

# Trying to Keep

**“Christian Churches are in an incredibly powerful position to do something about global warming.” This was the challenge thrown out by climatologist Prof. Bob White of the Faraday Institute in Cambridge, addressing a recent conference in Belfast – Ireland and Global Warming – organised by the local group of Christians in Science.**

Politicians are difficult to convince to take action on climate change when the benefits will not be seen until well after the next election,” argued Prof. White, “but if public opinion wants something done it’s amazing how quickly a government will act and Christians can be very strong lobbyists.

“The other strength the Christian communities have is that not only are they groups of very committed people but there are committed Christian groups in every patch of the world, most of whom we have direct links with, and so can lobby internationally.”

Another conference speaker, Prof. Sir John Houghton, President of the John Ray Initiative, agreed. “Churches are the one big group, a group much bigger than all the ‘green’ organisations added together, that can work internationally and across the rich/poor divide, building partnerships to address this issue worldwide.”

A third speaker, Dr. John Sweeney, Director of ICARUS (Irish Climate Analysis and Research

Units), was also convinced the Churches needed to play their part but had a different reason. “Carbon dioxide emissions from ‘Christian countries’ or ones who have been Christian, show that we have been very responsible for what has happened and so there is probably more onus on us to do more than some of the other groups that have not been so prolific in creating the problem.”

For its part, the Presbyterian Church in Ireland has also said that action needs to be taken and last year, 2007, the General Assembly resolved “that congregations and individuals take all measures possible to stop climate chaos as an act of solidarity with the world’s poor.”

But before we can change the world perhaps we need to know a little more about what has to be changed.

## **What is the problem?**

The earth is getting warmer. It’s heating up faster than it ever has before.

Average temperature has always changed across the surface of the earth due to small but regular variations in the Earth’s orbit around the sun. Temperature has risen and fallen by about 6C as ice ages give way to warmer periods separated by about 100,000 years.

But the same temperature change is predicted to happen during the next 100 years. Over the 21st century the global average temperature is expected to rise by between 2 and 6C. Adapting to such rapid change

will be very difficult both for humans and ecosystems alike.

The ten warmest years in the last 150 in terms of global mean temperatures have been 1998, 2005, 2003, 2002, 2004, 2006, 2001, 1997, 1995 and 1999. Even more striking is that each of the first eight months of 1998 was the warmest on record for that month.

In Ireland records show that summer night-time temperatures are getting warmer, daytime winter temperatures are getting warmer and a typical winter in the south-west of Ireland has half the frosts of 20 years ago.

“We don’t need the facts and figures or the statistics to show us that things are changing” says Dr. Sweeney. “In Ireland everyone has noticed the earlier springtime, the landscape changes, the earlier flowering of plants, a change in migration times; we know that things are changing.”

## **What is causing it?**

Once you decide what is causing the problem you know how you can begin to resolve it. But different causes and resolutions will have very different effects on the future of the economies of those involved. That’s why there has been so much debate about the causes because that decides who carries the cost of resolution.

The Intergovernmental Panel on Climate Change (IPCC) was unambiguous when it stated that “most of the observed increase in globally averaged

temperatures since the mid-20th century is very likely (90%) due to the observed increase in atmospheric greenhouse gas changes.”

What they meant was that carbon dioxide pumped into the atmosphere due to the burning of oil, coal and gas by the industrialised nations since the industrial revolution of the mid 18th century was largely responsible.

“Several thousand scientists drawn from many countries were involved as contributors and reviewers in these assessments,” explains Sir John Houghton who was chairman of IPCC. “Our task was, honestly and objectively, to present balanced scientific conclusions to the world’s policy makers. No assessment on any other scientific topic has been so thoroughly researched and reviewed. The world’s top scientists could not have spoken more strongly.”

Prof. Houghton regrets that strong vested interests spent many millions of dollars on spreading misinformation about the climate change issue, first denying evidence for rapid climate change due to human activity and then arguing that its impact would not be great. “The scientific evidence cannot support such arguments,” he concludes.

## **So what are these greenhouse gases?**

If it wasn’t for the so-called greenhouse gases in the atmosphere, the earth would

# o Our Cool...

be a much colder place. In the same way as a garden greenhouse traps the heat, so carbon dioxide, water vapour and methane act as a blanket around the earth and keep it about 20 or 30C warmer than it otherwise would be.

However, since the industrial revolution, one of these greenhouse gases, carbon dioxide, has increased by 40%. It is at a higher concentration now than it has ever been because of the huge increase in the burning of fossil fuels – coal, gas and oil – which emit carbon dioxide into the atmosphere as a product of their combustion.

This has resulted in the 'blanket' around the earth trapping too much heat and so temperatures are rising. If no action is taken the concentration of carbon dioxide will continue to rise and the average global temperature could increase by as much as 6C over the next century.

The main emitters of carbon dioxide are the developed countries including USA, Canada, Australia, Russia, Japan and Europe with Africa and India being by far the lowest emitters. It is estimated that half of the carbon dioxide emissions are caused by just 6% of the population while by one measurement Ireland has the second highest emission within the EU.

## What are the effects?

Global warming and increasing temperature leads to many

other changes that will have significant impact on human communities, the land they inhabit and the climate they experience.

Sea level is expected to rise about half a metre per century due to the expansion of water as it warms up. This will continue for many centuries and will cause problems for communities living in low-lying regions.

Bangladesh is obviously at risk where about 10 million people live less than a metre above sea level. Other areas difficult to protect include south China and islands in the Indian and Pacific oceans. Even in England, sea defences along the eastern coastline will need improved.

There will be increased regularity of extreme events. The unusually high temperatures across Europe in 2003 that led to the deaths of around 20,000 people will be average by the middle of the 21st century and considered cool by 2100.

In a warmer world there will be more evaporation of water, more water vapour in the atmosphere and more rain. It will be more intense in some areas while other areas will have less rain.

Floods, already the most damaging of the world's disasters claiming 200,000 lives over the last 25 years, could increase in risk by a factor of 5 by 2050, while droughts that currently affect about 2% of the world's land area will affect 10%.

These changes will mean that many people will have to move from their homes and one estimate suggests that, due to climate change, there could be 150 million extra refugees by 2050.

While these are the main impacts other changes about which there is less certainty include melting of the polar ice caps and the reduction of the

be much more significant.

While winter rainfall will increase by about 10% the summers will become much drier with decreases in rainfall ranging between 25 to 40% leading to the Ards peninsula and South Down areas being very dry.

The increased river flows in the winter will require the need to recalculate our flood

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Gulf Stream that warms the seas around western Europe.

## Changes in Ireland

Of course not all the effects will be negative and predictions show that Ireland will be one of those areas that should be able to adapt and cope well with the differences brought about by climate change.

Mean temperature is predicted to rise by 1.5C by 2050 and another 1C by 2075 with winters in Northern Ireland being similar to those experienced along the Cork/Kerry coast.

July temperatures will increase by about 2.5C by 2050 reaching around 23C which should be quite pleasant.

However rainfall changes will

protection measures and it is predicted that the present 25 year high flood on some rivers could be occurring every 6 years by 2050 and every couple of years by 2080.

There could also be problems if a dry winter was followed by a drier summer reducing the level of water significantly, reducing the dilution of effluent, the availability of water for reservoirs and increasing the need for irrigation schemes.

Agriculturally we should be able to grow similar crops to today though potatoes might be at risk in some areas.

An increase in sea level up to about 0.5m by 2100 should not cause a major problem either although erosion might increase

on the soft coasts of South Down, Wexford and Wicklow.

### International Aims and Agreements

The picture painted about how Ireland and the world will look by the end of the century is based on the work of the IPCC and the Framework Convention on Climate Change, signed by over 160 countries. They agreed to take “precautionary measures to anticipate, prevent or minimise the causes of climate change and mitigate its adverse effects,” and “to stabilise greenhouse gas concentrations in the atmosphere at a level that does not cause dangerous interference with the climate system.”

Such stabilisation will eventually stop further climate change but will take the best part of a century to achieve and then only if strong measures are taken to reduce carbon emissions to a small fraction of their present levels.

The Kyoto Protocol is the only international treaty presently in place that commits countries to cutting their greenhouse gas emissions by 5% by 2012. It finally was adopted in 2005 after ten years of debate and even now the US, the biggest emitter of carbon dioxide, has still to sign up.

In 1996 the EU agreed to a limit for the rise in global average temperature from its pre industrial level of 2C and members, including Ireland, have agreed to a 20% emission cut by 2012. Meanwhile in the UK the government is following the recommendations of the Stern Report which it commissioned in 2006 and has targeted a reduction of greenhouse gas emissions of 60% by 2050.

These targets are all steps in the right direction. But if we are to slow climate change and stabilise the climate further radical reductions will be

required aiming to keep global average temperature rises as far below 2C as possible.

### International Action

While we know we must decrease greenhouse gas emissions, present trends predict a doubling of energy demands globally by 2020.

Therefore the actions we need to take require more energy to be produced but without the associated carbon dioxide emissions of simply burning more fossil fuel of which reserves are diminishing anyway.

At national and international level this will require strategies which will make for more efficient use of energy, the development of non-fossil fuel or renewable sources and techniques for disposing of our waste carbon dioxide other than pumping it into the atmosphere.

The economy and the environment need to be addressed together. While unpopular carbon taxes can encourage those of us in the developed countries to think more carefully about how we use our energy and help pay for research of new and alternative sources.

Alternative technologies need to be developed which implies joint programmes between government and industry to provide the necessary resources. The UK has some of the largest tides in the world and has the potential to generate up to 20% of the country's electricity requirement but like many similar projects in many countries it requires encouragement and incentives to make it happen.

Developing countries with rapidly increasing energy demands need assistance to help them extract that energy from their abundant coal and gas supplies but with technology that will make their power stations carbon neutral. Technology transfer

## Action you can take

The average home produces over 26 tonnes of carbon dioxide every year. Here are some things you can do to cut that figure.

- use energy saving light bulbs
- next time you replace an electrical item buy the most energy efficient model
- check your loft insulation
- sign up for an eco tariff electricity supply
- turn down your central heating thermostat
- turn off lights when you leave a room
- don't leave electrical appliances on standby
- fill the kettle with just the water you need to boil
- generate your own electricity with a wind turbine
- heat your water with a solar panel
- use your legs and not the car
- try public transport
- get on your bike or share the car
- holiday closer to home and save a flight
- reduce, reuse and recycle

The list could go on but for more information and ideas see:  
*Christianity, Climate Change and Sustainable Living* by Nick Spencer and Robert White, Published by SPCK  
*A Global guide to Eco Living* from Christian Aid  
*For Tomorrow Too* from Tearfund

from developed to developing countries is vital to craft energy solutions that are both sustainable.

### The Christian Challenge

All of us experience the strong temptation, both personally and nationally, to use the world's resources for ourselves without thought for others and we have benefited substantially over many generations from abundant fossil fuel energy. Now the effects of that are to be seen in global warming and climate change. However the impact will fall, not on us who benefited from the energy, but on the poorer nations making worse the divide between rich and poor. The real challenge for Christians is how we respond to this inequality.

Sir John Horton is confident Christians will be up to the task. “We may feel daunted by the seemingly impossible challenge posed by care for the earth and its people. But an essential Christian message is

that we do not have to carry the responsibility alone. Our partner is none other than God himself.

“An unmistakable challenge is presented to the worldwide Christian church to take on the God-given responsibility for caring for creation. It provides an unprecedented mission opportunity for Christians to take a lead and demonstrate love for God and love for our neighbours wherever they may be – remembering the words of Jesus, ‘From everyone who has been given much, much will be demanded.’”

*The factual information in this feature was presented at the 'Ireland and Global Warming' Conference organised by Christians In Science – Ireland (www.cis.org.uk/ireland) in February 2008 and from 'Global Warming, Climate Change and Sustainability' a briefing paper written by Prof. Sir John Houghton and published by the John Ray Initiative (www.jri.org.uk)*