How climate change is impacting financial services

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Introduction

This paper has been prepared for the 2004 Financial Services Forum to highlight why climate change is an important issue for the Financial Services industry. The authors are both committee members of the Energy and Environment Committee of The Institute of Actuaries of Australia.

Section 1 of this paper looks at global warming and describes the major impacts of climate change. Section 2 looks at the specific ways in which the Financial Services industry will be directly and indirectly affected by climate change.

1 Climate change

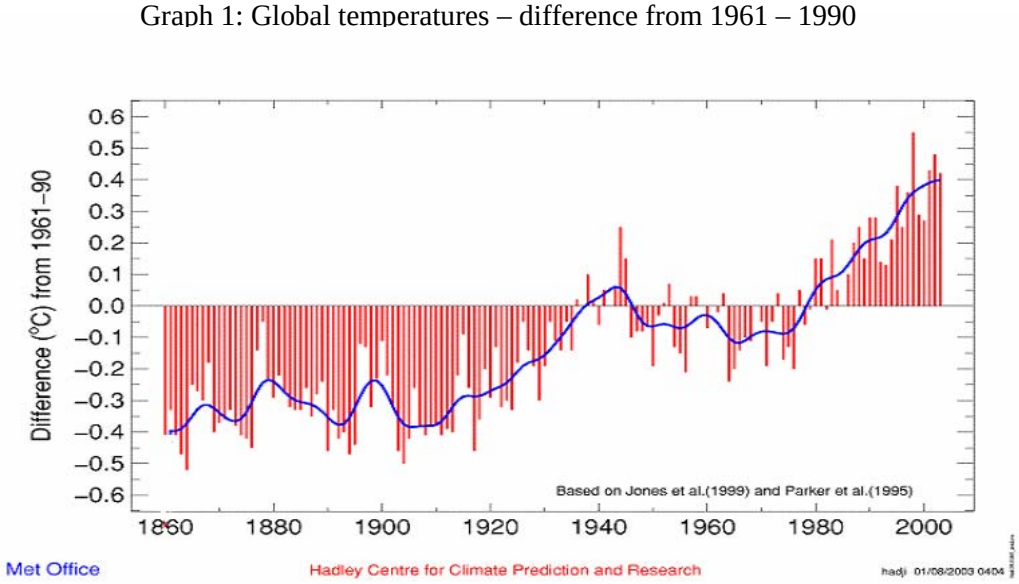
The early impacts of climate change are already happening in Australia – increasing average temperatures contributed significantly to the 2002 drought and some of the worst hailstorms in Australia's history have been experienced in the last decade.

1.1 Warming trend

An increasing body of observations give a collective picture of a warming world. The warming of the climate between the last glacial period (ending around 12,000 years ago) and the present reflects a change of global mean temperature of only 5 - 6°C. During the last century we have already observed a warming of the planet of 10% of this change (~0.6°C).

Graph 1 shows the difference in global temperatures from the 1961 – 1990 average (represented by the straight line across the middle of the graph). A steadily increasing trend in the temperature can be seen from the graph showing this 0.6°C increase.

Graph 1: Global temperatures – difference from 1961 – 1990

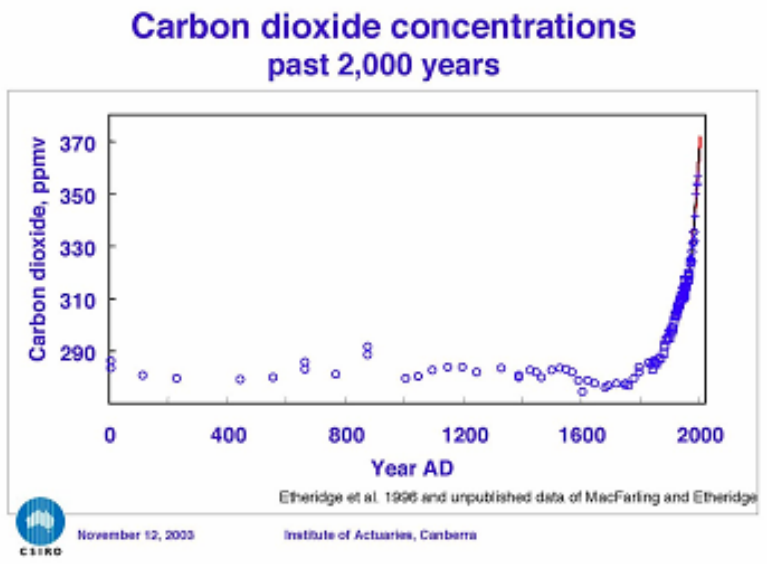


Other observational evidence of climate change includes rising sea levels, warming of the deep ocean, decrease in global snow cover and sea ice extent and changes in rainfall.

1.2 What's causing this warming ?

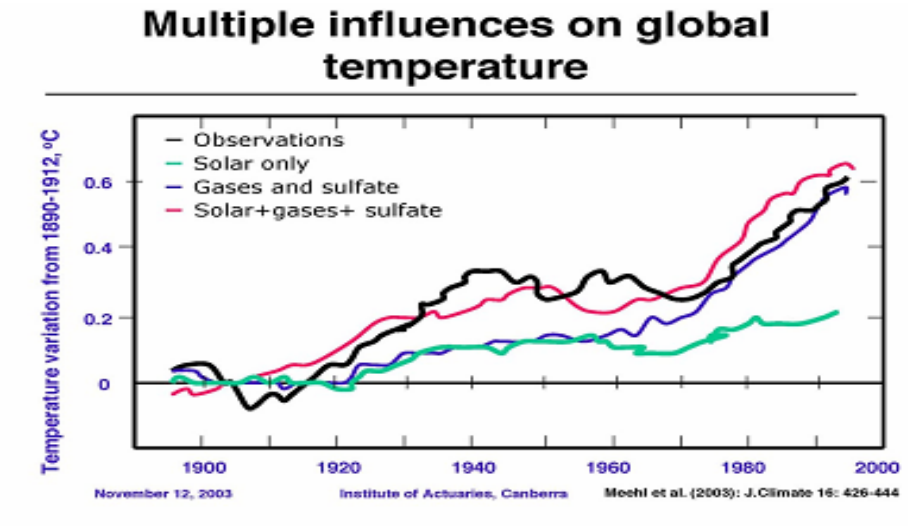
There is now common consensus that the observed warming trend over the last 50 years is due to an increased concentration of greenhouse gases (GHGs) in the atmosphere. Greenhouse gases e.g. carbon dioxide, methane continue to increase due to human activities, mainly due to the burning of fossil fuels in the industrialized world, for electricity and transport. The composition of gases in the global atmosphere is now different than it was.

As seen from the graph below current carbon dioxide concentrations are unprecedented in the world's modern history. This increase started to occur with the industrialised revolution in the 19th century.



Global carbon dioxide levels in the atmosphere are increasing. In March 2004, CSIRO measured increases of 19 and 17 billion tonnes of carbon dioxide in the atmosphere for 2002 and 2003 respectively (compared to 10-year trend of 13 billion tonnes p.a.). CSIRO said that measurements show that "carbon dioxide over the last two years has increased at near-record levels".

Most of the observed warming over the last 50 years correlates with increases in greenhouse gas concentrations rather than smaller effects such as sun emission variation, volcanic eruptions and Aerosols (dust) as seen by the following graph.



Because of the long effective lifetime of carbon dioxide in the atmosphere (almost 100 years) stabilising atmospheric concentrations will require very significant reduction of emissions (of order 60% over the next 50 years). This has to be achieved whilst addressing challenges of population growth, per capita demand and inertia of existing energy infrastructure.

1.3 Consequences of warming trend

A projected warming of between 1.4-5.8°C is expected between 1990 and 2100. The actual warming will depend on the emissions achieved. This warming has the potential to impact the extreme severity of our weather, the availability of fresh water and food and the spread of disease. With just a 1 or 2°C increase in the average global temperature, Australia will experience shifting rainfall patterns that reduce runoff to rivers and recharge of water supplies, increased agricultural and other economic losses from natural disasters, more damage to homes, business and infrastructure caused by extreme weather (e.g cyclone, hail, flood), increased and new threats to the health of Australians and irreversible change to some natural ecosystems.

As the effective lifetime of carbon dioxide in the atmosphere is almost 100 years, the impact of current emissions will continue to be felt for many years, raising an issue of inter-generational equity in terms of living conditions.

1.4 The world's reaction to Climate Change

<u>IPCC</u>
The Intergovernmental Panel on Climate Change (IPCC) was established in 1988 by the World Meteorological Organization and the United National Environment Programme to access climate change research. Its most recent report was published in 2001. The strength of the IPCC's conclusions has led national and regional governments around the world to establish policy relating to both the adaptations to the anticipated change and to efforts to mitigate against the change through the control of greenhouse-gas emissions.

UNFCCC

The United Nations Framework Convention on Climate Change (UNFCCC) was signed by 153 nations at the Rio "Earth Summit" in 1992 and entered into force in 1994. The UNFCCC sets an overall framework for intergovernmental efforts to tackle climate change. It establishes objectives, principles and commitments for different groups of countries according to their circumstances and needs.

The ultimate objective of the Convention is: "… to achieve stabilization of atmospheric concentrations of greenhouse gases at levels that would prevent dangerous anthropogenic (human-induced) interference with the climate system…". The Convention's principals hinge on:

i) equity and common but differentiated responsibilities;
ii) a precautionary approach; and

a recognition that development and climate change are interlinked and that patterns of energy consumption, land use and demographic growth are key drivers of both.

The first Conference of the Parties (COP 1), the ultimate decision making body of the Convention, was held in Berlin in early 1995. Two and a half years later legally binding commitments were adopted in Kyoto, Japan in December 1997. This was the Kyoto Protocol. The commitments were made by developed countries, including Eastern Europe economies in transition, as listed in Annex I of the Protocol.

Kyoto Protocol

Australia, although committed to the Kyoto targets, has not ratified the Kyoto Protocol. The Federal government has said that it does not believe the Protocol provides an effective global framework required for meeting long-term objectives. The Protocol can only enter force when at least 55 countries, including enough Annex I parties to encompass 55 percent of that group's carbon dioxide emissions in 1990, ratify the Protocol. To date, the Protocol has been ratified by 122 countries, but these represent only 44% of Annex I CO_2 emissions. To come into effect the Kyoto Protocol needs to be ratified by the Russian Federation (17% of 1990 CO_2 emissions) or the USA (36% of 1990 CO_2 emissions). Russia has indicated that it is intending to sign the Protocol.

The Kyoto Protocol's rules focus on: i) commitments, including legally binding emission targets; ii) implementation; iii) minimizing impacts on developing countries; iv) accounting, reporting and review; and v) compliance.

One of the major methods of implementation agreed to under the Protocol is the use of emissions trading. with three types of flexibility mechanisms that will be only available to countries that have ratified the Protocol:

- International Emissions Trading between countries whereby a country with emissions in excess of its target can reduce its recorded emissions by buying credits from another country;
- Joint Implementatation through transnational investment in projects to reduce emissions between countries; and
- Clean Development Mechanism whereby investment in projects that reduce emissions in developing countries can create emissions credits against a country's target.

The rationale for emissions trading is that a country that may be able to reduce its emissions more cheaply than others can make greater reductions than required and trade these excess reductions with other countries. This provides for the reductions in emissions to be implemented in the most cost efficient way.

The emission targets for Annex I parties amount to an aggregate reduction shared among all such parties of at least 5% from 1990 levels by 2008-12. All Annex I parties have individual emission targets that were decided by negotiation.

Australia has a Kyoto target of 108% of 1990 levels by 2008-12. The table below shows the Kyoto targets for EU member states and emission levels in 2001.

EU Member State	**Kyoto target**	**Emissions in 2001**
Austria	- 13.0 %	+ 4.8 %
Belgium	-7.5 %	+ 0.2 %
Denmark	- 21.0 %	+ 1.8 %
Finland	0.0 %	+ 4.7 %
France	0.0 %	+ 0.4 %
Germany	- 21.0 %	- 18.3 %
Greece	+25.0 %	+ 23.5 %
Ireland	+ 13.0 %	+ 31.1 %
Italy	- 6.5 %	+ 7.1 %
Luxembourg	- 28.0 %	- 44.2 %
Netherlands	- 6.0 %	+ 4.1 %
Portugal	+ 27.0 %	+ 36.4 %
Spain	+ 15.0 %	+ 32.1 %
Sweden	+ 4.0 %	- 3.3 %
United Kingdom	- 12.5 %	- 12.0 %
Total EU-15	**- 8.0 %**	**- 2.3 %**

Source: http://europa.eu.int/

On top of these Kyoto commitments, the UK Government has set a target of reducing CO_2 emissions by 60% by 2050 and Denmark plans to reduce its greenhouse gas emissions by 50% by around 2050.

1.5 Australia's Greenhouse Emission Trends

Australia's greenhouse gas emissions are projected to reach around 110% of 1990 levels on average by 2008-12, or 596 million tones of carbon dioxide equivalent (Mt CO2-e). To reach Australia's Kyoto target of 108% further emission savings of 13 Mt CO2-e will be required.

The following table shows Australia's greenhouse gas emissions by sector. Within the overall emissions expectation of 110% of 1990 levels in 2008-12 there is significant variation by sector. The Energy sector is expected to increases its emissions by 40% over 1990 levels. Excluding land use change and forestry sinks, greenhouse gas emissions are expected to rise by 32% from 420 (in 1990) to 553 Mt CO2-e (in 2008-12).

Sector	1990	2008-12 (average)	
		'With measures' Mt CO_2-e	of % 1990
Energy	299	419	140%
Stationary	209	293	141%
Transport	61	87	142%
Fugitive	29	38	132%
Agriculture	91	99	108%
Waste	15	15	99%
Industrial Processes	14	26	184%
Impact of GHG abatement	0	-5	
Forestry sinks	0	-21	
Land use change	120	64	53%
Total emissions	**540**	**596**	**110%**

Source: Table 1 'Tracking to the Kyoto Target 2003', Australian Government, Sept 2003

Although we will probably meet the Kyoto targets in 2008-12 due to the large land use credits, emissions for 2020 are projected to be 126% of the 1990 level on an indicative basis, reflecting the impact of ongoing growth in the energy sector. As scientists suggest emissions may need to be reduced by 60% by 2050 this is a huge challenge for business and government.

1.6 Reaction to climate change: Opportunities and mitigation strategies

Since the release of the IPCC reports there has been a substantial shift in the degree of interest and commitment of the private sector towards adapting and mitigating against the growth of emissions. In order to minimise the negative impacts of climate change, both businesses and individuals will need to change their behaviour. This movement to a low carbon use economy will present risks and opportunities for businesses and it is the companies that respond early that are most likely to succeed. The financial services community will be directly and indirectly involved in this change. The reasons why this will impact on the financial services community will be discussed in Section 2.

Opportunities for the agricultural industry include carbon sinks through land use practice and forestry, methane and other gas reduction via technology and reduced land clearing. Opportunities within the energy industry include improved end use efficiency, improved power generation and transport. There are opportunities for win-win and multiple benefit situations e.g. Jobs and exports as well as addressing biodiversity, salinity and greenhouse issues - bioenergy plus forestry plus sinks plus salt control.

Mitigation strategies can also save money. There is a need for a portfolio of activities that addresses the required reduction in greenhouse gas emissions. At the same time there is a need for maintaining flexibility for different sectors of the global and national communities and through different timescales. The advantage of such an approach is that individual companies, jurisdictions and countries can hone and evolve their respective portfolios to maximise emission reduction and energy amenity.

2 Climate Change impact on Financial Services

Financial services businesses will be increasingly required to consider the risks and opportunities arising from climate change. The following sections outline some of the key climate change issues facing the financial services sector.

2.1 Measurement and reporting of GHG emissions
2.2 The role of sustainability in investment policy
2.3 Carbon Emissions Trading
2.4 Impact of Government's GHG abatement policies on investments
2.5 Effect of extreme temperatures on diseases on human health

This section of the report aims to give a flavour of some of the issues impacting Financial Services rather than be a comprehensive account of all current issues and reports.

2.1 Measurement and Reporting of GHG emissions

This section provides some examples of voluntary initiatives rather than mandated reporting.

2.1.1 Global Reporting Initiative

The web site for the Global Reporting Initiative (GRI) describes itself as "A multi-stakeholder process and independent institution whose mission is to develop and disseminate globally applicable Sustainability Reporting Guidelines". The guidelines are used voluntarily by organisations for reporting on the economic, environmental and social dimensions of their activities, products, and services.

The GRI aims to support global progress towards sustainable development and its vision is that the guidelines will become the generally accepted, broadly adopted worldwide framework for preparing, communicating and requesting information about corporate performance.

The GRI web site lists the following Australian companies as organisational stakeholders that use GRI guidelines: Australian Ethical Investment, BHP Billiton, Landcare Australia and Westpac.

2.1.2 Reporting – GHG emissions by Australian companies

On 30 July 2003, the Australian Climate Justice Program was launched by Climate Action Network Australia (CANA). CANA notified, in writing, the directors of 145 Australian companies of the financial risks that climate change presents to their companies and of their legal obligations to deal with those risks appropriately.

Mr Peter Cashman, on behalf of CANA said, "What we're seeing is an emerging area of climate litigation. As the impacts of climate change worsen, the number of potential plaintiffs, and the range of legal actions available to those plaintiffs, will undoubtedly increase". The CANA press release said "The notice poses questions about the fulfilment of directors' duties that may be asked of directors who fail to deal with Climate Risk: Is it

'reasonable' not to order an assessment of their company's level of exposure? Are you sufficiently informed to make a sound 'business judgment' on this matter? Is a failure to act on Climate Risk in the 'best interests' of the company?"

The issue of climate change is regularly reported in the Australian newspapers. For example, the Australian Financial Review, '*Eco risks more than hot air'* by Annabel Day, 2 July 2004, reported that many companies are ignoring the dangers of global warming. It said a survey of 60 chief executives, company secretaries and general counsel of ASX 200 companies showed that Australian companies may be "radically underestimating the risk that climate change poses to their business". The survey showed that "73 per cent of respondents recognised climate change as a reality, but more than 60 per cent say ratification of the Kyoto Protocol will not affect their company". The survey showed that two in three respondents did not produce triple-bottom-line reporting and most did not intend to start.

2.1.3 Reporting – the Carbon Disclosure Project

The Carbon Disclosure Project (CDP) was launched in December 2000. The first stage of the project (CDP 1) involved sending a letter and questionnaire to the FT500 largest companies requesting information on the company's strategy on climate change. This letter was signed by 35 institutional investors and the CDP 1 report was published in February 2003.

In response to the CDP 1 report the UK Prime Minister, Mr Tony Blair, said "It has some important messages for all of us. Crucially, it illustrates how the answer to reducing greenhouse gas emissions lies as much with companies and investors as it does with governments, international agencies and the public". He added, "No industry can afford to ignore the issue. And indeed the project demonstrates that many investors have a very comprehensive view of their fiduciary responsibilities to invest prudently, consistent with this Government's strong emphasis on improved corporate and investor governance".

In May 2004, the Carbon Disclosure Project released its second report (CDP 2). The CDP 2 information request was signed by 95 institutional investors with assets of US$10 trillion and was sent to FT500 Global Index companies.

The key findings of the report were:

- The mainstream investment community has woken up to the financial implications of climate change. Analyst and fund managers are starting to see risks and opportunities take shape.
- The social and economic costs of climate change began to emerge. In 2003 weather-related disasters cost US$70 billion and a European heat wave killed 20,000 people.
- Companies are likely to face increased pressure from financial market authorities, fiduciaries, company officers and accounting bodies to deal with climate risk factors.
- Legislation designed to put a price on carbon accelerated in 2003/04 throughout the OECD. The 2004 global carbon market could reach US$480m.
- More FT500 firms now see opportunities in the 'clean tech' sector.

The response rate to the CDP 2 survey of 59% was improved (47% for CDP 1) but the report said “many companies remain firmly behind the curve” and that a “major disconnect still exists between some company’s response status and what is known publicly about their actual climate change stance”.

The report included a ‘Climate Leadership Index’ comprising the 50 “best in class” responses. The index includes four listed Australian companies – BHP Billiton, Rio Tinto, National Australia Bank and Westpac.

The Australian signatories of CDP 2 were VicSuper, AMP Capital Investors, Catholic Superannuation Fund (CSF) and the Public Sector Superannuation Scheme / Commonwealth Superannuation Scheme (PSS/CSS). In Investor Weekly, 7-13 June 2004, VicSuper chief executive Bob Welsh is quoted as saying his fund’s involvement would prepare it for the massive investment ramifications of a “carbon-constrained” world. He said, “Carbon trading is going to happen, and we want to know how our investee companies are dealing with it”.

2.2 The role of sustainability in investment policy

There are two impacts on investment policy and strategy – both the direct impact on returns (as a result of changing legislative environment and business opportunities) as well as investor appetite for socially responsible investments.

2.2.1 ASIC guidelines

In December 2003, the Australian Securities & Investments Commission (ASIC) released ‘Section 1013DA disclosure guidelines’ with regard to product issuers for disclosure about labour standards or environmental, social and ethical considerations in Product Disclosure Statements (PDS). The ASIC guidelines apply to all investment products issued to retail clients where any of the following are taken into account by the product issuer when selecting, retaining or realising an investments: (a) labour standards; (b) environmental considerations; (c) social considerations; and/or (d) ethical considerations.

Where labour standards or environmental, social or ethical considerations are not taken into account, the Corporations Regulations state that the PDS must explicitly state this. The ASIC guidelines apply to all PDSs dated after 11 March 2004 and to any PDS given to a person on or after 11 March 2005.

While it is not clear what impact this disclosure will have on how individuals choose investment products, it does show that the regulator considers individuals should be aware of how labour, environmental, social and ethical considerations are applied to their investments.

2.2.2 Reports for Commonwealth Department of Environment and Heritage

In May 2003, Ernst & Young prepared a report ‘The Materiality of Environmental Risk to Australia’s Finance Sector’ for the Commonwealth Department of Environment and Heritage. The report said there was an increased social awareness of environmental issues within the finance community and that recent calls for enhanced corporate governance and shareholder activism had succeeded in raising the profile of environmental issues in investment decision-making.

The report said that in Australia this had resulted in:

- Retail, investment banks and venture capitalists developing environmental risk management policies for lending, equity and investment operations.
- Fund managers and superannuation trustees developing environmental risk registers, screening mechanisms and product disclosure statements for the emerging socially responsible investment (SRI) market.
- Insurance brokers and underwriters offering hybrid risk financing solutions for hedging environmental risks in mergers and acquisitions, and project financing.
- The emergence of triple bottom line reporting in response to calls for more transparent engagement and transfer of investor-related information.

With regard to Investment Banking the report said, “a few institutional banks have recently begun to look at how environmental risks such as greenhouse gas emissions might impact (positively or negatively) on debt servicing ratios. Undertaking such analysis requires an in-depth understanding of how environmental risks like greenhouse emissions might result in a financial exposure (e.g. Impact on future revenue streams). Those consulted concede that such analyses require significant further development which also points to a possible disconnect between the sector’s growing awareness of environmental issues such as greenhouse, and a lag in terms of how the sector understands it should respond or accurately factor in these issues to investment decision-making”.

With regard to Insurance the report said as the sector is particularly sensitive to a broad range of environmental issues (e.g. contamination, pollution and climate change) the “resulting awareness and understanding of environmental issues and the quality of information utilized within this segment of the financial sector is of a high standard”. The report added, “The insurance sector also observes that determining material environmental risks, despite the relatively high levels of understanding in this sector, is still often difficult even with actuarial support”.

With regard to Funds Management the report said that superannuation trustees were becoming more sensitive to the potential importance of environmental risks and that they “will probably push for, and even possibly mandate, greater disclosure requirements on environmental issues from their respective fund managers”.

The report also highlighted the subjectivity of some information sources relied upon by the sector as a potential concern and that this may be fostering the emergence of a disconnect between the sector’s overall awareness of environmental issues and its ability to identify, measure and manage these issues in investment scenarios.

Also in 2003, the Commonwealth Department of Environment and Heritage released ‘The Mays Report, Corporate Sustainability – an Investors Perspective’. Drawing upon the case studies and discussion with the steering committee the following conclusions were made:

- Sustainability behaviours add value to commercial endeavour, and as a result companies should be including sustainability into strategic decision-making and risk management processes.
- Sustainability offers value to investment analysis, fund managers, superannuation trustees and insurance funds. The long-term nature of sustainability means it has a role to play as a lead indicator of future investment performance.

- A number of companies undertook sustainability initiatives despite the absence of a sustainability policy that proved to be good business practice.
- Sustainability initiatives are particularly useful in the management of intangible assets such as brand and reputation.
- Sustainability needs improved definition to increase its rate of adoption. Companies are not providing investment analysts with sufficient insight into their sustainability policies and practices. Equally, investors are still not asking the right questions.
- A shift towards a common framework for sustainability dialogue offers a company and investor win-win.
- Sustainability principles can be applied at either a corporate, strategic, project or operational level.
- Superannuation funds and other investors do not have a formal process for assessing their investments other than on an after-the-event investment performance basis. The practical understanding of fiduciary duty should be refined to accommodate a more thorough understanding of long-term risk, including sustainability considerations. Superannuation fund trustees will then match their fund investment horizon more closely to the working life of their members.

2.2.3 SRI Funds

The size of the Australian socially responsible investment (SRI) industry is reported to be in the range of A$2b to A$21b depending on the definition used. The low-end represents SRI 'branded' managed funds and the top-end includes organisations such as charities and church groups.

The UK has actively embraced SRI concepts for some years. In July 2000, the Pensions Act was amended to require occupational pension trustees to disclose to fund members the extent to which social, environmental and ethical considerations are reflected in the buying, selling and holding of investments.

The Association of British Insurers (ABI) in their report 'A Changing Climate for Insurance', June 2004, said, "Climate change issues, long seen as a specialist interest, are impacting more widely through the changing political and regulatory environment. This will have implications for investment strategies which fiduciaries, fund managers, and advisers will need to understand so as to manage the risks and opportunities in, their portfolios".

AMP Capital Investors SRI team issued a 'Climate Change Position Paper' in 2002. It said they would seek out and encourage companies that:

- Establish a greenhouse gas emissions inventory
- Assess corporate exposure to climate change
- Project future exposure and develop scenarios
- Carry out competitor analysis to benchmark with other companies
- Agree a climate strategy including clear targets for greenhouse gas emission reductions
- Develop internal capacity (climate literacy)
- Work with suppliers and customers
- Engage creatively with stakeholders
- Act as an advocate for action on climate change
- Review and report publicly on climate change policies and performance

The ABI reports says that “In the past it has been assumed that there is a degree of trade-off between profitability and SRI status, although some commentators now question this, as some funds have performed ahead of the general stock indices. In addition it is suggested that companies with well developed Corporate Social Responsibility (CSR) policies and climate change risk strategies often perform well and the presence of such policies may be taken as an indicator of future equity value”.

2.2.4 ‘Mainstream’ Funds

The ABI report ‘A Changing Climate for Insurance’ suggests two factors influence the ability of investment funds to anticipate climate change effects: i) the lack of clear information and impeded information flows; and ii) the short time horizons on which fund managers work. The report says “Given the uncertainties currently affecting climate change predictions, the main driver, assuming gradual climate change will be investor requirements coupled with Government regulations on emissions. If investor requirements remain short-term returns, fund managers will have no option other than to provide these. However, if investors increasingly require climate change to be incorporated into funds’ risk management strategies, that will drive a shift in stance”.

In June 2004, the United Nations Environment Programme (UNEP) released a paper ‘The Materiality of Social, Environmental and Corporate Governance Issues to Equity Pricing’. The conclusion of the report was that environmental, social and corporate governance issues do affect long-term shareholder value. The report includes ‘ten point indicators’ that the working group will encourage the adoption of by investors, asset managers and capital markets.

It is clear that the impact of climate change is not just an issue for SRI funds but also for ‘mainstream’ fund managers as it affects the companies that they have funds invested in. For example, in Europe, emissions trading is starting to have an effect on returns.

A number of global insurance / reinsurance companies have adopted climate change into their investment policy. For example, Swiss Re says it adopts an investment policy that incorporates ecological criteria in its pursuit of medium to long-term profit objectives.

2.3 Carbon Emissions Trading

Carbon emissions trading is a market mechanism designed to help countries and companies meet their emission reduction targets. Companies that can cut their emissions back to lower than required levels earn a credit. They can then sell the credit to another company that has been unable or where it is more costly to reduce its emissions. The price of the credits is set in an open market.

The EU commences its carbon emissions trading scheme in January 2005. The aim of the Emissions Trading Scheme (ETS) is to help achieve compliance with commitments by existing and future EU member states under the Kyoto Protocol.

According to the EU web site the scheme covers about a third of total greenhouse gas emissions and has been decided upon in order to allow for cheaper compliance with existing targets. Letting participating companies buy or sell emission allowances means that the overall target (the total cap) can be achieved at least cost. If the Emissions

Trading Scheme had not been adopted, other – more costly – measures would have had to be implemented.

Since the scheme is EU-wide, companies will seek out the cheapest reductions in the whole of the EU and ensure that they are made first. Emissions trading is seen as the most cost-effective manner of achieving a given environmental target. From 2005 to 2007, penalties of 40 euros per tonne of CO_2-e are to be imposed. From 2008 the penalty amount will increase to 100 euros per tonne of CO_2-e.

The legal framework of the EU trading scheme does not regulate how and where the market in allowances takes place. Companies with commitments may trade allowances directly with each other, or they may buy or sell via a broker, bank or other allowance market intermediary.

In January 2004, the Australian Government halted work that the Australian Greenhouse Office was doing on an international carbon emissions trading scheme given the uncertainty about Kyoto and said that it wanted industry to be proactive and cut emissions, and not accept defeat and then look for ways to make up for it. In reaction to this, the State Governments have come together to look at establishing a national emissions trading scheme.

Financial Services companies are likely to be involved in developing and running emissions trading markets. The impact of emission trading schemes on companies is likely to create investment opportunities in terms of emissions abatement and capital allocation to renewal sources of energy.

2.4 Impact of government GHG abatement policies on investments

2.4.1 Australian abatement schemes

In Australia, the main scheme aimed at encouraging renewable energy is the Mandatory Renewable Energy Target (MRET) and it commenced in 2001. The Renewable Energy (Electricity) Act 2000 requires the generation of 9,500 gigawatt hours of extra renewable electricity per year by 2010. The effect of the legislation is to place a legal liability on wholesale purchasers of electricity to proportionately contribute towards the generation of the additional renewable energy.

By 2007, sufficient capacity is expected to have been installed to meet the MRET target of 9500 GWh for 2010. As a consequence, investment is expected to fall away rapidly. As part of the Government's 'Securing Australia's Energy Future' White Paper released on 15 June 2004, it decided to continue but not to extend or increase the MRET target as it claimed it would pose significant economic costs through higher electricity prices with the projected costs of extending the scheme unable to be justified.

The White Paper says "The size of greenhouse reductions that may be needed over the long term demands that a strategy be introduced to prepare the economy to respond to future emission constraints". The report adds "Any significant reduction in Australia's long-term greenhouse signature must involve changing the way we produce and use energy".

In March 2004, the Clean Energy Future Group released a study 'A Clean Energy Future for Australia'. The report confirmed that it was possible to achieve a 50% reduction in current CO_2 emissions from stationary energy by 2040.

The study assumes that the world of 2040 will be subject to significant constraints on CO_2 emissions and that these carbon costs will be included in all prices, increasing the price of all fossil fuels. It says "Coal will be the most severely affected fossil fuel and natural gas the least affected".

The study sets out a range of scenarios, including a 'Clean Energy' scenario in which stationary energy CO_2 emissions are reduced to 130.9 Mt in 2040 compared to 261.7 Mt in 2001, a 50% reduction and about 35% below stationary energy emissions in 1990. It includes the adoption of zero and low emission energy supply technologies, in particular the replacement of coal combustion for electricity generation with other more renewable generation technologies.

The Australian Climate Group released a paper 'Climate Change, Solutions for Australia' in June 2004. The group was convened in late 2003 by WWF Australia and the Insurance Australia Group in response to the increasing need for action on climate change in Australia. The paper calls on all Australians to act on climate change to help reduce GHG emissions by 60% by 2050, with an emissions trading scheme to be set up as "a powerful tool to meet reduction targets".

Depending on the type of the greenhouse gas abatement schemes that Australia chooses to use to reduce greenhouse gases, fund managers, as custodians of consumer's funds, will need to factor these impending changes into their industry and stock analysis.

2.4.2 Impact of increased electricity cost on various industries

The impact of GHG abatement measures on varies industries will depend upon how the measures are applied. The following table shows an example of the impact of an increase in energy costs on a range of electricity intensive industries:

Industry	Energy costs as a proportion (%) of production costs	Earnings before interest and taxes (EBIT) margin	Effect on EBIT margin of a 10% increase in energy prices
Aluminium smelting	20	14	-14
Paper manufacturing	20	9	-22
Chlor/Alkali production	20	15	-13
Brick manufacturing	18	10	-18
Steel production	11	14	-8
Nickel production	10	17	-6
Copper/Uranium prodn	10	8	-13
Gold production	8	7	-11
Cement production	7	8	-9

Source: Business Council of Australia (2000)

The actual impact on companies from the mechanisms used to reduce carbon emissions will depend upon such issues such as how emission credits are granted, how well companies utilise new technology to reduce emissions, and to what degree companies can pass through higher input costs into product prices.

2.5 The effect of extreme temperatures on diseases on human health

Bad human health directly affects life and disability insurance. As such, the life insurance industry will need to closely monitor the risk of climate change on human health, particularly in those segments of the population that are at greatest risk.

In late 2003, the Australian Greenhouse Office released a report 'Climate Change: An Australian Guide to the Science and Potential Impacts'. It includes a section on human health. The report says that impacts of climate change on human health can be both direct and indirect. Direct effects are those readily attributed to climate include heat stress and the consequences of natural disasters. Indirect effects include disrupted agriculture, reduced food security in developing countries, and increase incidence of vector or food borne diseases in developed countries.

The report describes the general conclusions regarding the impact of climate change on heath in Australia as:

- Many vector, food and water borne infectious diseases are known to be sensitive to changes in climatic conditions
- Projected climate change will be accompanied by an increase in heat waves, often exacerbated by increased humidity and urban air pollution, which would increase heat-related deaths and illness
- Reduced winter deaths would occur in some regions where such deaths are common
- There is likely to be an increase in the range of potential transmission of malaria and dengue fever and in the incidence and seasonality of these and other diseases within their range
- Any increase in flooding will increase the risk of drowning, diarrhoeal and respiratory diseases
- For each anticipated health impact there is a range of social, institution, technological and behavioural adaptation options to lessen that impact
- Overall the adverse health impacts of climate change will be greatest in vulnerable lower income populations, especially the elderly, sick and those without access to good housing and adequate fresh water supply

3 Summary

This paper documents only some of the many initiatives and changes that are already happening in the financial services in response to climate change. We realise this paper contains a lot of information but hope that it conveys the enormity of the revolution that is awaiting us.

In summary, climate change is happening and will continue through this century. Stabilisation of carbon dioxide concentrations in the global atmosphere will require major reductions of emissions in the future therefore the sooner the global community addresses the challenges of reducing emissions the better. Climate change will occur despite these mitigative actions and thus we will need to be prepared for adaptation. The prognosis for Australia is for warmer and mostly drier conditions. The pervasive effects of weather and climate is that it impacts on all sectors – agriculture, natural resource management, water resources, health, commerce, manufacturing etc.

This change presents a challenge for the insurance, investment and financial services industry. We are on the precipice of some major changes to the business world for this century. We hope that in presenting this information to you that we may be able to open up some strategic thinking about future opportunities.

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