

# Nuclear power as panacea for climate change? Experts divided

December 4 2015, by Martine Pauwels

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As delegates at a Paris summit haggle over how to curb global warming, the role of nuclear energy in limiting climate-changing emissions is the

subject of fierce debate between champions and critics of atomic power.

Energy production accounts for 35 percent of the greenhouse-gas emissions that fuel global warming, with 25 percent coming from electricity generation alone.

Unlike polluting coal, oil and gas-fired power plants, nuclear facilities do not generate emissions by producing electricity.

Like solar panels or wind turbines, they only indirectly generate emissions during their life cycle, namely in the construction of reactors and the extraction of the uranium they use as fuel.

The Intergovernmental Panel on Climate Change (IPCC) estimates the median value of emissions from nuclear plants at 16 grams of CO<sub>2</sub>-equivalent per kilowatt hour, about as much as a wind turbine and far less than the footprint of plants that burn fossil fuels.

The IPCC, which tracks global warming for the UN, puts [nuclear power](#) on a par with renewables among the low-carbon [energy](#) sources whose share of electricity generation must grow to 80 percent by 2050—compared with 30 percent today—if global warming is to be capped at 2 degrees Celsius over pre-Industrial Revolution levels.

## **Green funding for nuclear?**

The IPCC's apparent endorsement of [nuclear energy](#), which features in nearly all the scenarios it presents in its recommendations on curbing warming, has incensed anti-nuclear groups.

Dogged by security concerns, the share of nuclear power in global [electricity generation](#) has been in steady decline over the past two decades, falling from 17 percent in 1993 to 11 percent in 2012,

according to the IPCC.



Dogged by security concerns, the share of nuclear power in global electricity generation has been in steady decline over the past two decades. As delegates at a Paris United Nations summit haggle over global warming, the role of nuclear in reducing climate-changing emissions is the subject of fierce debate between atomic energy's champions and critics.

The panel acknowledged the need to find "acceptable responses" to fears over "reactor safety, radioactive waste transport, waste disposal, and proliferation".

For the International Energy Agency, nuclear power increases energy security and sustainability by being "one of the world's largest sources of low-carbon energy" with an average output to rival "4,000 windmills".

The OECD's energy agency estimates that nuclear power has avoided over 60 gigatonnes of CO<sub>2</sub> emissions since 1980, assuming that that power would otherwise have been produced by burning gas or coal.

To have a good chance of limiting [global warming](#) to 2 degrees Celsius the installed nuclear capacity would have to grow from 396 gigawatts currently to 930 gigawatts by 2050, an investment of \$4.4 trillion (four trillion euros), the OECD said.

For the Nuclear for Climate initiative, which was set up by the French Nuclear Energy Society to promote atomic energy as a panacea to climate change, nuclear is "part of the solution" and should therefore "have access to climate finance schemes such as the (UN) Green Climate Fund".

## **'Every phase is polluting'**

In France, which relies heavily on nuclear power, state-controlled electricity utility EDF says nearly 98 percent of its power was free of carbon emissions in 2014.

EDF said its emissions amounted to 17 grams of CO<sub>2</sub>-equivalent per kilowatt hour, which it claimed was "20 times less" than the European average.



Chief Executive Officer of EDF Energy, Vincent de Rivaz, speaks during the Nuclear: Powering the UK energy conference organised by the Nuclear Industry Association in London on December 3, 2015

A report by PricewaterhouseCoopers consulting firm found EDF had reduced its CO2 [emissions](#) by 13 million tonnes, or 21 percent, last year by reducing power generation from fossil-fuel plants in favour of nuclear power.

But not everyone agrees that more nuclear is the answer.

A report by the WISE-Paris research agency commissioned by several NGOs, including Greenpeace, concluded that the safety concerns over nuclear power —as exemplified by the 2011 Fukushima disaster—rule it out as a viable energy source.

Highlighting the exorbitant cost of nuclear power compared with renewables, the report also accused the nuclear industry of overstating its contribution to the fight against climate change.

"From uranium mines to nuclear waste, including radioactive and chemical pollution from nuclear reactors, every phase of the nuclear cycle brings about pollution," the report said.

The researchers made the case for energy saving and greater investment in renewables instead.

France, it said, had the potential "to produce three times as much renewable electricity as the current demand for power".

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