

# UNTAPPED POTENTIAL FOR CLIMATE ACTION: RENEWABLE ENERGY IN NATIONALLY DETERMINED CONTRIBUTIONS



## EXECUTIVE SUMMARY

**Nationally Determined Contributions (NDCs) are a cornerstone of the Paris Agreement on climate change. They set out the actions that countries plan to undertake to achieve the agreement's objectives, focused on limiting the rise in average global temperatures to well below 2°C, ideally to 1.5°C. Renewable energy features prominently in most of these NDCs, confirming that the transition to a renewable energy future has come to be recognised globally as central to addressing climate change.**

Governments are well underway with implementing the first set of NDCs and will begin to review them in 2018. This entails taking stock of the adequacy of those NDCs to meet the objectives set out in the historic 2015 climate agreement. NDCs will be revised or updated by 2020, and every five years thereafter – with each revision aimed at being more ambitious than the previous one.

**As a contribution to this process, the International Renewable Energy Agency (IRENA) has undertaken an analysis of current NDCs.** These were compared with national renewable energy targets, plans, programmes and policies, as well as with current trends in renewable energy deployment. At the same time, where data was available, IRENA compared NDCs and national renewable energy targets with the estimated cost-effective potential for increased deployment.

IRENA's analysis suggests that while renewable energy targets and policies are indeed critical components of NDCs, there is substantial scope for countries to increase their renewable energy ambitions. This is true not only for the purposes of mitigation, but also to build resilience in the face of growing climate change impacts.



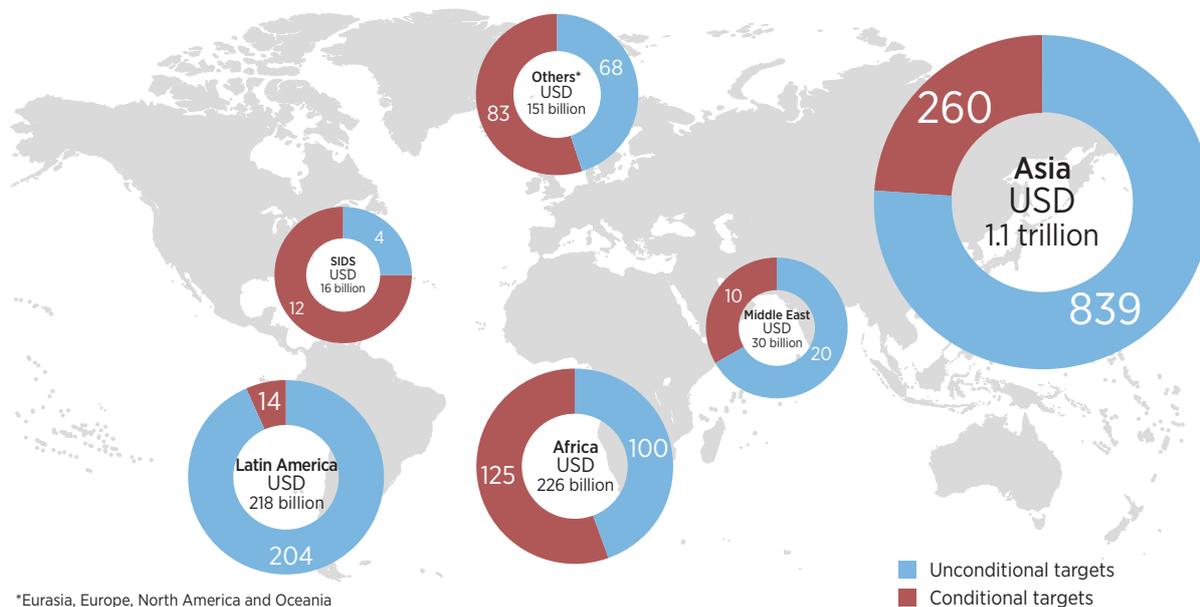
# KEY FINDINGS AND RECOMMENDATIONS

**Most countries have included renewable energy in their NDCs, recognising that accelerating the energy transition will be essential to achieve the climate goals agreed worldwide in 2015.** Of the 194 Parties to the United Nation Framework Convention on Climate Change (UNFCCC) that submitted NDCs, 145 referred to renewable energy action to mitigate and adapt to climate change, while 109 Parties included some form of quantified target for renewables.

**While 85 Parties to the UNFCCC have not included quantified targets for renewables in their NDCs, many of them have ambitious national energy plans in place.** Others also show significant cost-effective potential for renewables. Given the importance of renewables to achieve the objectives of the Paris Agreement, countries should consider reflecting progressively their national renewable energy targets in their NDCs.

**The inclusion of renewable energy components in NDCs can help attract additional investment in the renewable energy sector.** In fact, over USD 1.7 trillion would be needed by 2030 (see Figure 1) to implement renewable energy targets contained in NDCs, of which 70% relates to unconditional targets that countries plan to implement unilaterally. Embarking on this investment path will unleash the dynamics that can accelerate the energy transition. In order to mobilise private investment, stable, consistent and transparent enabling frameworks for renewables are required. Furthermore, the use of public finance should focus more on risk mitigation instruments and structured finance mechanisms and less on direct financing, i.e., grants and loans.

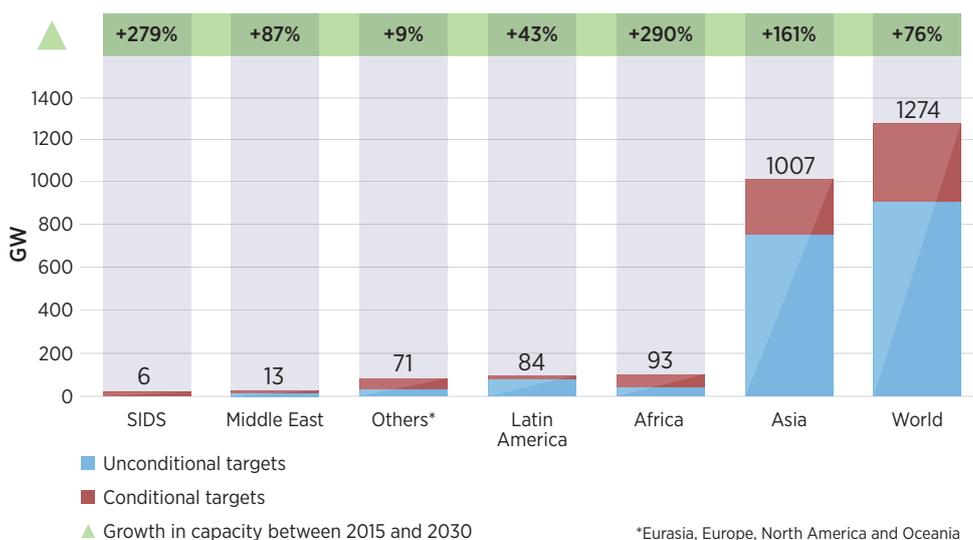
**Figure 1 Total investment needed by 2030 for the implementation of renewable energy targets in current NDCs (USD billion)**



**At least 1.3 terawatts (TW) of renewable power installed capacity would be added globally in the years between 2015 and 2030 as a result of NDC implementation.** This represents a 76% increase in the world's total installed capacity compared to 2014 (see Figure 2).

**NDCs, however, have not kept up with the recent rapid growth in renewables.** While the global installed capacity of renewable power grew by an average 8.5% per year between 2010 and 2016, implementation of the renewable energy targets in NDCs would only lead to an average annual increase in renewable energy deployment of 3.6% over 2015-2030. Countries can use the opportunity presented by the 2020 NDC update to examine whether their renewable energy components can be strengthened to reflect at least the current pace of renewable energy deployment.

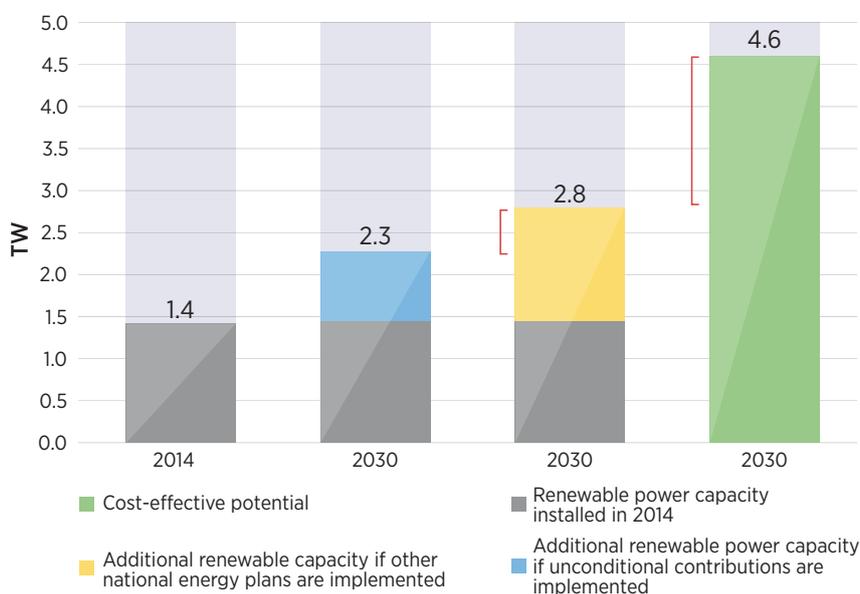
**Figure 2 NDC-driven increases in renewable power installed capacity up to 2030 by region and target**

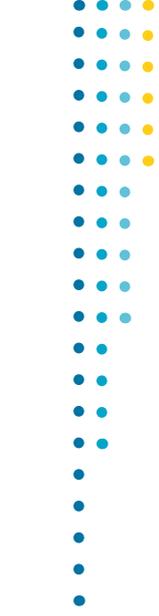


**Renewable energy targets in NDCs are often less ambitious than targets that countries have already established in national energy plans and strategies.** For example, the implementation of unconditional contributions in Africa would bring online an additional 40 gigawatts (GW) of renewable power installed capacity. This could be raised to at least 110 GW, just by ensuring the alignment of NDCs with existing national energy plans and strategies. Setting renewable energy targets in NDCs that are consistent with national energy strategies and plans can considerably strengthen the impact of NDCs and send a strong signal to investors.

**The cost-effective potential for renewable energy is much higher than what is captured in NDCs.** For example, significant untapped potential still exists in G20 countries for the development of renewables by 2030 (see Figure 3). For 10 of them in particular (Argentina, Australia, India, Indonesia, Mexico, the Republic of Korea, Saudi Arabia, South Africa, Turkey and the United States), the implementation of current NDCs would leave more than 65% of this potential untapped, providing these countries with the opportunity to progressively increase the ambition of renewable energy targets in the next round of NDCs. If countries include targets reflecting the cost-effective renewable energy potentials in their NDCs, the world could be put on track to meeting the well below 2°C objective of the Paris Agreement through the implementation of NDCs.

**Figure 3 G20 renewable energy components in the NDCs, national targets and cost-effective potential**





**The majority of NDCs include renewable energy targets only for electricity generation.** However, 14 countries also include targets for the production of liquid biofuels, 11 call for the advancement of biogas, and 8 include the deployment of solar water heaters. More countries can explore opportunities for scaling up renewables in other end-use sectors beyond electricity and increasingly reflect their efforts in the next round of NDCs. These sectors have an important role to play in achieving the objectives of the Paris Agreement. Specifically, significant carbon dioxide (CO<sub>2</sub>) emission reductions will be needed by 2050 in heating and cooling in buildings (-73% compared to a business-as-usual scenario), energy use in transport (-70%) and energy use in industry (-56%).

**Most NDCs treat renewable energy deployment primarily as a mitigation measure.** However, renewable energy deployment can contribute to adaptation efforts, for example, by promoting the diversification of the power supply and by building resilience through improved energy access. Currently, 43 countries recognise the potential contribution of renewables in adapting to, and building resilience against, the adverse impacts of climate change.

Larger numbers of countries, especially those most vulnerable to climate change impacts, have the opportunity to broaden the scope of their future NDCs, so as to increasingly include renewable energy targets as part of their adaptation strategies.

**Given the cost-competitiveness of renewables, governments today have remarkable opportunities to utilise renewable energy targets in NDCs to accelerate the global energy transition and increase climate-resilience.** Although current NDCs do not always reflect it, stronger targets for the uptake of renewables can significantly advance the energy transition.

Several countries have demonstrated increased ambition in their NDC renewable energy targets, both in terms of aiming for high share of renewables in the power mix and in setting targets for renewables in transport and heating and cooling. Other countries, especially where renewables are still viewed as a novelty, need to start this transition, which will become easier as experience is built and as technology costs decline further. Initiating the implementation of renewable energy components will help to unleash much of this potential, as well as to engage all the stakeholders needed to mobilise the investment dynamics that can drive further deployment.

**Significant potential exists to strengthen renewable energy targets in the next round of NDCs.** This can build on the strong current growth rates for renewables, it can pick up ambitious targets in national energy plans and strategies, and it can be informed by an assessment of the cost-effective potential of renewables in all sectors.

**The rapid deployment of renewables, coupled with energy efficiency, can achieve around 90% of the emission reductions in the energy sector needed by 2050, while at the same time advancing economic growth and development. Advancing NDCs to match the actual potential of renewables will be crucial to ensure the viability of the Paris Agreement as a means to achieve global climate objectives.**

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This executive summary is based on a report prepared for discussion at COP23 – the 23rd Conference of the Parties to the United Nations Framework Convention on Climate Change.

ISBN 978-92-9260-043-3 (PDF)

Citation: IRENA (2017), *Untapped potential for climate action: Renewable energy in Nationally Determined Contributions*, International Renewable Energy Agency, Abu Dhabi.

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