



2020 Blogs

## Climate Emergency

During 2020 we continued to reflect on current thinking regarding the climate emergency and explored some ideas about what the future might bring.

### Climate Crisis – Social and Political Trends



*Image by stuart hampton from Pixabay*

In previous posts, we've looked at the Environmental impacts of the climate crisis, possible Technological responses and the Economic effects. In this one, we consider the way Social and Political attitudes are changing and consider how they play out in the future. Next time, we'll also look at Legal and Regulatory issues.

Society does seem to be have become increasingly concerned about the climate crisis in the last couple of years, and it features much more frequently in public debate. Even the language used ("crisis" rather than "change") has begun to reflect this. Environmental activists may still be in a minority, but their actions are pushing the issue more into the centre of public opinion.

Pressure is increasing in a number of ways:

- School strikes and Greta Thunberg create headlines frequently: "You have stolen my dreams and my childhood with your empty words"
- Extinction Rebellion demonstrations bring the issue directly to the attention of the public; though can create a backlash in some cases



- BP sponsorship of the arts has become challenged by high profile people like Mark Rylance, and other such as the Scottish National Portrait Gallery are also getting involved
- Similarly, Roger Federer is coming under criticism for taking sponsorship from Credit Suisse, a company that finances the fossil fuel industry.

Wider interest in environmental issues (such as air pollution, single-use plastic) is also creating an atmosphere where taking personal action to reduce emissions is more common. A YouGov poll of more than 2,000 people found that 67% agreed that limiting air travel was key to addressing climate change. A total of 53% agreed that reducing the amount of meat consumed as part of everyday diets should be targeted. Veganism – or at least eating less meat – is a distinct trend, supported by commercial interests. The survey also noted that 61% of the public supported the declaration of a “climate emergency” and the setting of a net-zero target.

Support is not universal however – rising fuel prices introduced to reduce emissions were initially the spark of the *gilets jaunes* demonstrations in France (though the movement has now taken on other issues).

Although technology will support a shift to net-zero targets, many – including Defra’s ex Chief Scientific Advisor – argue that reducing consumption will be necessary to hit the targets early enough. He suggested that the tax system should be used to reward lower carbon activities, and move people away from high polluting ones. These changes in attitudes are feeding through into the political process. The UK Government has passed into law the requirement to reach net-zero carbon emissions by 2050 – though many argue this is not sufficient. All major party manifestoes at the UK 2019 General Election included commitments to tree planting and other actions to hit the target.

The EU has also set out its climate goals. The new President of the European Commission, Ursula von der Leyen, has put climate change at the top of her agenda. She pledged to strengthen the EU’s short-term goal on greenhouse-gas emissions from a 40% reduction by 2030 to at least a 50% cut, relative to 1990 levels. She also pledged to unlock €1 trillion over the next decade for climate investment, and to turn parts of the European Investment Bank into a dedicated climate bank.

The “European Green Deal” presented in December sets out how to make Europe the first climate-neutral continent by 2050. Its detailed roadmap and actions covers a wide range of areas, including:

- a “Climate Law” to enshrine the 2050 target;



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- reviews of the Emissions Trading Directive and the Energy Efficiency Directive;
- CO<sub>2</sub> emissions targets for cars and vans;
- a strategy for offshore wind power; and
- a Circular Economy Action Plan.

In the US, Congress will debate a “Green New Deal” – a pair of resolutions sponsored by the Democrats, though opposed by the President and many Republicans.

In France, President Macron has opted for an innovative “citizens assembly” of 150 randomly chosen people of all ages to come up with recommendations for cutting carbon emissions.

The extensive bush fires in Australia have led to increasing pressure on the PM to act on climate change – but has highlighted the real political tensions since much of the country’s exports and employment is reliant on the coal industry.

However, the latest global climate change conference, COP25, was generally viewed as a failure. The aim was to finalise the “rulebook” of the Paris Agreement by settling on rules for carbon markets and other forms of international cooperation. However, the talks were unable to reach consensus in many areas, pushing decisions into 2020. Brazil, India, Australia, the US, China and other major emitters were all accused of holding up progress.

The UN Environment Programme’s (UNEP) own emissions gap report, released just prior to the COP, showed the stretch 1.5°C goal of the Paris Agreement is “slipping out of reach”. Even if existing climate pledges are met, emissions in 2030 will be 38% higher than required to meet that target, the report concluded.

*Written by Huw Williams, SAMI Principal  
Published 15 January 2020*



## Climate Emergency and The Law



*Image by Hermann Traub from Pixabay*

In this post on the climate emergency, we turn attention to the law. To what extent can governments and carbon polluters be legally held to account for their actions? It seems this approach is gaining traction, though with some limitations and setbacks.

Research by the LSE shows that climate change litigation is increasingly viewed as a tool to influence policy outcomes and corporate behaviour. Cases are designed to press national governments to be more ambitious on climate action or to enforce existing legislation; other cases against major emitters seek compensation for loss and damage. A human rights basis for litigation on climate change has had increasing resonance with judges. This litigation continues is occurring worldwide: there are now cases in the Americas, Asia and the Pacific region, and Europe. Litigation could encourage private companies and investors to give greater consideration to climate risk. Plaintiffs have made claims against investment funds and companies for failing to incorporate climate risk into their decision-making.

The Netherlands' supreme court upheld a ruling ordering the country's government to do much more to cut carbon emissions. The court ruled that the government had explicit duties to protect its citizens' human rights in the face of climate change and must reduce emissions by at least 25% compared with 1990 levels by the end of 2020. According to the supreme court, individual nations have direct obligations under articles 2 and 8 of the European convention on human rights, covering the right to life and the right to private and family life. However, the latest national statistics show the Netherlands is very unlikely to meet the 2020 emissions target.



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The US Supreme Court denied the Trump administration's request to dismiss a case brought by young people alleging that the government has violated their constitutional rights to life, liberty and property by failing to prevent dangerous climate change. However, the US district court of Oregon found that it lacked the power to enforce climate policy decisions by the government and Congress. Nevertheless, it found that the record "conclusively establishes that the federal government has long understood the risks of fossil fuel use and increasing carbon dioxide emissions" and "that the government's contribution to climate change is not simply a result of inaction". A similar case was brought in Canada.

As well as targeting governments, activists are suing oil companies. The Climate Accountability Institute identified the top polluters: 20 companies are responsible to one third of all emissions. Saudi Aramco and Chevron head the list.

States such as Rhode Island and Northern California are suing oil companies for the damage caused by climate change, arguing that they knowingly misled the public about the climate threat posed by their products. In echoes of the litigation against tobacco companies, there is already substantial evidence that oil and gas company executives created campaigns to convince the public that climate change was not a threat.

But courts are not always convinced. Exxon Mobil was ruled not to have deceived investors of the impacts of "its practices and procedures" though the court did not excuse it of responsibility for global heating.

ClientEarth, a charity that uses the law to press Governments to take action on climate change, has benefitted from an auction of Dave Gilmour's guitars which raised £21.5m.

It may be surprising to some that the demand for law reform is not just coming from pressure groups, but also from industry. A regulatory environment built around fossil fuels actively works against the development of renewable energy. Whilst offshore wind, for instance, generally finds it relatively easy to gain the relevant permits, in the UK onshore wind development is hampered by planning permission requirement, is excluded from capacity auctions for new power generation, and has had subsidy support removed .

There are no longer grants for domestic solar in the UK. The Feed-In Tariff system was closed in April 2019.

Energy policy generally remains a political football. Governments are struggling with getting the right regulatory environment to encourage renewable energy without stifling the traditional energy companies, who are the only organisations that have



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both the money and the incentive to make real, sustainable change in the sector. This is not only about a subsidy regime that promotes energy efficiency but also about tackling issues such as carbon taxes, the development and introduction of new technologies, and pricing.

The law can be used against energy companies, especially in demanding it play its part in the transition to a green future. It can also be used with those companies – in the future, we will have to see both carrot and stick to ensure the ambitious targets of Paris are actually met.

*SAMI Consulting's energy expertise includes Dr Will Blyth at the UK Energy Research Centre and at Oxford Energy Associates; and Jonathan Blanchard Smith at the Natural Resources Forum.*

*Written by Huw Williams, SAMI Principal and Jonathan Blanchard Smith, SAMI Fellow and Director  
Published 29 January 2020*



## Climate crisis – some final thoughts



Image by Gerd Altmann from Pixabay

Back in June 2019, we began our series of blog posts on the climate crisis. Now that we have examined each of the PESTLE categories, it's time to reflect on developments since we began and, overall, the range of outcomes that may yet come about. We all know there is no one inevitable future, and predicting outcomes 30, 50, 100 years ahead can never be a precise science. But with the climate the uncertainties are immense and cover a very wide range of issues.

The ***Environmental*** issues are obviously most fundamental. The last six months have seen so many signals of environmental change that they are now impossible to ignore:

- The unprecedented scale of bush-fires in Australia burnt through about 12 million hectares, an area about 1.5 times the size of Tasmania, with massive effects on wildlife: estimates of half a billion animal deaths and some species thought to be in danger of extinction. The smoke drifted to New Zealand where it contaminated glaciers, causing them to melt faster and creating another feedback loop.
- Fires in California have been bad but through proactive planning and investments firefighters were successful in mitigating and fighting, blazes in extreme weather conditions
- Ocean temperatures are repeatedly hitting record highs (the chart in the reference article is terrifying)
- The Thwaites Glacier in Antarctica is melting fast and has already shed ice accounting for about four percent of global sea level rise. The entire Antarctic ice sheet is melting nearly six times faster than 40 years ago.



- The UN Biodiversity chief warned of mass extinction of wildlife and destruction of life-supporting ecosystems.

However, some countries see benefits in global warming. Russia identified “positive effects” such as decreased energy use in cold regions, expanding agricultural areas, and Arctic navigation with easier access to more oil reserves – another feedback loop. In Argentina, the government said the heavier summer rains seen in central Argentina have allowed agriculture to move westward into areas not previously considered productive.

Predicting the extent to which anthropogenic greenhouse gas emissions lead to global warming – and then to extreme weather events – is difficult. The most in-depth work by the IPCC is careful to give a range of forecasts with confidence levels. A review of their models since the 1970’s however shows that they were “generally quite accurate in predicting global warming in the years after publication.”

More recently some have suggested that the models don’t consider feedback loops and tipping points well enough and are consequently under-estimating the effects. Others argue that the IPCC “business as usual” case (predicting a 5°C rise) is too extreme because of reduced coal use, though we are still “on course for around 3 °C of warming” – which most think would be bad enough.

**Technology** continues to advance and remains the best hope for averting the worst effects of the climate crisis. Costs of renewable energy continue to fall and will soon match those of fossil fuels. Electric vehicles are becoming more common – including even electric aircraft. Carbon Capture and Storage is becoming more viable too. The key issue, however, is scale: can these technologies can reach critical scale in the timeframe required? Is their scalability limited by system limits, such as the availability of rare earth metals?

The Centre for Alternative Technology argues that achieving net zero emissions by 2050 can be achieved with the technology we have today. Demand should be reduced:

- Buildings: having high ‘Passivhaus’ standards for new buildings, retrofitting all existing buildings, and improving internal temperature control could reduce energy demand for heating by around 50%.
- Transport: reducing how much we travel and changing how we travel – with more use of public transport, walking, cycling, switching to efficient electric vehicles and two thirds less flying – could reduce energy demand for transport by 78%.

and then the two-thirds of energy demand that is electricity can be met by renewables, and the remaining third by carbon neutral synthetic fuels.





The **Economics** of climate change may well be the key driver of change – renewables becoming cheaper than fossil fuels; electric vehicles at least price comparable with internal combustion. Arguments about the cost of mitigation being less than adaptation (as in the Stern report) haven't had much success, but now we are seeing arguments in favour of adaptation rather than recovery. The concern then is of "climate apartheid" where the rich countries can avoid the effects while the poor ones suffer.

When he was Governor of the Bank of England, Mark Carney argued that banks, building societies and fund managers needed to be aware of the risk of "stranded assets" – fossil fuel reserves valued at today's rates, when in a zero-carbon world they were close to worthless. His appointment as economic adviser to the UK COP26 talks may be a positive signal.

Banks are increasingly coming under pressure from lobby groups to stop funding the fossil fuel industry. The decision by BlackRock – the world's biggest asset manager – to exit investments that "present a high sustainability-related risk" has been welcomed by environmentalists. In practice so far this only means divesting \$500m from coal-related businesses; it still holds a 6.7% stake in ExxonMobil, 6.9% in Chevron, and 6% in the mining company Glencore, and substantial other tracking fund investments.

The IMF also warned that the climate crisis will affect economic growth. The increased frequency and intensity of weather-related disasters already endangers health and economic outcome, not only in the directly affected regions, but in others by contributing to cross-border migration or financial stress (for instance, in the insurance sector).

We considered the **Societal and Political** effects together. High profile actions by Extinction Rebellion and Greta Thunberg have raised awareness but may be limited in effect to already committed activists. Comments from the likes of David Attenborough may bring the issue more into the mainstream. More politicians are talking about a "Green New Deal", though there is resistance to the idea notably in the US, Brazil and Australia. Media groups are also adding their weight to the debate. Copying action by a Swedish newspaper, The Guardian is refusing to take advertising from fossil fuel companies.

The World Economic Forum's survey of global risks, as identified by business leaders, politicians and economists, put environmental issues at the top of its lists and provided a platform for a debate broadcast worldwide.

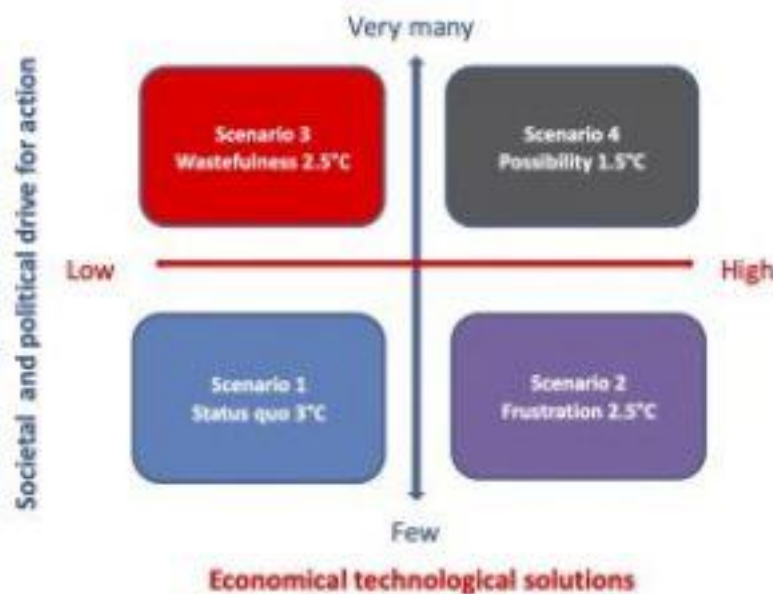


Top 10 risks in terms of Likelihood	Top 10 risks in terms of Impact
1 Extreme weather	1 Climate action failure
2 Climate action failure	2 Weapons of mass destruction
3 Natural disasters	3 Biodiversity loss
4 Biodiversity loss	4 Extreme weather
5 Human-made environmental disasters	5 Water crises

How quickly activists win an argument for the need for action, and how quickly governments respond, is critical. The trend is not all in one direction, as the *gilet jaunes* and rioters in Chile showed – people’s personal economic circumstances may be a more powerful political force than their concern about weather events 100 years away.

Finally, we considered how the **Law and Regulation** might impact climate change mitigation. The first efforts at using the law to compel governments to act have been patchy – successful in the Netherlands (and by implication at least across the EU), less so in the US. Regulation will be the practical way in which progress is made – for example banning the sale of petrol and diesel vehicles by 2035. Regulation on buildings insulation could similarly bring down demand for energy, if there were the political will to do so.

So, there is uncertainty in many dimensions – there is no one inevitable future. If we were to build a **scenario cross**, we might choose to examine high vs low levels of societal/political engagement; and high vs low levels of economically viable technology options. Only one of the consequent four scenarios would save the planet – if we were lucky.





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So where does this take us? Into – as SAMI’s tagline says, “uncertain times”. Governments were always going to take action too late – electoral cycles and 100-year projections do not mix – but the clear rise in damaging extreme weather events is now too obvious even for them to ignore. There will continue to be a fightback from old economy states with powerful lobby groups on behalf of traditional manufacturing and fossil fuel producers; and in the developing world, the need for energy will continue to drive the demand for coal.

But it is not impossible we are seeing the tipping point into sustainability – charismatic leaders like Greta Thunberg and David Attenborough, combined with regular shocking news around the world, will drive demands for change at exactly the moment that change is possible in renewables, electric vehicles and the like. For all our sakes, we must hope that our futures are within – or at least border, Scenario 4.

For more about our thinking on the climate crisis, sign up to [our newsletter](#). Or get in touch at [info@samiconsulting.co.uk](mailto:info@samiconsulting.co.uk).

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*Published 12 February 2020*



## Climate Crisis – Views from the University of Helsinki



*Image by Gerd Altmann from Pixabay*

In the sumptuous and august surroundings of the Reform Club library, three speakers presented their perspectives on the climate crisis and some proposals for action. Hosted by Roger Harrabin, the BBC's Energy and Environment Analyst, the session was opened with an introduction from Tarja Halonen, ex-President of Finland. She welcomed the opportunity to share the thinking of Finland's leading climate change researchers, who she saw as embodying the best of Finnish culture – stubborn and creative, with a strong sense of solidarity.

The opening speaker was **Markku Kulmala**, leader of the University of Helsinki's Division of Atmospheric Science. He called for climate action to be grounded in solid data, and for the creation of a "global earth observatory". In that way we can reduce the scientific uncertainties concerning global climate change, and analyse important feedback loops between CO<sub>2</sub> and aerosol particles. The carbon sink cycle binds in carbon through photosynthesis, creating more aerosol particles and a positive feedback loop that accelerates photosynthesis.

He was also concerned about the link with air pollution, especially in China, but in megacities generally. More data was needed, and data mining techniques employed, to fully understand these processes, which centre more around particulates, NO<sub>x</sub> and ozone.

Roger questioned whether taking 20 years to gather more data was really appropriate at a time of crisis, and asked what Markku would do immediately, what he would prioritise spend on. Although he conceded there may be some quick wins,



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the Professor was adamant that better data was the key thing – if countries are to be rewarded for their climate sinks, then measurement is essential. Members of the audience seemed generally to side with Roger on the need for action – perhaps not surprising as most of those attending would presumably already have been interested in averting climate disaster, otherwise they would not have been there. Discussion centred around technology and life-style solutions, with a concern about the limitations of carbon sinks.

The second speaker, **Mari Pihlatie**, looked to answer how agriculture could solve the climate crisis. Soils are losing carbon to the atmosphere, and becoming less productive as a consequence. Photosynthesis binds carbon into the soil, but the overall effect is more complex as the carbon feeds bacteria which emit more carbon. She identified a number of ways for agriculture to help:

- - Maximise soil cover to reduce carbon emissions
  - Crop diversity to provide continuous photosynthesis
  - Keep roots moist (to reduce carbon emissions by bacteria)
  - Integrate livestock with arable farming so that manure is part of the cycle.

Mari warned us that other greenhouse gases such as methane and nitrous oxide were important too. Methane was emitted more from wet areas; N<sub>2</sub>O effects were 300 times that of CO<sub>2</sub>.

This all had implications for agricultural policy, where governments needed to get farmers to treat the soil well, with a long-term perspective, rather than relying on fertilisers. It should be a Win-Win approach, reducing carbon emissions, but also making land more profitable for farming.

Questioned about “wilding” policies, Mari suggested that improving bio-diversity made agricultural systems more resilient, more resistant to new infections without the need for pesticides. She also noted that there was a saturation point for carbon in soil, but at around 9% there was considerable scope for improvement as generally we were around 2% now.

**Sasu Tarkoma**, Head of Department of Computer Science, spoke about using 5G, the internet of things, and AI to address issues of air pollution in megacities. He described a project – “Megasense” – that combined the readings of low-cost sensors carried by members of the public with more accurate fixed sensors. With a



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relatively small number of volunteers, it was possible to produce quite accurate pollution maps of a city – Edinburgh and a number of other cities were also participating in the project. The prototype sensor could track up to 10 different parameters.

Sasu speculated that widespread availability of such sensors could lead to increased citizen engagement and pressure for political change. Greater awareness of the risks to one's health not only allows people to modify their behaviour (taking less polluted routes to work, jogging at different times), but to produce hard evidence of the need for change.

This point was taken up in the discussion. Roger Harrabin gave an example of Camden, which had high levels of pollution despite low car ownership, probably due to through traffic – the rich imposing poor health on the poor. Monitoring pollution around houses would have an impact on property prices. Others suggested that the system, as being for the common good, should have personal benefits as well – personal health tracking, alarms at high pollution levels.

This discussion echoed the message from a SAMI Consulting horizon scanning project for the Dept for Transport, which identified wearables monitoring air pollution as a force that would increase calls for action. It seems that low-cost sensors are not far away now.

*Written by Huw Williams, SAMI Principal  
Published 26 February 2020*