



MISSION

ISSUE 3 2014

# CATALYST

*Intelligent comment on faith and culture*



## SIR JOHN HOUGHTON

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# BORED TO DEATH



## WE MAY NEED TO REDEFINE 'EXCITING' WHEN IT COMES TO OUR PLANET'S FUTURE

**B**oring! The word that hides a thousand reasons why people prefer to look away and hope that without their input global warming will be solved. Well, it won't be, and unless our generation pressures politicians to act, our children's children will reap a bitter harvest.

Christians have particular insights about creation and key convictions regarding our responsibility for other people, especially the poor, and these things suggest we should be active in engaging in these critical issues.

Like everyone else, we're confused about what to do, unsure whether our small lifestyle changes matter, overly optimistic that others will 'sort the problem'. Besides, the science behind climate change is extremely complex, beyond most but the community of specialised climate scientists. And what we don't understand, we don't engage with.

But three recent reports by the Intergovernmental Panel on Climate Change (IPCC) argue that action is needed now.

The first, in September 2013, showed climate change was 'unequivocally' caused by human activity. The second, in March 2014, warned that the impact of global warming posed a grave risk to humanity.

A summary of that report reads thus: 'The effects of climate change will be severe, pervasive and irreversible. Rising sea levels will mean hundreds of millions will be hit by flooding. CO<sub>2</sub> emissions are making seas more acidic, threatening ecosystems. Rising temperatures will hurt harvests, causing food shortages. People will be forced to flee some areas due to extreme conditions.'

The third report, in April 2014, showed how our reliance on fossil fuels must end in order to avoid the catastrophic consequences of climate change.

There are alternatives to fossil fuels available such as wind and solar and the report notes that these have developed significantly since 2007. Nuclear is also promoted as a relatively low-carbon option.

Cutting our use of fossil fuels makes a real difference, and moving towards a lighter carbon-footprint is the ethically responsible option for us all.

Science helps us too, capturing the carbon that is emitted and storing it is being researched but is not yet

available on an industrial scale.

But politicians have to act now. Writing in the *Guardian* on 10 April 2014, Archbishop Desmond Tutu called for an anti-apartheid style campaign against fossil fuel companies, arguing that they simply make so much money they will never change unless they are forced to do so.

So why is this a Christian issue? Simply because "The earth is the Lord's, and everything in it, the world, and all who live in it" (Psalm 24: 1). And in Genesis 2: 15 we're told concerning this earth: "The Lord God took the man and put him in the Garden of Eden to work it *and take care of it.*"

In December 2015, Paris will host the next major Climate Conference, COP21. In the coming months you'll have opportunities to add your voice and your footsteps to millions of others to demand political action now.

This could be an exciting moment when the world's peoples come together and vote with their feet for what is right.

That's right. Exciting – not boring!

**David Kerrigan**  
General Director



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*The Deluge by John Martin (1834) depicts the flood as recorded in Genesis*

## FLOODS, FAITH AND JUSTICE

### A METEOROLOGY SCIENTIST EXAMINES THE LINK BETWEEN EXTREME WEATHER AND CLIMATE AND OUR RESPONSE TO IT ALL

Inevitably, after a truly exceptional winter, with storm after storm, destructive winds and floods, people are asking whether our climate is truly changing. What is more, the UK is not the only place to have experienced extreme weather. Droughts, unusual cold and torrential rains have visited many parts of the world.

Climate is not, of course, a few exceptional weather events. It is the accumulation of many events, adding up to the average temperature, rainfall or winds. It is not even a single exceptional season, but the average of many seasons. A single extreme weather event is not an indication of climate change. But a series of extreme events may well be.

But there are some very sound reasons for fearing that our climate may be changing, and changing drastically. The fundamental reason is that the levels of

atmospheric carbon dioxide have risen by over 70 per cent since pre-industrial times. This increase is overwhelmingly due to the burning of fossil fuels by humanity. Carbon dioxide levels are now rising more rapidly than ever. Carbon dioxide acts like a blanket, trapping the warmth of the earth in the lower atmosphere. Already, we are seeing some effects of global warming. Sea ice in the summer Arctic is now drastically reduced, and is likely to disappear completely within a few decades. This will have consequences across the world, even though it is a challenging scientific problem to predict exactly what and where these consequences will be.

Climate change is often misleadingly spoken of in terms of global warming. Many will think that a global temperature increase of two or three degrees would be relatively benign. But what matters more, especially in our latitudes, is temperature

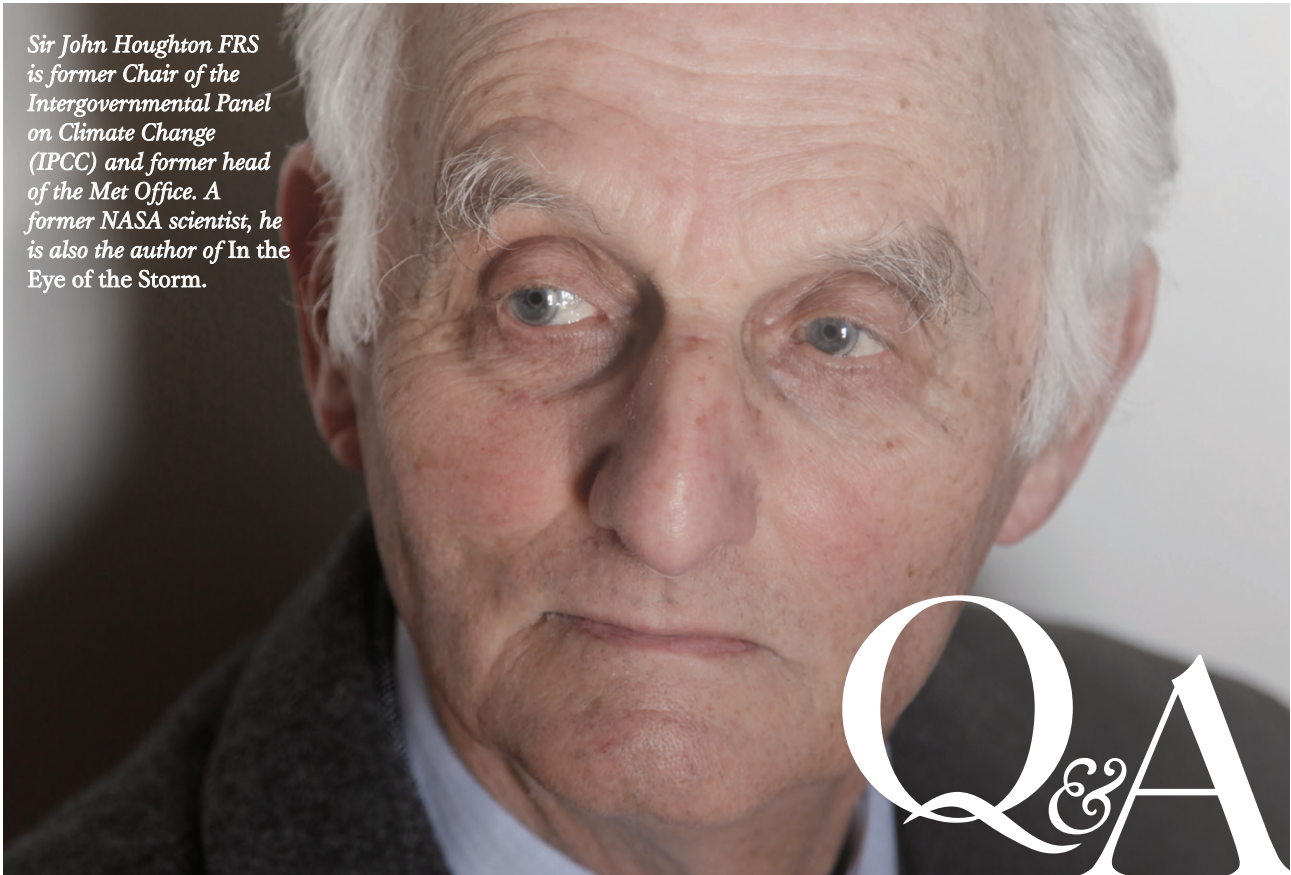
differences. The rapid rise of Arctic temperature reduces the temperature difference between low and high latitudes. For us, this could mean less mobility of the weather, so we have more persistent droughts or, as this last winter, a persistent series of vigorous depressions with their attendant gales and torrential rains.

The recent reports by the Intergovernmental Panel on Climate Change (IPCC) have concluded that climate change will inevitably be “severe, pervasive and irreversible”. Our lives will be changed drastically; even more drastic will be the effects on poorer communities in other parts of the world. So dealing with climate change is not just a matter of our own self interest; we are dealing with the damage to the poor and weak. It is a justice and compassion issue. We are dealing with a fundamentally Christian issue.

Our society, with its incessant demand for more and cheaper energy, its insistence on unlimited travel, is contributing far more than its fair share to climate change. Our demands will damage our poorer neighbours, and indeed will damage all living things on our earth. Jesus warned us that hurting the weak and poor is hurting him (Matthew 25: 35). The time has come for human-induced climate change to take its place at the very heart of Christian thinking.

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*Sir John Houghton FRS is former Chair of the Intergovernmental Panel on Climate Change (IPCC) and former head of the Met Office. A former NASA scientist, he is also the author of In the Eye of the Storm.*



Q&A

# SIR JOHN HOUGHTON

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## *OIL COMPANIES ATTACKING SCIENTISTS AND CHINA LEADING THE US IN GREEN TECH: SURPRISING TRUTHS FROM ONE OF CLIMATE SCIENCE'S MOST SIGNIFICANT VOICES*

**The subject of climate change seems to have gone out of the public imagination a little bit. Why do you think that is?**

There are a number of reasons. One is that people don't think it's as serious as it really is, because of the apparent debate about whether it's happening or not. Companies like Exxon Mobil have

been at the front of it all and put millions of dollars into trying to destroy the real evidence. They started by saying it was all a big put-up by the scientists who were trying to get money for their work. But once they couldn't get away with that, they said: 'oh, it is happening but it isn't happening that badly and we can cope

with it and we can put it right.' And that's what lots of oil companies are still saying: 'we haven't got to worry about it too much because we can do something about it.' From their point of view, we have to do rather little and carry on as before with coal and oil and gas.

**Has the scientific community made any significant mistakes in communicating these truths to the public?**

The scientific community communicates in scientific terms to the scientific world and hopefully to the intelligent world, as well as we can. Scientists aren't all that good at putting



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over things of this kind to the public at large. And scientists, including myself I suppose, have perhaps been a bit reticent to appear to be exaggerating in any way, or making it sound worse than it is or could be. So we've been a little careful in saying how sure we are.

Right from the beginning, the IPCC was saying, 'it's going to happen but we're not quite sure how bad it will be'. It's these statements of uncertainty the public has latched onto.

The newspapers, the media, have been absolutely terrible in the way they rubbish all the work of the Met Office, for instance. Terrible things have been published in the press against the world meteorological and climate communities.

We have tried to maintain absolutely our integrity and make sure we don't exaggerate in any way. And the people on the opposition side have tried to pick up absolutely anything they find in our documents which suggest that we are exaggerating.

The latest IPCC report is 1,500 A4 pages long, it's a very big document. In it there was a statement about the melting of ice in the Himalayas. It said there would be melting by 2035, when the correct number was supposed to be 2350. It was a typo. A great deal was made of that. They said 'these people are grossly exaggerating!' But that wasn't published in any of the summaries. It was quite insignificant, hidden in the document, and it was never used by the IPCC in any way.

There are very few documents about anything in the world that are treated that way. But there is such a desire on the part of the fossil fuel industry to keep going as they are, that they will do anything to try to rubbish the IPCC.

Then you have somebody like Nigel Lawson, of course, who says that the IPCC is all exaggeration, etc, but he doesn't know anything about it at all. I don't believe he's ever read the document.

How you counter that is difficult. And mostly scientists are reticent to speak too boldly, I guess. I've got a lot bolder recently, but now I'm getting old so I can't do so much. But I hope the message is beginning to get through.

### **Many people identify the Copenhagen Conference in 2009, COP15, as a major setback. What do you think went wrong there?**

I don't think it was any one thing particularly. I think that it was a last attempt, in a way, to get agreement

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*“ There is such a desire on the part of the fossil fuel industry to keep going as they are, that they will do anything to try to rubbish the IPCC ”*

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amongst the nations and they just weren't agreeing, because they *don't* on that scale. The people who were trying to run that conference just did not realise that they were not going to get agreement from all nations.

Copenhagen was the beginning of the realisation of the international people that they could never get agreement on this sort of issue and that groups of nations ought to get together and decide what they're going to do for themselves.

And some nations, particularly the oil states and even the United States, were not very keen on it at all. And that's a great shame, because the USA is one of the biggest users of fossil fuel. And their industries are working and developing hard, but not fast enough, to bring American emissions of carbon dioxide down.

My hope and prayer is that somehow the Americans and the Chinese will get together to produce real solutions to the problem.

The Chinese, of course, have been setting up lots of new coal-fired power stations, building coal-fired power stations every week, almost. But they are actually closing old coal-fired power stations every week. They are trying to increase their efficiency. They are putting a great deal of industrial effort and money into developing renewable energy, because they want to be supplying renewable energy to the world.

As far as photovoltaic solar-power systems are concerned, they have brought the price in the West right down, and that's a very good thing. The Chinese are really trying to do something about it. They also have a very good climate research unit within their government, which is modelled on the climate unit I set up at the Met Office in the UK.

So, I think things are better in China in some ways than they are in the US.

The biggest blockage is not the Chinese, it's the American Republicans who are blocking things in Congress.

### **If you had a message to the Church on the subject of climate change, what would it be?**

I would say: we live in a world which is God's world, it's his creation, he's made it and he's told us to look after it. And allowing climate change because of human activity to continue at the current rate is something that is completely against what God has told us to do.

The world can stop using fossil fuels or, if they do use them, they can get the carbon dioxide back into the ground with carbon capture and storage.

And although some world economists will tell you we can't afford to do that, that's absolute nonsense, because we *can* afford it. We can't afford *not* to do it. There's a body called International Energy Agency (IEA) based in Paris. They are the most official body of the world's energy industry. In the year 2008, the G8 Nation's Meeting in Edinburgh asked the IEA what would have to be done in the world's energy industry to make sure that the global average temperature never rose above two degrees. The IEA has produced large volumes of how it can be done. And they conclude very clearly that we would have to spend quite a lot to begin with on new forms of energy, etc, but that if you average cost over that period of 30, 40 years, then we will actually be gaining very substantially because we won't be buying fuel.

I've tried to publicise what the IEA have said. They aren't environmentalists, they're energy experts and economists.

*Sir John Houghton was speaking to Jonathan Langley*



Sir John's autobiography, *In the Eye of the Storm*, is available from [lionhudson.com](http://lionhudson.com)



# 10 REASONS WHY NOBODY SEEMS TO CARE ABOUT CLIMATE CHANGE ANYMORE

Jonathan Langley  
Editor, Mission Catalyst

## BAD SCIENCE, BAD THEOLOGY, HOW WE'RE WIRED AND OUR SENSE OF FAILURE: NONE OF IT IS HELPING

**Y**ou're a bad person. Admit it. You saw the title of this issue and thought: 'Oh, no. Not this again.' You know it's a terribly important subject, but a magazine themed around climate change sent the words 'global yawning' flashing across your mind. Don't worry. I felt the same, and I'm writing in it.

For a while, a few years back, climate change felt like it was going to become everyone's favourite cause. It felt like momentum was building. It felt not just important, but exciting. We were going to save this planet whether it liked it or not and we were going to do it soon! But raise the question in your office or small group today and be prepared for the blinding flash of white and sudden depressurisation of the room as all eyes present begin rolling and there is a collective intake of breath for a long, heartfelt sigh.

But if we're going to reignite our passion for this cause (and I really think we should, don't you?), then we probably need to examine some of the reasons the flame

went out in the first place. The first step is admitting you have a problem...

### 1. I BLAME SCIENCE

Or, rather, scientists. Part of the reason many people have developed climate fatigue over the last few years is because of messages coming out of the scientific community. They started off boring, moved into confusing and then almost immediately became boring again. The initial caution of climate scientists over making bold predictions has been commented on by Sir John Houghton elsewhere in this issue, and that caution was jumped on by the opponents of creation care – large oil and fossil fuel energy companies with masses of cash in the bank and a select group of scientists in their pockets.

An alternative narrative was quickly developed: that climate change was a hoax, a swindle, a communist plot. And the media, ever hungry for a counterpoint and a new angle, were too happy to give

it airtime and column inches completely disproportionate to the amount of acceptance it enjoyed in mainstream scientific circles.

The situation now stands as such: a too significant section of the population believes a tiny minority of scientists who say climate change isn't dangerous or man-made or significant (in a way they would never believe, say, the minority of scientists who believe HIV doesn't lead to Aids). Another significant group feels, wrongly, that 'there are two sides' to the climate change issue. There *are* two sides, but they are not equally valid. And those of us who already know that make up the rest of the population. We are the people who already believe the accepted science, but keep having to hear it, *ad nauseam*, because of the need to convince the misled few. It gets old.

### 2. IT'S THE ECONOMY, STUPID

It is an irony that the global financial system, whose unending hunger for



consumption and growth has partly led us to the point of ecological disaster, has also helped distract us from that impending cataclysm. The global financial crisis has affected how much governments care about climate change (remember when the Conservatives were branded 'green?') and what they are willing to do about it, but it has influenced ordinary people much more. While we have to worry about our own jobs or benefits and the uncertain future facing our children and grandchildren, it's hard to worry about something as seemingly abstract as climate change.

### 3. IT'S SO MUCH SLOWER THAN A COAL-TRUCK

It seems an unfortunate image to use, but climate change moves like a glacier. That's partly why we can prioritise immediate economic concerns over much larger ones: we don't notice the long term. Our brains are developed to sense and protect us from dangers that look more like a tiger jumping out of a bush than a two degree increase in sea temperatures. Because climate change happens so slowly, we don't notice or feel it. And we fail to think of it as urgent. Drive a lorry full of coal at us and we will jump out of the way. Burn billions of lorries worth of coal and threaten every ecosystem on the planet and we simply don't notice.

### 4. WE CAN'T BOMB IT

Human beings like an enemy. If a threat is personal, if we can challenge and defeat it, we're a lot more likely to devote time to dealing with that threat. In an excellent *LA Times* article, Professor Daniel Gilbert of Harvard University points out that "global warming lacks a moustache", and by that he means it isn't personal. If Osama Bin Laden was trying to destroy us with CO<sub>2</sub>, we'd probably be more upset. But, as Gilbert puts it, "global warming isn't trying to kill us, and that's a shame." Climate change poses a greater threat to both life and property than any national or international enemy, and yet our military, espionage and anti-terror budgets dwarf any resources allocated to fighting climate change in any realistic way.

### 5. WE HAVE BAD THEOLOGY

Our theology can be bad in two ways. It can justify personal or communal selfishness, or it can take the view that the earth doesn't matter. The first has the consequence that we don't care much about climate change because it is likely to affect millions of Bangladeshis a lot more than it will us, and that is their problem, not ours. A lack of identification with people from other races, religions or countries will make climate change seem less important. It's easy to fall into if your faith sees God as being

primarily concerned with Britain and her allies.

The other form of bad theology is an eschatology that sees creation essentially as firewood for the end times. God is going to burn it all up soon, so why bother with it? Jürgen Moltmann, Richard Bauckham, Michael Northcott and others make the theological arguments better than I can, but since most of the Christians who believe this are quite passionate Protestants, it's worth remembering Martin Luther's assertion that if he knew the world was falling apart tomorrow, he would still plant a tree.

### 6. IT DOESN'T OFFEND US

*If Only Gay Sex Caused Global Warming* was the title of that Daniel Gilbert article mentioned earlier, and it rather captures the essence of this point. "Although all human societies have moral rules about food and sex, none has a moral rule about atmospheric chemistry," he says. When we feel outraged and offended in a moral sense, we're more likely to react and to care, but, in Gilbert's words, climate change "doesn't force us to entertain thoughts that we find indecent, impious or repulsive." The fact it doesn't may have quite a lot to do with our selfish theology, but it also means that we will put more effort into protecting future children from online pornography than from respiratory diseases, starvation or drowning.



## 7. PASSION/COMPASSION FASHION

*Ugh. Climate change? Didn't we do that already?* Those of us who consider ourselves conscious of and engaged with important world issues can see ourselves as occupying (sometimes literally in the case of the activists among us) moral high ground, but we can be victims of fashion and political ADHD just like anyone else. Want evidence? How many of the people who took part in Make Poverty History are still marching and demonstrating against poverty regularly? Is that because world trade became fair, poverty was defeated and Bono decided to be quiet while we weren't looking? Or because new, shiny causes and campaigns have emerged?

It's important not to beat ourselves up. Fracking, trafficking, the cuts and women bishops are all important issues and deserve our full engagement. But we also need to be grown up about our activism. Apartheid was not defeated in a year. Climate change is in many ways the longest of long term issues. We need to be in it for the long haul.

## 8. THOSE SCIENTISTS AGAIN!

I know, I know. Scientists are really the good guys in this story, but there is a more direct way that science is also a little to blame for our complacency over climate

change. Many of us seem to hold to the childish belief that men and women in white coats will almost certainly produce a panacea that will save us all from the trouble we've gotten ourselves into. Magic new energy sources! Colonising fresh planets! Clean, free energy without need for investment! It's more science fiction than science, but that doesn't stop us believing that the universal Mum of technology and learning will clean up our mess without our needing to do much about it.

Yes, technologies that will help the world deal with the ways climate has already started to change are important, but it is too easy to be dazzled by shiny new ideas like floating buildings and revolutionary flood defences and assume the hard work of slowing and reversing the change itself has become less important. It hasn't.

## 9. WE'RE, LIKE, SUPER BUSY

*The Great Talented British Sewing Apprentice Voice Bake* isn't going to watch itself, is it? I mean, we're busy, right? There are new tablets to buy and *TOWIE* to watch, apps to download and videos with titles ending in '...you won't believe what happened next!' to click on. How could we possibly write a letter to an MP or show up at an event or read up on a subject related to science or the world's poor?

Self-flagellation aside, we really are all

busy. We care for children and parents. We have church commitments. We work. We need rest. But this is important. And there is a lot in our lives that steals our time and gets in the way of our doing something about it. That could do with changing.

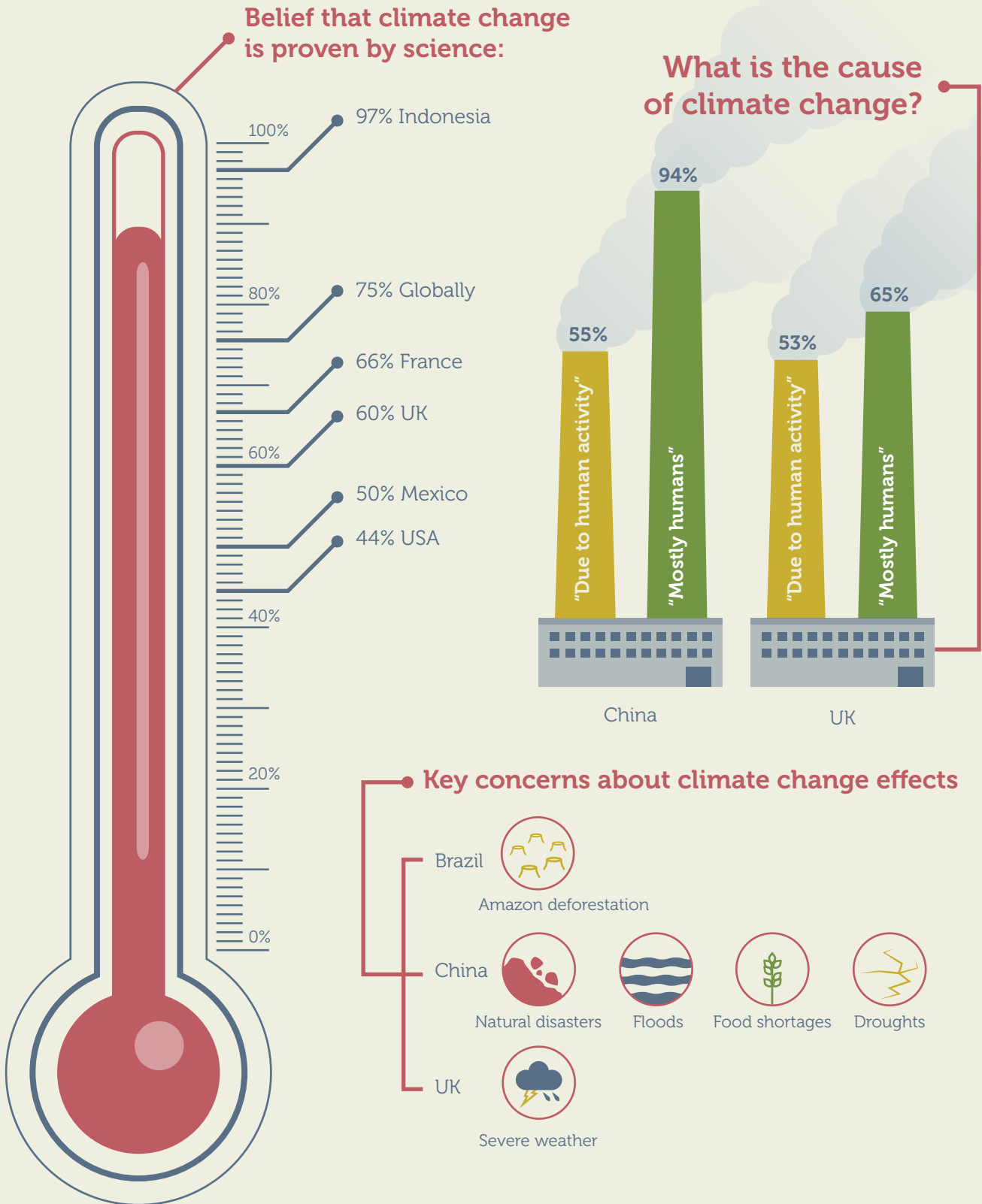
## 10. WE'VE LOST HOPE

If we're honest, many of us suspect it's too late to do anything about climate change. It's not that we have any scientific evidence of that, just a *feeling*. And that's understandable. When so much political and financial might seems invested in ignoring or denying the urgency of climate change, when vast numbers of people seem not to care, when scientists' predictions become more doom-laden by the month and when moments of hope like climate conferences seem inevitably to fail, it's easy to despair.

But Christianity is not a religion of despair, and our God is a God of hope. There is still a chance to slow and mitigate some of the expected damage. There is still a reason to invest time and money and energy in protecting creation. There is always still room for God's hope, no matter how big the challenges that face us. And whether or not we are successful, we are called to *try*. There are more of us than you may think. We have more influence than most of us imagine. And there is still time to make a difference. We just need to start caring again. It's time we did just that.



# Global attitudes to climate change



Source: United Nations Foundation Global Climate Change Public Opinion & Digital Research Unit



UN Secretary-General Ban Ki-moon during his closing press conference after delegates adopt a decision taking note of the Copenhagen Accord

# COP A LOAD OF THAT: DOES COPENHAGEN MATTER?

## THE COP15 CONFERENCE IN 2009 WAS A TURNING POINT FOR THE ENVIRONMENTAL MOVEMENT AND WE'RE STILL FEELING ITS EFFECTS TODAY

'Post-Copenhagen' has become a well-worn phrase in recent years amongst environmentalists and aid NGOs, said with the same familiarity and resigned expression as when someone mentions, 'the current economic climate'. But what has the city of Copenhagen done to become talked about in such a way? The answer, of course, is that it played host to COP15 (a much-needed shorthand for the 15<sup>th</sup> Conference of the Parties to the United Nations Framework Convention

on Climate Change!) and became the location for what could possibly be one of the most significant collapses of political negotiations this world will ever see.

The Copenhagen summit was the latest in a long line of negotiations around the environment, climate change and national carbon emissions initiated by a UN conference in Stockholm in

1972, then the famous Rio 'Earth Summit' of 1992 and then the Kyoto summit in 1997 and the resulting treaty (the Kyoto Protocol), which finally came into force in 2005. The first commitment period of the protocol was due to end in 2012 and one of the key aims of Copenhagen was to agree what would happen post-2012.

The negotiations were widely seen as a failure. Instead of a deal that would

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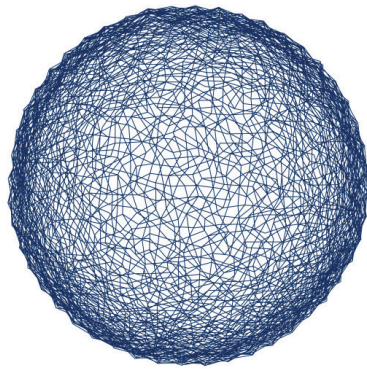
**“ THE NEGOTIATIONS WERE WIDELY SEEN AS A FAILURE ”**

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legally bind economically developed countries to their emissions targets, what resulted was 'the Copenhagen Accord', which was not legally binding and contained only vague agreements and voluntary pledges. One of the key asks was that developed countries would provide a fund to help poorer nations respond and adapt to the crippling challenges of climate change, but only half the money requested was committed and no details were agreed on as to where that money would actually come from.

History may look back at Copenhagen as the moment when humankind lost any hope of stopping the effects of runaway climate change. The negotiations were also a shocking exposé of how the rich club together to protect their interests against the poor.

Perhaps most interestingly, though, they were a huge psychological blow to the multitudes of individuals and organisations who care deeply for this world and all that live in it, and who saw Copenhagen as the biggest opportunity to deal with the biggest environmental



## COP15 COPENHAGEN

UNITED NATIONS CLIMATE CHANGE CONFERENCE 2009

To my mind, this is a clarion call to us all. Copenhagen was a fight and we got beaten up. But it's time to dust ourselves off, stand up and take action once more on what is, without doubt, the biggest threat

## “ HISTORY MAY LOOK BACK AT COPENHAGEN AS THE MOMENT WHEN HUMANKIND LOST HOPE ”

problem that we are facing: that of climate change. The sense of defeat and hopelessness was devastating, with no one knowing quite what to do next, and whether there was any point trying to do anything anyway. I noticed as I travelled around churches in the years immediately after Copenhagen, speaking on environmental care, the question I was most often asked was whether or not there was any hope.

(As an aside, it's no surprise, in the face of the defeat of these macro political negotiations, that the Transition Movement, with its emphasis on small, local solutions, exploded in popularity at around this time.)

Post-Copenhagen syndrome, coupled with the economic recession, meant that climate change all but fell off the agenda in every area of life. Nearly five years on, though, I sense a shift. Back in February of this year a motion was tabled at General Synod, effectively calling on the Church of England to take climate change seriously again (having taken its eye off the ball) and act.

ever facing humankind and the world of which we are a part.

The good news is that we still care. This hit me when I led the pre-rally service for the IF Campaign last year, at Westminster Central Hall. It was a joyous celebration with WCH filled to the brim and impromptu services being held outside by those who weren't able to get in. There are still countless numbers of us determined to work to see a better world, and together we *can* make a difference.

The other piece of good news is that, despite the post-Copenhagen rhetoric, it isn't too late to act. As Ben Niblett from Tearfund told me, "Copenhagen certainly wasn't the last chance to get a global deal on climate, and a global deal would be very helpful indeed but certainly isn't the only way to adapt to climate change and cut global emissions."

One final piece of good news is that God does not ask us to save the world. Last time I looked, that was his job! What God *does* ask us to do is to 'act justly, love mercy and to walk humbly' with him (Micah 6: 8).

So what is to be done then in our post-Copenhagen world? I want to suggest that you and your churches do three things:

### 1. Keep up the fight

The political negotiating hasn't stopped, and neither must we. Coming up over the next eighteen months or so are Ban Ki-Moon's Climate Summit (September), COP discussions in Lima (November) and then some crucial COP negotiations in Paris (November 2015). Learn more about these and find out what you and your church can do to have your say and push for our global leaders to make bold decisions.

One good thing to be aware of is the Hope for the Future Campaign. This is a campaign to get issues around climate change on the agenda for next year's General Election and makes the simple suggestion that we all write to our MPs and ask them to do just that. You can find out more at [hftf.org.uk](http://hftf.org.uk)

### 2. Put your house in order

With or without political change, we can make a big difference by bringing these issues into our churches and making sure we are putting our own house in order. A Rocha UK believes that it should be as commonplace for churches to be engaged in acts of creation care as it is for them to be engaged in acts of community involvement. Could that be said of your church?

Eco Congregation is an ecumenical programme that helps churches make the link between environmental issues and Christian faith, and respond in practical action in the Church, in the lives of individuals, and in the local and global community. Take a look at [ew.ecocongregation.org](http://ew.ecocongregation.org) and get your church signed up.

### 3. Live it out

Governments, businesses, churches... they all need to be making changes and taking climate change seriously. But so do we, as individuals. If we are pushing others to act but doing nothing ourselves, I think that places us in the category of hypocrite!

Gandhi's words still apply to us today: live simply that others might simply live. We can do that in the way we eat, the way we travel, the energy we use, and the way we throw things away. There are lots of useful ideas at [arocha.org.uk/our-activities/living-lightly](http://arocha.org.uk/our-activities/living-lightly)

So here are three things that every one of us reading this magazine can do. Thousands of people working to make a difference. Just imagine!



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Andy Boston

Leads the Analysis Team for the Energy Research Partnership which helps government, industry and academia co-ordinate energy system innovation and worked for 28 years prior to that at E.ON looking at energy system modelling and the techno-economics of new forms of generation.

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# CAN SCIENCE SAVE THE WORLD?

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## THERE ARE TECHNOLOGICAL SOLUTIONS TO THE PROBLEMS OF CLIMATE CHANGE, BUT YOU'RE NOT GOING TO LIKE THEM

The energy industry is fixated by a 'trilemma'. It appears in conference presentations, academic literature, company strategies and government policy. Imagine one ball on a triangular shaped billiard table with a pocket in each corner labelled 'unaffordable', 'dirty' and 'insecure'. The table is on a boat and your aim is to avoid pocketing the ball as it is buffeted by the storms of public opinion, politics and events.

To put it another way, for an energy system to be sustainable, it must first be affordable. No-one should be prevented from accessing essential energy through cost, but a precious commodity like energy must not be so cheap it's devalued and squandered. It must also be secure (we only want the lights to go out when we switch them off), and clean (avoiding the cataclysmic climate change our current energy system is pushing us towards). Achieving two of the three is not difficult, but all three is a tough nut to crack.

### **Want to hear about**

So what can we do? Is there a magic technology that will hit all three goals and make our energy system more affordable, secure and clean? Yes, actually – but it is the least sexy of all: insulation. In fact, any means by which we can reduce consumption would help, which includes behaviour change too.

Reducing consumption means we import less energy, pay less and damage

the environment less, so why isn't this win-win-win being taken up to the full? It mainly comes down to the hassle factor. For example, loft insulation is nearly always a quick win financially and environmentally, but the thought of emptying the attic of all those unread school reports is quite off-putting.

Behaviour change is even worse – I

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“ MY PERSONAL FAVOURITE IS THORIUM:  
MORE ABUNDANT AND LESS PRONE TO THE  
PROLIFERATION OF NUCLEAR WEAPONS ”

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embarrassingly offer my own house as an example. I'm writing this late at night and am the only person awake. So why are six rooms in my house lit at the moment by 14 bulbs? Sheer laziness, really, and a lack of conscious connection between my actions and the consequences which will be decades later and thousands of miles away.

Sorry, I should know better, I've switched nine lights off now.

### **Top techs**

After we have exhausted all the ways we can think of to reduce our consumption, we will still need to look to a cast of technology stars to help us reduce emissions to a sustainable level.

### **Carbon capture**

The lead actor is probably carbon capture and storage (CCS). This technology scrubs the CO<sub>2</sub> from the flue gas and pumps it down an old oil well or saline aquifer to avoid it entering the atmosphere. Much of the chemistry and engineering is understood, but no full sized demonstrations have yet taken place. It is costly (greatly increasing the capital cost of a power station) and reduces power station output by 25 per cent. It is, however, the only technology that can decarbonise many industries, and coupled with biomass as a fuel is the only 'negative emission' electricity generation technology that can actually

reduce atmospheric CO<sub>2</sub>. So, although expensive, CCS will be an essential part of the future energy mix. Without it we will have to stop burning fossil fuels, as the atmosphere is fast reaching its capacity to absorb CO<sub>2</sub> without causing damaging climate change.

### **Biomass fuels**

Also starring is the solution of switching to fuels derived from biomass. This could include the burning of woody matter for generation, production of biofuels for transportation and burning biomass for heating purposes. Biomass is a good energy source because the only CO<sub>2</sub> released is that originally absorbed during the growth phase. However, quite a bit of energy is



Wind farm in front of San Jacinto Peak, southern California © John Marquis



Toyota hybrid technology © Toyota UK



Carbon capture and storage (CCS) plant in Brindisi, Italy © Enel Sharing

consumed converting raw biomass to more useful energy vectors such as road fuels and the growing of some biomass (eg palm oil) has been controversial especially, as some is grown on land cleared of virgin rainforest. However, without biofuels, only incremental progress can be made in decarbonising transport, especially by air, where no alternatives exist.

### Nuclear

So, if that covers the lead actors, who else has a role? Nuclear is probably next on the credit list. It's a well understood technology that delivers consistent power when required, although it brings problems with waste disposal and bad press from accidents at poorly designed out-dated facilities. It could be harnessed to deliver heat as well, especially if small modular

reactors are developed that are less capital intensive and can be sited nearer to heat demand. Worth watching out for are novel fuel cycles that are more efficient at burning conventional fuels derived from uranium or my personal favourite, thorium, a much more abundant fuel and less prone to the proliferation of nuclear weapons.

### Wind

Wind probably is also worth a mention as it delivers clean electricity (on windy days anyway!) and is popular in some (but not all) quarters. It does create issues, though, for the system operator, meaning it requires a supporting cast of other technologies (such as storage or conventional generation) to back it up when the wind drops.

### Hydrogen

At home we will probably see more plug-in hybrid electric vehicles (like the Prius Plug-in) that charge from the grid (which will have been decarbonised) and run on battery power for short journeys but can switch to conventional road fuel when a longer range is required. Hydrogen may even make a break through as a transport fuel, but technical challenges mean its production is expensive and inefficient and it is far more explosive than petrol or gas.

### Heat pumps

We may also be using heat pumps which make your home into a giant fridge in reverse, using a small proportion of electricity to scavenge heat from an external source (the ground or the air or possibly a nearby river) and upgrading it to a temperature that can be used for space heating.

Many other technologies will play their part, some acting in a supporting role for renewables (such as smart grids which allow National Grid to schedule your washing when it's windy!), some there because they are socially attractive. Solar photovoltaic energy production is a case in point. It's not a cost effective way of reducing emissions, but rooftop panels are popular for displaying the owner's environmental credentials or earning them a good return on their wealth. Solar thermal (heating water, for instance, through sunlight) may also have a cameo role, but solar technologies are, unsurprisingly, best deployed in sunnier climes than the UK.

### Attitude Change

But we can't escape the awkward truth that, if we do love our global neighbour, we are going to have to change our attitude and behaviour significantly. We will need to share the atmosphere's remaining carbon space more equitably, rather than it being an unthinking right to be able to continue to dump our emissions there. Consequently, energy prices will have to rise and, in a throw back to the wartime era of energy rationing, we may have to ask ourselves, 'Is your journey really necessary?'

# MOVING FROM GLOOM TO ACTION

## THE DIFFERENCE WE CAN MAKE IS AT A NATIONAL AND GLOBAL LEVEL THROUGH OUR PROPHETIC VOICE

As someone who works for Christian Aid, I could tell you about how greenhouse gas emissions are having an increasingly devastating impact on the world's poorest countries. About people forced to migrate because of droughts, of farmers unable to feed their families due to erratic rainfall or flooding and of communities destroyed by extreme weather. All this is true and will get worse unless we do something about it.

All pretty depressing. But there are signs of hope. China is starting to move in the right direction, spurred by the lethal air pollution of its own cities. America has reduced its emissions by reducing the amount of dirty coal it burns, and the misery of floodwaters here in the UK has put the issue back on the political map. In more progressive (but less powerful) countries around the world, climate change is already a priority. UN Secretary-General Ban-Ki Moon has made climate change the focus of a special summit this autumn and, in December 2015 in Paris, the first truly global climate deal will hopefully be struck.

But I'm most encouraged by the

“ I HAVE A DREAM OF A WORLD WHERE WE FIND JOY IN 'ENOUGH' RATHER THAN GREEDILY STRIVING FOR MORE THAN WE NEED ”

emergence of a prophetic Christian voice both here and around the world. The slow moving Church of England General Synod recently passed a motion to review its ethical investment policy in line with its commitment to tackle climate change. The Pope is soon to release an encyclical on the environment and grassroots Christian organisations are speaking out in favour of creation care. Across the UK I've seen increasing numbers of people in churches wanting to involve their communities in responsible, faithful stewardship of the environment.

As both a Christian and a climate change campaigner I don't want to harangue people into feeling guilty or brow beaten. There is a positive story to be told and I think it's for Christians to provide hope amid the gloom. To borrow a line from that famous Baptist, Martin Luther King Jr, I have a dream and it's a dream far bigger than just climate change. I have a dream of a world where we find joy in 'enough' rather than greedily striving for more than we need. A world where we can all share in God's creation, rather than the rich getting richer and the poor scraping by on what's left. A world where we can use our energy and ingenuity to build a society that isn't reliant on fossil fuels. One where we have safe, clean, sustainable energy. This will be achieved by working together rather than alone.

By coming together we not only

safeguard our future, we find richness in community. Eco systems will be preserved and food will be locally sourced. I see churches as green hubs at the heart of communities and relevant to all. Our energy will be generated locally. We'll value things more and won't be swept up in a throwaway culture. The world's poorest people will be able to develop in a way that won't entrench them in poverty through increasing

natural disasters. By leapfrogging

dirty energy, developing countries will be able to embrace the green energy revolution and prosper by harnessing their natural resources and renewable energy sources.

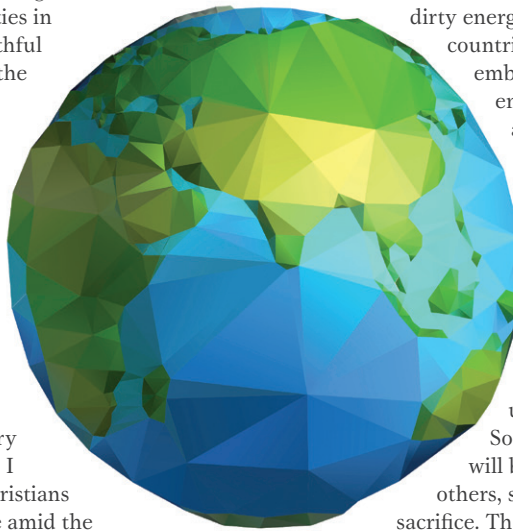
It won't be easy to achieve, but anything worth doing is usually hard work.

Some bits of this will be easier than others, some will require sacrifice. There are small steps

we've already taken, like fitting energy saving lightbulbs and insulating our homes. But we can also use our voices, our churches and our imagination to inspire others. How wonderful it would be to see a prophetic Christian vision of a better planet helping transform our nation and our world.

With the general election around the corner, you can join with others in a weekend of prayer and action urging our politicians to take action to tackle climate change. Visit [christianaid.org.uk/climate](http://christianaid.org.uk/climate) for details.

We've changed the light bulbs. Now let's change the world.





# THE BIG 'WHY?'

*IT'S A QUESTION THAT COMES UP MORE THAN YOU'D EXPECT. AND THE ANSWERS ARE BEAUTIFULLY SIMPLE. THEOLOGIANS AND CHRISTIAN ENVIRONMENTAL EXPERTS EXPLAIN WHY CHRISTIANS HAVE TO CARE FOR CREATION*



Dave Bookless



Elaine Storkey



Vinoth Ramachandra



Sir John Houghton

“We care for creation because God cares for creation,” says theologian and author Dr Vinoth Ramachandra. “This is a world that God has brought into being and God delights in it. How can we turn our back on what God delights in?”

Humankind were called from the beginning to be the caretakers of creation: “God said, ‘Let us make mankind in our image, in our likeness, so that they may rule over the fish in the sea and the birds in the sky, over the livestock and all the wild animals...’ (Genesis 1: 26).

But for centuries we’ve used creation for our own gain without taking care of it or preserving it for future generations. This is not what God intended. “It’s God’s

world and we are called to ‘bear his image’, in other words to reflect his character, in how we look after his world,” says Rev Dave Bookless, National Director of A Rocha. “And God’s character is not about destroying.”

Sir John Houghton, former Co-chair of the Intergovernmental Panel on Climate Change’s working group, agrees: “God is the creator – he has given us the environment to enjoy, to use, and also to look after. God has put us here to do that, and we’re not doing it very well.”


Developing countries bear a disproportionately large brunt of the burden of climate change – a phenomenon caused, until very recently, almost exclusively by the actions of the West. From extreme flooding in countries in Asia

to unexpected droughts in East Africa, many poor countries just do not have the resources to cope with the changes in their weather conditions.

“The world’s poorest people pick up the tab for climate change. They’re picking it up right now,” says Dr Elaine Storkey, theologian, author and broadcaster. “If we’re serious about mission we cannot miss this great thing that is going on in front of our very eyes, amongst the poorest people of the world who we’re trying to bring the gospel to.

“Looking after the creation, helping people who are the most vulnerable, goes hand in hand with telling them that Jesus is Lord, and that this is God’s world and we are part of this together.”

For Brendan Bowles, Director of Climate Stewards, an organisation which helps people offset their carbon, there is no question: part of being a Christian is to care for creation. “The churches have probably more reason to care than the rest of society. Love God, love your neighbour. Love God – of course you’re going to care for his creation. Love your neighbour – of course you’re going to care for a creation on which his livelihood depends.”



You can hear more from all of these Christian voices and find Bible studies and theological reflections at [bmsworldmission.org/futureshape](http://bmsworldmission.org/futureshape)

**BORED, SCEPTICAL OR BEGINNING,** whatever point you're at on your journey with creation care, there's a resource for you. Here are a few places you might want to dip your toe into the rapidly warming waters of environmental writing and viewing.



VIEWING

**AN INCONVENIENT TRUTH**

Former US Vice President Al Gore sets out to educate the world about climate change – in many ways the film that, in the reactions it inspired, sparked the anti-science bent of much climate change scepticism.

**GASLAND**

Called 'poetic and lyrical' by Mark Kermode, this hard-hitting documentary by Josh Fox about fracking in the United States won a Special Jury Prize at the 2010 Sundance Film Festival.

**ENCOUNTERS AT THE END OF THE WORLD**

Legendary filmmaker Werner Herzog's breathtaking, beautiful and bizarre portrait of nature and humanity in Antarctica is not so much a scientific documentary as a portrait of what we stand to lose.

**FUTURESHAPE? videos**

BMS World Mission's own short videos featuring interviews with scientists, academics and campaigners are a great way to introduce your small group to the issues surrounding climate change. [bmsworldmission.org/futureshape](http://bmsworldmission.org/futureshape)

READING

**CLIMATE CHANGE 2014: Impacts, Adaptation, and Vulnerability**

**The Intergovernmental Panel on Climate Change**  
If you've some time on your hands and an academic mind, the latest report from the IPCC makes fascinating if sobering reading. The science is clear. Only our response is in question.

**IN THE EYE OF THE STORM**

*Sir John Houghton*  
The autobiography of one of the most significant personalities in the world of climate science, reflecting on faith, co-chairing the IPCC and a life in science.

**A MORAL CLIMATE: the Ethics of Global Warming**

*Michael Northcott*  
The ethical and theological implications of global warming, assessed by a University of Edinburgh ethicist.

**FUTURESHAPE? Small group studies**  
[bmsworldmission.org/futureshape](http://bmsworldmission.org/futureshape)

Studies on why creation care is mission, why it is biblical and why it is ethical, with questions to help you delve deeper and insights from experts in the field. See also: *Environment* by Dr Ruth Valerio.

**PLANETWISE: Dare to Care for God's World**

*Dave Bookless*  
A helpful and very accessible book on the biblical foundations of environmental care.

**THE BIBLE AND ECOLOGY: Rediscovering the community of creation**

*Richard Bauckham*  
Renowned biblical scholar and theologian Richard Bauckham looks at the theology and eschatology of the earth.

**L IS FOR LIFESTYLE: Christian living that doesn't cost the earth**

*Ruth Valerio*  
A biblical and practical look at the key social and environmental issues we face in our world today.

Mission Catalyst



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