

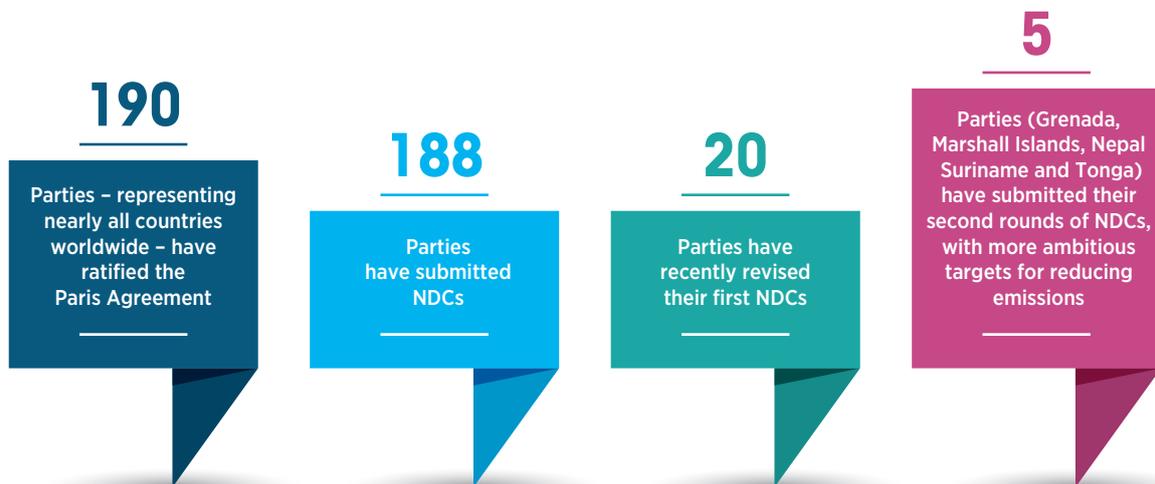
RENEWABLE ENERGY AND CLIMATE PLEDGES

FIVE YEARS AFTER THE PARIS AGREEMENT

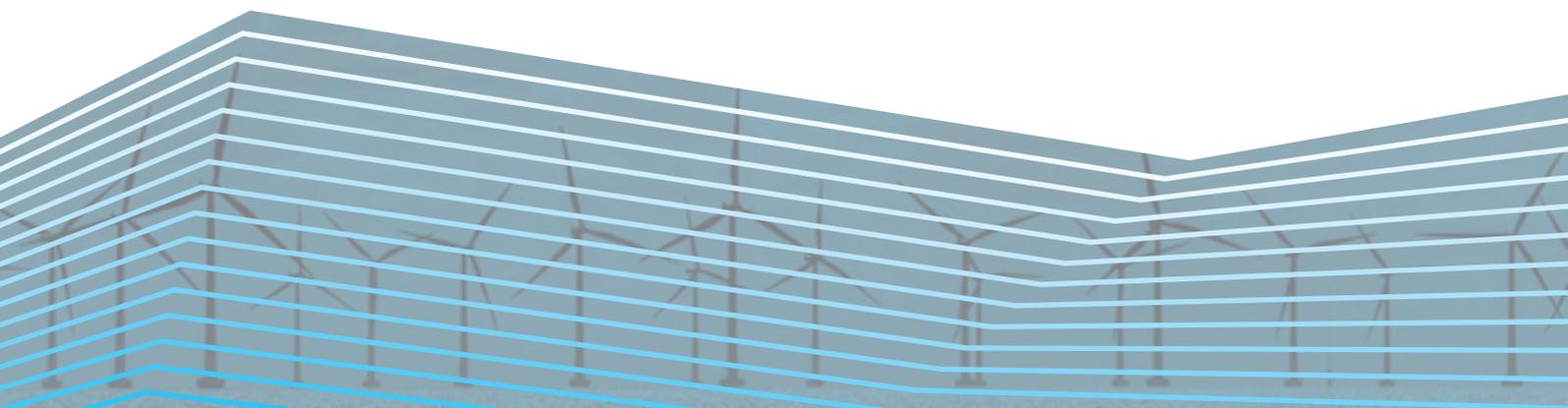
With the adoption of the Paris Agreement on 12 December 2015, nearly all countries around the world agreed to keep the rise in the average global temperature well below 2 degrees Celsius (°C) this century compared to pre-industrial levels, and to try to limit the increase to 1.5 °C.

Renewable energy is a crucial component of Nationally Determined Contributions (NDCs) – the national pledges submitted under the framework of the Paris Agreement. NDCs quantify the commitment of each Party (or signatory that has ratified the agreement) to reduce carbon dioxide (CO₂) and other greenhouse gas emissions, as well as to adapt to the impacts of climate change. By scaling up renewable energy, countries can sharply reduce one major source of the problem: their energy-related CO₂ emissions.

To date:



Note: Figures were last updated and verified on 9 December 2020.

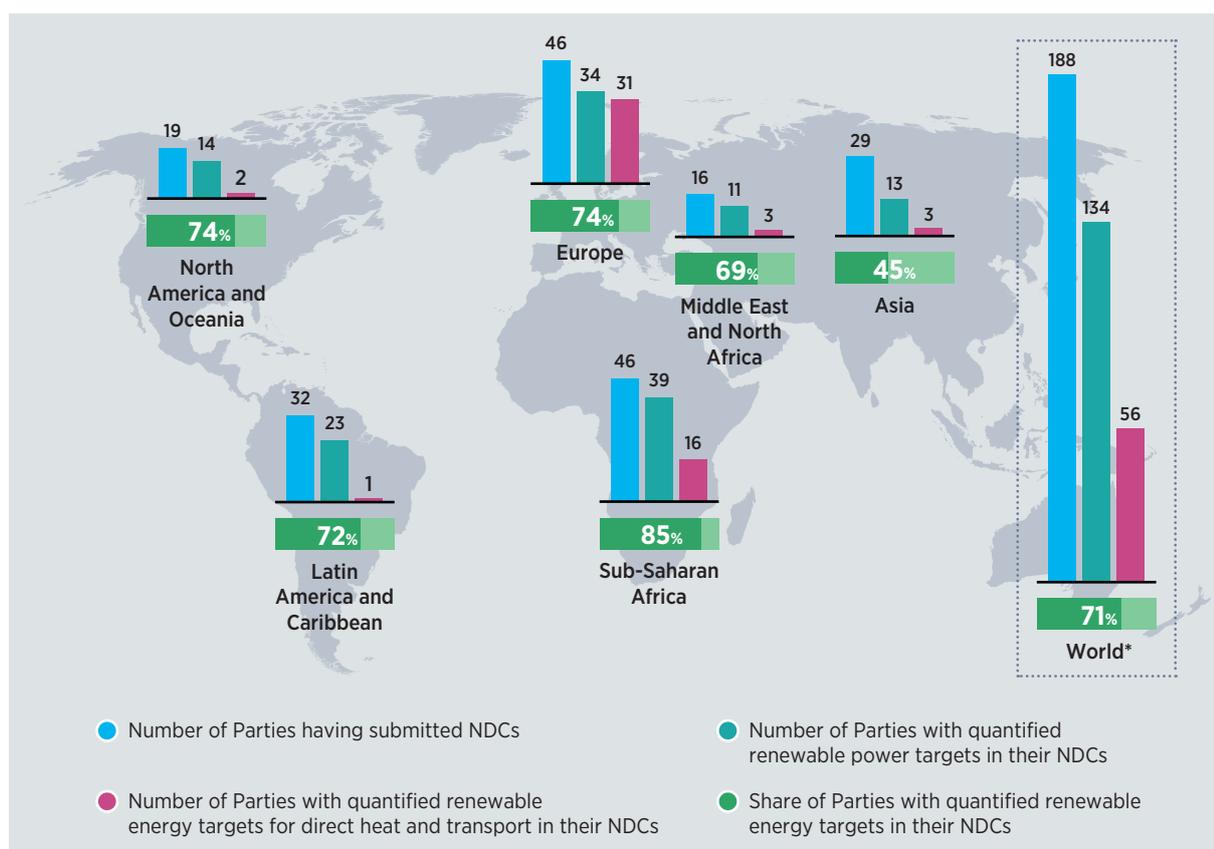


Renewable energy components in current NDCs

Of the total 188 Parties that had submitted NDCs as of early December 2020, 170 (or 90% of the total) mentioned renewables, while 134 (or 71%) included quantified renewable energy targets. While all of these 134 Parties included renewable energy targets for electricity generation in their NDCs, only 56 included targets outside the power sector, including for direct heat and for transport (Figure 1). The potential of renewables in heating and cooling and in transport remains largely untapped in current NDCs, even though these end uses account for nearly one-half and one-third, respectively, of total global energy consumption, and their decarbonisation is key to achieving the objectives of the Paris Agreement.

Targets expressed in NDCs could boost the generation of renewable-based electricity rapidly by 2030. If all renewable energy targets included in NDCs, specifically within the power sector, were implemented, an additional 1041 gigawatts (GW) of renewables would be added within the decade, according to estimates by the International Renewable Energy Agency (IRENA).¹ Global installed capacity for renewable power generation would consequently grow almost 42%, from 2 523 GW in 2019 to an estimated 3 564 GW in 2030.

Figure 1 Renewable energy components in current NDCs



Note: Figures were last updated and verified on 9 December 2020.

Disclaimer: Boundaries and names shown on this map do not imply any official endorsement or acceptance by IRENA.

¹ Estimates in this brief are solely based on renewable energy targets explicitly included in the NDCs. The focus of national pledges under the Paris Agreement is generally on climate change mitigation and adaptation. Hence, even when countries do not include quantified targets for renewables in their NDCs, they may still have plans to expand renewable energy development as a means to reduce their energy sector greenhouse gas emissions and build resilience to the impacts of climate change.

While most of this new capacity would be added in **Asia (567 GW)**, the highest growth compared to current levels is expected in **Africa and the Middle East**, which are set to **almost triple** their installed capacity for renewable power in the next decade.

Focusing on the 134 Parties with explicit renewable power targets in their NDCs, deployment trends resulting from NDC implementation are estimated to be lower than actual observed trends, overall.

On an annual basis, NDC implementation would add on average 95 GW of renewables each year during 2020-2030, 12% below the average of 107 GW added annually during 2010-2019. However, results differ by region: in **Africa** and the **Middle East**, for example, NDC targets are more ambitious than deployment trends observed over the past decade, whereas in **North America** and **Asia** targets fail to reflect the past.

2020 updates

The year now ending, 2020, marks the beginning of the formal NDC submission cycle. All Parties to the Paris Agreement were expected to submit new or updated NDCs by 2020, with updates every five years thereafter. In particular, each Party with a first NDC running to 2025 was to communicate a new NDC with an extended time frame (up to 2030 or longer) by 2020. Fifteen countries² still had 2025 targets in their NDCs at the beginning of 2020. Of those, only **Brazil** and **Grenada** had submitted a new NDC by early December 2020.

The COVID-19 pandemic has affected countries around the world, slowing economic activities and hindering, among other things, country-level NDC review processes. As a result, many Parties are likely to miss the 2020 NDC deadline. Since the beginning of 2020, only 18 countries³ had submitted new NDCs, and at least 7 countries had communicated to IRENA that they planned to submit their NDC updates before year's end.

Given the urgency of raising climate ambition, in September 2020 the United Nations (UN) Secretary-General, António Guterres, and Patricia Espinosa, Executive Secretary of the UN Framework Convention on Climate Change (UNFCCC), among others, urged countries to submit enhanced NDCs as early as possible and well before the next major global climate talks (COP 26), which were re-scheduled to take place in late 2021 (IISD, 2020).

Of the 18 NDCs submitted in 2020, 10 include quantified renewable energy targets, namely **Andorra, Cuba, Grenada, Japan, Nepal, Republic of Moldova, Rwanda, Singapore, Switzerland** and **Tonga**. Only five of these targets appeared to be more ambitious than in the previous round of NDCs (Table 1).

In 2020, **Angola, Kyrgyzstan** and **Lebanon** ratified the Paris Agreement and submitted their first NDCs, confirming their Intended Nationally Determined Contributions (INDCs) submitted in 2015 and the corresponding renewable energy targets included. Also during the year, **Zambia** officially communicated to the UNFCCC that it was working on enhancing the ambition of its current NDC and planned to submit revised targets.

² *Brazil, Ecuador, El Salvador, Gabon, Gambia, Grenada, Guyana, Niue, Palau, Samoa, Saint Vincent and the Grenadines, Suriname, Timor-Leste, Tuvalu and Uruguay.*

³ *Andorra, Brazil, Chile, Cuba, Grenada, Jamaica, Japan, Mongolia, Nepal, New Zealand, Norway, Republic of Moldova, Rwanda, Singapore, Switzerland, Thailand, Tonga and Viet Nam.*

Table 1 Renewable energy components of new NDCs submitted in 2020

Country	Renewable energy target(s)?	Renewable energy target in NDC	Increased renewable energy ambition?
Andorra	Yes	<p>Medium term: Increase national electricity production to 33% of electricity demand by 2030, with more than 75% of electricity produced from renewables.</p> <p>Long term: Increase national electricity production to at least 50% of electricity demand by 2050, with 80% of electricity produced from renewables</p>	Renewable energy targets are less detailed compared to the previous NDC, but a longer-term target for 2050 was added, in addition to the 2030 target.
Brazil	No	-	<p>The previous NDC included explicit targets for renewables as below:</p> <ul style="list-style-type: none"> · Reaching 45% renewable energy in the primary energy mix by 2030; · Achieving 28-33% renewable energy other than hydropower in the primary energy mix by 2030; · Reaching 23% of renewable electricity other than hydropower (wind, biomass and solar) by 2030; and · Achieving 18% of biofuels in the primary energy mix
Chile	No	-	<p>The previous NDC included an unconditional target of renewables other than hydropower accounting for 20% of the energy matrix by 2025. This quantified target was removed.</p>
Cuba	Yes	<p>The NDC projects that, in 2030, electricity generation will reach 29 591 gigawatt-hours (GWh), of which 24% will come from renewables (14% from sugarcane biomass and 10% from wind, solar photovoltaic [PV] and hydropower). This is to be achieved through the installation of 2 144 megawatts (MW) of renewable power capacity by 2030.</p>	Renewable energy targets are the same as in the previous NDC, but more detail is provided and they are to be partially funded with state budgets, as opposed to fully funded through international support as outlined in the previous NDC.
Grenada	Yes	<p>The NDC builds on the 2025 targets laid out in the first submission, mentions the importance of deploying geothermal energy to achieve the overall mitigation target and estimates that the existing network could incorporate a total of 15 MW of intermittent renewable energy by 2030.</p>	The previous NDC included conditional targets for geothermal (15 MW by 2025), solar (10 MW by 2025) and wind (2 MW by 2025).

Note: In light blue are those countries with quantified renewable energy targets in their new NDCs.

Table 1 Renewable energy components of new NDCs submitted in 2020 (continued)

Jamaica	No	-	The new NDC does not include any quantified targets for renewables, unlike the previous NDC which set an unconditional target of 20% renewables in the primary energy mix by 2030.
Japan	Yes	The NDC assumes that, by fiscal year 2030, 22-24% of power generation will come from renewables (7% from solar, 1.7% from wind, 1% to 1.1% from geothermal, 8.8% to 9.2% from hydropower and 3.7% to 4.6% from biomass).	NDC targets are unchanged.
Mongolia	No	-	The new NDC mentions the use of renewable energy sources under unconditional mitigation measures but provides no details. In its previous NDC, Mongolia set the conditional target of achieving 20% of electricity generation from renewables by 2020 and 30% by 2030. Specific measures to achieve this target included installing 675 MW of large hydropower (USD 1.35 billion), 354 MW of wind (USD 584 million) and 145 MW of solar PV (USD 573 million) by 2030.
Nepal	Yes	<ul style="list-style-type: none"> · Expand electricity generation from clean energy sources, from about 1 400 MW to 15 000 MW by 2030 (5 000 MW will be added unconditionally). Of this, 5-10 % will be generated from mini and micro-hydro power, solar, wind and bioenergy; · Ensure 15% of the total energy demand is supplied from clean energy sources by 2030; · Install an additional 200 000 household biogas plants and 500 large scale biogas plants by 2025. 	The previous NDC included only conditional targets for 2020 and 2025. By 2020, the country intended to increase electricity generation by 20% through the development of renewables other than large hydropower. By 2025, Nepal planned to develop 25 MW of mini and micro hydropower, 600 000 solar home systems, 1500 solar power systems, 130 000 biogas systems and 1200 biogas plants.
New Zealand	No	-	No targets are mentioned for renewables, similar to the previous NDC.
Norway	No	-	No targets are mentioned for renewables, similar to the previous NDC.
Republic of Moldova	Yes	The NDC includes the promotion of solar PV, wind, and biomass-heated facilities (for an investment of USD 80 million), the promotion of biofuels (USD 0.14 million) and the promotion of water-energy-land interaction with renewables (USD 30 million).	The new NDC includes renewable energy targets, unlike the previous NDC which only mentioned renewables without specifying any quantified target.

Note: In light blue are those countries with quantified renewable energy targets in their new NDCs.

Table 1 Renewable energy components of new NDCs submitted in 2020 (continued)

Rwanda	Yes	<p>Unconditional targets:</p> <ul style="list-style-type: none"> · Develop 56.75 MW of large hydropower, 24.5 MW of small and mini hydropower and 75 MW of regional projects by 2030 (estimated cost: USD 328 million). · Install solar lighting and LED systems for street lighting and public spaces by 2024 (USD 28 million). · Replace diesel with renewables (USD 5 million). · Use solar water pumping systems for irrigation (USD 285 million). <p>Conditional targets:</p> <ul style="list-style-type: none"> · Install 68 MW peak of solar mini-grids in rural areas by 2030 (USD 206 million). · Develop off-grid solar and rooftop solar PV panels for around 1.5 million households (USD 600 million). · Install solar water heaters in urban residential buildings (USD 60 million). · Promote on-farm biogas (USD 62 million). 	Renewable energy targets were extended to 2030 (from 2020 in the previous NDC). Unconditional targets were also added, while in the previous NDC all targets were conditional.
Singapore	Yes	Singapore aims to achieve at least 2 GW of solar PV by 2030, which would contribute to 10% of daily peak electricity demand today.	The updated NDC includes a more ambitious target compared to the previous one which estimated that solar PV could contribute to up to 8% of peak electricity demand by 2030.
Switzerland	Yes	The NDC mentions that the emission reduction target for 2030 was established based on the Energy Strategy 2050. This foresees an increase in annual generation from new renewable sources other than hydropower from 4,186 GWh in 2019 to 11,400 GWh by 2035, and an increase in average hydropower production from 36,137 GWh in 2019 to 37,400 GWh by 2035.	The previous NDC did not mention renewable energy.
Thailand	No	-	No targets are mentioned for renewables, similar to the previous NDC.
Tonga	Yes	The NDC aims to achieve 70% of electricity generated from renewable sources by 2030 through combination of solar, wind and battery storage	The target is the same as in the previous NDC.
Viet Nam	No	-	No targets are mentioned for renewables, similar to the previous NDC.

Note: In light blue are those countries with quantified renewable energy targets in their new NDCs.

2020: The good news

Amid the COVID-19 pandemic, governments around the world have announced ambitious climate pledges. Near the end of 2020, more than 12 countries and the European Union had passed or proposed laws related to net-zero emissions. Such targets demonstrate national commitments to the deployment and development of renewables and can provide higher levels of certainty for investors and consumers.

Meanwhile, climate change and CO₂ emissions remain pressing global problems. With climate mitigation, decarbonisation and sustainability challenges becoming increasingly urgent, the global recovery from the COVID-19 crisis needs to be green and aligned with the international goals set by the Paris Agreement. Examples include **China**, which announced its intent to become carbon-neutral before 2060; the **European Union**, which raised its 2030 emission reduction target from 40% to 55% over 1990 levels and pledged to achieve climate neutrality by 2050; and **Japan**, which ramped up its climate ambition and pledged to reduce its emissions to zero and become carbon-neutral by 2050 (European Commission, 2020; Murray, 2020). These targets, however, are yet to be reflected in NDCs.

Following the results of the 2020 presidential election, the **United States** – the second-largest global emitter of greenhouse gases – is set to re-join the Paris Agreement, providing higher hope that the world will achieve the targets. Under the new leadership, the country’s climate ambition is expected to intensify, with plans to reach net-zero carbon emissions by 2050 and USD 1.7 trillion of investment planned for the green recovery (Harvey, 2020).

Rapid uptake of renewables, coupled with energy efficiency, can achieve around 90% of the energy-related emission reductions needed by 2050. Renewable energy provides a readily available climate mitigation and adaptation tool, which can accelerate global climate action. Along with bringing broad socio-economic benefits, renewables can fulfil rising national ambitions under the Paris Agreement.

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NDC ENHANCEMENT AND IMPLEMENTATION: SUPPORT AVAILABLE TO COUNTRIES

Five years after the historic Paris Agreement, IRENA is working closely with countries to step up their climate ambitions and enhance their NDCs in the energy sector. With a mandate to promote the widespread adoption and sustainable use of renewables worldwide, IRENA aims to enhance the next round of NDC submissions and to support the implementation of climate actions based on the accelerated deployment of renewable energy sources.

IRENA's current engagement on NDCs spans **66 countries**, with a total population of **1.3 billion people** and energy-related greenhouse gas emissions approaching **3 billion tonnes of CO₂ equivalent per year**. These include 17 of the world's **least developed countries (LDCs)** and 20 **small island developing states (SIDS)**.

- IRENA supports countries directly with:
 - Renewable energy resource assessments
 - Monitoring, reporting and verification (MRV)
 - High-quality data and statistics
 - Capacity building for data collection and management
 - Policy advice and capacity building on renewable energy targets and policies.
- Key tools include:
 - **REmap (Renewable Energy Roadmap) analysis** – clarifying long-term decarbonisation options and perspectives at the country level;
 - **Long-term energy scenarios** – aligning national power system development with ambitious NDCs;
 - **Renewables Readiness Assessment (RRA)** – engaging stakeholders to identify key barriers and recommend practical solutions;
 - **Capacity building** – helping to create the enabling conditions for renewable energy investment, as well as MRV systems; and
 - Advice on **NDC Implementation Plans** and associated **Investment Frameworks**.

IRENA can support NDC upgrades either through **bilateral engagement** with each country or via **partnerships** with other international organisations, such as the NDC Partnership, the United Nations Development Programme and the UNFCCC.

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