Additional information on domestic mitigation measures

This addendum to the 2026 NDC synthesis report provides additional information on domestic mitigation measures synthesized from 127 new nationally determined contributions communicated by 154 Parties to the Paris Agreement and recorded in the registry of nationally determined contributions between 1 January 2024 and 31 August 2026.

Contents

		Page
Abbreviations and acronyms		3
I.	Introduction	4
II.	Emissions, domestic mitigation measures and quantitative mitigation targets for priority areas	4
III.	Feasible, effective and low-cost mitigation options in priority areas	6
	A. Feasible, effective and low-cost mitigation options in 2030	6
	B. Feasible, effective and low-cost mitigation options in 2035	8
IV.	Global efforts and mitigation options covered in recent decisions	11
	A. Tripling renewable energy capacity globally by 2030	12
	B. Doubling the global average annual rate of energy efficiency improvements by 2030	15
	C. Accelerating efforts towards the phase-down of unabated coal power	17
	D. Accelerating efforts globally towards net zero emission energy systems, utilizing zero- and low-carbon fuels, well before or by around mid-century	19
	E. Transitioning away from fossil fuels in energy systems, in a just, orderly and equitable manner, accelerating action in this critical decade, so as to achieve net zero by 2050 in keeping with the science	21
	F. Accelerating zero- and low-emission technologies, including, inter alia, renewables, nuclear, abatement and removal technologies such as carbon capture and utilization and storage, particularly in hard-to-abate sectors, and low-carbon hydrogen production	23
	G. Accelerating the substantial reduction of non-carbon-dioxide emissions globally, in particular methane emissions by 2030	30
	H. Accelerating the reduction of emissions from road transport on a range of pathways, including through development of infrastructure and rapid deployment of zero- and low-emission vehicles	34
	I. Phasing out inefficient fossil fuel subsidies that do not address energy poverty or just transitions, as soon as possible	36
	J. Transitional fuels playing a role in facilitating the energy transition while ensuring energy security	37
	K. Transitioning to sustainable lifestyles and sustainable patterns of consumption and production in efforts to address climate change, including through circular economy approaches	37
V.	Status of and trends in domestic mitigation measures relevant to the global efforts and mitigation options covered in recent decisions	38
VI.	Coherence and synergies with development priorities	40

Abbreviations and acronyms

AFOLU	agriculture, forestry and other land use
AR	Assessment Report of the Intergovernmental Panel on Climate Change
BECCS	bioenergy with carbon dioxide capture and storage
CCS	carbon dioxide capture and storage
CCUS	carbon dioxide capture, use and storage
CDR	carbon dioxide removal
CH_4	methane
CMA	Conference of the Parties serving as the meeting of the Parties to the Paris Agreement
CO_2	carbon dioxide
CO_2 eq	carbon dioxide equivalent
DACCS	direct air carbon dioxide capture and storage
GDP	gross domestic product
GHG	greenhouse gas
GWP	global warming potential
IAEA	International Atomic Energy Agency
ICE	internal combustion engine
IEA	International Energy Agency
IPCC	Intergovernmental Panel on Climate Change
IRENA	International Renewable Energy Agency
LT-LEDS	long-term low-emission development strategy(ies)
LDAR	leak detection and repair
N_2O	nitrous oxide
NDC	nationally determined contribution
NZE scenario	Net Zero Emissions by 2050 scenario
SDG	Sustainable Development Goal
UNEP	United Nations Environment Programme

I. Introduction

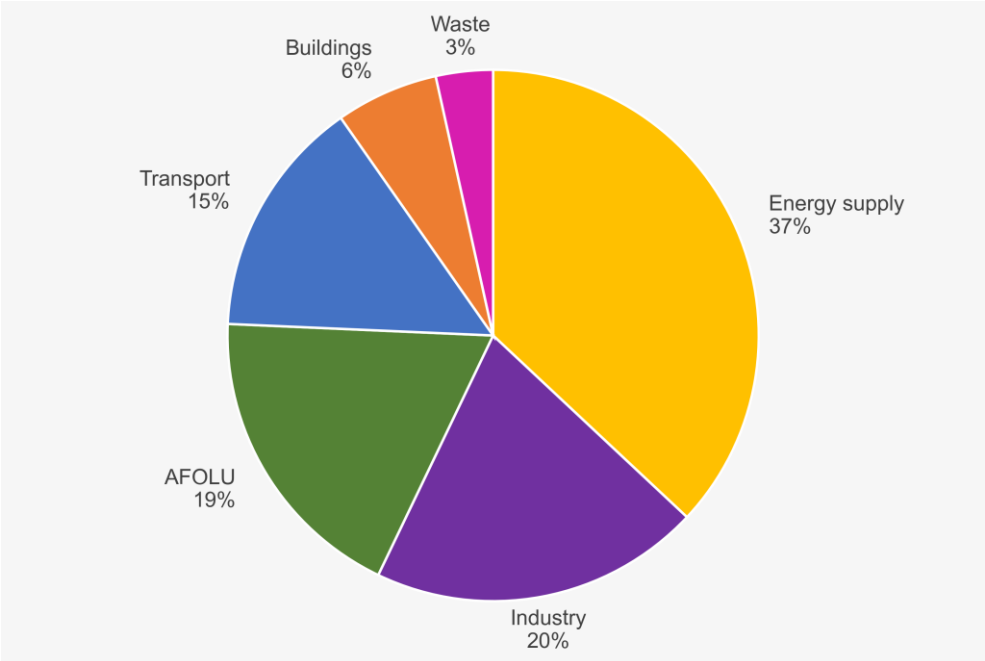
1. Under Article 4, paragraph 2, of the Paris Agreement, Parties shall pursue domestic mitigation measures with the aim of achieving the objectives of their NDCs. CMA 5 emphasized the urgent need for accelerated implementation of domestic mitigation measures.[1]

2. In this report, domestic mitigation measures refer to specific domestic policies and actions in NDCs that contribute to achieving mitigation objectives identified in NDCs, including adaptation actions and economic diversification plans with mitigation co-benefits.[2]

II. Emissions, domestic mitigation measures and quantitative mitigation targets for priority areas

3. A total of 99 per cent of Parties (the same share as in the previous NDCs) outlined in their new NDCs domestic mitigation measures as key instruments for achieving mitigation targets for their NDCs and/or specific priority areas, including energy supply,[3] transport, buildings, industry, AFOLU and waste. Specifically, Parties communicated measures most frequently in the priority area of energy supply, followed by AFOLU and transport (see Table 1). These three priority areas together are estimated to account for about 70 percent of global GHG emissions in 2024 (see Figure **1**).[4]

Figure 1
Estimated share of global greenhouse gas emissions across priority areas in 2024



[1] Decision 1/CMA.5, para. 31.
[2] Parties are not required to communicate domestic mitigation measures in their NDCs, as indicated in paragraph 1 above. Therefore, this report may not cover all such measures by Parties.
[3] Energy supply covers emissions from generating energy such as electricity and heat, as well as fugitive emissions from fuels. Industry includes emissions from fuel use in industry, industrial process emissions and emissions from product use. For the scopes of emissions covered by the priority areas, see document FCCC/PA/CMA/2021/8/Add.2.
[4] Shares of emissions across priority areas were estimated on the basis of data from UNEP. 2025. *Emissions Gap Report 2025: Off target – Continued collective inaction puts global temperature goal at risk - Appendices.* Nairobi: UNEP. Available at https://wedocs.unep.org/items/6010ed5d-90eb-4994-8156-7e95c9fdd9ce.

4. A total of 58 per cent of Parties (the same share as in the previous NDCs) communicated in their new NDCs domestic mitigation measures aimed at achieving fully unconditional mitigation targets, whereas 68 per cent (up from 64 per cent in the previous NDCs) included measures aimed at achieving fully or partially conditional mitigation targets (see Table 1).[5] Measures aimed at achieving fully or partially conditional mitigation targets were most frequently identified by Parties in relation to energy supply, followed by cross-cutting or other, and transport. Compared with the previous NDCs, the share of Parties reporting measures aimed at achieving fully or partially conditional mitigation targets increased across all priority areas, with the largest increases observed for cross-cutting or other (by 18 percentage points), followed by AFOLU (by 16 percentage points) and industry and waste (by 10 percentage points respectively).

Table 1
Conditionality of measures for priority areas in nationally determined contributions by share of Parties

Priority area	*Share of Parties reporting measures (%)*	*Share of Parties reporting measures for fully or partially conditional targets (%)*	*Share of Parties reporting measures for fully unconditional targets (%)*
Energy supply	96	66	42
Transport	92	60	44
Buildings	88	56	42
Industry	82	48	36
AFOLU	95	57	35
Waste	87	56	38
Crosscutting/other	95	62	44
All	99	68	58

Notes: (1) The shares reflect measures included in the Parties' new NDCs that are aimed at achieving either 2030 or 2035 mitigation targets; (2) if a Party communicated more than one measure for a mitigation option (e.g. three different measures for solar energy), this was counted as one Party communicating measures for that option.

5. A total of 94 per cent of Parties (up from 86 per cent in the previous NDCs) communicated one or more quantitative mitigation targets specific to priority areas or sub-areas. These targets support and underpin Parties' overall mitigation targets, enhancing clarity in terms of how the overall targets will be implemented and sending clear signals to the private sector to encourage investment and innovation in low-emission technologies and practices in the priority areas or sub-areas. Such targets were communicated most frequently for energy supply (86 per cent of Parties), followed by AFOLU (67 per cent), cross-cutting or other (67 per cent) and transport (64 per cent), while they were much less frequently indicated in the other priority areas (13–30 per cent). Renewable energy generation targets were the most frequently communicated quantitative targets specific to sub-areas (82 per cent of Parties).

6. A total of 49 per cent of Parties quantified mitigation targets or mitigation potential for all, some or a few of the domestic mitigation measures in their new NDCs. Of these Parties, 24 per cent, accounting for 5.8 per cent of global GHG emissions in 2024 excluding land use, land-use change and forestry,[6] reported annual mitigation targets or potential for 2035, while 5 per cent communicated cumulative mitigation targets or potential up until 2035

[5] Domestic mitigation measures aimed at achieving fully or partially conditional mitigation targets include those targeting fully conditional targets and those targeting both unconditional and conditional targets. The sum of the shares of Parties reporting measures aimed at achieving fully unconditional and fully or partially conditional mitigation targets exceeds 100 per cent. This exceedance arises because some Parties that communicated NDCs with both unconditional and conditional mitigation targets indicated multiple conditionalities of measures for a single mitigation option (i.e. measures for fully conditional, fully unconditional, and/or both unconditional and conditional targets). Of the 154 Parties that submitted new NDCs, 59 communicated NDCs with both unconditional and conditional mitigation targets.

[6] Estimated on the basis of data from Gütschow, J, Busch, D, Pflüger, M. 2025. *The PRIMAP-hist national historical emissions time series v2.7. (1750-2024)*. Zenodo, available at https://zenodo.org/records/17090760.

and 20 per cent included annual mitigation targets or potential for other years. These figures suggest that the quantification of mitigation targets or potential for individual mitigation measures remains much less common than that of the mitigation targets specific to priority areas or sub-areas. Such quantification can not only help underpin Parties' overall or priority-area-specific mitigation targets, but can also help Parties to prioritize cost-effective measures for achieving them, as well as provide donors and investors with concrete metrics for assessing investment opportunities.

III. Feasible, effective and low-cost mitigation options in priority areas

7. CMA7 reiterated its resolve to pursue efforts to limit the temperature increase to 1.5 °C to limit both the magnitude and the duration of any temperature overshoot.[7] According to the Synthesis Report of the AR6,[8] transitioning towards net zero CO_2 emissions faster and reducing non-CO_2 emissions such as CH_4 more rapidly would limit peak warming levels and reduce the requirement for net negative CO_2 emissions, thereby reducing feasibility and sustainability concerns, and social and environmental risks associated with CDR deployment at large scales.[9]

8. CMA 5 noted that feasible, effective and low-cost mitigation options are already available in all sectors to keep the 1.5 ºC temperature goal within reach in this critical decade with the necessary cooperation on technologies and support. Further, it welcomed that over the past decade mitigation technologies have become increasingly available, and that the unit costs of several low-emission technologies have fallen continuously, notably wind power and solar power and electricity storage, while recognizing the need to increase the affordability and accessibility of such technologies.[10]

A. Feasible, effective and low-cost mitigation options in 2030

9. According to the contribution of Working Group III to the AR6[11], mitigation options costing up to USD 100/t CO_2 eq could deliver a net mitigation potential of 31–44 Gt CO_2 eq/year by 2030, with options costing below USD 20/t CO_2 eq accounting for over 50 per cent of this net mitigation potential.[12] Many of these mitigation options have been assessed as technically viable and publicly supported. Parties reported measures for such feasible, effective and low-cost mitigation options to support their 2030 targets in their new and/or previous NDCs (see Figure **2**).

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[7] Decision 1/CMA.7, para 7.

[8] IPCC. 2023. *Climate Change 2023: Synthesis Report. Contribution of Working Groups I, II and III to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change*. Core Writing Team, H Lee and J Romero (eds.). Geneva: IPCC. Available at https://www.ipcc.ch/report/ar6/syr/. The report states that achieving and sustaining net negative global CO_2 emissions, with annual rates of CDR greater than residual CO_2 emissions, would gradually reduce the warming level again.

[9] See footnote 83 for examples of concerns and risks associated with CDR deployment at large scales.

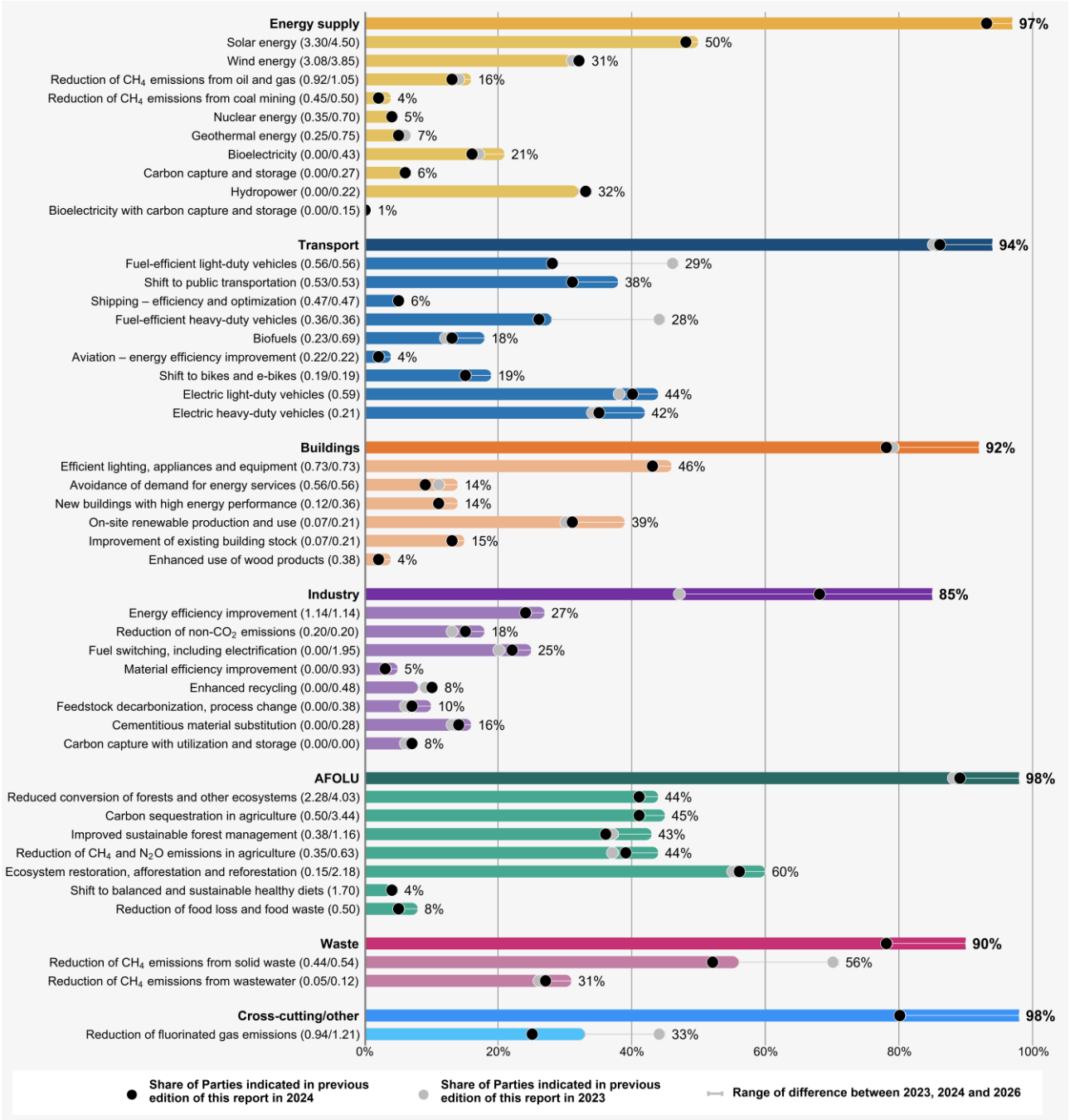
[10] Decision 1/CMA.5, paras. 16(c) and 30.

[11] IPCC. 2022. *Climate Change 2022: Mitigation of Climate Change. Contribution of Working Group III to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change*. PR Shukla, J Skea, R Slade, et al. (eds.). Cambridge and New York: Cambridge University Press. Available at https://www.ipcc.ch/report/ar6/wg3/. This report projects that pathways limiting warming to 1.5 °C with high overshoot require global GHG emissions to fall by 23 per cent by 2030, 55 per cent by 2040 and 75 per cent by 2050 relative to 2019 levels, with CO_2 emissions reaching net zero by 2055. A high overshoot is defined as temporarily exceeding 1.5 °C global warming by 0.1–0.3 °C for up to several decades.

[12] The contribution of Working Group III to the AR6 presents net mitigation potential as the sum of reduced emissions and/or enhanced sinks compared with current-policy scenarios for 2015–2019. It refers to the costs as the net lifetime discounted costs of avoided GHG emissions relative to a reference technology. The costs of some mitigation options in Figure 2, such as efficient lighting, appliances and equipment and fuel-efficient light-duty vehicles, are estimated to be less than zero. Negative costs indicate that lifetime monetary revenues exceed lifetime monetary costs.

Figure 2

Shares of Parties that referred to domestic mitigation measures for priority areas and mitigation options with high mitigation potential costing below USD 20/t CO_2 eq or up to USD 100/t CO_2 eq in 2030 in their nationally determined contributions



Notes: (1) The shares reflect measures included in the Parties' new and/or previous NDCs that are aimed at achieving 2030 mitigation targets. See footnote 20 below for the definition of new NDCs; (2) if a Party communicated more than one measure for a mitigation option (e.g. three different measures for solar energy), this was counted as one Party communicating measures for that option; (3) the estimated net mitigation potential (in Gt CO_2 eq/year) for each option is presented as a pair of values: the first for options costing below USD 20/t CO_2 eq and the second for options costing up to USD 100/t CO_2 eq in 2030. For example, the values for solar energy are "3.30/4.50". These estimates are based on data from the contribution of Working Group III to the AR6, which states that the mitigation potentials and costs of individual technologies in a specific context or region may differ greatly from the provided estimates and are associated with uncertainties; (4) according to the contribution of Working Group III to the AR6, estimating the costs of mitigation potentials was not possible for options with only one mitigation potential listed (e.g. electric light-duty vehicles), owing to a high variation in or lack of data; (5) the range of difference excludes 2025, for which new and/or previous NDCs from only 64 Parties were considered.

Table 2
Conditionality of measures for mitigation options with the highest estimated mitigation potential costing below USD 20/t CO_2 eq or up to USD 100/t CO_2 eq in 2030 in nationally determined contributions by share of Parties

Mitigation option	*Share of Parties reporting measures (%)*	*Share of Parties reporting measures for fully or partially conditional targets (%)*	*Share of Parties reporting measures for fully unconditional targets (%)*
Solar energy	50	41	18
Wind energy	31	24	9
Reduced conversion of forests and other ecosystems	44	30	15
Energy efficiency improvements in industry	27	19	10
Reduction of fluorinated gas emissions	33	17	10
Reduction of CH_4 emissions from oil and gas	16	10	8

Notes: As notes (1) and (2) to Figure 2.

10. Of the 43 feasible, effective and low-cost mitigation options in 2030 (see Figure **2**), more than two thirds (30 options) were referred to by a larger share of Parties than in the previous NDCs assessed in the 2023 edition of this report. The largest increase was observed for on-site production and use of renewables in buildings (by 8 percentage points), followed by electric heavy-duty vehicles (by 7 percentage points), reducing CH_4 and N_2O emissions in agriculture and shifting to public transportation (by 6 percentage points respectively) and electric light-duty vehicles and fuel switching in industry, including electrification (by 5 percentage points respectively).

11. Similarly, over three quarters of the 43 mitigation options (33 options) were referred to by a larger share of Parties than in the previous NDCs assessed in the 2024 edition of this report. The largest increase was observed for on-site production and use of renewables in buildings (by 7 percentage points), followed by electric heavy-duty vehicles, shifting to public transportation, reducing fluorinated gas emissions, and improved sustainable forest management (by 6 percentage points respectively) and bioelectricity (by 5 percentage points). Together with the findings reported in paragraph 10 above, these increases may suggest a continued and growing emphasis on renewable energy deployment, electrification and a shift to public transportation.

12. Of the 43 mitigation options, Parties most frequently communicated in their NDCs measures aimed at achieving fully or partially conditional mitigation targets in relation to ecosystem restoration, afforestation and reforestation (49 per cent of Parties), followed by reducing CH_4 emissions from solid waste (47 per cent), solar energy (41 per cent) and efficient lighting, appliances and equipment (38 per cent). This indicates that Parties have a greater need for support and cooperation in implementing these options.

13. Of the 43 options, 6 have the highest mitigation potential, each exceeding 0.9 Gt CO_2 eq/year (see Table **2**). For these options, measures aimed at achieving fully or partially conditional targets were most frequently reported in their NDCs in relation to solar energy, the reduced conversion of forests and other ecosystems and wind energy. This points to a greater need for support and cooperation in implementing these options.

B. Feasible, effective and low-cost mitigation options in 2035

14. According to the UNEP *Bridging the gap* report,[13] if fully implemented, mitigation options costing up to USD 200/t CO_2 eq could deliver a net mitigation potential of 41 (36–

[13] UNEP Copenhagen Climate Centre and Common Futures. 2024. *Bridging the gap: Sectoral greenhouse gas mitigation potentials in 2035*. Copenhagen: UNEP Copenhagen Climate Centre. Available at https://unepccc.org/publications/bridging-the-gap-sectoral-greenhouse-gas-mitigation-potentials-in-2035/.

46) Gt CO_2 eq/year by 2035.[14] Options costing below USD 100/t CO_2 eq[15] account for about 90 per cent of this mitigation potential, while those costing below USD 20/t CO_2 eq account for about half.[16] Similar to the feasible, effective and low-cost mitigation options in 2030, many of the 2035 options have been assessed as technically viable. Parties reported measures for such options to support their 2035 targets in their new NDCs (see Figure **3**).

15. Of the 46 feasible, effective and low-cost mitigation options in 2035, Parties most frequently communicated in their new NDCs measures aimed at achieving fully or partially conditional mitigation targets in relation to afforestation and reforestation (48 per cent of Parties) and reducing CH_4 emissions from solid waste (47 per cent), followed by solar energy (43 per cent), reducing CH_4 and N_2O emissions in agriculture (41 per cent), electric light- and heavy-duty vehicles (40 per cent respectively) and efficient lighting, appliances and equipment (36 percent). These findings suggest that Parties have a greater need for support and cooperation in implementing these options and are broadly consistent with the findings for 2030 presented in paragraph 12 above.

16. Of the 46 options, 6 have the highest mitigation potential, each exceeding 2 Gt CO_2 eq/year (see Table **3**). For these options, measures aimed at achieving fully or partially conditional targets were most frequently reported in new NDCs in relation to afforestation and reforestation and solar energy, indicating a comparatively greater need for support and cooperation in implementing these options. This finding is also consistent with that for 2030 presented in paragraph 13 above.

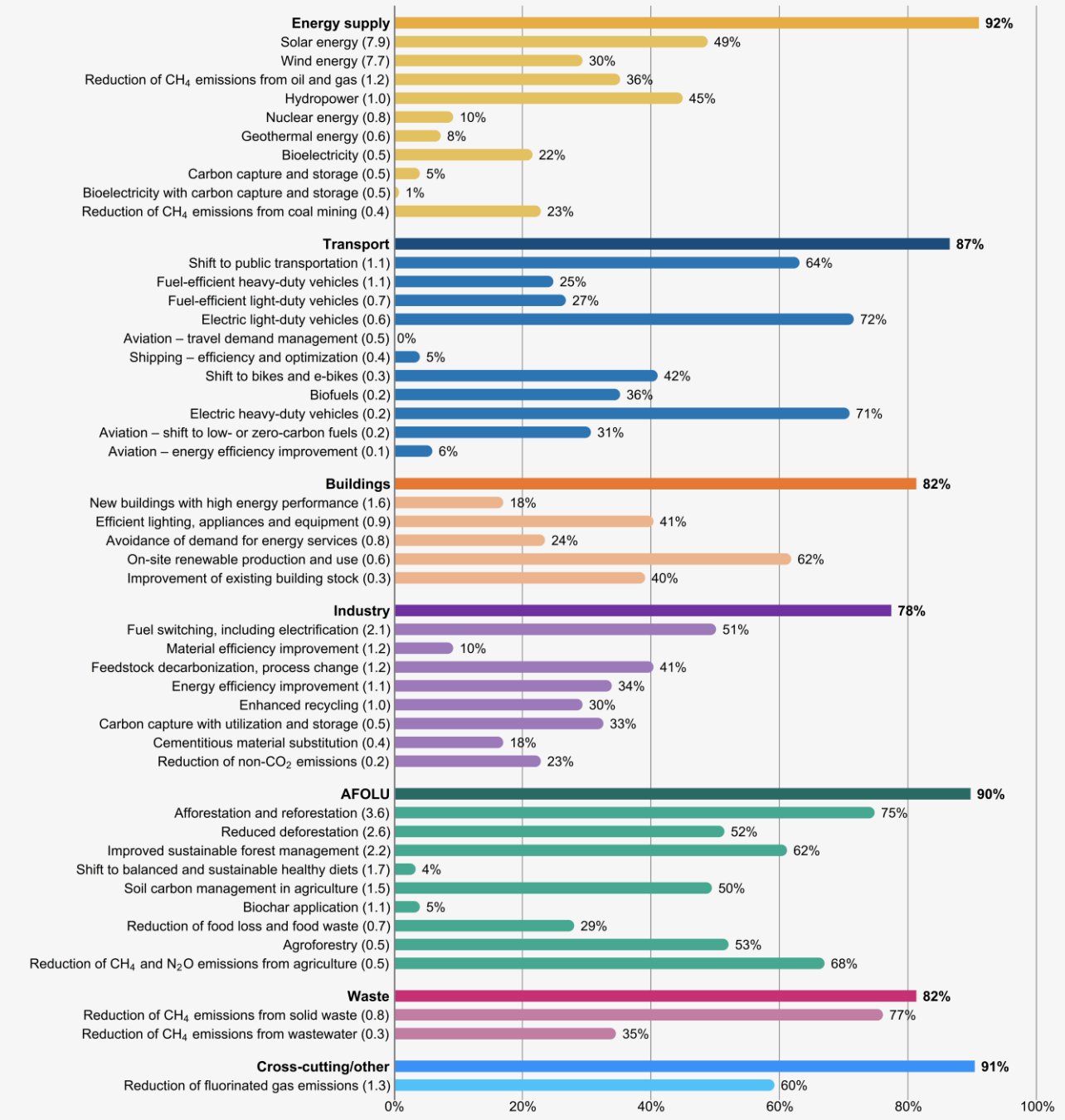
[14] Similar to the contribution of Working Group III to the AR6, the UNEP *Bridging the gap* report presents the net mitigation potential as the sum of reduced emissions and/or removals beyond the current-policy baseline reflecting climate policies in place. This estimated net mitigation potential assumes actions beginning in 2020.

[15] The cost includes internal monetary costs and savings, such as costs of equipment and benefits due to saved energy, but excludes external costs and benefits, such as climate change impacts.

[16] While extensive data are available for the mitigation potential and costs by 2030, research for 2035 remains limited. The UNEP *Bridging the gap* report notes that a deeper analysis of mitigation costs is beyond the scope of the assessment.

Figure 3

Shares of Parties that referred to domestic mitigation measures for priority areas and mitigation options with high mitigation potential costing up to USD 200/t CO_2 eq in 2035 in their nationally determined contributions



Notes: (1) The shares reflect measures included in the Parties' new NDCs that are aimed at achieving 2035 mitigation targets; (2) as notes (2) to Figure 2; (3) the estimated net mitigation potential (in Gt CO_2 eq/year) of each option is presented in parentheses, for example "(7.9)" in the case of solar energy. These estimates are based on data from the UNEP *Bridging the gap* report and are associated with uncertainties.

Table 3
Conditionality of measures for mitigation options with the highest estimated mitigation potential costing up to USD 200/t CO2 eq in 2035 in nationally determined contributions by share of Parties

Mitigation option	*Share of Parties reporting measures (%)*	*Share of Parties reporting measures for fully or partially conditional targets (%)*	*Share of Parties reporting measures for fully unconditional targets (%)*
Solar energy	49	43	12
Wind energy	30	26	5
Afforestation and reforestation	75	48	32
Reduced deforestation	52	31	25
Improved sustainable forest management	62	36	29
Fuel switching in industry, including electrification	51	23	29

Notes: (1) As note (1) to Figure **3**; (2) as note (2) to Figure 2.

IV. Global efforts and mitigation options covered in recent decisions

17. CMA5 recognized the need for deep, rapid and sustained reductions in GHG emissions in line with 1.5 °C pathways and called on Parties to contribute to the global efforts, in a nationally determined manner, taking into account the Paris Agreement and their different national circumstances, pathways and approaches. It also recognized the role of transitional fuels in facilitating the energy transition while ensuring energy security, and encouraged the efforts to transition to sustainable lifestyles and sustainable patterns of consumption and production, including through circular economy approaches.[17]

18. CMA7 reiterated its resolve to pursue efforts to limit the temperature increase to 1.5 °C to limit both the magnitude and the duration of any temperature overshoot.[18]

19. Parties reported in their NDCs measures and quantitative targets relevant to the global efforts[19] and mitigation options covered in decisions 1/CMA.3, 1/CMA.4 and 1/CMA.5, as outlined in chapter IV.A–K below. Taking into account contributions to the efforts and options covered in all these CMA decisions, including those with the 2030 timeline (e.g. tripling renewable energy capacity globally by 2030) and focus on this critical decade (e.g. transitioning away from fossil fuels in energy systems, in a just, orderly and equitable manner, accelerating action in this critical decade), this chapter and chapter V below consider measures and quantitative targets reported in both Parties' new and previous NDCs.[20]

20. Some of the global efforts and options are addressed fully or in part in the main report (FCCC/PA/CMA/2026/9), including in sections on forests, the ocean, just transition and mitigation co-benefits resulting from adaptation action and/or economic diversification plans.

[17] Decision 1/CMA.5, paras. 28, 29 and 36.
[18] Decision 1/CMA.7, para 7.
[19] The indicators used to track the progress of ambitions for the global efforts do not preclude the use of other relevant indicators. The indicators were selected on the basis of the frequency with which they are mentioned in the submitted NDCs as well as the availability of historical data and scenarios consistent with 1.5 °C pathways with high overshoot.
[20] New NDCs are defined as those submitted between 1 January 2024 and 31 August 2026, as stated in the main report (FCCC/PA/CMA/2026/9). Where new NDCs do not include 2030 mitigation targets, measures and quantitative targets reported in the previous NDCs of the Parties in question were considered. A more comprehensive estimate of the aggregated targets referred to in this chapter will be possible once new NDCs have been submitted by all Parties. The 154 Parties included in the analysis accounted for 90 per cent of total energy supply from fossil fuels for all Parties in 2024.

A. Tripling renewable energy capacity globally by 2030

21. CMA 7 acknowledged that significant global progress has been made over the last decade, including rapid advancements in and declining costs of technologies and record levels of global renewable energy capacity.[21]

22. Between 2015 and 2025, the estimated global average costs of technologies fell by 67 per cent for solar power, 57 per cent for onshore wind power, 44 per cent for offshore wind power, and 91 per cent for battery energy storage.[22] Consequently, increasing renewable energy offers significant mitigation potential at low costs. As shown in Figure **2**, in 2030, solar energy could reduce emissions by 3.30 Gt CO_2 eq/year, and wind energy by 3.08 Gt CO_2 eq/year, at costs below USD 20/t CO_2 eq. Notably, 82 per cent of the mitigation potential for solar energy (2.70 Gt CO_2 eq/year) and 75 per cent for wind energy (2.31 Gt CO_2 eq/year) is achievable at negative cost.[23] At costs below USD 100/t CO_2 eq, the mitigation potential increases to 4.50 Gt CO_2 eq/year for solar energy and to 3.85 Gt CO_2 eq/year for wind energy. As shown in Figure **3**, in 2035, the potential reaches 7.90 Gt CO_2 eq/year for solar energy and 7.70 Gt CO_2 eq/year for wind energy at costs below USD 200/t CO_2 eq.[24]

23. Of the 68 per cent of Parties that highlighted the contribution of domestic mitigation measures to energy security,[25] over two fifths (29 per cent of Parties) explicitly indicated renewable energy as enhancing energy security. Renewable energy is increasingly recognized not only as the lowest-cost source of new electricity generation, but also as a key supply-side driver of energy security that replaces imported fuels for electricity generation with domestic sources and thereby lowers expenditure on fuel imports and imported fuel subsidies, reduces fuel price volatility and diversifies the electricity mix.[26]

24. A total of 94 per cent of Parties, accounting for 77 per cent of global electricity generation from fossil fuels in 2024,[27] indicated measures to increase renewable energy in their NDCs—an increase from 90 per cent in the previous NDCs assessed in the 2024 edition of this report.

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[21] Decision 1/CMA.7, para 9.

[22] Estimated on the basis of data from IRENA. 2026. *Renewable Power Generation Costs in 2025*. Abu Dhabi: IRENA. Available at https://www.irena.org/Publications/2026/Jul/Renewable-Power-Generation-Costs-in-2025. The report estimates that the global weighted average levelized cost of electricity for solar photovoltaics (USD 44/MWh), onshore wind power (USD 33/MWh) and offshore wind power (USD 78/MWh) in 2025 was below that of the lowest cost fossil fuel fired alternatives, including combined-cycle gas turbines (USD 102/MWh). IRENA also finds that the global average combined cost of co-located solar and storage in 2025 was below USD 60/MWh (IRENA. 2026.*24/7 Renewables. The economics of firm solar and wind*. Abu Dhabi: IRENA. Available at https://www.irena.org/Publications/2026/May/24-7-renewables-The-economics-of-firm-solar-and-wind).

[23] See footnote 12 on the definition of negative cost.

[24] The aggregated net mitigation potential of increasing renewable energy has not been estimated. The contribution of Working Group III to the AR6 states that the mitigation potential in 2030 is assessed independently for each option and cannot necessarily be summed. Similarly, the *UNEP Bridging the gap* report notes that the net mitigation potential of mitigation options in 2035 cannot simply be added together as the options may interact or compete with each other. These considerations also apply to the aggregated net mitigation potential of other global efforts and mitigation options, as applicable.

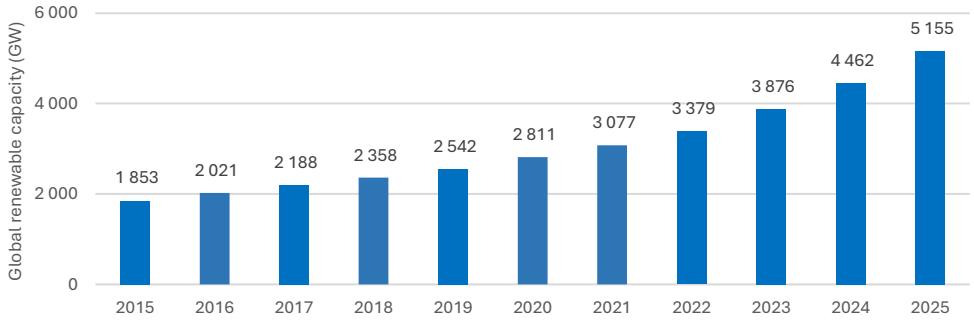
[25] Decision 1/CMA.4, para 13, recognized that the unprecedented global energy crisis underlines the urgency to rapidly transform energy systems to be more secure, reliable, and resilient, including by accelerating clean and just energy transitions to renewable energy during this critical decade of action. Subsequently, decision 1/CMA.7, para. 9. highlighted the economic and social benefits and opportunities of climate action, including improved energy access and security.

[26] The IRENA *Renewable Power Generation Costs in 2025* report estimates that renewable energy avoided 8.4 Gt of CO_2 emissions and saved USD 480 billion in fossil fuel costs in 2025.

[27] Estimated on the basis of data from IEA. 2026. *World Energy Balances*. Paris: IEA. All rights reserved. Available at https://www.iea.org/data-and-statistics/data-product/world-energy-balances; as modified by the secretariat. IEA data used in this report are subject to IEA terms and conditions, available at www.iea.org/terms. Unless otherwise stated, all shares of Parties relating to global electricity generation and total global energy supply in 2024 in this report, including those from fossil fuels, coal and/or oil, are estimated on the basis of the IEA World Energy Balances report.

25. According to the IRENA Renewable Energy Statistics 2026 report,[28] total global renewable power capacity surged to a record 5,155 GW in 2025, which is 2.8 times greater than in 2015 and by 1.5 times greater than in 2022 (see Figure **4**).[29] This represents a 16 per cent increase from 2024, which exceeds the 15 per cent increase recorded between 2023 and 2024 and the five-year average growth rate of 8 per cent per year between 2015 and 2019 prior to the coronavirus disease 2019 pandemic. At this growth rate, total global renewable power capacity is projected to reach 10,615 GW by 2030 and 21,857 GW by 2035.

Figure 4
Global installed renewable power capacity 2015–2025



Notes: See footnote 28 above for the data source.

26. A total of 61 per cent of Parties, accounting for 62 per cent of global electricity generation from fossil fuels in 2024, communicated quantitative targets in their NDCs to increase total or additional[30] installed capacity for renewable power generation by 2030. The aggregated capacity of these quantitative targets is 1,982 GW.[31] Taking existing installed capacity into account for the additional renewable capacity targets by 2030,[32] the aggregated quantitative target for total installed capacity by 2030 is estimated at 2,992 GW (including 1,247 GW directly referenced as a contribution to this global effort) (see Figure **5**). This represents about 58 per cent of the total global installed renewable power capacity in 2025 (5,155 GW), indicating that the quantitative targets reported for this effort remain below the current global level. Of this 2,992 GW, 292 GW (or 10 per cent) was communicated in

[28] IRENA. 2026. *Renewable Energy Statistics 2026*. Abu Dhabi: IRENA. Available at https://www.irena.org/Publications/2026/Jul/Renewable-Energy-Statistics-2026.

[29] (1) IEA. 2025. *World Energy Outlook 2025*. Paris: IEA. All rights reserved. Available at https://www.iea.org/reports/world-energy-outlook-2025. Under the NZE scenario, IEA projects that total global installed renewable power capacity will increase rapidly to 11,600 GW by 2030, 19,601 GW by 2035, 27,003 GW by 2040 and 35,983 GW by 2050 on its 1.5 °C pathway with high overshoot. As a result, the share of renewables in power generation will expand from around one third today to about three quarters by 2035. The NZE scenario anticipates temperatures peaking at around 1.65 °C above pre-industrial levels, recognizing that pathways that limit this overshoot of 1.5 °C to low levels are now out of reach; (2) IRENA. 2026. *Transitioning away from fossil fuels: A roadmap based on renewables, electrification and grid enhancement*. Abu Dhabi: IRENA. Available at https://www.irena.org/Publications/2026/May/Transitioning-away-from-fossil-fuels. Similarly, under its revised 1.5 °C scenario, IRENA projects that total global installed renewable power capacity will increase rapidly to about 12.0 TW by 2030, 18.4 TW by 2035, 25.0 TW by 2040 and 38.2 TW by 2050. These amounts correspond to a share of renewables in power generation of 65 per cent, 78 per cent, 84 per cent and 92 per cent respectively.

[30] Some Parties included targets to develop additional renewable capacity, such as installing an additional 300 MW of large-scale solar photovoltaics by 2030.

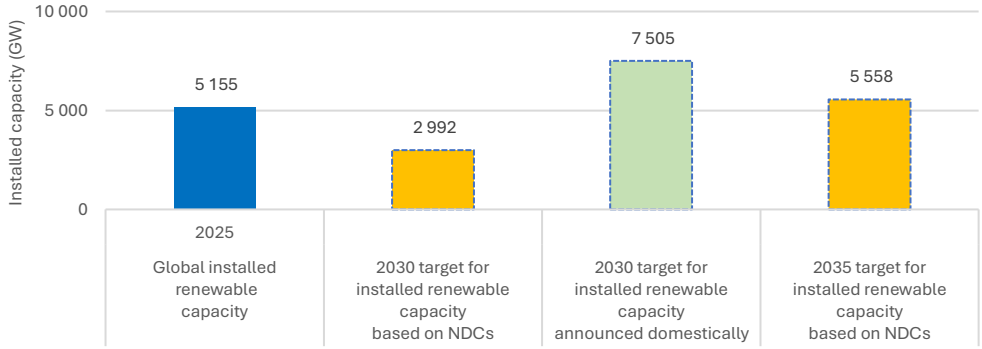
[31] This encompasses pre-2030 targets that fall within the time frame for NDC implementation. Aggregated targets are derived from total renewable capacity targets and additional (technology-specific) renewable capacity targets. Other metrics, such as the share of renewables in total power generation, are not included.

[32] As at 31 August 2026, over 80 per cent of Parties' new NDCs had been submitted in 2024 or 2025, while about 80 per cent of Parties' previous NDCs had been submitted in 2020 or 2021. Therefore, unless otherwise specified in the NDCs, the existing capacity for additional capacity targets is assumed to be the total installed capacity in 2023 for new NDCs, and in 2019 for previous NDCs.

relation to achieving mitigation targets that are fully or partially conditional, highlighting Parties' need for enhanced support and cooperation to effectively implement these targets.

Figure 5

Aggregated targets for installed renewable power capacity for 2030 and 2035 based on nationally determined contributions



Notes: See paragraphs 19 and 26 as well as footnotes 20 and 30–32 above for the methodologies used to estimate the aggregated capacity targets.

27. In its *COP28 Tripling Renewable Capacity Pledge 2025: Update* report,[33] IEA estimates that the total domestically announced commitments for renewable capacity by 2030 amount to 8,355 GW globally. For the 154 Parties that submitted new NDCs, these commitments total 7,505 GW.[34] This figure is about 2.5 times greater than the aggregated capacity target of 2,992 GW based on the NDCs, indicating that the NDCs submitted do not cover all domestic commitments. Some Parties may nationally determine that progress in increasing installed renewable power capacity—along with other contributing factors, such as enhanced international cooperation and support—contribute to a greater potential for accelerated implementation and enhanced ambition of this effort.

28. The deployment of renewable energy is increasingly constrained by geographical distances between renewable energy sources and demand centers, widespread grid connection queues,[35] rising curtailment, the time required to obtain approvals for renewable energy projects, and the variability of renewable energy sources. According to the IEA *World Energy Outlook 2025* report, efforts to extend and modernize electricity grids, expand energy storage capacity and expedite permission processes play a critical role in enabling the tripling of global renewable capacity by 2030 while ensuring electricity security.[36] A total of 70 per cent of Parties indicated measures for grid improvement and 56 per cent for energy storage—a sharp increase from the 51 and 33 per cent respectively in the previous NDCs assessed in the 2024 report.

[33] IEA. 2025. *COP28 Tripling Renewable Capacity Pledge 2025: Update*. Paris: IEA. All rights reserved. Available at https://www.iea.org/reports/cop28-tripling-renewable-capacity-pledge-2025-update.

[34] Estimated on the basis of data from the IEA *COP28 Tripling Renewable Capacity Pledge 2025: Update* report.

[35] In its *Transitioning away from fossil fuels* report, IRENA notes that around 2,500 GW of renewable projects are currently in global grid connection queues, partly owing to lagging investment in grid and grid construction timelines, which are 3–5 times longer than those of renewable energy projects.

[36] The IEA *World Energy Outlook 2025* report projects that, following an 87 per cent rise from 89 GW in 2023 to 166 GW in 2024, stationary battery capacity will grow steeply to 2,885 GW by 2035, 4,120 GW by 2040 and 5,716 GW by 2050 on its 1.5 °C pathway with high overshoot. Transmission and distribution networks are also projected to expand by 36 per cent from 84 million km today to 114 million km by 2035. Similarly, in its *Transitioning away from fossil fuels* report, IRENA projects that, following a 2.5-fold rise from 164 GW in 2024 to 416 GW in 2025, global installed storage capacity will increase sharply to 2,530 GW by 2035 and 6,859 GW by 2050.

B. Doubling the global average annual rate of energy efficiency improvements by 2030

29. Energy efficiency improvements present significant mitigation potential at low costs across priority areas by reducing energy consumption while maintaining the same level of output. For example, in 2030, energy efficiency improvements in industry could reduce emissions by 1.14 Gt CO_2 eq/year and efficient lighting, appliances and equipment by 0.73 Gt CO_2 eq/year, at costs below USD 20/t CO_2 eq (see Figure **2**). Notably, the full mitigation potential of efficient lighting, appliances and equipment is achievable at negative cost. At costs below USD 100/t CO_2 eq, material efficiency improvements could contribute reductions of 0.93 Gt CO_2 eq/year, while new buildings with high-energy performance could reduce emissions by 0.36 Gt CO_2 eq/year. In 2035, the mitigation potential reaches 1.60 Gt CO_2 eq/year for new buildings with high-energy performance, 1.20 Gt CO_2 eq/year for material efficiency improvements, and 0.90 Gt CO_2 eq/year for efficient lighting, appliances and equipment, at costs below USD 200/t CO_2 eq (see Figure **3**).

30. Energy efficiency improvements also provide co-benefits, including enhanced energy security and the alleviation of energy poverty through reduced energy expenditure. A total of 16 per cent of Parties noted in their NDCs that, as a key demand-side driver, energy efficiency improvements strengthen energy security by reducing the volume of fuel imports required to achieve the same level of output and limiting peak electricity demand, with the latter avoiding the need for additional generation capacity and grid reinforcement. One third of these Parties (5 per cent of Parties) also noted the potential of energy efficiency improvements to alleviate energy poverty through lower energy expenditure.

31. A total of 96 per cent of Parties, accounting for 75 per cent of total global energy supply[37] in 2024, indicated measures to improve energy efficiency in their NDCs—an increase from 92 per cent in the previous NDCs assessed in the 2024 report.

32. In addition, 33 per cent of Parties, accounting for 21 per cent of total global energy supply in 2024, included in their NDCs quantitative targets to increase economy-wide energy efficiency improvements by 2030.

33. According to the *Tracking SDG 7: The Energy Progress Report 2026*,[38] global primary energy intensity[39](i.e. the amount of energy used to produce a unit of GDP) declined from 4.2 GJ/USD 1,000 in 2015 to 3.7 GJ/USD 1,000 in 2025. This represents an improvement of approximately 12 per cent, meaning that the same level of GDP can now be produced using substantially less primary energy.

34. On the other hand, the annual rate of improvement in primary energy intensity is estimated to have declined from 2.8 per cent in 2015 and 2.4 per cent in 2022 to approximately 1.8 per cent in 2025 (see Figure **6**).[40] The average annual improvement rate

[37] According to IEA, total energy supply includes all the energy produced in or imported to a country, minus that which is exported or stored. It represents all the energy required to supply end users in the country. Some of these energy sources are used directly while most are transformed into fuels or electricity for final consumption.

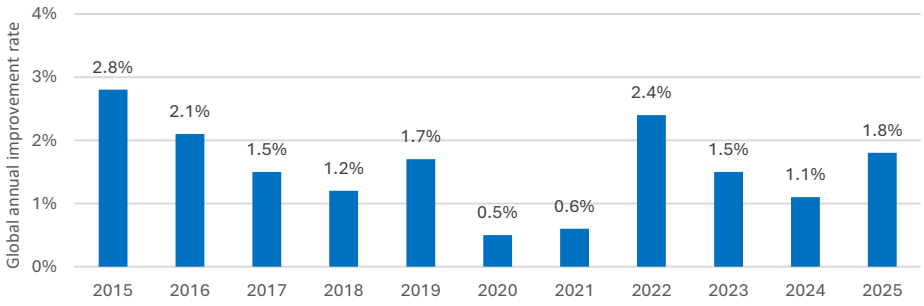
[38] IEA, IRENA, United Nations Statistics Division, World Bank and World Health Organization. 2026. *Tracking SDG 7: The Energy Progress Report 2026*. Washington, D.C.: World Bank. Available at https://www.iea.org/reports/tracking-sdg7-the-energy-progress-report-2026.

[39] Defined as the ratio of total energy supply to GDP (in United States dollars, based on 2021 purchasing power parity). Primary energy intensity, or energy intensity of economy, is identified as the most comprehensive measure of energy efficiency, as it captures all changes that improve the ratio of economic output to energy inputs. For example, between 1990 and 2022, global GDP increased by 2.7 times while total global energy supply grew by 1.7 times, resulting in a sustained improvement in the energy intensity of the global economy over this period. However, as noted in footnote 19 above, using primary energy intensity to track the progress of ambition for this global effort does not preclude the use of any other relevant indicators.

[40] Estimated on the basis of data from the *Tracking SDG 7: The Energy Progress Report 2026*. (1) To achieve SDG target 7.3 of 2.6 per cent average annual improvement in primary energy intensity between 2010 and 2030, the report highlights that the average rate of improvement from 2024 to 2030 needs to accelerate to 4.2 percent annually in response to the slower pace of global progress. (2) In its

between 2022 and 2025 stood at 1.4 per cent, which is below both the five-year average of 1.6 per cent between 2015 and 2019 prior to the coronavirus disease 2019 pandemic and the average of 2.2 per cent between 2010 and 2015. IEA *Energy Efficiency Progress Tracker*[41] indicates that this slower pace of progress reflects resilient energy demand, which grew by an average of 1.4 per cent per year between 2019 and 2025, unchanged from the period between 2010 and 2019, despite average GDP growth slowing from 3.4 per cent to 2.8 per cent between the two periods. This was partly driven by rapid growth in industrial energy consumption and rising electricity demand for cooling during heatwaves.

Figure 6
Global annual rates of improvement in primary energy intensity 2015–2025



Notes: See footnote 38 above for the data source.

35. A total of 5 per cent of Parties, accounting for 4 per cent of total global energy supply in 2024, communicated targets to increase the average annual rate of improvement in primary energy intensity by 2030. The aggregated rate of improvement targets through to 2030 is estimated at 2.4 per cent (see Figure **7**).[42] This is about 1.7 times greater than the average annual improvement rate of 1.4 per cent recorded in both 2015–2025 and 2022–2025. More than half of this 5 per cent of Parties (3 per cent of Parties) reported such targets in relation to achieving mitigation targets that are fully or partially conditional, underscoring Parties' need for enhanced support and cooperation to effectively implement these targets.

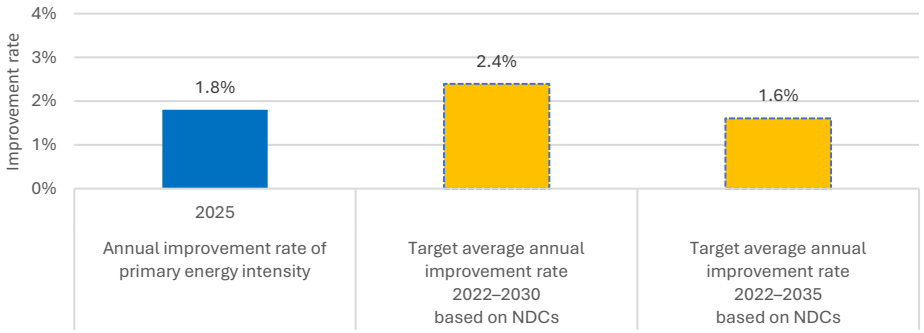
World Energy Outlook 2025 report, IEA projects that global average annual rate of improvement in primary energy intensity will double to 4 per cent through to 2030 and remain at 4 per cent through to 2035 on its 1.5 °C pathway with high overshoot. (3) IRENA. 2026. *Delivering on the UAE Consensus - Tracking progress toward tripling renewable energy capacity and doubling energy efficiency by 2030*. Abu Dhabi: IRENA. Available at https://www.irena.org/Publications/2026/Sep/UAE-Consensus-2030-tripling-renewables-doubling-efficiency. In its *delivering on the UAE consensus report*, IRENA projects that the average annual rate of improvement in primary energy intensity needs to accelerate to 5.6 per cent over 2026–2030, to achieve an average annual improvement rate of 4 per cent through to 2030 in response to the slower pace of progress since 2023.

[41] IEA. 2025. *Energy Efficiency Progress Tracker*. Paris: IEA. All rights reserved. Available at https://www.iea.org/data-and-statistics/data-tools/energy-efficiency-progress-tracker#methodology.

[42] Estimated on the basis of data from the IEA *World Energy Balances* report; the World Bank Group's *World Bank Open Data*, available at https://data.worldbank.org/ (accessed 7 May 2026); the International Monetary Fund's *World Economic Outlook (April 2026)*, available at https://www.imf.org/external/datamapper/datasets/WEO (accessed 7 July 2026); and the United Nations Statistical Division's *The National Accounts Main Aggregates Database*, available at https://unstats.un.org/unsd/snaama/downloads (accessed 27 July 2026).

Figure 7

Aggregated targets for average annual rates of improvements in primary energy intensity from 2022 to 2030 and from 2022 to 2035 based on nationally determined contributions



Notes: (1) See paragraph 19 and footnotes 20, 39 and 42 above for the definition and data sources used to estimate aggregated improvement rate targets; (2) the 2.4 per cent value is the aggregated average annual rate of improvement in primary energy intensity for 2022–2030, based on targets reported by 5 per cent of Parties.

36. In its *World Energy Outlook 2025* report, IEA identifies three main levers for doubling the rate of energy efficiency improvements by 2030: improving the technical efficiency of equipment and buildings; shifting to more efficient fuels through electrification[43] and renewables; and avoiding energy demand through material efficiency improvements and modal shifts in transport. A total of 55 per cent of Parties indicated in their NDCs measures for efficient lighting, appliances and equipment, while 73 per cent reported measures relating to on-site renewable production in buildings, and 40 per cent indicated measures to improve material efficiency in industry. These shares, particularly for improving material efficiency in industry, represent significant increases compared with the previous NDCs assessed in the 2024 report, where the corresponding shares were 44, 32 and 14 per cent respectively.

C. Accelerating efforts towards the phase-down of unabated coal power

37. IEA estimates that coal-fired power generation was the single largest source of global energy-related CO_2 emissions in 2024, accounting for 30 per cent (11.5 Gt CO_2),[44] while providing employment for 2.2 million people across more than 80 countries.[45] Although coal-fired power generation accounted for 74 per cent of CO_2 emissions from the global electricity sector in 2024, its share in global electricity generation stood at 35 per cent, highlighting its carbon-intensive nature. The contribution of Working Group III to the AR6 finds that new investments in coal-fired power without CCS are inconsistent with limiting warming to 2 °C or below. In contrast, phasing down unabated coal power offers important co-benefits, including improved air quality,[46] leading to fewer premature deaths and respiratory diseases.

38. Global coal-fired power generation is estimated to have increased by 14 per cent since 2015 and by 3.7 per cent since 2022, reaching 10,858 TWh in 2025 (see Figure **8**).[47] However,

[43] Electrification can substantially reduce energy losses. Electric cars, for example, convert around 85–90 per cent of electrical energy into motion, compared with 25–35 per cent of the energy contained in gasoline used by ICE vehicles.

[44] Estimated on the basis of data from the IEA *World Energy Outlook 2025* report.

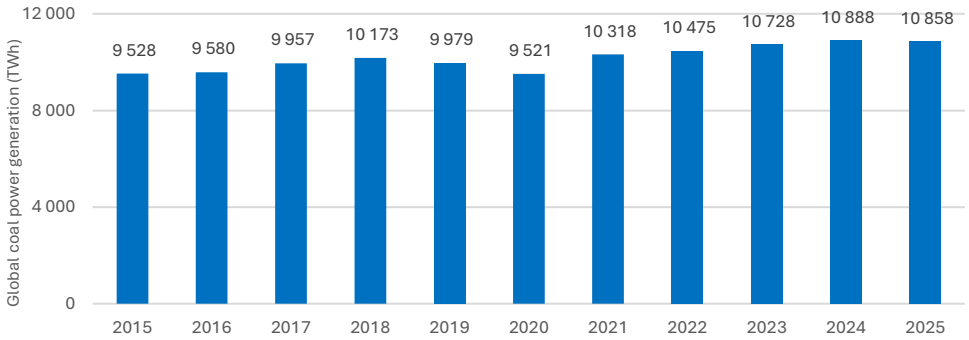
[45] IEA. 2025. *World Energy Employment 2025*. Paris: IEA. All rights reserved. Available at https://www.iea.org/reports/world-energy-employment-2025.

[46] The IEA *World Energy Outlook 2025* report projects that, driven by reduced coal use in power generation, emissions of particulate matter, sulfur dioxide and nitrogen oxides will decline by 80 per cent by 2035 in developing countries on its 1.5 °C pathway with high overshoot.

[47] Estimated on the basis of data from the IEA *World Energy Balances* report and IEA. 2026. *Global Energy Review 2026*. Paris: IEA. All rights reserved. Available at https://www.iea.org/reports/global-energy-review-2026; as modified by the secretariat. In its *World Energy Outlook 2025* report, IEA projects that global unabated coal-fired power generation will decline by 75 per cent to 2,681 TWh by 2035 and be phased out by 2040 on its 1.5 °C pathway with high overshoot.

it declined by 0.3 per cent (or 30 TWh) between 2024 and 2025. This marks a clear contrast with the 1.5 per cent increase recorded between 2023 and 2024 and the five-year average growth rate of 1.2 per cent per year between 2015 and 2019 prior to the coronavirus disease 2019 pandemic. In relative terms, the share of coal in global power generation is estimated to have declined from 39 per cent in 2015 to 36 per cent in 2022 and 34 per cent in 2025, primarily owing to the rapid expansion of renewable sources, as indicated in chapter IV.A above. As a result, coal-fired power generation was nearly matched by renewable power generation (10,808 TWh) in 2025.

Figure 8
Global coal-fired power generation 2015–2025



Notes: See footnote 47 above for the data source.

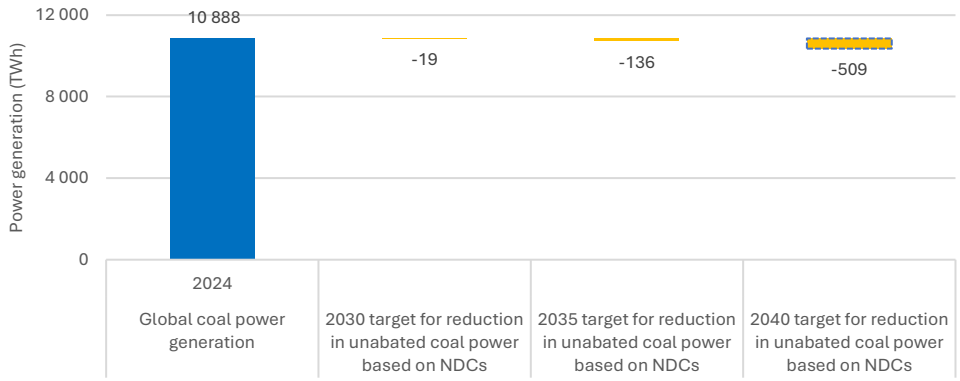
39. A total of 37 per cent of Parties, accounting for 69 per cent of global electricity generation from coal in 2024, indicated measures to phase down unabated coal power in their NDCs—nearly quadruple the 10 per cent in the previous NDCs assessed in the 2024 report. These measures include replacing coal-fired power plants with modern and cost-effective electricity system based on renewable energy. Furthermore, over four fifths of this 37 per cent of Parties (31 per cent of Parties) indicated the need or measures for a just transition for communities and workers dependent on coal.

40. In addition, 3 per cent of Parties, accounting for 0.2 per cent of global electricity generation from coal in 2024, communicated quantitative targets in their NDCs to reduce unabated coal-fired power generation by 2030, with 2 per cent of Parties including phase-out targets by 2030. These targets amount to a reduction of 19 TWh below 2024 levels[48] (including 15 TWh directly referenced as a contribution to this global effort) by 2030, which is equivalent to 0.2 per cent of global unabated coal-fired power generation in 2024 (10,888 TWh) (see Figure **9**). The entire 19 TWh reduction was reported in relation to achieving fully unconditional mitigation targets.

[48] Aggregated reduction targets are derived from absolute targets to reduce unabated coal-fired power generation and from targets to reduce the share of unabated coal in the electricity mix where a target total power generation is specified in the NDCs. Other metrics are not included. Consistent with the approach described in footnote 32 above, baselines for estimating targets for unabated coal-fired power generation by 2030, 2035 and 2040 are assumed, unless otherwise specified in the NDCs, to be total coal-fired power generation in 2023 for new NDCs and in 2019 for previous NDCs. Reduction targets for 2030, 2035 and 2040 are estimated using the latest available Party-level data for 2024.

Figure 9

Aggregated reduction targets for unabated coal power for 2030, 2035 and 2040 based on nationally determined contributions



Notes: See paragraph 19 above and footnotes 20 and 48 above for the methodologies used to estimate aggregated reduction targets.

41. Similarly, 6 per cent of Parties, accounting for 1.3 per cent of global electricity generation from coal in 2024, reported such targets by 2035, with 5 per cent of Parties including phase-out targets by 2035. These targets represent a total reduction of 136 TWh below 2024 levels (including 123 TWh directly referenced as a contribution to this global effort) by 2035, which is equivalent to 1.3 per cent of global unabated coal-fired power generation in 2024. Of this total reduction, 95 TWh (or 70 per cent) was reported in relation to achieving mitigation targets that are fully or partially conditional, highlighting Parties' high level of need for enhanced support and cooperation for implementation.

42. For the period up until 2040, 9 per cent of Parties, accounting for 5 per cent of global electricity generation from coal in 2024, communicated such targets, with 8 per cent of Parties including phase-out targets by 2040. These targets correspond to a reduction of 509 TWh below 2024 levels (including 293 TWh directly referenced as a contribution to this global effort) by 2040, which is equivalent to 4.7 per cent of global unabated coal-fired power generation in 2024. Of this total reduction, 95 TWh (or 19 per cent) was reported in relation to achieving mitigation targets that are fully or partially conditional.

43. As renewable power generation nearly matched coal-fired power generation in 2025, sustained rapid growth in renewable power, supported by the greater deployment of energy storage to address variability,[49] could become a key lever for phasing down unabated coal power by meeting new electricity demand and displacing existing demand currently served by unabated coal. Global renewable power generation is estimated to have reached a record high of 10,808 TWh in 2025. This marks an increase of 880 TWh compared with 2024, which is equivalent to 1.3 times the growth in global power generation over the same period (684 TWh).[50] This indicates that the expansion of renewable power generation between 2024 and 2025 more than offset the decline in fossil fuel fired power generation, including coal-fired power generation (–30 TWh) and natural gas fired power generation (–86 TWh) in the same period.

D. Accelerating efforts globally towards net zero emission energy systems, utilizing zero- and low-carbon fuels, well before or by around mid-century

44. The contribution of Working Group III to the AR6 clarifies that net zero CO_2 energy systems[51] entail the use of alternative energy carriers, such as modern bioenergy, low-

[49] See footnotes 22 and 36 above for information on the cost and growth of stationary batteries respectively.

[50] As footnote 47 above.

[51] The term "energy systems" encompasses both energy supply and energy end-use sectors.

emission hydrogen (see chapter IV.F below) and low-emission hydrogen-based fuels, in applications less amenable to electrification, including long-distance transport and heavy industry. These approaches contribute to the transitioning away from fossil fuels in energy systems referred to in chapter IV.E below.

45. Shifting to zero- and low-carbon fuels[52] presents notable mitigation potential at low costs. For example, in 2030, biofuels in transport could reduce emissions by 0.23 Gt CO_2 eq/year at costs below USD 20/t CO_2 eq. At costs below USD 100/t CO_2 eq, fuel switching in industry could achieve reductions of 1.95 Gt CO_2 eq/year, while the mitigation potential of biofuels in transport increases to 0.69 Gt CO_2 eq/year. In 2035, the potential of fuel switching in industry reaches 2.1 Gt CO_2 eq/year at costs below USD 200/t CO_2 eq.

46. The use of zero- and low-carbon fuels also offers important co-benefits, including enhanced energy security through reduced dependence on fuel imports and greater diversification of fuel supply, as well as the creation of new employment opportunities. In its *Delivering Sustainable Fuels* report, IEA projects that liquid biofuels reduced dependence on transport fuel imports by 5 to15 percentage points in many countries in 2024, and that the expansion of zero- and low-carbon liquid and gaseous fuels could more than triple direct employment to nearly 2 million.[53]

47. A total of 90 per cent of Parties, accounting for 74 per cent of total global energy supply from fossil fuels in 2024, reported measures for shifting to zero- and low-carbon fuels in their NDCs, such as providing funding to support fuel switching to bioenergy to accelerate industrial heat decarbonization. In long-distance transport and heavy industry, 35 per cent of Parties communicated measures for shifting to zero- and low-carbon fuels in aviation, 33 per cent in shipping and 10 per cent in metal, chemical and cement—a sharp increase from 21, 23 and 5 per cent respectively in the previous NDCs assessed in the 2024 report.

48. In its *World Energy Outlook 2025* report, IEA projects that modern bioenergy, including liquid biofuel and biogas—which currently account for the vast majority of zero- and low-carbon fuel use—will remain one of the key pillars of the clean energy transition over the next decade and beyond, particularly in aviation, shipping, industry and space heating.[54] Total global energy supply from modern bioenergy is estimated to have increased to a record high of 54 EJ in 2024, representing an increase of 18 per cent since 2015 and 2.7 per cent since 2022.[55] It increased by 0.7 per cent between 2023 and 2024, below both the 2.0 per cent increase recorded between 2022 and 2023 and the five-year average growth rate of 2.0 per cent per year between 2015 and 2019 prior to the coronavirus disease 2019 pandemic. In relative terms, the share of modern bioenergy in total global energy supply rose slightly from 8.1 per cent in 2015 to 8.4 per cent in 2022, before declining to 8.3 per cent in 2024 owing to the slowed growth between 2023 and 2024.

49. A total of 56 per cent of Parties, accounting for 30 per cent of total global energy supply from fossil fuels in 2024, communicated measures for shifting to modern bioenergy—more than 2.5 times greater than the 21 per cent in the previous NDCs assessed in the 2024

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[52] IEA. 2023. *Net Zero Roadmap: A Global Pathway to Keep the 1.5 °C Goal in Reach: 2023 Update*. Paris: IEA. All rights reserved. Available at https://www.iea.org/reports/net-zero-roadmap-a-global-pathway-to-keep-the-15-c-goal-in-reach. The report refers to modern bioenergy, low-emission hydrogen, and low-emission hydrogen-based fuels (e.g. ammonia and synthetic hydrocarbons produced from low-emission hydrogen) as low-emission fuels. It defines modern bioenergy as bioenergy excluding the traditional use of biomass (e.g. wood and wood waste) and renewable waste.

[53] IEA. 2025. *Delivering Sustainable Fuels – Pathways to 2035*. Paris: IEA. All rights reserved. Available at https://www.iea.org/reports/delivering-sustainable-fuels. Zero- and low-carbon liquid and gaseous fuels are typically produced from domestically available resources such as crops, agricultural residues and renewable energy.

[54] This projection assumes a shift from using conventional feedstocks towards using advanced bioenergy feedstocks from waste and residues, thereby avoiding trade-offs with food and feed production and supporting circular economy approaches, as referred to in chapter IV.K below. According to the IEA *World Energy Outlook 2025* report, the share of modern bioenergy in total global energy supply is projected to increase rapidly from 8 per cent in 2024 to 14 per cent by 2035 and to reach 18 per cent by 2050 on its 1.5 °C pathway with high overshoot, reflecting the ability of modern bioenergy to serve as a drop-in substitute for fossil fuels.

[55] As footnote 27 above.

report. The measures reported include investing in long-term clean fuels, including biofuels for the marine and rail sectors, and replacing petroleum coke used in cement production with sewage sludge from wastewater treatment plants as an alternative fuel.

E. Transitioning away from fossil fuels in energy systems, in a just, orderly and equitable manner, accelerating action in this critical decade, so as to achieve net zero by 2050 in keeping with the science

50. Global CO_2 emissions from fossil fuel combustion are estimated to have reached a record high of 35.5 Gt CO_2 in 2024, representing increases of 9.6 per cent relative to 2015 and 3.6 per cent relative to 2022.[56] The pace of growth, however, slowed to 1.5 per cent between 2023 and 2024, compared with 2.1 per cent recorded between 2022 and 2023. Nevertheless, it remained above the five-year average growth rate of 1.0 per cent per year between 2015 and 2019 prior to the coronavirus disease 2019 pandemic.

51. Transitioning away from fossil fuels can generate multiple co-benefits, including enhanced energy security, improved air quality and strengthened food security, as outlined in chapters IV.A, C, D, F and H.

52. A total of 97 per cent of Parties, accounting for 74 per cent of total global energy supply from fossil fuels in 2024, indicated measures for transitioning away from fossil fuels in energy systems in their NDCs—a slight increase from the 94 per cent in the previous NDCs assessed in the 2024 report. These measures include replacing 20 per cent of fuel oil consumption with renewable sources in industrial steam generation by 2030 and increasing the sales share of electric light-duty passenger vehicles to 30 per cent by 2030. In addition, over four fifths of this 97 per cent of Parties (81 per cent of Parties) reported the need and/or measures for a just transition for communities and workers dependent on fossil fuels, such as providing targeted training in green skills to support workers to access sustainable employment, particularly in the growing clean energy sector. It is estimated that at least 36 million workers, accounting for nearly half of all energy-related jobs, were employed in fossil fuel-related industries in 2024, including fossil fuel production, fossil fuel fired power generation and ICE vehicle manufacturing.[57]

53. The share of fossil fuels in total global energy supply is estimated to have declined gradually from 82 per cent in 2015 to 81 per cent in 2022 and 80 per cent in 2025,[58] driven largely by the growing share of renewable sources. In absolute terms, however, total global energy supply from fossil fuels has increased by 12 per cent since 2015 and by 3.6 per cent since 2022, reaching 522 EJ in 2025. Despite this longer-term growth trend, fossil fuel supply declined slightly by 0.1 per cent from 2024, in contrast to the 1.9 per cent increase recorded between 2023 and 2024 and the five-year average growth rate of 1.3 per cent per year between 2015 and 2019 prior to the coronavirus disease 2019 pandemic. This stabilization reflected a 0.5 per cent decline in oil supply between 2024 and 2025, while renewable energy supply increased by 7.5 per cent in the same period.

54. A total of 2 per cent of Parties, accounting for 31 per cent of total global energy supply from fossil fuels in 2024, communicated quantitative targets in their NDCs to reduce the share of fossil fuels in total energy supply[59] by 2035. Examples include a target to generate

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[56] Estimated on the basis of data from IEA. 2026. *Greenhouse Gas Emissions from Energy*. Paris: IEA. All rights reserved. Available at https://www.iea.org/data-and-statistics/data-product/greenhouse-gas-emissions-from-energy. In its *World Energy Outlook 2025* report, IEA projects that global energy-related CO_2 emissions (including industrial process and flaring emissions) are projected to decline sharply to 17.6 Gt CO_2 by 2035, 8.1 Gt CO_2 by 2040 and reach net-zero by 2050 on its 1.5 °C pathway with high overshoot.

[57] Estimated on the basis of data from the IEA *World Energy Employment 2025* report.

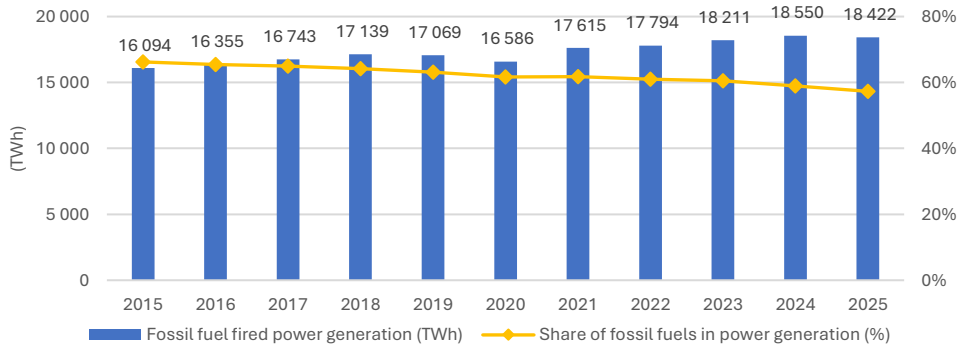
[58] As footnote 47 above. According to the IEA *World Energy Outlook 2025* report, this share is projected to decline rapidly to 51 per cent by 2035, 33 per cent by 2040 and 16 per cent by 2050 on its 1.5 ºC pathway with high overshoot. Similarly, the IRENA *Transitioning away from fossil fuels* report projects a decline to 48 per cent by 2035, 34 per cent by 2040 and 15 per cent by 2050.

[59] These include targets to reduce the share of total energy consumption, which refers to the total amount of energy inputs, including all raw energy, entering the national economy.

at least 50 per cent of primary energy supply from nuclear energy by 2030. Two thirds of these Parties (1 per cent of Parties) reported such targets in relation to achieving mitigation targets that are fully or partially conditional, highlighting Parties' need for enhanced support and cooperation for implementation.

55. IEA estimates that 41 per cent of total global energy supply in 2024 was used for electricity generation.[60] While the share of fossil fuels in power generation declined from 66 per cent in 2015 to 61 per cent in 2022 and 57 per cent in 2025,[61] primarily owing to the rapid expansion of renewable sources, global fossil fuel fired power generation has increased in absolute terms by 14 per cent since 2015 and by 3.5 per cent since 2022, reaching 18,422 TWh in 2025 (see Figure **10**). However, it declined by 0.7 per cent between 2024 and 2025, in contrast with the 1.9 per cent increase recorded between 2023 and 2024 and the five-year average growth rate of 1.5 per cent per year between 2015 and 2019 prior to the coronavirus disease 2019 pandemic. This decline reflects the rapid growth in renewable power generation, which increased by 8.9 per cent in 2025 (880 TWh) and exceeded the 2.2 per cent growth in global power generation (684 TWh), more than offsetting the decline in fossil fuel fired power generation in 2025 (-128 TWh).

Figure 10
Global power generation from fossil fuels 2015–2025



Notes: See footnote 61 above for the data source.

56. A total of 5 per cent of Parties, accounting for 1.2 per cent of global electricity generation from fossil fuels in 2024, communicated quantitative targets in their NDCs to reduce fossil fuel fired power generation by 2030, with 3 per cent of Parties including phase-out targets by 2030. These targets correspond to a reduction of 19 TWh below 2024 levels[62] (including 17 TWh directly referenced as a contribution to this global effort) by 2030, which is equivalent to 0.1 per cent of global fossil fuel fired power generation in 2024 (18,550 TWh). The entire 19 TWh was reported in relation to achieving fully unconditional mitigation targets.

57. Similarly, 10 per cent of Parties, accounting for 2.4 per cent of global electricity generation from fossil fuels in 2024, reported such targets by 2035 in their NDCs, with 6 per cent of Parties including phase-out targets by 2035. These targets correspond to a reduction of 258 TWh below 2024 levels (including 249 TWh directly referenced as a contribution to this global effort) by 2035, which is equivalent to 1.4 per cent of global fossil fuel fired power generation in 2024. Of this reduction, 97 TWh (or 37 per cent) was reported in relation to

[60] As footnote 44 above. In its *World Energy Outlook 2025* report, IEA projects that this share will increase to 50 per cent by 2035, 58 per cent by 2040 and 72 per cent by 2050 on its 1.5 °C pathway with high overshoot.

[61] As footnote 47 above. In its *World Energy Outlook 2025* report, IEA projects that this share will decline sharply to 13 per cent by 2035, 4 per cent by 2040 and 1 per cent by 2050 on its 1.5 °C pathway with high overshoot. Similarly, the contribution of Working Group III to the AR6 projects that low-carbon sources produce 93–97 per cent of global electricity by 2050 in scenarios that limit warming to 2°C (>67 per cent) with action starting in 2020.

[62] Footnote 48 above applies mutatis mutandis.

achieving mitigation targets that are fully or partially conditional, highlighting Parties' need for enhanced support and cooperation for implementation.

58. For the period up until 2040, 13 per cent of Parties, accounting for 6 per cent of global electricity generation from fossil fuels in 2024, reported such targets in their NDCs, with 6 per cent of Parties including phase-out targets by 2040. These correspond to a reduction of 631 TWh below 2024 levels (including 608 TWh directly referenced as a contribution to this global effort) by 2040, which is equivalent to 3.4 per cent of global fossil fuel fired power generation in 2024. Of this reduction, 97 TWh (or 15 per cent) was reported in relation to achieving mitigation targets that are fully or partially conditional.

59. A total of 35 per cent of Parties, accounting for 12 per cent of global electricity generation from fossil fuels in 2024, communicated quantitative targets in their NDCs to reduce the share of fossil fuels in power generation by 2030. Examples include generating at least 95 per cent of power generation from clean energy sources by 2030. Over four fifths of these Parties (29 per cent of Parties) reported such targets in relation to achieving mitigation targets that are fully or partially conditional, underscoring Parties' high level of need for enhanced support and cooperation for implementation.

60. Similarly, 42 per cent of Parties, accounting for 14 per cent of global electricity generation from fossil fuels in 2024, communicated corresponding targets by 2035 in their NDCs. More than four fifths of these Parties (34 per cent of Parties) reported such targets in relation to achieving mitigation targets that are fully or partially conditional, again underscoring Parties' high level of need for enhanced support and cooperation for implementation.

61. Of total global CO_2 emissions from fossil fuel combustion in 2025 (35.2 Gt CO_2), coal combustion accounted for 42 per cent, followed by oil (30 per cent) and natural gas (20 per cent). Coal-fired power generation accounted for 73 per cent (11.5 Gt CO_2) of the coal combustion emissions.[63] As noted in chapter IV.C above, sustained rapid growth in renewable power, supported by the greater deployment of energy storage to address variability, could become a key lever for phasing down unabated coal power. Similarly, road transport accounted for 54 per cent (6.2 Gt CO_2) of the oil combustion emissions. As outlined in chapter IV.H below, the uptake of electric cars, improvements in the efficiency of ICE vehicles and the expansion of public transport could play a key role in reducing such emissions.

F. Accelerating zero- and low-emission technologies, including, inter alia, renewables, nuclear, abatement and removal technologies such as carbon capture and utilization and storage, particularly in hard-to-abate sectors, and low-carbon hydrogen production

62. Accelerating zero- and low-emission technologies[64] offers substantial mitigation potential at low costs. For example, in 2030, nuclear energy could reduce emissions by 0.35 Gt CO_2 eq/year at costs below USD 20/t CO_2 eq. At costs below USD 100/t CO_2 eq, the mitigation potential of nuclear energy increases to 0.70 Gt CO_2 eq/year, while CCS in the energy supply could achieve reductions of 0.27 Gt CO_2 eq/year. In 2035, the mitigation potential further increases at costs below USD 200/t CO_2 eq, with nuclear energy projected to reduce emissions by 0.80 Gt CO_2 eq/year and CCS in the energy supply by 0.50 Gt CO_2 eq/year. Additionally, CCS in industry and bioelectricity with CCS could each contribute reductions of 0.50 Gt CO_2 eq/year at costs below USD 200/t CO_2 eq in 2035.

63. A total of 99 per cent of Parties, accounting for 75 per cent of total global energy supply from fossil fuels in 2024, indicated measures to accelerate zero- and low-emission technologies in their NDCs—up from 94 per cent in the previous NDCs assessed in the 2024 report.

[63] As footnote 44 above.

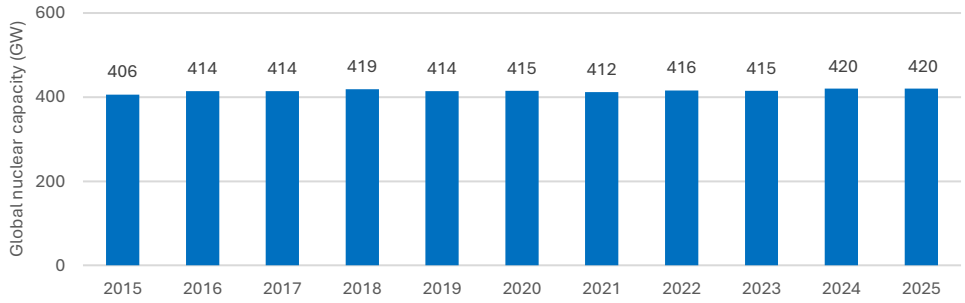
[64] Defined as technologies that produce little or no CO_2 or that remove CO_2 from the atmosphere.

64. The contribution of Working Group III to the AR6 finds that net zero CO_2 energy systems entail electricity systems that emit no net CO_2, the use of CCS in the remaining fossil fuel systems after a substantial reduction in overall fossil fuel use, the deployment of CDR to counterbalance hard-to-abate residual emissions,[65] and the use of alternative energy carriers in applications less amenable to electrification as referred to in paragraph 44 above.

1. Nuclear

65. Nuclear power, the second-largest source of dispatchable low-emission electricity after hydropower, supplied 9 per cent of global electricity across more than 30 countries in 2025.[66] Total global installed capacity remained at 420 GW, unchanged from 2024 (see Figure **11**).[67] This represents a 3.4 per cent increase from 2015 and a 1 per cent increase from 2022. As the deployment of variable renewable energy increases in electricity systems globally, dispatchable and firm low-emission capacity will be critical for ensuring seasonal flexibility of the power system, both by absorbing surplus supply and by meeting peak demand.

Figure 11
Global installed nuclear power capacity 2015–2025



Notes: See footnote 67 above for the data source.

66. A total of 11 per cent of Parties, accounting for 58 per cent of global electricity generation from fossil fuels in 2024, included measures to increase nuclear power generation in their NDCs—more than double the 5 per cent in the previous NDCs assessed in the 2024 report.

67. In addition, 2 per cent of Parties, accounting for 4 per cent of global electricity generation from fossil fuels in 2024, communicated quantitative targets in their NDCs to increase total or additional installed capacity for nuclear power generation by 2030. Taking existing installed capacity into account for the additional nuclear capacity targets by 2030,[68] the aggregated quantitative target for total installed capacity by 2030 is estimated at 20 GW.[69] This represents 4.9 per cent of the global installed nuclear capacity in 2025 (420 GW) (see Figure **12**). Of this 20 GW total, 4.3 GW (or 21 per cent) was reported in relation to achieving

[65] According to the contribution of Working Group III to the AR6, CDR to counterbalance hard-to-abate residual emissions, such as CO_2 from industrial activities and from long-distance transport and CH_4 and N_2O from agriculture, is unavoidable if net zero CO_2 or GHG emissions are to be achieved. The scale and timing of the deployment will depend on the trajectories of gross emission reductions in different sectors. Upscaling the deployment of CDR depends on developing effective approaches to address feasibility and sustainability constraints especially at large scales.

[66] As footnote 47 above.

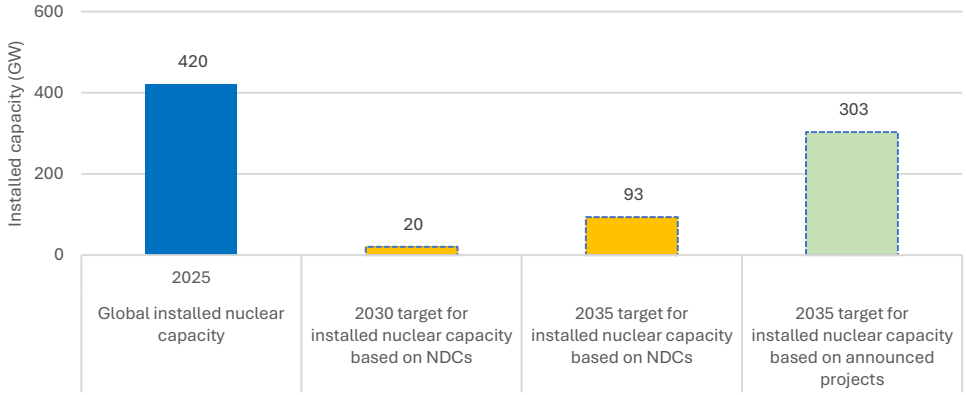
[67] Estimated on the basis of data from the IEA *Global Energy Review 2026* report and IEA. 2026. *Tracking COP28 progress*. Paris: IEA. All rights reserved. Available at https://www.iea.org/topics/cop28-tracking-the-energy-outcomes. In its *World Energy Outlook 2025* report, IEA projects that total global installed capacity for nuclear power will increase to 520 GW by 2030, 714 GW by 2035, 892 GW by 2040 and 1,079 GW by 2050 on its 1.5 °C pathway with high overshoot.

[68] As footnote 32 above. To calculate the existing installed capacity for additional capacity targets, retired capacity is projected on the basis of the average annual retired capacity observed between 2020 and 2024.

[69] Footnote 31 above applies mutatis mutandis.

mitigation targets that are fully or partially conditional, highlighting Parties' need for enhanced support and cooperation for implementation.

Figure 12
Aggregated targets for installed nuclear power capacity for 2030 and 2035 based on nationally determined contributions



Notes: See paragraphs 19 above and 67 above and 68 below as well as footnotes 20 and 68 above for the methodologies used to estimate aggregated capacity targets.

68. Similarly, 4 per cent of Parties, accounting for 5 per cent of global electricity generation from fossil fuels in 2024, reported such targets by 2035 in their NDCs. Taking existing capacity into account, the aggregated quantitative target by 2035 is estimated at 93 GW (including 5 GW directly referenced as a contribution to this global effort). This corresponds to 22 per cent of the global installed nuclear capacity in 2025. Of this 93 GW total, 68 GW (or 73 per cent) was reported in relation to achieving mitigation targets that are fully or partially conditional, underscoring Parties' high level of need for enhanced support and cooperation for implementation.

69. According to the IAEA *Nuclear Power Reactors in the World 2025 Edition*,[70] nuclear reactors with a combined capacity of 67 GW were under construction or scheduled to begin construction in 2025 across 15 countries. Of this total, 61 GW is located in 12 of the 154 Parties that submitted new NDCs. Based on these Parties' capacity levels in 2025 and a median construction period of 6.6 years since 2001, total aggregated capacity in the 154 Parties could reach 303 GW by 2035.[71] This figure is about 3.3 times greater than the 93 GW aggregated capacity target by 2035 based on the NDCs, indicating that the NDCs submitted do not cover all announced projects. Some Parties may nationally determine that progress in increasing installed nuclear power capacity—along with other contributing factors, such as enhanced international cooperation and support—contribute to a greater potential for accelerated implementation and enhanced ambition of this effort.

2. Carbon capture and utilization and storage, particularly in hard-to-abate sectors

70. Global annual carbon capture capacity is estimated to have increased to a record high of 62 Mt CO_2 in 2025 (of which 7.3 Mt CO_2 was associated with hard-to-abate sectors, including emissions from industrial activities), which is 57 per cent greater than in 2015 and 25 per cent greater than in 2022 (see Figure **13**).[72] This represents a 13 per cent increase from 2024 and marks a significant acceleration compared with the 6.2 per cent increase recorded

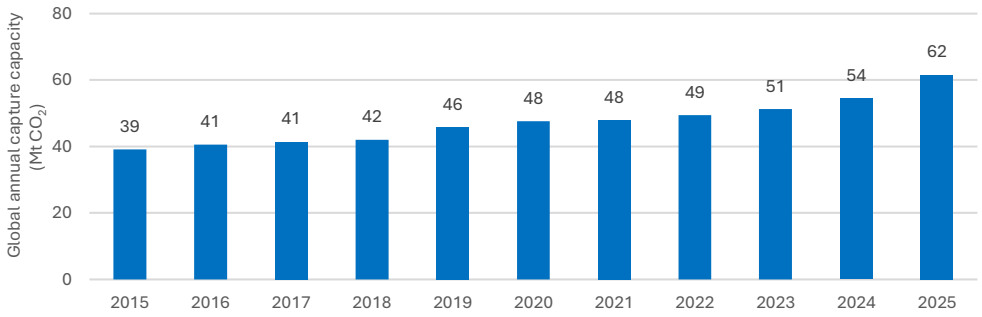
[70] IAEA. 2025. *Nuclear Power Reactors in the World 2025 Edition*. Vienna: IAEA. All rights reserved. Available at https://www.iaea.org/publications/15943/nuclear-power-reactors-in-the-world.

[71] An annual average retired capacity of 3.5 GW between 2026 and 2035 is assumed for the 154 Parties, on the basis of the global average annual retired capacity observed between 2021 and 2025.

[72] Estimated on the basis of data from IEA. 2026. *CCUS Projects Database*. Paris: IEA. All rights reserved. Available at https://www.iea.org/data-and-statistics/data-product/ccus-projects-database (accessed 26 May 2026). According to the *World Energy Outlook 2025* report, total global carbon captured is projected to increase from 45Mt CO_2 in 2024 steeply to 690 Mt CO_2 by 2030, 2,261 Mt CO_2 by 2035, 3,889 Mt CO_2 by 2040 and 6,052 Mt CO_2 by 2050 on its 1.5 °C pathway with high overshoot.

between 2023 and 2024 and the five-year average growth rate of 4 per cent per year between 2015 and 2019 prior to the coronavirus disease 2019 pandemic. The contribution of Working Group III to the AR6 projects that cumulative CCS will reach 670 (540–860) Gt CO_2 by 2100 on 1.5 °C pathways with high overshoot.[73]

Figure 13
Global annual carbon capture capacity of CCUS 2015–2025

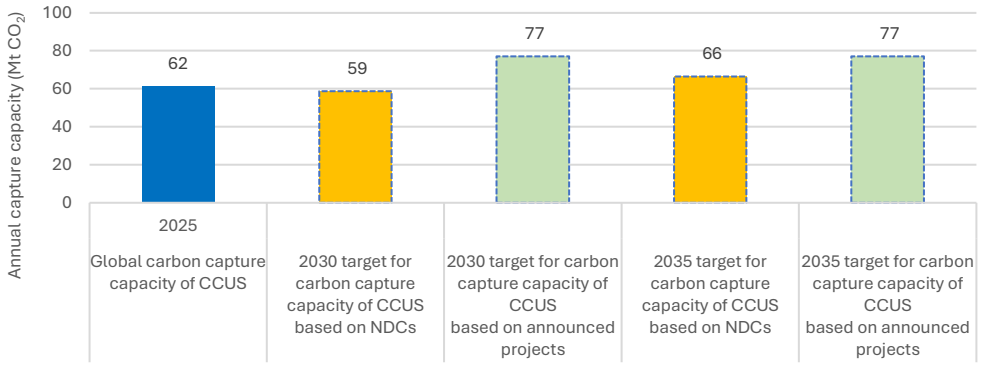


Notes: See footnote 72 above for the data source.

71. A total of 45 per cent of Parties, accounting for 69 per cent of total global energy supply from fossil fuels in 2024, indicated measures for CCUS in their NDCs—3.5 times greater than the 13 per cent in the previous NDCs assessed in the 2024 report. The measures mentioned include introducing an investment tax credit for capital invested in CCUS projects. More than three quarters of the 45 per cent of Parties (35 per cent of Parties) reported such measures in hard-to-abate sectors.

72. In addition, 5 per cent of Parties, accounting for 6 per cent of total global energy supply from fossil fuels in 2024, reported quantitative targets in their NDCs to increase annual carbon capture capacity of CCUS by 2030. These targets total 59 Mt CO_2 (including 14 Mt CO_2 associated with hard-to-abate sectors and 12 Mt CO_2 directly referenced as a contribution to this global effort), which is equivalent to 95 per cent of global annual carbon capture capacity of CCUS in 2025 (62 Mt CO_2) (see Figure **14**). Of this total, 12 Mt CO_2 (or 21 per cent) was reported in relation to achieving mitigation targets that are fully or partially conditional, highlighting Parties' need for enhanced support and cooperation for implementation.

Figure 14
Aggregated targets for annual carbon capture capacity of CCUS for 2030 and 2035 based on nationally determined contributions



Notes: See paragraph 19 as well as footnotes 20 and 72 above for the methodologies used to estimate aggregated capacity targets.

73. On the other hand, IEA projects that, if all announced CCUS projects under construction are completed, total global carbon capture capacity of CCUS could reach 114

[73] The contribution of Working Group III to the AR6 states that global rates of CCS deployment are far below those in modelled pathways limiting global warming to 1.5 °C or 2 °C.

Mt CO_2 annually in 2030 (including 19 Mt CO_2 in hard-to-abate sectors).[74] For the 154 Parties that submitted new NDCs, total carbon capture capacity could reach 77 Mt CO_2 (including 10 Mt CO_2 in hard-to-abate sectors).[75] This is 1.3 times greater than the 59 Mt CO_2 aggregated capacity target based on the NDCs,[76] indicating that the NDCs submitted do not cover all announced projects. Some Parties may nationally determine that progress in increasing annual carbon capture capacity of CCUS—along with other contributing factors, such as enhanced international cooperation and support—contribute to a greater potential for accelerated implementation and enhanced ambition of this effort.

74. Similarly, 6 per cent of Parties, accounting for 6 per cent of total global energy supply from fossil fuels in 2024, reported quantitative targets in their NDCs to increase annual carbon capture capacity of CCUS by 2035. These targets amount to 66 Mt CO_2 (including 13 Mt CO_2 associated with hard-to-abate sectors and 21 Mt CO_2 directly referenced), which is equivalent to about 1.1 times greater than the global annual carbon capture capacity of CCUS in 2025. Of this total, 11 Mt CO_2 (or 16 per cent) was reported in relation to achieving mitigation targets that are fully or partially conditional.

75. Likewise, IEA projects that, if all announced projects under construction are completed, total global carbon capture capacity of CCUS could reach 114 Mt CO_2 annually in 2035 (including 19 Mt CO_2 in hard-to-abate sectors). For the 154 Parties that submitted new NDCs, total carbon capture capacity could reach 77 Mt CO_2 (including 10 Mt CO_2 in hard-to-abate sectors).[77] This is about 1.2 times greater than the 66 Mt CO_2 aggregated capacity target based on the NDCs,[78] indicating that the NDCs submitted do not cover all announced projects.

3. Removal technologies

76. According to the contribution of Working Group III to the AR6, in addition to deep, rapid, and sustained emission reductions, CDR[79] can fulfil three complementary roles: lowering net CO_2 or net GHG emissions in the near term; counterbalancing hard-to-abate residual emissions to help achieve net zero CO_2 or net zero GHG emissions in the medium term as referred to in footnote 65 above; and enabling net-negative CO_2 or GHG emissions in the long term if deployed at levels exceeding annual residual emissions. The Synthesis Report of the AR6 indicates that the larger the overshoot, the more net negative CO_2 emissions would be needed to return to 1.5 °C by 2100, with 1.5 °C pathways with high overshoot requiring cumulative net-negative emissions of 360 Gt CO_2 by 2100.[80] The UNEP *Limiting Overshoot* report[81] projects that even pathways with the least overshoot require total

[74] IEA. 2026. *CCUS Projects Explorer*. Paris: IEA. All rights reserved. Available at https://www.iea.org/data-and-statistics/data-product/ccus-projects-database (accessed 26 May 2026). If the announced projects are completed, the *CCUS Projects Explorer* projects that total storage capacity will reach 668 Mt CO_2 by 2030 and 794 Mt CO_2 by 2035.

[75] Estimated on the basis of data from the IEA CCUS Projects Database.

[76] If all announced CCUS projects in the planning stage are also taken into account, total global carbon capture capacity of CCUS could reach 376 Mt CO_2 annually in 2030. For the 154 Parties that submitted new NDCs, total carbon capture capacity could reach 230 Mt CO_2. This is nearly four times greater than the 59 Mt CO_2 aggregated capacity target based on the NDCs.

[77] As footnote 75 above.

[78] If all announced CCUS projects in the planning state are also taken into account, total global carbon capture capacity of CCUS could reach 425 Mt CO_2 annually in 2035. For the 154 Parties that submitted new NDCs, total carbon capture capacity could reach 272 Mt CO_2. This is more than four times greater than the 66 Mt CO_2 aggregated capacity target based on the NDCs.

[79] Defined as anthropogenic activities that remove CO_2 from the atmosphere, either directly or through biological processes, and durably store it in geological, terrestrial or ocean reservoirs, or in products.

[80] Reducing the global temperature by 0.1 °C would require net negative emissions of 220 Gt CO_2 (best estimate, with a likely range of 160–370 Gt CO_2). According to the UNEP *Emissions Gap Report 2025*, 260–610 Gt CO_2 will need to be removed from the atmosphere to return to 1.5 °C by 2100, under the rapid mitigation action from 2025 scenario.

[81] UNEP. 2026. *Limiting Overshoot: Navigating exceedance of 1.5 °C and pathways towards return*. Nairobi: UNEP. Available at https://doi.org/10.59117/20.500.11822/49857. The report estimates that durable land-based CDR averaged about 2 Gt CO_2 per year over the past decade. Current model estimates suggest that sustainable afforestation and reforestation could remove about 5.6 (3.3–8.4) Gt CO_2 per year by 2050, with limited potential for further expansion.

CDR to increase from around 2.2 Gt CO_2 yr^{-1} today to 2.7–4.1 Gt CO_2 yr^{-1} by 2035 and 6.5–13.3 Gt CO_2 yr^{-1} by 2050[82] while sustainable afforestation and reforestation could remove about 5.6 (3.3–8.4) Gt CO_2 per year by 2050.

77. Meanwhile, deep GHG emission reductions by 2030 and 2040, including substantial reductions in CH_4 emissions, as referenced in chapter IV.G below, could limit peak warming levels, thereby reducing feasibility and sustainability concerns regarding the large-scale deployment of CDR technologies.[83]

78. A total of 5 per cent of Parties reported measures for DACCS in their NDCs, 2 per cent indicated measures for BECCS, and 6 per cent included measures for biochar applications. These figures represent sharp increases compared with the previous NDCs, where the corresponding shares were 2, 1 and 1 per cent respectively.

79. Global annual CDR capacity using CCS-based technologies, such as DACCS and BECCS, is estimated to have been operational since 2017 and nearly tripled from 0.9 Mt CO_2 in 2022, to a record high of 2.5 Mt CO_2 in 2025.[84] This is more than double the figure of 1.1 Mt CO_2 in both 2023 and 2024.

80. A total of 1 per cent of Parties, accounting for 2 per cent of total global energy supply from fossil fuels in 2024, communicated quantitative targets in their NDCs to increase annual CCS-based CDR capacity by 2035. These targets amount to 14 Mt CO_2 (including 9 Mt CO_2 directly referenced as a contribution to this global effort), which is more than 5.5 times greater than the total global CDR capacity in 2025 (2.5 Mt CO_2). The entire 14 Mt CO_2 was reported in relation to achieving fully unconditional mitigation targets.

81. On the other hand, IEA projects that, if all announced CCS-based removal projects under construction or in the planning stage are completed, total global CCS-based CDR capacity could reach 78 Mt CO_2 annually in 2035. For the 154 Parties that submitted new NDCs, total CCS-based CDR capacity could reach 35 Mt CO_2.[85] This is 2.5 times greater than the 14 Mt CO_2 aggregated capacity target based on the NDCs, indicating that the NDCs submitted do not cover all announced projects. Some Parties may nationally determine that progress in increasing annual CCS-based CDR capacity—along with other contributing factors, such as enhanced international cooperation and support—contribute to a greater potential for accelerated implementation and enhanced ambition of this effort.

4. Low-carbon hydrogen production

82. IEA estimates that low-carbon hydrogen[86] accounted for less than 1 per cent of global hydrogen production (about 100 Mt) in 2025, with most hydrogen produced from unabated fossil fuels, partly owing to cost gaps and regulatory and demand uncertainties.[87] Production

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[82] According to the UNEP *Limiting Overshoot* report, most scenarios that return warming to 1.5°C after a peak rely on further upscaling of CDR beyond the level achieved at net-zero CO_2, with removals reaching between about 15 and 24 Gt CO_2 per annum in 2100 to achieve deeply net-negative CO_2 emissions. However, the report also projects that, even with optimistic scaling of CDR, temperature reversal is unlikely to exceed a few tenths of a degree this century, and feasibility of such a reversal depends strongly on concurrent further reductions in residual CO_2 emissions.

[83] For example, the contribution of Working Group III to the AR6 notes that afforestation or production of biomass crops for BECCS or biochar, when poorly implemented, can have adverse socio-economic and environmental impacts, including on biodiversity, food and water security, local livelihoods and on the rights of Indigenous Peoples, if implemented at large scales and where land tenure is insecure.

[84] As footnote 72 above. For forest- and ocean-related CDR technologies, see the relevant sections in the main report (FCCC/PA/CMA/2026/9). The IEA *World Energy Outlook 2025* report projects that total global annual carbon removed by CDR technologies, such as BECCS and DACCS, will increase steeply to 180 Mt CO_2 by 2030, 657 Mt CO_2 by 2035, 1,116 Mt CO_2 by 2040 and 2,090 Mt CO_2 by 2050 on its 1.5 °C pathway with high overshoot.

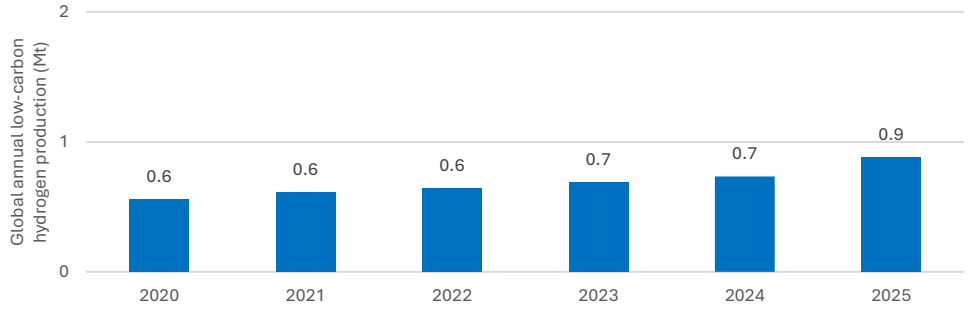
[85] Estimated on the basis of data from the IEA CCUS Projects Database.

[86] The IEA *World Energy Outlook 2025* report defines low-carbon hydrogen as hydrogen produced through water electrolysis, using electricity generated from low-emissions sources such as renewables and nuclear, and hydrogen produced from biomass or from fossil fuels equipped with CCUS technology.

[87] IEA. 2026. *Global Hydrogen Review 2026*. Paris: IEA. All rights reserved. Available at https://www.iea.org/reports/global-hydrogen-review-2026.

reached a record high of 0.9 Mt in 2025, up 37 per cent from 2022 and 20 per cent from 2024 (see Figure **15**).[88] Growth between 2024 and 2025 represents a nearly threefold acceleration compared with the average annual growth rate of 7 per cent between 2020 and 2024.

Figure 15
Global annual low-carbon hydrogen production 2020–2025



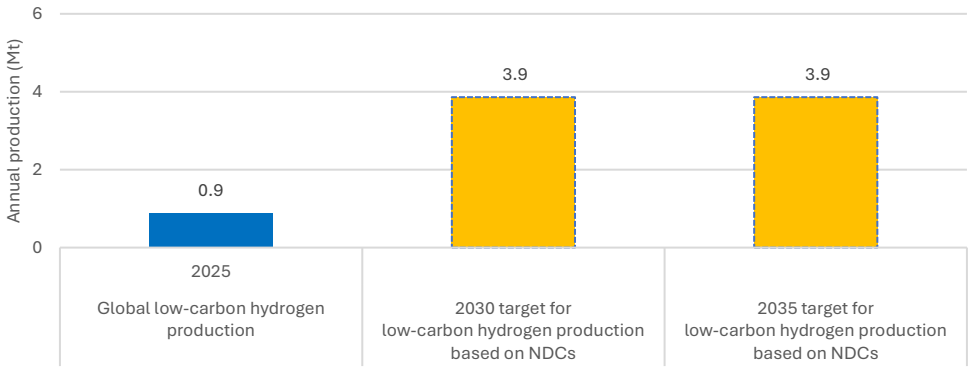
Notes: See footnote 88 above for the data source.

83. In addition to the co-benefits referred to in chapter IV.D above, including enhanced energy security and employment, low-carbon hydrogen could also improve food security, as it serves as a feedstock for urea used in fertilizers.

84. A total of 33 per cent of Parties, accounting for 64 per cent of total global energy supply from fossil fuels in 2024, indicated measures for low-carbon hydrogen production in their NDCs—5.5 times greater than the 6 per cent in the previous NDCs assessed in the 2024 report.

85. In addition, 3 per cent of Parties, accounting for 3 per cent of total global energy supply from fossil fuels in 2024, communicated quantitative targets in their NDCs to increase total low-carbon hydrogen production by 2030. These targets total 3.9 Mt (including 2 Mt directly referenced as a contribution to this global effort), which is more than quadruple the amount of the global low-carbon hydrogen production in 2025 (0.9 Mt) (see Figure **16**). Of this total, 3 Mt (or 74 per cent) was reported in relation to achieving mitigation targets that are fully or partially conditional, highlighting Parties' high level of need for enhanced support and cooperation for implementation.

Figure 16
Aggregated targets for low-carbon hydrogen production for 2030 and 2035 based on nationally determined contributions



Notes: See paragraph 19 as well as footnote 20 above for the methodologies used to estimate aggregated production targets.

86. Similarly, the same 3 per cent of Parties communicated quantitative targets in their NDCs to increase total low-carbon hydrogen production by 2035. These targets likewise

[88] Estimated on the basis of data from IEA. 2026. *Hydrogen Tracker*. Paris: IEA. All rights reserved. Available at https://www.iea.org/data-and-statistics/data-tools/hydrogen-tracker (accessed 8 July 2026). In its *World Energy Outlook 2025* report, IEA projects that global low-carbon hydrogen production will increase sharply to 35 Mt by 2030, 125 Mt by 2035 and 376 Mt by 2050 on its 1.5 °C pathway with high overshoot.

amount to 3.9 Mt (including 2 Mt directly referenced). Of this total, 3 Mt (or 74 per cent) was reported in relation to achieving mitigation targets that are fully or partially conditional.

G. Accelerating the substantial reduction of non-carbon-dioxide emissions globally, in particular methane emissions by 2030

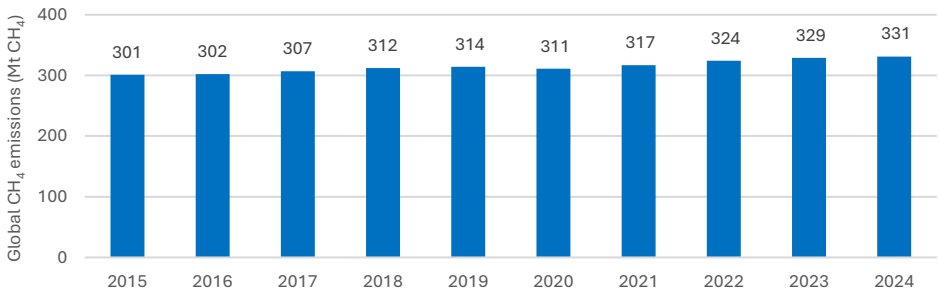
87. CMA 7 reiterated its resolve to pursue efforts to limit the temperature increase to 1.5 °C to limit both the magnitude and the duration of any temperature overshoot.[89]

88. The Synthesis Report of the AR6 finds that a more rapid reduction in CO_2 and non-CO_2 emissions, particularly CH_4, limits peak warming levels and reduces the need for net-negative CO_2 emissions and CDR, thereby reducing feasibility and sustainability concerns, and social and environmental risks, as referenced in paragraph 77 above. The much shorter atmospheric lifetime of CH_4 and its significantly higher GWP compared with CO_2 mean that deep reduction in CH_4 emissions can be particularly effective in reducing peak global warming in the near term.[90]

89. Moreover, accelerating substantial reductions in CH_4 and other short-lived climate pollutants offers important co-benefits, including improved air quality, leading to fewer premature respiratory deaths and diseases.[91] Utilizing captured biogenic CH_4 in the agriculture and waste sectors can also enhance energy security by providing domestic sources of low-emission fuels, thereby replacing imported fuels, as indicated in chapter IV.D above.

90. Global CH_4 emissions are estimated to have increased to a record high of 331 Mt CH_4 (9.3 Gt CO_2 eq) in 2024, which is 10.0 per cent above the 2015 level, 5.4 per cent above the 2019 level and 2.2 per cent above the 2022 level (see Figure **17**).[92] While this is also 0.6 per cent higher than 329 Mt CH_4 (9.2 Gt CO_2 eq) recorded in 2023, growth between 2023 and 2024 marked a slowdown compared with the average annual increase of 1.9 per cent observed between 2020 and 2023 and the five-year average growth rate of 0.8 per cent per year between 2015 and 2019 prior to the coronavirus disease 2019 pandemic.

Figure 17
Global CH_4 emissions 2015–2024



Notes: See footnote 92 above for the data source.

[89] Decision 1/CMA.7, para 7.

[90] According to the Synthesis Report of the AR6, CH_4 emissions are the second largest contributor to global warming, responsible for about 0.5 (0.3–0.8) °C of the warming in 2010–2019 relative to the pre-industrial period. The atmospheric lifetime of CH_4 is estimated at about 12 years, and its GWP is estimated to be about 80 times that of CO_2 over a 20-year time frame.

[91] According to the IEA *World Energy Outlook 2025* report, achieving universal access to clean cooking could prevent 1.6 million premature deaths annually and reduce CH_4 emissions from incomplete bioenergy combustion.

[92] As footnote 6 above; as modified by the secretariat, on the basis of GWP-100 values from the contribution of Working Group I to the AR5 in line with decision 18/CMA.1. The contribution of Working Group III to the AR6 estimates that global CH_4 emissions reached 11 ± 3.2 Gt CO_2 eq in 2019, using the AR6 GWP-100 values, with uncertainties reported for a 90 per cent confidence interval. The Synthesis Report of the AR6 projects that global CH_4 emissions will decline by 24 per cent by 2030 and 37 per cent by 2040 below 2019 levels on its 2.0 °C pathways with action starting in 2020.

91. A total of 93 per cent of Parties, accounting for 74 per cent of global CH_4 emissions in 2024,[93] indicated measures for reducing CH_4 emissions in their NDCs—a 1.5-fold increase from the 63 per cent in the previous NDCs assessed in the 2024 report.

92. Of the 92 per cent of Parties that included CH_4 among GHGs covered by their NDCs, 8 per cent, accounting for 4 per cent of global CH_4 emissions in 2024, reported economy-wide quantitative targets to reduce CH_4 emissions by 2030, such as reducing CH_4 emissions by 11 per cent below the 2013 level. Of these Parties, 3 per cent presented absolute CH_4 emissions targets, corresponding to a reduction of 2.3 Mt CH_4 below 2024 levels by 2030[94] (including 1.9 Mt CH_4 directly referenced as a contribution to this global effort).This is equivalent to 0.7 per cent of global CH_4 emissions in 2024 (331 Mt CH_4). Of the total reduction, 0.02 Mt CH_4 (or 0.7 per cent) was reported in relation to achieving mitigation targets that are fully or partially conditional.

1. Accelerating the substantial reduction of non-carbon-dioxide emissions globally, in particular methane emissions from energy supply by 2030

93. Reducing CH_4 emissions from energy supply presents notable mitigation potential at low costs. In 2030, at costs below USD 20/t CO_2 eq, reducing CH_4 emissions from oil and gas operations could lower emissions by 0.92 Gt CO_2 eq/year and from coal mining by 0.45 Gt CO_2 eq/year. Notably, approximately one third of the mitigation potential for oil and gas operations (0.31 Gt CO_2 eq/year) is achievable at negative cost, as the market value of captured CH_4 could exceed the investment required for lifetime costs. At costs below USD 100/t CO_2 eq, the mitigation potential increases to 1.05 Gt CO_2 eq/year for oil and gas operations and to 0.5 Gt CO_2 eq/year for coal mining. In 2035, the mitigation potential for reducing CH_4 emissions from oil and gas operations reaches 1.20 Gt CO_2 eq/year at costs below USD 200/t CO_2 eq.

94. Energy supply is estimated to be the second largest source of global anthropogenic CH_4 emissions after agriculture, accounting for 36 per cent of emissions in 2024.[95] Global CH_4 emissions from energy supply are estimated to have increased to a record high of 118 Mt CH_4 (3.3 Gt CO_2 eq) in 2024, which 10 per cent above the 2015 level and 2.6 per cent above the 2022 level (see Figure **18**).[96] However, the lack of growth between 2023 and 2024 marked a slowdown compared with the five-year average growth rate of 1.1 per cent per year between 2015 and 2019 prior to the coronavirus disease 2019 pandemic. Most of these emissions originate from the production, processing, storage and transport of fossil fuels. The remainder arises from the incomplete combustion of traditional biofuels, primarily in developing countries where access to clean cooking remains limited.

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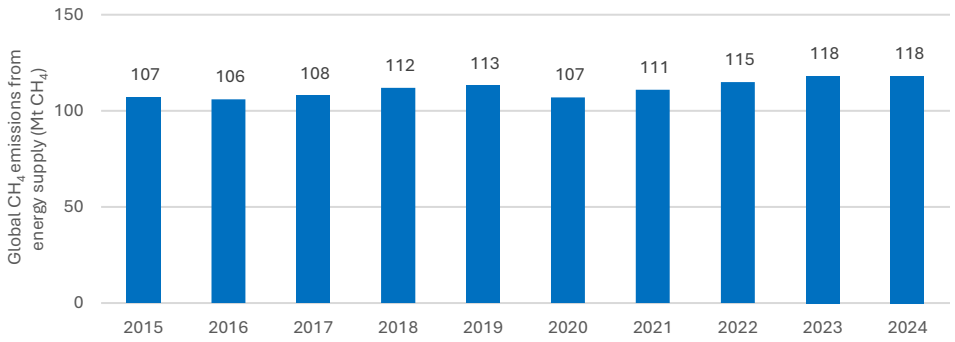
[93] As footnote 6 above. Unless otherwise stated, all shares of Parties in this report relating to global CH_4 emissions, as well as CH_4 emissions from energy supply, agriculture and waste, are estimated on the basis of data from the PRIMAP-hist national historical emissions time series v2.7. (1750–2024).

[94] Aggregated reductions targets are derived from absolute CH_4 emissions targets. Consistent with the approach described in footnote 32 above, baselines for estimating target CH_4 emissions by 2030 (e.g. reducing CH_4 emissions by 40 per cent by 2030) are assumed, unless otherwise specified in the NDCs, to be total CH_4 emissions in 2023 for new NDCs, and in 2019 for previous NDCs. Reduction targets by 2030 are estimated using the latest available Party-level data for 2024.

[95] As footnote 92 above. IEA. 2026. *Methane Tracker.* Paris: IEA. All rights reserved. Available at https://www.iea.org/data-and-statistics/data-tools/methane-tracker-data-explorer. According to the IEA *Methane Tracker*, global CH_4 emissions from energy supply accounted for 41 per cent of global anthropogenic CH_4 emissions in 2025 (148 Mt CH_4), while Crippa et al. estimated the corresponding share at 33 per cent (108 Mt CH_4) (Crippa, M et al. 2025. *GHG emissions of all world countries – 2025 Report*. Luxembourg: Publications Office of the European Union. Available at: https://edgar.jrc.ec.europa.eu/report_2025). Estimates differ depending on methodologies (e.g. emission factor-based estimates and measurement-based estimates) and datasets used.

[96] In its *World Energy Outlook 2025* report, IEA projects that global CH_4 emissions from energy supply will decline sharply to about 46 Mt CH_4 (1.3 Gt CO_2 eq) by 2030 and to 32 Mt CH_4 (0.9 Gt CO_2 eq) by 2035 on its 1.5 °C pathway with high overshoot.

Figure 18
Global CH_4 emissions from energy supply 2015–2024



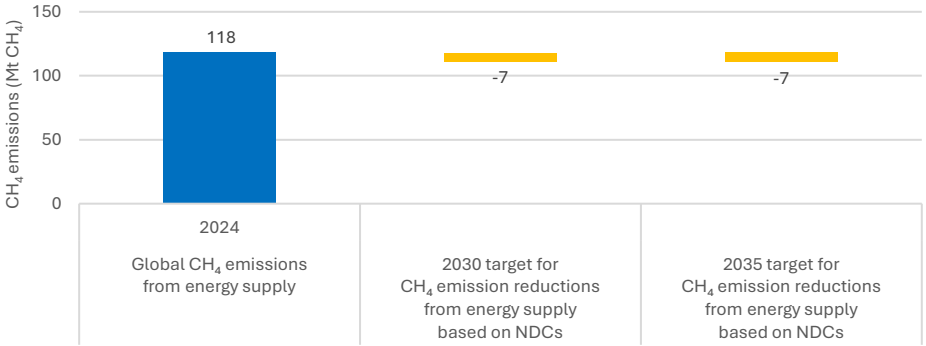
Notes: See footnote 92 above for the data source.

95. Measures to reduce CH_4 emissions from energy supply, such as achieving zero routine flaring and venting by 2030 and setting LDAR requirements, were communicated by 62 per cent of Parties, accounting for 64 per cent of global CH_4 emissions from energy supply in 2024. This is more than double the 29 per cent in the previous NDCs assessed in the 2024 report.

96. For oil and gas operations, which represent more than half of global CH_4 emissions from energy supply, IEA estimates that tried-and-tested measures, including limiting flaring and venting and implementing LDAR, could more than halves CH_4 emissions from these operations.[97] A total of 13 per cent of Parties indicated measures to limit flaring and venting and 9 per cent indicated measures for LDAR—a sharp increase from the 8 and 3 per cent respectively in the previous NDCs assessed in the 2024 report.

97. In addition, 5 per cent of Parties, accounting for 10 per cent of global CH_4 emissions from energy supply in 2024, reported quantitative targets in their NDCs to reduce CH_4 emissions from energy supply by 2030. These targets amount to a total reduction of 7 Mt CH_4 below 2024 levels by 2030[98] (all of which is directly referenced as a contribution to this global effort), and equates to 6 per cent of the 118 Mt CH_4 of global CH_4 emissions from energy supply in 2024 (See Figure **19**). Of this total reduction, 5.4 Mt CH_4 (or 77 per cent) was reported in relation to achieving mitigation targets that are fully or partially conditional, highlighting Parties' high level of need for enhanced support and cooperation for implementation.

Figure 19
Aggregated targets for the reduction in CH_4 emissions from energy supply by 2030 and 2035 based on nationally determined contributions



Notes: See paragraph 19 as well as footnotes 20 and 98 above for the methodologies used to estimate aggregated reduction targets.

[97] IEA. 2026. *Global Methane Tracker 2026*. Paris: IEA. All rights reserved. Available at https://www.iea.org/reports/global-methane-tracker-2026.

[98] As footnote 94 above.

2. Accelerating the substantial reduction of non-carbon-dioxide emissions globally, in particular methane emissions from agriculture by 2030

98. Agriculture is estimated to be the largest source of global anthropogenic CH_4 emissions, accounting for 44 per cent of emissions in 2024 (145 Mt CH_4).[99]

99. Reducing CH_4 and N_2O emissions from agriculture offers substantial mitigation potential at low costs. In 2030, emission reductions are estimated at 0.35 Gt CO_2 eq/year at costs below USD 20/t CO_2 eq, increasing to 0.63 Gt CO_2 eq/year at costs below USD 100/t CO_2 eq.

100. A total of 77 per cent of Parties, accounting for 58 per cent of global CH_4 emissions from agriculture in 2024, reported measures to reduce CH_4 and N_2O emissions from agriculture in their NDCs—nearly double the 40 per cent in the previous NDCs assessed in the 2024 report. The measures reported include adopting technologies to minimize CH_4 emissions from effluent and manure management for 55 per cent of the dairy herd by 2030 and constructing biodigesters to replace fuelwood consumption with biogas from the anaerobic digestion of manure.

101. According to the contribution of Working Group III to the AR6, more than 90 per cent of global agricultural CH_4 emissions between 2010 and 2019 originated from enteric fermentation from ruminant livestock, rice cultivation, and manure management. A total of 51 per cent of Parties indicated measures for improved herd and manure management and 17 per cent for improved water management in rice production in their NDCs—a sharp increase from the 31 and 7 per cent respectively in the previous NDCs assessed in the 2024 report.

102. A total of 1 per cent of Parties, accounting for 0.7 per cent of global CH_4 emissions from agriculture in 2024, communicated quantitative targets to reduce CH_4 emissions from agriculture by 2030. All of these Parties directly referenced their contribution to this global effort and reported such targets in relation to achieving fully unconditional mitigation targets.

3. Accelerating the substantial reduction of non-carbon-dioxide emissions globally, in particular methane emissions from waste by 2030

103. Waste is estimated to be the third largest source of global anthropogenic CH_4 emissions after agriculture and energy supply, accounting for 20 per cent of emissions in 2024 (67 Mt CH_4).[100]

104. Reducing CH_4 emissions from waste presents notable mitigation potential at low costs. In 2030, at costs below USD 20/t CO_2 eq, reducing CH_4 emissions from solid waste could lower emissions by 0.44 Gt CO_2 eq/year. Notably, three quarters of this mitigation potential (0.33 Gt CO_2 eq/year) is achievable at negative cost, as the market value of captured CH_4 or by-products could exceed the investment required for lifetime costs. At costs below USD 100/t CO_2 eq, the mitigation potential increases to 0.54 Gt CO_2 eq/year. In 2035, the mitigation potential for reducing CH_4 emissions from solid waste is projected to reach 0.8 Gt CO_2 eq/year, while that for wastewater is estimated at 0.30 Gt CO_2 eq/year, at costs below USD 200/t CO_2 eq.

105. Measures to reduce CH_4 emissions from waste, such as establishing advanced wastewater treatment facilities that capture CH_4 for energy use and diverting organic waste to community composting to reduce reliance on imported chemical fertilizers, were reported by 89 per cent of Parties, accounting for 80 per cent of global CH_4 emissions from waste in 2024—1.5 times the greater than the 56 per cent in the previous NDCs assessed in the 2024 report.

106. Key mitigation options for reducing CH_4 emissions from waste include waste-to-energy measures, waste recycling, waste reuse, waste reduction, and composting, all of which are examples of circular economy approaches referenced in chapter IV.K below. Waste-to-energy measures can reduce fuel import costs for electricity generation, while enhancing energy security. Composting can also lower fertilizer import costs, while enhancing food

[99] As footnote 92 above. CDR to counterbalance hard-to-abate residual CH_4 and N_2O emissions from agriculture is unavoidable if net zero emissions are to be achieved, as noted in footnote 65 above.

[100] As footnote 92 above.

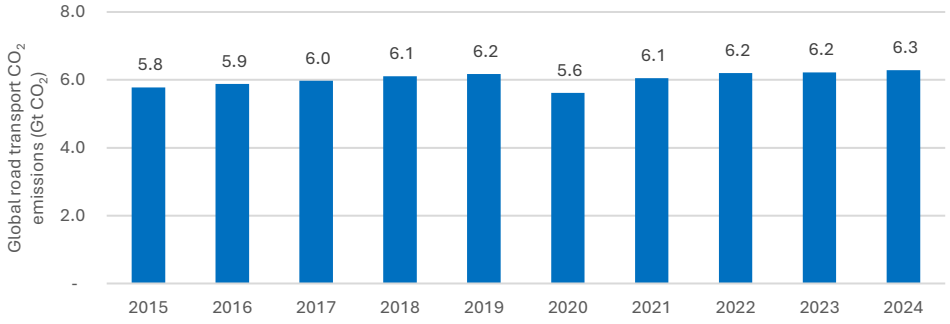
security. A total of 49 per cent of Parties included measures for waste-to-energy and 45 per cent indicated measures for composting in their NDCs—a sharp increase from the 32 and 24 per cent respectively in the previous NDCs assessed in the 2024 report.

107. A total of 1 per cent of Parties, accounting for 0.004 per cent of global CH_4 emissions from waste in 2024, communicated quantitative targets to reduce CH_4 emissions from waste by 2030. All of these Parties reported such targets in relation to achieving mitigation targets that are fully or partially conditional, highlighting the need for enhanced support and cooperation for implementation.

H. Accelerating the reduction of emissions from road transport on a range of pathways, including through development of infrastructure and rapid deployment of zero- and low-emission vehicles

108. Road transport was the second largest source of global energy-related CO_2 emissions in 2024 after coal-fired power generation, accounting for 18 per cent of energy-related emissions and 74 per cent of transport-related emissions.[101] Global CO_2 emissions from road transport are estimated to have increased to a record high of 6.3 Gt CO_2 in 2024, which is 8.8 per cent above the 2015 level and 1.3 per cent above the 2022 level (see Figure **20**). This represents a 1.0 per cent increase compared with 2023. Although this rate of growth between 2023 and 2024 remained below the five-year average growth rate of 1.7 per cent per year between 2015 and 2019 prior to the coronavirus disease 2019 pandemic, it marks an acceleration from the 0.3 per cent increase observed between 2022 and 2023.

Figure 20
Global CO_2 emissions from road transport 2015–2024



Notes: See footnote 56 above for the data source.

109. Reducing emissions from road transport offers notable mitigation potential at low costs. For example, in 2030, fuel-efficient light-duty vehicles could reduce emissions by 0.56 Gt CO_2 eq/year, while shifting to public transport could reduce emissions by 0.53 Gt CO_2 eq/year, both at costs below USD 20/t CO_2 eq. Notably, the full mitigation potential of both of these mitigation options is achievable at negative cost. At costs below USD 100/t CO2 eq, biofuels have a mitigation potential of 0.69 Gt CO_2 eq/year. Electrification also plays a key role in lowering emissions, with electric light-duty and heavy-duty vehicles projected to reduce emissions by 0.59 Gt CO_2 eq/year and 0.21 Gt CO_2 eq/year respectively.[102] According to the IEA *World Energy Outlook 2025* report, battery prices declined by 75 per cent between 2015 and 2024, narrowing the price gap between electric and ICE vehicles. In 2035, mitigation potential reaches 1.1 Gt CO_2 eq/year for shifting to public transport, 0.7 Gt CO_2 eq/year for fuel-efficient light-duty vehicles, and 0.6 Gt CO_2 eq/year for electric light-duty vehicles, all at costs below USD 200/t CO_2 eq.

[101] As footnote 56 above. The IEA *World Energy Outlook 2025* report projects that global CO_2 emissions from road transport will decline sharply to 3.8 Gt CO_2 by 2035, 2.2 Gt CO_2 by 2040 and by 0.5 Gt CO_2 by 2050 on its 1.5 °C pathway with high overshoot.

[102] According to the contribution of Working Group III to the AR6, no estimated costs of mitigation potentials could be allocated to this mitigation option owing to a high variation in or lack of data.

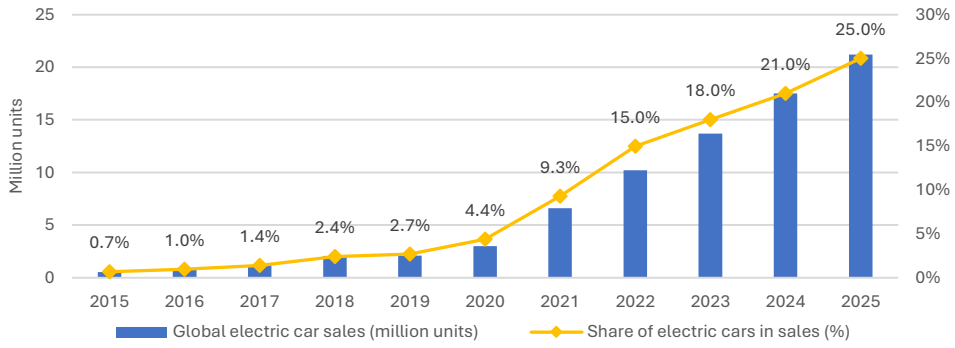
110. These mitigation options also offer important co-benefits, including reduced premature mortality from air pollution and enhanced energy security through lower dependence on oil imports, particularly in oil-importing countries. IEA estimates that the electrification of light-duty vehicles alone displaced about 1.2 million barrels of oil demand per day in 2025, which is equivalent to about 1.2 per cent of global oil demand,[103] with around 5 per cent of the global car stock becoming electrified.[104] This trend supports both the global effort to transition away from fossil fuels (see chapter IV.E above) and energy security. 6 per cent of Parties identified road transport electrification as contributing to enhanced energy security by replacing imported fuels with domestic energy sources, thereby lowering dependence on imported fuels and associated expenditure.

111. A total of 94 per cent of Parties, accounting for 67 per cent of global CO_2 emissions from road transport in 2024,[105] reported measures to reduce emissions from road transport in their NDCs—up from 79 per cent in the previous NDCs assessed in the 2024 report. The measures reported include providing subsidies for electric vehicle purchases, introducing light rail transit system, and enforcing stricter emission standards for imported second-hand vehicles. More specifically, 81 per cent of Parties indicated measures to electrify light-duty vehicles in their NDCs, 40 per cent to improve the fuel efficiency of light-duty vehicles and 75 per cent to increase the shift to public transport—a sharp increase from the 41, 29 and 32 per cent respectively in the previous NDCs assessed in the 2024 report.

112. A total of 18 per cent of Parties, accounting for 12 per cent of global CO_2 emissions from road transport in 2024, communicated quantitative targets to reduce CO_2 emissions from road transport by 2035 in their NDCs. All of these Parties reported such targets in relation to achieving mitigation targets that are fully unconditional targets.

113. Global electric car sales are estimated to have increased to a record high of 21.2 million units in 2025, having increased more than 40-fold since 2015 and doubled since 2022 (see Figure **21**).[106] This represents a 21 per cent increase from the 17.5 million units sold in 2024. As a result, electric cars accounted for 25.0 per cent of all cars sold in 2025, up from 21.0 per cent in 2024, 15.0 per cent in 2022 and 0.7 per cent in 2015.

Figure 21
Global electric car sales 2015–2025



Notes: See footnote 106 above for the data source.

[103] As footnote 44 above.

[104] IEA. 2026. *Global EV Outlook 2026*. Paris: IEA. All rights reserved. Available at https://www.iea.org/reports/global-ev-outlook-2026.

[105] All shares of Parties relating to global CO_2 emissions from road transport in 2024 in this report are estimated on the basis of data from the IEA *Greenhouse Gas Emissions from Energy* report.

[106] Estimated on the basis of data from the IEA *Global EV Outlook 2026* report. Electric cars refer to battery electric and plug-in hybrid passenger light-duty vehicles. In its *Energy Technology Perspective 2026* report, IEA projects that the share of electric cars in global sales will increase to nearly 100 per cent by 2035 on its 1.5 °C pathway with high overshoot (IEA. 2026. *Energy Technology Perspective 2026*. Paris: IEA. All rights reserved. Available at https://www.iea.org/reports/energy-technology-perspectives-2026). The report also notes that rapidly growing electric car sales contributed to a significant reduction in battery energy storage costs, as referred to in paragraph 22 above.

114. A total of 12 per cent of Parties, accounting for 9 per cent of global car sales in 2025,[107] reported in their NDCs quantitative targets to increase the share of zero- and low-emission (primarily electric) cars in total new car sales by 2030. Two thirds of these Parties (8 per cent of Parties) communicated such targets in relation to achieving mitigation targets that are fully or partially conditional, underscoring Parties' high-level of need for enhanced support and cooperation for implementation.

115. Similarly, 34 per cent of Parties, accounting for 23 per cent of global car sales in 2025, reported corresponding targets by 2035 in their NDCs. Nearly three quarters of these 34 per cent of Parties (25 per cent of Parties), accounting for 23 per cent of global car sales in 2025, included targets to increase the sales share beyond the 2025 global level of 25 per cent by 2035, while nearly three fifths (20 per cent of Parties), accounting for 23 per cent of global car sales in 2025, included targets to increase the sales share to a 100 per cent by 2035. More than one third of these 34 per cent of Parties (12 per cent of Parties) communicated such targets in relation to achieving mitigation targets that are fully or partially conditional, underscoring Parties' need for enhanced support and cooperation for implementation.

116. As electric car sales continue to expand rapidly, driven by factors such as declining battery costs and lower operating costs, [108] the availability, capacity and speed of both private and public[109] charging is key to enabling wider access to electric cars. A total of 50 per cent of Parties, accounting for 71 per cent of global car sales in 2025, reported in their NDCs measures to expand or improve charging infrastructure for road transport—1.5 times greater than the 32 per cent in the previous NDCs assessed in the 2024 report.

I. Phasing out inefficient fossil fuel subsidies that do not address energy poverty or just transitions, as soon as possible

117. According to the contribution of Working Group III to the AR6, removing fossil fuel subsidies is projected to reduce global GHG emissions by up to 10 per cent by 2030, as well as bring other environmental and financial benefits, including fewer premature deaths related to air pollution and improved public revenue.

118. Total global fossil fuel subsidies are estimated to have increased by 90 per cent from USD 486 billion in 2015 to USD 921 billion in 2024. However, this represents a 44 per cent decrease from USD 1,659 billion in 2022,[110] as some government provisions introduced in response to the global energy crisis have since expired. Nonetheless, the 2024 level remains 51 per cent higher than the pre-crisis10-year annual average of USD 609 billion for 2021–2021. In particular, natural gas subsidies in 2024 were 111 per cent higher than the pre-crisis 10-year annual average of USD 123 billion. Petroleum product subsidies accounted for the largest share (44 per cent) of total global fossil fuel subsidies in 2024, followed by subsidies for natural gas (28 per cent) and electricity (23 per cent).

119. A total of 32 per cent of Parties, accounting for 29 per cent of total global fossil fuel subsidies in 2024,[111] identified measures to remove fossil fuel subsidies in their NDCs—more than five times greater than the 6 per cent in the previous NDCs assessed in the 2024 report. Measures reported include shifting subsidies from buses with ICEs to electric buses and

[107] Estimated on the basis of data from the International Organization of Motor Vehicle Manufacturers, available at https://oica.net/sales-statistics/ (accessed 26 August 2026). All shares of Parties relating to global car sales in 2025 in this report are estimated on the basis of data from the International Organization of Motor Vehicle Manufacturers.

[108] See footnote 106 above. While the upfront costs of electric cars remain higher than those of ICE cars in most markets, electric cars generally have lower operating costs, leading to lower total lifecycle expenditure. This becomes more pronounced when oil prices are higher during energy crises.

[109] In its *Global EV Outlook 2026* report, IEA estimates that total global public charging points increased to a record high of about 7 million in 2025, having increased 40-fold since 2015 and nearly tripled since 2022. This represents a 30 per cent increase compared with 5.4 million in 2024. The number of public charging points are projected to expand fivefold between 2025 and 2035, reaching 35 million on IEA's 1.5 °C pathway with high overshoot.

[110] Fossil Fuel Subsidy Tracker, available at https://fossilfuelsubsidytracker.org/ (accessed 14 May 2026). Global estimates are based on data from 195 economies.

[111] Estimated on the basis of data from the Fossil Fuel Subsidy Tracker.

redirecting funds to effectively incentivize the decarbonization of public transport while ensuring affordable transportation.

J. Transitional fuels playing a role in facilitating the energy transition while ensuring energy security

120. The contribution of Working Group III to the AR6 finds that natural gas may remain part of energy systems through mid-century, for both electricity generation and use in industry and buildings, even if likely warming is limited to 2° C or less.[112] Its scenarios indicate that gas use in electricity will likely peak in around 2035 and 2050 if warming is limited to 1.5 °C with limited or no overshoot or to 2° C with action starting in 2020 respectively.[113]

121. This mitigation option contributes, for example, to fuel switching in industry, which could reduce emissions by 1.95 Gt CO_2 eq/year at costs below USD 100/t CO_2 eq in 2030 and by 2.10 Gt CO_2 eq/year at costs below USD 200/t CO_2 eq in 2035.

122. Global power generation from natural gas is estimated to have reached 6,822 TWh in 2025, which is 23 per cent greater than in 2015 and 4.8 per cent greater than in 2022.[114] However, it declined by 1.2 per cent from 6,908 TWh in 2024, in contrast with the 3 per cent increase recorded between 2023 and 2024 and the five-year average growth rate of 3.4 per cent per year between 2015 and 2019 prior to the coronavirus disease 2019 pandemic.

123. A total of 38 per cent of Parties, accounting for 56 per cent of total global energy supply from coal and oil in 2024, indicated in their NDCs measures to use transitional fuels in facilitating the energy transition while ensuring energy security—a 1.5-fold increase from the 25 per cent in the previous NDCs assessed in the 2024 report. The measures reported include encouraging industries to switch from heavy fuel oil to natural gas through pollution control laws and securing power generation fired by liquefied natural gas to support fuel security while facilitating the fade-out of inefficient coal-fired power generation.

K. Transitioning to sustainable lifestyles and sustainable patterns of consumption and production in efforts to address climate change, including through circular economy approaches

124. This mitigation option offers substantial mitigation potential across priority areas at low costs. For example, in 2030, reducing CH_4 emissions from solid waste could achieve emissions reductions of 0.44 Gt CO_2 eq/year at costs below USD 20/t CO_2 eq. At costs below USD 100/t CO_2 eq, improving material efficiency in industry could reduce emissions by 0.93 Gt CO_2 eq/year, while enhancing recycling in industry could reduce emissions by 0.48 Gt

[112] Total global energy supply from natural gas is estimated to have reached a record high of 149 EJ in 2025, which is 21 per cent greater than in 2015, 3.5 per cent greater than in 2022, and 0.2 per cent greater than in 2024. Growth between 2024 and 2025 slowed markedly compared with the 3 per cent growth observed between 2023 and 2024 and the five-year average growth rate of 3.1 per cent per year between 2015 and 2019 prior to the coronavirus disease 2019 pandemic. See footnote 47 above for the data source. The contribution of Working Group III to the AR6 projects that total global energy supply from natural gas will increase by 15 (10–25) per cent by 2030 but decline by 45 (25–55) per cent by 2050 below the 2019 levels on 1.5 ºC pathways with high overshoot. IEA projects in its *World Energy Outlook 2025* report that total global energy supply from natural gas will sharply decline by 39 per cent by 2035, 58 per cent by 2040 and 80 per cent by 2050 relative to the 2024 level on its 1.5 °C pathway with high overshoot.

[113] The contribution of Working Group III to the AR6 states that there is variability in the role gas would play in future scenarios based on national climate commitments and the availability of cheap renewables. In line with its 1.5 °C pathway for total global energy supply referred to in footnote 112 above, IEA projects in its *World Energy Outlook 2025* report that global power generation from unabated natural gas will sharply decline by 59 per cent to 2,779 TWh by 2035, by 82 per cent to 1,249 TWh by 2040 and by 97 per cent to 205 TWh by 2050 relative to the 2024 level on its 1.5 °C pathway with high overshoot.

[114] As footnote 47 above.

CO_2 eq/year. Shifting to balanced and sustainable healthy diets could also achieve emission reductions of 1.70 Gt CO_2 eq/year in 2030.[115] In 2035, at costs below USD 200/t CO_2 eq, the mitigation potential reaches 1.20 Gt CO_2 eq/year for improving material efficiency in industry and 1.00 Gt CO_2 eq/year for enhancing recycling in industry.

125. A total of 92 per cent of Parties communicated in their NDCs measures relevant to transitioning to sustainable lifestyles and sustainable patterns of consumption and production—a 1.5-fold increase from the 59 per cent in the previous NDCs assessed in the 2024 report. The measures mentioned include scaling up composting and biogas production from organic waste by 2030 and converting industrial parks into eco-industrial parks by enhancing energy and material efficiency and by achieving cost savings among participating industries.

126. According to the contribution of Working Group III to the AR6, circular economy approaches, such as material efficiency improvements and enhanced recycling, can significantly reduce emissions by avoiding the large amount of energy required to process virgin materials, while also helping to mitigate material supply risks for critical minerals used in clean energy applications. In its *World Energy Outlook 2025* report, IEA projects supply-demand gaps for critical minerals by 2035, particularly for copper and lithium, despite the expected increases in supply from recently announced mining projects.

127. A total of 32 per cent of Parties indicated in their NDCs measures to enhance recycling in industry, such as implementing regulations on batteries and waste batteries that cover the full life cycle of batteries, including the sourcing and recovery of materials. Additionally, 51 per cent of Parties reported measures to promote cross-sectoral circular economy approaches, including developing a national circular economy roadmap based on the circular economy law. These figures represent threefold increases compared with the previous NDCs assessed in the 2024 report, where the corresponding shares were 11 and 16 per cent respectively.

V. Status of and trends in domestic mitigation measures relevant to the global efforts and mitigation options covered in recent decisions

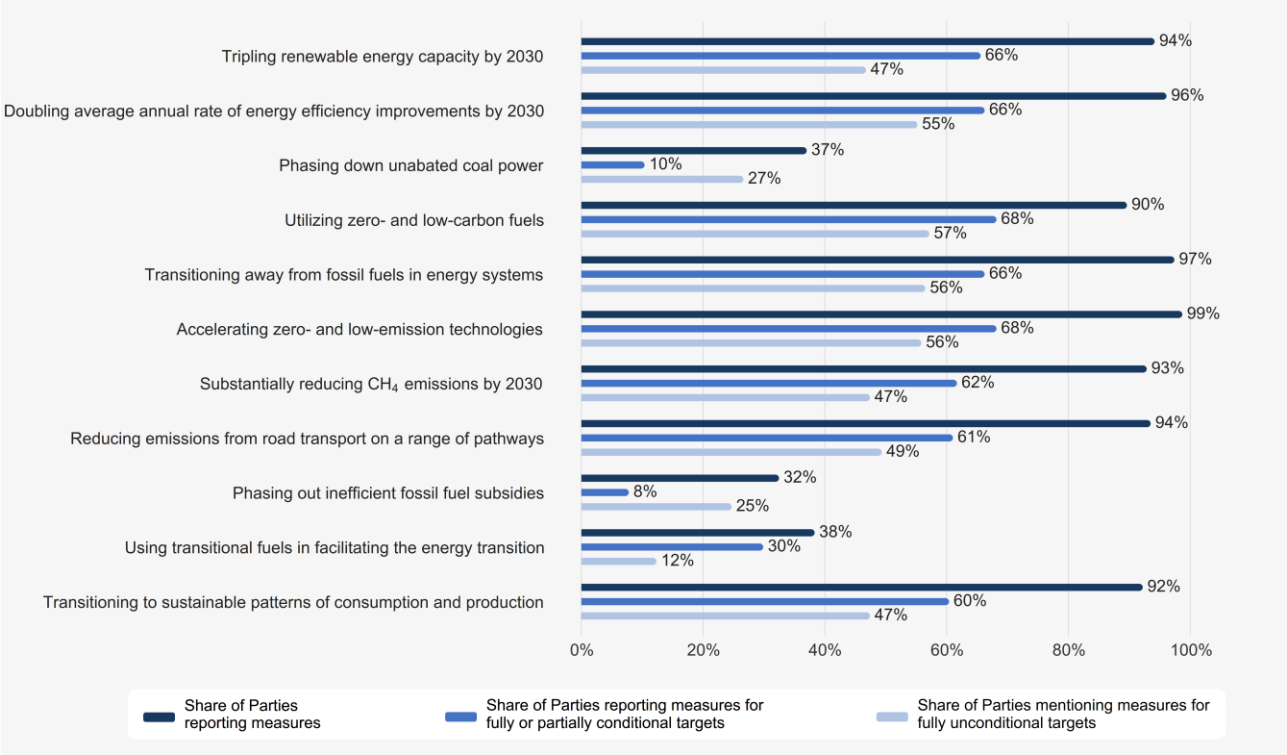
128. For 8 of the 11 global efforts and mitigation options covered in recent CMA decisions, almost all Parties (90–99 per cent of Parties) reported relevant measures in their NDCs (see Figure **22**). Compared with the previous NDCs assessed in the 2024 report, all 11 global efforts and mitigation options saw an increase in the share of Parties reporting relevant measures. The largest increases were observed for transitioning to sustainable patterns of consumption and production (by 33 percentage points), followed by substantially reducing CH_4 emissions by 2030 (by 30 percentage points) and phasing down unabated coal power (by 27 percentage points).

129. Of these efforts and options, measures aimed at achieving fully or partially conditional mitigation targets were reported most frequently in relation to utilizing zero- and low- carbon fuels and accelerating zero- and low-emission technologies, followed by doubling the average annual rate of energy efficiency improvements by 2030, transitioning away from fossil fuels in energy systems and tripling renewable energy capacity by 2030. This indicates a comparatively greater need for support and cooperation in implementing these efforts. Compared with the previous NDCs assessed in the 2024 report, the share of Parties reporting measures aimed at achieving fully or partially conditional mitigation targets increased across all efforts and options. The largest increases were observed for utilizing zero- and low-carbon fuels (by 25 percentage points), followed by reducing emissions from road transport on a range of pathways and transitioning to sustainable patterns of consumption and production (by 16 percentage points respectively).

[115] As footnote 102 above.

Figure 22

Conditionality of domestic mitigation measures relevant to the global efforts and mitigation options covered in recent CMA decisions in nationally determined contributions by share of Parties

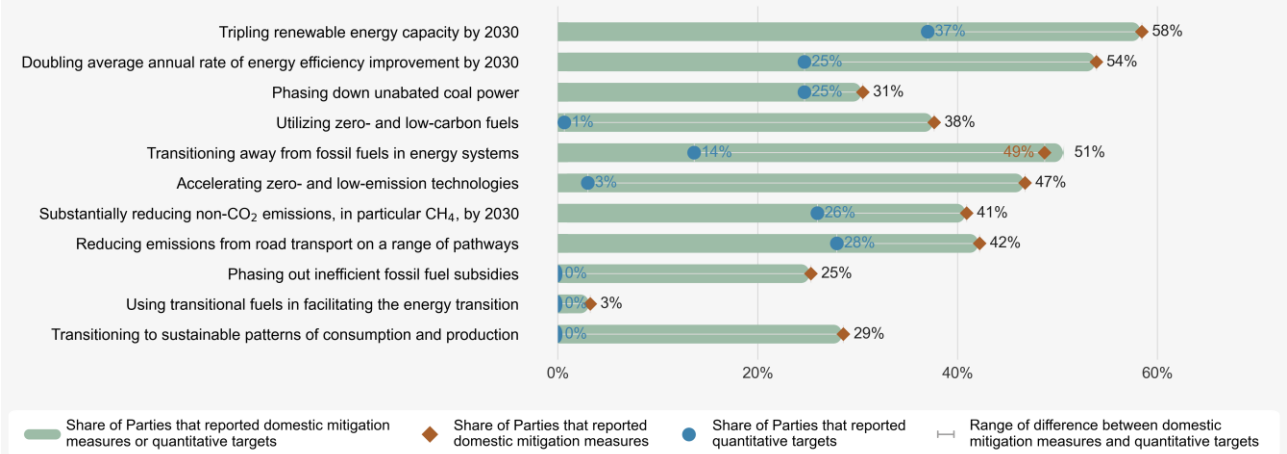


Note: As notes (2) to Figure 2.

130. Informed by the outcomes of the first global stocktake, 64 per cent of Parties reported measures and/or quantitative targets in their NDCs with direct references to their contributions to at least one energy-related global effort or mitigation option. The most frequently cited was tripling renewable energy capacity by 2030, followed by doubling the average annual rate of energy efficiency improvement by 2030 and transitioning away from fossil fuels in energy systems (see Figure **23**). Of these 64 per cent of Parties, over four fifths (52 per cent of Parties) reported quantitative targets with direct references to their contributions to at least one such effort or option, with tripling renewable energy capacity by 2030 being the most frequently cited, followed by reducing emissions from road transport on a range of pathways. Across individual efforts and options, quantitative targets were directly referenced considerably less frequently than domestic mitigation measures.

Figure 23

Shares of Parties that reported domestic mitigation measures or quantitative targets with direct references to energy-related global efforts or mitigation options in their nationally determined contributions



Notes: (1) Direct references are to the relevant paragraphs of decision 1/CMA.5 by paragraph number, substantive content or both; (2) if a Party communicated more than one measure or target for a given global effort or mitigation option, this is counted as one Party communicating measures or targets for that effort or option.

VI. Coherence and synergies with development priorities

131. CMA 5 noted the importance of aligning NDCs with LT-LEDS and encouraged Parties to align their next NDCs with LT-LEDS. In addition, it noted that the global transition to low emissions and climate-resilient development provides opportunities and challenges for sustainable development and poverty eradication.[116]

132. A total of 95 per cent of Parties highlighted policy coherence and synergies between their domestic mitigation measures and broader development priorities, including their LT-LEDS, the SDGs and specific development co-benefits.

133. Of the 48 per cent of Parties that submitted both new NDCs and LT-LEDS,[117] 28 per cent (up from 23 per cent in the previous NDCs) identified domestic mitigation measures that contribute to longer-term measures or targets set out in their LT-LEDS. Examples include identifying measures for NDCs on the basis of programmes of action or mitigation options set out in the LT-LEDS and legally requiring the government to develop mitigation measures for the NDC emission target and to report, at least once every five years, on how these measures contribute both to the NDC emission target and the 2050 net zero target in the LT-LEDS and Climate Change Law.

134. Similarly, 38 per cent of Parties—a notable increase from 23 per cent in the previous NDCs—clarified the alignment between their mitigation measures and efforts towards achieving the SDGs, highlighting multiple co-benefits of their measures for sustainable development and the cost-effectiveness of these measures under fiscal constraints. Of these Parties, 26 per cent—a notable increase from 16 per cent in the previous NDCs—communicated one or more specific SDGs in relation to which there are synergies with their priority areas or mitigation measures (see Figure **24**). Most frequently, energy supply measures were linked to achieving SDG 7 (affordable and clean energy), while AFOLU measures were linked to achieving SDG 15 (life on land) and SDG 2 (zero hunger).

Figure 24
Shares of Parties that referred to synergies between efforts in mitigation priority areas and efforts towards the Sustainable Development Goals in their nationally determined contributions

	SDG																
Mitigation priority area	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
Energy supply	2%	1%	3%	1%	3%	1%	22%	7%	12%	0%	8%	8%	14%	1%	1%	1%	2%
Transport	0%	1%	6%	1%	3%	1%	14%	6%	12%	1%	13%	8%	12%	4%	1%	2%	3%
Buildings	2%	0%	5%	1%	3%	2%	17%	5%	11%	1%	12%	8%	14%	1%	3%	1%	2%
Industry	0%	0%	1%	1%	3%	1%	6%	5%	8%	0%	4%	8%	6%	1%	1%	1%	1%
AFOLU	7%	18%	3%	1%	5%	7%	4%	8%	5%	1%	1%	12%	16%	5%	20%	3%	3%
Waste	1%	2%	9%	1%	3%	11%	6%	6%	7%	1%	12%	13%	10%	1%	1%	0%	1%
Cross-cutting/other	3%	2%	3%	2%	1%	5%	6%	3%	4%	1%	5%	4%	8%	3%	3%	2%	2%

Note: The shading reflects how frequently synergies were identified by Parties: the darker the shading, the more frequently synergies were identified.

[116] Decision 1/CMA.5, paras. 40 and 9 respectively.
[117] As at 18 September 2026.