (upper end); NewClimate Institute calculations (lower end); IIASA GLOBIOM/G4M model (2024).

TARGETS

The Russian Federation's NDC includes a target to reduce emissions by at least 70% below 1990 levels aligning with the lower bound of its original 70-75% target range (Government of the Russian Federation, 2020).

The Russian Federation announced it would set a 2060 net zero target. This was followed by government approval of the 'Strategy of socio-economic development of the Russian Federation with low emissions levels by 2050' which formalised this target and included a target of reaching an 80% reduction in emissions below 1990 levels by 2050. The long-term strategy reiterating these targets was submitted to UNFCCC in September 2022 (Government of the Russian Federation, 2022).

RECENT DEVELOPMENTS

In late 2023, the Russian Federation renewed its 2009 Climate Doctrine, which confirms the recognition of human-induced climate change and Russia's goal to reach net zero by 2060 and "creates the basis for climate policy development and implementation". However, there is no specific mention of phasing out fossil fuels or promoting renewable energy and energy efficiency measures (Presidential Executive Office, 2023; Asia Pacific Energy Portal, 2024).

Similarly, the Decree "On the national development objectives of the Russian Federation for the period until 2030 and for the future until 2036" from May 2024, does not contain specific measures in the climate or energy areas, though it refers to development goals such as comfortable and safe living environment, environmental well-being and a sustainable and vibrant economy (Ministry of Natural Resources and Environment of the Russian Federation, 2024; Presidential Executive Office, 2024; TAdviser, 2024).

Meanwhile, the international climate impact of the first two years of Russia's war on Ukraine has been higher than the annual emissions generated individually by 175 countries, surpassing 175 $MtCO_2e$*****. This is caused by a surge in emissions from direct warfare, landscape fires, rerouted flights, forced migration, leaks caused by military attacks on fossil fuel infrastructure and the estimated carbon cost of reconstruction. The invasion has also led to a rise in military spending, particularly in Europe. As militaries are responsible for 5.5% of global emissions, a rise in military spending leads to more military emissions worldwide.

2019 historical and 2030 projections of key emissions indicators for the Russian Federation

Emission values are rounded to the nearest 10

Indicator (incl. land use)	**2019 historical**	**2030 projection**	
		2024 update	**NDC |** unconditional
Absolute emissions (tCO_2e/cap)	**1,590**	**1,440 to 1,800**	**2,160**
	+20% vs 2010	-9% to +14% vs 2019	+36% vs 2019
Emissions per capita (tCO_2e/cap)	**10.9**	**10.2 to 12.7**	**15.2**
	+18% vs 2010	-6% to +17% vs 2019	+40% vs 2019
Emissions per GDP (tCO_2e/thousand USD)	**0.83**	**0.63 to 0.79**	**0.95**
	+3% vs 2010	-24% to -5% vs 2019	+13% vs 2019

***** These emissions are **not included in our projections**, as they are mostly outside of the scope considered in this report, for example, because they happen outside the Russian Federation territory.

4.18 SAUDI ARABIA

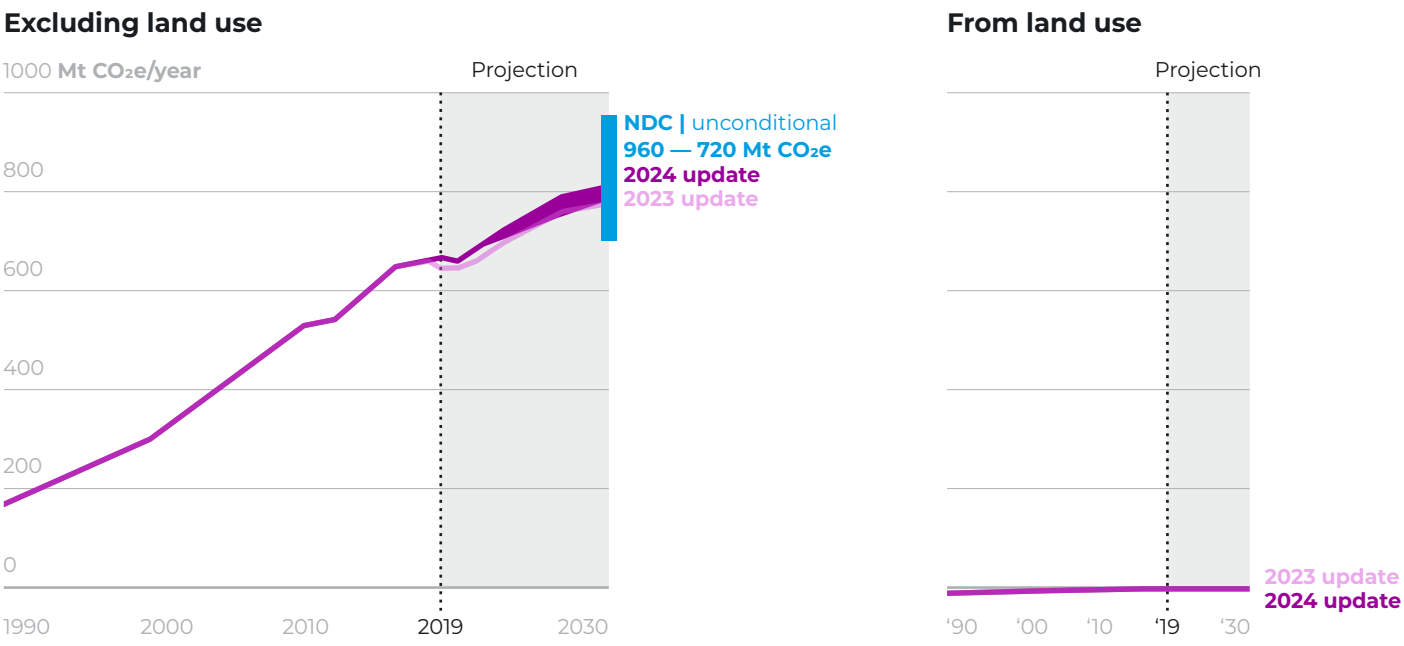
Saudi Arabia's NDC and net zero targets

Pledge	Key targets
NDC	Reduce emissions by **278 MtCO₂e** 2030 (unclear reference)
Net zero	Net zero by **2060** (gas coverage unclear; no LTS submitted)

Saudi Arabia is **likely on track to meet its NDC target** with existing policies. The lack of official estimates for the reference for the target increases the uncertainty of our analysis. We assume that the NDC target refers to reductions below a baseline scenario of 990-1,240 MtCO₂e in 2030 (Climate Action Tracker, 2020).

Our 2024 current policies scenario is higher than our 2023 projections, mostly due to updated historical data. Since our last update, we have not identified policy developments that will substantially alter Saudi Arabia's emissions projections. Emissions under current policies are projected to increase until 2030. Although the growth slows down post-2026 in the upper end of our scenario, emissions show no clear sign of peaking before 2030.

Impact of climate policies on emissions in Saudi Arabia



Source: NewClimate Institute calculations; IIASA GLOBIOM/G4M model (2024).

TARGETS

Saudi Arabia's NDC includes a target to cut emissions by 278 MtCO₂e by 2030. Due to uncertainty about the reference for the target calculation, the quantification of the NDC target leads to a broad emissions range. Our estimates result in absolute emissions between 715 – 958 MtCO₂e in 2030. Other studies interpret Saudi Arabia's target differently and show emissions ranging between 310–800 MtCO₂e in 2030 (Meinshausen et al., 2021; Climate Action Tracker, 2022).

The net zero by 2060 target was announced in 2021 but has not been submitted to the UNFCCC as part of Saudi Arabia's long-term strategy. Sectoral and gas coverage of the target remains unclear, as well as the role of land use sinks, technological CDR and international carbon credits for achieving the target (Kingdom of Saudi Arabia, 2021a).

RECENT DEVELOPMENTS

Saudi Arabia updated its NDC and announced a net-zero target by 2060 as part of the Saudi Green Initiative in October 2021. The Saudi Green Initiative lists measures to reach the updated NDC target (Kingdom of Saudi Arabia, 2021a). These measures include increasing the share of renewable energy to 50% by 2030, enhancing energy efficiency, producing hydrogen, using carbon capture for methanol and improving waste management.

The current target to reach 50% of renewable energy in the electricity mix by 2030 is part of Saudi Arabia's Vision 2030 strategy. Saudi Arabia earlier announced adding 27 GW of renewable electricity capacity by 2023 and 58 GW by 2030. However, as of 2022, Saudi Arabia had installed only 2.7 GW of renewable energy capacity, missing its 2023 target (IRENA, 2024c). At the current pace, the 50% renewable electricity target by 2030 likely remains out of reach.

Despite diversification plans away from fossil fuels, Saudi Arabia remains highly reliant on fossil revenues (KMPG, 2023). The government is currently betting on carbon, capture and storage (CCS) technologies to reach its climate goals while sustaining its extensive fossil fuel production and exports (Kingdom of Saudi Arabia, 2021b). Aramco, Saudi Arabia's national oil company, aims to increase oil production to 13 million barrels of oil per day by 2027 and is currently building one of the world's largest carbon capture and use or storage (CCUS) hubs (Aramco, 2023).

2019 historical and 2030 projections of key emissions indicators for Saudi Arabia

Emission values are rounded to the nearest 10

Indicator (incl. land use)	**2019 historical**	**2030 projection**	
		2024 update	**NDC |** unconditional
Absolute emissions (tCO_2e/cap)	**670**	**790 to 820**	**960 to 720**
	+26% vs 2010	+18% to +22% vs 2019	+43% to +6% vs 2019
Emissions per capita (tCO_2e/cap)	**19.0**	**19.7 to 20.4**	**17.8 to 23.8**
	+3% vs 2010	+4% to +7% vs 2019	-6% to +26% vs 2019
Emissions per GDP (tCO_2e/thousand USD)	**0.91**	**0.76 to 0.79**	**0.92 to 0.69**
	-10% vs 2010	-16% to -13% vs 2019	+1% to -24% vs 2019

4.19 SOUTH AFRICA

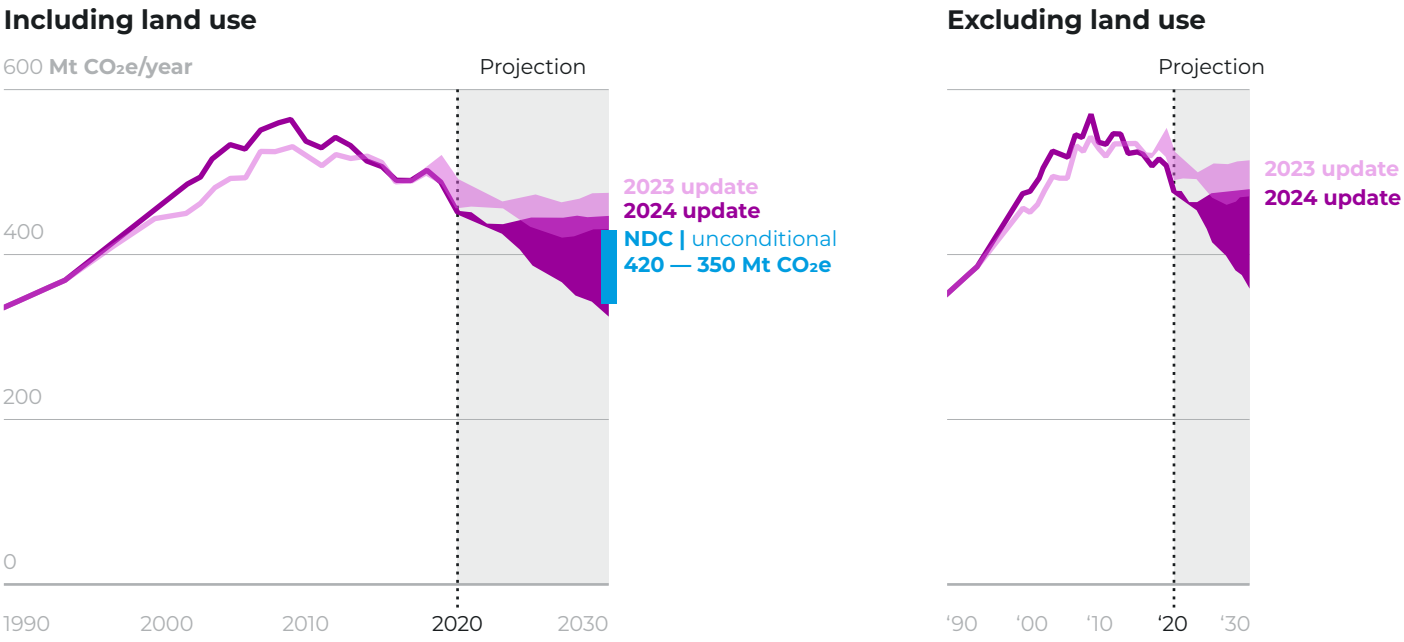
South Africa's NDC and net zero targets

Pledge	Key targets
NDC	Limit emissions to **350–420 MtCO₂e** by 2030
Net zero	Net zero by **2050** (CO_2; LTS submitted)

South Africa is **likely on track to meet its NDC targets** under current policies. However, we project substantial uncertainty in the country's emissions, especially considering the magnitude of emissions related to Eskom's, South Africa's public utility, coal-fired power plants. Emissions in South Africa could plateau towards 2030 or continue to decline, based on the lower end of current policy projections. Additionally, our analysis indicates that emissions are likely to end up within the target range of emissions provided in the NDC — meeting the lower end of the NDC target is unlikely.

Our 2024 current policies scenario is substantially lower than our 2023 projections. Although there is no substantial policy progress, our 2024 projections are harmonised with updated historical data, which show a continuous decline in emissions pre-2020. Updated renewable cost forecasts also accelerate the emissions decline projected at the lower end of our projections. This decline is roughly in line with the decline observed since 2010.

Impact of climate policies on emissions in South Africa



Source: PBL IMAGE model (lower end); NewClimate Institute calculations (upper end); IIASA GLOBIOM/G4M model (2024).

TARGETS

South Africa's NDC includes an economy-wide target to limit emissions to 350–420 $MtCO_2e$ by 2030 (Republic of South Africa, 2021). We assume that this target is unconditional. However, the country states that "the implementation of these

ambitious mitigation targets will require substantial multilateral support, as provided for in the Paris Agreement". We understand that this statement refers to the general provision under the Paris Agreement that developing countries shall receive support, and not to the conditionality of the target.

In its long-term strategy, South Africa commits to "moving towards a goal of net zero carbon emissions by 2050" (Government of South Africa, 2020). South Africa remains in the process of developing its 2050 target, thus all elements on scope, architecture and transparency, such as reliance on land use sinks and international carbon credits to achieve its target, remain unclear.

RECENT DEVELOPMENTS

In November 2022, South Africa launched the Just Energy Transition Partnership (JETP) investment plan, mapping out almost USD 100 billion in required financing between 2023 and 2027 (European Commission, 2022a; Government of South Africa, 2022b; Presidential Climate Commission South Africa, 2023). So far, the international partners have committed to at least USD 9.3 billion over the JETP period (Delegation of the European Union to the Republic of South Africa, 2023). In November 2023, South Africa presented its JET Implementation Plan 2023-2027, which outlines the concrete investments needed to meet the NDC target (The Presidency Republic Of South Africa, 2023).

In July 2022, President Ramaphosa proposed a long list of policy actions to bolster the South African energy system (Ramaphosa, 2022). A few — such as discrete amendments to the Electricity Regulatory Act — were legislated to date. For instance, the 2023 Integrated Resource Plan (which sets the basis for new power procurement and coal plant decommissioning) was released in January 2024 for public consultation (Minister of Minneral Resources and Energy South Africa, 2024).

The draft Climate Change Bill was adopted in September 2023 (Parliamentary Monitoring Group, 2023). Notable aspects include adaptation strategies by the Ministry of Forestry, Fisheries and the Environment, and an obligation to determine a national emissions trajectory and sectoral emissions targets (Government of South Africa, 2022a).

2019 historical and 2030 projections of key emissions indicators for South Africa

Emission values are rounded to the nearest 10

Indicator (incl. land use)	**2019 historical**	**2030 projection**	
		2024 update	**NDC |** unconditional
Absolute emissions (tCO_2e/cap)	**490**	**330 to 450**	**420 to 350**
	-10% vs 2010	-33% to -9% vs 2019	-14% to -28% vs 2019
Emissions per capita (tCO_2e/cap)	**8.4**	**5.1 to 6.9**	**5.4 to 6.5**
	-19% vs 2010	-40% to -18% vs 2019	-36% to -23% vs 2019
Emissions per GDP (tCO_2e/thousand USD)	**1.01**	**0.62 to 0.84**	**0.80 to 0.66**
	-22% vs 2010	-39% to -17% vs 2019	-21% to -34% vs 2019

4.20 THAILAND

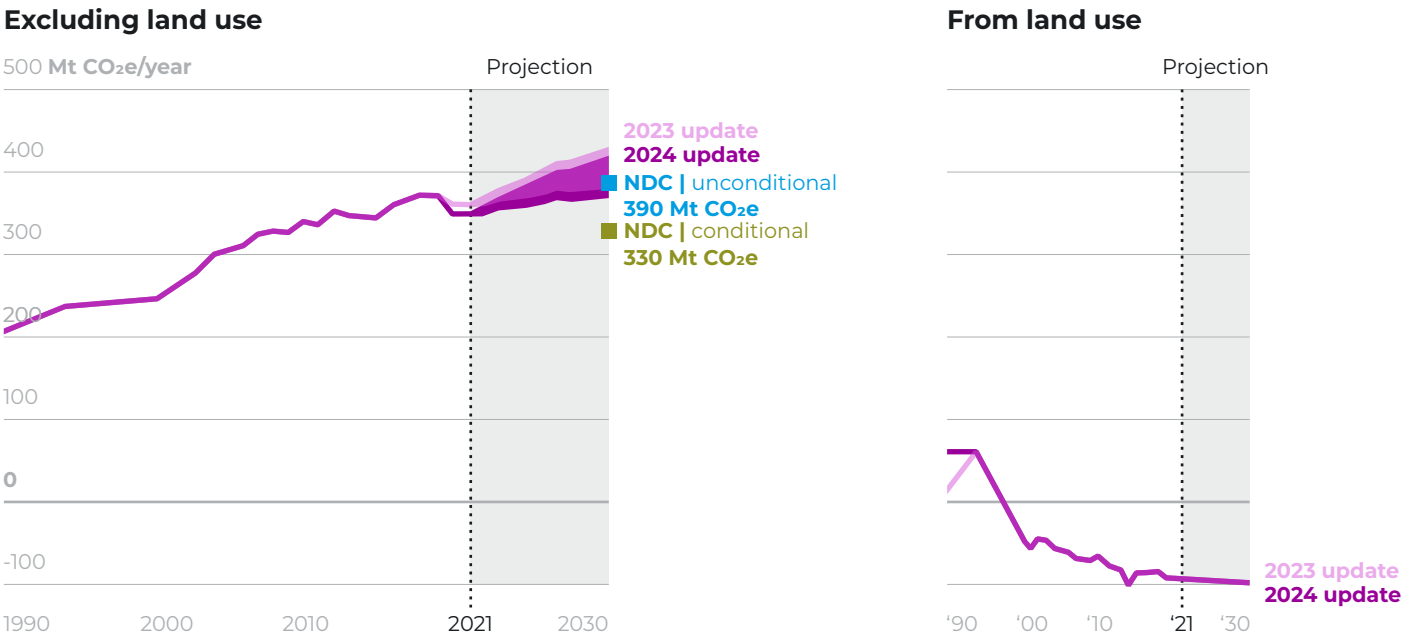
Thailand's NDC and net zero targets

Pledge	Key targets
NDC	Reduce emissions by **30% (unconditional)** and by **40% (conditional)** below BAU excluding land use by 2030
Net zero	Net zero **CO_2 by 2050** and net zero **GHG by 2065** (LTS submitted)

Thailand is **likely to miss its unconditional NDC targets** based on the lower end of the current policy range. However, it could meet its unconditional target if it ensures full implementation of existing policies according to their most ambitious interpretation. Thailand **will also miss its conditional NDC target** with existing policies. Thailand's emissions are projected to increase and show no signs of peaking before 2030. The land use sector is projected to remain a major emissions sink up to 2030.

Our 2024 current policies scenario is slightly lower than our 2023 projections, mostly due to the inclusion of the most up-to-date historical emissions data and GDP forecasts until 2030. We did not identify substantial policy developments.

Impact of climate policies on emissions in Thailand



Source: NewClimate Institute calculations; IIASA GLOBIOM/G4M model (2024).

TARGETS

Thailand's NDC includes an unconditional target of reducing emissions by 30% below business-as-usual (BAU), and a conditional target of reducing emissions by 40% below BAU. Both targets and the BAU exclude the land use sector. The BAU emissions are expected to reach 555 $MtCO_2e$ by 2030 (Government of Thailand, 2022).

Thailand submitted targets to reach carbon neutrality by 2050 and net zero emissions by 2065 to the UNFCCC before COP27. Thailand plans to use considerable land use sinks and carbon capture and storage to reach those targets (Office of Natural Resources and Environmental Policy and Planning, 2022).

RECENT DEVELOPMENTS

Since 2021, Thailand has been pursuing several measures to improve energy security (Electricity Generating Authority of Thailand, 2022; Praiwan, 2022). It supports fossil fuels by postponing the retirement of coal-fired power plants, building new gas-fired plants, and purchasing new gas fields in neighbouring countries. However, it also advances renewable energy by adopting policies to increase renewable energy purchases from small producers and the residential sector.

In 2024, Thailand is expected to publish its National Energy Plan 2024, which will incorporate the Power Development Plan (PDP) 2024-2027, the Alternative Energy Development Plan (AEDP), the Energy Efficiency Plan (EEP), the Gas Plan and the Oil Plan (the Nation, 2024). In the new PDP, the contribution of renewable energy increases to 51% by 2037 (from 20% in 2023), gas declines to 41% (from 57%), and coal declines to 7% (from 20%). Additionally, the PDP indicates that Thailand's total electricity installed capacity is expected to double by 2037, reaching 112 GW, up from around 54 GW in 2023 (Praiwan, 2024).

2019 historical and 2030 projections of key emissions indicators for Thailand

Emission values are rounded to the nearest 10

Indicator (incl. land use)	**2019 historical**			**2030 projection**
		2024 update	**NDC |** unconditional	**NDC |** conditional
Absolute emissions (tCO_2e/cap)	**370**	**370 to 420**	**390**	**330**
	+10% vs 2010	-1% to +12% vs 2019	+4% vs 2019	-11% vs 2019
Emissions per capita (tCO_2e/cap)	**5.2**	**5.1 to 5.8**	**5.4**	**4.6**
	+5% vs 2010	-2% to +10% vs 2019	+3% vs 2019	-12% vs 2019
Emissions per GDP (tCO_2e/thousand USD)	**0.82**	**0.68 to 0.76**	**0.71**	**0.61**
	-17% vs 2010	-18% to -7% vs 2019	-13% vs 2019	-26% vs 2019

4.21 TÜRKIYE

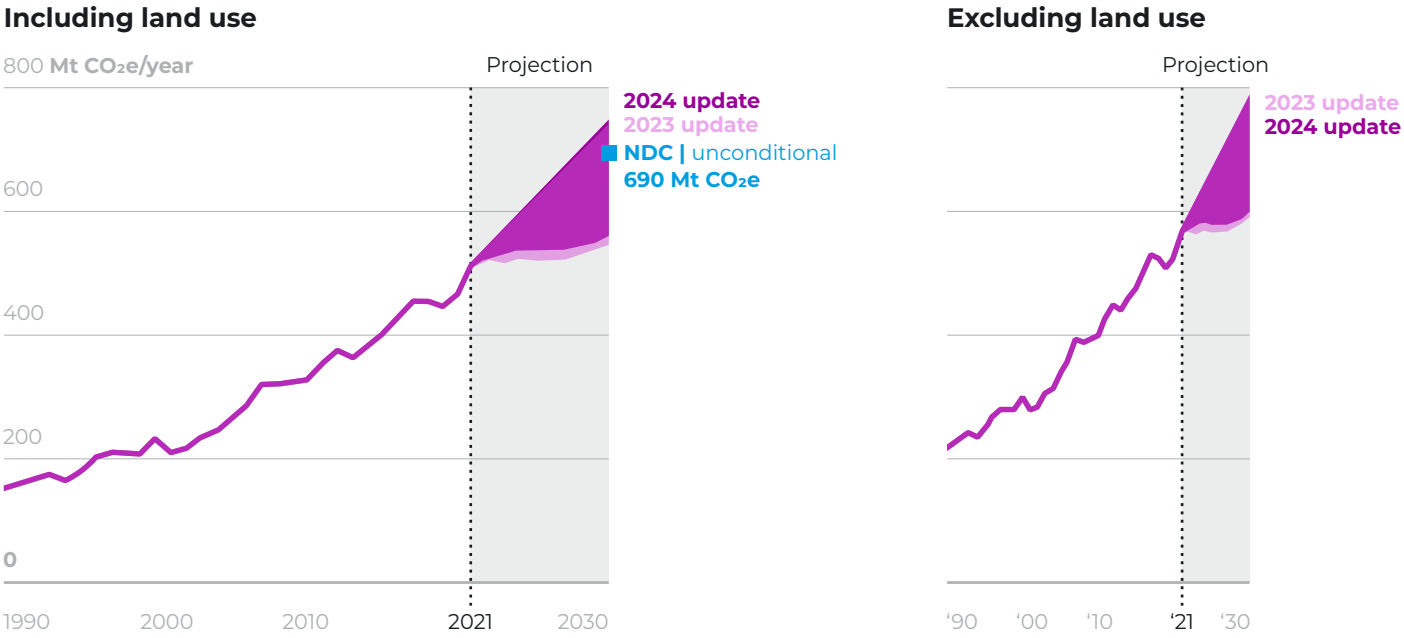
Türkiye's NDC and net zero targets

Pledge	Key targets
NDC	Reduce emissions by **41% below BAU** by 2030
Net zero	Net zero by **2053** (gas coverage unclear no LTS submitted)

Türkiye is **likely on track to meet its NDC target** with existing policies, although we project substantial uncertainty. Emissions projections in Türkiye are highly dependent on socio-economic assumptions. Emissions under current policies are projected to steadily increase until 2030 and show no sign of peaking before 2030.

Since our last update, we have not identified substantial policy developments in Türkiye. As a result, our projections are similar to those presented in our 2023 update report. Current policies lead to higher emissions compared to our 2022 projections especially due to the most up-to-date historical emissions, which show a faster growth in emission in 2021.

Impact of climate policies on emissions in Türkiye



Source: PBL IMAGE model (lower end); NewClimate Institute calculations (upper end); IIASA GLOBIOM/G4M model (2024).

TARGETS

Türkiye's NDC communicates an unconditional target of reducing economy-wide emissions by 41% below a business-as-usual scenario in 2030 (Government of Türkiye, 2023). In its NDC, Türkiye mentions it intends to peak its emissions at the latest by 2038.

Türkiye aims to reach net zero by 2053 (Government of Türkiye, 2021). The emission coverage of this target remains unclear, and Türkiye does not specify how they intend to use offsets, carbon dioxide removal and whether the target includes aviation and shipping. This target is part of Türkiye's latest climate policy roadmap.

RECENT DEVELOPMENTS

To address rising energy demand — the fastest-growing among OECD countries — the government introduced the 2030 Energy Efficiency Strategy. This plan aims to improve energy security and includes USD 20 billion in energy efficiency investments to cut emissions and reduce fossil fuel reliance (Ministry of Energy and Natural Resources, 2024).

The National Energy Plan for 2020-2035, published in December 2022, aims to increase the renewable energy share from 16.7% in 2020 to 23.7% by 2035 and requires an average of 5 GW of renewables per year (Turkish Ministry of Energy and Natural Resources, 2022). As of September 2024, Türkiye has not committed to a coal phase-out and plans to boost fossil gas production, potentially conflicting with its net-zero emissions target (Robins, 2023).

Türkiye is advancing its nuclear power goals, with the Akkuyu Nuclear Power Plant expected to be operational by 2025 (Dalton, 2023). It also increased domestic electric vehicle (EV) production and sales, though the industry is still developing (Ozbek, 2022; Daily Sabah, 2023). Foreign investments include a production plant operated by the largest global EV producer BYD, with potential joint production ventures with Turkish manufacturer TOGG (Reuters, 2024).

Türkiye plans to introduce an Emissions Trading System (TR-ETS) aligned with the EU system, starting a pilot in October 2024. The TR-ETS is supported by a forthcoming Climate Law expected to establish its legal framework (ICAP, 2024b).

2019 historical and 2030 projections of key emissions indicators for Türkiye

Emission values are rounded to the nearest 10

Indicator (incl. land use)	**2019 historical**	**2030 projection**	
		2024 update	**NDC |** unconditional
Absolute emissions (tCO_2e/cap)	**450**	**560 to 750**	**690**
	+36% vs 2010	+26% to +67% vs 2019	+55% vs 2019
Emissions per capita (tCO_2e/cap)	**5.4**	**6.3 to 8.4**	**7.8**
	+19% vs 2010	+18% to +57% vs 2019	+46% vs 2019
Emissions per GDP (tCO_2e/thousand USD)	**0.35**	**0.29 to 0.38**	**0.36**
	-16% vs 2010	-19% to +8% vs 2019	+0% vs 2019

4.22 UNITED ARAB EMIRATES

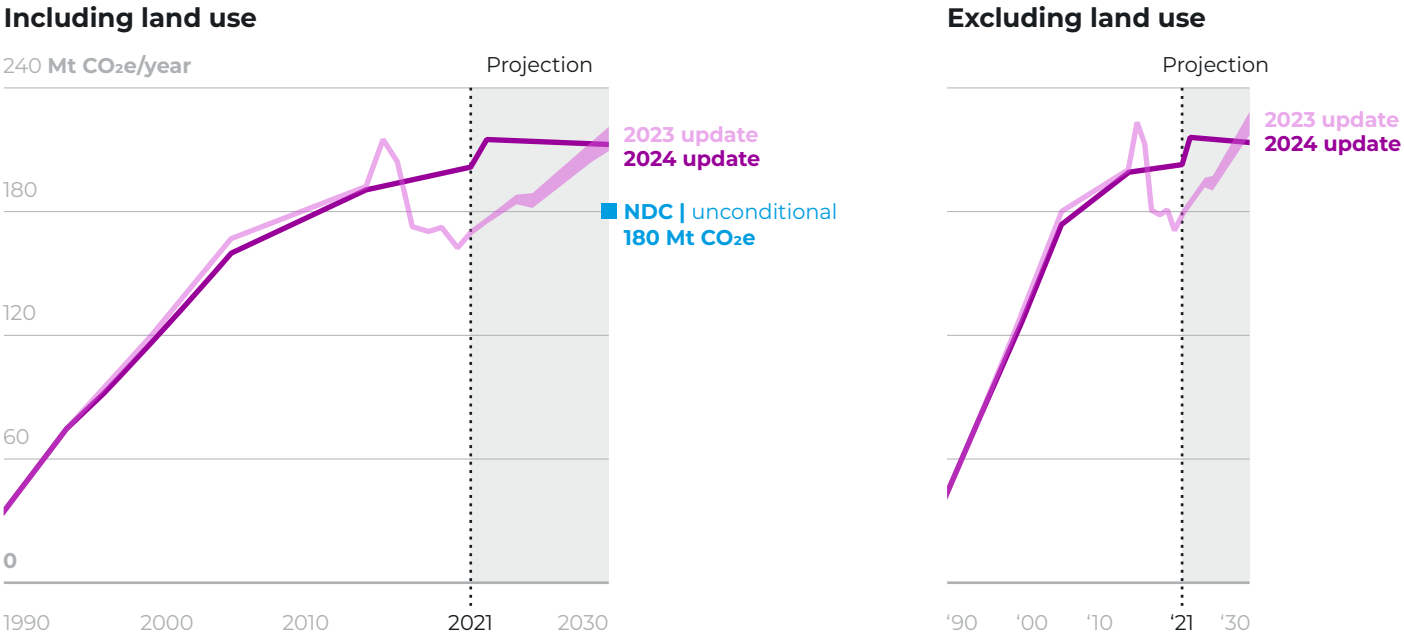
United Arab Emirates's NDC and net zero targets

Pledge	Key targets
NDC	Limit emissions to **182 MtCO₂e** by 2030
Net zero	Net zero by **2050** (GHG; LTS submitted)

The United Arab Emirates (UAE) is **projected to miss its NDC target**. Emissions based on current policies are expected to plateau towards 2030.

Our 2024 current policies scenario is within the range of our 2023 projections. The changes compared to last year are due to two reasons. First, the UAE recently updated its inventory data, which does not a peak and decline in energy-related emissions that were estimated between 2015 and 2020. Second, the UAE published new information on its policy scenarios (included in its LTS), which now cover all sectors of the economy. Our 2024 update includes the impact of climate policies in all sectors (previously only the power sector) and results in lower emissions growth than previous projections.

Impact of climate policies on emissions in the United Arab Emirates



Source: NewClimate Institute calculations; IIASA GLOBIOM/G4M model (2024).

TARGETS

The UAE NDC sets the economy-wide and unconditional target of reducing emissions to 182 $MtCO_2e$ by 2030 (Government of the UAE, 2023). The NDC includes sectoral measures to support its economy-wide target.

The government also announced a 2050 net zero target and released several official communications on its net zero plans since (Government of the UAE, 2021). The UAE also submitted a Long-Term Strategy to the UNFCCC in 2024. The strategy aligns the NDC and net zero targets and presents sectoral pathways and mitigation

measures by sector and their expected impact. The net zero target aims to reduce emissions to 13 $MtCO_2e$ by 2050 while increasing LULUCF sinks to 3.5 $MtCO_2e$ and removing 9.5 $MtCO_2e$ through technical removal options.

RECENT DEVELOPMENTS

In the power sector, the UAE continues to invest in renewables, almost doubling its installed capacity in 2023 compared to 2022 (IRENA, 2023). With current plans, it will reach 9 GW of installed capacity of wind and solar by 2030, up from around 6 GW in 2023 (Tollast, 2022; Government of the UAE, 2023).

For the period between 2030 and 2050, the UAE plans to reduce its emissions to 3.5 $MtCO_2e$. Most of the emissions reductions will come from the industry and power sectors. In the industry sector, which includes oil and gas production, 32% of the emissions reductions will be met through carbon capture and storage (CCS), which translates to roughly 43.5 $MtCO_2e$. In the power sector, natural gas is planned to account for 50% of total installed capacity in 2050, but with a 0 tCO_2/MWh grid coefficient. This implies an extensive use of CCS also in the power sector.

Alongside its plans to reduce emissions, the UAE continues to invest in oil and gas, with no clear plan to phase down production in the foreseeable future. The UAE is planning investments of USD 150 billion to support oil and gas expansion, and it recently brought its oil production target up from 2030 to 2027 (The Guardian, 2023).

2019 historical and 2030 projections of key emissions indicators for the United Arab Emirates

Emission values are rounded to the nearest 10

Indicator (incl. land use)	**2019 historical**	**2030 projection**	
		2024 update	**NDC |** unconditional
Absolute emissions (tCO_2e/cap)	**200**	**210**	**180**
	+12% vs 2010	+7% vs 2019	-9% vs 2019
Emissions per capita (tCO_2e/cap)	**21.8**	**21.4**	**18.3**
	+3% vs 2010	-2% vs 2019	-16% vs 2019
Emissions per GDP (tCO_2e/thousand USD)	**0.48**	**0.36**	**0.31**
	-19% vs 2010	-26% vs 2019	-37% vs 2019

4.23 UNITED KINGDOM

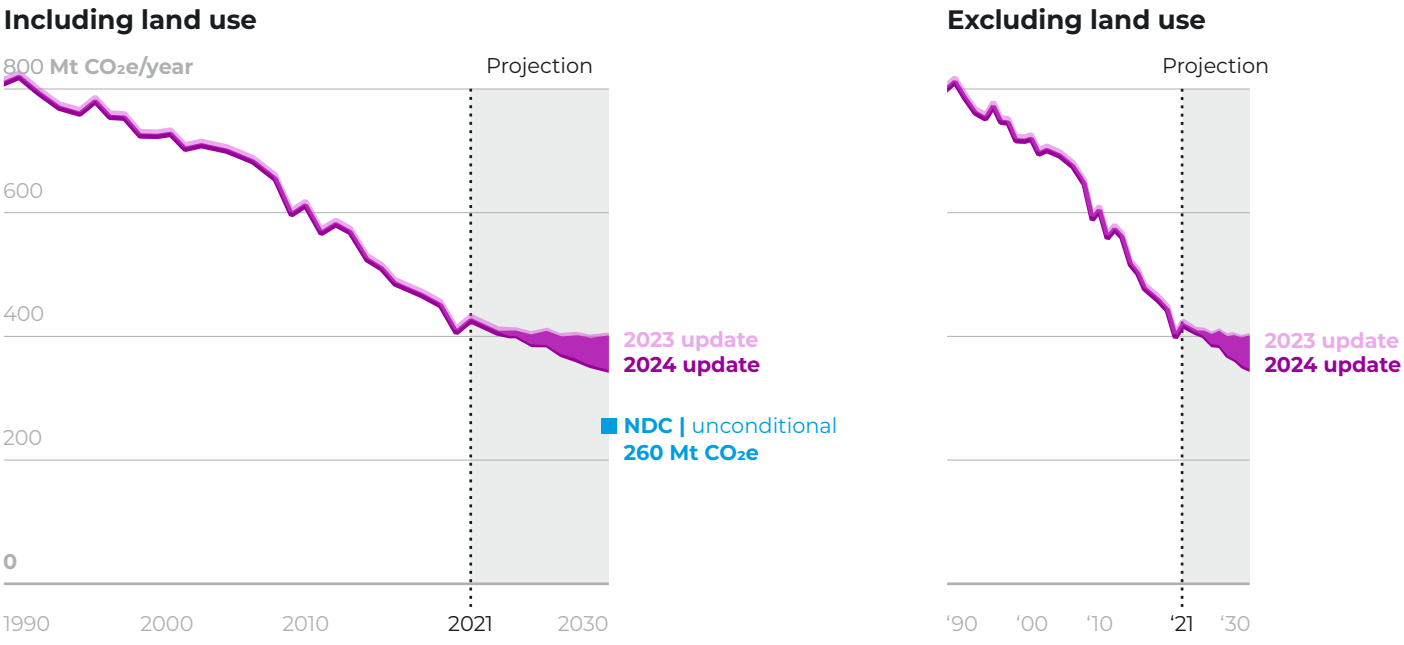
United Kingdom's NDC and net zero targets

Pledge	Key targets
NDC	Reduce emissions by **68% below 1990** by 2030
Net zero	Net zero by **2050** (GHG; LTS submitted)

The United Kingdom (UK) is **projected to miss its NDC target** under current policies. Emissions have been on a downward trend up to 2030. However, the declining trend could slow down substantially and only result in emissions plateauing towards 2030.

Since our last update, we have not identified substantial policy developments in the UK. As a result, our projections are equivalent to those presented in our 2023 update report. Some of the announcements and updates from the new Labour government (see recent developments below) happened after the cut-off date for policies in this report. The upper end of the range only includes policies where there are proven delivery mechanisms, a credible combination of public/private financing and clear timelines in place. The lower end of the range includes policies which display some risks related to delivery mechanisms, financing or implementation timelines.

Impact of climate policies on emissions in the United Kingdom



Source: NewClimate Institute calculations; IIASA GLOBIOM/G4M model (2024).

TARGETS

The NDC includes a target of 68% emissions reductions below 1990 levels. It also includes information about the NDC process and implementation plan (Government of the UK, 2022).

The UK enshrined its 2050 net zero emissions target in law in 2019 and has introduced multiple policies and sectoral plans that support emissions reductions in the aftermath. Based on these policies, the UK government released a Net Zero Strategy in October 2021 and submitted it to the UNFCCC (Government of the UK, 2021). The updated Net Zero Strategy, called the "Carbon Budget Delivery Plan", was published in March 2023, and clarifies how government measures will reduce emissions.

RECENT DEVELOPMENTS

Policy delays and reversals in key areas overshadowed positive developments under the previous conservative government, such as enshrining the zero-emission vehicle mandate in law, industrial electrification deal, and heat pump incentives. The government delayed the phase-out of fossil-fuel vehicles and boilers till 2035, exempted 20% of households from the phase-out of fossil-fuel boilers, exempted rented homes from improved energy efficiency regulation, and issued hundreds of new oil and gas licences (UK Climate Change Committee, 2024).

However, after a victory in July 2024, the new labour government intends to get the UK back on track to reach its net zero by 2050 target. The government has already reinstated the 2030 phase-out date for fossil-fuel vehicles, lifted restrictions on onshore wind turbines, approved new solar farms, dropped the legal defence of the new coal mine approved by the former government, and established a National Wealth Fund of GBP 7.3 billion to support clean energy initiatives (Harvey, 2024).

The Labour government further plans to fully decarbonise the UK power system by 2030, pass a New Green Deal to support the overhaul of the energy sector and ensure a just transition, introduce a sustainable aviation fuel mandate from 1 January 2025 and enhance energy efficiency standards in buildings (Government of the UK, 2024; UK Labour Party, 2024).

2019 historical and 2030 projections of key emissions indicators for the United Kingdom

Emission values are rounded to the nearest 10

Indicator (incl. land use)	**2019 historical**	**2030 projection**	
		2024 update*	**NDC |** unconditional
Absolute emissions (tCO_2e/cap)	**450**	**350 to 400**	**260**
	-26% vs 2010	-23% to -12% vs 2019	-43% vs 2019
	-44% vs 1990	-57% to -51% vs 1990	-69% vs 1990
Emissions per capita (tCO_2e/cap)	**6.8**	**5.0 to 5.8**	**3.7**
	-31% vs 2010	-26% to -15% vs 2019	-46% vs 2019
	-52% vs 1990	-65% to -59% vs 1990	-74% vs 1990
Emissions per GDP (tCO_2e/thousand USD)	**0.15**	**0.10 to 0.12**	**0.08**
	-38% vs 2010	-31% to -21% vs 2019	-49% vs 2019
	-68% vs 1990	-78% to -75% vs 1990	-84% vs 1990

4.24 UNITED STATES

United States of America's NDC and net zero targets

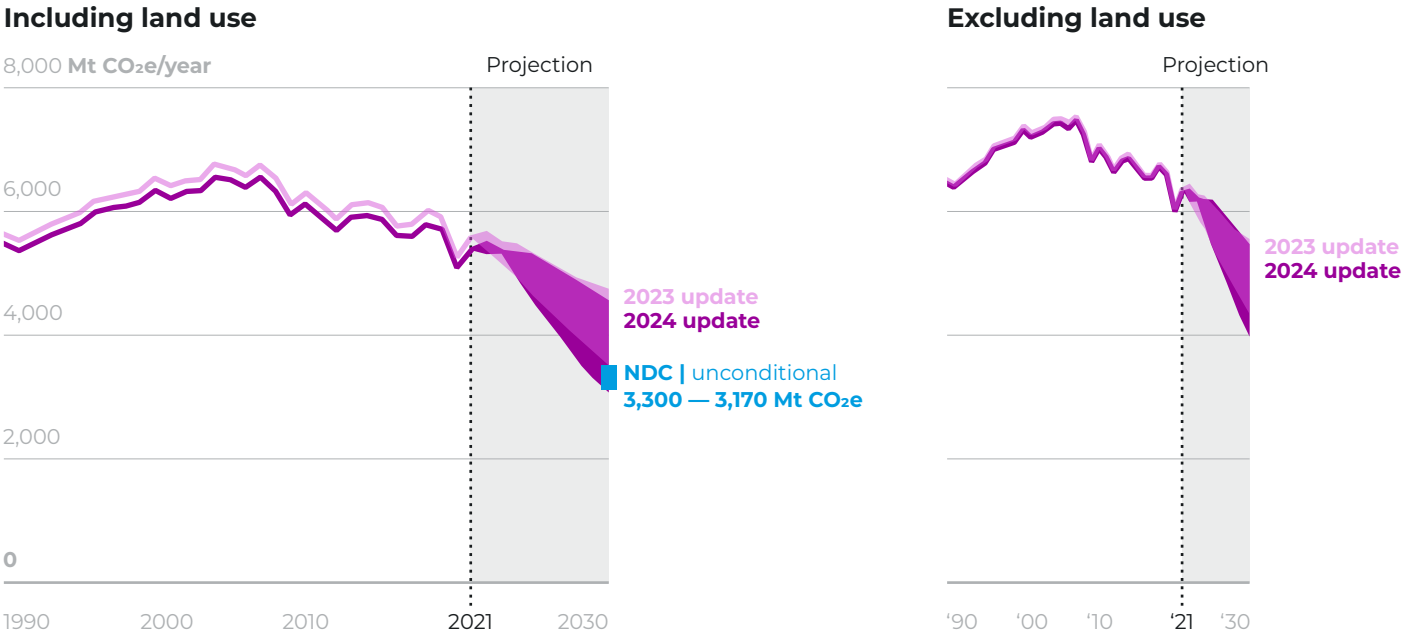
Pledge	Key targets
NDC	Reduce emissions **by 50–52% below 2005** by 2030
Net zero	Net zero by 2050 (GHG; LTS submitted)

The United States (US) is **likely to miss but could meet its NDC targets** based on the lower end of the current policy range. However, to meet its target the country needs to ensure full implementation of existing policies according to their most ambitious interpretation.

The Inflation Reduction Act brings the US closer but remains insufficient to put the country decisively on track to meet its latest NDC target. However, implementation of the newly published Environmental Protection Agency's (EPA) regulations regarding methane emissions from oil and gas production, vehicle emission standards and fossil fuel power plant emission limits would bring the lower end of current policy projections in line with the country's NDC.

Our 2024 current policies scenario is lower than our 2023 projections. This is partly driven by new policy developments, such as updates on emissions standards for transport and power plants (see more below), and by a revision in historical land-use emissions data, which included managed forest land in Hawaii and US territories and increased historical forest carbon uptake.

Impact of climate policies on emissions in the United States of America



Source: PBL IMAGE model (lower end); NewClimate Institute calculations (upper end); IIASA GLOBIOM/G4M model (2024).

TARGETS

The US NDC target includes a reduction of 50–52% below 2005 levels by 2030 (Government of The United States of America, 2021). The US aims to reach economy-wide

net zero emissions by 2050. To meet its net zero target, the US specifies that it expects land use sinks to reach between -600 and -1,400 $MtCO_2e$ in 2050, while technological CDR could reach between -300 and -500 $MtCO_2e$ (U.S. Government, 2021).

The US will hold elections in November 2024. Since the two candidates have widely contrasting views on climate change mitigation, the result of the election will probably substantially affect the country's future emissions trajectory. An independent analysis estimated that a new Trump administration could result in an additional 4 $GtCO_2e$ by 2030 (Evans and Viisainen, 2024). During the Trump administration between 2017 and 2021, the US left the Paris Agreement, which affected national and international climate policy.

RECENT DEVELOPMENTS

In August 2022, President Biden signed into law the Inflation Reduction Act. The Act injects billions in the form of tax credits, grants and loans to support clean energy technologies and investments (Jenkins et al., 2022). Two years after its implementation, the IRA has mobilised historical public and private investments in clean energy technologies, accelerating state and local action.

However, recent developments in the oil and gas industry undermine the full potential of the Inflation Reduction Act to decarbonise the economy. In 2023, the US continued to reach record-high oil and gas production and exports and it is planning to increase its liquified natural gas export capacity by about 50% by 2026, compared to 2022 (U.S. Energy Information Administration, 2019). Between 2021 and 2023 the profits of the largest oil and gas corporations tripled compared to 2017 through 2019 (McCormick and Smyth, 2024).

In April 2024, the Environmental Protection Agency (EPA) passed vehicle emissions standards for passenger cars, light-duty trucks, and medium-duty vehicles from 2027 until 2032. To meet the 2032 target, the EPA estimates that auto manufacturers will produce between 30–56% battery electric vehicles to meet the average emissions target (U.S. Environmental Protection Agency, 2024b). In April 2024, the EPA passed several regulations affecting fossil fuel power plants, including tighter carbon emissions limits. The rule requires all coal power plants to shut down by 2038 or reduce their emissions by 90%. However, it does not cover existing gas plants and only covers new ones if they are not peak power plants (U.S. Environmental Protection Agency, 2024a).

2019 historical and 2030 projections of key emissions indicators for the United States of America

Emission values are rounded to the nearest 10

Indicator (incl. land use)	**2019 historical**	**2030 projection**	
		2024 update	**NDC |** unconditional
Absolute emissions (tCO_2e/cap)	**5,700**	**3,070 to 4,510**	**3,300 to 3,170**
	-7% vs 2010	-46% to -21% vs 2019	-42% to -44% vs 2019
Emissions per capita (tCO_2e/cap)	**17.1**	**8.7 to 12.8**	**9.0 to 9.4**
	-13% vs 2010	-49% to -25% vs 2019	-47% to -45% vs 2019
Emissions per GDP (tCO_2e/thousand USD)	**0.31**	**0.13 to 0.19**	**0.14 to 0.14**
	-24% vs 2010	-57% to -37% vs 2019	-54% to -56% vs 2019

4.25 VIET NAM

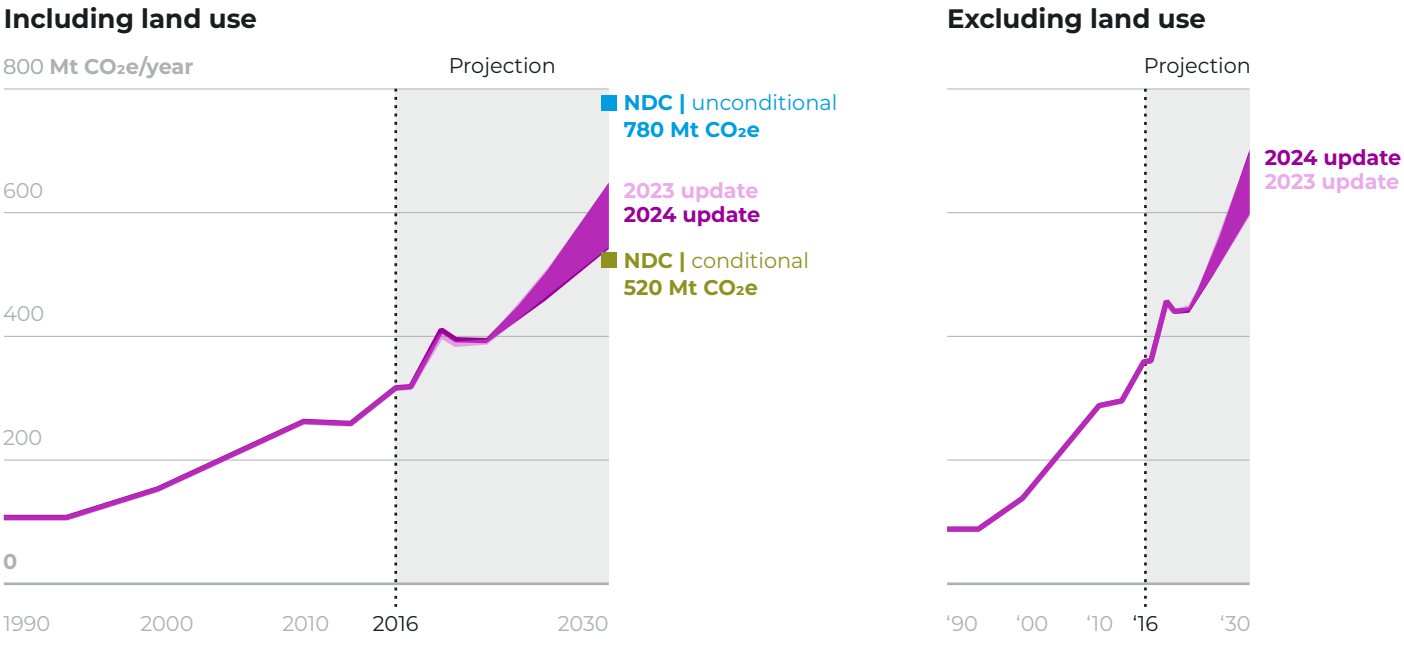
Viet Nam's NDC and net zero targets

Pledge	Key targets
NDC	Reduce emissions **by 15.8% (unconditional)** and by **43.5% (conditional)** below BAU by 2030
Net zero	Net zero **by 2050** (GHG; no LTS submitted)

Vietnam is well **on track to meet its unconditional NDC target but is projected to miss its conditional target**. Both targets are well above 2020 emission levels. The land use sector is currently a sink of emissions. This sink is expected to increase up to 2030 and slow down the overall emissions growth in the country. However, total emissions are projected to increase substantially up to 2030, driven by an increase in energy and industry sectors, and show no sign of peaking before 2030.

Since our last update, we have not identified substantial policy developments in Vietnam. As a result, our projections are equivalent to those presented in our 2023 update report. However, in recent years we have observed an increase in projections, partly due to higher projected electricity demand and use of the existing and planned coal fleet.

Impact of climate policies on emissions in Viet Nam



Source: NewClimate Institute calculations; IIASA GLOBIOM/ G4M model (2024).

TARGETS

Viet Nam's NDC includes an economy-wide unconditional target to reduce emissions by 15.8% by 2030 compared to a business-as-usual (BAU) scenario and a conditional target to scenario reduce emissions by 43.5% by 2030 below BAU.

Viet Nam also targets to reach net zero emissions by 2050 target. The target covers all emissions and economic sectors and is enshrined in Viet Nam's National Strategy

on Climate Change (Government of Viet Nam, 2022). The climate change strategy supporting the target estimates that emissions in 2050 will be around 185 $MtCO_2e$ or a 90% emissions reduction compared to the BAU level in 2050; this indicates the expected role of land use sinks, technological carbon dioxide removal and international credits.

RECENT DEVELOPMENTS

In December 2022 Viet Nam announced its Just Energy Transition Partnership (JETP), a partnership through which international partners support Viet Nam's low-emission and climate-resilient development. At COP28 in November 2023, Viet Nam presented its Resource Mobilization Plan (RMP), outlining action plans to use the USD 15.5 billion in funds that were pledged (Socialist Republic of Viet Nam, 2023). Viet Nam is expected to receive these funds to support peaking its power sector emissions at 170 $MtCO_2e$ by 2030 and increasing its share of renewable power generation from 25% in 2020 to at least 47% by 2030 (European Commission, 2022b).

Viet Nam released its Eight Power Development Plan (PDP8) in May 2023, which contains a plan for the period of 2021-2030 (Barnes, 2023; Vu and Guarascio, 2023; Wengel, 2023). Under the PDP8, coal remains an important energy source, accounting for 20% of the energy mix by 2030. Because of the expected increase in total energy use, coal-based capacity is projected to increase to more than 30 GW by decade end. Power plants using domestic and imported liquefied natural gas (LNG) are also set to become an important source of electricity by 2030, with a combined installed capacity of 37 GW (15% of the total) — more than a fourfold increase from 2020. The PDP8 also indicates how renewable sources are set to cover 48% of the country's energy needs by 2030, if pledges by international partners as part of the JETP are fully implemented. The decree on Direct Power Purchase Agreements (DPPA), adopted in July 2024, is an important step to realise Viet Nam's renewable ambitions (Hauber, 2024). The DPPA sets up the legal framework for power purchase agreements between renewable assets and large consumers. It enables the creation of privately owned utilities to complement state efforts and support the development of large-scale renewable projects. Although we have not quantified whether this project will result in additional emissions reductions compared to the PDP8, it supports the implementation of Viet Nam's renewable targets.

2019 historical and 2030 projections of key emissions indicators for Viet Nam

Emission values are rounded to the nearest 10

Indicator (incl. land use)	**2019 historical**			**2030 projection**
		2024 update	**NDC |** unconditional	**NDC |** conditional
Absolute emissions (tCO_2e/cap)	**410**	**540 to 640**	**780**	**520**
	+55% vs 2010	+33% to +57% vs 2019	+91% vs 2019	+28% vs 2019
Emissions per capita (tCO_2e/cap)	**4.3**	**5.3 to 6.3**	**7.6**	**5.1**
	+41% vs 2010	+24% to +46% vs 2019	+77% vs 2019	+19% vs 2019
Emissions per GDP (tCO_2e/thousand USD)	**1.61**	**1.20 to 1.43**	**1.73**	**1.16**
	-13% vs 2010	-25% to -12% vs 2019	+7% vs 2019	-28% vs 2019

REFERENCES

A

ABNR Law (2022) Long-Awaited Presidential Regulation Signals Transition To Greener Energy In Indonesia. Mondaq. Available at: https://www.mondaq.com/renewables/1238098/long-awaited-presidential-regulation-signals-transition-to-greener-energy-in-indonesia (Accessed: 16 August 2024)

APERC (2022) APEC Energy Demand and Supply Outlook 8th Edition. Annex II: Data Projection Tables. Asia Pacific Energy Research Centre. Available at: https://aperc.or.jp/file/2022/9/29/APEC_Outlook_8th_Edition-Appendix.xlsx

Aramco (2023) Carbon capture, utilization & storage. Available at: https://www.aramco.com/en/sustainability/climate-change/managing-our-footprint/carbon-capture-utilization-and-storage (Accessed: 27 September 2023)

ARENA (2023) Hydrogen Headstart: Guidelines. Canberra: Australian Renewable Energy Agency (ARENA). Available at: https://arena.gov.au/assets/2023/10/Hydrogen-Headstart-Guidelines.pdf (Accessed: 16 August 2024)

Asia Pacific Energy Portal (2024) RUSSIAN FEDERATION: Climate Doctrine of the Russian Federation (Order of the President No. 861-pp of 2009). United Nations Economic and Social Commission for Asia and the Pacific (ESCAP). Available at: https://policy.asiapacificenergy.org/node/220

Australian Government (2021) Australia's Long-term Emissions Reduction Plan: A whole-of-economy Plan to achieve net zero emissions by 2050

B

Barnes, M. (2023) Vietnam's Power Development Plan 8: What You Should Know, Vietnam Briefing. Available at: https://www.vietnam-briefing.com/news/vietnam-power-development-plan-approved.html/ (Accessed: 6 October 2023)

BEE (2024) Fuel Efficiency. Bureau of Energy Efficiency (BEE), Ministry of Power, Government of India. Available at: https://beeindia.gov.in/en/programmesenergy-efficiency-in-transport-sector/fuel-efficiency (Accessed: 16 August 2024)

Bloomberg (2023) 'Egypt Sees 2025 as Earliest It Can Boost LNG Exports to Europe'. Available at: https://www.bloomberg.com/news/articles/2023-02-15/egypt-sees-2025-as-earliest-it-can-boost-lng-exports-to-europe#xj4y7vzkg

Bloomberg News (2024) 'China Hits Xi Jinping's Renewable Power Target Six Years Early', Bloomberg, 23 August. Available at: https://www.bloomberg.com/news/articles/2024-08-23/china-hits-xi-jinping-s-renewable-power-target-six-years-early

Bourke, I. (2024) 'Claudia Sheinbaum: What a climate-scientist turned president might mean for global efforts to tackle climate change', BBC News, 7 June. Available at: https://www.bbc.com/future/article/20240607-claudia-sheinbaum-mexicos-new-climate-minded-president

C

Casa Civil (2023) Novo PAC. Available at: https://www.gov.br/casacivil/pt-br/novopac (Accessed: 31 July 2024)

CEA (2023) National Electricity Plan (Volume I Generation). New Delhi: Central Energy Agency (CEA), Government of India. Available at: https://cdnbbsr.s3waas.gov.in/s3716e1b8c6cd17b771da77391355749f3/uploads/2023/09/20230901125607134 9.pdf (Accessed: 16 August 2024)

CEC (2024) CEC released 2023-2024 National Electricity Supply and Demand Situation Analysis and Forecast Report. Available at: https://cn.chinadaily.com.cn/a/202401/31/WS65b9dcb0a31026469ab16f10.html

CEM (2024) EV30@30 Campaign. Clean Energy Ministerial (CEM). Available at: https://www.cleanenergyministerial.org/who-we-are/ (Accessed: 16 August 2024)

Chandak, P. (2024) 'Morocco Charges Ahead: $7 Billion Investment Boosts Energy Capacity With Renewables, Gas, And Green Hydrogen', Solar Quarter, 4 June. Available at: https://solarquarter.com/2024/06/04/morocco-charges-ahead-7-billion-investment-boosts-energy-capacity-with-renewables-gas-and-green-hydrogen/ (Accessed: 15 August 2024)

Clague, D. (2024) 'Mexico elects a climate scientist as president – but will politics temper her green ambition?', Climate Home News, 3 June. Available at: https://www.climatechangenews.com/2024/06/03/mexico-elects-a-climate-scientist-as-president-but-will-politics-temper-her-green-ambition/

Climate Action Tracker (2020) Country assessment: Saudi Arabia. September 2020. Berlin and Cologne, Germany. Available at: https://climateactiontracker.org/countries/saudi-arabia/2020-09-22/

Climate Action Tracker (2022) Climate Action Tracker: Country Assessments: As of December 2022, Country Assessments. Available at: https://climateactiontracker.org/countries/ (Accessed: 6 December 2022)

Climate Action Tracker (2023) No change to warming as fossil fuel endgame brings focus onto false solutions. Cologne and Berlin, Germany. Available at: https://climateactiontracker.org/publications/no-change-to-warming-as-fossil-fuel-endgame-brings-focus-onto-false-solutions/ (Accessed: 3 June 2023)

CMS (2024) Renewable energy in Morocco. Available at: https://cms.law/en/int/expert-guides/cms-expert-guide-to-renewable-energy/morocco (Accessed: 23 August 2024)

CREA and GEM (2024) China risks missing multiple climate commitments as coal power approvals continue. Available at: https://energyandcleanair.org/publication/china-risks-missing-multiple-climate-commitments-as-coal-power-approvals-continue/

D

Dafnomilis, I., Soest, H. van, Roelfsema, M., et al. (2023) 'Climate Policy Modelling Protocol - IMAGE model'. PBL Netherlands Environmental Assessment Agency. Available at: https://www.pbl.nl/en/image/about-image

Daily Sabah (2023) 'Electric car sales rocket as Türkiye's EV drive gains pace', 4 June. Available at: https://www.dailysabah.com/business/automotive/electric-car-sales-rocket-as-turkiyes-ev-drive-gains-pace

Dalton, D. (2023) 'Russia Delivers First Batch Of Fuel For Akkuyu Nuclear Station', NUCNET, 28 April. Available at: https://www.nucnet.org/news/russia-delivers-first-batch-of-fuel-for-akkuyu-nuclear-station-4-5-2023

DCCEEW (2023) National Electric Vehicle Strategy. Canberra: Department of Climate Change, Energy, the Environment and Water (DCCEEW). Available at: https://www.dcceew.gov.au/sites/default/files/documents/national-electric-vehicle-strategy.pdf (Accessed: 16 August 2024)

DCCEEW (2024) Capacity Investment Scheme. Department of Climate Change, Energy, the Environment and Water (DCCEEW). Available at: https://www.dcceew.gov.au/energy/renewable/capacity-investment-scheme (Accessed: 16 August 2024)

Delegation of the European Union to the Republic of South Africa (2023) South Africa's just energy transition is progressing, says international partners group ahead of cop28. Delegation of the European Union to the Republic of South Africa. Available at: https://www.eeas.europa.eu/delegations/south-africa/south-africa's-just-energy-transition-progressing-says-international-partners-group-ahead-cop28_en?s=120 (Accessed: 3 September 2024)

Department of Environment of Iran (2015) Intended Nationally Determined Contribution, Islamic Republic of Iran. Available at: http://www4.unfccc.int/submissions/INDC/Published Documents/Iran/1/INDC Iran Final Text.pdf

DG Ener (2023) New Energy Efficiency Directive published. Directorate-General for Energy (DG Ener). Available at: https://energy.ec.europa.eu/news/new-energy-efficiency-directive-published-2023-09-20_en (Accessed: 16 August 2024)

DG GROW (2024) Critical Raw Materials Act. Directorate-General for Internal Market, Industry, Entrepreneurship and SMEs (DG GROW). Available at: https://single-market-economy.ec.europa.eu/sectors/raw-materials/areas-specific-interest/critical-raw-materials/critical-raw-materials-act_en (Accessed: 16 August 2024)

DG TAXUD (2024) Carbon Border Adjustment Mechanism. Directorate-General for Taxation and Customs Union (DG TAXUD). Available at: https://taxation-customs.ec.europa.eu/carbon-border-adjustment-mechanism_en (Accessed: 16 August 2024)

DISER (2020) Technology Investment Roadmap. First Low Emissions Technology Statement – 2020. Department of Industry, Science, Energy and Resources, Australian Government. Available at: https://www.industry.gov.au/sites/default/files/September 2020/document/first-low-emissions-technology-statement-2020.pdf (Accessed: 30 September 2020)

Doelman, J.C., Stehfest, E., van Vuuren, D.P., et al. (2020) 'Afforestation for climate change mitigation: Potentials, risks and trade-offs', Global Change Biology, 26(3), pp. 1576–1591. doi:https://doi.org/10.1111/gcb.14887

E

ECCC (2021) Update to the Pan-Canadian Approach to Carbon Pollution Pricing 2023-2030. Environment and Climate Change Canada (ECCC). Available at: https://www.canada.ca/en/environment-climate-change/services/climate-change/pricing-pollution-how-it-will-work/carbon-pollution-pricing-federal-benchmark-information/federal-benchmark-2023-2030.html (Accessed: 16 August 2024)

ECCC (2023) Canada's Electric Vehicle Availability Standard (regulated targets for zero-emission

vehicles). Environment and Climate Change Canada (ECCC). Available at: https://www.canada.ca/en/environment-climate-change/news/2023/12/canadas-electric-vehicle-availability-standard-regulated-targets-for-zero-emission-vehicles.html (Accessed: 16 August 2024)

ECCJ (2022) The government enacted the revised Building Energy Conservation Act , Asia Energy Efficiency and Conservation Collaboration Center. Available at: https://www.asiaeec-col.eccj.or.jp/policynews-202207/ (Accessed: 22 September 2022)

EcoNews Global (2023) De Ministerio a Subsecretaría de Ambiente: cómo será la política climática en el gobierno de Milei, EcoNews Global. Available at: https://econews.global/subsecretaria-de-ambiente-ministerio-interior/#:~:text=De "Ministerio de Ambiente y Desarrollo Sostenible de,Javier Milei%2C quien asumió ayer en la Argentina. (Accessed: 6 August 2024)

Electricity Generating Authority of Thailand (2022) EGAT bears Ft charge of 36,000 million Baht and adjusts fuel management plan to reduce electricity cost of 14,800 million Baht, EGAT. Available at: https://www.egat.co.th/home/en/20220128e/ (Accessed: 21 September 2022)

ELEVATE (2022) 'ELEVATE: Supporting international climate policy'. Available at: https://elevate-climate.nl/

den Elzen, M., Dafnomilis, I., Forsell, N., et al. (2022) 'Updated nationally determined contributions collectively raise ambition levels but need strengthening further to keep Paris goals within reach', Mitigation and Adaptation Strategies for Global Change, 27(6), p. 33. doi:10.1007/s11027-022-10008-7

den Elzen, M.G.J., Dafnomilis, I., Hof, A.F., et al. (2023) 'The impact of policy and model uncertainties on emissions projections of the Paris Agreement pledges', Environmental Research Letters, 18(5), p. 054026. doi:10.1088/1748-9326/acceb7

European Comission (2023a) Directive (EU) 2023/1791 of the European Parliament and of the Council of 13 September 2023 on energy efficiency and amending Regulation (EU) 2023/955 (recast) (Text with EEA relevance), EUR Lex. Official Journal of the European Union. Available at: https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=OJ%3AJOL_2023_231_R_0001&qid=1695186598766 (Accessed: 16 August 2024)

European Comission (2023b) Regulation (EU) 2023/956 of the European Parliament and of the Council of 10 May 2023 establishing a carbon border adjustment mechanism (Text with EEA relevance), EUR Lex. Official Journal of the European Union. Available at: https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=uriserv%3AOJ.L_.2023.130.01.0052.01.ENG&toc=OJ%3AL%3A2023%3A130%3ATOC (Accessed: 16 August 2024)

European Comission (2024) Regulation (EU) 2024/1252 of the European Parliament and of the Council of 11 April 2024 establishing a framework for ensuring a secure and sustainable supply of critical raw materials and amending Regulations (EU) No 168/2013, (EU) 2018/858, (EU) 2018/17, EUR Lex. Official Journal of the European Union. Available at: https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=OJ:L_202401252 (Accessed: 16 August 2024)

European Commission (2022a) Joint Statement: South Africa Just Energy Transition Investment Plan. European Commission. Available at: https://ec.europa.eu/commission/presscorner/detail/en/statement_22_6664 (Accessed: 25 September 2023)

European Commission (2022b) Political Declaration on establishing the Just Energy Transition Partnership with Viet Nam. Available at: https://ec.europa.eu/commission/presscorner/detail/en/statement_22_7724

Evans, S. and Viisainen, V. (2024) 'Analysis: Trump election win could add 4bn tonnes to US emissions by 2030', Carbon Brief, 6 March. Available at: https://www.carbonbrief.org/analysis-trump-election-win-could-add-4bn-tonnes-to-us-emissions-by-2030/

F

Fricko, O., Havlik, P., Rogelj, J., et al. (2017) 'The marker quantification of the Shared Socioeconomic Pathway 2: A middle-of-the-road scenario for the 21st century', Global Environmental Change, 42, pp. 251–267. doi:10.1016/j.gloenvcha.2016.06.004

G

General Committee on the Basic Plan on Electricity Supply and Demand (2024) Draft Plan of the 11th Basic Plan on Electricity Supply and Demand. Ministry of Trade, Industry and Energy, Republic of Korea

Global Energy Monitor (2023) Global Coal Plant Tracker 2023. Global Energy Monitor. Available at: https://globalenergymonitor.org/projects/global-coal-plant-tracker/ (Accessed: 3 April 2024)

Global Forest Watch (2024) Brazil Tree Cover Loss. Available at: https://www.globalforestwatch.org/dashboards/country/BRA/?map=eyJjYW5Cb3VuZCI6dHJ1ZX0%3D

Gomaa, A. (2022) 'As negotiations falter, Ethiopia begins third-stage filling of Nile dam', Al-Monitor, 18 July. Available at: https://www.al-monitor.com/originals/2022/07/negotiations-falter-ethiopia-begins-third-stage-filling-nile-dam

Government of Argentina (2021) Actualización de la meta de emisiones netas de Argentina al 2030 - Octubre 2021. Available at: https://unfccc.int/sites/default/files/NDC/2022-05/Actualización meta de emisiones 2030.pdf

Government of Argentina (2022) Estrategia de desarrollo resiliente con bajas emissions a largo plazo a 2050. Available at: https://unfccc.int/sites/default/files/resource/Estrategia de desarrollo resiliente con bajas emisiones a largo plazo a 2050.pdf

Government of Australia (2021) Low emissions technology statement 2021. Available at: https://www.industry.gov.au/sites/default/files/November 2021/document/low-emissions-technology-statement-2021.pdf (Accessed: 16 September 2022)

Government of Brazil (2023) Nationally Determined Contribution (NDC). Available at: https://unfccc.int/sites/default/files/NDC/2023-11/Brazil First NDC 2023 adjustment.pdf

Government of Canada (2021) Canada's 2021 Nationally Determined Contribution under the Paris Agreement. Available at: https://unfccc.int/sites/default/files/NDC/2022-06/Canada%27s Enhanced NDC Submission1_FINAL EN.pdf (Accessed: 4 January 2023)

Government of Canada (2022a) Exploring Approaches for Canada's Transition to Net-Zero Emissions. Ottawa, Canada: UNFCCC. Available at: https://unfccc.int/process/the-paris-agreement/long-term-strategies (Accessed: 2 August 2023)

Government of Canada (2022b) 'Standard on the Disclosure of Greenhouse Gas Emissions and the Setting of Reduction Targets'. Canberra: Government of Canada. Available at: https://www.tbs-sct.canada.ca/pol/doc-eng.aspx?id=32743 (Accessed: 16 August 2024)

Government of Canada (2024) 2023 Progress Report on the 2030 Emissions Reduction Plan: Executive summary. Government of Canada. Available at: https://www.canada.ca/en/services/environment/weather/climatechange/climate-plan/climate-plan-overview/emissions-reduction-2030/2023-progress-report/executive-summary.html (Accessed: 3 September 2024)

Government of China (2021a) China's Achievemnets, New Goals and New Measures for Nationall Determined Contributions

Government of China (2021b) China's Mid-Century Long-Term Low Greenhouse Gas Emission Development Strategy. Beijing, China. Available at: https://unfccc.int/sites/default/files/resource/China's Mid-Century Long-Term Low Greenhouse Gas Emission Development Strategy.pdf

Government of Colombia (2020) Colombia's Updated Nationally Determined Contribution (NDC). Available at: https://www4.unfccc.int/sites/ndcstaging/PublishedDocuments/Colombia First/NDC actualizada de Colombia.pdf

Government of Egypt (2021) Launching and Delivering the First Batch of the New CNG Vehicles, Ministry of Petroleum and Mineral Resources. Available at: https://www.petroleum.gov.eg/en/media-center/EventsPages/Pages/mop_09042021_01.aspx (Accessed: 15 September 2022)

Government of Egypt (2022) Egypt's First Updated Nationally Determined Contribution. Available at: https://unfccc.int/sites/default/files/NDC/2022-07/Egypt Updated NDC.pdf.pdf

Government of Egypt (2023) Egypt's Second Updated Nationally Determined Contribution. Available at: https://unfccc.int/sites/default/files/NDC/2023-06/Egypts Updated First Nationally Determined Contribution 2030 %28Second Update%29.pdf

Government of Ethiopia (2016) Federal Democratic Republic of Ethiopia: Growth and Transformation Plan II (GTP II)(2015/16-2019/20). Addis Ababa: National Planning Commission, Federal Democratic Republic of Ethiopia. Available at: https://europa.eu/capacity4dev/file/30510/download?token=efsF8UiP

Government of Ethiopia (2020) Ten Years Development Plan: A Pathway to Prosperity (2021-2030). Available at: https://europa.eu/capacity4dev/nexus_ethiopia/documents/ethiopia-ten-years-development-plan-2021-2030-planning-and-development-commission-federal (Accessed: 13 September 2022)

Government of Ethiopia (2021) Updated Nationally Determined Contribution

Government of Ethiopia (2023) Ethiopia's Long-Term Strategy Low Emission and Climate Resilient Development Strategy (2020-2050). Bonn: United Nations Framework Convention on Climate Change (UNFCCC). Available at: https://unfccc.int/sites/default/files/resource/ETHIOPIA_LONG TERM LOW EMISSION AND CLIMATE RESILIENT DEVELOPMENT STRATEGY.pdf (Accessed: 13 August 2024)

Government of Ethiopia (2024) Green Legacy Initiative. Office of the Prime Minister. Available at: https://www.greenlegacy.et/green-legacy/home (Accessed: 13 August 2024)

Government of India (2022a) India's Long-Term Low-Carbon Development Strategy . Available at: https://unfccc.int/sites/default/files/resource/India_LTLEDS.pdf (Accessed: 15 November 2022)

Government of India (2022b) India's Updated First Nationally Determined Contribution Under Paris Agreement (2021-2030). New Delhi. Available at: https://unfccc.int/sites/default/files/NDC/2022-08/India Updated First Nationally Determined Contrib.pdf

Government of India (2023) GOBARdhan (Galvanizing Organic Bio-Agro Resources Dhan). Government of India. Available at: https://www.india.gov.in/spotlight/gobardhan-galvanizing-organic-bio-agro-resources-dhan (Accessed: 3 September 2024)

Government of Indonesia (2021) Long-Term Strategy for Low Carbon and Climate Resilience 2050 (Indonesia LTS-LCCR 2050). UNFCCC. Available at: https://unfccc.int/process/the-paris-agreement/long-term-strategies (Accessed: 27 July 2023)

Government of Indonesia (2022) Enhanced Nationally Determined Contribution. UNFCCC. Available at: https://unfccc.int/sites/default/files/NDC/2022-09/ENDC Indonesia.pdf (Accessed: 20 March 2023)

Government of Japan (2019) The Long-term Strategy under the Paris Agreement. Government of Japan. Available at: https://unfccc.int/sites/default/files/resource/The Long-term Strategy under the Paris Agreement.pdf

Government of Morocco (2021a) Contribution déterminée au niveau national NDC - actualisée. Available at: https://unfccc.int/sites/default/files/NDC/2022-06/Moroccan updated NDC 2021 _Fr.pdf

Government of Morocco (2021b) Long Term Low Carbon Strategy. Available at: https://unfccc.int/sites/default/files/resource/MAR_LTS_Dec2021.pdf

Government of South Africa (2020) South Africa's Low-Emission Development Strategy 2050. Available at: https://www.environment.gov.za/sites/default/files/docs/2020lowemission_developmentstrategy.pdf (Accessed: 26 November 2020)

Government of South Africa (2022a) Climate Change Bill [B 9—2022]. Ministry of Forestry, Fisheries and the Environment. Available at: https://www.parliament.gov.za/storage/app/media/Bills/2022/B9_2022_Climate_Change_Bill/B9_2022_Climate_Change_Bill.pdf (Accessed: 25 July 2022)

Government of South Africa (2022b) South Africa's Just Energy Transition Investment Plan (JET IP) for the initial period 2023–2027. Available at: https://www.thepresidency.gov.za/download/file/fid/2649

Government of Thailand (2022) Thailand's 2nd Updated Nationally Determined Contribution. Available at: https://unfccc.int/sites/default/files/NDC/2022-11/Thailand 2nd Updated NDC.pdf (Accessed: 3 November 2022)

Government of the Russian Federation (2020) Russian Federation Updated Nationally Determined Contribution (NDC). Available at: https://www4.unfccc.int/sites/ndcstaging/PublishedDocuments/Russia First/NDC_RF_eng.pdf

Government of the Russian Federation (2022) Strategy of socio-economic development of the Russian Federation with low greenhouse gas emissions until 2050. UNFCCC. Available at: https://unfccc.int/process/the-paris-agreement/long-term-strategies (Accessed: 2 August 2023)

Government of the UAE (2021) UAE Net Zero 2050, The Official Portal of the UAE Government. Available at: https://u.ae/en/information-and-services/environment-and-energy/uae-net-zero-2050 (Accessed: 5 November 2021)

Government of the UAE (2023) Third Update of the Second Nationally Determined Contribution of the United Arab Emirates. UNFCCC. Available at: https://unfccc.int/sites/default/files/NDC/2023-07/Third Update of Second NDC for the UAE_v15.pdf (Accessed: 12 July 2023)

Government of the UK (2021) Net Zero Strategy: Build Back Greener. UNFCCC. Available at: https://unfccc.int/sites/default/files/resource/UK Net Zero Strategy - Build Back Greener.pdf (Accessed: 2 August 2023)

Government of the UK (2022) UK's Nationally Determined Contribution – updated September 2022. Available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1106145/NDC_ICTU_MASTER_VERSION_20PT_tables.pdf (Accessed: 26 September 2022)

Government of the UK (2024) Sustainable aviation fuel initiatives. Available at: https://www.gov.uk/government/speeches/sustainable-aviation-fuel-initiatives

Government of The United States of America (2021) The United States of America Nationally Determined Contribution. Available at: https://unfccc.int/sites/default/files/NDC/2022-06/United States NDC April 21 2021 Final.pdf

Government of Türkiye (2021) Remarks following the Presidential Cabinet Meeting. Available at: https://www.tccb.gov.tr/haberler/410/130712/-

turkiye-ekonomisi-salgin-sartlarini-ve-daha-once-yasadigi-kimi-sikintilari-geride-birakarak-hak-ettigi-yere-dogru-hizla-yol-aliyor-

Government of Türkiye (2023) Updated First Nationally Determined Contribution. Available at: https://unfccc.int/sites/default/files/NDC/2023-04/TÜRKİYE_UPDATED 1st NDC_EN.pdf (Accessed: 18 April 2023)

Government of Viet Nam (2022) 896/QD-TTg in Vietnam, Decision 896/QD-TTg 2022 approving the National strategy for climate change until 2050 in Vietnam. Available at: https://thuvienphapluat.vn/van-ban/EN/Tai-nguyen-Moi-truong/Decision-896-QD-TTg-2022-approving-the-National-strategy-for-climate-change-until-2050/525126/tieng-anh.aspx (Accessed: 12 September 2022)

Groenendaal, B. (2020) 'Ethiopia: Construction of 2160MW Koysha Hydropower Dam on Track', Green Building Africa (GBA), 16 October. Available at: https://www.greenbuildingafrica.co.za/ethiopia-construction-of-2160mw-koysha-hydropower-dam-on-track/

Gusti, M. and Kindermann, G. (2011) 'AN APPROACH TO MODELING LANDUSE CHANGE AND FOREST MANAGEMENT ON A GLOBAL SCALE', in Proceedings of 1st International Conference on Simulation and Modeling Methodologies, Technologies and Applications (SIMULTECH-2011). SCITEPRESS, pp. 180–185. doi:10.5220/0003607501800185

Gütschow, J. and Pflüger, M. (2023) 'The PRIMAP-hist national historical emissions time series (1750-2021) v2.4.2'. Zenodo. doi:10.5281/zenodo.7727475

H

Harvey, F. (2024) 'Labour must ramp up renewable energy to meet 2030 climate vows, says watchdog', The Gaurdian. Available at: https://www.theguardian.com/environment/article/2024/jul/18/labour-must-ramp-up-renewable-energy-to-meet-2030-climate-vows-says-watchdog

Hauber, G. (2024) Vietnam's direct power purchase agreement (DPPA) decree could catalyze a new era for renewable energy. Available at: https://ieefa.org/resources/vietnams-direct-power-purchase-agreement-dppa-decree-could-catalyze-new-era-renewable#:~:text=For the first time%2C Vietnam's,Electricity of Vietnam (EVN).

Havlík, P., Valin, H., Herrero, M., et al. (2014) 'Climate change mitigation through livestock system transitions', Proceedings of the National Academy of Sciences of the United States of America, 111(10), pp. 3709–14. doi:10.1073/pnas.1308044111

I

Iberdrola (2023) We signed an agreement to sell more than 8,400 MW of combined cycle gas in Mexico for $6 billion. Available at: https://www.iberdrola.com/press-room/news/detail/we-signed-an-agreement-to-sell-more-than-8400-mw-of-combined-cycle-gas-in-mexico-for-6-billion (Accessed: 21 February 2024)

ICAP (2024a) Emissions Trading Worldwide: 2024 Status Report. Berlin. Available at: https://icapcarbonaction.com/en/ets/argentina

ICAP (2024b) 'Turkish Emission Trading System Factsheet'

IEA (2008) New National Renewable Energy Strategy. Available at: https://www.iea.org/policies/4859-new-national-renewable-energy-strategy (Accessed: 15 April 2021)

IEA (2023a) Energy Ministry Decree N0.373.k/MB.01/MEM.B/2023. International Energy Agency (IEA). Available at: https://www.iea.org/policies/18000-energy-ministry-decree-n0373kmb01memb2023 (Accessed: 16 August 2024)

IEA (2023b) Energy Ministry Decree No.258.K/MB.01/MEM.B/2023. International Energy Agency (IEA). Available at: https://www.iea.org/policies/18001-energy-ministry-decree-no258kmb01memb2023 (Accessed: 16 August 2024)

IEA (2023c) Energy Ministry Regulation No.10/2023. International Energy Agency (IEA). Available at: https://www.iea.org/policies/17999-energy-ministry-regulation-no102023 (Accessed: 16 August 2024)

IEA (2023d) National Policy on Biofuels (2022 Amendment). International Energy Agency (IEA). Available at: https://www.iea.org/policies/17006-national-policy-on-biofuels-2022-amendment (Accessed: 3 September 2024)

IEA (2023e) Subsidies for Battery Electric Vehicle. International Energy Agency (IEA). Available at: https://www.iea.org/policies/17302-subsidies-for-battery-electric-vehicle (Accessed: 16 August 2024)

IEA (2023f) 'World Energy Balances'

IEA (2023g) World Energy Outlook. Paris, France. Available at: https://iea.blob.core.windows.net/assets/42b23c45-78bc-4482-b0f9-eb826ae2da3d/WorldEnergyOutlook2023.pdf

IEA (2023h) 'World Energy Outlook 2023'. International Energy Agency (IEA). Available at: https://iea.blob.core.windows.net/assets/42b23c45-78bc-4482-b0f9-eb826ae2da3d/WorldEnergyOutlook2023.pdf

IEA (2024a) 'Greenhouse Gas Emissions from Energy 2024 Edition - CO2 emissions in aviation in the Net Zero Scenario, 2000-2030'. International Energy Agency. Available at: https://www.iea.org/data-and-statistics/charts/co2-emissions-in-aviation-in-the-net-zero-scenario-2000-2030

IEA (2024b) Renewable Energy Progress Tracker. Available at: https://www.iea.org/data-and-statistics/data-tools/renewable-energy-progress-tracker

IMF (2024) World Economic Outlook Database. April 2024 Edition, World Economic Outlook. IMF. Available at: https://www.imf.org/en/Publications/WEO/weo-database/2024/April (Accessed: 1 August 2024)

INPE (2024) TerraBrasilis PRODES (deforestation). Available at: https://terrabrasilis.dpi.inpe.br/app/dashboard/deforestation/biomes/legal_amazon/rates (Accessed: 31 July 2024)

IPCC (2007) Fourth Assessment Report. Geneva

IPCC (2023) Synthesis Report of the IPCC Sixth Assessment Report (AR6) - Summary for policymakers. Intergovernmental Panel on Climate Change (IPCC). doi:10.4324/9781315071961-11

IRENA (2018) 'Renewable Energy Outlook Egypt'. Abu Dhabi, United Arab Emirates: IRENA, p. 8. doi:10.1007/978-3-658-01115-4_5

IRENA (2022) Renewable Capacity Statistics 2022. Available at: https://www.irena.org/-/media/Files/IRENA/Agency/Publication/2022/Apr/IRENA_RE_Capacity_Statistics_2022.pdf

IRENA (2023) Renewable Capacity Statistics 2023. Available at: www.irena.org

IRENA (2024a) Egypt - Energy profile. Available at: https://www.irena.org/-/media/Files/IRENA/Agency/Statistics/Statistical_Profiles/Africa/Egypt_Africa_RE_SP.pdf

IRENA (2024b) Morocco - Energy profile. Available at: https://www.irena.org/-/media/Files/IRENA/Agency/Statistics/Statistical_Profiles/Africa/Morocco_Africa_RE_SP.pdf

IRENA (2024c) Renewable Energy Capacity Statistics 2024. IRENA. Available at: https://www.irena.org/Data/View-data-by-topic/Capacity-and-Generation/Statistics-Time-Series

Al Jazeera (2023) Filling of Grand Renaissance Dam on the Nile complete, Ethiopia says, Al Jazeera. Available at: https://www.aljazeera.com/news/2023/9/10/filling-of-grand-renaissance-dam-on-the-nile-complete-ethiopia-says (Accessed: 25 September 2023)

J

Jenkins, J.D., Mayfield, E.N., Farbes, J., et al. (2022) Preliminary Report: The Climate and Energy Impacts of the Inflation Reduction Act of 2022. ZERO LAB, Princeton University. Available at: https://repeatproject.org/docs/REPEAT_IRA_Prelminary_Report_2022-08-04.pdf (Accessed: 15 August 2022)

K

Kingdom of Morocco (2021) 'Feuille de route - Hydrogene verte'. Available at: https://www.mem.gov.ma/Lists/Lst_rapports/Attachments/36/Feuille de route de hydrogène vert.pdf

Kingdom of Saudi Arabia (2021a) Reducing Emissions - Saudi Green Initiative. Available at: https://www.saudigreeninitiative.org/targets/reducing-emissions/ (Accessed: 15 July 2022)

Kingdom of Saudi Arabia (2021b) Vision 2030. Available at: https://www.vision2030.gov.sa/media/cofh1nmf/vision-2030-overview.pdf

KMPG (2023) Saudi Arabia budget report 2023. Available at: https://assets.kpmg.com/content/dam/kpmg/sa/pdf/2022/kpmg-saudi-arabia-budget-report-2023.pdf

KPMG (2024) Argentina: New incentive regime for large investments approved. Available at: https://kpmg.com/us/en/home/insights/2024/07/tnf-argentina-new-incentive-regime-for-large-investments-approved.html (Accessed: 6 August 2024)

Kuhudzai, R.J. (2024) Ethiopia Says ICE Vehicle Import Ban Continues As Part of New Economic Reforms, Only EV Imports Allowed!, Clean Technica. Available at: https://cleantechnica.com/2024/07/31/ethiopia-says-ice-vehicle-import-ban-continues-as-part-of-new-economic-reforms-only-ev-imports-allowed/#:~:text=In an unprecedented move some,the import of ICE cars. (Accessed: 13 August 2024)

Kuramochi, T., Nascimento, L., Moisio, M., et al. (2021) 'Greenhouse gas emission scenarios in nine key non-G20 countries: An assessment of progress toward 2030 climate targets', Environmental Science & Policy, 123, pp. 67–81. doi:https://doi.org/10.1016/j.envsci.2021.04.015

L

Liu, L.-J., Jiang, H.-D., Liang, Q.-M., et al. (2023) 'Carbon emissions and economic impacts of an EU embargo on Russian fossil fuels', Nature Climate Change, 13(3), pp. 290–296. doi:10.1038/s41558-023-01606-7

M

McCormick, M. and Smyth, J. (2024) 'Oil and gas profits triple under Joe Biden even as industry decries him'. Financial Times. Available at: https://www.ft.com/content/aebdb5ac-7e97-425e-8af3-e086488255c5

Meinshausen, M., Lewis, J., Guetschow, J., et al. (2021) NDC factsheets (as of 14 February 2022). Climate Resource. Available at: https://www.climate-resource.com/tools/ndcs (Accessed: 8 July 2022)

METI (2023) The Basic Policy for the Realization of GX - A roadmap for the next 10 years - (provisional translation). Tokyo, Japan: Ministry of Economy, Trade and Industry. Available at: https://www.meti.go.jp/english/press/2023/pdf/0210_003a.pdf

México, S. de H. y C.P. de (2023) 'Estrategia de Movilización de Financiamiento Sostenible'. Ciudad de México: SHCP. Available at: extension://bfdogplmndidlpjfhoijckpakkdjkkil/pdf/viewer.html?file=https%3A%2F%2Fwww.gob.mx%2Fcms%2Fuploads%2Fattachment%2Ffile%2F857379%2FDocu_EMFS_V4.pdf

Minister of Minneral Resources and Energy South Africa (2024) Publication for comments: Integrated Resource Plan, 2023. Minister of Minneral Resources and Energy South Africa. Available at: https://www.gov.za/sites/default/files/gcis_document/202401/49974gon4238.pdf (Accessed: 3 September 2024)

Ministério da Fazenda (2024) Plano de Transformação Ecológica, Ações e programas. Available at: https://www.gov.br/fazenda/pt-br/acesso-a-informacao/acoes-e-programas/transformacao-ecologica/saiba-mais (Accessed: 31 July 2024)

Ministerio de Ambiente y Desarrollo Sostenible (2024a) 'Gobierno Petro logra la mayor reducción de la deforestación en la historia de Colombia', Noticias, 8 July. Available at: https://www.minambiente.gov.co/gobierno-petro-logra-la-mayor-reduccion-de-la-deforestacion-en-la-historia-de-colombia/#:~:text=julio 8%2C 2024-,Gobierno Petro logra la mayor reducción de la deforestación en,el país en un 36%25.

Ministerio de Ambiente y Desarrollo Sostenible (2024b) 'La deforestación baja en 2023 y en 2024 enfrenta amenazas', Noticias, 8 April. Available at: https://www.minambiente.gov.co/la-deforestacion-baja-en-2023-y-en-2024-enfrenta-amenazas/

Ministerio de Ambiente y Desarrollo Sostenible Colombia (2021) 'Colombia Carbono Neutral', una estrategia para combatir el cambio climático'. Available at: https://www.minambiente.gov.co/index.php/noticias-minambiente/5028-colombia-carbono-neutral-una-estrategia-para-combatir-el-cambio-climatico

Ministerio del Ambiente y Desarrollo Sostenible (2022) Se reduce y se contiene la deforestación en Colombia durante los últimos cuatro años. Available at: https://www.minambiente.gov.co/bosques-biodiversidad-y-servicios-ecosistemicos/se-reduce-y-se-contiene-la-deforestacion-en-colombia-durante-los-ultimos-cuatro-anos/ (Accessed: 5 September 2022)

Ministry of Energy and Natural Resources (2024) Türkiye plans $20B energy efficiency investment by 2030. Available at: https://enerji.gov.tr/news-detail?id=21228 (Accessed: 16 August 2024)

Ministry of Environment and Forestry (2023) FOLU NET SINK: Indonesia's Climate Actions Towards 2030. Jakarta: The Ministry of Environment and Forestry of the Republic of Indonesia

Ministry of Natural Resources and Environment of the Russian Federation (2024) 'Second multilateral assessment working group session of the fifth cycle of the international assessment and review'. Bonn: United Nations Framework Convention on Climate Change (UNFCCC). Available at: https://unfccc.int/sites/default/files/resource/Presentation_MA_RUS_0.pdf (Accessed: 16 August 2024)

MNRE (2023) National Green Hydrogen Mission. Ministry of New and Renewable Energy (MNRE), India. Available at: https://cdnbbsr.s3waas.gov.in/s3716e1b8c6cd17b771da77391355749f3/uploads/2023/01/2023012338.pdf (Accessed: 16 August 2024)

MOE (2023) Overview of the National Plan for Carbon Neutrality and Green Growth . Available at: https://m.me.go.kr/eng/web/board/read.do?menuId=461&boardMasterId=522&boardId=1591210 (Accessed: 10 July 2023)

MOEJ (2021) Cabinet decision on the 'Plan for Global Warming Countermeasures' and ' Japan's Long-term Strategy under the Paris Agreement', and decision by the Global Warming Prevention Headquarters on 'Japan's NDC (Nationally Determined Contribution)'. 22 October. Ministry of the Environment, Japan. Available at: https://www.env.go.jp/en/headline/2551.html (Accessed: 9 February 2022)

MOTIE (2020) '9th Basic Plan for Electricity Supply (2020-2034)'. Available at: https://www.motie.go.kr/motie/ne/presse/press2/bbs/bbsView.do?bbs_seq_n=163670&bbs_cd_n=81

MOTIE (2023) The 10th Basic Plan for Electricity Supply and Demand. Available at: https://www.motie.go.kr/motie/ms/nt/announce3/

bbs/bbsView.do?bbs_seq_n=68162&bbs_cd_n=6&currentPage=1&search_key_n=&cate_n=&dept_v=&search_val_v=&biz_anc_yn_c= (Accessed: 13 March 2023)

Myllyvirta, L. (2024) 'Analysis: Record drop in China's CO2 emissions needed to meet 2025 target', Carbon Brief. Available at: https://www.carbonbrief.org/analysis-record-drop-in-chinas-co2-emissions-needed-to-meet-2025-target/

N

Nascimento, L., den Elzen, M., Kuramochi, T., et al. (2023) 'Comparing the Sequence of Climate Change Mitigation Targets and Policies in Major Emitting Economies', Journal of Comparative Policy Analysis: Research and Practice, pp. 1–18. doi:10.1080/13876988.2023.2255151

Nascimento, L., Kuramochi, T., Woollands, S., et al. (2023) Greenhouse gas mitigation scenarios for major emitters. Analysis of current climate policies and mitigation commitments: 2023 update. Available at: https://newclimate.org/resources/publications/emissions-scenarios-for-major-economies-2023-update

Nascimento, L. and Höhne, N. (2023) 'Expanding climate policy adoption improves national mitigation efforts', npj Climate Action, 2(1), p. 12. doi:10.1038/s44168-023-00043-8

Nascimento, L., Kuramochi, T. and Höhne, N. (2022) 'The G20 emission projections to 2030 improved since the Paris Agreement, but only slightly', Mitigation and Adaptation Strategies for Global Change, 27(6), p. 39. doi:10.1007/s11027-022-10018-5

NDRC (2021) 'Action Plan for Carbon Dioxide Peaking Before 2030'

NDRC (2022) Working Guidance for Carbon Dioxide Peaking and Carbon Neutrality in Full and Faithful Implementation of the New Development Philosophy. Available at: https://en.ndrc.gov.cn/policies/202110/t20211024_1300725.html (Accessed: 30 March 2022)

NDRC and NEA (2024) 'Action Plan for the Low Carbon Transformation of Coal Power Plant (2024-2027)', gov.cn, 24 June. Available at: https://www.gov.cn/zhengce/zhengceku/202407/content_6963501.htm

NPC (2016) '(GTP II) Growth and Transformation Plan II', National Planning Commission, p. 236. Available at: http://www.npc.gov.et/web/guest/gtp/-/document_library_display/48Gh/view/58840

O

Office of Natural Resources and Environmental Policy and Planning (2022) Thailand's Long Term Low Greenhouse Gas Emissions Development Strategy. Available at: https://unfccc.int/sites/default/files/resource/Thailand LT-LEDS %28Revised Version%29_08Nov2022.pdf (Accessed: 16 November 2022)

Osborn, C. (2023) Lula's Rainforest Diplomacy Debut, Foreign Policy. Foreign Policy. Available at: https://foreignpolicy.com/2023/08/11/brazil-amazon-climate-rainforest-summit-lula-diplomacy-deforestation/ (Accessed: 13 October 2023)

Ozbek, I. (2022) Erdogan Rolls Out First Turkish EV Ahead of Elections, Bloomberg. Available at: https://www.bloomberg.com/news/articles/2022-10-29/erdogan-set-to-roll-out-first-turkish-ev-ahead-of-elections (Accessed: 24 November 2022)

P

Park, S.M. (2023) Underlining framework to support competitiveness in industry via energy efficiency: Highlighting India's Performance, Achieve, Trade (PAT) scheme. SciencesPo. Available at: https://www.sciencespo.fr/psia/chair-sustainable-development/2023/09/13/underlining-framework-to-support-competitiveness-in-industry-via-energy-efficiency-highlighting-indias-performance-achieve-trade-pat-scheme/ (Accessed: 3 September 2024)

Parliament of Australia (2022) Climate Change Bill 2022. Parliament of Australia. Available at: https://www.aph.gov.au/Parliamentary_Business/Bills_Legislation/Bills_Search_Results/Result?bId=r6885 (Accessed: 16 September 2022)

Parliamentary Monitoring Group (2023) Climate Change Bill (B9-2022). Available at: https://pmg.org.za/bill/1065/#:~:text=Climate Change Bill (B9-2022)&text=The bill has been signed into law

Pauw, W.P., Castro, P., Pickering, J. and Bhasin, S. (2020) 'Conditional nationally determined contributions in the Paris Agreement: foothold for equity or Achilles heel?', Climate Policy, 20(4), pp. 468–484. doi:10.1080/14693062.2019.1635874

Powering Past Coal Alliance (2023) Colombia and Panama join growing coalition of countries committed to phasing out coal. Available at: https://poweringpastcoal.org/press-releases/colombia-and-panama-join-ppca/#:~:text=As the world's sixth-largest coal exporter%2C Colombia's decision,out coal power generation%2C while protecting mining communities. (Accessed: 13 October 2023)

Praiwan, Y. (2022) 'ERC hikes feed-in tariff to promote solar scheme', Bangkok Post, 24 May. Available at: https://www.bangkokpost.com/business/2314858/erc-hikes-feed-in-tariff-to-promote-solar-scheme (Accessed: 21 September 2022)

Praiwan, Y. (2024) 'A closer look at the new energy plan', Bangkok Post, 20 June

Presidential Climate Commission South Africa (2023) South Africa's Just Energy Transition Investment Plan (JET-IP). Presidential Climate Commission South Africa. Available at: https://www.climatecommission.org.za/south-africas-jet-ip (Accessed: 28 September 2023)

Presidential Executive Office (2023) Russia's new Climate Doctrine approved. Kremlin. Available at: http://en.kremlin.ru/acts/news/72598 (Accessed: 16 August 2024)

Presidential Executive Office (2024) Executive Order on Russia's development goals through 2030 and for the future until 2036. Kremlin. Available at: http://en.kremlin.ru/events/president/news/73986 (Accessed: 16 August 2024)

Preston, R. (2023) Kenya and Ethiopia agree to build 3000km Lamu - Addis Ababa SGR, International Railway Journal. Available at: https://www.railjournal.com/infrastructure/kenya-and-ethiopia-agree-to-build-3000km-lamu-addis-ababa-sgr/ (Accessed: 13 August 2024)

PWYP Indonesia (2024) New and Renewable Energy Bill and National Energy Policy Draft is Not Ambitious Enough to Achieve a Just Energy Transition. Publish What You Pay Indonesia. Available at: https://pwypindonesia.org/en/new-and-renewable-energy-bill-and-national-energy-policy-draft-is-not-ambitious-enough-to-achieve-a-just-energy-transition/?privacy=updated (Accessed: 3 September 2024)

R

Ramaphosa, C. (2022) Address by President Cyril Ramaphosa on actions to address the electricity crisis, Union Buildings, Tshwane. Tshwane, South Africa: Government of South Africa. Available at: https://www.thepresidency.gov.za/speeches/address-president-cyril-ramaphosa-actions-address-electricity-crisis,-union-buildings,-tshwane (Accessed: 26 July 2022)

Rangelova, K. (2024) Brazil rises as G20 renewables powerhouse, Ember Insights. Available at: https://ember-climate.org/insights/in-brief/brazil-rises-as-g20-renewables-powerhouse/

RECCESSARY (2024) Concerns arise as Indonesia JETP progresses slowly in coal transition. RECCESSARY. Available at: https://www.reccessary.com/en/news/id-market/concerns-arise-as-indonesia-jetp-progresses-slowly-coal-transition (Accessed: 16 August 2024)

Renewable Energy Institute (2023) The GX Basic Policy Falls Short in Proposing Strategies for Overcoming the Current Crises. Available at: https://www.renewable-ei.org/en/activities/reports/20230228.php

Republic of Argentina (2023) Decree 70/2023: Reconstruction of the Argentine Economy. Available at: https://www.argentina.gob.ar/normativa/nacional/decreto-70-2023-395521/texto

Republic of Korea (2020) 2050 Carbon Neutral Strategy of the Republic of Korea: Towards a sustainable and green society. UNFCCC. Available at: https://unfccc.int/sites/default/files/resource/LTS1_RKorea.pdf (Accessed: 12 July 2023)

Republic of Korea (2021) 2030 National Greenhouse Gas Reduction Target (NDC) Upgrade Plan. Available at: https://www.korea.kr/common/download.do?fileId=196125969&tblKey=GMN

Republic of South Africa (2021) South Africa's First Nationally Determined Contribution Under The Paris Agreement (Update). Available at: https://www4.unfccc.int/sites/ndcstaging/PublishedDocuments/South Africa First/South Africa updated first NDC September 2021.pdf

Reuters (2022) 'Egypt signs framework deals in bid to launch hydrogen industry'

Reuters (2024) China EV maker BYD to build $1-bln plant in Turkey. Available at: https://www.reuters.com/business/autos-transportation/china-ev-maker-byd-build-1-bln-plant-turkey-2024-07-08/ (Accessed: 16 August 2024)

Robins, A. (2023) Turkey National Energy Plan announced: Solar target is strong but no exit from coal [Türkiye Ulusal Enerji Planı açıklandı: Güneş hedefi güçlü ama kömürden çıkış yok], BBC Türkçe. Available at: https://www.bbc.com/turkce/articles/cmmzprr0j5po (Accessed: 23 January 2023)

Rodrigues, M. (2023) 'Politics and the environment collide in Brazil: Lula's first year back in office', Nature Spotlight: Brazil [Preprint]. Available at: https://doi.org/10.1038/d41586-023-04042-x

Rodríguez, P.V. (2023) 'Colombia dejó de firmar contratos de exploración de carbón, petróleo y gas, confirmó Gustavo Petro en la COP28', Infobae, 1 December. Available at: https://www.infobae.com/colombia/2023/12/01/colombia-ya-dejo-de-firmar-contratos-de-exploracion-de-carbon-petroleo-y-gas-gustavo-petro-reitera-el-tema-en-la-cop28/

Roelfsema, M., van Soest, H.L., den Elzen, M., et al. (2022) 'Developing scenarios in the context of the Paris Agreement and application in the integrated assessment model IMAGE: A framework for bridging the policy-modelling divide', Environmental Science & Policy, 135, pp. 104–116. doi:https://doi.org/10.1016/j.envsci.2022.05.001

S

Salsabila, N.P. and Wong, J. (2024) 'Indonesia's new climate goals: positive developments but some red flags', Climate Action Tracker Blog, 30 August. Available at: https://climateactiontracker.org/blog/indonesias-new-climate-goals-positive-developments-but-some-red-flags/

Sawyer, Dave; Kanduth, Anna; Bradford, Griffin; Förg, Franziska; Linden-Fraser, Ross; Zhang, A. (2023) Independent Assessment of the 2023 Emissions Reduction Plan Progress Report. Canadian Climate Institute. Available at: https://climateinstitute.ca/wp-content/uploads/2023/12/ERP-assessment-2023-EN.pdf (Accessed: 3 September 2024)

SENER (2024) PRODESEN 2024 - 2038. Ciudad de México

Socialist Republic of Viet Nam (2023) 'Resource Mobilisation Plan: Implementing Viet Nam's Just Energy Transition Partnership (JETP)'. Socialist Republic of Viet Nam. Available at: https://climate.ec.europa.eu/system/files/2023-12/RMP_Viet Nam_Eng_%28Final to publication%29.pdf (Accessed: 3 September 2024)

Spring, J. (2023) 'Argentina Will Stay in Paris Climate Agreement Under Milei, Negotiator Says', Reuters, 10 December. Available at: https://www.usnews.com/news/world/articles/2023-12-10/argentina-will-stay-in-paris-climate-agreement-under-milei-negotiator-says

Stehfest, E., van Vuuren, D.P., Kram, T., et al. (2014) Integrated assessment of global environmental change with IMAGE 3.0, Model description and policy applications, The Hague: PBL Netherlands Environmental Assessment Agency. Bilthoven, the Netherlands: PBL Netherlands Environmental Assessment Agency. Available at: http://www.pbl.nl/en/publications/integrated-assessment-of-global-environmental-change-with-IMAGE-3.0

Strangio, S. (2024) 'Indonesia Announces New Tax Incentives to Encourage EV Sales', The Diplomat, February

Suprema Corte de Justicia de la Nación (2024) 'REFORMA DE 2021 A LA LEY DE LA INDUSTRIA ELÉCTRICA; EN CUANTO INTRODUCE NUEVAS REGLAS EN EL ORDEN DEL DESPACHO DE ENERGÍA, LA FORMA DE ASIGNACIÓN DE LOS CONTRATOS DE COBERTURA ELÉCTRICA Y EL SISTEMA DE ADQUISICIÓN DE CERTIFICADOS DE ENERGÍAS LIMPIAS, VULN'. Ciudad de México: SCJN. Available at: https://www.internet2.scjn.gob.mx/red2/comunicados/noticia.asp?id=7699

T

Taborga, S. (2024) Toward Solar Innovation: CFE Announces Floating Solar Plant, Mexico Business News

TAdviser (2024) National Development Goals of Russia. TAdviser. Available at: https://tadviser.com/index.php/Article:National_Development_Goals_of_Russia (Accessed: 16 August 2024)

TALANOA (2023) Brazil's Climate Policy in Full 2023: Progress and gaps in the country's climate policy agenda. Available at: https://nossadescarbonizacao.org/wp-content/uploads/2023/11/00_Talanoa-PCporInteiro-2023-Desktop-EN.pdf

The Guardian (2023) 'Revealed: UAE plans huge oil and gas expansion as it hosts UN climate summit'. Available at: https://www.theguardian.com/environment/2023/apr/04/revealed-uae-plans-huge-oil-and-gas-expansion-as-it-hosts-un-climate-summit

The Islamic Republic of Iran (2023) Iran's Seventh Five-Year Development Plan Bill (2023-2027). Available at: http://iranwif.org/files/fa/news/1402/3/1/2068_332.pdf

the Nation (2024) 'Govt to launch National Energy Plan in September', the Nation, 7 June. Available at: https://www.nationthailand.com/news/general/40038624

The Presidency Republic Of South Africa (2023) Just Energy Transition Implementation Plan 2023-2027. The Presidency Republic Of South Africa. Available at: https://www.stateofthenation.gov.za/assets/downloads/JET Implementation Plan 2023-2027.pdf (Accessed: 3 September 2024)

The State Council of the People's Republic of China (2024) 'Action Plan for Energy Efficiency and Carbon Reduction for 2024-2025', gov.cn, 29 May. Available at: https://www.gov.cn/zhengce/content/202405/content_6954322.htm

Tollast, S. (2022) Solar power in the Middle East: how some countries are racing to go green, The National News. Available at: https://www.thenationalnews.com/weekend/2022/09/16/solar-power-in-the-middle-east-how-some-countries-are-racing-to-go-green/ (Accessed: 18 October 2022)

Tubiello, F.N., Conchedda, G., Wanner, N., et al. (2021) 'Carbon emissions and removals from forests: New estimates, 1990-2020', Earth System Science Data, 13(4), pp. 1681–1691. doi:10.5194/essd-13-1681-2021

Turkish Ministry of Energy and Natural Resources (2022) Turkey's National Energy Plan [Türkiye Ulusal Enerji Planı]. Available at: https://enerji.gov.tr/Media/Dizin/EIGM/tr/Raporlar/TUEP/Türkiye_National_Energy_Plan.pdf (Accessed: 23 January 2023)

U

U.S. Energy Information Administration (2019) U.S. LNG exports to Europe increase amid declining demand and spot LNG prices in Asia.

Available at: https://www.eia.gov/todayinenergy/detail.php?id=40213 (Accessed: 14 November 2019)

U.S. Environmental Protection Agency (2024a) Greenhouse Gas Standards and Guidelines for Fossil Fuel-Fired Power Plants. Available at: https://www.epa.gov/stationary-sources-air-pollution/greenhouse-gas-standards-and-guidelines-fossil-fuel-fired-power (Accessed: 23 August 2024)

U.S. Environmental Protection Agency (2024b) 'Multi-Pollutant Emissions Standards for Model Years 2027 and Later LightDuty and Medium-Duty Vehicles: Final Rule'. U.S. Environmental Protection Agency. Available at: https://www.epa.gov/system/files/documents/2024-03/420f24016.pdf

U.S. Government (2021) The Long-Term Strategy of the United States: Pathways to Net-Zero Greenhouse Gas Emissions by 2050. UNFCCC. Available at: https://unfccc.int/process/the-paris-agreement/long-term-strategies

UK Climate Change Committee (2024) Progress in reducing emissions 2024 Report to Parliament. Available at: https://www.theccc.org.uk/wp-content/uploads/2024/07/Progress-in-reducing-emissions-2024-Report-to-Parliament-Web.pdf

UK Labour Party (2024) Make Britain a clean energy superpower. Available at: https://labour.org.uk/change/make-britain-a-clean-energy-superpower/

UNEP (2023) Emissions Gap Report 2023: Broken Record – Temperatures hit new highs, yet world fails to cut emissions (again). Nairobi: United Nations Environment Programme. doi:10.59117/20.500.11822/43922

UNFCCC (2015) Adoption of the Paris Agreement. FCCC/CP/2015/L.9/Rev.1. Paris, France: United Nations Framework Conventions on Climate Change. Available at: http://unfccc.int/resource/docs/2015/cop21/eng/l09r01.pdf

UNFCCC (2023) 'Draft decision-/CMA.5: Outcome of the first global stocktake', in FCCC/PA/CMA/2023/L.17. Bonn, Germany: United Nations Framework Convention on Climate Change. Available at: https://unfccc.int/sites/default/files/resource/cma2023_L17_adv.pdf

United Nations (2022) 'World Population Prospects', World Population Prospects [Preprint]. New York: United Nations Department of Economic and Social Affairs. Available at: https://www.un.org/development/desa/pd/content/World-Population-Prospects-2022

Urrutia, A. (2024) "Día histórico", inicio de operaciones en Dos Bocas: AMLO, La Jornada

V

Villalobos, A. (2022) Colombia, Venezuela launch COP27 call to save Amazon, Al-Monitor

Vu, K. and Guarascio, F. (2023) Vietnam's $135 billion power plan for 2030, World Economic Forum. Available at: https://www.weforum.org/agenda/2023/05/vietnam-pdp8-power-plan-for-2030/ (Accessed: 6 October 2023)

van Vuuren, D.P., Stehfest, E., Gernaat, D., et al. (2021) The 2021 SSP scenarios of the IMAGE 3.2 model. doi:10.31223/X5CG92

W

Wengel, F. (2023) Vietnam's Eight National Power Development Plan (PDP8). Available at: https://greenfdc.org/vietnams-eight-national-power-development-plan-pdp8/ (Accessed: 25 September 2023)

Worland, J. (2023) 'Why Colombia's President is Determined to Ditch the Country's Oil Wealth', TIME, 12 December. Available at: https://time.com/6344611/gustavo-petro-interview-cop28/

World Nuclear Association (2024) Nuclear power in Iran. Available at: https://world-nuclear.org/information-library/country-profiles/countries-g-n/iran (Accessed: 23 August 2024)

Y

Yustika, M. (2024) The dark cloud over Indonesia's pledge to achieve net-zero emissions by 2060. Available at: https://ieefa.org/resources/dark-cloud-over-indonesias-pledge-achieve-net-zero-emissions-2060

NewClimate – Institute for Climate Policy and Global Sustainability gGmbH

Cologne Office
Waidmarkt 11a
50676 Cologne, Germany

Berlin Office
Schönhauser Allee 10-11
10119 Berlin, Germany

Phone: +49 221 999 83 300
Email: info@newclimate.org
Website: www.newclimate.org