10 YEARS

Progress to Action
The world has undergone dramatic change over the last decade. Growing populations have increased global energy demand, the urgency of addressing climate change has intensified, and sustainable development has moved into sharp focus.

In response, renewable energy has advanced from the margins to the centre ground of global energy and development policy. This mainstreaming has made renewables the world’s primary source of new power capacity, outpacing all other forms of new generation put together for the last seven years.

Yet the deployment of renewables must accelerate considerably to meet development goals in the new decade. Universal energy access, sustainable economic growth and gender equality should all be a reality by 2030. Renewables contribute across the sustainable development spectrum.

*10 Years: Progress to Action* charts recent global advances and outlines the measures still needed to scale up renewables, achieve sustainable development and meet key climate goals set by the United Nations for the next ten years.

The solutions are affordable, readily available and deployable at scale. It is possible to achieve sustainable development and climate goals, but only through a decade of unprecedented ambition and decisive action.

**THAT DECADE OF ACTION STARTS NOW.**

Published for the 10th annual Assembly of the International Renewable Energy Agency (IRENA), January 2020.
Renewables have become the world’s main source of new power generation capacity

DECADE OF PROGRESS

Renewables

2009

2018

New power generation capacity

62%

39%

Total installed capacity

2009

1 140 GW

2018

2 360 GW

2019

200+ large companies committed to 100% renewable electricity

Learn more:
Renewable capacity can become the world’s primary source of power generation

Renewables could cover 57% in 2019 and 26% in 2030 of global power supply.

Share of electricity in total energy consumption:
- 20% in 2019
- ~30% in 2030

Renewables must grow four times faster* by 2030 to cover 57% of global power supply.

*Under IRENA's scenario

Pathway to climate safety and sustainable development by 2030

Learn more:
Renewables are now central to national policies

2019
67% of pledges (NDCs) set targets for renewables

105 NDCs

Paris Agreement: First national climate pledges (NDCs)

2009
2015
2019

Renewable targets

Final energy consumption
Power generation

2.4 TW global installed capacity
29%

Renewable electricity
20%

57% Fossil-fuel use
7.7 TW global installed capacity

DECADE OF PROGRESS

Learn more:
Renewables must grow to meet climate goals

DECADE OF ACTION

Holding the line on global temperature rise

Renewables in NDCs

Final energy consumption

2030

2.4 TW global installed capacity

7.7 TW global installed capacity

2019

29%

Renewable electricity

57%

Renewables

20%

Fossil-fuel use

Power generation

NDC = Nationally Determined Contribution
Renewable power generation increasingly competes head-to-head with fossil fuels

Solar PV
- 2010: USD 371 MWh
- 2019: USD ~52 MWh
- 87% decrease

Onshore wind
- 2010: USD 84 MWh
- 2019: USD ~47 MWh
- 46% decrease

Competitive within the fossil-fuel cost range

Global installed capacity of global power needs could cover 1/3 by 2030
Renewable power could become the most competitive option based on costs alone.

By 2030, the global installed capacity of solar PV will be 2,840 GW, and wind power will be 2,015 GW.

- Solar PV electricity costs: USD 34-40 MWh
- Onshore wind costs: USD 30-40 MWh

Falling costs will drive renewables growth, and by 2030, solar PV and wind could cover over 1/3 of global power needs.

GW = gigawatt
MWh = megawatt-hour
The world has invested USD 3 trillion in renewables in 10 years

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**2018**

90% financed by private sector

Public sector financing mechanisms behind feed-in tariffs add substantial, yet indirect financial volumes.

**USD 329 billion**

**2019**

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*(UNEP/BNEF “Global Trends in Renewable Energy Investment 2019, plus large hydro”)*
Annual investments in renewables must double by 2030 to ensure a sustainable future.

- Annual renewable energy investment in 2018 was USD 329 billion.
- Scaling-up total investments by 60%.
- Total renewable energy investments until 2030: USD 737 billion.
- USD 10 trillion fossil-fuel investments must be redirected until 2030.
Renewables create growing numbers of jobs across many sectors of the economy.

**2009**
- **11 million people**
- **4-5x** job growth

**2019**
- **30 million people**

**Women in renewable energy**
- 32%

**Women in oil and gas**
- 22%

Learn more:
The global energy transformation means net gains in job creation.

**Jobs in renewable energy**

- **Solar**
  - 4.4 million people (2019)
  - 11.7 million people (2030)

- **Wind**
  - 1.1 million people (2019)
  - 3.5 million people (2030)

**2030**

**30 million people**
Off-grid renewables have emerged as a key solution to expand energy access.
Off-grid renewables will help reduce the world’s energy access gap

Off-grid renewables will benefit millions of people

- Improved agriculture
- Clean cooking
- Clean cooling
- Safe water
- Stopping desertification
- Improved healthcare
- Improved education
- Improved income
- Increased water and food quality

2030

60% of new electricity access from renewable energy sources

Stand-alone and mini-grid systems will provide the means for almost half of new access
Innovation has paved the way for cost-effective uptake of renewables

**2009**
- **Grid Scale**
  - 0.1 GW installed capacity
- **80% reduction in Li-on batteries cost**

**2019**
- **Grid scale**
  - >1.2 GW installed capacity
- **>6 million EVs**
- **>1.2 GW grid scale**

**2017**
- **First floating wind farm**
  - 30 MW

**2019**
- **Consumer to prosumer**
  - Total capacity
  - >200 GW of distributed solar applications (rooftop)

- **Batteries**
- **Electric vehicles**
- **Offshore wind Generation**
- **Consumer to prosumer**

DECADE OF PROGRESS
Innovation will accelerate the global energy transformation

**Batteries**
- Up to 180 GWh installed capacity
- 54-61% Li-on batteries cost reduction

**Electric vehicles**
- 157 million EVs

**Generation**
- Hydrogen could cover 8% of global energy consumption by 2050
- Offshore wind: 228 GW global installed capacity
- Floating solar: 400 GW potential

**Consumer to prosumer**
- Solar PV rooftop systems: 1000 GW by 2030

Learn more:
“We have entered the decade of renewable energy action — a period in which the energy system will transform at unparalleled speed.

“IRENA’s role in advancing this low-carbon future will further promote knowledge exchange, strengthen partnerships and work with all stakeholders, from private sector leaders to policy makers, to catalyse action on the ground. We are engaging with countries and regions worldwide to facilitate renewable energy projects and unlock investment.

“Renewables can ensure a climate-safe and sustainable future. It’s possible.”

Francesco La Camera
Director-General, IRENA