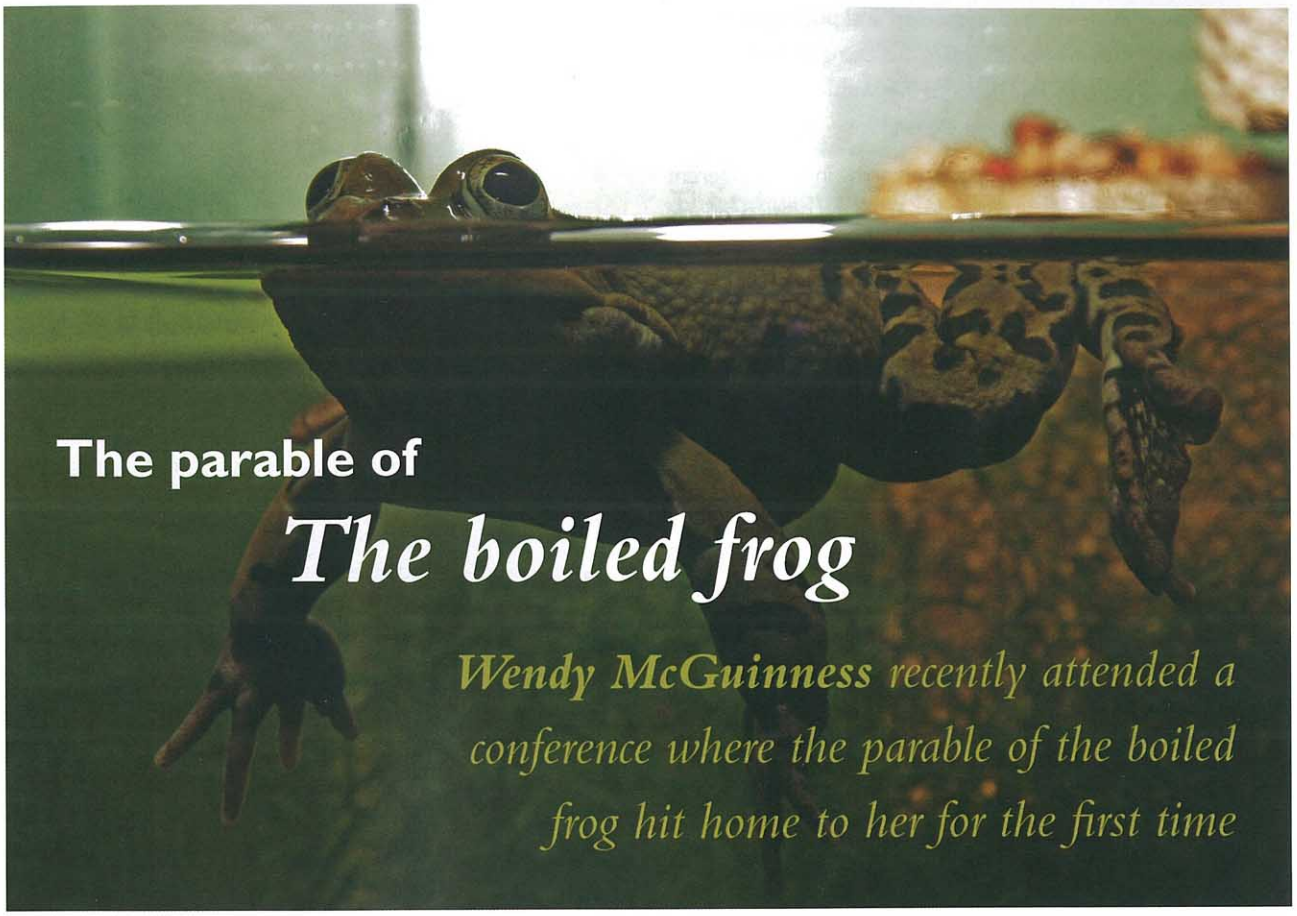

The parable of *The boiled frog*

***Wendy McGuinness** recently attended a conference where the parable of the boiled frog hit home to her for the first time*

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The parable of the boiled frog (see box) was quoted at Victoria University of Wellington's recent Climate Change and Governance Conference in March to highlight global warming and for the first time, the parable hit home.

This article attempts to bring together what the "global warming marketplace" means for business and non-profit organisations in New Zealand. In particular, it considers the risks and opportunities that Chartered Accountants may wish to discuss with their clients. Naturally, the answers to scientific questions are still being debated; for example how much carbon is too much? Is there a tipping point? To what extent is global warming reversible? But what is clear is that very few scientists are arguing that global warming, to excuse the pun, is simply a load of hot air.

A comparison of global warming with other global risks, like the bird flu pandemic, shows that the differences are significant. A pandemic, should it arise, will be an immediate and visible crisis. Response preparation focuses both on how we should manage the risks until we have access to a vaccine and how to minimize transmission until the risk recedes. We are fortunate we can learn from past experiences and have the technology to reduce and (arguably) manage the risks.

Unfortunately, we do not have this luxury with global warming. We are largely part of an experiment and as such, the optimal solution is complex and requires an inclusive approach. The optimal approach must, by its very nature, include engagement by global, national, local, and organisational entities and individuals. Such a solution will not only focus on a range of solutions, but also demand the monitoring and reporting of progress and a great deal of that most critical element, leadership.

What is clear is that scientists consider that there are two types of solutions. We must turn down the thermostat, meaning we "mitigate" the risk by reducing CO_2 and other greenhouse ▸

The parable of the boiled frog

"If you place a frog in a pot of boiling water, he will immediately try to scramble out. But if you place the frog in room temperature water, and don't scare him, he'll stay put. Now, if the pot sits on a heat source, and if you gradually turn up the temperature, something very interesting happens. As the temperature rises from 70 to 80 degrees F, the frog will do nothing. In fact, he will show every sign of enjoying himself. As the temperature gradually increases, the frog will become groggier and groggier, until he is unable to climb out of the pot. Though there is nothing restraining him, the frog will sit there and boil. Why? Because the frog's internal apparatus for sensing threats to survival is geared to sudden changes in his environment, not to slow, gradual changes."

– Senge, The Fifth Discipline, 1990, p22

gas emissions and we must also develop and put in place tools and technologies that help us "adapt" to being in "hot water". This means we need to find ways to live with chaotic climates, such as we are now beginning to experience.

Business will be affected by global warming in three different ways. First, organisations will continue to face the primary effects of global warming. (A list from the conference is provided in Table 1.) Second, organisations will be affected by mitigation strategies; and last by adaptation strategies. Many of the mitigation strategies outlined in Table 2 and the adaptation strategies in Table 3 provide huge opportunities for businesses. Table 4 attempts to provide insights into the characteristics of the new "global warming marketplace". Readers interested in the underlying scientific evidence or more timely information on the effects outlined in Tables 1-4 may like to refer to the websites listed at the end of this article.

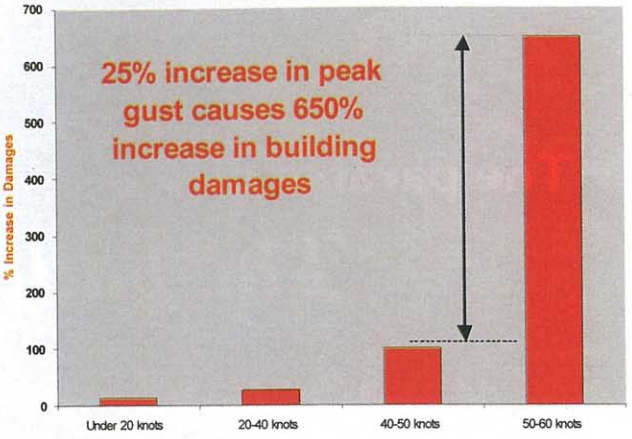
Primary effects

The broad pattern of change expected in New Zealand and the Pacific is outlined in Table 1. In addition, a New Zealand report, *Climate Change Effects and Impacts Assessment: A Guidance Manual for Local Government in New Zealand* (May 2004) predicts that we can expect increased temperatures (with greater increases in the winter season, and in the north of New Zealand), decreased frost risk but increased risk of very high temperatures, stronger west-east rainfall gradient (wetter in the west and drier in the east), increased frequency of extreme (heavy) daily rainfalls, increased sea level and increased westerly winds. The projected range of possible sea level changes around New Zealand by 2100, (corresponding to the full IPCC global temperature projection range), is 9-88 cm.

Table 1: Primary effects over time may include

- a tendency towards increased annual rainfall in the south and west of New Zealand, and decrease in the north and east
- higher annual average temperatures, fewer frosts and more hot days
- sea level rise, with resulting pressures on some low-lying island and coastal locations
- snowline rise, shortened duration of seasonal snow lying
- increased peak wind and rainfall intensity in tropical cyclones in some regions (refer Figure 1)
- heavier and/or more frequent extreme rainfalls, especially where more rain is predicted; increasing flood risk
- increasing drought risk for soils in already drought-prone eastern areas
- new health effects
- islands under stress may create increased immigration for Australia and New Zealand
- mass migration of the human and animal populations in Africa, India and Central Europe away from areas which are extremely hot, prone to flooding or stormy; some other things (such as coral) will not be able to migrate.

Figure 1: Small changes in hazard intensity can lead to multiple increases in damages (Source: IAG Insurance Australia Group)



From a Pacific perspective, Enele Sopoaga, vice-chairman of the Alliance of Small Island States (AOSIS) stated at the conference that "for someone who comes from a nation with a unique lingual, a unique cultural and a unique way of life, the thought that my nation may become uninhabitable in possibly my lifetime or in the lifetime of my children, is very distressing. Yet there continues to be denial that the climate is changing" (see picture).

Mitigation strategies

A range of mitigation strategies are being discussed and a number are already being implemented (Table 2).

Table 2: Mitigation strategies

Global

- Treaties to mitigate emissions and maintain energy security (the two issues have elements in common). Countries undergoing large economic growth may require more stringent efforts to lower emissions

- Emissions/carbon trading systems (cap and trade)
- Ensuring that higher prices for oil flow through to consumers (supply will not be the issue, pricing will)
- Governments using taxes to reduce demand. – e g northern Europe
- Accelerating a transition to a hydrogen economy
- Strong emphasis on renewables (e g biofuels, wind) development and energy security
- Research into energy storage technologies
- Carbon capture and storage technologies
- Other technologies – solar, nuclear power, biofuels derived from waste by-products like tallow/animal fat, or wood waste; interestingly there may be no need for GM technology as conventional breeding techniques may suffice

Nationally

- Taxes and other signals in the marketplace to reduce demand for carbon-intensive fuel (note however, that a broad-based carbon tax has recently been abandoned in New Zealand)
- Promotion of renewables, including wind, solar, biofuels
- Vehicle testing and fuel standards
- Research into carbon storage
- Emission trading systems
- Stronger regulations on private sector emissions and pollutants

Adaptation strategies

A range of adaptation strategies are being discussed and a number are already being implemented as outlined in Table 3.

Table 3: Adaptation strategies

National and local

- New engineering technologies to manage floods and water level rises, like dams and building techniques
- Higher building standards for energy use reduction, flooding and storms
- Transportation systems as part of the sustainable cities programme
- Managing the availability of water
- Managing the impact of extreme weather events
- Managing changes in agricultural practices

The relationship between governance and strategies

In practice, what Tables 2 and 3 indicate is that "global and national initiatives" will need to focus on mitigation strategies and sharing global experiences while "organisational and individual initiatives" will need to focus on adaptation strategies. Local councils will need to apply both types of strategy. However, even local actions and initiatives need guidance and support from national and regional governments. Figure 2 attempts to reflect the relationship portrayed at the conference between the types of strategy appropriate to the different governance groups.

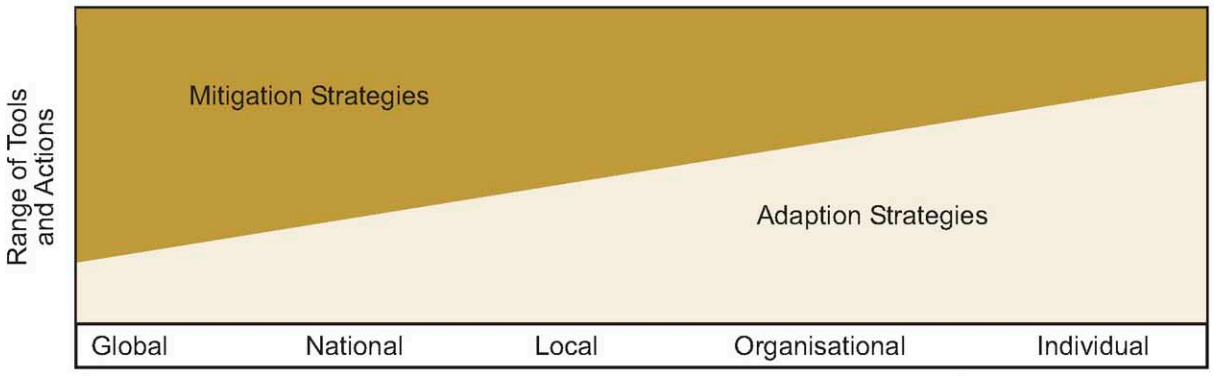
Importantly, business must embrace a risk management approach, take a long-term view and engage with stakeholders. There may be some positive effects but as stated in the Association of British Insurers Report: Financial Risks of Climate Change (2005): "We need to understand the consequences of climate change to make informed choices about the future. Policy-makers should incorporate financial assessments of the impacts of climate change on extreme weather, as well as on average weather, in cost-benefit analyses of options."

Table 4: Characteristics of the new "global warming marketplace"

Note: Many provide both an opportunity and threat.

- Some form of price on carbon (e g via a carbon tax)
- Higher insurance premiums for extreme weather as a result of increased claims
- More insurance restrictions
- Increased demand for skills in weather prediction and timely weather reporting
- Higher prices for oil and other fossil fuels
- Higher prices for water (water by bottle is already more expensive that petrol)

Figure 2: The relationship between governance and strategies. (Source: McGuinness and Associates)



- More research funds and business opportunities in the areas of solar and wind energy, agricultural emission reduction, biomass and carbon and energy storage
- Significant redevelopment of large infrastructures – this may include cables and more engineering challenges (e g dams) and improving carbon-free/active transport systems (e g bike lanes and public transport)
- Building standards, technologies and appliances – e g use of water tanks, heat pumps, solar heat, north-facing houses, insulation, photovoltaics etc
- New products (like hybrid vehicles) and services for both end consumers and production organisations as the focus changes to cleaner and safer products and services
- More sustainability reporting on an organisation's environmental footprint, including performance, provisions and contingent liabilities; this is likely to place a stronger emphasis on reducing operational costs and risk management
- Increasing demand for the Internet and quality transmission cables as we move away from paper, posting and transportation in the current sense
- Increased immigration
- Significant changes in land use due to new demand for energy (e g biomass and new climate conditions)
- Disaster relief and clean-up services will increase; this may also put additional stress on local emergency organisations
- Significant changes in consumer and supply chain demands as individuals and particularly organisations adapt to climate change and importantly, want to be seen to adapt to climate change by being good corporate citizens

Ethics

The underlying ethical question is whether (i) the polluter pays now (ii) the general public pays now or (iii) current generations do not pay, and instead the general public pays in the future. British Prime Minister Tony Blair discussed this question and directed the conference audience to consider whether this generation was prepared to opt for "short term pain, long term gain" or "short term gain, long term pain". How we answer this question will challenge our individual resolve and is likely to be the key test that defines this generation.

The New Zealand scene

Since 2002, the key platform of the Government's Climate Change Policy has centred on a broad-based carbon tax regime. Unfortunately, this strategy lost support in 2005, possibly because business did not support the proposed regime and to date, no alternative or optimal carbon tax regime has been proposed. It is understood that officials are expected to report back to the Government shortly on work programmes designed to develop new policy measures.

Naturally, the current lack of a climate change policy is a concern for many scientists and others, who cannot understand why the public do not appreciate the urgency and inevitability of effective strategies. Obviously, the Government needs a mandate for action and while organisations and individuals are seen to sit on the sidelines, time continues to march on. Ralph Chapman, Associate Professor and Director of the Graduate Programme in Environmental Studies at Victoria University, summed this up when he stated New Zealand needs the development of a "broad-based and informed constituency" and a "policy package of forward-thinking and sound policy measures which can, preferably, find wide support from the public and political opponents."[1]

Simon Upton's address concluded that if the current policy mix has got too sticky and too complex, then it might be an ideal time for the main parties to get round the table and try to hammer out an investment-friendly approach that can provide some sort of long-term policy stability. There are sufficient incoherences on all sides to make for reasonably even servings of humble pie.

Since the very first predictions of global warming, we have debated the existence and extent of the problem; a few have debated the options, but very few have implemented the necessary strategies to mitigate and adapt to global warming. We need to accept the problem in order to implement the solution. The effects on profit and non-profit organisations will be dependent upon what strategies are implemented.

Without adequate strategies we have no protection from the primary effects, rather like being in a thunderstorm without a raincoat. Profit and non-profit organisations alike can add value by accepting the problem, providing government and local authorities with a mandate to change and most importantly, being part of the solution. Even if we take action now, unlike the frog, jumping is not an option. Unfortunately, we have no other planet to move to. Our only options are to mitigate and adapt.

My special thanks to Elayne Grace (Insurance Australia Group) and Ralph Chapman (Victoria University) for their assistance in preparing this article. Any errors are mine.

Useful sites include:

Victoria University's Climate Change and Governance Conference – www.vuw.ac.nz/sog/events/info-climate.aspx

Association of British Insurers – www.abi.org.uk

www.climateprediction.net

www.theclimategroup.org

www.ipcc.ch

www.climatechange.govt.nz

www.niwa.co.nz.

Footnote

1 Chapman R (2006), "A Way Forward on Climate Policy for New Zealand". Climate Change and Governance Conference, Wellington (March): http://www.vuw.ac.nz/sog/events/downloads/CCG_Papers/Chapman_29March.pdf ■