Carbon value

Robust carbon management – a framework to protect and enhance shareholder value in response to climate change
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“Climate change represents the greatest challenge facing the global business community at the beginning of the 21st century.”

World Economic Forum, Davos, Switzerland (2000)
Introduction

Climate change is becoming potentially the greatest source of business risk in history. Australian companies must urgently understand this risk, which breaks down into two basic categories: first- and second-order.

First-order risks are the result of actual changes in weather regimes, leading to for example the increased likelihood of extreme events such as hurricanes and cyclones, which can significantly disrupt normal business activity. Second-order risks are potentially even more hazardous, and relate to changes in the behaviour of a company’s stakeholders in response both to the threat and experience of climate change.

These two risks create the further issue of financial reporting and fiduciary responsibility. As companies’ vulnerability to climate change becomes clearer, pressure is mounting for them to disclose their exposure to these risks and to report on their management strategies. Governments, investors, customers, employees and suppliers are among those demanding greater transparency.

The result is that climate change already represents a material risk to many companies – and not just major emitters of carbon dioxide and other greenhouse gases. In turn, businesses that do not respond robustly to these demands may be putting shareholder value at risk, and could see the market place a discount on their share price.

Yet climate change also presents significant opportunities. The growing demand for products and services that mitigate or offset the negative effects of climate change could translate into the biggest new market in history.

As we move rapidly towards a carbon-constrained global economy, featuring a proliferation of carbon trading schemes and similar mechanisms, there is only one way to protect and enhance shareholder value. That is to design and implement a robust and effective carbon management strategy.

At PricewaterhouseCoopers we refer to this as ‘carbon value’: the shareholder value that companies create or destroy as they respond to climate change. Understanding, managing and maximising this value is fast becoming a key requirement for businesses in Australia and around the world.

Mark Goddard
Australian Climate Change Services Leader
PricewaterhouseCoopers

Robust carbon management

Robust carbon management addresses the foreseeable impacts of climate change on a company’s business environment and helps organisations manage the transition to a fully carbon conscious business over the long-term. Robust carbon management requires an organisation to embrace the following key activities:

1. Measure and monitor carbon emissions and abatement successes
2. Have carbon emissions and abatement activities audited and independently verified
3. Forecast emissions and set reduction targets
4. Report carbon data internally and externally and put in place a clear carbon communication strategy
5. Assign costs to abatement opportunities to ascertain the true cost of carbon to the organisation
6. Price carbon into investment decisions to quantify carbon exposure and minimise the potential for liability shocks
7. Empower executives to oversee carbon management, drive abatement and pursue carbon management opportunities
8. Track competitor responses and their impact on the business landscape
9. Identify and leverage new carbon opportunities
10. Review progress against targets and amend climate change strategy as necessary.
“Worse than we thought”

The Guardian, 3 February 2007
For many, 2007 will be remembered as the year that the debate around the science of climate change ended, and attention turned to developing an appropriate business response. While the precise scale and consequences are still uncertain, there is little doubt remaining that the issue poses a significant threat to global development and living standards.

The progress that has been made in the scientific understanding of climate change is documented in the fourth assessment report of the Intergovernmental Panel on Climate Change (IPCC), which was completed this year. The summary findings of the IPCC’s Working Group I (WG I Summary) concludes with 90% certainty that climate change is due to the releasing of greenhouse gases (GHGs) into the atmosphere by human activity. This conclusion is the culmination of over 19 years of work by the IPCC, which was established in 1988 to provide definitive advice on the state of scientific understanding of climate change to national governments.

The science identifies six primary greenhouse gases: carbon dioxide ($CO_2$), methane ($CH_4$), nitrous oxide ($N_2O$), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs) and sulphur hexafluoride ($SF_6$). By increasing the amount of these gases in the atmosphere, human activity is increasing the amount of heat from the sun that is retained by the earth. Each of the six primary greenhouse gases contributes to this warming to a different extent, and for the purpose of measurement each gas is related back to the equivalent tonnes of carbon dioxide (for example, one tonne of methane is referred to as 21 tonnes of carbon dioxide equivalent).

The WG I Summary confirms that since 1850, global average temperatures have increased by approximately 0.76°C and predicts that the rate of warming will accelerate into the future. By 2100, average temperatures are expected to increase by a further $+0.3–6.4°C$, depending on future global greenhouse gas emission levels.

The consequences of these predicted temperature changes are outlined in the IPCC’s Working Group II summary findings Impacts, Adaptation and Vulnerability. Broadly speaking, the predicted temperature increases are expected to have a range of negative impacts on food production, water supplies, human health, physical infrastructure and ecosystems. As is illustrated in the chart on the next page, these impacts tend to worsen as temperature increases.

Accordingly, to avoid the worst of the predicted impacts, it will be necessary to significantly reduce greenhouse gas emissions. Many political and scientific leaders advocate a global objective of stabilising greenhouse gas
concentrations at between 450 and 550 parts per million (ppm) of CO₂ equivalent (CO₂e). In 2005, concentrations sat at 379 ppm, which is significantly above the natural range over the past 650,000 years of 180 – 300 ppm.

Achieving stabilisation within this range is generally accepted to require a global reduction in annual emissions to 60% of 1990 levels. This will be a daunting task, especially given the current emissions trajectory – the WG I Summary predicts that at current rates, there will be a doubling of annual emissions from seven billion tCO₂e to 14 billion tCO₂e by 2050. In essence, what needs to be achieved is an aggregate global reduction of approximately 600 billion tCO₂e over the next four decades.

That challenge, the response of governments to it and the threat of a climate system significantly modified by human activity have combined to create potentially the greatest source of business risk in history. The challenge is especially acute for companies as the business community is widely expected to lead efforts to reduce international carbon emissions. If Australian companies are to meet that challenge, they require a comprehensive understanding of the sources and potential impact of climate change related risks and opportunities on their business.
“As carbon costs and physical impacts of climate change rise, we expect companies and investors increasingly to understand that climate change has a tangible effect on profitability.”

Elaine Prior, Citigroup Australia, Feb 2007
The global investment community, and numerous other key stakeholders in businesses worldwide, are increasingly concerned about the risk that climate change presents to business. This risk can be broken down into two categories: first-order impacts and second-order impacts.

The market has already begun quantifying first-order risks

First-order impacts flow from the direct impact on companies of changes in the climate system due to carbon emissions caused by human activity. They include the consequences of changes in weather patterns – for instance, more frequent and harsher storms; sea-level rises; reduced water availability and other hydrological effects; temperature changes; and corresponding health effects such as more heat-related illnesses, which could affect a company’s workforce.

An example of a first-order impact on a business is where iron-ore producers in the Pilbara region of Western Australia were forced to drastically reduce their operations in 2006 after experiencing several large cyclones. Similarly, offshore oil producers in the Gulf of Mexico were badly affected by hurricane Katrina in 2005.

Direct climate change impacts are not restricted to single-event extreme weather phenomena such as hurricanes, cyclones and tornados. They include less dramatic, but equally significant, changes in the weather regime. Ski resort operators in Australia, for instance, have experienced significant commercial losses in recent years due to changes in annual snowfall levels.

The prolonged drought, meanwhile, has hampered agricultural production, as well as the level of hydro and coal fired generation available in the south-eastern states of Australia, resulting in a significant increase in the national electricity market’s wholesale electricity prices. These rises are having a significant impact on those energy intensive businesses with exposure to the wholesale price, and threatening the profits of retailers who are unable to pass higher wholesale electricity costs onto their customers.

The growing frequency of first-order impacts is also leading market participants to reconsider how they evaluate the performance of companies most exposed to them. For instance, it is not difficult to imagine that unless weather conditions improve soon, credit agencies might alter the outlook for hydro-electric generating companies whose earnings have been hit by the prolonged drought.

The resulting low water levels behind their dams have already forced many of these firms to start delivering electricity to clients through more costly gas-fired power plants.

The rising surface temperature of the planet is another source of first-order risk. The geographic range of many disease vectors is expanding as a result, with mosquitoes carrying malaria and dengue fever, for instance, already migrating closer to large human population centres. As human activity adds to GHGs in the atmosphere over time, the energy in the climate system is set to expand even more, creating possibly whole new classes of business impacts.

The market has already begun to identify and quantify first-order material risks for companies across a wide range of industries.

Second-order risks may pose an even greater challenge

It is generally assumed that first-order risks represent the biggest threat to businesses, but second-order risks create substantially more challenges in terms both of their scale and the range of industries affected.

Second-order carbon risks flow from changes to a company’s business landscape resulting from key
stakeholders employing strategies to manage their own carbon risks and expectations. Regulators, customers and employees have already begun deploying strategies to manage carbon risk in ways that will affect a wide range of businesses.

Climate change regulation is being rolled out in a growing number of jurisdictions worldwide. Carbon trading schemes were first introduced in the United Kingdom and New South Wales, Australia, in 2002. Since then, similar schemes have appeared in or been proposed for the European Union (EU), Japan, New Zealand and a number of US states, including California.

The most extensive of these is the EU Emissions Trading Scheme (EU ETS), which has significantly modified the business landscape across much of Europe. By putting a cost on carbon emissions – the so-called carbon price – the EU aims to hedge against future economic damage from climate change. The EU scheme currently covers more than 50% of the region’s total carbon emissions and creates binding carbon emissions targets for companies in six sectors – power generation, steel, cement, paper and pulp, building materials and glass. In 2006, the scheme saw trade in over one billion allowances (representing a three-fold increase over 2005) for a financial value of €18.7 billion (A$30.0 billion).

Customers are also evolving strategies to manage their carbon risks. For example, many companies are already asking key suppliers to provide information on carbon emissions related to the production and delivery of their products and services. Wal-Mart spent more than a year contacting its 67,000 suppliers requesting not only carbon emissions data from them but also details of their efforts to reduce and offset their emissions. PG&E, a Californian power supplier, has begun offering carbon-offset electricity in response to customer demand. British Airways and Virgin Blue similarly now offer carbon-offset air travel to their customers.

Climate change is also having a profound impact on the job market. In many countries, including Australia, where there is fierce competition for human intellectual capital, generation X and Y graduates from top university programs are increasingly asking potential employers to communicate their climate change policies, making it clear that this is likely to influence their choice of employer. The trend is leading a growing number of human resource departments to conclude that a proactive carbon management strategy is vital to acquiring and retaining the best people.

Inevitable surprises: force majeure loses its utility?

It is common commercial practice for parties entering into major agreements to include a force majeure clause that protects them from liability where unforeseen events occur.

Essentially, such clauses provide that where a party is prevented from meeting its obligations under the agreement by an extraordinary event or circumstance beyond their expectation or control no liability will arise. It makes no difference whether the circumstance or event occurred with or without human intervention, but for a force majeure claim to have validity the following two conditions need to be met:

- The event could not reasonably have been foreseen by either party
- The event and its consequences were completely beyond the control of the party making the claim.

Climate change challenges the ability of businesses to meet these conditions in case of an extreme weather event in two ways. First, by expanding the range of events that can be reasonably foreseen – the science tells us that going forward extreme weather events are likely to be more frequent and intense. Second, by altering what will be considered to be within the control of the parties – now that we know how the weather is changing, Courts will expect businesses to have systems and processes that can manage a wider range of conditions.

This is a significant issue for businesses dependant on infrastructure that is not climate change ready. As time goes by they will face increasing levels of disruption from extreme weather, and a decreasing ability to avoid liability for the resultant losses.
Climate change impacts on physical infrastructure

As the accompanying chart shows, there has been a dramatic increase in the frequency and severity of weather-related catastrophes impacting on physical infrastructure worldwide since 1970. If the situation worsens, the impact on businesses could be profound. The chart also reveals a corresponding increase in the rate of insured losses due to such events, which are now widely believed to be linked to climate change.

However, the insured losses recorded here account only for a portion of total losses to physical infrastructure. Other losses include increased wear and tear as a result of the climate becoming progressively harsher. First-order impacts have the potential to create even more disruption if there is:

- An increase in extreme daily rainfall, which could affect the capacity and maintenance of storm water, drainage and sewer infrastructure
- Substantially more severe wind and lightning, which could damage transmission lines and structures
- Heightened storm activity, which could result in flood damage to roads, rail networks, bridges, ports, airports, tunnels and coastal infrastructure (due to storm surges).

Although there is scope for pre-empting such catastrophes with measures such as stronger flood defences and larger water reservoirs, those structures are not immune from climate change impacts themselves.

The 2007 Infrastructure and Climate Change Risk Assessment published by the Australian State of Victoria identified a number of possible adaptive responses to this threat that are worthy of national consideration. They include:

- Changing infrastructure materials to ones with longer life expectancy and which are easier to maintain
- Changing the design of infrastructure to cope better with the immediate impact and degradation effects of extreme weather events
- Changing maintenance regimes to more appropriate timeframes and undertaking more preventative action
- Encouraging the development of new technology to help infrastructure better withstand weather impacts.

![Diagram 3: Number of weather-related catastrophes and insured losses (2004 prices)](image-url)
“As one of the largest companies in the world, with an expanding global presence, environmental problems are our problems.”

H. Lee Scott, CEO, Wal-Mart
A business landscape modifier

Climate change is a large-scale business landscape modifier

Few changes in the marketplace are capable of modifying the entire business landscape of companies across all sectors of the economy. A recent example is the introduction of the personal computer and subsequent rapid evolution of the internet. Going further back, the arrival of the steam engine, the telephone, and mass-produced automobiles were similarly disruptive. Climate change joins this rarified group of large-scale business landscape modifiers.

A company’s business landscape includes its supply chain, its own operations and the demands of its customers. It also includes its competitors, and the full range of key internal and external stakeholders – shareholders, employees, regulators, community organisations and the media.

Risk categories intersect with components of the business landscape

As noted, climate change generates a range of first- and second-order risks. A comprehensive study of those risks demonstrates that they have the capacity to modify every component of a company’s business landscape.

The intersection of the two risk categories with the various business landscape components creates a range of different risk profiles. Some companies, for instance, face relatively few first-order risks to their operations, while second-order impacts on their supply chain or customers could be dramatic. Consider, for example, how BP recently won a large fuel supply contract with Visy, an Australian packaging and recycling firm, at least in part because of its unique ability in the Australian market to

Diagram 4: First- and second-order risks in the business landscape
bundle carbon-offsets with the petrol supplied (see press release extract below.

Other companies face a completely different assortment of first- and second-order risks. Large consumers of water in Australia for activities such as power generation, mining and agriculture, for example, have faced mainly first-order impacts on their respective supply chains as a result of the prolonged drought. Meanwhile, insurance companies have restructured their premiums to take account of likely significant increases in large-scale insured loss events due to climate change. The previous two examples represent cases where first-order impacts are the most pronounced.

Visy and BP Australia announced today that Visy will offset the greenhouse gas emissions from its entire vehicle fleet, equivalent to a reduction of approximately 19,000 tonnes of greenhouse gases each year.

Visy CEO, Harry Debney, said the company had switched its fuel account to BP as a direct result of the BP Global Choice program.

“Visy spends in excess of $5 million a year on fuels for our car and truck fleet and we are aware of the impact their emissions have on the environment. We have already converted more than 150 of our 800 strong car fleet to LPG and we are looking at alternative fuels such as biodiesel. But we wanted to do more and BP Global Choice was the obvious answer,” Mr Debney said. “By switching our fuel account to BP we are not only helping to reduce our environmental impact, we are helping to reward a company which is acting in an environmentally responsible manner. Hopefully this sends a message to other businesses that there are many ways to have a positive environmental impact and a positive financial impact at the same time,” Mr Debney said.
“Last year, we said that ‘green can be green’ – that we would make money helping customers meet their environmental challenges. A year later, we know that green is green, and that it will make a difference on the bottom line for GE investors as customers’ interest is accelerating.”

Jeff Immelt, CEO, GE, announcing Ecomagination revenues crossing US$10 billion
As previously noted, avoiding the worst effects of climate change will be a monumental challenge. It will require the stabilisation of GHG concentrations at between 450 and 550 ppm CO$_2$e. This target can only be achieved if global GHG emissions can be reduced to 60% of 1990 levels by 2050. Put another way, what is required is a reduction of around 600 billion tCO$_2$e from business-as-usual projections over the next 40 years.

The flip side of this challenge, however, is the creation of a potentially enormous new global market for low-carbon products and services. Assuming a low average abatement cost of US$25 per tCO$_2$e, this equates to a capital markets activation challenge of US$15 trillion. This sobering calculation has inspired John Doerr, the renowned Silicon Valley venture capitalist, to remark recently that climate change represents the greatest investment opportunity in history. Many institutional investors, investment banks, private equity firms and hedge funds appear to share this optimistic view.

The recent activities of leading financial and industrial companies support the view that one company’s carbon risk is another’s opportunity. The emerging carbon-constrained global economy is creating a host of business opportunities in terms of carbon trading, carbon finance, carbon products and carbon services.

The global carbon trading market could be worth US$1 trillion by 2012

Around the world, there has been frantic activity to establish carbon trading platforms in order to cash in on this remarkable new commercial opportunity. The march was led by the UK, which set up the world’s first nationwide carbon trading scheme in 2002.

One of the British Government’s key motives for pioneering this market-based regulatory approach was to position London as the leading global centre for carbon trading and finance. The plan has worked astonishingly well – in 2006, London dominated the global market for trading in regulated carbon instruments, capturing 68% of a market thought currently to be worth about US$40 billion. According to some estimates, the global market for carbon trading could exceed US$1 trillion within five years.

All leading Eurozone banks now operate carbon trading desks, with carbon instruments increasingly traded like any other standardised commodity. Electronic trading platforms such as the European Climate Exchange (www.europeanclimateexchange.com) have sprung up, offering spot and forward trades.

In the Asia Pacific region, meanwhile, several governments and business consortiums have moved to position their key financial centres as carbon trading hubs. Singapore has passed legislation enabling tax-free carbon trading, while New Zealand has ambitions to set up a carbon trading platform in the world’s first time zone. The Auckland-based TZ1 (or Time Zone 1) aims to capture a big share of the Asia Pacific market for carbon instruments.

A group of leading financial institutions is also preparing to launch a carbon trading platform in Hong Kong, and the Tokyo Stock Exchange has unveiled plans to open up its own trading facility. Similar platforms are emerging in Australia, with 2007 seeing the Australian Stock Exchange announce its intention to establish a futures market for emission rights in June, the launch of the Australian Climate Exchange in July, and FEX Climate expected to commence trading in carbon from September.
Breaking it down into chunks: the Princeton Wedges Analysis

The sheer size of the emission reductions required makes stabilisation a daunting task. One conceptual tool that many find to be a helpful way to think about the problem is the Princeton Wedges Analysis. This Analysis was developed in 2005 by the Princeton Environment Initiative, working in partnership with BP and Ford.

As is illustrated below, the Analysis takes an annual stabilisation target of seven billion tonnes of carbon (the analysis uses metric tonnes of carbon, not tCO\(_2\)e as its unit of measurement) and plots this alongside a business-as-usual emission projection of 14 billion tonnes of carbon. The hypothetical triangle that is then formed between the stabilisation scenario and the business-as-usual approach is then divided into seven equal areas, or ‘wedges’. Each wedge represents an activity that reduces emissions in the atmosphere which will equate to one billion tonnes of carbon per year at 2054. At US$25/tCO\(_2\)e, each wedge then represents a market opportunity with the potential to grow to more than US $2 trillion by 2050.

One of the findings of the Princeton Analysis is that there are a large number of existing technologies that have the potential to deliver a wedge. A prime example is the broad scale deployment of the most efficient lighting and appliances in domestic and commercial buildings, which combined with improved insulation has the potential to generate two wedges. This sets the stage for business to make a significant contribution to the emission reduction challenge, when the right price signal emerges.

Diagram 6: Princeton Wedges Analysis

More than US$200 billion in carbon funds have already been established

Carbon financing, already a bigger market than carbon trading, is expected to account for the largest share of the entire global carbon market. Its focus is on providing finance to fund everything from carbon abatement projects to the development and deployment of low-carbon-energy technologies. A lot of these investments are expected to be channeled towards developing wind and solar power, as well as other renewable-energy technologies.

Governments, hedge funds and investment banks have established carbon funds with cumulatively more than US$200 billion under management. Meanwhile, Citigroup, Morgan Stanley and Bank of America have launched funds specifically to exploit growing demand for low-carbon technologies, products and services. The World Bank, Asian Development Bank and European Bank for Reconstruction and Development also manage their own carbon funds. The Austrian, Danish, Dutch and Italian governments too, have created national carbon funds, while major European banks have joined forces to launch the European Carbon Fund (ECF) (www.europeancarbonfund.com). There are many others based in Europe and elsewhere.

The appeal of the carbon finance market, however, is not limited to funds management, and also includes mergers and acquisitions, as well as project financing.
Companies are introducing carbon offsetting products

A growing range of companies has begun offering low-carbon products to their customers. This is mainly based on carbon offsetting, where existing products are sold with sufficient carbon credits to offset or neutralise emissions generated during the manufacture or use of the product. One of the best-known carbon offset products in the market is BP’s Global Choice petrol, which the company initially sold to fleet petrol customers in Australia; the product is now also being sold in the UK under the Target Neutral brand (www.targetneutral.com).

The manufacturer Dell recently launched a new consumer offering allowing online buyers of its computers to offset the associated carbon emissions through its Plant a Tree for Me campaign. It is likely that companies selling carbon-intensive products to consumers will increasingly offer carbon offsetting as a way of allowing their customers to manage the product’s carbon emissions.

Avis has been offering carbon-offset car rental in Europe for about three years and British Airways is in its third year of providing carbon-offset airline travel. Virgin Blue was the first Australian airline to introduce carbon-offset travel in 2007, and Qantas has announced it will do the same shortly. In the energy sector, Origin (formerly Origin Energy) has launched a carbon-offset business-to-business and business-to-consumer service.

Carbon services will also proliferate

The carbon services market is the companion market to carbon products. This market includes not only traditional service providers (for instance, in the legal, accounting and insurance fields), but also many new carbon offset service offerings.

In Australia and elsewhere, there are now numerous online sellers of carbon offsets directly to consumers, including Climate Friendly (www.climatefriendly.com), TerraPass (www.terrapass.com) and The CarbonNeutral Company (www.carbonneutral.com). Alongside this, more companies are striving to become ‘carbon neutral’. HSBC was the first large business to announce that it was planning to measure, reduce and offset its global carbon footprint, and has been followed by a growing list of companies worldwide, including News Corporation, Nike and IBM.

In Australia, ANZ, City West Water, NAB and PricewaterhouseCoopers, among others, have all recently announced plans to become carbon neutral. For many of these companies, the move is more about gaining experience of managing operations in a carbon-constrained environment and attracting and retaining the best talent, than about the prospect of having their carbon emissions regulated.

Finally, there are a growing number of businesses offering carbon-neutralising services to other companies, which includes everything from measuring their carbon footprint to sourcing the carbon credits used to support emissions-offsetting plans.
“Companies’ response to the threats and opportunities of climate change – or their lack of response – could have a material bearing on their financial performance and therefore on shareholder value.”

VALUE AT RISK: Climate Change and the Future of Governance, CERES, April 2002
Capital markets around the world share fundamental disclosure requirements designed to enable financial markets and securities exchanges to operate more effectively. On publicly traded companies, the requirements range from regular reporting of financial results to the full disclosure of all new and existing material risks.

A material risk is one that is capable of impacting significantly on a company’s ability to operate and meet its financial and commercial targets. Today, disclosure of material risks is required by all securities regulators and financial exchanges around the world, including the Australian Stock Exchange (ASX) and New York Stock Exchange (NYSE).

The idea that climate change presents material risks to companies is not new. In April 2002 the CERES (www.ceres.org) report *Value at Risk: Climate Change and the Future of Governance* stated that “companies’ response to the threats and opportunities of climate change – or their lack of response – could have a material bearing on their financial performance and therefore on shareholder value”, and a number of similar publications have been issued by specialist analysts and institutional investors since then.

The financial arguments used in these reports have led some legal analysts to raise publicly the fact that existing reporting and disclosure obligations are likely to be broad enough already to require many businesses to address climate risk in their statutory financial reports.

What is new, however, is that securities regulators, including the Australian Securities and Investment Commission (ASIC), US Securities and Exchange Commission (SEC) and the UK’s Financial Services Authority (FSA), are considering amending corporate disclosure regulation to make it abundantly clear that climate change is a material risk that needs to be addressed.

A recent revision by the ASX Corporate Governance Council of the guidance given to companies on risk management resulted in an express acknowledgement that sustainability issues, such as climate change, can present material risks for business that must be managed.

The pressure to make changes of this kind is coming mainly from sections of the global investment community that are dissatisfied with the volume and quality of information on climate risk that they can obtain from companies that they invest in. For public companies, all the signs point to increasing disclosure obligations regarding carbon risk.

Climate change is already influencing investment decisions

Members of the global institutional investment community are increasingly identifying climate change as a significant source of material risk. One clear example is the rise of the Carbon Disclosure Project (CDP) (www.cdproject.net), which is now an unprecedented coalition of 280 financial institutions with more than US$41 trillion of assets under management. The CDP has identified a relationship between a company’s carbon risk and its shareholder value and already applies this formula to help drive investment decisions.

To assist in making its assessment of carbon risk, the CDP sends out an information request each year to a growing list of companies worldwide. Earlier in 2007, the organisation sent its fifth information request to the world’s largest 2,400 public companies, calling on them to disclose the extent to which their firms had identified carbon risk and devised or implemented a corresponding carbon risk management strategy.

All ASX100 companies and NZ50 companies received the 2006 CDP4 information request, and about
half responded. Significantly, some 94% of respondents recognised “the potential for climate change related issues to impact future earnings, liabilities or the company’s general risk profile”. The CDP5 information request was issued in February 2007, with the results due to be released in September/October 2007.

The investment community is becoming increasingly active on carbon risk

The Carbon Disclosure Project has inspired the creation of several regional organisations with a similar focus on pressuring companies to disclose material carbon risks. The Investor Group on Climate Change (IGCC) (www.igcc.org.au), for instance, represents institutional investors with more than US$340 billion under management and targets ASX100 and NZ50 companies. The IGCC says it aims to ensure “the risks and opportunities associated with climate change are incorporated into investment decisions for the ultimate benefit of individual investors”.

The Investor Network on Climate Risk (INCR) (www.incr.com) is a US group of more than 50 institutional investors with more than US$4 trillion under management, while the Institutional Investors Group on Climate Change (IIGCC) (www.iigcc.org) focuses on London-traded companies.

Climate change is already affecting company valuations

Climate change is leading the investment community to change the way it evaluates companies and their assets. Consider the recent buyout of TXU, a large Texan power-generation firm, by a group of investors led by Goldman Sachs and Kohlberg Kravis Roberts (KKR). This largest-ever corporate acquisition (worth US$42 billion) hinged almost exclusively on the likely future carbon liabilities resulting from the company’s plans to build 11 coal-fired US power stations.

Closer to home, Rio Tinto’s recent bid for Alcan is reported to have included a premium reflecting the low carbon intensity of Alcan’s aluminium production, secured through long-term hydro power supply contracts. Rio Tinto’s CEO, Tom Albenese, put it this way: “the access to long-term, low-cost, sustainable energy with essentially a zero-carbon footprint, very much puts the Alcan aluminium production in a competitive advantage”.

These two examples demonstrate clearly that many mergers and acquisitions, as well as large asset sales (particularly where carbon emissions are a factor), are today being evaluated on the basis of modified financial models that incorporate a price of carbon. Carbon costs are also increasingly being used to assess the financial viability of other types of commercial transactions. The impact is set to become even more pronounced and wide-ranging as the price of carbon becomes clearer.

Increased demand for standardised disclosure of carbon risk

The activity of carbon risk disclosure groups, both global and regional, is fuelling demand for international standards on how and what companies report. At the January 2007 World Economic Forum (WEF) meeting in Davos, Switzerland, a group of seven prominent national and international organisations – including the CDP, International Emissions Trading Association (IETA) and Centre for Education and Research in Environmental Strategies (CERES) – launched the Climate Disclosure Standards Board (CDSB), whose aim is to establish “a generally accepted framework for climate risk-related reporting by corporations”.

The CDSB takes the view that reporting of comparable information in annual reports remains the exception rather than the rule, and proposes uniform disclosure standards requiring companies to incorporate the following key information:

- An assessment of the company’s total carbon emissions
- An assessment of the physical risks to the company from climate change
- An assessment of the regulatory risks to the company from climate change
- A strategic analysis of carbon risk and GHG emissions management.

It is not just the investment community demanding greater transparency. Regulators, too, are...
pushing companies to disclose carbon data. In August this year, the Australian Government introduced new legislation, the National Greenhouse and Energy Reporting Bill 2007. When enacted, this Bill will mandate annual reporting of carbon emissions and energy use from major emitters and users (see box on page 21). The Bill’s mandatory reporting requirements will take effect in the 2009 financial year (ie the year ending 30 June 2009), and reported emissions will be made publicly available online.

Carbon performance equals financial performance

The growing recognition of climate change as a source of material risk for businesses has not escaped the attention of the global equity research community. Equity research teams at some leading investment banks have already begun creating metrics based on CDP response data that will eventually be used to translate a company’s carbon performance into its financial results.

Goldman Sachs, Citigroup, JP Morgan, and Morgan Stanley have all issued research reports in the past year that attempt to quantify material carbon risks and evaluate their likely impact on financial performance. Some such reports have tried to identify the companies most at risk (in terms of their market capitalisation), while others draw attention to firms that could benefit from a carbon-constrained global economy.

In November 2006, Citigroup in Australia released a report which measured firms’ carbon intensity (GHG emissions per A$10,000 of market capitalisation) against their theoretical carbon liability, based on a GHG emissions price of A$20 per tonne of carbon dioxide. The report attracted enormous market attention after ranking 48 of the ASX100 companies in terms of their exposure to carbon risk. It concluded that for most of them:

- Between 1% to 2% of market capitalisation was at risk
- Between 1% to 4% of sales revenue was at risk
- Between 4% and 18% of EBITDA was at risk.

Heralded as ‘the first major plank in Australia’s emissions trading system’, the National Greenhouse and Energy Reporting Bill 2007 was introduced into Parliament in August 2007. It is intended to establish a single national reporting framework for GHG emissions that will provide the robust data needed to inform the design of the national emissions trading scheme, and provide appropriate and consistent information for investors and the general public.

The Bill requires entities to report GHG emissions and energy production and use if they exceed the thresholds set out in the table below.

<table>
<thead>
<tr>
<th></th>
<th>FY09</th>
<th>FY10</th>
<th>FY11</th>
</tr>
</thead>
<tbody>
<tr>
<td>Corporate – emissions</td>
<td>125,000 tCO₂e</td>
<td>87,500 tCO₂e</td>
<td>50,000 tCO₂e</td>
</tr>
<tr>
<td>Corporate – energy production or use</td>
<td>500 TJ</td>
<td>350 TJ</td>
<td>200 TJ</td>
</tr>
<tr>
<td>Facility – emissions</td>
<td>25,000 tCO₂e</td>
<td>25,000 tCO₂e</td>
<td>25,000 tCO₂e</td>
</tr>
<tr>
<td>Facility – energy production or use</td>
<td>100 TJ</td>
<td>100 TJ</td>
<td>100 TJ</td>
</tr>
</tbody>
</table>

The precise detail of the data to be disclosed when the Bill is enacted will be specified in regulations, which at the time of writing had not yet been developed. The data disclosed will be made public via the internet, except where entities can show that through the publication of the data, trade secrets may be revealed.

The Bill contains a broad set of enforcement powers, including civil penalty provisions and the ability for the regulator to accept enforceable undertakings to rectify breaches. Where an entity is in breach, civil penalties can also be imposed on the entity’s CEO personally.

PricewaterhouseCoopers
But the analysts were solely focussed on downside risks. A growing body of analytical work establishes a financial upside to investing in companies with strong performance on sustainability issues such as climate change. A key example of this is the performance of the Dow Jones Sustainability Index World, which comprises the top 10% of sustainability performers from the world’s 2,500 largest public corporations. Since its inception in 1999, this index has tracked and outperformed the Morgan Stanley Capital International World Index by approximately 4%.

There is also evidence to suggest that voluntary reporting of sustainability risks correlates with improved profitability in medium to large companies. *Tip of the Iceberg?* – a report released in August 2007 by the Financial Services Institute of Australasia (finsia) – argues that voluntary reporting of sustainability risks leads to a profit gain of 2% to 3% for medium and large companies. Finsia attributes this gain to the benefits of lower corporate borrowing costs (due to reduced risk) and higher labour productivity and sales as a result of companies boosting their reputation with employees and customers.

**Financial agencies are beginning to factor in carbon risk**

The concept of carbon risk is being integrated into decision-making processes across the entire financial value chain, including in the reinsurance sector and among credit-rating agencies. It is likely, too, that the leading credit-rating companies will soon begin downgrading the outlook and ratings of companies considered to be failing to manage climate change-related risks.

The cumulative impact of this growing market and regulatory activity surrounding the issue of carbon risk disclosure leads to the very clear and compelling conclusion that climate change now represents a material risk to all public companies. Moreover, companies that fail to identify, manage and report on their material carbon risks appropriately could already be in violation of a number of fundamental obligations to their shareholders.
“Firms that recognise the challenge early, and respond imaginatively and constructively, will create opportunities for themselves and thereby prosper.”

The Business of Climate Change report, Lehman Brothers, New York, January 2007
We have seen that climate change is a business landscape modifier that, like earlier ones such as the internet, the steam engine and the telephone, threatens to unleash its own brand of creative destruction across the corporate world. Virtually all aspects of a company’s operating environment – its supply chain, customers, operations, investors, regulation and even competitors – are exposed to its effects.

The extent of this vulnerability to climate change, which cuts across all industry sectors, represents a real threat to companies’ future earnings. This explains why pressure is growing on firms to act swiftly and decisively to protect and enhance shareholder value by minimising downside risks and maximising the upside opportunities of climate change.

One certain way to achieve this objective is for companies to put in place a robust carbon management strategy that addresses the foreseeable impacts of climate change on their own business environment, and helps manage the transition to a fully carbon conscious business over the long term.

Astute companies have already realised that merely branding the firm as ‘going green’ is no longer good enough. Carbon performance will need to be managed for at least the next four decades, and as the increasingly disruptive effects of changing weather patterns are felt across the business world, many more companies are likely to appreciate the need to reconfigure their operations to manage the risks and exploit the opportunities that are created.

However, the realisation of what needs to be done is only the beginning of the journey towards robust carbon management.
Robust carbon management

What does a robust carbon management strategy look like? Below we offer an outline of the framework organisations need to start putting in place to prepare for increasingly unpredictable weather patterns and a carbon-constrained economy.

1. Measure and monitor carbon footprint

It is critical that a company understands its contribution to global emissions inclusive of direct and indirect emissions (indirect emissions relate to a company’s interaction with suppliers, partners and customers). Leading carbon performers will find ways to drive reductions in both of these categories of emissions.

Additionally, abatement efforts can only be adequately assessed if a company’s carbon footprint is properly monitored. Utilising a recognised reporting protocol, such as the WBCSD/WRI Greenhouse Gas Protocol or ISO 14064, helps companies develop an internal GHG emissions monitoring program through which abatement successes can be communicated effectively internally and externally. If companies use a different accounting standard, they should specify the standard and the rationale for adopting it.

2. Ensure carbon data is independently audited

Stakeholders want to know that all data on carbon emissions and abatement activities is credible. To ensure credibility, companies need to have their data audited by a third-party. Meanwhile, companies that trade in the voluntary market will require independent verification of their offset activities in order to provide assurance that the programs they have implemented are legitimate. Independent verification also provides insurance against allegations of ‘greenwash’ and any subsequent litigation that may occur.

3. Forecast carbon growth and set reduction targets

Companies should forecast their carbon emissions growth, which can be benchmarked against an intensity unit. Some companies have already begun devising metrics to make it easier to track their abatement efforts – for example, carbon emissions per unit of production, or a financial unit such as EBITDA. Companies should also set internal and external reduction targets. These targets provide a basis to measure future carbon performance.

Claims of ‘greenwashing’ can be averted by robust carbon management

‘Greenwashing’ is the practice of overstating one’s environmental credentials. Last year, the Australian Federal Government identified up to 12 cases where companies misleadingly claimed to be offsetting their carbon emissions by planting trees (when in fact no seedlings were planted). And there are signs of greenwashing being more widespread:

- Electricity companies were fined $600,000 in 2006 for failing to buy renewable energy credits as required by law
- A leading electronics manufacturer was forced to pay up to $3.1 million in rebates to consumers who bought 15,000 air conditioners with inaccurate efficiency rating labels
- The Department of Transport is investigating cases of certain car manufacturers’ potentially inaccurate claims about fuel efficiency
- A major distribution services company was forced to stop advertising a particular brand of air conditioner as ‘environmentally friendly’ in 2005 and 2006 because the model contained a refrigerant categorised as a potent greenhouse gas
- The Australian Competition and Consumer Commission has acted a number of times against companies making inaccurate or unsubstantiated environmental claims.

4. Assign costs to abatement opportunities
Since carbon and carbon performance will play an important role in business for the foreseeable future, companies need to factor the future cost of carbon into business calculations today. To do this, a company needs to identify and understand its carbon emissions abatement opportunities and costs for all direct, indirect and product-related emissions abatement opportunities. The objective is to create a marginal-cost-of-abatement curve for individual business units, as well as for the entire company.

This information provides the quantum of avoidable carbon emissions relative to key cost points and is essential to enable stakeholders to factor the cost of carbon and carbon compliance into their investment decisions.

5. Report carbon data internally and externally
Transparency on carbon-related issues is essential as stakeholders – including capital markets, investors, shareholders, employees and customers – are increasingly insisting on being informed about companies’ efforts to control their emissions.

A carbon management communications strategy is critical to convey the company’s vision, targets and progress on emissions reduction. Clear, transparent statements should be made particularly in sustainability reporting, and Climate Disclosure Project (CDP) information requests should be answered robustly. Stakeholders must also be engaged appropriately and care taken to convey information in the way most relevant to them, as often they have different concerns and priorities.

6. Create a senior carbon management position
Leading companies will be in the business of managing carbon performance for at least the next 50 years, and this will have an enormous impact on shareholder value. Such companies would be well-advised to create a new, senior carbon management position and team. If the position is a profit centre, it will drive the direction of that team from compliance and cost minimisation to a focus on the opportunities created through new investments and trading. The team’s focus should be on driving internal and external carbon targets, identifying and leveraging carbon opportunities and reviewing and revising carbon strategies across the organisation.

7. Track competitors’ responses
Keeping track of competitors’ responses to climate change is vital to enable companies to assess how competitors will be affected by the first- and second-order changes in the business landscape, as well as how competitors’ carbon management policies might impact their own business, the industry and the wider business community.

To this end, it is important to understand whether competitors are more or less vulnerable to the wide range of first-order and second-order climate change impacts.

Responding to competitor behaviour
The growing profile of climate change as an issue means that companies are increasingly compelled to respond robustly whenever a competitor takes the initiative in this area. Consider the electricity retail market, which has become highly competitive as retailers seek a point of differentiation for what is essentially a ubiquitous product. If one electricity retailer introduces a low- or zero-emission product such as greenpower, others are compelled to match the offer, often with a slight differentiator. Likewise in the airline industry, Qantas is expected to respond with its own offer of carbon offsets for flights in response to similar moves by competitors, such as Virgin Blue.

PricewaterhouseCoopers
Longer term, businesses should look at rating competitors’ carbon performance against their own, as well as carefully monitoring rival offsetting products and services that could alter customers’ behaviour and subsequently their own investment decisions.

8. Price carbon into investment decisions
It will become increasingly necessary for companies to factor carbon exposure into their investment decisions, both with greenfield developments and when contemplating mergers or acquisitions. Incorporating carbon costs into acquisition analysis lessens the likelihood of significant and unexpected carbon exposure and ensures carbon liability shocks, should they occur, are at least manageable.

Leading companies have been incorporating a carbon price into their investment decisions for a number of years to help them determine the viability of a project – despite Australia only recently committing to a carbon trading system.

9. Identify and leverage new carbon opportunities
The immaturity of existing carbon markets and regulation means there are huge potential business opportunities. Customers, for instance, will be actively searching for solutions to their own carbon management challenges. This situation creates enormous scope or opportunity for companies to provide carbon-neutral or offset products, where customers receive a product with the carbon emissions completely offset by the use of robust carbon credits.

10. Review progress on carbon targets
Robust carbon management is not a set-and-forget process. It requires regular review and revision to ensure a company remains responsive to changes in the regulatory and broader social environment. To remain ahead of the game, leading firms will need to make sure they constantly refine their approach to meeting carbon reduction targets.

Establishing an internal carbon price
A number of benchmarks could be used to develop an internal carbon price to help guide investment decisions.
- The average market price of tCO₂e freely tradable on the international market;
- Forward market price curves;
- The cost of internal abatement activities; or
- A combination of the above.

Of these, the most appropriate internal carbon price benchmark would be the external price of carbon allowances and credits, as this will have the single most important impact on projects undertaken. The emerging nature of this market, however, makes accurate price forecasting difficult. It requires detailed analysis of the regulatory arrangements in the jurisdiction relevant to the project, as well as analysis of the carbon supply and demand balance.

Nevertheless, it is important that an internal carbon price be established promptly and updated annually for the purposes of understanding the risks and opportunities in carbon-intensive businesses.
PwC carbon management services

PwC has a dedicated carbon management services group that works with policymakers and companies to analyse the issues and develop practical solutions. With a strong Australasian team and a network of more than 150 specialists globally, PwC offers a broad range of advisory, assurance, tax and legal services that collectively guide clients through the complexities of addressing the implications of climate change and carbon management.

PwC has developed a number of key services to answer the demands of our clients and facilitate the business response to climate change.

These services have been grouped to align with the core business impacts of climate change, both first and second order. Recognising that climate change is a multi-dimensional business issue, our Australasian Carbon Management Services team is made up of professionals from across our key lines of service – Assurance, Advisory, Tax and Legal. Our Australian and New Zealand teams also have strong links to PwC’s global climate change services team, ensuring that our local clients benefit from the vast experience of our global network.

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