



CARING for Creation



Presbyterian Church
of Aotearoa New Zealand



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This publication was developed for the Presbyterian Church of Aotearoa New Zealand by Andrea Candy and Angela Singer with contributions from the Right Rev Dr Graham Redding, Rev Selwyn Yeoman and Dr Kevin Tate, and with guidance from the editorial committee: Very Rev Pamela Tankersley, Rev Steve Jourdain, Rev Geoff King and Emily Wotton.

PRAYER

Dear Lord our God, you are Creator of the heavens and the earth. You form us in your image. You have entrusted us with the care of your good Creation. We praise you for the wonder, mystery and awe that we see and feel in the beauty of the world about us.

In the midst of our own fears, and conscious of those things within and around that damage and destroy, we pray for your guidance. Come among us again as the Spirit which brings forth new life. Open our hearts and minds to your wisdom as we seek to act in ways which honour, celebrate and care for the world you so love. In Christ's name we pray. Amen.

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Introduction

The earth is the Lord's and the fullness thereof (Psalm 24:1)

Our vocabulary has taken on a whole set of new words in recent times. Phrases like "global warming", "climate change", "Kyoto Protocol", "carbon footprint", "greenhouse gases", "sustainable living" were all unheard of a decade or two ago. Now we are expected to not only know what they mean, but understand the scientific complexities behind them.

Every week the media reports there is increasing urgency to change the way we live; we are told we are at a crisis point, that it is up to us to avert ecological disaster for our planet, and that only by acting now can we safeguard the future of our children and grandchildren.

The amount of information we receive can be bewildering; how do we make sense of it all? How do we respond as Christians?

This booklet is designed to help answer three main questions:

1. What are the environmental **issues** we face?
2. What **impact** do these have – globally, nationally, locally and personally?
3. What **action** can we take at each level that will make a difference?

We'll also look at the Biblical mandate for caring for Creation. Scripture makes it clear that *The earth is the Lord's and the fullness thereof* (Psalm 24:1). As human beings made in God's image, we have a responsibility to cherish and nurture the Earth's resources, as well as care for those who suffer most as a result of environmental damage.

Caring for Creation is fundamental to our ministry and mission in the world. Basically, it's all about relationships – with God, with each other and with the Earth we inhabit alongside all God's other creatures. By protecting, healing and developing the fruitfulness of the created order, we honour God and witness to him. Our care for the world of which we are a part becomes an aspect of our "rightful worship."

CARING FOR CREATION: A BIBLICAL AND THEOLOGICAL PERSPECTIVE

GRAHAM REDDING

In Genesis 1, God pronounces the goodness of creation prior to the creation of human-kind, which means that its goodness is not related to its usefulness for human beings. It has an intrinsic goodness. The question is, what is it good for? What is its purpose?

The answer is found in the creation of the Sabbath (Gen. 2:2-3). Creation is meant to show forth its Creator's glory.

Within this purpose, human beings have a two-fold responsibility:

1. **As *priests of creation*:** Psalm 98 presents a poetic image of rivers and mountains clapping their hands and singing for joy before the Lord. Other psalms convey a similar picture of the whole of creation sharing in an act of praise and worship. In this act, human beings can be said to have a special role, giving voice to Creation's praise of its Creator. This is a priestly role. Made in God's image, we are called to continue God's blessing of Creation, preserving its beauty, nurturing its fruitfulness, and offering back to the Creator what which originally came from God's hand.
2. **As *stewards of Creation*:** We are given dominion over Creation (Gen. 1:26; Ps. 8:6). Dominion does not mean domination. From a Christian perspective, dominion is defined by the Lordship of Christ, which is that of servanthood and humility as opposed to self-assertion and coercion. Usefulness must always be tempered by stewardship.

Biblically, the roots of the ecological crisis lie in the act of primordial disobedience of Adam and Eve. The consequence of disordered relations in the Genesis narrative is expulsion from the Garden. This suggests two things:

1. Thereafter, the backdrop for human conduct is an Earth, that for all its intrinsic goodness and possibility is cursed, and the nature of human work is no longer described in terms of vocation but rather of toil (Gen. 3:17). As such, the solution to the ecological crisis is found not merely in a series of practical steps to solve certain problems, but rather in the healing of those disordered relations. In other words, the way forward for our planet is mapped out theologically as much as it is pragmatically. This will involve the recovery of a Sabbath theology, with its emphasis on rest from work and use of land, harmony and worship.

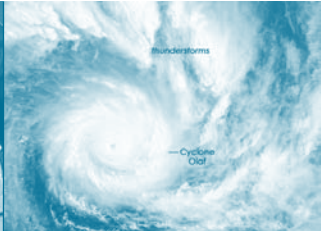
2. We cannot return to the Garden. The primary image of the Book of Revelation, which concludes the Biblical witness to God's activity, is not of a Garden but of a City – a new Jerusalem. A biblical ecological ethic does not regard science and industrial development as evil because they tamper with the natural order that the Garden-image represents. The Biblical emphasis is not on a return to a mythical paradise, but rather sustainable development and the serving of God's vision.

For the Apostle Paul, there is a sense in which Creation is in bondage and waits with eager longing for the glory of God to be revealed (Romans 8:18-23). He also talks about Creation groaning in labour pains. The image here is not merely that of pain associated with suffering, but rather of pain associated with birth. The question is, what is being born?

For Paul, it is a new Creation, the advent of which is every bit as significant as that of the first Creation in Genesis. For John (author of Revelation), it is a new heaven and a new earth. Whatever the terminology, the impression is of a new reality emerging from the old – related but distinct. As far as the New Testament is concerned, this new reality has begun in Jesus Christ.

Colossians 1:15-20 refers to Jesus as the firstborn of all Creation – all things on heaven and on Earth have been created through him and for him. In him, all things have been reconciled and hold together. This is a remarkable claim, expressed elsewhere in the New Testament (e.g. Hebrews 1). It prompts certain questions:

1. What does it mean to think about Jesus not simply as the Saviour of human beings (i.e., the One who forgives us our sin) but as One in whom Creation finds both its purpose and its restoration?
 2. If, in Jesus Christ, a new Creation has begun, how are we to understand this new Creation, and its relationship to the old Creation – i.e., what difference does it make?
 3. How are, or should, our responses to the above questions be embodied and expressed in the life and mission of the Church?
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STUDY ONE:

What's happening to our planet?



STUDY ONE: WHAT'S HAPPENING TO OUR PLANET?

It is now common knowledge that the Earth is facing an ecological crisis of huge proportions. Almost daily, we hear new evidence of polar ice caps melting, species becoming extinct, or unusual weather events.

While these things may seem far removed from our daily lives, here in New Zealand, we've had our own share of devastating floods, storms and droughts. Our "clean green" image as a natural paradise is increasingly challenged. Waterways are polluted or clogged with weed; beaches are sometimes unsafe for swimming and shellfish gathering. Some of our most iconic native species are endangered, and kauri have been attacked by a mystery virus. Rising sea levels in the Pacific have already sent climate refugees to our shores. We face the threat of invasion by exotic pests, some of which carry tropical diseases previously unknown in this country.

What's happening to our planet? Are the environmental threats real? Are they getting worse? What's caused them?

Many of the factors in the current ecological crisis are interrelated, and they affect the very basics of human existence: health, food, shelter, water supply. It's a complex picture, but a majority of scientists now agree that there is a crisis, although they may debate its causes and what to do about it.

Global warming

In New Zealand, total emissions of greenhouse gases in 2006 were 26 percent higher than in 1990. Just under half are produced by agriculture (methane and nitrous oxide from farm animals); the biggest growth is in carbon dioxide from transport and electricity generation: road transport emission increased 67 percent, rail 99 percent, aviation 44 percent, and shipping 31 percent. Due to demand, more electricity was generated by burning gas, coal and oil.¹

WHAT IS CLIMATE CHANGE?

DR KEVIN TATE²

Climate change is a natural process that has occurred in regular cycles for millennia as a result of a number of processes, including changes in solar radiation, and the Earth's orbit and atmosphere. Evidence for these regular cycles is recorded in ice cores, and show glacial periods (ice ages) and interglacials (warm periods). The present warm period has lasted for 10,000 years. During this period, natural concentrations of greenhouse gases, such as carbon dioxide, methane and nitrous oxide, have maintained the Earth's climate at temperatures that have allowed life to flourish. These atmospheric gases are present in trace amounts compared to the major constituents, nitrogen and oxygen.

However, since the beginning of the industrial age (approximately 1750), increasing human populations, and their activities – including deforestation, demand for fossil fuels (coal, oil, gas), food and fibre from animals – have been causing these gas concentrations to rise in the atmosphere. Atmospheric carbon dioxide concentration, for example, is now much higher than at any time in the last million years, and continues to rise steadily. During the industrial age, these increasing emissions have modified the Earth's "natural" greenhouse effect. This has had the effect of putting an insulating blanket around the earth, subjecting us to higher temperatures than in pre-industrial times; and these emissions continue to rise.

Since the 1950s, this warming has become increasingly evident in ice caps melting, glaciers retreating, heat waves, intensifying hurricanes, floods and droughts, and species extinctions. During 2007, the Intergovernmental Panel on Climate Change (IPCC) released the four-part Fourth Assessment report on climate change, which is the most authoritative documentation on the science of the enhanced greenhouse effect, its actual and projected impacts, and a range of, and need for, mitigation and adaptation options. The report indicates there is now a 90 percent certainty that human activities are the primary cause.

The underlying message in these reports is that unless we act quickly and decisively as a global community, we will face a climate catastrophe by the end of this century. But we still have time to avert a global catastrophe if we are willing to act now. The question is – will we?

Air pollution

Industrial activity creates smog and soot, these have a devastating affect on the people's health. Air pollution increases the risk of respiratory disease, lung cancer and asthma and contributes to heart disease.

A government study in New Zealand shows that air pollution from vehicle emissions, wood smoke and industrial sources causes almost 1100 premature deaths and costs around \$1.1 billion each year.³

Waste

Our patterns of consumption in the Western world produce huge amounts of waste. We are known as the "disposable society" and many new products are only designed to last a short while. Getting rid of waste is a major problem. Plastic is produced from oil and is not biodegradable. Decomposing organic material produces methane, while burning rubbish creates carbon dioxide. Heavy metals leach out into groundwater and soil, leaving a legacy of contaminated sites or making their way eventually to the sea. New Zealanders dispose of 3.4 million tonnes of waste into our landfills every year.⁴

Approximately 93 percent of manufacturing materials never end up in saleable products but are discarded during the production process; about 80 percent of products we use are discarded after a single use.

Water problems

- >> Global warming leads to changes in weather patterns, creating either floods or droughts.
- >> Global water consumption increased six fold over the last 100 years. It continues to grow.
- >> More than one billion people worldwide still lack safe water; more than three million die every year from avoidable water-related diseases.
- >> By 2025 almost 50 percent of the world's population will be "water-stressed".

New Zealand faces an increased demand for water for hydro-electricity generation, farming irrigation, recreational use and domestic supply. Those who allocate water have to consider Maori cultural values, economic interests, agricultural demands and tourist appeal as well as environmental issues. The politics of water supply have led to social tensions in some areas.

New Zealand waterways are now more polluted than they were five years ago. The pollution is linked to dairy farming, from faeces, nitrates and silts.⁵ In July 2008, the government put dairy farmers and regional councils on notice over declining water quality and supply.⁶ Overall water quality in New Zealand lowland and urban rivers is growing worse due to an intensifying agriculture sector, with rising livestock and fertiliser use, and continued waste discharge. For example, more than 100,000 cubic metres of treated waste is poured into the Manawatu River each day, the Tukituki River in Hawke's Bay has been dogged by algae, and parts of the Waikato River are deemed unsafe for stock to drink from.⁷ The mining industry has also caused water pollution by acid mine drainage: acidity of streams draining off a mine rise to a level that's toxic to fish.⁸

New Zealand rainfall patterns have become increasingly uneven in the last few years, leading to floods in some areas, and drought in others. Many local councils struggle to control the run off of oil, grease and other toxic pollutants from streets and driveways. These kill fish, insects and plant life around waterways and destroy habitats.

Oceans

Oceans occupy 70 percent of the Earth's surface and contain more than 90 percent of all life on Earth. They act as a regulator of the world's climate, as well as providing a source of food and livelihood for millions of people. Global warming causes a rise in

sea levels and changes the nutrients and saltiness of the oceans, all of which have a profound effect on marine species. Coral reefs, for example, are in dire straits with an estimated 30 percent expected to die in 10 to 20 years.

Pollution has created “dead zones” or oxygen-depleted areas near heavily industrialised areas, while thousands of acres of coastal wetlands and estuaries are lost each year. Nearly one third of the world’s fisheries have collapsed or are near collapse because of over fishing or destructive practices such as bottom trawling.

In New Zealand, seasonal algal blooms are becoming a regular feature around our coast. Beaches and shellfish are often polluted by sewage or other waste. Some of our fisheries are threatened by overfishing, such as hoki, snapper and tuna, and “by-catch” (creatures caught accidentally by fishing gear) kills hundreds of fur seals, seabirds and dolphins every year. Aquaculture may be unsustainable too. Greenpeace reports it takes approximately 4kgs of wild caught fish to produce 1kg of farmed salmon.⁹

The Pacific Rubbish Dump

In the Pacific Ocean is a “rubbish dump” the size of Texas dubbed “the Asian Trash Trail”. It has been estimated that over a million sea-birds and one hundred thousand marine mammals and sea turtles are killed each year by ingestion of plastics or entanglement.

Plastic is believed to constitute 90 per cent of all rubbish floating in the oceans. Plastics can act as a sort of “chemical sponge”. They can absorb many of the most damaging of the pollutants, so any animal eating plastic debris will also be taking in highly toxic pollutants. When plastic enters the food chain, it can end up on your dinner plate.¹⁰

Land use and population

For millions of years, agriculture has been humanity’s most basic way of relating to the Earth – farming and drawing sustenance from its fruitfulness. Agricultural technology has changed dramatically in the past few decades, but around 30 percent of the world’s population still depend on local natural resources for their livelihoods. Other land uses compete with the production of food, such as the extraction of timber, minerals, fossil fuels, urban development and transport networks.

The main pressure on the Earth’s resources is population growth. There are about 6.7 billion people in the world, expected to reach nearly 9 billion by 2042.¹¹

Feeding the world’s population raises a number of environmental issues: genetic modification of foods; water supply; biofuels vs food crops; deforestation; soil quality; use of chemicals; and sustainable development, to name a few. In all these issues, care for Creation is tied up with equitable treatment of the world’s poor.

Bread bowl to dust bowl

In China farm land has been turned into a huge desert.. Herders overgrazed the North China Plain. As the soil becomes barren, it is swept away in massive dust storms that pollute cities as far away as North America. Hundreds of thousands of people have been relocated as ecological refugees.

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Food for thought

According to the United Nations, the livestock industry is one of the biggest degraders of the environment. Modern practices of raising animals for food, especially through factory farming, contribute on a huge scale to air and water pollution, land loss, climate change and loss of biodiversity.

The UN reports that, "the livestock sector emerges as one of the top two or three most significant contributors to the most serious environmental problems at every scale from local to global".

In the United States, growing crops for animals takes nearly half the water supply and 80 percent of its agricultural land. Seventy percent of US grain is fed to animals, and one third of its fossil fuels go towards animal agriculture. This all contributes to greenhouse gases, as does the methane the animals produce themselves.

Worldwide, animal agriculture is one of the largest sources of greenhouse gases – responsible for 18 percent of all greenhouse gas emissions as measured in Carbon Dioxide equivalents. By comparison, all of the world's transportation (cars, trucks, buses, trains, ships, planes etc) emits 13.5 percent of the Carbon Dioxide.

The demand for grazing land has destroyed millions of acres of rainforest, while tons of animal waste pollutes waterways.

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Should we eat less meat?

New Zealand is unique. In the early 2000s greenhouse gas emissions were made up of methane 37 percent, and carbon dioxide 45 percent. This reflected the large number of farmed livestock (that produce methane by belching) and relatively low use of fossil fuels for generating electricity. Nitrous oxide made 18 percent of New Zealand's greenhouse gas emissions. It is produced through the breakdown of animal excreta and the nitrogenous fertilisers applied to farmlands. Farming fewer animals would significantly cut New Zealand's greenhouse gas emissions.¹⁵

Endangered species

Worldwide, at least 15,589 species face extinction. However, this is an underestimate, as most of the world's 1.9 million species have not been described, and others haven't even been discovered yet. Many factors endanger unique forms of life, including the impact of introduced species, pollution, disease, excess hunting, and over fishing. But the single largest threat is habitat destruction caused by human actions. Forests, grasslands and wetlands have all shrunk significantly. Melting icecaps are changing the ecological balance of the Arctic. Up to 37 percent of land-based species could be made extinct by 2050 due to global warming.¹⁶

Since people arrived in New Zealand, it is estimated that the following have become extinct:

- » nearly one third of native land and freshwater birds
- » close to one fifth of sea birds
- » three out of seven native frog species
- » one fish, one bat and perhaps three reptiles
- » at least twelve invertebrates such as snails and insects
- » eleven plants, with several more that have not been spotted for years.¹⁷

New Zealand is ranked second in the world for its biodiversity (number and variety of its species of plant and animal life).¹⁸

CREATION CARE IN CHRISTIAN HISTORY

REV SELWYN YEOMAN

It is a widely held perception that Christian faith has from the outset cultivated a negative attitude towards Creation. Actual encounter with Christian thinking and practice, however, reveals a very different story. The Apostle Paul wrote to the Colossians (1:15-20) that all things have been created through and for Christ, in him all things hold together, and in him all things in heaven and on Earth will be reconciled to God. Much more could be identified in a similar vein throughout the New Testament. What Christians did take a negative attitude towards, were "the world and the flesh." These speak neither of Creation nor of our humanity, but of all those things within ourselves and our institutions that have fallen and now orientate us away from the character and purposes of God, and alienate us from a right relationship with Creation.

In Christ this alienation can begin to be overcome. Thus Christ-likeness was recognised in people who were able to live peaceably with animals, even wild ones. Biblical examples include Daniel, who survived unharmed by the lions, and Paul, who survived the snake bite.

Benedict, and after him most Western monasticism, recognised that in the work of gardening we could cooperate with God's providential care, discern the sustaining presence of God, and both offer and receive the gifts of the Earth in praise and thanksgiving. Some historians suggest that the loving and prayerful work of the monastic movements actually healed large tracts of Europe and the Mediterranean from the rapacious exploitation of the great estates of the Roman Empire.

Francis of Assisi has become famous for his conversations with animals, and for encouraging a deep sense of connectedness between humans and all the other creatures of God. But often this has become sentimentality that fails to properly recognise the impact humans can have simply by breathing. We have power and we have been given responsibility for the well-being of the Earth.

John Calvin encouraged farmers to see themselves not as owners but as stewards of God's estate and to ensure that they left it in a better state than they received it. In our day that may mean something different than it did in the 16th Century! Calvin and most of his Puritan descendants constantly warned against covetousness and finding ones identity in abundance of possessions. Those motivations drive the environmentally destructive juggernaut of modern consumerism.

Only after the "Enlightenment," with God banished to become at best a distant onlooker at a mechanistic universe inhabited by allegedly free people (at last!), does a dominating and plundering attitude to nature appear in the culture of post-Christian Europe. But radical Christian communities - the Amish and Mennonites come to mind - have always cultivated a caring and careful attitude towards the Earth, and the same can be said of many alternative experiments that developed during the 20th Century. Numerous symposia from the World Council of Churches, and the *Evangelical Declaration on The Care of Creation*, all bear witness that Creation care is close to the heart of Christ and not the preserve of radicals or nutters. Today, all over the world, churches bear witness to hope by local initiatives of environmental care.

Countering the myths

Is climate change proven?

Some sceptics question the credibility of climate change science but the world's leading scientific bodies and national academies now agree that global warming is real. The most authoritative source of information is the Intergovernmental Panel on Climate Change (IPCC), which involves hundreds of experts from the worldwide scientific community. This panel regularly reviews assessments of climate change, its impacts and remaining uncertainties.

Even the sceptics agree on two facts:

- » Global average temperatures have risen (by 0.8°C since the industrial revolution)
- » Carbon dioxide in the atmosphere has increased.

What they disagree on is the link between the two and whether human beings are to blame. It pays to ask what interest the nay-sayers have in trying to prove that climate change is not related to human activity. Some, for instance, are employed by oil companies.¹⁹

Is global warming part of a natural cycle?

The IPCC concluded that it's now 90 percent certain that human activities are the primary cause of climate change, especially given our reliance on fossil fuels.

Concentrations of carbon dioxide and methane in the atmosphere far exceed the natural range over the last 650,000 years. Average global temperatures are up by almost 1°C, a further 2°C rise would bring about enormous damage to agriculture, weather patterns and ecosystems across the world with catastrophic effects on human society.

Is it as bad as people say?

Even small temperature increases can have devastating effects. For instance, it is estimated that if the polar ice caps continue to melt at their current rate, sea levels around the world could rise by four to six metres, affecting coastal cities and harbours on every continent.²⁰

Wouldn't some species become extinct anyway, like the dinosaurs?

It's true that a number of species have become extinct in the past due to natural events, but this is no reason not to protect those that remain. Mass destruction of habitats and extinction of plant and animal species could further limit food supplies.

Why worry about saving the whales when people are suffering?

When human activity conflicts with species protection, the question is one of comparative value, and this can be very difficult to determine. How does one actually determine the value of a species? Some have obvious economic value as a source of food, clothing, building materials, medicinal products or fuel. Others have *potential* value that we have yet to discover. Another value derives from the species' place in the *ecosystem*, playing a unique role in the functioning of Creation. Even if there is no direct worth to humans, many species are *aesthetically* valuable, reflecting the creativity (and sometimes humour!) of the God who made them. And that fact means we also have to consider their *intrinsic* value, along with our own, in the eyes of the Creator who declared all things "good" from the beginning.²¹

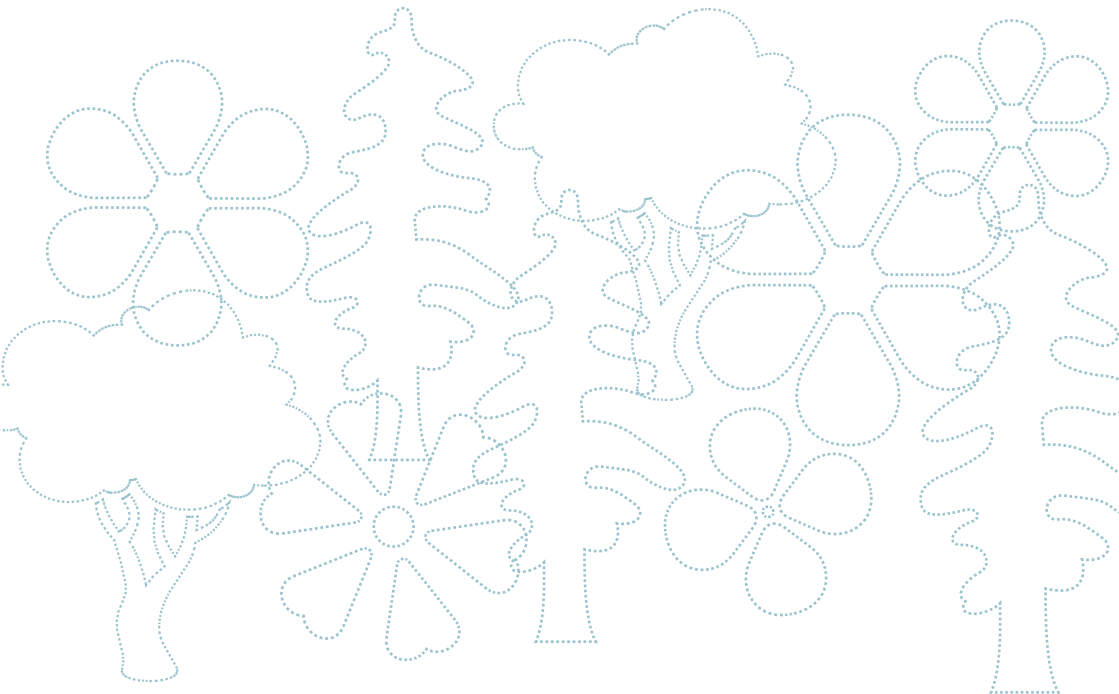
Talking point

1. Do the statistics on global warming and other ecological issues surprise you?
2. How would you describe your relationship with the natural world?
3. Describe your best and worst experience of or in the natural world.

Reflection

Read Psalm 8, 65 or 104

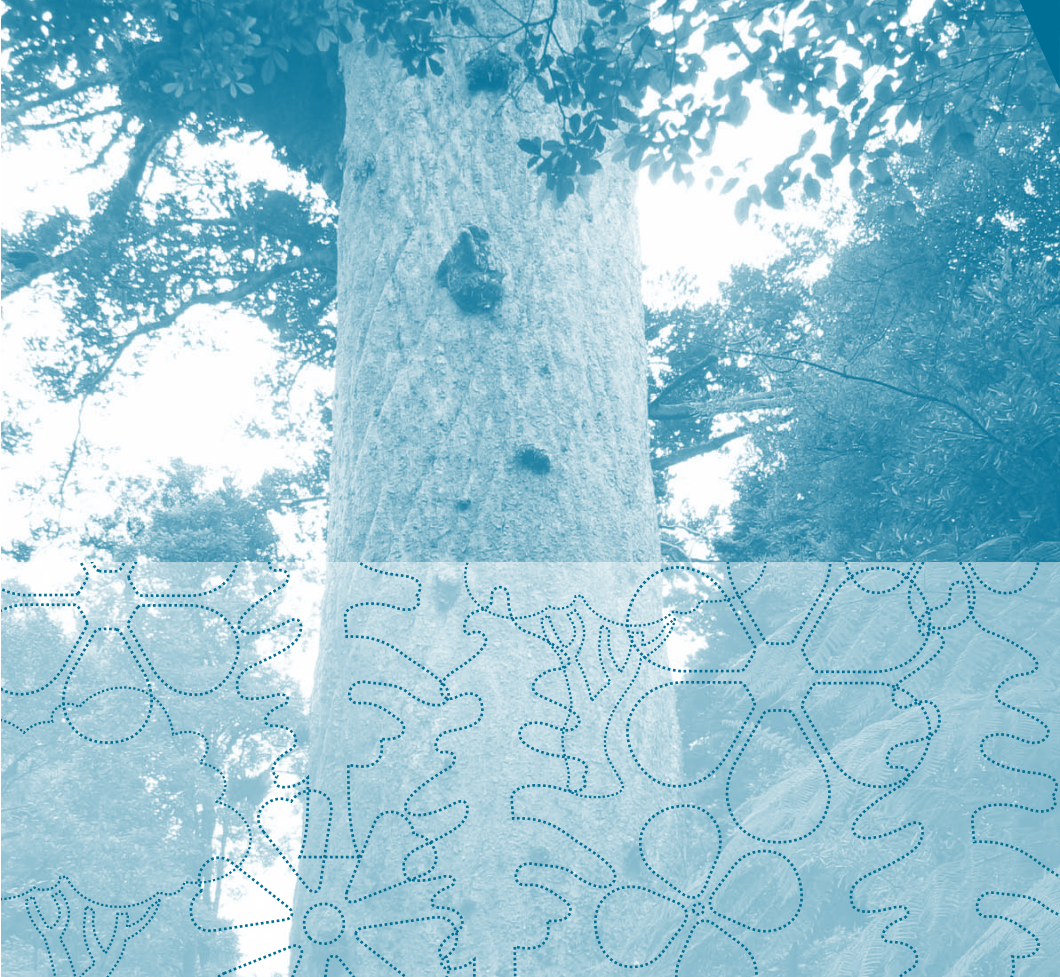
1. What do these passages tell us about the relationship between God, creation and human beings?
2. Is there a particular place, plant or animal in or of the natural world that makes you feel closer to God? Describe your experience to others.
3. Do you think it is easier to worship God in the city or the countryside?
4. It's been said that Creation is God's other "great book". How would you rank it alongside Scripture?





STUDY TWO:

What impact does it have?



STUDY TWO: WHAT IMPACT DOES IT HAVE?

The environmental crisis facing our planet has far-reaching consequences. As God's people, we have a responsibility to care for Creation as well as protect those most affected by environmental damage.

Developing countries are likely to suffer the most from the negative impacts of climate change. This is because their populations depend directly on the environment for food and do not have the resources to cope with crises. Faith communities and aid organisations will increasingly be called on to fill the gap.

GLOBAL IMPACTS¹

Disaster relief

Warmer oceans lead to more hurricanes and typhoons of greater intensity. Climate change disaster has panicked the world's big insurers, with premiums against hurricanes and floods set to rise dramatically. Since the 1960s, industry statistics show the number of large scale weather disasters has increased fourfold. A category five hurricane can collapse buildings up to 8km inland, storm surge and flooding can damage up to seven city blocks inland, requiring massive evacuation of residential areas. Up to 332 million people worldwide could be displaced through increased flooding and tropical storms, according to the UN Development Programme.

Low-lying Pacific atolls are already threatened by rising sea levels atolls. If polar ice caps continue to melt at their current rate, major cities such as New York and London could be flooded.

What could happen if a major city flooded?

In an extensive flood, London will require mass evacuations, homes will be uninhabitable and services such as electricity, gas and telecommunications are unlikely to function. The sewage system will be out of action, resulting in widespread contamination. The addition of household rubbish, corpses and animal excreta to the flood waters will create a toxic brew, and severe illnesses and fatal diseases will result. Most of London's hospitals are located within the flood zone so there will be little medical treatment available. London Underground will be severely hit, as will roads. London may never recover to be a major city again.²

Food and water security

Global climate change will reduce access to drinking water, limit production of food and negatively impact human health, especially in Africa, Asia and Latin America. Many people in these areas are already living in poverty and are least able to deal with the effects of more erratic rainfall, flooding and disease.

About a third of the world's population does not have basic sanitation, and more than one billion people still use unsafe sources of drinking water. Three million people, mostly children, die each year from water-borne diseases such as malaria; global climate change will only make their situation worse.

I was hungry and you gave me food, I was thirsty and you gave me something to drink, I was a stranger and you welcomed me, 40And the king will answer them, "Truly I tell you, just as you did it to one of the least of these who are members of my family, you did it to me". (Matthew 25:35,40)

Refugee resettlement

The International Red Cross estimates that climate change already displaces more people than war and persecution. These "environmental refugees" have to leave their homes because of rising sea levels, expanding deserts, catastrophic weather or because the land they have traditionally farmed is no longer productive. New Zealand currently takes climate change refugees from Tuvalu.

In 2006, there were an estimated 8.4 million refugees in the world. If climate change continues as projected, there could be as many as 50 million by 2010.

Do not neglect to show hospitality to strangers, for by doing that some have entertained angels without knowing it. (Hebrews 13:2)

Impacts in New Zealand

The global impacts of climate change are already becoming evident, and further climate changes are inevitable due to the greenhouse gas emissions already in the atmosphere. In New Zealand, climate change could have significant impacts on our economy, environment and society.

The Ministry for the Environment³ states that the likely impacts of climate change in New Zealand include:

- » Higher temperatures, particularly in the North Island
- » Rising sea levels
- » More frequent extreme weather events, such as droughts and floods
- » Changes in rainfall (higher in the west and lower in the east)

Exactly how these changes will affect New Zealand as a whole is still largely uncertain, but effects could include:

Agricultural productivity will increase in some areas and decline in others due to drought, pests and diseases. There will be some cost to changing land use to suit a different climate.

Health will be affected. Hotter summers increase the risk of heat stress and subtropical diseases. Greenhouse gases could delay the recovery of the ozone layer, which means continued exposure to high levels of ultraviolet radiation.

Forests and vegetation may grow faster, but native ecosystems could be invaded by exotic species, or suffer from drought.

Extreme weather events will increase damage to lives and properties, raising the cost of insurance and rebuilding.

Rising sea levels cause erosion and saltwater intrusion, leading to the need for coastal protection or curbed development.

Retreating snowlines and glaciers will change water flows in major rivers.

Electricity and water supplies will fluctuate according to rainfall and seasonal demand. Water quality could continue to decline.

Infrastructure (roads, railway lines, stormwater and drainage systems) may require more maintenance to cope with heat waves, erosion or flooding.

CASE STUDY: YOUNGER COUPLE

MATT AND HEATHER FROM THE CONGREGATION OF ST DAVID'S PRESBYTERIAN CHURCH, PALMERSTON NORTH.

Matt says he doesn't recall his family being "green" so it wasn't until he left home that he began to actively care for the environment. "I moved to a place where there was recycling and did it because everyone else did, the same with composting. It made sense and didn't require any great effort."

School is where Heather remembers learning about recycling. She would save her paper and take it to a recycling station.

Being identified as a "greeny" is not something that Matt is comfortable with. "We do a lot of environmental things at home mainly to save money and because they aren't difficult. Like turning down the water temperature and insulating the roof. Using cloth nappies saves heaps of money and rubbish".

The reason that Heather recycles is, "I lean towards being "green" and I want to make a difference to our world."

When she is supermarket shopping Heather tries to avoid products with lots of packaging, but with a fussy toddler, "I now buy what she will eat. Like before, I wouldn't buy muesli bars with all the packaging but now I buy them because I'm trying to get her to eat."

Recently returned from living in overseas, both Matt and Heather say NZ is way behind other Western countries when it comes to the environment. Matt says, "Overseas it's cool to be green but not so in NZ."

Heather says that being vegetarian or vegan is better for the environment. "We are vegetarians and caring for the environment plays a big part in that decision, and it's kept me committed. Because of our country's farming background it seems to be a dirty topic and no one wants to discuss it. It's frustrating that in NZ meat sausages are just a few dollars compared to vegetarian around \$8 for six."

Individual impact

Health A government report⁴ states that climate change may already be affecting New Zealander's health and that we could see an increase in New Zealand's world-leading rate of skin cancers. Increased temperatures in the North Island could assist the mosquito that carries dengue fever to establishing itself here. Increased flooding and drought could affect water quality, with increased rates of water-borne diseases.

Maori The reliance of Maori on the environment as both a spiritual and economic resource makes them more vulnerable and less adaptable to climate change. Land presently owned by Maori is often of lower quality, which makes it more prone to erosion and invasion by exotic species. Impacts on the coastal environment are also of great importance to Maori culture and economy. Any threats to native plants and animals are considered to undermine the value of their taonga (cultural treasures). Maori are also more at risk health-wise.⁵

The elderly Older people are particularly vulnerable to climate changes that affect their health, such as heat waves and polluted air. The European summer of 2003 was the hottest recorded since 1510 and saw 35,000 heat-related deaths (many of them elderly) across the continent. Typically, in the United States, heat waves kill more people than all other natural disasters combined.

Young people The indications are that climate change will enhance the factors already threatening children's health. Worsening air quality leads to more asthma; New Zealand already has the second highest rate of asthma in the world. Heat stress overtakes children more easily than adults, and children are also the most vulnerable to famine, lack of safe drinking water and water-borne diseases. According to the UN Millennium Project Report (2005), 270 million children worldwide are already suffering long term malnourishment; food security is a critical issue.

In addition, the younger generations will face the added costs of trying to adapt to climate changes or mitigating its effects. We run the risk of handing an uninhabitable planet to our grandchildren.

IMPACTS OF CLIMATE CHANGE

DR KEVIN TATE

The conclusions of recent authoritative global reports on the deteriorating state of the global environment (the Intergovernmental Panel on Climate Change Fourth Assessment Report 2007, Ecosystem Millennium Report 2005 and the UNEP Geo-4 Report 2007) collectively show that, unless we can find ways to live within the limits set by our planet's finite resources, our children and grandchildren face a very uncertain future.

According to some recent US government reports, wars over dwindling water, land, food and energy resources may occur in just two to three decades.

Some leading academics have recently interpreted the call for economic growth (seen as the way out of the current global financial meltdown) as futile, because the science is telling us that to save the planet we need to reshape the world's economies; unlimited growth is not an option.

The current escalation of climate change impacts, including the increased rate of melting of the ice caps and glaciers, sea level rise, intensifying hurricanes, and species extinctions, has surprised most scientists. Unlike earlier collapses of communities from environmental degradation (for example, Easter Island), we cannot walk away from this because we don't have another nearby habitable planet.

We can expect more frequent extreme weather events, the arrival of new pests and diseases, and environmental refugees from Tuvalu, Kiribati, and later Bangladesh (the numbers affected will be in the hundreds of millions; Bangladesh alone has 150 million people).

According to a report just released by the UN Climate Change Secretariat, New Zealand is the sixth worst developed country in controlling its rising greenhouse gas emissions. New Zealand may be less directly affected by global warming than many countries in the northern hemisphere, but unless we can demonstrate a much stronger resolve to curb our emissions, we can expect possible trade sanctions.

New Zealand has adopted some sensible options, such as protecting our forests and planting new ones, and increasing our use of renewable energy, but more needs to be done to reduce environmental impacts from agriculture.

According to the latest IPCC report, we still have time to avert a global catastrophe if we act quickly. Stopping deforestation of tropical rainforests is one example that would markedly reduce carbon dioxide emissions globally. Procrastination is not a sensible option, and the key question is whether, and to what extent, we are prepared to change our lavish lifestyles so that our children and grandchildren, and the many millions living in the developing world, can inherit a habitable planet.

CASE STUDY – OLDER COUPLE

PETE AND MARION FROM COASTAL UNITY PARISH, DUNEDIN.

Pete and Marion both remember growing up in a time without plastic bottles.

Pete remembers his father “would burn everything he could lay his hands on”. He recalls being at church and seeing and smelling a huge bonfire, “it was my father”. Pete says his father would often take things to an unofficial dump, “I don’t think I thought about the right and wrong of it.”

There wasn’t a need for recyclers back then says Marion, “we didn’t have a lot of paper, newspaper went in the fire and wrapping paper was saved and reused”.

Both say they never really had to seriously consider rubbish until 20 years ago when they lived in Papua New Guinea and the Solomon Islands. “The problem was”, says Pete, “there was no rubbish collection at all and as a doctor I was concerned about disease. I had to figure out what to do with the hospital waste, dressings and the like, and initially all I could do was dig a giant hole for it”. Pete says waste from the clinic was being thrown in the sea, “needles were washing up onshore”.

Marion says that plastic bags are a huge issue in the Islands. “They don’t break down, they are everywhere”.

Today, Pete and Marion bring an ecological awareness to their home. “We don’t have a burning drum anymore. We compost food scraps and we recycle anything the recyclers will take; it’s a matter of being aware shopping so that you have less to recycle. We don’t use plastic bags. We make our own yoghurt so we don’t have leftover containers.”

Pete says they have, “changed to the energy efficient light bulbs, got gas hot water, double glazing and a heat pump. We are looking at getting solar heating if its cost effective. I often ride a bike and we both use the bus. We own a car but don’t often use it”. Holidays no longer involve the car says Marion, “we take the bus instead. We had a three week holiday last year using buses from Dunedin to Auckland”.

Their commitment to the environment extends beyond their own walls. Marion says, “Our house backs onto a Railway reserve that was overgrown, Pete cut it back and we planted native trees for everyone to enjoy. The Railways own the land and they aren’t happy with what we’ve done, they have written in the newspaper that if people keep “using” their land they might charge rent!”

Talking point

- » Think about the ways our lives are dependent on the natural world. How have you been directly affected by changes in your local or national environment?
- » What are your thoughts on NZ taking in large numbers of environmental refugees?
- » Psalm 24:1 says, "The earth is the Lord's and all that is in it, the world and those who live in it." What implications does this have for us as a nation of builders, farmers, and property-owners?

Reflection

Read Isaiah 24:4-13, 18b-20 and Hosea 4:1-3

- » What are the reasons for devastation, according to these Scriptures?
- » How relevant is this picture for us today?
- » "God gave us Creation as a storehouse of goods for our use." How would you respond to this statement?





STUDY THREE:

Taking Action



STUDY THREE: TAKING ACTION

According to the WWF's *Living Planet Report 2008*,¹ we are using Earth's resources faster than they can be replaced. Our impact on the planet now exceeds the world's ability to regenerate by about 30 percent. This means that if our demands on the Earth continue to increase at the same rate, within 26 years we will need the equivalent of two planets to maintain our lifestyles.

Humanity is no longer living off nature's interest, but drawing down its capital.

The average New Zealander requires the equivalent of 30,800 square metres of land to support their lifestyle.

Unless we get back to a more sustainable level of activity, we risk irreversible damage to the Earth. But how can we stop living beyond our means, ecologically speaking?

Change often starts with attitudes. Christian faith in action calls us to:

- » Practise sufficiency and contentment as a way of life – in what we buy, use and where we choose to live.
- » Consider our "neighbour downstream", whether locally or overseas, and the impact of our actions have on them.
- » Respect the Earth for the sake of the One who created it.
- » Recognise that the choices we make now will affect the life of future generations.
- » Be joyful and hopeful in the knowledge that God desires abundant life for all.

OBSTACLES TO ACTION²

Technology will provide the answer.

Some technological advances are useful for reducing greenhouse gas emissions, some from the past have contributed to the problem, and those of the future may carry unknown risks along with benefits. Technology alone will not solve our problems if we are not also committed to changing our lifestyles and economies.

It would cost more to do anything about climate change than to live with it.

Actually, we need to do both. Governments around the world, including our own are looking to mitigate climate change as well as adapt to its effects. The United Kingdom's Stern Report, which reviewed the economics of climate change, concluded that, "the benefits of strong, early action considerably outweigh the costs."

Putting off action now in order to save money may mean future generations cannot avoid catastrophe, no matter how much they pay.

We can always offset greenhouse gas emissions.

'Green' industries have become fashionable, and some make money out of reforestation or clean energy schemes. But unless these actually make a difference to the amount of carbon dioxide emitted, they may have little effect on climate change. Even extensive tree-planting may not be enough to offset the damage already done. Others criticise offsetting schemes on the basis that they make the guilty pay, but don't necessarily change behaviour.

Other countries produce far more greenhouse gases, so anything we do is a drop in the ocean.

Increasing growth in New Zealand's emissions puts NZ among the worst polluters of the world's industrialised nations. Our emissions increased by 25 percent from 1990-2006; only five countries rated worse than New Zealand.³

Climate change is such a huge and complex problem it's probably too late to do anything about it now.

Some effects of climate change are unavoidable; others we can do something about, or at least reduce their impact on the most vulnerable people and countries. We can reconsider our priorities, create stronger community relationships and love our neighbour in meaningful ways. Above all, as God's people, we can hope in God for the redemption of our world, based on the commitment God has already demonstrated towards creation in Jesus Christ.

PROFILE OF A CHRISTIAN ECOLOGICAL GROUP: A ROCHA AOTEAROA NEW ZEALAND

In the early 1980s, Peter and Miranda Harris sensed a call to mission and established a wildlife studies centre in Portugal as a connection between Christians and non-Christians. Since then, A Rocha has grown to 20 projects across five continents.

In 2004 Richard Storey returned to New Zealand, inspired from two years with A Rocha Lebanon. He helped to found A Rocha Aotearoa New Zealand, which was accepted into the international A Rocha family in April 2007, and launched in June 2008.

So what motivates A Rocha? The beauty, intricacy and wonder of God's world affirm the Biblical witness that God values and cares for all God has made. For those who are moved by this dual witness and recognise that they bear the image of the Creator, working to protect Creation from degradation is the only appropriate response. Conservation work is a practical form of worship. A Rocha is also motivated by the hope that God will one day renew and restore his creation, and that God's people have an active part to play as ministers of this reconciliation (Ro 8:19-21, 2 Cor 5:17-19).

In New Zealand, the A Rocha vision is being outworked mostly through local groups in Palmerston North, Christchurch, Wellington, Auckland and Hamilton. Each local group is beginning, or exploring options for, a practical project where they may help to restore a

local habitat. The national team and trustees are building relationships and looking for a place to establish the first ARANZ field studies centre.

For more information see www.arochoa.org

Individual – what can I do?*

- » Reduce, reuse, recycle. Compost food and garden waste and don't accept supermarket plastic bags. Make use of your local Hazmobile for toxic substances, and the annual eDay collection.
- » Use a free global warming calculator to measure your household's greenhouse gas emissions and learn how to reduce them. See www.footprintcalculator.org
- » Do not litter. Rubbish can easily end up in the sea.
- » Conserve energy – buy energy efficient appliances, turn off those you're not using at the wall, use less hot water, set your hot water cylinder no higher than 60°, insulate your home, keep lids on pots when cooking.
- » Consumer has a chart of the most energy-efficient appliances and their usage (cost of wattage per use) www.consumer.org.nz.
- » Conserve water – fix leaky taps, take shorter showers, water your garden in the morning or evening when it's cooler, recycle "grey" water for plants or outside cleaning, turn the tap off when brushing your teeth, wash clothes in cold water and wait for a full load before washing, install a dual flush toilet cistern place a brick in the cistern.
- » Transport – bicycle, walk, use public transport, car pool, set up a walking school bus, consider working more from home.
- » Cut down air pollution by driving less, tuning your car regularly, using clean-air heating.
- » Use fewer chemicals many end up in the sea. Find natural alternatives to cleaners and gardening products: clean with white vinegar, lemon juice, baking soda, borax, and hydrogen peroxide. Keep insects at bay with diluted neem soap in water (from Trade Aid).
- » Buy wisely – use your LOAF: Locally produced, Organically grown, Animal friendly, Fairly traded.
- » Eat less meat – animals belch methane and pollute waterways.
- » Share your home for greater efficiency and energy savings.
- » Look for wood products that come from sustainably managed forests - 80 percent of the world's forests have already been destroyed.

- » Avoid eating fish that comes from unsustainable fisheries. Greenpeace New Zealand has a list of fish, including hoki, snapper and tuna, and should be avoided because they are being overfished: see www.greenpeace.org/new-zealand/sos/red-list
- » Use a hand mower instead of a petrol one.
- » Put a "No junk mail" sign on your letterbox and save trees.
- » Choose goods without excess packaging and take your own bag when shopping.
- » Do not purchase anything made from endangered species or their parts (e.g., ivory, crocodile skin, corals).
- » Choose sustainable travel and reconsider taking a cruise - cruise ships dump tons of waste directly into the open oceans, where there are no national laws prohibiting this.

Communities – what can we do?

- » Conservation – support an organisation working to educate about or protect the environment.
- » Development – become active in local politics and zoning decisions where land use affects wildlife habitats.
- » Plant trees.
- » Lobby and vote for local and central government policies that protect the environment. Lobby for recycling.
- » Adopt your local park, reserve or school grounds and help keep them clean and well-maintained.

Businesses – what can workers do?

- » Reduce rubbish, print less, conserve energy and water at work.
- » Become a member of the New Zealand Business Council for Sustainable Development.⁵
- » Practice ethical purchasing - environmentally friendly paper, cleaning products, and Fair Trade products for your tea room.
- » Encourage management to adopt an environmental policy.
- » Ship goods by rail instead of truck, use a bicycle courier service.
- » Recycle paper and boxes.

Congregations – what can we do?

- » Conduct an environmental audit on how your church buildings are being used. Check that they are energy and water efficient. Consider carpooling to church events and make public transport timetables available.

- » Preach and teach. Educate and motivate congregations about loving their neighbour by caring for the environment.
- » Celebrate Creation with a special service, festival or outdoor activity.
- » Form an environmental study to keep environmental issues before the congregation.
- » Join with other community organisations to organise a local tree planting or rubbish tidy-up day.
- » Investigate allowing church grounds to become a recycling centre or start an opportunity shop for second-hand goods. Host a swap event for unwanted goods.
- » Support an aid organisation that is committed to sustainable development, such as the Church's Global Mission Office.
- » Share items that are costly or only used occasionally. Consider creating a database of tools that others could lend.
- » Use the many free resources for congregations available on the Presbyterian Church website: www.presbyterian.org.nz/4968.0.html#c16889 Social Justice and Advocacy » Environmentally sustainable church resources

PARISH CASE STUDY: SAINT COLUMBA'S HAVELOCK NORTH

Since the early 1990s, the environmental house group of St Columba's Presbyterian Church, Havelock North, has been meeting monthly. Well before it became common practice, the group was promoting recycling and energy conservation. They even conducted an environmental audit of the St Columba's precinct. After devoting much time to exploring global environmental issues, congregation and group member Jim Watt says, "we felt a bit helpless".

In response, in 2000, the group decided to focus on "their own backyard" and involved the wider community in restoring the local Karamu Stream, a waterway that had long been choked with willow, long grass and debris. Working closely with local and regional councils, the stream was cleaned up and the banks planted over a four year period. The community donated funds for plants and memorial plaques on seating, and helped with watering the plants in drought months.

This year a large community volunteer group (Karamu Enhancement Group) formed to begin cleaning up the rest of the 19km stream. Inspired by what they have seen the St Columba's group achieve over 10 years with "their" 1km, the new group is working with the Council on the ambitious scheme. Jim says it brings a huge sense of satisfaction to the environmental house group that from a seed a major restoration project has burst forth.

Governments – what can they do?⁶

- » Impose a carbon tax on industries that emit greenhouse gases.
- » Set up emissions trading schemes to provide incentives for reduced emissions.
- » Play their part in international forums on climate change.
- » Comply with the Kyoto Protocol and other international agreements.
- » Allow for environmental refugees in immigration policies.
- » Fund conservation measures and organisations.
- » Increase biosecurity measures.
- » Contribute to insurance schemes that help people recover from natural disasters.
- » Support the research and development of eco-friendly technologies.
- » Factor climate change into decisions relating to land-use and development.
- » Legislate for sustainability in energy, transport, industry, waste management, agriculture and forestry sectors.

The New Zealand Government is addressing climate change in a variety of ways. In May 1998 it signed the Kyoto Protocol and ratified it in December 2002. This commits the country to reducing greenhouse gas emissions to 1990 levels (they have risen nearly 25 percent since then).

The main source of emissions in New Zealand is livestock farming. Animals produce methane, which has 20 times the impact of carbon dioxide. A “fart tax” was proposed to fund research into reducing these emissions, but abandoned after opposition.

In September 2008 the Labour Government enacted a controversial emissions trading scheme. The recently elected National Government initially announced a full review of the scheme along with the science of climate change. Carbon taxes were suggested as a possible alternative. Up until the publication of this booklet there was still uncertainty as to the terms of reference of the review, although senior politicians suggested an ETS was the likely outcome. The Government also announced it would repeal a law obliging fuel companies to sell a proportion of biofuel.⁷ Before the election, the National Party said it would legislate for a 50 percent reduction in greenhouse gas emissions by 2050 compared to 1990 levels, honour Kyoto Protocol obligations and carry out other measures to address climate change.⁸

Talking point

- » What is the biggest obstacle to action for you?
- » What do you think you could you take up and begin to act on?
- » In the story of the good Samaritan (Luke 10:35–37), Jesus teaches about love for our neighbour. Who is your neighbour in the environmental context? How do we balance love for our neighbour with care for Creation?

Reflection

Isaiah 65:17–25 paints a picture of fruitfulness, beauty and harmony with the natural world.

- » What most inspires you about this picture?
- » How do you think this vision of the new heaven and new earth should affect our attitude to Creation today?
- » How has your “ecological awareness” changed through what you have learnt and reflected on in these studies?

A theology of Creation care¹

Some Christians have not always thought it was their duty to care for the environment. Part of the problem lies with poor theology regarding the origins and destiny of the created order and humans' place within it. The Bible presents firm evidence however that caring for Creation is essential to the mission and ministry of God's people.

God's work is good

From the opening verses of Genesis, the Bible affirms that Creation is “good” in God's eyes. God loves what he has made unconditionally; he delights in it regardless of its usefulness to him. He is still actively involved with Creation, continuing to sustain and provide for it (Psalm 104:13, 16, 27–30; Luke 12:24, 28; Colossians 1:17; Genesis 3:8; Job 39:1–2).

In response, Creation is full of life and praise, reflecting God's glory and inspiring worship. As Psalm 19 says, *The heavens declare the glory of God; the skies proclaim the work of his hands. Day after day they pour forth speech, and night after night they display knowledge.* Like the rest of Creation, human beings are to worship God by being and doing all that he has made us to be and do. If we claim to love God, we will care for the things he cares for – including Creation.

Our interconnection with Creation

Genesis 2:5-7 tells us that man (*adam*) was made “from the dust of the ground” (*adamah*) because there was “no one to till the ground”. The Hebrew pun emphasises humanity’s interconnection with the rest of Creation; we are mutually dependent on each other and on God for life itself. Caring for Creation is one of the reasons for our very existence and because we are creatures too, we care for ourselves when we care for the Earth and all it contains.

The original harmony between humans and the Earth was disrupted by an act of disobedience and idolatry (Genesis 3). As a result, humanity and Creation were mutually “cursed”. The Earth became difficult to till and tend; sustenance was extracted by sweat and toil instead of with joy. The New Testament confirms this profound disharmony. Romans 8 talks of Creation “in bondage to decay” and “groaning in labour pains” (vs 20-22). We suffer the pain of Creation’s distress, which we ourselves have caused.

Humans as rulers and servants

God created humans “in his image and likeness” (Genesis 1:26), setting them apart from the rest of Creation in a unique relationship with himself. Humans were given the mandate to *fill the earth and subdue it; and have dominion (rule) over...every living thing* (Genesis 1:28). This has often been taken as an excuse to exploit and abuse the Earth, but if we are made like God, we should exercise our authority as he does i.e. with justice, care and love. God designed us as his agents to bring blessing, not misery to Creation.

In the Old Testament, the prophets continually called the people of God back to this original covenant relationship, or face the consequences of desolation of the Earth itself (Jeremiah 9:10, 12:4; Hosea 4:1-3). As humans acknowledge their Creator in faithfulness and obedience, blessings flow, not just for humans but for the rest of Creation as well. Harmony is restored (Leviticus 26:3-5).

Christ reconciles all things

The incarnation of God in the flesh and blood human form of Jesus Christ affirms the value of the physical Creation to God. Indeed, the New Testament states that Christ himself was the One for whom and by whom all things are created and sustained (Colossians 1:15-20). Through his death and physical resurrection, he began a new Creation, reversing the curses of the first, and reconciling all things under the sovereignty of God the Creator (2 Corinthians 5:17-19). Christ’s saving act extends to the whole universe. In Greek, John 3:16 reads: For God so loved the *cosmos that he gave his only Son...*”

Hope for the future

Some Christians believe that this world will ultimately be destroyed in favour of a more “spiritual” heavenly realm. 2 Peter 3: 7-10 seems to support this view: *But the day of the Lord will come like a thief, and then the heavens will pass away with a loud noise, and the elements will be dissolved with fire, and the earth and everything that is done on it will be disclosed (some translations say “burned up”).* Elsewhere in the Bible, however, fire is used as a metaphor for the judgement and purification wrought by Almighty God. Destruction is reserved for *those who destroy the earth* (Revelation 11:17-18), not the Earth itself.

Other Old and New Testament passages describe a future of abundance, productivity, harmony and blessing for all Creation (Isaiah 11:6-9; Isaiah 55:12-13; Ezekiel 47:9, 11-12; Revelation 22:1-2). Ultimately, our Christian hope lies in the promise that heaven will come to Earth and God will live with us in a renewed, liberated and transformed Creation (Revelation 21:3-5).

How then to live?

The vision of the Kingdom of God given in the Bible is one of wholeness and harmony of all relationships, based on the love and justice of God. In Christ, we have been given a “ministry of reconciliation” (2 Corinthians 5:18-19) to be his co-workers and agents for the redemption of all things. Caring for Creation and caring for the poor are interconnected because if we love others, we will be as concerned for their physical circumstances as the state of their souls. In practical terms, this may mean that we re-examine our priorities: does our level of consumption disadvantage others? What happens to the things we throw away? What kind of world will we leave for future generations? Together we need to formulate strategies that balance care for our neighbour with care for the non-human Creation.

Above all, the Gospel is a message of hope. It’s easy to feel that environmental issues are too overwhelming and complex for ready solutions. But as believers, we should be neither anxious nor complacent. Our faith motivates us to act with others for the good of the whole Earth, fully expecting that God the Creator, Redeemer and Sustainer of all things will be faithful to his promises.

NOTES:**Study One: What's happening to our planet?**

- 1 www.4million.org.nz/climatechange/understanding/index.php#howis and the Ministry for the Environment website www.mfe.govt.nz/publications/climate/greenhouse-gas-inventory-overview-apr08/html/page3.html
- 2 Dr Kevin Tate was awarded the 2005 Marsden Medal at the Royal Society Science Awards for "outstanding contribution to research on climate change". He is research associate at Landcare Research. As a member of the Church's Environmental Task Group he helped develop a Declaration on Climate Change endorsed by General Assembly 2008.
- 3 Health and Air Pollution in New Zealand (HAPiNZ). www.hapinz.org.nz
- 4 Information from www.zerowaste.co.nz and Ministry for the Environment, March 2002. www.mfe.govt.nz
- 5 Dairying and Declining Water Quality: Why has the Dairying and Clean Streams Accord not delivered cleaner streams? October 2008. www.forestandbird.org.nz/conservation/freshwater/Dairying_and_Declining_Water_Quality.pdf
- 6 Water-use plan targets farmers. The Press, 24 July 2008, ,pg 5.
- 7 Slow death of a dirty brown river. The Dominion Post. 18 October 2008.
- 8 Unhappy Valley. NZ Listener. 9-15 August 2008. www.listener.co.nz
- 9 www.greenpeace.org/new-zealand/campaigns/oceans
- 10 www.greenpeace.org/international/campaigns/oceans/pollution/trash-vortex#
- 11 en.wikipedia.org/wiki/World_population
- 12 China's Man-Made Disaster, The New Zealand Herald, 15 Nov 2008, B10.
- 13 & 14 Livestocks long shadow. Food and Agriculture Organization of the United Nations, Rome, 2007. www.fao.org/docrep/010/a0701e/a0701e00.HTM and E, The Environmental Magazine www.emagazine.com/
- 15 www.teara.govt.nz/EarthSeaAndSky/ClimateAndAtmosphere/Atmosphere/3/en
- 16 www.creationcare.org/resources/sunday/facts.php
- 17 www.seafriends.org.nz/enviro/reddata.htm#Mammals
- 18 WWF- New Zealand. www.wwf.org.nz/index.php/new_zealand_conservation/
- 19 Countering climate change sceptics and handling tricky questions. operationnoah.org/resources/factsheets/

- 20 www.wwf.org.nz/fck_image_uploads/file/Answering_the_Climate_Change_Sceptics_BriefingPaper_Oct%2006.pdf
- 21 Evangelical Environmental Network booklet on endangered creatures. www.creationcare.org/resources/endangered_book.php

Study Two: What impact does it have?

- 1 Material for this section taken from Climate and Church: How global climate change will impact core church ministries, National Council of Churches USA, Eco-Justice Program Office, Washington DC.
- 2 <http://www.floodlondon.com/floodtb.htm>
- 3 www.mfe.govt.nz/issues/climate/about/impacts.html
- 4 Climate Change: Potential Effects on Human Health in New Zealand, Ministry for the Environment, 2001.
- 5 Climate change impacts on New Zealand report, Ministry for the Environment. www.mfe.govt.nz/publications/climate/impacts-report/impacts-report-jun01.pdf

Study 3: Taking Action

- 1 The WWF is one of the world's largest conservation organisations and began its Living Planet Reports in 1998.
- 2 Source: Operation Noah www.operationnoah.org/resources/factsheets/countering-climate-change-sceptics-and-handling-tricky-questions
- 3 Key reviews carbon tax as NZ gets 'dirty' rating, New Zealand Herald, 19 Nov 2008, A5.
- 4 Draws on www.creationcare.org/resources/sunday/actions.php
- 5 www.nzbcscd.org.nz/
- 6 See The Ministry for the Environment website www.mfe.govt.nz/ and www.climatechange.govt.nz/
- 7 Govt gives definite yes to ETS, New Zealand Herald, 12 Dec 08.
- 8 en.wikipedia.org/wiki/Climate_change_in_New_Zealand

A theology of Creation care

- 1 This section draws on resources from the Jubilee Centre www.jubilee-centre.org/topics.php?topicID=9&catID=3 and the Evangelical Environmental Network's declaration 'On the Care of Creation' www.creationcare.org/resources/declaration.php



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