

Renewables key in race against climate change clock

November 1 2015, by Marlowe Hood



Camels walk on the road near the Ashegoda wind farm in Ethiopia's northern Tigray region

Any plausible game plan for capping the rise of Earth's surface temperature depends on replacing fossil fuels with energy sources that generate little or no carbon pollution.

That means renewables, especially solar and wind, both of which face fewer constraints to growth than more established [clean energy](#): a river can be dammed only so many times, and nuclear remains expensive and controversial.

But humanity has dithered for so long in the fight against global warming, experts say, that the window of opportunity for decarbonising the global economy fast enough to avoid devastating climate change is barely ajar.

"The cost and difficulty of mitigating greenhouse gases increases every year, time is of the essence," Maria van der Hoeven, executive director of the International Energy Agency, said in a special IEA report on [energy](#) and [climate change](#) released earlier this year.

The world's nations -- gathering in Paris in a month to ink the first-ever universal climate pact—have set a target of limiting [global warming](#) to two degrees Celsius (3.6 degrees Fahrenheit) above pre-industrial levels.

Cross that red line, scientists say, and there will, almost literally, be hell to pay.

Science also tells us that, if we are to respect the 2 C limit, future greenhouse gas emissions cannot exceed a total "budget" of about 1,000 billion tonnes of carbon dioxide.

Carbon-cutting pledges from nearly 150 nations, unveiled on Friday, put us on track for a 3 C world.

This is a vast improvement on doing nothing. But even this unprecedented effort would use up three quarters of that carbon budget by 2030, leaving very little margin for closing the remaining gap.

That's where the transition from [fossil fuels](#) to renewables comes in.

"The economics have been shifting on both sides of the equation," said Alden Meyer, a veteran climate specialist with the Union of Concerned Scientists in Washington. "The least-cost global strategy is to rapidly reduce our reliance on fossil fuels and switch into the clean-energy economy."

Scaling up quickly



US President Barack Obama speaks with Commander Col Ronald Jolly as he tours a solar array at Hill Air Force Base in Utah

Energy production accounts for two-thirds of global [greenhouse gas emissions](#), and thus transformation of this sector is crucial, he and other experts said.

"Decarbonising energy is probably the quickest way to decarbonise the world," Adnan Amin, director general of the International Renewable Energies Agency, told AFP.

The question, however, is whether solar, wind and other clean energy options can scale up quickly enough.

According the UN climate science body, the Intergovernmental Panel on Climate Change (IPCC), low-carbon energy must account for at least 80 percent of global electricity production by 2050 to have a better-than-even chance of staying under the 2 C threshold.

The good news is that renewables are expanding rapidly and attracting investment.

Nearly half of all new installed power generation capacity in 2014 was in renewables—37 percent wind, a third solar and a quarter hydro, according to the IEA.

Investment in the sector totalled more than a quarter of a trillion dollars in the same year, an 8.5 percent increase over 2013.

"Capital markets have already begun to shift away from dirty technology to clean technology," Christina Figueres, executive secretary of the UN Framework Convention on Climate Change, told journalists Friday in releasing an analysis of national emissions-reduction pledges.

Confounding predictions only a decade ago, the cost of solar and wind energy has plummeted.



Future greenhouse gas emissions cannot exceed a total "budget" of about 1,000 billion tonnes of carbon dioxide, science shows

"Generating electricity from renewables is cost competitive on the grid or beating most conventional sources" in some areas, said Amin.

Fossil fuels highly subsidised

In poor countries, this holds out the possibility of skipping past the fossil fuel stage of development, much in the way some regions went from no phones to cell phones.

"I think India" – where 300 million people are without electricity – "is realising that it may be easier and more cost effective for them to provide sustainable energy services to hundreds of millions of villagers through a decentralised renewable-based strategy," said Meyer. "They

and other countries are poised to leapfrog the fossil fuel age."

India has invested massively in clean energy, and pledged to install 175 gigawatts of renewable capacity by 2022.



The question is whether solar, wind and other clean energy options can scale up quickly enough to combat climate change

But renewables only account for about 20 percent of global electricity generation, and three-quarters of that is hydro. Of total energy consumption -- overwhelmingly dominated by coal, oil and gas -- less than five percent comes from clean technology, excluding nuclear.

The transition towards a low-carbon economy is also hampered by fossil fuel subsidies totalling more than half-a-trillion dollars every year, four times the amount allocated for renewables.



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Which is why, experts say, the Paris climate summit, which starts at the end of this month, is so crucial.

"COP21" — the Paris climate summit — "needs to give a global and long-term signal to the world economy that is relevant to investors," said Martin Kaiser, a climate analyst from Greenpeace.

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