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# Renewable Energy and Jobs

## Annual Review 2021

12

million jobs  
in 2020



**SPECIAL EDITION**  
Labour and Policy Perspectives

In Collaboration with



International  
Labour  
Organization

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## ABOUT IRENA

The International Renewable Energy Agency (IRENA) serves as the principal platform for international co-operation, a centre of excellence, a repository of policy, technology, resource and financial knowledge, and a driver of action on the ground to advance the transformation of the global energy system. A global intergovernmental organisation established in 2011, IRENA promotes the widespread adoption and sustainable use of all forms of renewable energy, including bioenergy, geothermal, hydropower, ocean, solar and wind energy, in the pursuit of sustainable development, energy access, energy security, and low-carbon economic growth and prosperity.

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## ABOUT ILO

The only tripartite U.N. agency, since 1919 the ILO brings together governments, employers and workers of 187 member States, to set labour standards, develop policies and devise programmes promoting decent work for all women and men.

[www.ilo.org](http://www.ilo.org)

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## FOREWORD

The year 2020 demonstrated that not even a global pandemic can slow the advance of renewable energy. It also revealed the tight connections between environments, economies and human well-being. These, and the rapidly rising challenges of climate change, reinforce the need for a just and inclusive transition toward a clean, reliable energy supply and decent and climate-friendly jobs. That transition is well under way: Last year jobs in the renewable energy sector grew to 12 million.

The 1.5°C pathway put forward by the International Renewable Energy Agency (IRENA) in its *World Energy Transitions Outlook* will lead to 122 million energy sector jobs globally by 2050 (of which 43 million will be in renewables) and will set the conditions for long-term economic resilience, development and equality. Solar photovoltaics will provide the most jobs by 2050 (20 million), followed by bioenergy, wind and hydropower.

Renewable energy employment has been on an upward trajectory since IRENA's first jobs report in 2012. Then as now, solar photovoltaics has led the field, accounting for some 4 million jobs today. Large-scale solar facilities feed power to the grid, while small, off-grid solar applications offer much-needed access to electricity to remote and energy-poor communities. Although off-grid sales took a hit from COVID-19 in 2020, off-grid solutions will continue to power farming, food processing, education and health care.

Bioenergy employed some 3.5 million people and hydropower another 2.2 million. Wind energy follows with 1.25 million jobs, with a growing number in operations and maintenance and in offshore wind energy. The wind sector's workforce is still male dominated; only a fifth of workers are women, comparable to the traditional oil and gas industry. The renewable energy sector as a whole shows a better gender balance (32% women). Yet, much remains to be done to ensure that the industry benefits fully from women's skills, talents and ideas.

The energy transition has revealed the need to expand skills in all regions of the world to create a capable renewable energy workforce. Meeting that need will require more vocational training, stronger curricula and greater training of trainers. Making use of digital innovations in teaching is another task, especially in light of the pandemic.

Decent jobs will not be created automatically in the energy transition; ambitious policy support and investments in a future-oriented, climate-safe and just energy transition will need to be sustained and expanded. IRENA is working to operationalise policy commitments for job creation in the sector.

Comprehensive policy frameworks grounded in effective social dialogue must use labour market incentives to open new possibilities for workers who lose jobs in conventional energy, along with industrial and enterprise policies to leverage existing domestic industries. Social protection measures may be needed in the interim and subsequently. The ILO tripartite *Guidelines for a just transition towards environmentally sustainable economies and societies for all* offer an important framework to further promote decent work and social justice in the energy transition, addressing all aspects from the quantity to the quality of employment.

The ongoing energy transition is poised to be one of history's great success stories if the world is indeed able to accelerate increase its speed and scale through a holistic approach.



**Francesco La Camera**  
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International Renewable  
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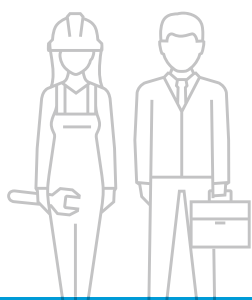
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International Renewable Energy Agency

## KEY NUMBERS

**12** million renewable  
energy jobs in 2020

**39%** in China

**4** million jobs in the  
solar PV industry

**32%** of renewable  
energy jobs are  
held by women

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