

Facing up to Climate Change: Optimism, Pessimism and Realism after Paris

Response by Dr Stuart Parkinson, [Scientists for Global Responsibility](#)

While I agree with Brian Heatley's paper regarding the odds currently being against us keeping global temperature change below 2C, that there are many dangers even at the 2C level, and that much more work to adapt to the unfolding impacts of climate change needs to be pursued, I do not agree with some of the other conclusions which I think are too defeatist.

Firstly, here's why I think 2C is still in reach:

1. Paris Agreement is an important step forward

While the Paris Agreement is clearly inadequate in many respects, it is only one part of the picture. Nevertheless, it is important because:

- For the first time, we have a global framework for supporting national actions to control carbon emissions.
- For the first time, we have agreement among the world's governments that the world needs to move to net-zero carbon emissions by the second half of this century.
- For the first time, we have agreement that nations need to aim "well below 2C", including acknowledgement of the desirability of 1.5C.
- For the first time, we have action plans to control over 90% of current global emissions.
- Also very important is the commitment to reach \$100 billion per year of international climate aid and the review mechanisms for improving the emissions targets.

All this is especially important because it sends a strong signal to the major international investors that they need to rapidly pull out of fossil fuels, and invest in alternatives. Some have already done so (see below).

2. The global renewables industry is large and expanding rapidly

- More than half of all new electricity generation capacity being installed globally is now renewable, outstripping all fossil fuels combined – and the sector is continuing to expand rapidly.
- Renewables now supply nearly a quarter of the world's electricity.
- The costs of solar photovoltaic panels have fallen by approx 75% in the last 5 years – in historical terms, that is a very fast rate of cost reduction – and it is likely to continue to fall rapidly.
- The efficiency of solar pv panels is improving quickly. Typical home solar panels are currently between 10% and 20% efficient. But 46% has now been achieved in the laboratory.

- Power from solar pv and onshore wind is now competitive with fossil fuels in many parts of the world. Deutsche Bank has predicted that by 2017 solar will reach 'grid parity' in 80% of the world.
- Analysis of UK and German electricity markets show that renewables already pay back their subsidies by reducing the wholesale price of electricity at peak times.
- Top energy company EON is withdrawing completely from fossil fuels.
- Before Paris, leading financial analysts were predicting that investment in renewable energy over the next 25 years will be more than double that in fossil fuels. Recent history shows that they have underestimated the potential of renewables.

3. Energy storage technologies are taking off

Energy storage technologies, such as batteries, are a necessary part of the transition to a 100% renewable energy system, as they help deal with the variability of some renewables such as solar and wind. These technologies are also developing rapidly.

- The costs of lithium-ion batteries – the leading type of rechargeable batteries – have fallen by over 60% in the last 5 years.
- Home, car and business-size batteries are now available at affordable prices, and utility-sized batteries are starting to be deployed.
- Tesla's \$5bn battery factory for mass-production is under construction, and other battery companies are expanding rapidly.
- In September 2015, 1 million electric cars had been sold worldwide.

4. The fossil fuel industries are in trouble

- Divestment campaigns globally have led to pledges by investors to steer \$2.6 trillion's worth of funds away from fossil fuel companies, a 50-fold increase in the total amount pledged by 2014.
- Numerous multi-billion fossil fuel programmes, such as the Keystone XL pipeline in North America and Shell's Arctic oil exploration, have been cancelled – while others such as the giant Kashagan oil field in Kazakhstan are in serious trouble. In 2014, a US government estimate of recoverable oil in the Monterey Shale field (the largest in the US at that time) was revised down by 96%. The global oil industry currently has about \$2.5 trillion of debt.
- The stock value of many coal companies is falling fast across the world. In the US, it has fallen more than 75% in 2 years.
- The low international oil price is causing the unconventional fossil fuel industry – which includes tar sands and shale oil and gas – to shrink. For example, the number of shale oil rigs in the US has fallen by half from its peak.
- Saudi Arabia is deliberately pursuing economic and industrial action to keep oil prices low to put (especially) the North American shale oil and gas industry out of business – and so

reduce competition. This action will also help the renewable energy industry, as investing in renewables becomes more cost effective than investing in (eg) shale.

- Many financial/ technology analysts – including at the Daily Telegraph – now believe the energy sector is starting a transformation as big as that experienced by the telecommunications sector, when it moved from fixed line phones to mobiles and then smart-phones.

5. Political, religious, business and community leadership on climate change action is experiencing a sea-change

- President Barack Obama has found new political tools to advance national action in the US – bypassing a hostile congress
- The last of the climate sceptic prime ministers in the West – Stephen Harper in Canada and Tony Abbott in Australia – have been thrown out of power
- The Pope – spiritual leader to over one billion Catholics – has issued a call to action on climate change. Equally strong calls have been made by other top religious leaders – eg in Islam and Buddhist
- There is rapidly increasing adoption by major corporations of the concept of the circular economy as the basis for business activities.
- Over 1,000 non-state groups – including major business and cities – have signed the Paris Pledge for Action on Climate. Collectively, a range of non-governmental commitments add up to many gigatonnes of carbon emissions reduction.

6. Comfortable very low carbon living is possible in today's society with current technologies

- I estimate my current carbon footprint to be less than 3 tonnes (CO2 equivalent) per year – consistent with the 2C target.
- I achieve this by living in an eco-development of highly efficient homes supplied by virtually 100% renewable energy (most locally sourced) and using very low carbon options for food, transport and household goods. Community-owned resources – eg a laundry and a car club – also help in keeping my carbon footprint low.
- All of this provides a high quality of life, demonstrating the compatibility of eco-living with quality of life.
- None of the technologies and designs used in our development are radically different those already widely available in the UK.
- This is just one of many examples in the UK and internationally of comfortable eco-living. There is enormous potential to scale up many aspects of these experiences.
- Eco-homes and eco-lifestyles also are much more resilient to many impacts of climate change – such as extreme weather and failures in global supply chains – and so scaling up would be both a mitigation and adaptation programme.

Adaptation and resilience

I also think a thorough survey of the literature on adaptation and resilience would reveal that hope is not yet lost in efforts in these areas – if large-scale funding and other resources is made available at least at the level promised by the Paris Agreement.

I've intentionally emphasised the positives here because we cannot decide future courses of action without considering both positive and negative trends.

Many issues still need a step-change in action

A few examples

- Elimination of fossil fuel subsidies
- International restrictions on the extraction of fossil fuels
- Reduction in carbon emissions from animal farming, civilian aviation and the armed forces
- Restrictions on certain large renewable energy projects whose sustainability benefits are questionable, eg large hydro-electric dams, biofuels from food crops
- Far too little community ownership of energy projects
- Cultural shifts away from consumerism
- Economic shifts away from an economy based on endlessly growing resource use

None of these are easy – but I believe that major progress on all of them is within reach.

Uncertainties in climate models mean that we don't know how much time we have left

Climate models are especially uncertain when it comes to estimating regional climate impacts and tipping points for abrupt climate change. These are the two types of effects we are most concerned about. One policy implication of this is that we need to follow a more precautionary emissions path. Another implication is that we should not give up trying to take preventative action (ie emissions reduction) at least until it is very clear that we have passed the point of no return.

There is a serious danger of giving up too soon.

In conclusion

I think the odds of keeping the below 2C are still not yet in our favour, and the difficulties of adapting to limit negative effects of this temperature rise are still very great. But I still think, on balance, the evidence points to there being much potential for achieving both. And I doubt we will galvanise many people for action based on the message that ahead lies only different types of doom – especially when the scientific evidence is not conclusive in that respect.