

# **Climate Change: Our Responsibility to Sustain God's Earth**

## **INTRODUCTION**

**Rapid climate change as the result of human activity is now recognised by the global scientific community as a reality.**

**People around the world are experiencing the impacts of increasing land temperatures, rising sea levels, and a change in the frequency of extreme climatic events.<sup>1</sup> The chemical composition of the atmosphere cloaking our Earth is being changed by pollution caused by human activity.<sup>2</sup> The resultant chemical substances strengthen what is called the greenhouse effect. As a result, Earth's climatic patterns are being altered at a pace not experienced in at least 10,000 years.<sup>3</sup> Atmospheric conditions are now outside the envelope they have occupied for the last 400,000 years.<sup>4</sup> It is entirely feasible that in 100 years time Earth's climate will be more like it was 20 million years ago.<sup>5</sup>**

**This human induced accelerated climate change suggests a lack of understanding for the integrity and the cycles of nature. It raises serious moral and spiritual questions, not just for Catholics but for all Australian citizens and leaders, and calls for change in our way of life.<sup>6</sup>**

**The joys and hopes, the pains and anxieties of all people of this age are intimately linked with human history and Earth's cycles. As pastors of more than a quarter of the Australian population, we urge Catholics as a matter of conscience to cooperate in facing global warming as one of the major issues of our time and take roles of responsibility proper to them.<sup>7</sup> Several times we have addressed environmental issues and recently called for *ecological conversion*.<sup>8</sup> We now urge Catholics as an essential part of their faith commitment to respond with sound judgements and resolute action to the reality of climate change.**

**A wise response will address both the human causes of accelerated global warming and develop a strategy to manage the future development of our society. Given the gravity of the problem, detailed and resolute responses need to be both swift and radical.**

**We offer the hand of cooperation to all spiritual and secular leaders in Australia in an act of solidarity, knowing that Earth is our common home. In a spirit of dialogue, we want to learn from informed scientists and encourage the efforts of our church communities in addressing the causes, effects and solutions regarding climate change. We choose the path of dialogue, solidarity and cooperation that helps all sectors of the community go beyond sectarian interests, secular and religious differences.<sup>2</sup>**

## **EARTH OUR COMMON HOME**

**We believe that the Earth is a gift from God, valuable in itself, and that human life is irrevocably linked with the Earth. Catholic faith believes that the cosmos displays the goodness, beauty and power of God.<sup>10</sup> In a sermon to agriculturists, Pope John Paul II said, "Within the movement of nature, tranquil and silent but rich in life, there continues to palpitate the original delight of the Creator."<sup>11</sup> God's plan for humanity is to know God through the world of matter and, in this belief, we feel at one with all people who revere a power in the natural world that is beyond the human.**

**The astronaut Loren Acton, describing the view of Earth from space observed, "Looking outward to the blackness of space, sprinkled with a glory of lights I saw majesty but no welcome. Below was a welcoming planet. There, contained in the thin, moving, incredibly fragile shell of the biosphere is everything that is dear to you, all human drama and comedy. That's where life is: that's where all the good stuff is".**

**Scripture witnesses to Earth's design and God's wisdom imbedded in the Earth (Job 38:2).<sup>12</sup> We look at Earth's wonders and praise our Creator (Ps 148). Every creature, every species, every ecosystem, the Earth itself, and the entire expanding universe display the grandeur of God. This means that the wonderful inter-relatedness that ecologists find in the biosphere on Earth, and the inter-relatedness that science discovers at all levels from quantum physics to**

cosmology, is all sustained at every moment by the Creator. We are intimately interconnected with the whole life-system of the planet and the complex interaction between living creatures and the atmosphere, the land and the water systems.

Scripture also says that human pride leaves us hard hearted rather than humble before God's wisdom and beauty made visible in the cosmos (Ps 2; Is 30:9-11). We have changed the very chemistry of the planet, we have altered the biosystem, we have changed the topography and even the geological structure of the planet, structures and functions that have taken hundreds of millions of years and even billions of years to bring into existence. Such an order of change in its nature and magnitude has never before entered into Earth history or into human consciousness. <sup>13</sup>

The web of life on Earth is under threat from accelerated climate change.<sup>14</sup> That web compares to a seamless garment and it needs the application of a consistent ethic to protect it, one that considers life now and in the future, and ranges from protection of the unborn child to cherishing the diversity of species.<sup>15</sup> Life is one, and human well-being is at its base interwoven with all life on Earth and the rhythm of its systems. The suffering of any one part means that all creation groans, and rapid global climate change dramatically displays that suffering.<sup>16</sup>

## **WARNINGS FROM THE SCIENTIFIC COMMUNITY**

We are indebted to the scientists, environmental activists, rural people, foresters, fisher people, writers, artists, photographers, educators, business people, government officials, society leaders and all who have helped humanity become aware of the dangers of climate change and create human choices for an alternative future.

Scientists alerted us to the danger of climate change and we are to be grateful rather than fearful. Reports of the International Panel on Climate Change, a body of over 2000 international scientists, and other credible groups explain the problem and point to solutions.

**We need to keep in mind the Precautionary Principle: *Where there are threats of serious or irreversible damage, lack of full scientific certainty should not be used as a reason for postponing remedial measures.* Its application in science, law and politics is a minimal requirement if wisdom and prudence are our values.<sup>17</sup>**

**The Earth system is complex and science is only beginning to unfathom its mysteries. The land, oceans, atmosphere, lithosphere and living organisms (the biota) exchange energy, water and chemicals in never-ending circles called *bio-geochemical cycles*. These cycles are our planetary life support systems and Earth's climate is the result of their complex interactions.<sup>18</sup> Scientists explain that energy from the sun drives Earth's weather and climate system. Some of the solar energy is reflected back into space, some is absorbed by the land surface, and some heats the atmosphere. Certain gases in the atmosphere (especially carbon dioxide but also methane and nitrous oxide) trap some of the outgoing energy, retaining heat and Earth's energy balance. This is called the greenhouse effect. Without this natural process, Earth temperatures would be much lower. For the last 700 million years for which science has good evidence, Earth's average temperature has stayed within the range of 5-25 degrees Celsius – optimum conditions for life.<sup>19</sup>**

**Scientific research has concluded that humans have caused rapid change in the concentrations of greenhouse gases and a resultant heating of Earth's atmosphere. Since the start of the industrial revolution, carbon dioxide has risen nearly 30%, methane more than doubled, and nitrous oxide has risen by about 15%. The use of fossil fuel (petroleum, coal and natural gas) for energy, accounts for about 80% and deforestation for 20% of human-caused carbon emissions. This energy is used in industrial production, transportation and in heating and cooling offices and homes. Nitrous oxide is largely produced by vehicle and industrial emissions, while methane emissions are caused both by industrial and agricultural activities. Since World War II the number of motor vehicles in the world increased from 40 million to 680 million.<sup>20</sup>**

**Carbon cycles naturally move between the atmosphere, vegetation on land, the oceans, and the lithosphere. The amount of greenhouse gases humans are releasing into the atmosphere exceeds the absorption capacity of the ocean and land. We now face an unavoidable rapid change in global climate and all the consequences that will bring. If we act now the changes can be slowed and ultimately halted and harm can still be minimised.**

## **PREDICTED CONSEQUENCES OF RAPID CLIMATE CHANGE**

**The governments of the world, including the Australian government, have signed an international treaty (the United Nations Framework Convention on Climate Change) to address the greenhouse problem. Under this treaty, the Inter-governmental Panel on Climate Change (IPCC) has been formed to provide governments with the best possible scientific advice.<sup>21</sup> The IPCC has concluded that we face the following consequences in the coming decades:**

- \* Severe and frequent natural disasters like floods and droughts will increase and cyclones will range further south in Australia.<sup>22</sup>**
- \* Patterns in ocean currents that transfer energy between the Polar Regions and the equator may change, slow down or cease to circulate.**
- \* Global temperatures could rise by as much as 5 degrees Celsius (estimated range 1.4-5.8°C) over the next century, but increases could be higher than this in certain regions.**
- \* The Arctic ice cap has thinned and will melt further over the coming decades causing a rise in sea levels. Rises are also due to thermal expansion of water. An increase of 3<sup>0</sup>C in global temperature will see an estimated sea level rise of 7m. Communities who live on low lying island nations (such as Tuvalu and Kiribati in the South Pacific) are already suffering from sea water encroachment of freshwater supplies. Some governments are planning evacuation. Similarly, communities living on coastal river plains (such as in Bangladesh) are vulnerable.**
- \* Poor countries will suffer disproportionately from rapid climate change, in part because of their geography and in part because they lack the resources to respond.**
- \* Human suffering in our region will increase from maladies such as heat stress and the spread of insect-borne tropical diseases south from the equator.**
- \* Geographic and seasonal patterns of rainfall will alter. Harvests in some of the world's key food crops could drop by up to 30% over the next 100 years resulting in food insecurity. Farmers in tropical areas will be forced into higher, cooler mountainous areas, intensifying pressure on forests and wildlife habitat, as well as on the quality and quantity of water supplies.<sup>23</sup>**
- \* Many species will be unable to adapt or disperse to better suited locations because of the speed of climate change. Individual species may become extinct and indeed entire ecosystems may vanish as their climatic niche disappears as**

habitats are lost or fragmented. Invasive weed species will overcome native plant and animals.<sup>24</sup>

Of overarching importance, modern human society has developed on the assumption that the global climate is constant. Science has demonstrated this assumption is false, even in the absence of human-forced climate change. Much of our infrastructure - dam design and engineering; coastal works; irrigation networks and cropping systems – is, locked into current patterns of rainfall and temperature and therefore, may prove inappropriate under a future climate regime. The human and economic costs of human-induced climate change will be immense. The longer we delay in addressing the problems the more costly will be the solutions

A critical part of the solution lies in the continuing development of alternative sources of energy that can substitute for greenhouse gas-emitting fossil fuels. While a mentality of "technological fixes" may be grasped by some as an escape from the reality of global warming, nevertheless, there is a real need for scientific research into technologies which reduce greenhouse gases through increased efficiencies and the search for alternatives.

## **A MORAL AND SPIRITUAL RESPONSE TO GLOBAL WARMING**

A Catholic Church response to global warming embraces moral and spiritual arguments drawn from its faith tradition. At the launch of Catholic Earthcare Australia, Archbishop John Bathersby said:

*The entire life of Christians is an exploration into Christ. Each generation pushes back ever so slightly the envelope of his mystery ... One of the most significant developments in Catholic understanding of the Christian mission in more recent times is its embrace of creation in all its beauty and vitality.*<sup>25</sup>

Particularly in the last century, a body of Catholic Social Teaching has been developed that provides principles to guide human behaviour towards the common good.<sup>26</sup> It now includes teaching on the natural world and environmental issues. Several Popes and Conferences of Bishops from around the world and in Australia have written on local and global issues.<sup>27</sup> Their thinking on the integrity of the natural world and environmental justice has been incorporated into the 1992 *Catholic Catechism of the Catholic Church*.<sup>28</sup> A few short quotations from it illustrates the thrust of our concern over global warming:

*... Our Creed begins with the creation of heaven and Earth, for creation is the beginning and the foundation of all God's works (No. 198I).*

*The right to private property, acquired by work or received from others by inheritance or gift, does not do away with the original gift of the Earth to the whole of mankind. The universal destination of goods remains primordial (No. 2403).*

*Man's dominion over inanimate and other living beings is not absolute; it is limited by concern for the quality of life of his neighbour, including generations to come; it requires a religious respect for the integrity of creation (No. 2415).*

The recently published Compendium of the Social Doctrine of the Church contributes further to the Church's teaching on ecological matters and humanity's right relationship with the rest of creation:

*...God freely confers being and life on everything that exists. Man and woman created in his image and likeness, are for that very reason called to be the visible sign and the effective instrument of divine gratuitousness in the garden where God has placed them as cultivators and custodians of the goods of creation. (No. 26)*

*...The common good of society is not an end in itself; it has value only in reference to attaining the ultimate ends of the person and the universal common good of the whole of creation (No. 170)*

*...The entrance of Jesus Christ into the history of the world reaches its culmination in the Paschal Mystery, where nature itself takes part in the drama of the rejection of the Son of God and in the victory of his Resurrection. (No. 454)*

## **ETHICAL PRINCIPLES FOR THE ENVIRONMENT**

The 1990 World Day of Peace Message of Pope John Paul II presented a comprehensive but concise overview of the spiritual and moral dimensions of environmental problems. From it can be drawn a set of principles for making ethical judgments about environmental issues.<sup>29</sup> These can be applied to the issue of global climate change and its implications for the future of Australia. In point form they can be summarized as follows:

- \* The natural world has value in itself and should not be valued merely for its usefulness to humanity.
- \* The world and all in it must be freed from what can be termed a state of suffering.
- \* Humans are part of the created world and inextricably part of a material existence.
- \* Earth belongs to God and is only on loan to humans who are called to care for it.
- \* The choices of humans in their use of the Earth gives humanity a hand in forming its history, a vocation to heightened consciousness within the life of Earth.
- \* Ecological education provides the background for wise and moral decisions.
- \* There are limits to world resources and the environmental services that Earth can meet before pushing it to a new epoch.
- \* Global resources are to be managed cooperatively at the local and international levels.



- \* Excessive demands are imposed on the Earth by nations with a consumerist economy and life-style.
- \* Restraint, penance and self-imposed limitations are part of authentic human living and are in the tradition of choosing sacrifice for the greater good.
- \* The fascinating beauty and intricacy deep in the natural world have great value for the artist and for healing the human spirit and body.
- \* The right to a safe ecological environment is a universal human right.
- \* Models of development, social structure and styles of technology must integrate environmental factors if there is to be authentic development.
- \* Super-development, often for the purpose of economic gain, poses an additional threat to the environment.
- \* The use of genetic engineering poses unknown environmental outcomes when genetic materials are swapped between species. It may threaten food security.
- \* Warfare has multiple negative environmental impacts and eats up much of the world's financial resources.
- \* Political leaders at every level have a duty to administer for the good of all. This includes administering prudently a nation's environmental resources..
- \* Issues of global significance demand solidarity and cooperation at a formal level of international agreements in order to implement change, especially by sharing technology.
- \* The richer nations have an obligation to dismantle structural forms of global poverty and to help poorer nations experiencing social or environmental problems.
- \* Future generations should not be robbed or left with extra burdens for they have a claim to a just administration of the world's resources by this generation.

**The 2001 government report on *The State of the Environment* bluntly names our styles of land use, industry, transport and buildings as the major sources in Australia of human- induced greenhouse gases.<sup>30</sup> The same document states, "Government interventions of various kinds, including legislation and regulations, codes of practice - formal and informal - have been effective in protecting and managing the environment".<sup>31</sup> In the interests of the common good we call for an increased effort. Planned management for the long-term, not just the short term, backed up by economic and legal incentives provides a way forward.**

**The national imagination needs to be stretched if a new model of living and managing our fragile land is to be found.**

**" The key to Australia's sustainable future lies in ourselves, our attitudes towards the environment, our heritage and each other. Positive change can be achieved when people see options for improvement in their quality of life and opportunities for their children and grandchildren. This change is accelerated when public awareness is translated into political action that influences the activities of our society to care for our country."<sup>32</sup>**

**Each sector of the community- citizens and consumers; governments, business and industry; and the non-government sector has a role in imagining and building a future Australia with radically reduced greenhouse gas emissions.**

**Consumers send powerful signals to the market by their greenhouse-friendly choice of goods and services. We dream of a fuller view of humanity, greater than a mere owning of more material goods.**

**The three levels of government have duties of leadership to take decisions for the common good and future of the nation, involving citizens in public debate on ecological issues. Short and long term ecologically sustainable options, and unsustainable dead ends, need to be identified and appropriate laws framed.**

**Locally, government agencies can preferentially choose greenhouse gas reducing procurements, buildings and energy options. Internationally, Australia must continue to support structures that help reduce global warming. Strengthening Biodiversity compliance and ratifying the Kyoto Protocol seems minimal.<sup>33</sup>**

**Foreign aid, based on ecologically sustainable research and technologies, needs to be given willingly, revising limiting patenting laws.<sup>34</sup>**

**Profit is a limited goal and needs to be linked to socially and environmentally responsible ethical investment.<sup>35</sup> Promoters of unsustainable lifestyles harm the environment now and will ultimately make Australia weaker. Infrastructure planners, the building sector, transport, manufacturing, electrical generation and related industries can all promote energy saving and seek alternative energy sources.<sup>36</sup> Farmers and foresters do well when they respect nature's rhythms.<sup>37</sup> Ultimately, profit is secondary to ecologically sustainable living.**

## **OUR RESPONSIBILITY TO THE EARLY VICTIMS OF CLIMATE CHANGE**

**The richer nations, Australia included, have a responsibility to help the poor developing nations deal with climate change because these nations will suffer most severely. More than periodic emergency relief they need long-term structural help - debt relief, equitable trade policies and technological exchange.**

**Poorer nations are to be helped take their place in the human family of nations as ecologically responsible partners.**

As one of the world's biggest emitters, per capita, of greenhouse gases, Australians have a particular duty to recognise the fact that they are directly implicated in the causes of atmospheric pollution which is harming the many innocent peoples of the Pacific region. Ironically, the ecological footprint of the victims is considerably lighter than our own.

**Global climate change has already had an impact in this region and the number of environmental refugees increases yearly. Australian citizens need to be informed. They need to debate how best to relocate these people. Of immediate concern are environmental refugees coming from our Pacific neighbours. Their representatives have already visited our shores to alert us to their concerns and for our help.<sup>8</sup>**

## **GOD HAS NOT ABANDONED THE WORLD**

**In 2002, Pope John Paul II in a joint Statement with Patriarch Bartholomew I declared, “God has not abandoned the world. It is His will that His design and our hope for it will be realised through our cooperation in restoring its original harmony.”<sup>38</sup>**

In the same year, the Australian Catholic Bishops pointed the way to restore the “harmony”:

*In justice, it is an urgent task for Christians today to be reconciled with all creation, and to undertake faithfully our responsibility of stewardship of God’s gifts. To achieve such reconciliation, we must examine our lives and acknowledge the ways in which we have harmed God’s creation through our actions and our failure to act. We need to experience a conversion, or change of heart.*

As a matter of justice and out of a pastoral concern, we Bishops address ourselves to the Catholic communities and ask them to lead by example, to see care for our planet Earth as a 'vocation'. We encourage all Catholics to help our nation by developing an ecological ethic and to face up to the radical changes required for tackling global climate change. Our nation, in turn, may become an example to other nations both for the wise choices it takes internally and the generous spirit it shows to developing nations. God is not mean, nor should we be.

**As spiritual people, we know that we cannot do this from our own resources. We need the strength of God’s Spirit to be co-creators to renew the face of the Earth<sup>39</sup>. For inspiration we look to Mary who willingly agreed to live as God wanted. The fruit of her obedience was the birth of her Son, the Word of God through whom the whole of creation came into existence, was born at a moment in space and time, physically present to his own domain [Jn 1].**

**We recognize his presence. He is within us, calling us, inspiring us, reassuring us, as we work together in reverence and love to protect and sustain his sacred handiwork.**

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1 The Australian Greenhouse Office *Global Warming: Cool it.*  
<http://www.greenhouse.gov.au/education/factsheets/planet.html> The National Greenhouse Strategy  
<http://ngs.greenhouse.gov.au> Commonwealth Government Chief Scientist, Dr. Batterham. *SMH* 19 July 2004 p. 5; K. Hennessy et alia *Climate Change in New South Wales* CSIRO July 2004.  
[http://www.cabinet.nsw.gov.au?greenhouse/linked\\_files/Climate%20change%20in%NSW.pdf](http://www.cabinet.nsw.gov.au?greenhouse/linked_files/Climate%20change%20in%NSW.pdf)

2 "Australians have a high per capita level of greenhouse gas emissions by world standards. Greenhouse gas emissions increased by 16.9% between 1990 and 1998 ... Since 1910, Australian average surface temperature has increased by 0.76°C ... Many of the warmest years on record have occurred in the 1980s and 1990s." *State of the Environment 2001: Key Findings*  
<http://www.deh.gov.au/soe/2001/key-findings.html>

3 Taylor K. (1999). Rapid Climate Change. *American Scientist* Volume 87, No. 4.  
<http://waiscores.dri.edu/Amsci/taylor.html>

4 Petit, J. R. et alia "Climate and atmospheric history of the past 420,000 years from the Vostok ice core, Antarctica" *Nature* 399: 429-436, 1999.

5 J. Zachos, et alia (2001), "Trends, Rhythms, and Aberrations: Global Climate 65 Ma to Present" Vol 292 *Science* pp. 686-693 [www.sciencemag.org](http://www.sciencemag.org)

6 Pope John Paul II has spoken often on environmental concerns in his sermons and addresses to the FAO, ambassadors, jurists, farmers, indigenous people and during foreign visits. He has written pieces on the environment in Messages on Peace and at Lent, and in authoritative encyclicals as an issue of substance which goes to the heart of Catholic faith. [Evangelium Vitae \(1995\)](#) Nos 42, 83-83, 100 [Veritatis Splendor \(1993\)](#) [Centesimus Annus \(1991\)](#) No 35-40 [Redemptoris Missio \(1990\)](#) [Sollicitudo Rei Socialis \(1987\)](#) Nos 28-34 [Laborem Exercens \(1981\)](#) [Redemptor Hominis \(1979\)](#) No 8, 55, 90 and 92 These documents can be found on the Vatican website.  
[http://www.vatican.va/holy\\_father/index.htm](http://www.vatican.va/holy_father/index.htm) and <http://vatican.mondosearch.com/> In 1963 John XXIII referred to the environment in his encyclical *Pacem in Terris* No 148, and, in 1971 environmental issues were addressed by Paul VI in his Apostolic Letter *Octogesima Adveniens* Nos 48-50.

7 Walter Abbott, ed., The Documents of Vatican II, London: Geoffrey Chapman, 1966, *Gadium et Spes* (Church in the Modern World) Nos 1, 10 and 43.

8 The Australian Bishops, their committees and groups of bishops have written on environmental issues. The first document came from the Australian Bishops' Committee for Justice, Development and Peace in 1991 "Christians and their duty towards Nature" (ACSJC, Occasional Paper, No. 7). In 2002 the newly named Australian Bishops' Committee for Justice, Development, Ecology and Peace took environment as the subject for the Social Justice Sunday Statement, *A New Earth: The Environmental Challenge*. In 2004 the Catholic Bishops of Queensland made a joint statement about the Great Barrier Reef and those within the Murray- Darling Basin made a statement on that river system. Statements by Australian Catholic Bishops are often available at <http://www.socialjustice.catholic.org.au> or [www.catholicearthcareoz.net](http://www.catholicearthcareoz.net)

9 "Philosophical thought is often the only ground for understanding and dialogue with those who do not share our faith. " **John Paul II Encyclical *Fides and Ratio* 1998, No 104, cf. No 108.**

10 "For those who have attentive ears and unveiled eyes, creation is like a first revelation, which has its own eloquent language: It is almost like another sacred book whose letters are represented by the multitude of creatures present in the universe. St. John Chrysostom says: 'The silence of the heavens is a voice that resounds more intensely than a trumpet: This voice cries to our eyes, and not to our ears, the grandeur of the one who made it' (PG 49, 105). And St. Athanasius: 'The firmament, through its magnificence, beauty and order, is a prestigious preacher of its author, whose eloquence fills the universe' (PG 27, 124). John Paul II Audience 30 Jan 2002.

- [11](#) John Paul II, Speech to Agriculturists, 11Nov. 2000.
- [12](#) "If you would learn more, ask the cattle, seek information from the birds of the air (Job 12.7)." This scriptural reference became the title for a 1945 book by the well known Australian writer Elyne Mitchell *Speak to the Earth* Sydney: Angus and Robertson.
- [13](#) Thomas Berry CP, *Riversdale Papers*, Riversdale Centre for Religious Studies.
- [14](#) Catholic Committee of Appalachia *At Home in the Web of Life* Webster Springs, W Virginia, 1996 quoted in Brendan Hill *Christian Faith and the Environment* Maryknoll: Orbis 1998 p. 162-165. The document defended sustainable communities against a culture of death and was signed by the local bishops.
- [15](#) New Zealand Catholic Bishops Conference Statement *A Consistent Ethic of Life* Wellington: Catholic Communications, 18 April 1997.
- [16](#) Brendan Byrne "Creation Groaning: An Earth Bible Reading of Romans 8:18-22", Norman C. Habel ed., *Readings from the Perspective of Earth* Sheffield, UK: Academic Press, pp. 193-203.
- [17](#) "The Precautionary Principle in Environmental Legislation" Conference 20-21 November 2003, ANU, Australia's National Law School. <http://www.law.anu.edu.au/ancel/> The USA Catholic bishops focus on prudence and precaution in their 2004 statement on Global Warming. <http://www.usccb.org/>
- [18](#) Will Steffen and Peter Tyson eds., "Global Change and the Earth System: A planet under pressure. The Global Environmental Programmes" *Science Series* No. 4. Stockholm: IGBP.
- [19](#) Gorshkov V.G. and Makarieva A.M. (2002) "Greenhouse effect dependence on atmospheric concentrations of greenhouse substances and the nature of climate stability on Earth". *Atmos. Chem. Phys. Discuss.* 2: 289-337.
- [20](#) Group of Religious Leaders, Rome, *Global Warming 2004* [www.ofm-jpic.org/globalwarming](http://www.ofm-jpic.org/globalwarming)
- [21](#) The International Panel on Climate Change (IPCC) issues ongoing reports. <http://www.ipcc.ch/>
- [22](#) Big weather disasters have increased four-fold since 1960. During the last decade, natural disasters have cost the world \$608 billion. (Group of Religious Leaders, Rome).
- [23](#) The United Nations Environment Programme (UNEP); UN Framework Convention On Climate Change.
- [24](#) Howden, M. et alia (eds) *Climate change impacts on biodiversity in Australia: outcomes of a workshop sponsored by the Biological Diversity Advisory Committee, 1-2 October 2002*. Commonwealth of Australia 2003
- [25](#) Archbishop Bathersby, *Launch of Catholic Earthcare Australia* 30 June 2002, Paddington, NSW.
- [26](#) "The Church's social teaching comprises a body of doctrine which is articulated as the Church [cf. No. 960] 'the unity of believers who form one body in Christ' interprets events in the course of history ... [and] proposes principles for reflection; it provides criteria for judgement; it gives guidelines for action." *Catechism of the Catholic Church*, Homebush, NSW: St Pauls, 1994, Nos. 2422-3.
- [27](#) In 1988 the Catholic Bishops Conference of the Philippines *What is Happening to our Beautiful Land*, had these words, "The attack on the natural world which benefits very few Filipinos is rapidly whittling away at the very base of our living world and endangering its fruitfulness for future generations." Brennan R. Hill *Christian Faith and the Environment* Maryknoll, NY: Orbis, 1998 pp 155-186; US Bishops Conference 1996 *Environmental Justice Program - Policy Framework*; Christiansen, Drew *And God Saw That it was Good* Washington: EJP 1996.

<http://www.nccbuscc.org/sdwp/ejp/background/policy.html> ; Group of Religious Leaders, Rome, *Global Warming* 2004 [www.ofm-jpic.org/globalwarming](http://www.ofm-jpic.org/globalwarming)

<sup>28</sup> *Catechism of the Catholic Church*, 1994. References to the inter-related issues of society, economy, environment and spirituality include Nos 339-341, 682, 1905-1912, 1930, 2415, 2422-2424, 2567.

<sup>29</sup> [http://www.vatican.va/holy\\_father/index.htm](http://www.vatican.va/holy_father/index.htm) go to John Paul II, Messages, Peace 1990.

<sup>30</sup> Barney Foran and Franzi Poldy "Future Dilemmas" CSIRO and DIMIA October 2002, pp. 12-15. [www.cse.csiro.au/futuredilemmas](http://www.cse.csiro.au/futuredilemmas)

<sup>31</sup> *State of the Environment, Australia 2001* <http://www.deh.gov.au/soe/>

<sup>32</sup> *State of the Environment Australia 2001*, Preamble.

<sup>33</sup> **"Respect for nature by everyone, a policy of openness to immigrants, the cancellation or significant reduction of the debt of poorer nations, the promotion of peace through dialogue and negotiation, the primacy of the rule of law: these are the priorities which the leaders of the developed nations cannot disregard."** John Paul II Speech to President George Bush 23 July 2001 No 3.

<sup>34</sup> McDonagh, Sean *Life: Creation or Commodity? The Case Against Patents on Living Things* Catholic Social Justice Series, ACSJC, 2001, no. 41; Sean McDonagh, *Sean Patenting Life? Stop* Dublin: Dominican Publications 2003.

<sup>35</sup> Australian Ethical Investment [www.austethical.com.au](http://www.austethical.com.au) ; Corporate Watch [www.corporatewatch.org.uk](http://www.corporatewatch.org.uk)

<sup>36</sup> <http://architecture.com.au/> <http://gbcaus.org/> <http://abgr.com.au/rating>

<sup>37</sup> The Greenhouse Office carries satellite images of land-use changes over three decades.

<sup>38</sup> "Environmental refugees are increasing as low lying Pacific islands suffer from rising sea levels caused by humanly accelerated climate change, deforestation in the Solomons and Papua." in "The Environment", *Refugees* vol.2 num.127, 2002, UNHCR; "Here on the small island atoll of Kiribati, the impacts of human-induced climate change are already visible. The sea level is rising. People's homes are vulnerable to the increasingly high tides and storm surges. Shores are eroding and the coral reefs are becoming bleached. The water supplies and soil fertility are being threatened by the intrusion of salt water. Weather patterns are less predictable posing risks to fisher-folk and farmers. Kiribati is not alone in its plight" *The Pacific Churches Statement on Climate Change*, Kiribati, 11 March 2004.

<sup>39</sup> Declaration on the Environment, the Pope and Patriarch of Constantinople, signed 10 June 2002.

<sup>40</sup> **"The Holy Spirit is indeed the principal agent of the whole of the Church's mission ... The history of humanity has known many major turning points which have encouraged missionary outreach, and the Church, guided by the Spirit, has always responded to them with generosity and farsightedness ... Today all Christians, the particular churches and the universal Church, are called to have the same courage that inspired the missionaries of the past, and the same readiness to listen to the voice of the Spirit."** John Paul II *Redemptoris Misio* Nos 21 and 30.