

## Science and the Theology of Climate Change



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### Summary

This is a summary of the lecture given online for Sarum College (30 January 2023). The lecture was given in two sections, science followed by theology. After each section there was a time for questions. We also provide some useful resources in this area.

### *The Science*

Carbon dioxide emissions from our burning of fossil fuels have been increasing since the Industrial Revolution, but have somewhat levelled off in the last ten years as the rich advanced economies have somewhat cut emissions while countries like China and India have increased their emissions. There have been a few times when emissions dropped due to economic downturns, but generally the trend is up. In the pandemic year, 2020, there was the biggest drop ever in emissions, but 2021 saw a rebound to almost the original value. In 2022 it looks likely there will be a small increase.

Three things can happen to that carbon dioxide: it can be absorbed by plants through photosynthesis; it can be absorbed by the oceans; and it can accumulate in the atmosphere. About half accumulates in the atmosphere. The pre-industrial concentration of carbon dioxide in the atmosphere was about 280 ppm, and we are now (Nov. 2022) at 417.51 ppm, and the figure continues to increase every year by around 2 ppm.

The Greenhouse effect would suggest that as carbon dioxide goes up the temperature should increase, and it has by about 1.1°C since the Industrial Revolution. All of the ten hottest years on the instrumental record are since 2010. We saw the effects even in the UK last summer when we reached 40°C for the first time in July. This would have been almost impossible without anthropogenic climate change.

Since 1990 there has been a steady increase in the heat stored in the oceans, with heat now getting into water below 700 m in depth. This increased temperature causes a number of things:

- 1) It is part of the reason for sea level rise as hot water expands
- 2) Hot water holds less oxygen, and is bad news for fish
- 3) Hot water is bad news for organisms like corals that have a narrow temperature range
- 4) Hot water gives extra energy to tropical storms and hurricanes meaning they become stronger

Climate change is a massive justice issue as the countries that emitted the most carbon dioxide have benefitted hugely by being able to use the energy generated to power their economies. But the poor countries that have hardly emitted any carbon dioxide are those suffering the worst effects of climate change already, and they will also do so in the future.

It is over thirty years since the Intergovernmental Panel on Climate Change (IPCC) first reported, and despite numerous reports and meetings, carbon dioxide emissions remain high, and the global temperature continues to increase. The recent COP26 and COP27 meetings made a little progress, but nowhere near enough. It is very clear that we have very little time left to avoid catastrophic climate change.

### Questions

1) Can you say something about the emissions from burning wood?

This is a big component of our carbon emissions, and in a bad year for forest fires it can be around 20% of total emissions. But emissions from the burning of fossil fuels remain the larger fraction.

2) How do you read the level of responsiveness to the climate emergency amongst people of faith who are scientists? Whatever your answer, do you think my question matters?

Your question matters. The late Sir John Houghton, the founder and former president of JRI was the chair of the science panel of the IPCC for its first three reports. JRI has many scientists of faith who are very concerned about the climate emergency.

3) Can I ask about the complex question of bio ethanol and also the slightly simplistic understanding around electric vehicles?

Biofuels like bio ethanol were touted as a great solution to climate change and energy security. It is now clear that they have a lot of problems, particularly in causing a decrease in biodiversity as rainforests are cut down and replaced with plantations. Electric vehicles are not problem free either. Much of the energy is the embodied energy in building the car, so it makes sense to keep cars for as long as possible before replacing them.

4) How could we replicate what happened during Covid-19 without the negative side effect?

We need a massive insulation campaign coupled with increased employment of renewable technologies (wind, solar etc.)

5) Can we hear something about the offsetting of carbon emissions?

Much in the news recently. It seems many offsets are not very effective, but read Caroline Pomeroy's latest JRI blog post: <https://jri.org.uk/carbon-offsetting-the-new-goldrush/>

6) If we do not make a series of radical changes, at what point do you think we will hit a tipping-point when it is too late?

Tipping points are, by definition, difficult to predict. What is certain is that the higher we allow the temperature to rise the more likely it is that we will reach a tipping point or several of them. If we do that then we will have out of control climate change. Hence the need for rapid cuts in emissions.

### **The Theology**

What is a Christian response to the climate and ecological Crisis? It's helpful to ask what are the reasons to care for nature? We might say that: nature enhances our wellbeing and our communities; nature gives us food and resources; we might find the cure for cancers or other diseases, and if we don't care for nature - we will have out of control climate change and biodiversity loss with terrible impacts for humanity. The weakness with this list of ideas is that they are all anthropocentric reasons, and are selfish- just about us.

A better way to look at nature is to think about intrinsic value (or value for its own sake). There are several ways of measuring value: ecocentric (the ecosystem as a whole has value); biocentric (each individual organism has value); theocentric (all of nature is valuable to God). How can we move from an anthropocentric view towards intrinsic value? One famous idea was the Land Ethic, developed by Aldo Leopold. He wrote *Sand County Almanac* (1947) at a time when there was little environmental legislation. 'Land' seen entirely for its potential for human use. The land ethic enlarges boundaries of community to include whole biosphere and geosphere.



So why have we not cared for the earth? In 1967 Prof Lynn White from UCLA in California wrote his famous article “Roots of our Ecologic Crisis” in ‘Science’. He argued that the roots of the environmental crisis lay in Medieval Christian Europe, and he based this on his interpretation of ‘Dominion’ in Genesis. He also advocated a spiritual solution to modern crisis.

When we read Genesis 1 we see God’s love for the world that he creates. He describes it as good seven times which is a perfect number. Towards the end of the chapter God creates humans as part of his creation and made in his image. Humans are given rule (Hebrew *radah*) over the rest of creation. The traditional English translation is “dominion” that could imply a negative domination of the Earth. Through history this has been the most common interpretation, but *radah* is also used when God gave King Solomon rule wisely over the nations (see Psalm 72). So a better translation is to say that we have been given responsibility for wise leadership of the rest of creation. This interpretation is also reflected in Genesis 2, where God took the man and put him in the garden to work it and take care of it. This sets the context for the rest of the Bible.

In Genesis 3 human sin resulted in a breakdown in relationships between God, people and creation. A breakdown in any of these relationships is sin and therefore a breakdown in relationship with the natural world is sin. We have come to see ourselves as sovereign over nature and not a part of it. We have also seen nature as very robust and not affected by our actions. Sadly none of these beliefs are correct.

We need to re-earth our Christian faith. We believe that God created this world through Christ and he loves it so much that Jesus became a physical part of this world in order to save and restore it. He died on the cross to put an end to sin and death and rose again as the first fruits of the new creation. The cross of Christ changed the history of the universe Christ will one day restore all things. Our role as Christians is to live in this time of lament and grief in a way that points towards resurrection and hope.

In the final section we looked at three types of hope: proximate, ultimate and resilient. This section was based on work that we have previously published (see Resources), and can be found online in Hodson and Hodson (2013), and is summarised at popular level by Hodson (2022). We ended with Hebrews 6:19: We have this hope as an anchor for the soul, firm and secure.

### Questions

1) What do you think of the idea that church buildings are not helping matters? Some work hard to be “eco church” whilst others resist any change or cannot afford change.

Much depends on the context of the church. In small rural churches that are only used a few times a month heating the people with under-pew heating is usually the best solution. Replacing heating systems is best done when the old system is no longer workable. Again we need to remember the embodied energy in any replacement system.

2) Is there any connection between creation and what we do with it, and the new heaven and earth of Revelation? Is there any continuity - if not does climate change really matter in the long run?

The Greek word for new in this passage is *kainos* which means renewed or remade, implying continuity. Whatever is the case, the clear commandments to care for creation have never been revoked.

3) What do you make of human population development: be fruitful and multiply... ?

“Be fruitful and multiply” applies to all animals, not just humans. Human population is a complex and emotive topic, but we should always balance looking at it with considering consumption. People in the developed West have much higher consumption of resources and carbon emissions than those from poorer parts of the world.

4) How can we motivate people of faith to address the question of diet?

It is clear that we should all reduce our meat consumption as globally it is a major source of emissions. It is less certain whether organic and 'Pasture for Life' meat is as bad. We favour a gradual reduction in meat consumption as it is much more achievable for most people. A participant suggested one approach to diet: <https://www.abdn.ac.uk/sdhp/divinity-religious-studies/cefaw/cefaw-policy-framework-2138.php>

This is good work, but largely considers the topic from a farmed animal welfare perspective, rather than a climate change viewpoint.

5) It's a difficult topic when you work in farming communities.

Yes, we are well aware of this as we live in a rural area. Several of our church wardens are livestock farmers. This whole area needs sensitive handling.

6) Do you think that we should deny any reading of the NT that suggests that all of future history on Earth is to be thought to be implied by the 'forward looking' texts of the NT?

These are difficult texts to interpret. It is probably best to look for general principles rather than trying to tie things down based on one or a few verses.

7) Is the problem that modern economies and society are based on greed and selfishness and that we seem to assume that growing the economy is more important than caring for the earth? Do we avoid suggesting to our congregations that they are going to have to accept lower standards of living and spend less rather than just changing their light bulbs?

Yes, economic growth is still the dominant paradigm. Of our current political parties, only one would not go along with this. In theory, the church should be much better at simple living as it follows Jesus' teaching. The church has come a long way on the environment in the last few years, but there is still much to do.

## Resources

Hodson, M.J. & Hodson, M.R. (2021) *A Christian Guide to Environmental Issues*, 2nd ed. Abingdon: BRF.

Hodson, M.R. & Hodson, M.J. eds (2013) *Environment and Hope*. Anvil Volume 29, Issue 1 (Sep 2013), pp. 1–129. <https://jri.org.uk/environment-and-hope/>

Maslin, M. (2021) *Climate Change: A Very Short Introduction*. 4th ed. Oxford: OUP.

Thunberg, G. (2022) *The Climate Book*. London: Allen Lane.

## Web

Hodson, M. (2021) *Three types of hope*. BRF. <https://www.brf.org.uk/three-types-of-hope/>

Hodson, M.J. & Hodson, M.R. *A Christian Guide to Environmental Issues* has been selected for The Big Church Read. Ten sessions with a video for each and discussion questions for churches, individuals, and small groups: <https://thebigchurchread.co.uk/a-christian-guide-to-environmental-issues-2/>

The John Ray Initiative (JRI) is an educational charity with a vision to bring together scientific and Christian understandings of the environment in a way that can be widely communicated and lead to effective action. <https://jri.org.uk>

Grove Booklets. JRI has gathered over 20 Grove Booklets on environmental themes on to one webpage: <https://jri.org.uk/resources/green-grove/>