

## **Transitioning towards sustainable freight logistics in desert Australia: A framework for analysing options that meet economic, environmental and social demands.**

**Marnie Ireland**

Desert Knowledge Cooperative Research Centre; Muresk Institute, Curtin University of Technology

**Fay Rola-Rubzen**

Desert Knowledge Cooperative Research Centre; Muresk Institute, Curtin University of Technology

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### **Abstract**

*Kaplan and Norton's Balanced Scorecard is a multi-dimensional performance management model. It can be effectively developed into a tool which supports evaluation of the sustainability of a range of options specific to an industry, rather than just as a management tool to support the implementation of corporate strategies.*

*The Balanced Scorecard makes it possible to take into account non-monetary success factors and provides a structured method for incorporating the three pillars of sustainability in a set of performance measures specifically applicable to a particular industry – in this case freight logistics in desert Australia.*

*This paper explores what constitutes sustainable freight in desert Australia via the four perspectives of a Sustainability Balanced Scorecard: in the economic/financial perspective the needs of companies and Government in providing freight services to remote communities are considered; in the customers/stakeholders perspective the needs and requirements of people living in remote communities are considered; in the internal processes perspective the policies and regulatory framework of the freight industry in desert Australia are evaluated; and in the learning and growth perspective the transfer of knowledge (seen as a key component required to support innovation and transition of the industry) are examined.*

### **Keywords**

*Freight, logistics, sustainability, Balanced Scorecard, desert, Indigenous, Australia*

## **1. Introduction**

Freight services play an important role in providing communities with equitable access to goods and access to markets for their produce. Remote communities with small populations generally have low freight demands and higher freight costs – typically leading to less frequent freight services. This impacts on the types of Small-Medium Enterprises (SMEs) which can be established and are viable in the long term.

In 2006 an Australian Remote Indigenous Stores and Takeaways project noted: 'Unanimous among the participants of the forum was the belief that, on the whole, the chain of food supply to remote indigenous communities is dysfunctional.' The South Australian Government Country Freight Service Improvement Strategy (2004) has also stated: 'Flow-on economic and social impacts in Australia from continuing rises in the price of transport fuel and potential reductions in oil supply have already had serious impacts on many Indigenous Australians living in remote... desert areas. All food and other freight travels long distances on remote roads which are costs factored into higher prices in ...community stores and increases the costs of getting produce to markets from these areas'



Indigenous Australians' health inequality is a national shame. Indigenous life expectation is 17-years lower than other Australians; infant mortality is three times higher; and death rates for Indigenous Australians are twice as high across all age groups for all age groups. (Australian Bureau of Statistics 2003) In particular, Indigenous Australians lack the opportunities other Australians enjoy to be healthy. The Human Rights and Equal Opportunity Commission has noted that 'More primary health care is needed to ensure Indigenous Australians can see a doctor when they need to - just like other Australians can; and the standard of housing and sanitation and food supplies in many Indigenous communities needs improving so that Indigenous Australians can make the same healthy life choices as other Australians.' (Human Rights and Equal Opportunity Commission 2007)

The Commissioner's stated approach – based on the right to health - is two-fold. First, Australian governments must work to ensure Indigenous Australians enjoy the same access to primary health care, and the same healthy standard of housing, food, and so on, as other Australians.

It is clear that improvements to freight services to remote desert communities are needed, and if achieved, would have significant impact on community well being – particularly in relation to access to improved fresh food options, but also opportunities for generating autonomous income which could be a key component for breaking intergenerational reliance on income support – this has multifaceted benefits associated with psychosocial factors all linked either directly or indirectly to many endemic health issues experienced by Indigenous Australians. (Berry et al. 2007)

The central research problem concerned with addressing these issues has been articulated as: Can freight into and out of remote communities to meet stated needs and expectations be done profitably or at least without making a loss? Integral to the research are further considerations such as: What are the most sustainable modes of freight logistics for servicing remote desert communities in Australia? How is sustainability defined for freight logistics in desert Australia? What are the key outcomes sought by remote communities from freight service providers? and Does an appreciation of environmental and social parameters, together with financial parameters, support the introduction of revised framework for the provision of freight services in desert Australia?

## 2. Background

A Senate inquiry conducted by the Rural and Regional Affairs and Transport References Committee into Australia's future oil supply and alternative transport fuels notes in its September 2006 interim report: 'Recent sharp rises in the price of oil have served to demonstrate that there are significant sectors within Australian society who have limited capacity to cope with sustained high oil prices.' (Rural and Regional Affairs and Transport References Committee 2006) Furthermore submissions and evidence submitted to this inquiry on the effects of high fuel prices noted that 'There appears to have been little hard research on the effects to date or the likely longer term effects' of high oil prices.

A study by Dodson and Sipe of Griffith University has found that those Australians affected soonest and most severely are likely to be those most reliant on car transport, due to a lack of suitable alternatives. 'These people tend to be those in socioeconomically disadvantaged outer-suburban locations and those on the fringes of urban areas and in regional and remote communities.' (Dodson 2005)

The same Senate inquiry interim report also notes that 'While there are a range of groups that actively promote the use of biofuels as an alternative to oil based products, there appear to be significant unresolved questions in relation to such fuels. However, all have a role to play in oil substitution and the transition to greater sustainability. There are issues in relation to biofuels which must be addressed...'

The findings of these studies illustrate that a range of social and environmental issues need to be considered in conjunction with financial perspectives when evaluating freight logistics in desert Australia.

A review of historical and currently applied freight and transport logistics models has highlighted that social and environmental considerations are rarely considered as part of an integrated approach to



sustainable provision of freight services. Numerous modelling approaches adopted to date focus on improving efficiencies by lowering costs – social and environmental issues are considered in isolation from these models, if at all.

The outcomes of this research will provide conclusions and recommendations supported by robust modelling and analysis based on Triple Bottom Line (TBL) principles. Thereby providing the evidence to support or refute submissions made to the Senate inquiry into Australia's future oil supply and alternative transport fuels. It will also contribute to an increased understanding of how small businesses and small business networks can more effectively deliver livelihoods for desert people based on natural and cultural resources and on service delivery, in ways that are environmentally sound and socially appropriate.

The Freight Transport Logistics industry steering committee produced an Action Agenda in 2002 which noted: 'An efficient and effective logistics sector is vital to the economy because of its enabling effect. Freight logistics extend market reach by giving manufacturers access to a wider range of raw materials and supplies from different sources. It also provides consumers with access to a wider range of domestic and international goods and services, while reducing waste in production, consumption and capital expenditure.' (Industry Steering Committee of the Freight Transport Logistics Industry 2002)

Freight services play an important role in providing communities with equitable access to goods and access to markets for their produce. In this regard remote communities with small populations, that are not on major freight corridors, generally have low levels of freight demand which results in less frequent freight services and higher freight costs. This impacts on the types of Small-Medium Enterprises (SMEs) that are established and can operate sustainably in these communities. Often these issues are overlooked when establishing a new venture, consequently freight logistics related issues are likely to be significant factors contributing to the higher rate of unsuccessful SMEs in the Northern Territory compared with the national average. (Australian Bureau of Statistics 1996)

The South Australian Government in its Country Freight Service Improvement Strategy noted that 'Flow-on economic and social impacts in Australia from continuing rises in the price of transport fuel and potential reductions in oil supply have already had serious impacts on many Indigenous Australians living in remote and rural communities throughout desert areas. All food and other freight travels long distances on remote roads which is already factored into higher prices in remote community shops or stores and increases the costs of getting produce to markets from these areas.' (South Australian Government 2004)

Taking into account the factors mentioned above it is clear that improvements to freight services to rural and remote areas of Australia are needed, and if achieved would have a significant impact on community well being.

Furthermore, identifying options and opportunities to provide freight services which are more economically viable and sustainable than those currently operated will encourage expansion of existing freight services and promote the introduction of new and innovative freight services specifically suited to the conditions in Desert Australia.

### ***2.1 Sustainability Principles in Freight and Transport Logistics***

The transportation industry is a major contributor to environmental degradation through its modes, infrastructures and traffics. (Bannister 1993; Whitelegg 1993). During the 1990's there was numerous studies, reports and opinion pieces published which suggested how the environment could be incorporated into the logistics industry (Muller 1990; Tanja 1991; Murphy 1994). However a review of the logistics industry undertaken in 2001 and published in 'The Handbook of Logistics and Supply-Chain Management' (Rodrigue et al. 2001) notes that '...interest in the environment by the logistics industry manifested itself most clearly in terms of exploiting new market opportunities.' While traditional logistics seeks to organise forward distribution, that is the transport, warehousing, packaging, and inventory management from the producer to the consumer, environmental considerations opened up markets for recycling and disposal, and led to an entire new sub-sector:



reverse logistics. Reverse logistics, also referred to as „reverse distribution, reverse-flow logistics, and green logistics (Byrne and Deeb 1993) involves the transport of waste and the movement of used materials.

How the logistics industry has responded to the environmental imperatives is not unexpected, given its commercial and economic imperatives. However, given that significant issues such as pollution, congestion and resource depletion have been virtually overlooked, the industry was not identified as very ‘green’ in the 1990’s – at the peak of corporate awareness of environmental issues. This conclusion is demonstrated in published surveys of members of the Council for Logistics Management undertaken by Murphy et al (1994).

Since the 1990’s many corporations have moved beyond evaluation of their environmental impacts to considerations of social issues under the banner of Corporate Social Responsibility. Since there is little evidence that the freight logistics industry had developed an understanding of managing environmental impacts of operation, it is not unexpected with regard to social parameters, typically the „next step□ after addressing environmental issues when an organisation or industry is attempting incorporate Triple Bottom Line parameters into operations, that there is little evidence of these considerations to be found to date in the logistics industry. Most social parameters are in reality economic considerations within the operating parameters of the current logistics industry. As noted by (Rodrigue 2001) the currently perspectives are that „the purpose of logistics is to reduce costs, notably transport costs. In addition, economies of time and improvements in service reliability, including flexibility, are further objectives’. However, it can be seen how these objectives can be developed in social parameters when seeking to address freight and transport service issues in the remote communities of desert Australia and compare various options.

### **3. Research objectives**

This research will contribute to a new perspective on what sustainability means within the freight and transport logistics industry in desert Australia.

In addressing these problems the main research objective is to evaluate various freight logistics options currently available using a set of metrics incorporating economic, environmental and social parameters. Further specific objectives are:

- To consider the needs associated with freight services into remote communities
- To consider the opportunities, broader benefits and needs associated with freight services out of remote communities.
- To evaluate various freight logistics options in terms of alternative fuel (renewables) use potential.

Establishing supply chains to source Indigenous produce and on-sell products from remote communities, together with revised notions of efficient freight transport logistics in desert areas, offers significant opportunities for sustainable development. The expected research outcomes include:

1. Better understanding of environmental, social and economic factors in relation to delivering the freight and transport needs of desert Australia.
2. Information on ways to create sustainable livelihoods for people that are based on natural resources and value traditional skills & knowledge
3. Identification of product & service enterprise opportunities that are environmentally and socially appropriate
4. Increased knowledge of critical success factors for small enterprises in desert Australia
5. Development of new knowledge on the impact of using bio-fuels and other alternative fuel sources for freight logistics into and out of Desert Australia.
6. Techniques for establishing and operating sustainable SME□s in Desert Australia through:



- the provision of solutions to freight and transport issues associated with developing viable micro-businesses in remote desert regions.
- Understanding various options for alternative ways of reducing freight and transport costs.

#### 4. Theory

Clearly it can be seen that a broad range of parameters need to be considered when evaluating and comparing freight services into and out of remote desert communities in Australia. Through a review of existing models used in the freight and logistics industry it was established that these would be unsuitable for an integrated assessment as they focused on efficiencies in moving freight from one point to another via a range of options. These structure of these models (generally based on algorithms of time, distance and cost) means they do not have the ability to incorporate environmental and, in particular, social elements to an evaluation. While environmental and social assessments could have been done separately, this approach allows economics to be considered in isolation from environmental and social elements and inevitably leads to an assessment which does not cater to the needs of all stakeholders, particularly those of people living in remote communities.

Consequently, a framework for analysis was sought from outside of the freight and logistics industry.

Since its publication in the Harvard Business Review in early 1992, the Balanced Scorecard (BSC: Kaplan and Norton, 1992) has become the best-known and most widely implemented multi-dimensional performance measurement (MDPM) model throughout the world. Its advocacy of a balanced and integrated performance measurement system using four perspectives on organisational performance is recognised as representing a significant step forward from the old uni-dimensional focus on financial performance measures of primary interest to shareholders. Its recognition of employees and customers as vital to organisational success has broadened the range of stakeholders catered for in performance measurement and management systems. In many organisations it has led to the use of non-financial performance measures to supplement traditional financial measures, that are themselves frequently being supplemented or supplanted by new financial metrics (Cooper et al, 2001).

Kaplan and Norton (2001b) argue that such new financial metrics are fully compatible with the BSC and that each enhances the other. However, neither new financial metrics nor the BSC itself cater for the needs of all significant organisational stakeholders. Two notable omissions are the environment and social matters, which are of vital importance in the analysis of freight services to remote communities in desert Australia and of increasing interest to most corporate entities. In a paper by Stan Brignall 'The UnBalanced Scorecard: A social and environmental critique' (2005) a case is made for re-balancing the BSC by incorporating social and environmental aspects of organisational performance that are of widespread concern. In doing so Brignall questions the causal chain inherent in BSC strategy maps (Kaplan & Norton, 2000, 2001a, b & c), concluding that it is flawed in such a way as to enable the inclusion of social and environmental aspects in a BSC.

Gray et al (1995) argue that there are three theoretical contexts for social and environmental accounting research. The first relates to the 'decision usefulness' of such information to decision makers, usually taken to be investors (Belkaoui, 1984; Aupperle, 1984). Mintzberg (1983) suggests that, while the results of such studies are inconclusive, there is evidence to suggest that it 'pays to be good, but not too good.' The second context concerns positive accounting theory and agency theory, which Gray et al (1995) dismiss as inimical to social and environmental aspects of organisational performance. This is because they are founded on notions of 'free' markets and the supposed virtues of the 'invisible hand', hence are unconcerned with the market failures and social inequalities that campaigners are attempting to remedy.

The third category is social and political theory, in which Gray et al (1995) identify 'stakeholder', 'legitimacy' and 'political economy' theories. Roberts (1992) argues that stakeholder theory provides a basis to 'analyse the impact of prior economic performance, strategic posture towards social responsibility activities, and the intensity of stakeholder power on levels of corporate social



disclosure.' Legitimacy theory argues that organisations must be seen to comply with regulatory requirements (see Kaplan and Norton, 2001c, above) that many would see as part of the 'social contract'. Mathews (1993, 1995) suggests that social contract theory is the most 'persuasive moral argument in favour of increased social and environmental disclosures'. However, for the social contract to work, organisations must be held accountable for their actions, and Gray (1998) suggests that 'the standpoints of accountability and transparency' are the most frequently used justifications for social and environmental disclosures. Gray (1992) defines accountability as concerned with 'the right to receive information and the duty to supply it.' However, Gray et al (1997) suggest that a stakeholder and accountability approach may fail, being 'too inert and only slowly responsive to changing stakeholder needs.' More seriously, it might be argued that the social and environmental literature considered so far is likely to be ineffective because it fails to sufficiently take into account the deep conflicts among different interests in society. It is for this reason that we finally turn to Gray et al's (1995) argument that social accounting can be seen to fall within political economy. The following quotation from Jackson (1982) is a useful definition:

'Political economy is the study of the interplay of power, the goals of power wielders and the productive exchange system (Zald, 1970, 233). As a framework, political economy does not concentrate exclusively on market exchanges. Rather it first of all analyses in whatever institutional framework they occur and, second, analyses the relationships between social institutions such as government, law and property rights, each fortified by power and the economy' (p.74)

Possibly the strongest critique of the mainstream social and environmental literature came from Tinker et al (1991). Tinker et al argue that the pragmatic approach of the mainstream neglects important issues of social justice and systematic social ills, so denigrating 'the importance of accounting in shaping social struggles.' Their preference is for a 'conflict based perspective' that places power asymmetries at the forefront of the analysis of the basic inequalities that cause the problems faced by modern societies. This author argues that mainstream MDPM models such as the BSC are an important new form of organisational accounting with implications for political economy, that hitherto have been captured and controlled by managerialist interests. Furthermore, most of the research into their design, implementation and use has been managerialist in orientation, hence their affects on wider societal matters have been largely ignored. If this is so, then a consideration of the inclusion of social and environmental aspects of organisational performance in such MDPM models is particularly relevant at this time and in relation to analysis of freight services to remote desert communities in Australia.

However, the managerialist orientation in the design and application of MDPM models such as the BSC do date could be argued to be function of their application in organisations for the purpose of strategic planning and policy development exercises. While the social and environmental aspects may never be reflected in managerial practice depending on the particular bent of an individual manager and the organisation they are managing, this need not be the case in the design and application of a MDPM model for research purposes. The independence of research evaluations (rather than those conducted by individual organisations or Government) of freight logistics in desert Australia creates the ability to think about the environmental and social effects of current management actions, Government policy and regulatory requirements that may not be felt until many years into the future, which, may be a useful corrective to the short-termism endemic in Government and among many managers.

It is evident that a consideration of the interrelationships among the four existing BSC perspectives provides a sound basis for analysis, which may be extended to include social and environmental aspects.

#### ***4.1 Incorporating Sustainability into a Balanced Scorecard model***

The Balanced Scorecard (BSC) makes it possible to take into account non-monetary strategic success factors which significantly impact on the success of a business. It is thus a promising starting-point to also incorporate environmental and social aspects into the main management of a firm (or in this



instance the Australian freight industry). By utilising the BSC framework for value-orientated corporate sustainability management the shortcomings of conventional

approaches to environmental and social management systems are overcome by integrating the three pillars of sustainability into a single and overarching management tool. Given this potential, a range of authors have dealt with the topic of a Sustainability Balanced Scorecard (e.g. Radcliffe 1999; Bieker et al. 2001; Epstein & Wisner 2001; Epstein & Roy 2001; Orsatto et al. 2001). Following on from these initial discussions, basic approaches and a methodology for a value-oriented sustainability management with the Balanced Scorecard were discussed in detail (Figge et al. 2001b; Figge et al. 2001c; Figge et al. 2002). A value-orientated approach to corporate sustainability management with the BSC helps to integrate the three pillars of sustainability into an overarching management or evaluation tool.

The three pillars of sustainability need to be integrated by a value-orientated approach for three reasons (Figge et al. 2001 a and 2001 b):

1. Sustainability management that reduces the business value is endangered because it is carried out by firms only as long as the company is successful and can afford this 'luxury'. If firms find themselves under financial distress, those costs are cut down first which do not contribute to the financial bottom line. Sustainability management which does not create business value will thus be practised only as long as firms are successful. Furthermore, in the desert Australia context, freight services that are heavily subsidised by Government will constantly be under scrutiny and contribute to discussions regarding the „viability“ of remote communities. These costs could be considered as a contributing factor to past Government policies aimed at relocating Indigenous people from traditional lands into „town camps“.
2. Non-value-orientated sustainability management is an inappropriate role model for other businesses. As firms which want to promote or reinforce their environmental and social management credentials often use these as point of difference with competitors, it is improbable that they adopt sustainability management which creates losses rather than benefits.
3. Non-value-orientated sustainability management is by definition not sustainable. According to the three pillar concept sustainability involves economic, environmental and social aspects. Usually, it is implicitly assumed that these aspects bear a complementary relation to each other. Sustainability is only achieved if environmental, social and economic goals are reached simultaneously. Only a business which improves with regard to all of the three dimensions of sustainability demonstrates a clearly sustainable performance.

The BSC assists the identification and the management of those environmental and social aspects, which contribute to financial business goals. Therefore, a Sustainability Balanced Scorecard fulfils the central requirement of the sustainability concept for a permanent improvement of the business performance in economic, environmental and social terms. The BSC is particularly suitable for value-based sustainability management due to two key reasons (Figge et al. 2002):

1. First, it ensures the integration of all three sustainability dimensions because it allows consideration of „soft“ factors which cannot be monetarized. Environmental and social aspect often show these characteristics.
2. Second, conceptually the BSC approach is open to implementing different kinds of strategies. As a consequence the Sustainability Balanced Scorecard is appropriate for use with not only to niche companies with an explicit sustainability strategy, but also to many mainstream firms who may not have explicit sustainability strategies.

In the following section the fundamental possibilities of an integration of environmental and social aspects into a BSC extended to application across an industry, rather than a single organisation, are described in the context of freight logistics in desert Australia.



## 5. Methodology

Brignall (2000) has proposed that environmental and social elements should be added to MDPM models such as the BSC as a fifth performance dimension in their own right. However, they also note that 'in order for environmental and social objectives to be realised, managers will have to understand the interrelationships among... existing BSC perspectives...' It is based on this premise and to avoid the ability for environmental and social performance measures to be considered in isolation from financial and economic performance measures, i.e. ensure integration, that the MDPM model based on a BSC framework has been developed for analysis of freight logistics options in desert Australia with economic, environmental and social performance measures incorporated into each of the existing four BSC perspectives.

However, before commencing with the incorporation of integrated sustainability performance measures into a BSC model, it must first be developed from its current format specifically catering to development and/or evaluation of strategic alignment and performance within organisations to a tool which can be applied to various organisations operating within a specified industry, in this case, desert freight logistics. This can be done relatively easily by defining industry wide objectives and targets in each of the BSC perspectives, which then supports the identification and incorporation of appropriate performance measures. This process transfers the focus of the BSC outputs from delivering competitive advantage for an individual organisation to a benchmarking and comparative analysis tool that can be used to compare various strategic options (for delivering freight services in this application) and scenario planning exercises. The BSC's four perspectives can be characterised briefly as follows (Weber & Schaffer 2000; Kaplan & Norton 2001):

- The financial perspective, in the organisational context, indicates if the transformation of a strategy leads to improved economic success. Thus, the financial measures assume a double role: they both define the financial performance a strategy is expected to achieve and are also the endpoint of cause and effect relationships referring to the other BSC perspectives.

These roles have been preserved in the Australian desert freight logistics context with objectives and targets defined as follows in order to compare various options in this perspective:

Objectives: To determine the lowest cost freight option/s for servicing remote desert communities. To consider all freight logistics options in terms of respective economic, environmental and social costs and benefits as considered from the service provider perspective (Government and freight service provider).

Targets: Improved services to remote communities. Identification of opportunities for improvement of services. An increased understanding of how various freight logistics options compare with each other when compared on a consistent basis using Triple Bottom Line Principles. An increased understanding of the environmental and social aspects of various freight logistics options in desert Australia.

- The customer perspective defines the customer (or in a non-profit application, the stakeholders) in which the organisation operates. By means of appropriate strategic objectives, measures, targets and initiatives the customer value proposition is represented in the customer perspective, through which the firm/business unit wants to achieve a competitive advantage in the envisaged market segment.

In relation to freight services in desert Australia, the key customers or stakeholders have been defined as the people living in remote communities. As such the key objectives and targets have been articulated as follows:

Objective: To evaluate freight services from the perspectives of the remote desert communities they are servicing, Government and remote businesses based on economic, environmental and social principles.

Targets: An improved understanding of the key issues relating to freight logistics into and out of desert communities. Identification of the key concerns people living have about freight



services and quantifiable measures for these issues that allows comparisons of various options to be made. A consistent basis for analytical comparison of freight logistics options in desert Australia.

- The internal process perspective traditionally identifies those internal business processes which enable an organisation to meet the expectations of customers in the target markets and those of the shareholders. In the industry wide adaptation of the BSC this perspective identifies and measures the impacts of various freight industry characteristics impacting on freight logistics in desert Australia and compare options in relation to these characteristics. These characteristics emanate from Government policy, regulatory requirements and subsidies etc currently defining the freight logistics framework in desert Australia.
- Finally, the learning and growth perspective describes the infrastructure which is necessary for the achievement of the objectives of the other three perspectives. Typically this has meant the most important areas are qualifications, motivation and goal orientation of employees and information systems. In the desert Australia context there is an extension of these ideas to skills and knowledge development of people living in remote communities so that they are better equipped to manage freight logistics service providers to suit their own needs. This involves developing a knowledge of how service providers operate and having the skills to place orders, access back loading opportunities and action matching strategies in order to transfer their involvement in the freight logistics industry in desert Australia from passive recipients to pro-active influencers and managers.

Once each of the BSC perspectives has been defined specifically in terms of the Australian desert freight logistics context, appropriate performance measures can be selected under each of the three pillars of sustainability. That is, under each BSC perspective performance measures are categorized under economic/financial, ecological/environment and social sub-sections. This structured method of developing the MDPM model using the BSC as a base ensures integration of environmental and social elements with economic/financial performance measures and, if done correctly with appropriate stakeholder engagement, value-orientated outcomes from assessments.

Figge et al. (2002) proposes three different approaches for integrating environmental and social elements into the existing economic focus of the BSC. In the Australian desert freight logistics industry application, the integration of sustainability categories into the existing four standard perspectives is considered the preferential approach, rather than addition of a non-market perspectives into the BSC or creation of a separation environmental/social scorecard is considered the most appropriate for the simple fact that it avoids the possibility of separating these elements from the economics after the analysis has been done. i.e. sustainability is imbedded into the analysis.

This model then provides an effective tool for conducting both consistent comparisons of existing freight logistics options and also the sustainability of potential future scenarios, (such as the increased use of biofuels) in desert Australia.

## **6. Leadership and entrepreneurship in desert Australia**

Based on traditional, economic evaluations of remote communities the question of „viability“ is often brought into discussions. This is a loaded term, as to state that a remote community is „unviable“, based on typically western ideas of economic rationalism, ignores the intrinsic right of an Indigenous person to maintain their strong links with their land or country and thereby maintain their culture.

If it is acknowledged that remote communities have a right to exist, the issue for freight logistics then becomes how to best and most efficiently service these communities in relation to a range of essential and non-essential products.

With advances in technologies such as real time freight logistics tracking systems via the internet it may be possible to for remote communities to improve freight logistics services by innovative applications of new and existing technologies.



People living in desert Australia are typically regarded as highly resourceful and innovative. It therefore follows that an increased understanding of how various freight logistics options operate will lead to opportunities for improved services and/or new links between service providers and customers to be identified and pursued.

### **6.1 Matching Strategies**

A hypothesis of this research which is evaluated in the learning and growth perspective of the BSC is that a transfer of skills and knowledge from freight logistics service providers to people living in remote communities will liberate matching strategies that improve the overall economics. For example, creation of small-medium enterprises with appeal to world markets (Indigenous art and produce) creates back loading opportunities with high value items that may eventually be able to offset (and lower?) the costs of supply into remote communities.

### **6.2 Role of Leadership**

In the absence of government commitment or clear policy to address issues, many private businesses are leading the push with CSR and Reconciliation policies. New business networks are being established in desert Australia which are developing Indigenous products such as art, bush produce (e.g. condiments and personal care or indulgence items) that are unique to the remote communities in which they are manufactured. These items have a high degree of appeal in overseas market segments, particularly the UK, Germany, Japan and North America. However, existing freight logistics services providers in desert Australia are traditionally focused on subsidised services into remote communities, rather than provision of two way services and the facilitation of international freight forwarding.

Within the Australian (and world) freight industry, private business that specifically seek to address freight logistics issues with a clear commitment to skills transfer and autonomous involvement of Indigenous people are required.

### **6.3 Best Practice Business Frameworks**

The performance measures incorporated into the Sustainability BSC for freight logistics in desert Australia provides a robust basis for evaluating the sustainability of various options in this context. However, the elements that constitute sustainability in desert Australia, with particular reference to Indigenous culture elements, are expected to differ significantly from how sustainability might be defined for freight logistics in the rest of Australia and worldwide.

The differences and similarities between the requirements for sustainability in these varying contexts provides another applications for the Sustainability BSC: identification of best practice business and industry frameworks. By realigning the BSC model focus from strategies to deliver competitive advantage to one that analyses performance of an overall system, (particularly through the performance measures incorporated into the internal processes perspective), limiting and enabling factors can be identified. Furthermore, the ability of various freight logistics options to deliver the best outcomes within existing policy and regulatory frameworks can be determined.

### **6.4 Partnerships are the Key**

It is clear even at this early stage of this research that new business relationships are required to transform the freight logistics industry in desert Australia in order to improve services to remote communities.

Establishing collaborative links and exploiting strengths of various organisations (both corporate and non-profit) to overcome endemic red tape and ingrained, systemic challenges resulting from mismanagement and direct / indirect programs of cultural genocide that have been implemented in the past are the key to generating tangible, positive outcomes in desert Australia.

The freight logistics and agri-food (particularly the bush produce) supply chains in desert Australia represent a key opportunity to link the various knowledge bases of entrepreneurial research institutions such as the Desert Knowledge Cooperative Research Centre, numerous freight and other



businesses entering and operating in remote communities, and expanding market segments for Indigenous produce to transform a heavily subsidised industry delivering a low level of service to a highly integrated and more efficient network. New business relationships and partnerships are the key to achieving joint benefits through shared costs and knowledge exchange programs. Examples of these partnerships may be inclusion the of freight on fuel deliveries to remote communities or linked logistics networks for deliveries from post, freight, fuel and private entities accessible by remote communities via internet connections.

## **7. Main Findings to date**

Kaplan and Norton's Balanced Scorecard is a multi-dimensional performance management model which can be effectively developed into a tool which supports evaluation of the sustainability of a range of options specific to an industry, rather than just as a management tool to support the implementation of corporate strategies.

Use of such a model to evaluate freight logistics options in desert Australia provides a method of ensuring consistent comparison based on value-orientated performance measures. This is generating research outputs that support tangible outcomes in terms of identifying ways to improve freight services to remote communities in desert Australia.

An early indication derived from application of the model in a limited number of case studies is that export supply agreements are key to transitioning the freight logistics industry in desert Australia. They are expected to create the pull necessary to support transition of freight industry in desert Australia from individually operated and often heavily subsidised businesses with a focus on supply only to a network of partnerships facilitating improved service both into and out of remote communities.

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