4 The emissions gap

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4.1 Introduction

The emissions gap is estimated as the difference between projected global greenhouse gas (GHG) emissions assuming full implementation of the mitigation pledges that countries have made for 2030, and emissions under least-cost pathways consistent with the Paris Agreement's long-term goal of limiting global average temperature increase to "well-below 2°C" and pursing efforts to limit it to 1.5°C, compared with pre-industrial levels. This year, the update of the emissions gap is particularly interesting as it is the first time countries have submitted new or updated nationally determined contributions (NDCs) as part of the Paris Agreement's five-year ambition-raising cycle. Thus, the update of the emissions gap provides an indication of the extent to which the NDC process under the Paris Agreement is working and the progress made.

To estimate the emissions gap, updated scenarios that underlie its quantification are assessed (section 4.2). This year, the mitigation pledge scenarios include the latest available NDCs as well as announced mitigation pledges for 2030 with a cut-off date of 30 August 2021. Further, scenarios consider the repercussions of the COVID-19 pandemic and possible economic recovery paths. The emissions gap assessment for 2030 is presented in section 4.3, while the implications of failing to bridge the emissions gap for global temperature rise are discussed in section 4.4. In this context, the key questions assessed in this chapter are: What is our current best estimate of the emissions gap for 2030 taking into account the new or updated NDCs, announced pledges and the impact of the COVID-19 pandemic and associated recovery measures? What are the global warming implications over the course of the century?

4.2 Scenarios considered for the 2030 gap assessment

This section updates the eight scenarios considered for the 2030 emissions gap assessment. These scenarios comprise reference scenarios (4.2.1), NDC scenarios (4.2.2), and least-cost mitigation scenarios starting in 2020 consistent with specific temperature targets (4.2.3). Table 4.1 lists and describes all scenarios included in the assessment

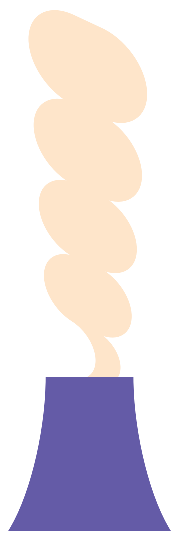


Table 4.1. Summary of assessed scenarios

Scenario		Cut-off year	Description
Reference	Year 2010 policies	2010	This scenario includes only climate polices implemented up to 2010 (no additional measures from 2010 onward).
	Current policies	2020/21	Current policies updated to reflect climate mitigation policies adopted and implemented as of 2020/21. Scenario also adjusted to reflect short- and midterm socioeconomic impacts from COVID-19.[1]
NDCs and announced mitigation pledges	Unconditional NDCs and announced mitigation pledges	2021	This scenario reflects new or updated NDCs as well as officially announced mitigation pledges for 2030 that have been indicated to be implemented without any explicit external support. (Cut-off date: 30 August 2021)
	Conditional NDC and announced mitigation pledges	2021	In addition to the unconditional pledges, this scenario considers new or updated NDCs as well as officially announced mitigation pledges for 2030 to be implemented conditional upon receiving international support (finance, technology transfer and/or capacity-building). (Cut-off date: 30 August 2021)
Mitigation scenarios consistent with the Paris Agreement	Below 2°C	Starting from 2020	Long-term least-cost pathway consistent with holding global warming below 2°C throughout the twenty-first century with at least 66 per cent chance.
	Below 1.8°C	Starting from 2020	Long-term least-cost pathway consistent with holding global warming below 1.8°C throughout the twenty-first century with at least 66 per cent chance.
	Below 1.5°C	Starting from 2020	Long-term least-cost pathway consistent with holding global warming below 1.5°C throughout the twenty-first century with limited or no overshooting. Global warming in 2100 is projected to be below 1.5°C with at least 66 per cent chance, while throughout the twenty-first century it is kept below 1.5°C with at least 33 per cent chance.

1 The updated current policy scenario adjusts original modelling studies to account for different policy cut-off dates, which range from 2017 to 2020, and varying consideration of the impact of the COVID-19 pandemic on socioeconomic drivers.

4.2.1 Reference scenarios and updates

Two reference scenarios are considered: the 'year 2010 policies' scenario and the 'updated current policies' scenario. Only the latter has changed compared to last year.

The **year 2010 policies scenario** assumes that no additional climate mitigation policies are implemented after 2010. As in previous gap reports, global GHG emissions in this scenario are based on the baseline projections of Shared Socioeconomic Pathway scenarios from six modelling studies assuming middle-of-the-road socioeconomic assumptions (SSP2) (Fricko *et al.* 2017) that also underpin the current policies scenario projections as of 2019 (McCollum *et al.* 2018; Roelfsema *et al.* 2020).[2]

The updated **current policies scenario** projects global GHG emissions assuming all currently adopted and implemented policies (defined as legislative decisions, executive orders, or equivalent) are realized and that no additional measures are undertaken. It also considers the impact of COVID-19. The data for this scenario are based on updates by four modelling studies[3] that include the impacts of COVID-19 and have a cut-off date of November 2020 and four international modelling groups.[4] The international modelling groups have 31 December 2016 as their cut-off date for current policies (Roelfsema *et al.* 2020) and do not include COVID-19 effects. They are included to ensure consistency of the data set and methodology across the Emissions Gap Reports. Their results were adjusted to reflect updates of policies until November 2020 by comparing them to the results of the four modelling studies that provide estimates for both cut-off dates (den Elzen, Höhne and Jiang 2017).

Following this approach, the median estimate of the impact of recent policies is a reduction in global GHG emissions of 1.5 gigatons of carbon dioxide equivalent ($GtCO_2e$) (range: 3.0–0.4). To capture the impact of COVID-19, the four international modelling groups' estimates were adjusted based on three of the four modelling studies (Climate Action Tracker, International Energy Agency [IEA] and PBL) that provide global GHG emissions projections based on consistent current policies scenarios, including as well as excluding the impact of the COVID-19 pandemic. Following this approach, the impact of COVID-19 is an estimated reduction in global GHG emissions of about 2.5 $GtCO_2e$ (range: 3.2–1.4) by 2030. Considering both of these impacts, the median estimate of global GHG emissions in 2030 for the updated current policies scenario becomes 55 $GtCO_2e$ (range of 52–58 $GtCO_2e$; see table 4.2) in 2030, which is 4 $GtCO_2e$ lower than the median estimate of the 2020 UNEP Emissions Gap Report.

It remains critically important to understand the potential structural changes of the COVID-19 pandemic and the post-COVID rescue and recovery packages on emission levels out to 2030 (see chapter 5). This is particularly important given the use of 2030 as a target year in many countries' NDC submissions and as a benchmark to gauge global climate action. Research is ongoing in this area, but not yet published in the peer-reviewed literature.

While understanding of energy-related GHG emissions trends during the COVID-19 pandemic is improving (Forster *et al.* 2020; Le Quéré *et al.* 2021, 2020; Liu *et al.* 2020), there is more uncertainty around trends in agriculture, forestry and other land-use (AFOLU)-based GHG emissions. However, these emissions seem to continue to increase. In 2020, agricultural activities had limited losses due to the COVID-19 pandemic and some commodities even increased their production (Food and Agriculture Organization of the United Nations [FAO] 2021a, 2021b; World Bank 2021). Further global deforestation rates increased significantly, resulting in a loss of tree cover by 25.2 Mha, 12 per cent more than in 2019 (Hansen *et al.* 2013; World Resources Institute [WRI] 2021).

Although near-term impacts on land-use dynamics are yet to be better known, as in the 2000s and 2010s, production of agricultural commodities (mainly beef, soy, and palm oil), illegal logging, mining extraction and wild fires were major drivers of deforestation (Curtis *et al.* 2018; FAO 2021c). The rising trend of prices for most food and metal commodities (FAO 2021a, 2021b; World Bank 2021), along with governmental stimulus into agribusiness activities, extractive industries, and development of road infrastructure in protected land regions drove deforestation and forest degradation, mainly in the tropics (Brancalion *et al.* 2020; Ferrante and Fearnside 2020). During the COVID-19 crisis and due to limited financing resources, some governments have also relaxed environmental laws and decreased their national budgets of regulatory mechanisms, which has reduced the enforcement of environmental protection laws (Amador-Jiménez *et al.* 2020; Vale *et al.* 2021). Furthermore, national lockdowns and disruption of non-forest economic activities have limited the income of forest-dependent communities,

2 From the CD-LINKS Scenario Database, version 1.0.

3 Climate Action Tracker (2021); Joint Research Centre's POLES model (Joint Research Centre, forthcoming); PBL Netherlands Environmental Assessment Agency's IMAGE model (Dafnomilis *et al.* 2021; den Elzen *et al.* in review; Nascimento *et al.* 2021) (see also: www.pbl.nl/ndc); and the stated policies scenario of the International Energy Agency [IEA]'s World Energy Outlook 2020 (IEA 2020). The more-optimistic stated policies scenario of the IEA World Energy Outlook 2020 that was used as a current policies scenario is not yet included. Furthermore, the energy-related CO_2 emissions of IEA were supplemented with the median estimates of the non-CO_2 GHG emissions and CO_2 land-use-related emissions of the current policies scenarios from the COMMIT database.

4 International Institute for Applied Systems Analysis (IIASA) with the MESSAGE–GLOBIOM model (Fricko *et al.* 2017); National Institute for Environmental Studies (NIES) with the AIM model (Fujimori *et al.* 2017); Potsdam Institute for Climate Impact Research (PIK) with the REMIND–MAgPIE model (Luderer *et al.* 2015) and COPPE, Universidade Federal do Rio de Janeiro (COPPE/UFRJ) with the COFFEE model (Rochedo *et al.* 2018).

thereby increasing pressure on forest products (Golar *et al.* 2020; Rahman *et al.* 2021).

Another issue related to land-use emissions is that about half of the global scenarios analyses and national GHG inventories use different definitions for anthropogenic removals in the land-use sector, resulting in different amounts of net land-use carbon dioxide (CO_2) emissions being reported, with a historic difference of up to 4 $GtCO_2e$/year between national GHG inventories and global emission pathway studies (Grassi *et al.* 2018). The solutions that have been published to account and correct for this discrepancy are integrated in these studies by applying a constant adjustment term over the 2010–2030 period.[5]

4.2.2 NDC and announced pledge scenarios and updates

The NDC and announced pledge scenarios include all the most recent NDCs (new or updated NDCs and previous NDCs for countries where no updates are available) as well as announced climate change mitigation pledges for 2030 that could be linked to updated NDCs and that focus on indicators or targets also included in their NDCs. The estimated impact of revised reduction targets in the new or updated unconditional NDC submissions and announcements lowers the emissions projection of the unconditional NDC scenario by about 4 $GtCO_2e$ (about 15 per cent) compared with the previous NDCs. For the conditional NDC scenario including announced pledges, a similar impact is found. This results in a median estimate of global GHG emissions of 52 $GtCO_2e$ and 50 $GtCO_2e$, if the unconditional and conditional NDCs are fully implemented. This is about 4 $GtCO_2e$ lower than last year's projections (based on previous NDCs, see figure 4.1).

The NDC and announced pledge scenario estimate is based on four model studies (Climate Action Tracker, PBL, JRC and Climate Resource) (Meinshausen *et al.* 2021),[6] all of which include the NDC updates (as at end of August 2021), while only the first three studies consider the impact of the announcements.[7,8] In addition, it is based on projections of four model groups (IIASA, the National Institute for Environmental Studies [NIES], the Potsdam Institute for Climate Impact Research [PIK] and Resources for the Future and Euro Mediterranean Center on Climate Change [RFF–CMCC]) that have been adjusted to reflect the impact of the new or updated NDCs and announced pledges.

4.2.3 Mitigation scenarios consistent with the Paris Agreement and updates

Emission projections of the latest NDCs and announced pledges scenarios, and updated current policies scenarios are compared to least-cost mitigation scenarios that meet specific temperature targets relative to pre-industrial levels. Here, we categorize emissions pathways from the literature based on their projected peak warming outcomes over the course of this century (Huppmann *et al.* 2018b, 2018a; Rogelj *et al.* 2018. See also chapter 3). We define three scenarios that differ in their estimated maximum warming over the course of this century (see table 4.1).

This year, the scenarios have been updated by re-assessing their temperature outcomes based on the Intergovernmental Panel on Climate Change (IPCC) Assessment Report 6 Working Group I assessment. The temperature outcome of the scenarios is assessed with the reduced-complexity carbon-cycle and climate model MAGICC (Meinshausen *et al.* 2011) in a set up that captures the uncertainties in radiative forcing as well as climate and carbon-cycle response (Nicholls *et al.* 2021) as assessed in cross-chapter box 7.1 of the IPCC Sixth Assessment Report (Forster *et al.* 2021).

As a result of the updates, global emissions in 2030 consistent with keeping global warming below 2.0°C with a 66 per cent chance are estimated at 39 $GtCO_2e$, which is about 2 $GtCO_2e$ lower than in earlier reports. Similarly, the estimate for 1.8°C is about 2 $GtCO_2e$ lower than the 1.8°C estimate of previous reports. There are no changes to the 1.5°C estimate (table 4.2). As pathways often assume net-negative CO_2 emissions in the second half of the century, the estimated global warming in the year 2100 is typically lower than the maximum warming over the course of the twenty-first century.

4.3 The emissions gap

The emissions gap for 2030 is defined as the difference between global total GHG emissions from least-cost scenarios that keep global warming to 2°C, 1.8°C or 1.5°C with varying levels of likelihood and the estimated global GHG emissions resulting from a full implementation of NDCs and announced reduction pledges. This section updates the gap based on the scenarios described in section 4.2.

5 This approach is consistent with the detailed adjustments calculated by Grassi *et al.* (2021), which are virtually constant until 2030 for emissions scenarios in line with updated current policies or NDCs scenarios. Previous reports already applied a similar adjustment method, when comparing model studies (such as the integrated assessment model studies) or in the emissions gap calculations. Although the literature now provides a more elaborate evidence base in support of this adjustment, this approach does not result in shifts in estimates of the global emissions gap.

6 Climate Action Tracker: https://climateactiontracker.org/global/cat-emissions-gaps/; PBL: www.pbl.nl/ndc; JRC: https://ec.europa.eu/jrc/en/geco.

7 The Climate Action Tracker accounts for the impact of the announcement of Japan and China, JRC for China and Japan, and PBL includes the impact of China, Japan and the Republic of Korea, and also includes the impact of the latest NDC of South Africa.

8 As these studies do not fully account for all announced pledges, the estimate is slightly lower than the estimate in chapter 2, but it has been rounded to avoid apparent inconsistencies.

Table 4.2 provides a full overview of 2030 emission levels for the eight scenarios considered, as well as the resulting emissions gap between the scenario and the 2°C, 1.8°C or 1.5°C pathways.

Table 4.2. Global total greenhouse gas emissions in 2030 under different scenarios, temperature implications, and the resulting emissions gap

Scenario (rounded to the nearest gigaton)	Number of scenarios in set	Global total emissions in 2030 [$GtCO_2e$]	Estimated temperature outcomes†			Closest corresponding IPCC SR1.5 scenario class	Emissions Gap in 2030 [$GtCO_2e$]		
			50% chance	66% chance	90% chance		Below 2.0°C	Below 1.8°C	Below 1.5°C
Year 2010 policies[i]	6	64 (60–68)							
Current policies[ii]	9	55 (52–58)					15 (12–18)	22 (19–25)	30 (28–33)
Unconditional NDCs (updated NDCs and announcements)	8	52 (49–55)					13 (10–16)	19 (16–22)	28 (25–30)
Conditional NDCs[iii] **(updated NDCs and announcements)**	8	50 (46–52)					11 (7–13)	17 (13–19)	25 (22–28)
Below 2.0°C (66% chance)**	71	39 (33–49)	Peak: 1.7–1.8°C In 2100: 1.3–1.7°C	Peak: 1.8–2.0°C In 2100: 1.5–1.9°C	Peak: 2.2–2.4°C In 2100: 1.9–2.4°C	Higher-2°C pathways			
Below 1.8°C (66% chance)**	23	33 (27–41)	Peak: 1.6–1.7°C In 2100: 1.2–1.6°C	Peak: 1.7–1.8°C In 2100: 1.4–1.8°C	Peak: 2.0–2.2°C In 2100: 1.8–2.2°C	Lower-2°C pathways			
Below 1.5°C (66% chance in 2100 with no or limited overshoot)	26	25 (17–33)	Peak: 1.5–1.6°C In 2100: 1.0–1.3°C	Peak: 1.6–1.7°C In 2100: 1.2–1.5°C	Peak: 1.9–2.1°C In 2100: 1.5–1.9°C	1.5°C with no or limited overshoot			

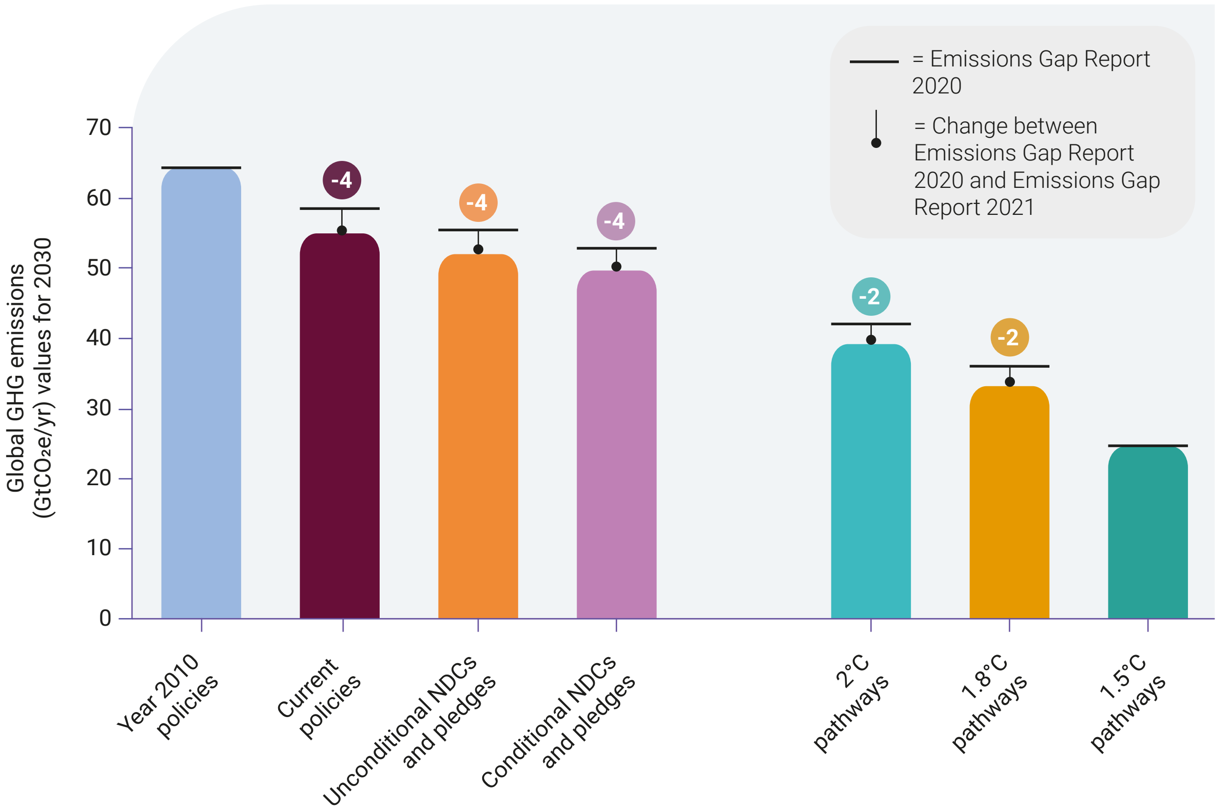
i All scenarios represent pre-COVID-19 estimates. Values represent the median and tenth to ninetieth percentile range across scenarios; ii All scenarios are adjusted to reflect the impact of COVID-19 and recent policies (cut-off date 2020). Values represent the median and tenth to ninetieth percentile range across scenarios; iii Values represent the median and tenth to ninetieth percentile range across scenarios.

† Temperature outcomes are estimated for global surface air temperature (GSAT) with the reduced-complexity carbon-cycle and climate model MAGICC (Meinshausen *et al.* 2011) in a set up that captures the uncertainties in radiative forcing as well as climate and carbon-cycle response (Nicholls *et al.* 2021).

** Values represent the median and tenth to ninetieth percentile range across scenarios. Probabilities ('chances') refer to peak warming at any time during the twenty-first century for the below-1.8°C and below-2.0°C scenarios. When deploying net-negative CO_2 emissions in the second half of the century, global warming can be further reduced from these peak warming characteristics. For the below-1.5°C scenario, it applies to the year 2100, while the "no or limited overshoot" characteristic is captured by ensuring projections do not exceed 1.5°C with at least 33 per cent chance over the course of the twenty-first century.

Note: The gap numbers and ranges are calculated based on the original numbers (without rounding), and these may differ from the rounded numbers (third column) in the table. Numbers are rounded to full $GtCO_2e$. GHG emissions have been aggregated with 100-year global warming potential (GWP) values of the IPCC AR4 (to be consistent with table 2.4 of IPCC Special Report on Global Warming of 1.5°C). IPCC SR1.5 refers to the IPCC Special Report on global warming of 1.5°C.

Figure 4.1. Overview of changes in greenhouse gas emissions projections for 2030 for different scenarios

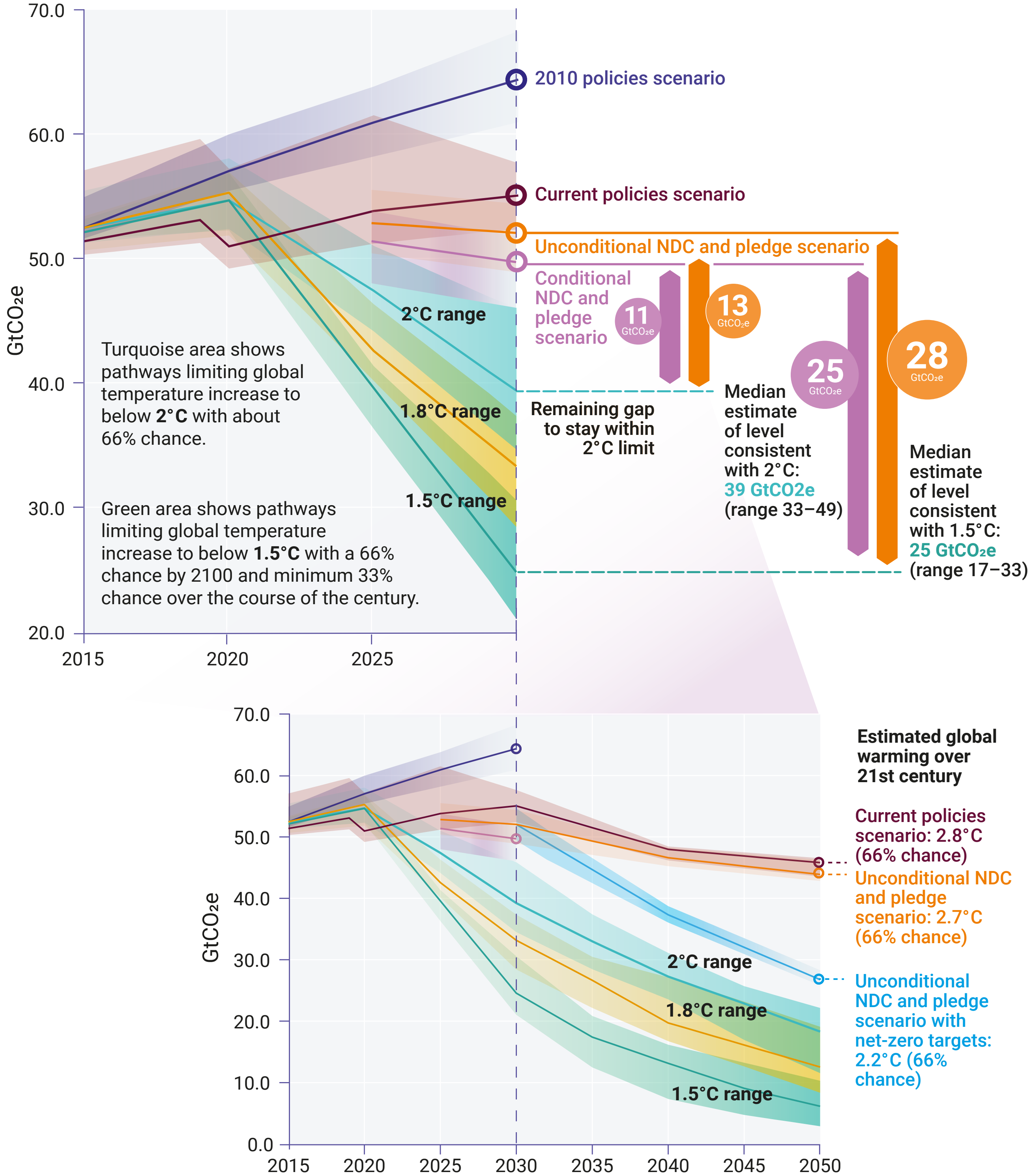


Note: Numbers in bubbles are rounded to nearest $GtCO_2e$.

The current policies scenario is estimated to reduce global GHG emissions in 2030 to about 55 $GtCO_2e$ (52–58), which is 9 $GtCO_2e$ lower than in the year 2010 policies scenario. It is also 4 $GtCO_2e$ lower than the median estimate of the current policies scenario of the 2020 UNEP Emissions Gap Report. The implementation gap, which is the difference between emissions expected under the current policies scenario and those needed to achieve the NDCs and announced reduction pledges, is estimated to be 3 $GtCO_2e$ and 5 $GtCO_2e$ for the unconditional and conditional NDCs and pledge scenarios respectively.

Figure 4.2 illustrates the emissions gap in 2030, highlighting that while the new and updated NDCs together with announced mitigation pledges narrow the gap slightly compared to previous NDCs, they are highly insufficient to bridge the gap. They take only 7.5 per cent off projected 2030 emissions, compared to earlier unconditional NDCs, whereas 30 per cent is needed for 2°C and 55 per cent is needed for 1.5°C. Figure 4.2 shows that full implementation of unconditional NDCs and announced reduction pledges is estimated to result in a gap to a 1.5°C pathway of 28 $GtCO_2e$ (range: 25–30). This is about 4 $GtCO_2e$ lower than the gap assessed in the 2020 report (United Nations Environment Programme [UNEP] 2020), due to the updated NDCs and announced reduction pledges. If the conditional NDCs and announced reduction pledges are also fully implemented, the emissions gap is further reduced by about 3 $GtCO_2e$. The emissions gap between unconditional NDCs and announced reduction pledges and below 2°C pathways is about 13 $GtCO_2e$ (range: 10–16 $GtCO_2e$), which is about 2 $GtCO_2e$ lower than last year. While NDC and announced mitigation pledges reduce global emissions by about 4 $GtCO_2e$ compared with previous NDCs, the updated 2°C scenario estimate for 2030 is about 2 $GtCO_2e$ lower than in previous Emissions Gap Reports (section 4.2.3), which means that the gap is only reduced by about 2 $GtCO_2e$.

Figure 4.2. Global greenhouse gas emissions under different scenarios and the emissions gap in 2030 (median estimate and tenth to ninetieth percentile range)

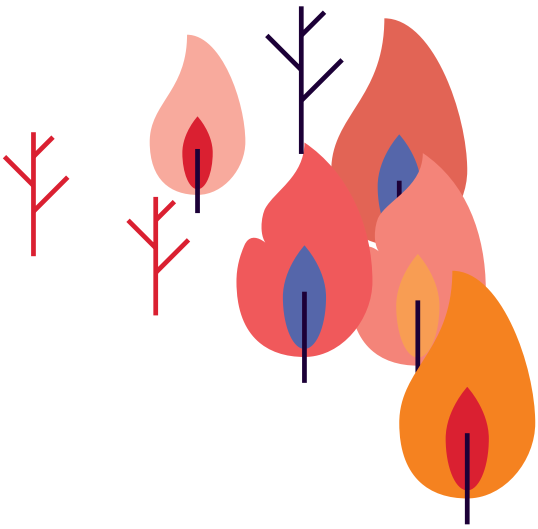


4.4 Temperature implications of the emissions gap

Neither current policies nor the latest NDCs and announced pledges are consistent with limiting warming to the goal of the Paris Agreement. To understand how far off the mark current policies and NDCs are, estimated emissions for the year 2030 for each of these scenarios are projected out to 2100, and their climate outcomes assessed with a climate model (see box 4.1). This approach assumes a continuation of climate action beyond 2030 without additional strengthening. Extrapolations until the end of the century are inherently uncertain and subject to scenario assumptions such as the level at which climate action continues or technology costs.

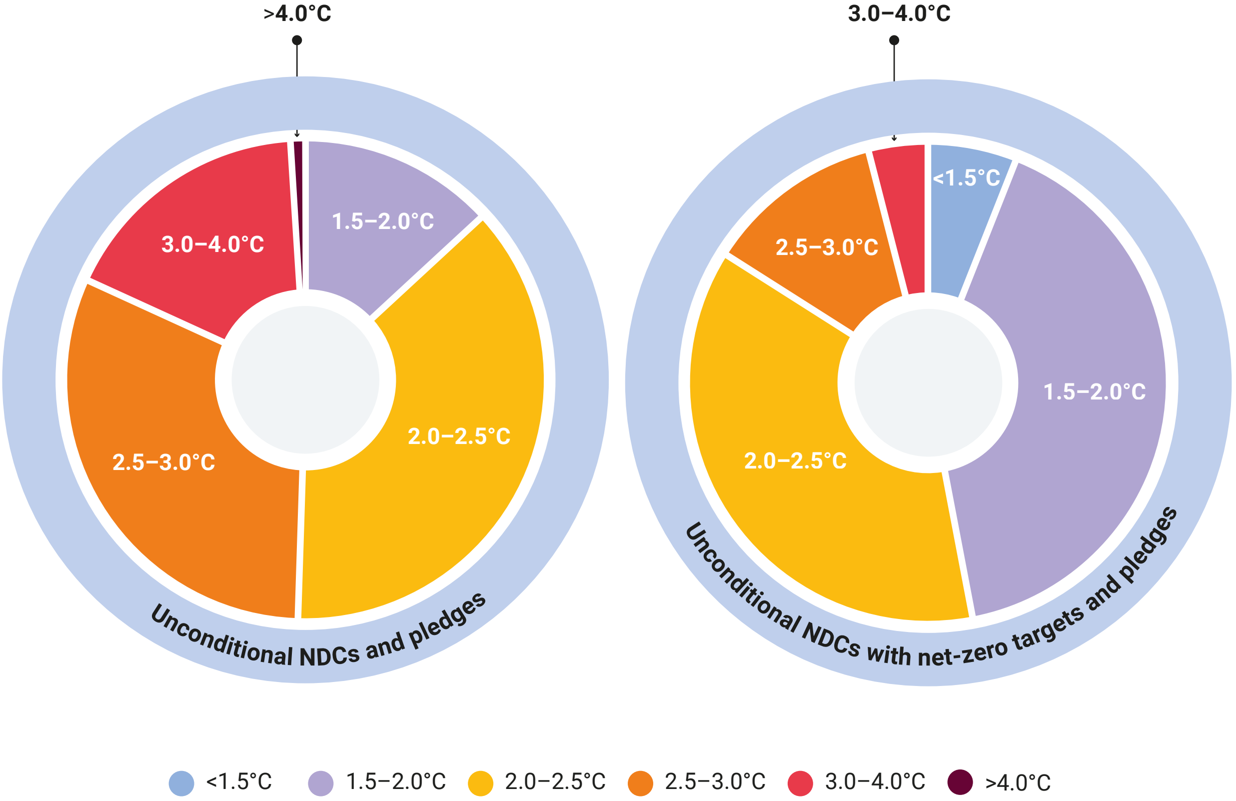
This year, the method to extend emissions to 2100 and the climate model set up used was updated based on improved methods and the latest climate assessment of IPCC AR6 Working Group I. These updates alone result in temperature projections that are about 0.2°C lower than in previous Emissions Gap Reports, which should be factored in when comparing the results below with previous estimates. A continuation of the effort implied by the latest unconditional NDCs and announced pledges is at present estimated to result in warming of about 2.7°C (range: 2.2–3.2°C) with a 66 per cent chance.[9] This implies a 50 per cent chance that warming is kept to 2.5°C (range: 2.0–2.9°C) by the end of the century and a 90 per cent chance that it is kept to 3.3°C (range: 2.7–3.9°C). A continuation of conditional NDCs and announced pledges lowers these estimates by about 0.1°C to 2.6°C (2.1–3.1°C), 2.4°C (1.9–2.8°C) and 3.2°C (2.6–3.8°C), respectively. By contrast, a continuation of current policies, which are insufficient to meet the 2030 pledges, increase the estimates by about 0.1°C to 2.8°C (range 2.3–3.3°C), 2.6°C (range 2.1–3.0°C) and 3.4°C (range 2.8–3.9°C), respectively.

Net-zero pledges, which have been announced by many countries (chapter 3), further lower these temperature estimates markedly by about 0.5°C, if fully implemented. Sixty-six per cent, 50 per cent and 90 per cent percentile global warming projections of pathways assuming unconditional NDCs and net-zero targets would then become 2.2°C (2.0–2.5°C), 2.0°C (1.8–2.3°C), and 2.7°C (2.3–3.1°C), respectively. Even with the implementation of current NDCs and all net-zero targets, there is still more than a 15 per cent chance that global warming will exceed 2.5°C by the end of the century, and a just short of 5 per cent chance that it will exceed 3°C (figure 4.3). Finally, these estimated improvements from net-zero targets should also be caveated by the fact that in many cases, current NDCs do not yet set countries' emissions on a direct path towards reaching longer-term net-zero targets (see chapter 3).



9 This range reflects the uncertainty due to extrapolation of GHG emissions after the year 2030 and is given for the central estimate of 2030 emissions implied by current policies, NDCs and/or other pledges. Taking the higher or lower end of the range surrounding the 2030 emissions estimates would lead to an additional increase or decrease in the temperature projections by about 0.1°C, respectively. Geophysical uncertainties in the climate response are reflected by the estimates for different warming percentiles (50 per cent, 66 per cent and 90 per cent).

Figure 4.3. Range of global warming outcomes projected if unconditional nationally determined contributions and announced pledges continue (left) and if additionally net-zero targets announced by countries are achieved (right)



Note: See box 4.1 for background.

Box 4.1. Estimating global warming implications of NDCs

A variety of methods exist to extend near-term emissions until the end of the century (Gütschow *et al.* 2018). We first estimate the global carbon price implied by the NDC emissions reductions in 2030 from a no-policies baseline. Here, we use the marker quantification of the second Shared Socioeconomic Pathway, called SSP2, which assumes a continuation of historical socioeconomic dynamics (Fricko *et al.* 2017; Riahi *et al.* 2017), to estimate the relationship between emission reductions and implied carbon prices in 2030. Subsequently, the carbon price implied by the global NDC reductions (e.g. globally about US20_{2010}$ in 2030 for unconditional NDCs) is extended out until the end of the century by applying the same annual growth rate as for projected global gross domestic product (GDP) under SSP2.

Based on the relationship between implied carbon prices and global GHG emissions levels over the course of the century, an emissions trajectory is estimated and divided into its constituting gases (Lamboll *et al.* 2020). Subsequently, the global warming outcome of each pathway is assessed with the reduced-complexity carbon-cycle and climate model MAGICC (Meinshausen *et al.* 2011) in a set up that captures the uncertainties in radiative forcing as well as climate and carbon-cycle response (Nicholls *et al.* 2021) as assessed in cross-chapter box 7.1 of the IPCC AR6 (Forster *et al.* 2021). Countries' net-zero targets, described and assessed in chapter 3, further bring down emissions projections over the course of this century (Höhne *et al.* 2021). The impact of this strengthening of climate action after 2030 is also estimated.

This approach is an update compared to previous reports, both in terms of the method used to extend emissions to 2100 and the climate model set up used. If the NDC estimates of this report are assessed using last year's methods, the temperature projections for unconditional NDCs would be about 0.2°C higher than this year's estimates.