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Transition to a Low Carbon Footprint: A Conceptual Model of Impacts and Management for Australian Businesses

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Abstract

Australian businesses will face profound and wide-ranging structural impacts during their transition to a low carbon footprint economy. This paper synthesizes the impacts for the firm during the transition and identifies the crucial impact variables. In doing so, it explores the
link between the opportunities and benefits, costs, risks and structural changes and evaluates the challenges in managing the multiple impacts. The paper provides a conceptual model that will assist decision-makers deal with risk management or bottom-line protection issues as well as exploiting the business opportunity the new regulatory environment will produce. The model argues for a holistic corporate governance mechanism, with responsibility and accountability of climate change risk management placed with the board of directors and senior management. The literature review is presented first, followed by the discussion and the model. Future empirical research direction is also presented with the development of a series of propositions for testing.

Key words: Carbon Footprint, Transition, Impacts, Corporate Governance, Management, Australian businesses

Introduction

During the last five years society at large has awakened to the climate issue, with ‘climate change and the environment higher on the minds of consumers around the world than any other socio-political question’ (Enkvist, Nauclera and Oppenheim, 2008). Although a binding agreement on climate change action was not reached at the United Nations Climate Change Conference (COP15) held in Copenhagen in December 2009, and the outcomes from it dubbed as disappointing (Guardian, 2009), businesses in both developed and developing countries are nevertheless confronting a paradigm change. The Australian government is strongly committed to reducing Australia’s carbon pollution through the Carbon Pollution Reduction Scheme (CPRS) which will guarantee that emissions are reduced by as much as 25% below 2000 levels by 2020 (Australian Government Department of Climate Change, 2010). Similarly, the European Union (EU) committed to a 20% reduction in its emissions compared to 1990 levels by 2020, irrespective of whether or not a satisfactory international agreement is reached (Commission of the European Communities (EC), 2009:2). The emissions reduction schemes imply enormous changes for businesses across a wide spectrum. For instance, in Australia the government is investing more than $5 billion in developing and commercializing clean energy technologies, and another $4.5 billion for using natural resources to create cleaner energy supplies, a further $1.3 billion to fund Green Car Innovations, and $4.4 billion in homes and offices to reduce carbon footprint, committed to a Renewable Energy Target of 20% by 2020, and announced a raft of action programmes for supporting businesses and households in re-skilling for a greener economy (Australian Government Department of Climate Change, 2010). The impacts of these wide ranging changes are inevitable in the short to medium-term as much as in the long-term and businesses will face profound structural effects during the transition to a low carbon footprint economy. The recent Australia – New Zealand Climate Change and Business Conference (ANZCCCB conference) held in Melbourne in August 2009 reiterated that while the macro-effects of CPRS will be mild, the structural effects on business, industries and regions will be profound and powerful. Several scholars and practitioners have commented that the effects will appear as a ‘yin and yang’, or as ‘opportunities and risks’ presenting companies with a tremendous management challenge, especially in the short- to medium-term transition period to a low carbon footprint economy.
Schultz and Williamson (2005) provide a succinct comment on the complex scenario facing firms. ‘The challenge for management lies in reducing the totality of these costs and the associated risks including handling the possibility of a shortage of emissions allowances, managing the risks to the company’s credit rating, and re-thinking the optimal portfolio of energy sources in a carbon-constrained world. This means developing a broad and comprehensive strategy for managing the new environment. Perhaps most interesting of all, it means looking for new opportunities to gain competitive advantage in a carbon constrained world...If handled correctly, climate change can be an opportunity to steal a march on rivals, not just an unwelcome problem to be dealt with’ (p.385).

In a similar vein, Oppenheim and Beinhocker (2009:2) observed that ‘the transition to a low-carbon economy, if done right, has the potential to stimulate economic growth, create jobs, and bring benefits to consumers...’. While all businesses will, in the short-term face increased energy costs, as they move to a low-carbon operation, in the long-term they would benefit not only from lower energy prices but also from stable prices. So too, the Stern Review on the Economics of Climate change (2007) urged that mitigation, defined as ‘taking strong action to reduce emissions’ must be viewed as an investment cost incurred now and in the coming few decades’ and observed that if these investment decisions are made wisely, then the costs will be manageable, providing a wide range of opportunities for growth and development.

Ratnatunga and Balachandran (2009) citing Weekes’ (2007) report that the Westpac Banking Corporation no longer views carbon costs as an add-on, but perceives it as being central to its operations, claiming that the emissions reduction practices have boosted its bottom line. Whilst most firms will become ‘too carbon-centric, they will also need to focus their attention on management of deforestation and loss of diversity’ (National Australia Bank’s Executive Director of Finance at the ANZCCB conference, August 2009).

What are the costs for firms that fail to make changes? Esty (2007) cautions that firms that fail to meet the expectations of customers, employees, and capital markets, as well as governments and non-government organizations (NGOs), on the release of public reports on greenhouse gas emissions, progress in improving energy efficiency, and achieving targets for reducing emissions, will meet with serious consequences. The author reports ‘several funds’ now screen companies for environmental and sustainability factors, including emissions reporting, and exclude poor performers’. Hoffman’s (2007) comments ‘if you’re not at the table, you’re on the menu’ reveals the scope of the impact of the low carbon economy on businesses wherein they need to also participate in the policy debate and not merely sit on the sidelines as a bystander to a significant shift in its market environment. Thus, risk management or bottom-line protection and business opportunity or top-line enhancement sums up the two-pronged strategies of businesses, with the ultimate goal being to move climate change as an issue from the periphery of the organization to its core (Hoffman, 2006).

Not only will firms need to face up to the risks and opportunities, they will also need to manage the extensive structural changes. Ratnatunga and Balachandran (2009) observed that carbon emissions management will impact ‘a wide spectrum of strategic issues, ranging from overall objectives to marketing, new product development, pricing, international business,
promotion, supply chain management, finance, and risk management, requiring firms to take an integrative approach, with ‘carbon thinking’ as an important part of the strategy focus’.

The presence of a ‘carbon-rationing and trading market has the potential to affect an organization’s business strategy, financial performance, and ultimately value and hence accountants and other business information providers need to consider measurements and strategies outside of conventional paradigms’ (Ratnatunga and Balachandran, 2009:4). The authors emphasize that carbon-focused thinking will need new tools and management practices if the accounting profession is to remain at the forefront of providing vital information for decision-making, and reiterate that the decisions of firms and their consequences will affect the accounting profession significantly. Moreover, there is a clear shift in the strategies adopted by firms wherein the market component is clearly increasing in importance, in comparison to the political, non-market strategies that dominated in the early 1990s (Kolk and Pinkse, 2004).

However, there is a paucity of information on the impact variables, the nature of the impact, link between the variables and the methods to deal with the impacts. Hence, real-world corporate experience from empirical data will be an invaluable input to the debate on management of the transition (Dunn, 2002). Based on a study of 100 firms from the 10 most carbon-intensive industries in the USA, Cogan (2006:16) observed that although many businesses were ‘embracing this new era of climate risk analysis and planning, serious governance gaps remained’. In particular the author pointed out the CEOs’ perspective of ‘long-term’ was flawed in the sense that ‘a typical corporate CEO may look three to five years ahead when making a capital investment. By comparison, the average term of service for a long-lived asset like a fossil fuel energy plant is eight times longer and carbon dioxide emissions from such a plant last an average of 100 years’ (Cogan, 2006:15). This highlights the urgent need for empirical data on governance aspects of managing climate change issues.

This paper synthesizes the literature on impacts for the firm due to the move to a low-carbon footprint system. In doing so it explores the link between the opportunities and benefits, costs, risks and structural changes and evaluates the challenges in managing the multiple impacts. The paper attempts to capture the impacts and its management in a conceptual model that will assist decision-makers deal with risk management or bottom-line protection issues as well as exploiting the business opportunity the new regulatory environment will produce. The literature review is presented first, followed by the discussion and the model. Future empirical research direction is also presented.

**Review of literature**

Although the opportunities and risks are expectedly different for firms and sectors, it will affect every single firm in every sector, with the emissions-intensive trade-exposed industries (EITE) and airlines being affected quite strongly (Standard and Poor, 2009). Moreover, it is easier to identity the sectors that are likely to face costs than to identify those that may reap benefits (Dunn, 2002). Companies in the non-carbon intensive sectors also recognize that carbon is strategically important to their overall value chain, even if their own direct emissions are low (Pricewaterhouse Coopers CDP Global 500:11).

Several surveys in Australia and internationally have attempted to assess the impact of climate change on firms. For instance, the July 2009 Australian Industry Group and KPMG survey on ‘Business readiness for climate change’ and the 2008 FTSE 350, S&P 500 and
Global 500 surveys on ‘Carbon disclosure project reports’ by Pricewaterhouse Coopers aimed to assess the current state of affairs of firms in dealing with the climate change issues in general and more specifically with emissions trading, carbon disclosure and business readiness for tackling these issues. However, whilst the surveys provide a numerical assessment of a range of issues, they fail to capture the nuances and the rationale for the issues, the linkages between them and a holistic view of their management.

Risks
Schultz and Williamson (2005) reported that major oil companies such as BP and Shell may face a number of risks, including a hit on their brand value, problems with staff retention, recruitment, and political access amounting to between $10–$50 billion, and litigation risk from the damage of climate change that could potentially exceed $100 billion (p.385). The authors observed that firms that have a strong retail component to their sales or business-to-consumer (B2C) firms would be more exposed than firms that sell directly to businesses or business-to-business (B2B) firms, and firms that produce ‘necessities’ for the economy would be more exposed and subject to public criticism, than firms perceived as ‘contributing to solving the climate problem’ such as renewable energy sectors. TEC (2007) observed that businesses will face regulatory risk, reputational risk, competition to retain their status as an employer of choice, increased pressure and scrutiny from investors, and even a reduced pool of investable funds due to investor boycotts, alongside the broader risks resulting from climate change itself such as extreme weather risks and disruption of supply chains.

Costs
Ratnatunga and Balachandran (2009) add that businesses will need to consider trading in carbon permits, investing in low-carbon dioxide (CO2) emission technologies, counting the costs of carbon regularity compliance, including the passing on of the increased cost of carbon regulation to consumers through higher prices. The total costs will differ markedly depending on whether the firm’s exposure was derived from direct emissions, indirect emissions or from the overall climate change issues (Schultz and Williamson, 2005). Kundu (2006) mentions the two major aspects of accounting from the low carbon perspective as: recognition of the value of carbon that the firm is allowed to emit, and the cost incurred to meet emission-reduction commitments. Deloitte (2008) reported that firms will need to consider the impact of carbon costs on asset impairment, major capital investment and restructuring decisions, the financial impact of regulatory constraints on the passing of costs to customers, determine the accounting policy in the absence if formal guidelines, determine how to account for forward purchase and sale of permits, earnings and cash flow impacts, manage the reporting disclosures as well as the continuous disclosure obligations if it is an ASX listed firm, and monitor developments in accounting standards of emissions rights, in addition to the taxation implications and National Greenhouse & Energy Reporting (NGER) requirements. Additionally, Hughes (2009) warns that asset impairments arising from accounting requirements would affect balance sheets and possibly financial covenants with banks.

Opportunities and potential benefits
Thus, it appears that depending on the types and amount of energy they use or produce, some firms and industries will be better positioned to respond to the challenges of this paradigm change than others (Cogan, 2006). Schultz and Williamson (2005) in their study of European businesses identified the three areas of opportunity for firms to gain competitive advantage as: minimization of the additional costs more effectively than their competitors,
differentiating their products by bundling carbon credits into their offerings, and turning their capacity to supply carbon credits into a profit centre.

Furthermore, as companies move towards minimizing their carbon footprint, they will replace high-emissions infrastructure with low-emissions infrastructure such as ‘renewables and carbon capture storage for conventional coal generation; energy-efficient industrial plants, buildings, and applications for less efficient ones; hybrids, electric vehicles, sustainable biofuels and super-efficient internal combustion engine vehicles for today’s vehicles’ (Oppenheim and Beinhocker, 2009:9). Thus, they will seek to engage in short, medium and long-term solutions, namely, installing more building insulations, diffusion of existing high-efficiency diesel engines, and use of the latest abatement measures as they are developed in the longer-term. However, it appears that while some firms have already started along the path of managing the climate change issues, others have no clue what to do. For example, as the CEO of Fletcher Building observed at the ANZCCB Conference (August 2009), most firms that anticipated severe impacts on their businesses have already made significant changes to their raw material usage and their existing technology, or used breakthrough technology, or even made changes to their electricity usage. However, he cautioned that capital intensive industries will need more capital during the transition to a carbon footprint and they will hence undergo a paradigm change in the long-run.

From the customer perspective, businesses in the low carbon economy will face severe tests. For instance, ‘as public including individual consumers become more aware of the risks of climate change, their buying decisions will become tied to the environmental credentials of the businesses from which they make their purchases, providing the businesses that proactively seek to reduce their carbon footprint with an opportunity to capture the market share from those who fail to take similar action’ (TEC, 2007). This implies that all firms will need to continuously monitor their competition.

**Linkages between the impact variables**

From the review of literature the intricate and complex link between the impact variables, namely, opportunities and benefits, costs, risks and structural changes is apparent. For instance, significant costs need to be incurred in the short to medium term in investments in clean technology, overhauling human resource management including behaviour and skills modifications, setting up extensive and comprehensive reporting systems including data collection and management. These costs need to be undertaken with the hope that in the long-term the rewards will outweigh the current expenditure. So too, while the firms will see their energy costs rise steeply in the short-term, the very same costs are expected to decrease in the long-term as the effects of low-carbon footprint seep through the economy. However, the transition period is expected to be fairly long, uncertain and hence painful. Thus, costs involve a conscious strategic decision to trade-off in terms of current pain for future gain.

The complexity comes from the fact that quite a few of the impacts are double-sided swords. Take for instance the reputational risk. If handled efficiently, the same risk can be transformed into an opportunity to improve brand value and reputation. If handled inefficiently, the damage is doubled with the firm’s products taking a hit on brand value at the same time as the firm’s reputation plummeting, and impacting the bottom-line adversely. Similarly, ineffective climate change policies will mean a reduced pool of investable funds and higher costs of capital, in contrast to the proactive and effective measures that will see the firm becoming an investor of choice and hence reduced costs of capital.
The benefits and opportunities segment is equally complex. There is enough evidence of benefits and opportunities for firms provided the opportunities are exploited. As Esty (2007) observed, environmental management can be used by the firm to positively impact its brand and attract new customers, and the reporting of it can be viewed as a ‘measure of corporate trustworthiness and good governance’. This will be picked up by investors such as pension funds scrutinizing the firms for socially responsible investments (SRI), leading to enhancement of firm value. However, to what extent the opportunities can be translated into benefits and the subsequent reporting that can be fully internalized into a successful bottom-line, is clearly firm-specific, calling for hands-on climate change management and best practice governance.

Yet another complexity arises between risks and opportunities. Whether government regulation is viewed as a business risk or opportunity is strongly dependent upon the type of industry. To cite an example, financial companies may perceive low-carbon footprint regulations as an opportunity due to increased business from facilitating emissions trading or financing offset projects, in contrast to the oil and gas, mining, metals and utilities firms perceiving regulations as risk and cost (Kolk and Pinkse, 2004). The perceptions are based on initial research which estimates that shareholders in leading oil and gas companies may lose 6% or more of the value of their investments because of regulatory efforts to address climate change (Dunn, 2002), while the financial services sector will, overall, encounter opportunities (Allianz Group and World Wide Fund for Nature, 2005).

Managing the impacts

**Governance and decision making issues**

As the above discussion points out, the transition to a low carbon footprint economy will involve ‘material’ costs and effects and hence board oversight is critical (Cogan, 2006). Board and senior management will need to get involved if the impacts have to be managed effectively, as the transition period will be characterized by severe lack of information and the resultant uncertainty. The severity is observed by Oppenheim and Beinhocker (2009) who stated that it is quite likely that senior managers and other employees will be handicapped by the lack of sufficient information to make low-carbon choices, even if they would like to do so. As the Director of Fonterra Milk Supply mentioned at the ANZCCB Conference (August 2009), the firm’s three year investment plans and investment decisions have been relatively sparse due to the uncertainty of the Emissions Trading Scheme (ETS) and observed that until businesses get clarity ‘it is difficult to do anything’. Similarly at the same conference, NAB’s Executive Director of Finance opined that the potential exists for profound changes in rules which in their current form are too broad which has led to businesses being forced to ‘put them off to one side’. Deloitte’s (2008) report cautions businesses stating that if they want to survive in the new carbon constrained world, they will need ‘excellent information about their business, their supply chains and target markets and knowledge of their key carbon exposures’ (p.6).

Ratnatunga and Balachandran (2009) summarize the range of corporate governance decisions on costs, risks, opportunities and structural changes. As the authors observed, firms will need to take decisions on employee behaviour modification, adoption of lean manufacturing techniques, carbon efficiency being embedded in the quality equation, lean accounting, make or buy decisions which need to include carbon emissions, carbon costs classifications,
identification of carbon cost drivers, benchmarking with the global best in carbon efficiency, corporate reputation audit to include responsible carbon citizen, and the extensive cost and management accounting, financial and reporting changes, and taxation issues. Thus, good governance is the key.

However, the alarming fact is that businesses have got caught up with dabbling with risks, costs and benefits and other changes individually and in a singular fashion, and in the process failed to take a holistic view of the changes through institutionalizing a best practice governance mechanism. Griffiths, Haigh and Rassias (2007) citing Griffiths and Zammuto (2005) pointed out that the governance systems in Australia viewed climate change approaches more as a cost than an opportunity. The authors observed that coal companies and industries associated with the production of energy from coal in Australia engage in significant lobbying to receive ‘financial compensation and for protection from a range of measures associated with the introduction of carbon taxes and emissions trading schemes’ (p.417).

The Pricewaterhose Coopers CDP Report- Global 500 (2008: v) observed that ‘governance still not at the forefront – climate change is still not a regular agenda item for most Boards. It is commonly discussed twice or four times a year at formal meetings, rather than being a routine Key Performance Indicator’. Businesses need to bring governance to the top to effectively understand, measure and manage the climate change impacts.

Figure 1 highlights the multiple impacts for firms from the transition to a low carbon footprint economy, including opportunities, costs, risks and structural changes. It demonstrates the interlinked nature of the impacts and the position of governance in the management process. Good corporate governance will be critical in ensuring that strategic direction of the process occurs in an efficient, rational manner and that the business remains sustainable into the future. The responsibility for best practice governance should reside with the Board of Directors and the senior management who should be accountable for it. Comprehensive reporting of climate change risk management is also required.
Concluding remarks and future research directions

This paper has attempted to model the multi-pronged impact for firms during their transition to a low-carbon model economy. The preliminary model argued for a holistic corporate governance mechanism from the top for successfully managing the impacts. The implication of the model is crucial for effective management of the risks, costs, opportunities and benefits. When the governance process and monitoring is seen as the responsibility of the Board and senior management, and they are made accountable for it, risk management of climate change takes on a strategic perspective. This is in stark contrast to the current perspective that climate change risks are operational risks and hence best managed at the project manager or middle management level.

The model and literature also highlights the future research directions. For instance, based on the discussion in this paper, a series of propositions can be framed for testing through empirical research.

Proposition 1: B2B firms will be more exposed to the impact variables during the transition than B2C firms.

Proposition 2: B2B firms will face more risks that B2C firms overall.

Proposition 3: Firms producing ‘necessary’ goods will be exposed to the impact variables.

Proposition 4: Firms that produce direct emissions will be more exposed than those with indirect emissions.

Proposition 5: Firms in the EITE sector are likely to have already launched massive structural changes to deal with the impact, relative to the other sectors.
Proposition 6: The monitoring of competitors’ strategies is likely to increase in the future low carbon economy.

Proposition 7: Firms in the service sector are likely to wait and watch relative to firms in the manufacturing sector.

Proposition 8: Firms in the EITE sector will need greater formal changes to their corporate governance systems and practices to manage the transition, in comparison to other sectors.

Currently, companies are responding in a variety of ways: ‘waiting, holding back, exploring, and taking steps, innovating or learning’ (Kolk and Hoffmann, 2007). But, as the paper ‘Towards a comprehensive climate agreement in Copenhagen’ by the EC (2009: 2) argued, investments towards a low-carbon footprint would have ‘both rapid and long term benefits in terms of climate change, economic recovery and should in any case be less than the costs of inaction’. Therefore, at some point all businesses will be forced to act.

Future research should audit the range of responses, both proactive and reactive with a view to understanding the impacts in greater depth. Furthermore, while the complex link between the impact variables such as opportunities and benefits, costs, risks and structural changes is somewhat clear, the magnitude, strength and nature of the link are not clear. Future empirical research could include a large-scale survey of senior executives from small, medium and large firms which will aid in quantifying the relationships, while in-depth interviews with senior executives will help provide insights into the nature of the relationships. Future research could also involve testing this model with a view to its development and delivering a conceptual tool-kit for businesses to manage the impact.

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