

The solution to the climate crisis: a just transition to 100% renewable energy for all by 2050

The process towards a universally accessible, affordable, and zero emissions energy system.

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Summary

- The climate science is clear: to avoid the worst impacts of climate change and keep global warming well below 2 or even 1.5 degrees Celsius, **we need to phase out emissions** from coal, oil and gas until mid-century.
- The only way to get there in time, while still securing energy access for all, is a **rapid transition to clean and affordable renewable energy**.
- The Paris Protocol must mark **the end of the fossil fuel era** and accelerate the transition to a 100% renewable energy future for all. It must reject alternatives - such as nuclear energy - that are too expensive, centralized and risky to be considered a solution to climate change. Instead, the Paris Protocol must send a clear and convincing signal to **citizens, companies and investors** that the world is moving away from fossil fuels.
- In Paris, countries must agree on the long-term goal of phasing out fossil fuel emissions to achieve zero emissions by mid-century and head towards **100% renewable energy for all** in a fair transition period.
- The countries' **short-term emission reduction commitments** must be aligned with the long-term goal and support transformational change, fairness and solidarity. Rich countries must reach zero emissions well before mid-century and provide poorer countries the support they need to achieve a 100% renewable energy supply by 2050.
- Those countries ready to lead need to **speak up in Lima and inspire the world**.

Managing emissions is no longer sufficient – they need to be phased out

Climate change is here, and it is showing alarming signs of acceleration. The latest report of the Intergovernmental Panel on Climate Change (IPCC) provides strong scientific backing for the 100 plus countries who are pushing for emission cuts that will limit warming to 1.5 degrees Celsius or below. For comparison, global warming of 2 degrees Celsius would already significantly increase the risks of two out of five key indicators of dangerous climate change to occur.

The Panel also found that limiting warming to about 1.5 degrees Celsius or less by 2100 is still possible. However, getting there in time requires governments, corporations and investors to change their approach to climate action fundamentally: instead of managing fossil fuel and industrial emissions they must accept the fact that emissions must be **phased out to zero**. We cannot afford to continue on the current path.

According to the IPCC analysis, we can only emit an additional 1000 billion tons (Gt) of CO₂ if we want to limit global warming to below 2 degrees Celsius with a higher than 66% likelihood of occurrence. To keep warming below 1.5 degrees Celsius, with a likelihood of at least 33%, carbon emissions cannot exceed 850 Gt starting in 2011 ⁽¹⁾. Since then we have already spent about 100 Gt of our carbon budget. To use our remaining budget wisely, we must **peak emissions before 2020** and phase out fossil fuels until we reach zero emissions before 2050.

“The world must start preparing for a rapid decarbonisation of the energy and industry sectors within the next decade and going to zero emissions by around 2050.”

– Dr Bill Hare, Climate Analytics ⁽²⁾ –

Ending the fossil fuel era – we can do it

Some countries and many regions are already ahead of the game in phasing out fossil fuels and phasing in renewable energy. Some have adopted targets and plans for their power systems to reach 100% renewable energy as early as 2020. Costa Rica is planning to go 100% renewable by 2016 and carbon neutral by 2021. The African island state Cape Verde intends to meet 100% of its electricity and transportation energy needs with renewable energy by 2020. Denmark is the first OECD country that is committed to achieve 100% renewable energy in electricity and heat generation by 2035 and to be totally fossil-free by 2050 ⁽³⁾, while Scotland intends to reach 100% renewable energy in electricity generation by 2020.

Major cities, such as Frankfurt, Munich, Sydney and San Francisco have set their own 100% renewable energy targets and plans. In Germany 74 regions and municipalities have already reached 100% renewable energy targets.

The IPCC Special Report on Renewable Energy Sources (SRREN) from 2011 acknowledged that “close to 80 per cent of the **world’s energy supply could be met by renewables by mid-century** if backed by the right **enabling public policies**” ⁽⁴⁾. Since the report’s launch, the voluntary procurement of renewables has continued at great speed, while the coal industry has crumbled in an unprecedented manner. We can assume that by now the vision for 2050 should look even brighter: by 2030, renewable energy sources could already meet almost half (45%) of the world’s energy needs, according to the Greenpeace Energy [R]evolution ⁽⁵⁾ scenarios.

Renewable energy meets the needs of the poor

The transition towards 100% renewable energy can help achieve the goal of providing universal access to energy by 2030 ⁽⁶⁾, thus also meeting the needs of the poor.

One inspiring example for universal energy access through renewables is the Dharnai village in Bihar, India. Last July the village declared itself energy-independent following the launch of a solar-powered micro-grid ⁽¹²⁾. The comprehensive, first-of-its-kind enterprise provides 24/7 electricity to more than 450 households and 50 commercial establishments and ended the age of darkness in the countryside. It is a model that could be replicated throughout rural India and other similar areas around the world, to meet the energy needs of the poor in a **much faster, cleaner, more reliable and empowering** way than any plan based on centralized coal plants could provide.

*“Modern energy services are crucial to **human well-being** and to a country’s **economic development**; and yet globally over 1.3 billion people are without access to electricity and 2.6 billion people are without clean cooking facilities. More than 95% of these people are either in sub-Saharan African or developing Asia and 84% are in rural areas”.*

– International Energy Agency ⁽⁷⁾ –

The transition has already started...

Global Banking giant Citi recently declared ⁽⁸⁾: “the age of renewable energy has begun”. The **renewable energy industry is booming** around the world, and energy systems are evolving. Between 2009 and 2013, 37% of all newly built power plants worldwide have been designed to supply renewable energy. In 2013 alone it was 52%.

The **competitiveness of renewable energy** is increasing steeply. It becomes particularly obvious when you take into account that the costs of fossil fuels and nuclear energy do not fully

internalize risks and impacts. Wind energy prices, particularly in the central United States, are at an all-time low, with utilities selecting wind as the lowest cost option ⁽⁹⁾. For several years now, power from solar photovoltaic (PV) generators has been cheaper than power produced by diesel generators. Due to the massive drop in PV prices between 2010 and 2014, “grid parity” was reached in Germany, meaning electricity from roof-top solar panels can be produced below the utilities’ prices. Germany has the same solar irradiation as Alaska. In more and more countries, solar PV electricity is reaching grid parity, e.g. 32 states in the US have already reached that stage ⁽¹⁰⁾.

More and more federal states, cities and municipalities are committing to a future powered by 100% renewable energy for reasons ranging from climate concerns to pure economic or development gains. Civil society organizations and a global coalition of trade unions and social movements, as well as indigenous, environmental, gender and youth groups from the South and the North are calling on governments to accelerate this transition ⁽¹¹⁾ while companies such as Google, Apple or IKEA have already set their renewable energy targets and will have their businesses run by 100% renewable energy.

...but it must speed up with the help of The Paris Protocol

World leaders keep talking about the seriousness of climate change, and how committed they are to climate action. Yet the same countries continue subsidizing fossil fuel consumption with hundreds of billions of dollars a year and expanding their oil, coal, nuclear and gas extraction further. This behaviour of saying one thing and doing another is sending mixed signals to investors, energy utilities, communities, workers and consumers. As a result, we remain stuck in the old, dirty and dangerous energy systems. While scientists say we have already found more oil, coal and gas than we can ever afford to burn, governments are using taxpayers’ money to fund corporates that look for more. According to the International Energy Agency’s (IEA) “World Energy Outlook 2014” published in November 2014, the fossil fuel subsidies added up to US\$ 548 billion for the year 2013 - twice as high as the total global renewable energy market volume ⁽¹³⁾.

“G20 countries are estimated to be spending \$88 billion every year subsidizing the exploration for fossil fuels”.

– Oil Change International ⁽¹³⁾ –

Until Paris next year, things have to change. The transition to clean energy needs to happen much faster, deeper and broader than at present. Governments must face the truth that we are no longer in the business of managing carbon pollution: emissions must be phased out. This means getting rid of oil, coal, gas and peat in our energy systems in order to get fossil emissions to zero. Likewise, deforestation must get to zero – and already by 2020.

During the Bonn climate talks last June, one third of the world's governments stressed the need to phase out emissions to zero. It was echoed by Ban Ki Moon in his summary of the Climate Summit held in New York in September. By the time of the Paris Conference, this call has to become a global one.

The Paris Protocol must send a clear and convincing signal to citizens, companies and investors that the world is moving away from fossil fuels and nuclear energy towards sustainable and safe energy systems that deliver 100% renewable energy for all.

Greenpeace is calling for the Paris Protocol to include a global goal to phase out fossil fuel and related emissions by mid-century, in the context of a just transition to a 100% renewable energy future for all.

It is crucial for this to be delivered with credibility and clearly defined, bold benchmarks to provide certainty to investors and the energy industry about the new direction the world is heading towards.

A transition towards 100% renewable energy for all needs to happen fast and fair

The transition to a renewable energy system creates **new jobs**, assures **healthier lives** and brings along **savings in fuel costs**. According to the International Renewable Energy Agency, just doubling the share of renewable energy in the global energy mix to 36% by 2030 could create 900,000 additional direct jobs in the energy sector, save global health-related costs of USD 200 billion annually, and result in overall savings of up to USD 740 billion per year by 2030 ⁽¹⁴⁾.

Governments will need to establish **strong and measurable objectives** for emission reductions and renewable energy generation. **Financial flows** need to be shifted. By phasing out subsidies for fossil and nuclear energy, renewable energy will become cost competitive compared with conventional energies. While industrialized countries will need to act sooner than others to phase out emissions and phase in renewable energy, developing countries now have the opportunity to leapfrog to renewables as new wind and solar systems are oftentimes more economic than coal and gas. Nuclear remains the most expensive form of power generation.

Rich countries must provide the **Green Climate Fund** with sufficient means to ensure that the Technology Mechanism of the UN Climate Convention drives this global energy transformation.

Multilateral development banks and bilateral cooperation must prioritize renewable energy and stop enabling the world's fossil fuel and nuclear addiction. Multilateral and other development banks must stop the financing of and export credits for coal and oil projects today!

Governments must ensure that the transition to clean, sustainable energy is fair to workers and communities, and that more opportunities are created than lost. They have to assess the impacts of the process on different sectors and communities, and respond to any needs for capacity building. The social dialogue should be fostered to achieve agreement on policies and economic measures among all stakeholders. The affected companies have to be asked to develop their internal transition plans in a participative manner, meaning in close cooperation with their workers and communities.

Governments must put in place the progressive economic measures necessary to distribute the positive and negative impacts of the transition. It will allow them to seize the present moment and combine climate protection with economic stimulation and the protection of citizens and citizens' rights.

The longer we wait and delay action, the more we will lock ourselves into higher risks and fewer solutions. Climate change is *already* a serious threat for the lives of many less fortunate, but even for the countries that do not belong to the group of the most affected by climate change, the climate crisis is seriously challenging the status quo at the economic and social level.

For our benefit, and for that of future generations we must get rid of fossil fuels starting now and speed up the just transition towards a 100% renewable energy world, today!

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- (1) See the IPCC Fifth Assessment Report, the Synthesis Report, table 2.2 in the longer report.
- (2) <http://www.climateanalytics.org/>
- (3) <http://www.ens.dk/en/info/news-danish-energy-agency/energy-system-without-fossil-fuels-technically-possible>
- (4) "Potential of Renewable Energy Outlined in Report by the Intergovernmental Panel on Climate Change". IPCC press release, 9 May 2011. <http://srren.ipcc-wg3.de/press/content/potential-of-renewable-energy-outlined-report-by-the-intergovernmental-panel-on-climate-change>
- (5) Energy [r]evolution scenario series are jointly published by the German Space Agency DLR, Greenpeace International and renewable energy industry associations. www.energyblueprint.info
- (6) www.se4all.org/
- (7) Source: <http://www.iea.org/topics/energy-poverty/>
- (8) <http://www.greentechmedia.com/articles/read/citi-group-says-the-age-of-renewables-has-begun>
- (8) <http://energy.gov/2013-wind-report>
- (9) Fraunhofer (2013) Levelized Cost of Electricity Renewable Energy Technologies. Source: <http://www.ise.fraunhofer.de>
- (10) Fraunhofer (2013) Levelized Cost of Electricity Renewable Energy Technologies. Source: <http://www.ise.fraunhofer.de>
- (11) See Declaration by Civil Society at <http://volveremos.org/> and CAN Position: Long Term Global Goals for 2050 in <http://www.climate-network.org/publication/can-position-long-term-global-goals-2050>
- (12) "Bihar village declares independence from darkness and anonymity". Greenpeace press release 20 July, 2014. <http://www.greenpeace.org/india/en/Press/Bihar-village-declares-independence-from-darkness-and-anonymity/>
- (13) <http://www.worldenergyoutlook.org/>
- (14) Oil Change International "The Fossil Fuel Bailout: G20 Subsidies for Oil, Gas and Coal Exploration", November 2014. <http://priceofoil.org/2014/11/11/fossil-fuel-bailout-g20-subsidies-oil-gas-coal-exploration/>
- (15) International Renewable Energy Agency, REmap 2030 <http://www.irena.org/REmap/>