Accounting for agriculture in place-based frameworks for regional development
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A value assessment and development framework, and toolbox for building constructed advantage in agriculture based regions

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Foreword

Local and regional development approaches in developed economies around the world often focus on endogenous, or local action, rather than external interventions, for solving intransigent, complex problems. This project has developed a regional scale analytical tool that aims to establish the broad contribution of agriculture and rural industries to regional development. It also aims to help understand the role of place-based assets in enhancing regional development.

These ‘place-based’ strategies identify how the unique attributes of individual places, both tangible and intangible, determine the comparative advantage and food security of a region. The strategies facilitate the integration of government policies to provide a holistic development approach, with policy support from the community, and all levels of government.

It will assist industry to articulate an informed argument as to its role and input into the function and health of the regional economy, and identify future opportunities and issues to build on this role based on its particular assets.

This report is targeted at State and Commonwealth Government departments, Local Government Authorities, regional development organisations, special interest groups, large businesses and SMEs in regions. Policy-makers at all levels of government, extension agents, consultants and farmer organisations, could benefit directly from this work. Indirect benefits could accrue to individual farmers and agribusinesses through more holistic and better targeted policy and support for the industry.

This project was funded by RIRDC core funds, which are provided by the Australian Government. The report is in addition to RIRDC’s diverse range of over 2000 publications, and it forms part of our National Rural Issues RD&E program, which aims to inform and improve policy debate by government and industry on national and global issues relevant to agricultural and rural policy in Australia.

Most of RIRDC’s publications are available for viewing, free downloading or purchasing online at www.rirdc.gov.au. Purchases can also be made by phoning 1300 634 313.

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About the Author

The project team was comprised of discipline experts from the Tasmanian Institute of Agriculture (TIA), the School of Management and the Institute for Regional Development (IRD) at the University of Tasmania, that together make up the Australasian Agrifood Value Chain Research Group.

TIA is a joint venture between the University of Tasmania and the Tasmanian Government. The TIA works collaboratively across disciplines and university schools via the Australasian Agrifood Value Chain Research Group to conduct value chain innovation research using a systems approach.

The Institute for Regional Development (IRD) is a place-based research and teaching institute located on the Cradle Coast campus of the University of Tasmania. It was established in 2007 as an initiative of the Federal Government’s ‘Renewing the Region’ project.

The team leader, Dr Laurie Bonney, is a Senior Research Fellow at TIA and the Convenor of the Value Chain Program, one of six strategic research areas. Laurie focuses his research on the strategic management of value chains, in particular, incentivising co-innovation. He also chairs the Australasian Agrifood Value Chain Research Group, and currently leads several value chain projects in Australia. Dr Bonney also conducts value chain research for development in Vietnam and PNG. Dr Bonney has previously conducted a successful foresight and strategic planning consultancy in Australia and SE Asia and had senior management experience in both private and public sectors to CEO level.

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- Tasmanian Farmers & Graziers Association
- Tasmanian Agricultural Productivity Group
- Cradle Coast Authority
- Rural Development Australia
- The Tasmanian Department of Economic Development, Tourism and the Arts.

Abbreviations

RDPM – Regional Development Planning Method
RSCA – Rapid Supply Chain Analysis
TIA – Tasmanian Institute of Agriculture at the University of Tasmania
IRD – Institute of Regional Development at the University of Tasmania
UTas - University of Tasmania
VCA – Value Chain Analysis
VCM – Value Chain Management

Glossary

A ‘supply chain’ is a sequence of linked businesses that transform raw materials into products, services and information that consumers value and will pay for.

A ‘value chain’ occurs when supply chain partners decide to collaboratively innovate or ‘co-innovate’ to create and deliver value for which their customers and consumers will pay a premium price.

Creativity is the production of novel and useful ideas in any domain.

Innovation is the successful implementation of creative ideas within an organisation.

Co-innovation in a value chain occurs when two or more companies in that chain collaborate to innovate in product, process, raw material inputs, markets or governance to improve the efficiency and/or effectiveness of delivering value to consumers, and overall sustainable competitive advantage of the whole chain (Bonney, 2011).

Innovation networks are also known as ‘innovation platforms’. They are a diverse group of actors that voluntarily contribute knowledge and other resources (such as money, equipment, and land) to develop jointly or improve a social or economic process or product (World Bank, 2012).
Clusters exist where there is loose geographic concentrated or association of firms and organisations involved in a value chain producing goods and services and innovating. They involve integrated and often dissimilar firms and public agencies/institutions specialising and collaborating on R&D, innovation, commercialisation and marketing to produce a range of new or re-engineered products and services which are often cross-sectoral in nature (Enright & Roberts, 2001).

A ‘system’ is a complex entity of individuals, businesses or organisations that, as a whole, has properties related to the whole that are meaningless if viewed only in terms of its component parts e.g. an industry or a supply chain (Bonney, 2011).
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Executive Summary

What the report is about

This project develops a regional scale analytical tool which aims to assist rural industries and communities to establish the contribution of agriculture and rural industry to regional development and economies. The tool also aims to help understand and build on the role of place-based assets in enhancing this development. Critically, the framework tool can also assist industry to identify and promote its indirect contribution. Indirect contributions are often missed in measurement exercises or overlooked in regional economic and/or industry analysis. The tool can therefore enable industry to articulate, with greater certainty than at present, an informed argument as to its role and input into the function and health of the regional economy, and identify future opportunities and issues to build on this role based on its particular assets.

Who is the report targeted at?

This report is targeted at State and Commonwealth Government departments, Local Government Authorities, regional development organisations, special interest groups, large businesses and SMEs in regions.

Where are the relevant industries located in Australia?

There are 55 regional development areas in Australia. This report is particularly relevant to those that have a strong agricultural base. The Value Assessment and Development (VAD) Framework and tools developed are relevant to all agricultural industries and sectors and, indeed, other industries as well.

The direct benefits of this report could accrue to:

- Policy-makers at all levels of government
- Extension agents
- Consultants
- Farmer organisations.

Indirect benefits could also accrue to individual farmers and agribusinesses through more holistic and better targeted policy and support for the industry.

Background

Regional Australia, and particularly the agricultural regions, faces unique, complex problems that are difficult to solve. Previously, top-down approaches to solving these problems have not always been successful. Further, traditional approaches have focused on economic analysis with little consideration of the non-traded knowledge-based intangibles that may be used to construct regional advantage through innovation.

The modern approach to development is more focused on bottom-up, or ‘endogenous’, strategies. Endogenous strategies aim to enhance the place-based opportunities and strengths, including intangible assets, which exist in every region.

Aims/objectives

The objective of this project was to develop a framework and toolbox for policymakers, which can be used to accurately describe the current and expected future contributions of agriculture to regions. The
project also aimed to implement this framework and toolbox to examine the contribution of agriculture to regional development in the case study region. Methods used

Methods used

The North West region of Tasmania was used as a field study to develop and pilot the framework, called the Value Assessment and Development Framework (VAD). The development of the theoretical construct was facilitated by the agri-business opportunity framework (Hansen, Shrader & Monllor, 2011). Two critical approaches are of assistance. The first offers an ends-driven, causal logic that starts with “what do we want to achieve and how can we get there”. The second is a means-driven, effectual logic that considers the resources first and then attempts to make the most valuable use of them (Sarasvathy 2001). Following Sarasvathy and Venkataraman’s (2011) entrepreneurship as method effectual approach, three questions were developed to stimulate the recognition or creation of new and economically attractive agri-business opportunities:

• What is the value of agriculture and agribusiness as it stands?
• What are the facilitators and inhibitors that determine the value of agriculture?
• What can be done to enhance the value?

Three concepts were then incorporated into the new framework and used to drive its methodology and tool selection:

• The ‘Seven Capitals’, a well-known framework in community development that has not previously been employed at a regional level (Emery & Flora, 2006);
• A broad conception of ‘innovation’ based on the foundational work of Schumpeter (1934);
• The policy platforms that can be used to construct regional advantage (Cooke, 2007).

Results/key findings

This project has developed and piloted a new rural regional development planning approach which specifically focuses on the place-based development of agriculture called the Value Assessment and Development (VAD) Framework. It is related to, but not derived from, Cooke’s (2007) Regional Development Planning Method (RDPM). As such, the VAD Framework makes the broad approach of endogenous, place-based regional development planning more relevant to agriculture.

The VAD Framework may be useful for a wider range of applications as additional tools and instruments are developed by users. This makes it adaptable in a range of planning contexts. The existence of the VAD Framework should be communicated to those who may be interested via appropriate web pages and media releases made available to regional planning practitioners and agricultural extension agencies. Any additional tools developed that could be employed in different contexts would expand the breadth of application, transferability and utility of the method.

Implications for relevant stakeholders

There are few planning approaches, methods and tools specifically developed or adapted for the differences that exist between agriculture and other industries. Further research into specific instruments and tools adapted to regional Australia and agriculture would benefit regional planning practitioners and agricultural extension providers in constructing advantage through the development of innovative regions, innovative marketing clusters and co-innovative value chains.

There may be potential for the three RIRDC projects addressing the task of developing endogenous, place-based approaches to regional planning, to be tasked with integrating approaches and tools. It may also be productive for these three RIRDC projects to address the task of identifying future
research directions to broaden and deepen the range of methods specifically suited for constructing advantage using place-based regional attributes.

**Recommendations for future research**

Potential areas for future research include the following:

- Developing a Rapid Value Chain Analysis method for assessing the ‘marketing health’ of agricultural regions, industries or sectors
- Identifying the managerial behaviours of innovative farmers and agribusinesses
- Identifying the potential for facilitating value creating rural networks in Australia.
Introduction

Local and regional development approaches in developed economies around the world often emphasise endogenous, or local, rather than external interventions (Khisty, 2006; Tomaney, 2010) for solving ‘wicked problems’ (Rittel & Webber, 1973). These so-called ‘place-based’ strategies identify how the unique attributes of individual places determine the facilitators and constraints, both tangible and intangible, that influence the development of comparative advantage and food security (Ryser & Halseth, 2010; Woods, 2012). Interventions go beyond fragmented policies and simple ‘place-branding’ to focus on holistic strategies that facilitate supportive, integrated policies at all government levels, as well as community cooperation (Bachtler, 2010). In particular, rural-urban networking and capacity have been found to be important to regional innovation (Dabson, 2011; Pritchard et al., 2012), as well as the influence of individual values, beliefs and norms on adaptive behaviour in regional change (Raymond, Brown, & Robinson, 2011). Long term approaches that focus on innovation, and facilitate the active involvement of stakeholders and human capital development, are essential (Tomaney, 2010). It is appropriate that rural communities have available a holistic, place-based framework to address the idiosyncratic strategic, community and regional development variables that foster the development of Australian regions.

RIRDC commissioned the Tasmanian Institute of Agriculture (TIA) and the Institute of Regional Development (IRD) at the University of Tasmania (UTas) to undertake a project to maximise the contribution of agriculture to regional economies by developing a portable framework to account for the dynamic role of agriculture, over time, in regional economies. The framework should help to understand the current role of agriculture in a region, and identify opportunities to increase industry, and subsequently regional, competitiveness and well-being.
Objectives

This project aimed to develop a framework, and accompanying methods and tools that could be employed, for using a place-based, systems approach to investigating the contribution of agriculture or other industries to a regional economy.

The project sought to achieve two things:

1. To identify a framework that could enable the contribution of the agricultural sector to be consistently and effectively assessed and enhanced; and

2. To apply this framework to assess the role and value of agriculture in North West Tasmania.
Methodology

The field study to develop and pilot the framework was conducted in the North West region of Tasmania. North West Tasmania comprises the Local Government Areas (LGA) of: (1) King Island, (2) Circular Head, (3) Waratah/Wynyard, (4) Burnie, (5) Central Coast, (6) Devonport, (7) Kentish, and (8) Latrobe. Due to the lack of significant agricultural activity, the West Coast area has not been included in the analysis.

This research adopted Sarasvathy and Venkataraman’s (2011) entrepreneurship as method effectuation approach to economic development. Three issues shaped the project and formed the core logic for the framework:

1. What are the region’s “means”?
2. What are the contingencies, controllable risks, and partnerships to leverage?
3. What valuable new end states can be created (Bonney, Collins, Verreynee, & Miles 2013)?

These three questions are brought together with sequential or concurrent processes, methods and tools in Figure 1.

![Figure 1: The three core questions used to develop the framework](image)

The research was carried out in three phases:

Phase 1: A desktop analysis of existing reports and data to summarise contextual information about the socio-demographics, industry and business profiles of the region, and a broader socioeconomic analysis of the community.

Phase 2: The development of a ‘current state of the region’ paper, which provided the basis for Phase 3. The methods employed included:

- Interviews using the ‘Seven Capitals’ framework (Emery & Flora, 2006) as a guide for convergent interviewing techniques
- Focus groups with the community, farmers and industry leaders
- An exemplar Rapid Value Chain Analysis of a typical regional value chain (Collins & Dunne, 2008)
An innovation and entrepreneurship survey of farmers and agribusinesses (Appendix X) based on an innovation framework using Schumpeter’s (1934) foundational definitions.

The data were analysed using qualitative content analysis, which developed themes representing the convergent (agreement) and divergent (disagreement) views of respondents. These themes and sub-themes were interpreted through the 7 Capitals framework and the Innovation/Entrepreneurship framework (based on Schumpeter, 1934) developed for this project.

Phase 3: The development of a strategic regional agricultural development strategy, which piloted the complete theoretical planning framework. This was based on an inductive analytical framework, framed around three questions:

Q1: What is the value of agriculture and agribusiness as it stands?
Q2: What are the facilitators and inhibitors that determine the value of agriculture?
Q3: What can be done to enhance the value of agriculture?

It was the original intention in this phase to conduct a futures workshop based on Mercer’s (1997) Short Scenario Method. However, getting a critical mass of regional stakeholders to commit to a one day workshop in the short time frames required by this project proved impractical. As a result, 11 interviews were held with the stakeholders separately. These provided feedback on the ‘State of the Region Report’ and data that were used for the development of three intuitive scenarios.

Finally, these data were interpreted through Cooke’s (2007) policy platforms framework for constructing regional advantage, in the context of the preferred future that emerged from the scenario development process which was entitled “Diversity Rules” to develop a range of appropriate government interventions to support existing regional initiatives and compensate for the market’s failure to initiate other activities regarded as critical for the development of the preferred future. This comprised the final step of the process and was reported in the form of a Regional Agricultural Development Strategy.

This process is illustrated in Figure 2.
Figure 2: The research model
A place-based framework for assessing the value of agriculture

Traditionally, when trying to understand the value and future development potential of a key industry such as agriculture within a region, researchers and policy makers have used economic modelling for these assessments. While economic modelling can provide useful insights, it paints an incomplete picture of the different types of attributes that an industry can leverage and generate through interactions in its local region. This project used a place-based framework to understand how the North West Tasmanian agricultural industry leveraged a range of regional attributes to create value. A place-based framework illuminates the interconnections among human, physical, financial and other resources that can be leveraged to intentionally ‘construct’ sources of economic advantage in regions.

Traditional sector modelling approaches

Economic models used by economists are framed with underlying theory and assumptions. They are not intended to be representations that explain everything about an economic system, but are a means of isolating useful approximations of key relationships to improve understanding and provide a basis for decision making. Such indicators are designed to provide a simplified representation of complex economic systems, which identify output based on current market conditions and relationships between the factors of production that sit between supply and demand.

The estimation of the economic contribution of industries or sectors of industries is a frequent single indicator used for regional economic planning because of its apparent objectivity and ease of comprehension. Models frequently assume perfect competition, which rarely occurs in reality (Emery & Trist, 1975).

Neo classical economic analysis is primarily based on a simplified premise of equilibrium, a steady state in which the variables within the analytical model alter with respect to endogenous and exogenous shocks and readjust to a new equilibrium. This simplification enables understanding the whole economy (Arthur, 2013) but has been criticised because of its idealised view of the world, which does not reflect reality. Nevertheless, this form of bounded and essentially short run modelling has provided the framework for the majority of the microeconomic analysis used to consider the value of an industry and the relationship between industries.

These approaches have evolved into several different ‘economic impact models’, used to analyse the relationships between industries and impacts of changes to a particular industry on employment and income. They are primarily based on recording the financial transactions between entities within a specific location, for example a region, state or country, and categorising them within the most disaggregated industry sector classification. This recording, when applied to national account structures, enables income, and cost structures and relationships to be determined, and when applied to input/output tables, multiplier effects are determined.

Impact measures

Impact measures are a means of estimating the impact of a ‘sector shock’ across related sectors within a geographic area. The impact of a change in one sector and its flow-on income and employment effect to others in both direct and indirect terms is captured in multiplier analysis. The relationships on which these estimators are derived are historic, reflect the manner in which the factors of production relate, and assume totally elastic relationships. Types of impact measures include:

- Input-Output or IO models, which are relatively simple modelling of the interconnectedness of sectors and market transactions. Strengths of this type of modelling include an ability to capture the inter-industry linkages well, and ease of implementation. Weaknesses include use
of fixed prices, non-accounting of substitution impacts, and potential for overestimates to occur.

- Computable General Equilibrium (CGE) models are more complicated models of the interconnectedness of sectors, institutions, factors, and non-market transactions which account for price changes, but these models may have difficulty with spatial issues (Cassey, 2009; Mitra-Kahn, 2008; Seung & Waters, 2009).

- Integrated econometric input-output (EC-IO) models incorporate the strengths of econometric modelling to overcome the IO weaknesses. They also improve the forecasting performance of econometric modelling, have improved impact analysis capabilities, can model the time paths of the effects of policy impacts and clarify the key elements of the policy mix.

- Social Accounting Matrix or SAM models represent the flows of all economic transactions that take place within a regional or national economy for a single year, providing a static picture of an economy. They depict the spending patterns of an economy and can be used in economic impact analysis. However, they have similar problems to IO models.

Whilst impact analysis provides a commonly used benchmarking methodology to provide a measure of change, and reduces the need for a survey of costs and benefits in response to a change in agricultural output, its value and limitations should be understood.

The models are sensitive to the parameters applied, and to the technical nature of production. An alternative model is based on national accounts, a method of accounting for outputs.

**Accounting measures**

IO modelling must be supplemented with demographic analysis, and employment within a region is also often used as an indicator of the contribution of an industry such as agriculture. The ABS uses separate multipliers (Type 2A) to estimate the direct and indirect effect of agriculture on overall employment (Trewin, 2001; McLennan, 2008). These are useful measures of the contribution of agriculture at a point in time, however should be treated with caution due to the previously identified partial descriptor of contribution, boundary issues and data.

Statistics on the financial value of agricultural production generated by the Australian Bureau of Statistics (ABS) provide a relative sense of the scale of agriculture in a region. They are generally measured in either gross terms, which do not remove the costs of production or transfers, or in net terms such as value added, where the difference between the gross revenue and input cost is identified. Both terms are useful for providing a picture of relative scale and productivity. The introduction of new activities can be modelled simplistically using cost-benefit analysis in terms of increasing production or employment. However, this approach does not model the interactions between agriculture and other industries in a region, which are important to estimate the overall regional impact of the change.

These data, along with other statistics, can be used to populate econometric models such as the various forms of regression analysis to establish trends, sensitivity to change and to develop forecasts, however similar limitations remain; this is not to exclude the techniques but to caution on over-reliance on the models in isolation of other forms and sources of knowledge and information.

In summary, traditional models have a number of strengths, but also limitations that reduce their usefulness, in measuring the impacts of an industry on a regional economy.
Strengths and weaknesses of traditional approaches

The strengths of traditional approaches include:

- Relative ease of comprehension for non-economists
- Reflective of the structure of regional economies at a point in time, from which changes or shocks to this structure are modelled
- Can facilitate forecasting for policy development, business strategy and management
- Can facilitate risk management.

The weaknesses of traditional approaches include:

- Do not easily account for temporal dimensions, such as traded interdependencies, which are non-market, non-price mechanisms such as knowledge-based assets (Powers, 2013)
- Do not produce robust forecasting results, given use of historic production function relationships and assumption of constant returns-forecasting
- Project current economic relationships into the future regardless of how these are likely to change with behavioural response to feedback
- Tend to overestimate the impact of a reduction/loss of industry to a region, because models do not account for use of private financial reserves or increases in government transfers into the region
- Are less able to model the introduction of new industries to a region, given a lack of historical data on that activity and its transactional relationships with other sectors
- Without complementary econometric analysis, do not provide guidance on how outputs and productivity would change in respect to the modification of inputs and resources allocation in the production function and associated value chain, or the optimising process involved in political decision-making and policy development (Arthur, 2013; Phillips, Karwandy, Webb, & Ryan, 2013).

To many, the IO and multiplier approach are a ‘black box’ that non-economists either greatly distrust or, and perhaps more dangerously, rely on too strongly (Cassey, 2009). This reinforces the paradox that exists in a context where there is only partial knowledge available or considered within the modelling construct, and the need for certainty; income and employment effects are often viewed as the definitive proxy for certainty in relation to an industry’s impact on a region.

Thus, traditional approaches are necessary but not sufficient. So, understanding the Gross Regional Product (GRP) is a necessary step in calculating the agricultural industry’s contribution to a region. IO modelling incorporating the highest level of value adding undertaken within a region is complex, and will not provide an understanding of the quantum of economic contribution where the value chains extend outside the region. Value chains from different industries vary considerably regarding the amount of value-adding undertaken in the region, as well as the complexity of their inputs and outputs. For example, wool chains are long and complex with much of the value-adding done overseas, whilst horticulture and meat chains frequently undergo considerable transformation into value-added products within a region.
How we used economic models in this project

Developing a new approach to economic modelling for rural regions, or the evaluation of alternative existing types and sources of modelling, was beyond the scope of this project. As the first step in understanding the contribution of agriculture to Tasmania’s North West region, we used the existing models currently used by key regional planning and development agencies:

- IO model employed by the Tasmanian Department of Economic Development, Tourism and the Arts (DEDTA). This is a modified REMPLAN (Regional Economic Modelling and Planning System) service provided to DEDTA.
- The accounting measures modelling used by the Tasmanian Department of Primary Industries, Parks, Water and Environment (DPIPWE) for its Food and Beverage Industry ScoreCard.

What we learned from the economic models we examined in this project

Whilst the contribution of agriculture to the Gross State Product (GSP) and GRP of a region are frequently estimated, the contribution of agriculture to the GRP is very difficult to calculate because:

- The statistics kept are incomplete
- The movement and realisation of the value of primary produce is complex. For example, produce may be processed outside of a region, external inputs may be drawn on for production within the region, or expenditure counted within a region is actually employed outside the region
- ABS statistical, industry and occupational definitions must be very carefully examined to ensure the compatibility of data.

These problems illustrate why it is necessary to adopt a more holistic approach when trying to understand the contribution of agriculture to regional economies. Agriculture’s contribution is much more than the simple production, income and employment impacts. However, no single framework appears to be adequate as a tool for exploring the current and future states of that contribution.

The contribution of agriculture to a place

The key question that emerges from these descriptors of the economic contribution of agriculture, or indeed any industry or sector, is whether they provide a reasonable estimation of the economic contribution made by the people involved in an industry, their practices and behaviours within a place. Traditional sectoral or industry approaches to the analysis of contribution are bounded by the industry definition. This limits the range of transactions and interdependencies that are valid.

Places can be viewed as a system of interdependent elements, connected in multiple and direct or indirect ways, some internal to the place and others external. When the contribution of an industry is considered within a place-based structure, the lack of reality (Arthur, 2013) to the models and their inability to clarify fit to the context of a place is apparent. This is considered important when a sector is positioned in a place-based context and its contribution is widened to consider the beneficial or detrimental outcomes in terms of ecological, economic and social perspectives and their interrelationships. The question then evolves from the traditional


technical dimensions to its sociotechnical dimensions, where benefit is defined by the mix of that society’s specific culture and values.

Consideration of ‘place’ as a development construct, as opposed to an industry or sector approach:

1. Opens the scope of those who can legitimately engage in discourse regarding the ‘what is, what if’ and the ‘what could be’ issues within a region, by removing the traditional industry definition that by default, identifies and limits the legitimate participants

2. Extends consideration of contribution from industry output to a wider range of outcomes that are valued by the society in that place (Arthur, 2013; Batie, 2008);

3. Defines the benefits sought from agriculture, and its role in positioning that place in relation to others.

Thus, place creates a context within which to address how agriculture fits into and contributes to the characteristics and condition of that place and, importantly, how that place relates to others (Savoie, 1992). These outcomes emerge from triple bottom line constructs centred on ecological, economic and social outcomes that reflect a societies prioritising between these perspectives.

There is an economic relationship between the elements of the triple bottom line construct of ecological, economic and social perspectives. An example of this is the natural endowments on which agriculture is based. The maintenance and improvement of endowments such as soil condition and water resources is an economic contribution that can be valued. In the short run, it is valued in terms of the value of output it can produce. In the medium term, it is valued in its capacity to allow producers to switch to alternate production to match market opportunity. In the longer run, it can be valued in terms of supporting food security.

Conversely, agricultural activity can damage or destroy the natural endowments and associated ecosystems of the place and, importantly, these impacts also have environmental, economic and social consequences which can be valued.

In addition to the more obvious physical elements, other less visible elements and connections exist within regional clusters. For example, specific spatial knowledge domains become expert in exploration, examination and exploitation knowledge (Cooke, 2007) along with attendant informal mechanisms, including digital networks and formal institutions that support the interrelationships within and between networks. Such elements of regional capital have clear, if unrecognised value from their contribution to the productivity and strategic positioning of the region.

The place-based structure highlights the broader notion of, and requirement for, an extended form of applied economics that recognises context (Batie, 2008) and multiple perspectives on value, applied in different ways of thinking about economic development (Arthur, 2013).

This does not mean a rejection of traditional models but, from understanding their limits, recognises that political decision making processes involve the integration of multiple perspectives including science based information and lay knowledge, through new forms of analysis within a constructive discourse (Batie, 2008).

As identified earlier, the boundaries applied to agriculture, whether at the farm gate or at the end of the value chain, will markedly alter estimates of value. Similarly, when considering the value of the primary industry to a place, estimation of value is transparently derived from the dominant values of the place into the social and political domains. People will value things on the basis of

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3 This refers to the interaction of the social aspects of people and society and the technical aspects of organizational structures and processes (Emery & Trist, 1975; Trist & Labour, 1981).
their values and interests, and this will often be contested. Therefore, a scientific and objective valuation that is broadly accepted and has utility may be problematic, particularly if the outcome of decisions is significant (Batie, 2008).

**The notion of ‘constructed advantage’**

The early economic concept of the ‘comparative advantage’ of goods derived from natural resource endowments being traded between regions and nations evolved in the 1970s to ‘competitive advantage’, where an attribute or combination of attributes is acquired or developed that allows it to outperform its competitors. However, neither of these explained the differences in regions’ relative abilities to exploit the dynamics of innovation. This has led to the development of the notion of ‘constructed advantage’, a knowledge-based construction which integrates:

- Knowledge generation, smart infrastructures, and strong local and global business networks;
- Multi-level governance of stakeholder interests, strong policy-support for innovators, enhanced budgets for research, vision-led policy leadership, global positioning of local assets;
- The development of a knowledge infrastructure through universities, professional consultancies, etc; and
- Community, culture and the development of talented human capital, creative cultural environments, and social tolerance.

The public factor in this notion provides the background for the dynamics of a ‘triple helix’ of university-industry-government relations. This has evolved into the ‘regional innovation systems’ and ‘industry cluster’ concepts becoming, in effect, a ‘policy platform’ supporting the development of a constructed advantage, complementing the natural advantage of the place endowments (Cooke & Leydesdorff, 2006).

**Value of place-based lenses for informing policy initiatives**

The use of a place-based context introduces wider notions of community wellbeing, and alternative benefits that agriculture can contribute. These include current and potential, direct and indirect benefits that occur through the provision of safe food, security of supply, and access to public goods substantiated by agricultural production and value adding. These examples introduce a number of dimensions to addressing key challenges in assessing the value of agriculture in a place:

- Understanding the values of society in a place and articulating them as outcomes sought from agriculture within a construct such as the triple bottom line (ecology, economic and social) as a means of framing consideration of value;
- Positioning agriculture in the context of place; the degree to which it dominates (or not) the economy and other community interactions, mechanisms from which human and social capital are derived, and how the industry positions the place to take other opportunities;
- Uncertainty, time horizons and a means of dealing with them. For example, at a point in time, the contribution of agriculture is exogenously driven by market price, but how does this affect income, employment and revenue, both in the present and in the future? Or, what could be the effect on soils and groundwater from increasing production value and productivity with large scale irrigation?
• Understanding the complexity of the nature of interrelationships and interdependencies that exist within the networks and systems, and the critical cause/effect relationships that influence the key parameters around which industry performance, contribution and value, are determined. It is important to ensure place-based constructs are also considered within the context of markets and the exogenous factors that determine demand characteristics for the majority of agriculture;

• Recognition of the range of sources of knowledge, combining expert and lay knowledge, quantitative and qualitative information in deliberative, constructive mechanisms; and

• From a supply side perspective, considering the Community Capitals Framework (Emery, 2006) as a means of establishing a constructed advantage policy platform (Cooke, 2007). This is reflective of the industry in the juxtaposed context of production, market places and systems.

Determining the value of the contribution of agriculture in a region is arguably of limited value. It has traditionally been determined in a partial sense, from a point in time, or as a trend with the limited parameters of revenue, income and employment. These indicators are generally adequate when the status quo is acceptable and there is general support for agriculture (Batie, 2008). If, however, the catalyst for determining industry value is to transition to determining ‘what if’ and ‘what could be’, traditional models are of less utility.

This conclusion is not just about the models, but also about the way we think about the intersection of industry and place. In particular, the interdependency between the culture and values that frame the society or community and, from this, the manner in which the valuation of industry contribution is used to achieve the beneficial outcomes sought from the industry. Socio-economic network and probabilistic frameworks and modelling currently being applied to ecosystems potentially provide an opportunity to match modelling to these frameworks. Fundamentally, it will be these mental frameworks that effect behavioural change and provide all levels of government with guidelines for supportive interventions.

Therefore, the following section outlines the framework developed from this project, and three possible constructs that appear to have utility in determining the value of agriculture and agribusiness, the facilitators and inhibitors of that value, and provide guidance for what can be done to enhance the value of agriculture.
What can be done to enhance the value of agriculture using place-based concepts?

This section presents conceptual frameworks for identifying opportunities, threats and levers for enhancing the value of agriculture using region-specific or 'place-based' attributes. This links the output of traditional economic modelling with broader social and cultural characteristics that underlie a community’s response to both the internal physical and social constraints, and the external socio-political context, in which they live.

The following sub-sections explain the logic and theoretical constructs used to develop a new framework for thinking about how to develop the sustainable competitive advantage of a region’s agricultural industry, based on more holistic characteristics. It first explains how the new framework was based around some core questions to develop opportunity, then proceeds to explain the integration of three well known theoretical constructs into a new planning and development framework for agriculture. This framework has been called the ‘Value Assessment and Development (VAD) Framework’, which incorporates:

- The ‘Seven Capitals’, a well-known framework in community development that has not previously been employed at a regional level (Emery & Flora, 2006);

- A broad conception of ‘innovation’ based on the foundational work of Schumpeter (1934); and

- The policy platforms that can be used to construct regional advantage (Cooke, 2007).

The logic used to identify the core questions for the framework

An initial finding from the analysis of the community conversation data, and the assessment of the Tasmanian Innovation Census (AIRC) and ABS data, is that the North West region of Tasmania could economically benefit from the development of agriculturally related value-added consumer products that entrepreneurs develop. While the region has significant agricultural production capabilities, it has very limited value added production and marketing, not unlike much of regional Australia.

To address this finding, the framework must focus on the ability of a region to transform its agricultural commodities into higher value consumer goods.

Arising from this, a development framework was created to help regions recognize and create agrifood opportunities, assess commercial agrifood opportunities, and most efficiently and effectively exploit these opportunities through business creation, alliance, or expansion initiatives. Figure 3 illustrates the general model adapted from Shane and Venkataraman (2000).

Figure 3: Agri-business opportunity framework

Opportunity recognition is a fundamental activity of both entrepreneurship and marketing (Hansen, Shrader & Monllor, 2011). Two critical approaches are of assistance; the first offering an ends-driven causal logic that starts with “what do we want to achieve and how can we get there”, and the second, a means-driven effectual logic that considers the resources first and then
attempts to make the most valuable use of them (Sarasvathy 2001). Following Sarasvathy and Venkataraman’s entrepreneurship as method effectual approach, three questions were developed to stimulate the recognition or creation of new and economically attractive agri-business opportunities. Figure 4 summarizes the effectual logic approach to opportunity recognition adapted from Saraswathy (2001).

Figure 4: The ‘three questions’ framework, set in effectual logic

The first question is “what is the value of agriculture and agribusiness as it stands?” Sadly, in much of regional Australia, the value is the economic value of the commodities alone, without additional processing or value adding initiatives. The second question is “what are the facilitators and inhibitors that determine the value of agriculture?” That is, what are the constraints that limit transforming the commodity into a highly valued consumer good? The third question is simply “what can be done to enhance the value?”

Kotler and Keller (2006) propose that value is the relationship between the product’s benefits to the final consumer and its total costs. They suggest that benefits include:

- Product related benefits, for example in the case of Vidalia Onions, where there is consumer perception that the onions are sweeter;
- Image related benefits, such as the social status of serving top tier regional foods such as a Parma Ham;
- The service related benefits of localized production; and
- Relationship benefits derived from doing business with those who are in your professional network.

Typically, costs that detract from the good’s value include:

- Acquisition, consumption and disposition monetary costs such as the decision to buy or not buy a Hybrid car;
- Time and effort costs to seek out organic foods for example; and
- Psychological costs, for example, of consuming food grown with the use genetically modified seeds (Kotler & Keller 2006).
This value equation helps explain the market success for products such as Vidalia Onions. Onions marketed as Vidalia’s are not sold as commodities, but as branded speciality goods, and are used as a premium ingredient in many foods in restaurants or in prepared sauces and salad dressing. For example, Brasswell foods make a premium line of salad dressings and sauces that use the branded Vidalia onion as the main ingredient, creating tremendous additional value for the onion growers and enhancing the reputation of the product (see http://www.walmart.com/ip/Braswell-s-Vidalia-Onion-Summer-Tomato-Dressing-12-oz-Pack-of-6/17769399). Likewise, Bland Farms aggressively markets their Vidalia onions in their farm gate retail outlet and also through the distribution power of Wal-Mart (see http://www.blandfarms.com/).

Figure 5 summarizes the three questions that are at the core of this research framework.

Figure 5: The three questions framework

Implementing this concept requires the identification or development of appropriate theoretical constructs to answer these questions. Thus, the following sub-sections identify the components of what we have termed a ‘Value Assessment and Development (VAD) Framework’ for agriculture. This is an open framework, compatible with McCall’s (2009) explanation of the Regional Development Platform Methods (RDPM) and, with little modification, could be applied to other industries in other places.
The components for a new VAD Framework for agriculture

The following section outlines the theoretical constructs that have been incorporated into the new framework and drive its methodology and tool selection:

- The ‘Seven Capitals’, a well-known framework in community development that has not previously been employed at a regional level (Emery & Flora, 2006);
- A broad conception of ‘innovation’ based on the foundational work of Schumpeter (1934);
- The policy platforms that can be used to construct regional advantage (Cooke, 2007).

The Seven Capitals

It is now well recognised that agriculture has inter-connected roles in producing food commodities as well as non-food commodities such as environmental services, landscape amenities and cultural heritage (IAASTD, 2007). These ‘multi-functional services’ (Millennium Ecosystem Assessment, 2005) have value to the wider community, just as the community context influences the nature of agriculture in that area.

To provide a framework for identifying the value created by agriculture we relied on Emery and Flora’s (2006) ‘Seven Capitals’, a recent enhancement of the well-known Five Capitals. Flora and colleagues developed the Seven Capitals framework for evaluating community and economic development, which they define as development activity “…which contributes to healthy ecosystems; social equity and empowerment; and vibrant, diverse, and robust economies.” (Fey, Bregendahl, and Flora, 2006: 3). The seven capitals in the framework are:

- **Natural capital**: the natural resources and amenities in a particular location “including weather geographic isolation, natural resources, amenities and natural beauty”;
- **Cultural capital**: the way people ‘know the world’ and how they act within it, including language and traditions. “Cultural capital influences what voices are heard and listened to, which voices have influence in what areas, and how creativity, innovation and influence emerge and are nurtured”;
- **Human capital**: “the skills and abilities of people to enhance their resources, access outside resources and bodies of knowledge to increase understanding, identify promising practices, and to access data for community-building”, as well as leaders’ ability to lead across community differences and proactively shape community development;
- **Social capital**: the connections among people and organizations, or the social “glue” to make positive or negative things happen;
- **Political capital**: access to power, resources and power brokers, and “the ability of people to find their own voice and to engage in actions that contribute to the well-being of their community”;
- **Financial capital**: access to the financial resources necessary for development and “to accumulate wealth for future community development”; and
- **Built capital**: regional infrastructure (Emery & Flora 2006).

As Emery and Flora (2006) explain, the community capitals framework has three particular advantages for analysing community and economic development. The first advantage is that it provides a systems perspective by enabling: “…the identification of assets in each capital (stock), the types of capital invested (flow), the interaction among capitals and the resulting
impacts across capitals…” (Emery & Flora 2006: 20). The second major advantage is that it focuses on assets and investments, rather than needs and deficits. The third advantage is that examining capitals as assets makes it possible to investigate and potentially predict whether, and how, investments in building specific forms of capital contributes to regional development outcomes. These advantages make it a particularly suitable framework for this toolkit, as it is focused on identifying ways to enhance the value of agriculture in regional communities.

**How we used the Seven Capitals in this project**

The Seven Capitals were the basis for Steps 1 and 2.1 – 2.2 in Figure 2: The Research and Development Model. The Desk Research conducted as Step 1 identified existing literature and data within the Seven Capitals Framework. Similarly, interviews (Step 2.1) and focus group (Step 2.2) were structured to use the Seven Capitals to answer the Three Core Questions. This was to identify how to construct regional advantage through the lens of the Seven Capitals Framework and provide data for additional research processes that focused on identifying how to develop regional innovativeness and entrepreneurship, and how to enable policy support.

**What we learned from using the Seven Capitals in this project**

The Seven Capitals Framework provided a very useful and detailed framework for identifying the existing strengths and weaknesses of the region which could be the focus for policy support. Other tools, such as problem/objective tree analysis may also be of assistance.

**Applying an appropriate innovation model for agriculture**

Strategically, innovation is critical for improving competitiveness in world markets as globalisation accelerates (Arumapperuma, 2006). However, at the micro level of agrifood suppliers, innovation is necessary to maintain access to supermarkets, find and access niche markets, and stay relevant to the modern retailing system (Keogh, 2013; Reardon & Timmer, 2012).

Cunningham (2001) undertook an extensive study of the leading global databases between 1987-2000 and found only one hundred and twenty three formal, peer reviewed management journal articles for agriculture. This is an important deficit, because agrifood value chains are subject to unique constraints compared to other industries (for example, originating from thousands of small family businesses) where value chain dynamics are also often more structured and integrated (Aramyan, Ondersteijn, van Kooten, & Oude Lansink, 2006; Bonney, 2011). For these reasons, single factor measures of innovativeness frequently used, such as the number of patents generated, are not appropriate. Further, the definition of innovation used in such measures, and the sampling frame, are also critical. For example, the Australian Innovation Research Centre’s (AIRC) Tasmanian Innovation Census (Arundel, Torugs, & O’Brien, 2012) incorporates data from businesses employing five or more people. Thirty-six North West regional businesses participated out of more than 1,200 businesses; therefore the majority of farmers and SMEs servicing agriculture were excluded on size. Furthermore, the survey defined innovation as new products and processes, which limits our understanding, particularly when it comes to SMEs.

Such broad approaches to the determination of innovativeness may not be critical to national analysis, but at a regional level, where the policy interventions and value chain strategy may have a greater likelihood of facilitating change, more appropriate measure of innovativeness and entrepreneurship are needed.

Innovation can be understood using a framework that considers the form and the magnitude of innovation in pursuit of superior economic returns through disruptive innovations (Miles, Paul, and Wilhite 2003). Adapting Schumpeter (1934), this study classifies innovation into the following categories:
1. Product
2. Process
3. Marketing
4. Supply chain
5. Strategic management or governance of the firm and the chain.

Product innovations focus on product features, benefits, and forms. Process or administrative innovations change how the product is created, produced and marketed. Strategic innovations change the firm’s position in the market, the value proposition, and even the domain of the business. Marketing innovations include both market development by entering new markets, and market creation by offering radical new products and thereby creating a new market. Supply chain innovation pertains to either the development of new sources of inputs, or the creation more efficient and effective supply chains. Strategic innovation involves innovation of value chain management and/or the value proposition itself, for example shifting from a commodity produce marketer to using the produce as the foundation for a valued added product.

Likewise, the magnitude of the innovation is classified into radical and continuous. Radical innovation forces new producer or consumer behaviour and can create new markets, while continuous innovations do not force changes in producer or consumer behaviour, but attempt to shape the market preferences towards the innovator.

Table 1 provides further explanation of the five Schumpeterian innovation categories and identifies actual examples found by the project in North West Tasmania. These examples are classified as incremental or radical, thus providing a guide for analysing regional agrifood innovation.

This innovation framework formed the basis for the development of an innovation and entrepreneurship survey of agribusiness and farmers that appears to have broad utility, and which, with the Seven Capitals, provided data for thematic or ‘qualitative’ content analysis.
<table>
<thead>
<tr>
<th>Form of innovation</th>
<th>Description</th>
<th>Continuous innovation</th>
<th>Radical innovation</th>
</tr>
</thead>
</table>
| **Product**       | Product innovations involving new features, benefits, presentation and forms. | • Bio-dairy speciality cheeses.  
• New frozen vegetable mixes or condiments/flavour enhanced vegetables.  
• Evolving from juice production to cider, dried fruit. | • Moving from frozen vegetables to pre-washed salads in a bag.  
• Moving from frozen vegetables to chilled, mixed salads & condiments in a PET\(^4\) box.  
• Moving from whole fruit to juice production. |
| **Process**       | Management innovations involving new or new to industry changes to the process of how the product is created, produced or marketed producing novelty in the product or increased efficiency of the process. | • Taking industry based continuous education courses.  
• Continuous improvement programs.  
• Lean Manufacturing programs. | • Change from field to greenhouse production methods.  
• Change from processing to fresh market production. |
| **Marketing**     | Both market development by entering new markets and market creation by offering radical new products, thereby creating a new market. | • Agricultural consultants moving towards a “bottom-line” from a production focus.  
• New promotional strategies.  
• Developing a supplier relationship management focus.  
• Continuous improvement. | • Adding a farm gate retail marketing function.  
• Individual commodity supply to cluster marketing for scale and sustainability.  
• Export to international niche markets.  
• Brand development. |
| **Supply chain**  | Development of new sources of inputs or the creation more efficient and effective supply chains. | • Incremental improvement projects.  
• Searching and acquiring complementary sources of raw materials. | • Searching and acquiring new sources of raw materials (e.g. horticultural firms seeking new fresh market suppliers from cool climate Tasmania as climate change risk management). |
| **Strategic management/governance** | Strategic innovations that change the firm’s position in the market, the value proposition, and even the domain of the business. | • Shifting from a commodity producer to a using the produce as the foundation for a valued added product or fresh market product.  
• Corporate demergers and disaggregation.  
• Horizontal co-innovation\(^5\). | • Horticultural processors moving from producing juice to cider.  
• Cluster production & marketing. |

\(^4\) Polyethylene terephthalate or PET is a thermoplastic polymer resin used in synthetic beverage, food and other liquid containers.  
\(^5\) Horizontal co-innovation occurs when competitors collaborate or when an organisation collaborates with research organisations such as universities, CSIRO etc.
How we used innovation and entrepreneurship in this project

This project specifically reviewed the leading global management and innovation research on the dynamics and drivers of innovation, and found eleven widely used scale instruments for measuring innovation, market orientation and entrepreneurship. These have been listed against the specific scales used in the survey instrument in Appendix 4. These were used to create an initial list of 120 questions and reduced to a manageable 57 items by removing duplication and some error checking. These questions were used to undertake an innovation and entrepreneurship survey of farming and agribusiness participants from all stages of North West Tasmanian supply chains. This provided data for analysis of the constraints and place-based potential of North West Tasmania’s agricultural industry. From this data emerged themes of place-based potential and constraints, which were subsequently used for the development of future scenarios for the region.

Whilst the survey has been constructed as two separate surveys to suit the circumstances of agribusiness and farm business structures and operations, they measure the same constructs and are able to be combined. The two surveys have only slightly different introductory questions and wording in some questions to suit the two groups.

What we learned from using innovation and entrepreneurship construct in this project

The survey of 57 items was derived from three scales: marketing orientation, entrepreneurial orientation, and strategic alignment scales. Preliminary analysis suggests the following:

- **The marketing orientation scale:**
  - The items are reliable and provide a consistent measurement of some construct (Cronbach’s Alpha = .872).
  - The three scales account for 46% of the variance in:
    1. Customer focus by chain;
    2. Information sharing throughout chain; and,
    3. Competitive aggressiveness and rent seeking within the chain.

- **The entrepreneurial orientation scale:**
  - The items are reliable and provide a consistent measurement of some construct (Cronbach’s Alpha = .831).
  - The two scales account for 60% of the variance in:
    1. Product innovation; and,
    2. Administrative/marketing innovation.

- **The strategic alignment scale:**

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6 ‘Rent-seeking’ is an economic term which implies extraction of uncompensated value from others without making any contribution to productivity. Rent-seeking is distinguished from profit-seeking, in which entities seek to extract value by engaging in mutually beneficial transactions (Krueger, 1974; Tullock, 1967). In supply chain terminology it is when an entity seeks to acquire a greater share of the value “pie” (p. 461) without expanding the market share (Jap, 1999, 2001).
The items are reliable and provide a consistent measurement of some construct (Cronbach’s Alpha = .775).

The three scales account for 40% of the variance in:

1. Intra-organisational trust and values;
2. A dominate lead firm in setting strategy for the chain; and,
3. Self-serving rent seeking chain member behaviour.

Further work is required to test the validity and reliability of these scales.

Survey and consultation methods should be adapted to the region involved. If implementation methods such as those outlined above are not successful, then others should be tested. It is likely that ‘consultation fatigue’ exists in other regions similar to North West Tasmania.

**Strategic foresight for envisaging future scenarios for place-based agriculture**

Developing long-range visions and plans requires unanimity of purpose. Strategic foresight processes, including scenario planning, can therefore be valuable for regions because they focus policy and regulatory support at all levels of government, and provide greater certainty for investment and innovation by business.

Strategic foresight drives, is supported by, and is a pre-cursor to strategic planning: strategic foresight is about synthesis, intuition, creativity and moving into the unknown, whilst strategic planning is about analysis, planning processes, programming and building, or extending, the known (Conway & Voros, 2002). Planning to manage for the future, then, involves an overhaul of the way in which managers think about the future. Strategic foresight comes from a systems perspective and is holistic and intent-driven. It focuses an organisation, region or nation and its individual members on a goal that links the past, present and future in a balanced view of their separate roles, but also developing their capacity to break current paradigms.

In business, approaches to the management of people are increasingly integrating all four aspects of human existence: the individual self and consciousness, behaviour, culture and worldview, and social systems and the environment. Effective and organisationally useful planning involves these psychosocial levels of the key people in an organisation. The strategic foresight processes involved in the minds of individuals, and the psyche and culture of groups participating, can be as important as the plan itself. This concept is based on the observation that people instinctively and constantly develop alternative plans for the future. The mind has an innate capacity to store these for future reference, constantly rehearsing and integrating them into our perception of the future, effectively forming mental ‘templates’. This is the neuro-psychological principle that lies behind elite training, particularly in the military and sports, where it is important that people act instinctively (Ingvar, 1985; MacKay & McKiernan, 2004).

This is important to organisations and regions, given it is necessary to read the environment; observing and perceiving change, and spotting subtle differences. Such ability is conditioned by the way the past is perceived, by the sensory alertness to spot the departures from the past, and fresh developments in the present (Tsoukas & Shepherd, 2004). The organisation or community is then able to respond quickly and with unity. This is the goal of managing uncertainty.

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7 Many nations undertake strategic foresight studies for their nation, however, one of the most widely acclaimed examples are the highly successful Mont Fleur Scenarios developed by post-Apartheid South Africa (Kahane, 1992).
This project used a strategic foresight process, specifically scenario analysis, to envisage what North West Tasmania’s agriculture might be like in 2025. Voros (2003) has characterised the alternative futures that might be developed from such a process as ranging from:

- Potential futures that have/have not yet been conceived
- Possible futures that ‘might happen’ based on future knowledge we don’t yet possess
- Plausible futures that ‘could happen’ based on knowledge that we currently possess
- Probable futures that are ‘likely to happen’ based on research of current trends
- Preferable futures when we might make a judgement about what we ‘want to happen’.

Hence, three scenarios were developed: plausible, probable and preferred. From these, the preferred scenario was used to propose policy platforms and conditions that might support its development in the region.

For Tasmania’s North West region, Ratcliffe’s (2004) truncated version of Mercer’s (1997) method can be employed within Slaughter’s (1999) structural overview. This is an inductive approach which builds progressively on the data emerging from the process and allows the structure of the scenarios to develop by themselves.

See Appendix 6 for more detail on implementing this scenario planning approach.

**How we used scenario planning in this project**

Owing to the difficulties experienced in obtaining participation, the project focused on the two largest sectors. One had recently been undergoing considerable upheaval and stress, and the planned scenario development activities slipped into a peak seasonal period. This meant that the methodology in Appendix 5 had to be modified to a series of interviews with key industry players using the scenario questions as follows:

- What developments in the industry sector during this period?
- What is likely to stay essentially the same between now and 2025?
- What are the major trends/drivers of change in place now that will influence the industry sector in 2025?
- What are the emerging issues that might come into play by 2025?
- What are the most serious problems facing the industry sector now and in the near term?
- What needs to change to assure a viable and prosperous industry sector in 2025?
- What are the scenario logics – continuities, trends, emerging issues and problems?
- What are the possible, probable and preferred scenarios?
- Are the scenarios relevant for the goal, internally consistent, archetypical and do they represent relatively stable outcome situations?
- What are the key challenges (opportunities and threats) over the next five years for the preferred scenario?
- What strategies will address the key challenges?
• Are the scenarios robust given the strategies?

In the second industry sector, a significant group of industry leaders and stakeholders participated in two, half day workshops where the method in Appendix 5 was fully implemented.

What we learned from using scenario planning in this project

The project found that:

1. The interview process using the foresighting questions gathered useful data, however was very much a second best option due to the lack of synergistic thinking, cohesive thought and commitment for action.

2. The interview process enabled a detailed focus on each expert or leaders opinions, and did elicit private opinions that may not have emerged in a group situation.

3. The Robust Strategic Thinking and Planning Method For Rural Industries, Sectors and Regions method provides the breadth and depth required to challenge decision-makers to go beyond the trivial, popular images that abound in the media, probing beyond the problem-oriented level that is typical of many management consultancies, to consider the critical and epistemological levels that underlie individual, organisational and community behaviour.

The strengths of this framework are its simplicity, and the processes that can be involved for each question to generate much wider thinking; for example, consideration of discontinuities will also generate the discontinuities. Further, the process allows for testing, or ‘wind tunnelling’, of the robustness of the strategies.

Policy Platforms for constructing regional advantage

Cooke (2007), a key architect of regional innovation systems policy in Europe, has suggested a framework for ‘Policy Platforms’ to assist the development of ‘constructed advantage’. McCall (2009), referring specifically to Tasmania, explains that constructed advantage has five assets that are fundamentally based on networks of people and local knowledge in a region: infrastructure, leadership, capital, people and learning. It is a process of building existing social capital that produces not only product innovation, but also local governance that enables innovation to occur. According to Cooke (2007), this involves:

• **Economy**: a strategic focus on proactively ‘constructing’ future sources of economic competitiveness in the region, as opposed to accepting the situation as it comes: inter-firm interactions, integration of knowledge generation, both local and global business networks.

• **Governance**: a strategic focus on seeking out governance mechanisms that support a proactive approach to the region’s future; multi-level governance of stakeholder interests, strong policy-support for innovators, enhanced budgets for research, vision-led policy leadership.

• **Knowledge infrastructure**: the active involvement of knowledge-based organisations in constructing advantage in the region: universities, public sector research, public sector agencies, consultancies, etc, must be involved in collaborative problem-solving.

• **Community and culture**: community and a public cultural orientation toward pro-activity and innovation.

How we used Policy Platforms in this project

The Policy Platforms were used as a lens for integrating the data from the other two component methods, and the strategic foresight process to develop ‘constructed advantage’ for the preferred regional scenario. The process used was similar to the qualitative pattern matching or thematic analysis.
outlined in Figures 7 – 9. It enabled an assessment of the extent to which the ‘platforms’ for constructing advantage were present in this region, and where in particular they could be strengthened.

Owing to the nature and history of the region, the output from this process, a ‘Regional Agricultural Development Strategy’. had cogency for local and state regional development agencies, particularly for implementing a local level regional development agency with the ‘behind-the-scenes’ coordinating role.

*What we learned from using Policy Platforms in this project*

The Policy Platforms framework provides the core foci for the social parameters of the regional agrifood system and linked well to the data generated from the other two components of the Value Assessment and Development (VAD) Framework.

The initial response of some stakeholders at the commencement of the project was that this was “another duplication”. However, by conclusion the integration of existing data as the basis for planning, which incorporated both quantitative (forecasting) and qualitative (intuitive) foresight, resulted in an acceptance of the utility of the approach.

The previous sections have outlined the logic and employment of three key constructs and a strategic process for developing a place-based framework for constructing advantage in regional agriculture. This has been called the “Value Assessment and Development (VAD) Framework”. The following section summarises the framework, also illustrated in Figure 2.

*Value Assessment and Development (VAD) Framework*

The process for establishing a meaningful framework to consider the current value of agriculture and agribusiness to the region identified complexities of the many factors that influence regional economies, and the difficulty isolating these factors for analysis. It also identified the lack of consistent data at the appropriate scale and timing for effective use in this context.

To identify the current situation, and the potential changes and facilitators influencing agriculture in the region, the project adopted and tested the use of three complementary frameworks, each bringing a way to focus analysis and identify where opportunities and challenges specific to the region may lie.

Firstly, the Seven Capitals by Emery & Flora (2006) aims to inter-connect attributes that shape vibrant, diverse and robust economies, social equity and empowerment, and healthy ecosystems. The Seven Capitals are natural, cultural, human, social, political, financial and built. Agriculture in the region is analysed against each of the Capitals to draw out the current situation, strengths and weaknesses of the region.

Building on this analysis, innovation considerations were assessed. Innovation is critical for improving competitiveness in world markets as globalisation accelerates (Arumapperuma, 2006), as well as being necessary to maintain access to supermarkets and stay relevant to the modern retailing system (Keogh, 2013; Reardon & Timmer, 2012). A broad definition is essential for understanding agrifood innovation. It can be categorised as product, process, marketing, supply chain and strategic management or governance of the firm or chain (derived from Schumpeter, 1934). Innovation should also be considered in relation to the magnitude of the innovation – whether it is a radical change or continuous improvements (Miles, Paul, and Wilhite, 2003). Understanding current performance and attributes of agriculture in North West Tasmania, in relation to each of these categories, can help understand where the agricultural sector is at now and potentially identify opportunities or barriers.

The third incorporated framework, which aims to complement the Seven Capitals and innovation analysis, is the use of Cooke’s (2007) Policy Elements which sought to consider possible actions to assist the development of ‘constructed advantage’ in the region through agriculture. Cooke is a highly
regarded architect of the regional innovation systems policy in Europe. Four action areas were considered – economy, governance, knowledge infrastructure and community culture.

The three components that make up the VAD Framework ensure that a one dimensional economic perspective is avoided. The Framework adopts approaches that both help the agricultural sector assess and communicate their contribution to the region, and also provide information on strengths and weaknesses that can assist planning for the future.
Figure 6: Value Assessment and Development (VAD) Framework for constructing place-based advantage in regional agriculture.
Implications

This project has developed and piloted a new rural regional development planning approach, which specifically focuses on the place-based development of agriculture. The VAD Framework builds on the strengths of traditional economic analysis of the value of agriculture, and builds in endogenous approaches to develop a place-based, holistic planning framework. It is related to, but not derived from, Cooke’s (2007) Regional Development Planning Method (RDPM). As such, it extends and makes the broad approach of endogenous, place-based regional development planning more relevant to agriculture.

The VAD Framework appears to have utility for a wider range of applications, with additional tools and instruments. This makes it adaptable in a range of planning contexts.

In implementing the framework, the project identified a number of existing tools, or developed new instruments and trialled them using a reflexive approach. These became the recommended suite of tools but there are many others that could be employed in different contexts, thus expanding the transferability and utility of the method. In this respect, the VAD Framework is a practical, dynamic approach that can be used in regional development and local government.

This research found that there were few approaches, methods and tools specifically developed or adapted for the differences that exist between agriculture and other industries. Indeed, in some instances these presented operational hurdles for the project implementation which had to be overcome. Further research into instruments and tools specifically adapted to regional Australia, and to the agricultural industry in particular, would broadly benefit regional planning practitioners and agricultural extension practitioners.
Recommendations

**Recommendation 1: Developing a Rapid Value Chain Analysis method for assessing regions, industries or sectors**

Depending on the scope of future projects, the RSCA could be further developed based on the theoretical concepts of:

- ‘Institutional isomorphism’; that is, the tendency of firms in an industry to adopt homogenous structures, processes and practices;
- The influence of industry norms on many firm processes such as strategy, innovation, trust development, culture, and firm performance; and
- Corporate social responsibility and the ‘triple bottom line’ approach (Bonney, 2011), as drivers of a regional industry culture. A rapid assessment of the nature of place-based agribusiness behaviour is a relevant component of understanding the constraints and potentialities of agriculture in a region.

The use of the RSCA as a tool for understanding the current state, constraints and enablers of future improvement of multiple regional chains could be achieved through:

1. Multiple RSCAs conducted across several exemplar regional supply chains, to get an overview of innovation and market orientation; and
2. The innovation, market orientation and entrepreneurship constructs identified for the Innovation and Entrepreneurship Survey in this project could be used to develop a survey diagnostic to determine the ‘health’ of regional value chains thus identifying potential government support to develop place-based innovativeness.

**Recommendation 2: Identifying the managerial behaviours of innovative farmers and agribusinesses**

There has been little research conducted regarding the nature of on-farm innovation and the innovative managerial behaviour of farmers that facilitates innovation (as opposed to the development of informal inventions or patents). Further, as value co-innovation is now a core strategy of agrifood value chains, it is increasingly important to identify how it occurs.

In part, this project developed a specific set of scales to measure farm and agribusiness innovativeness and agrifood chain co-innovativeness. The results were practically and statistically promising but there was insufficient sample size to validate reliability. Therefore, further research is required to further refine and confirm their utility as research instruments or self-assessment tools for farmers and agribusiness personnel, similar to the widely used Work Preference Inventory for Creativity (Amabile, Hill, Hennessey, & Tighe, 1994) used in other industries.

Further, the identification of innovative farmer behaviours could provide foci for structured interventions by government, extension agents and individuals.
Recommendation 3: Further research into value creating rural networks be conducted

A detailed employment of Value Network Analysis (VNA) (Allee, 2008) was beyond the scope of this project. However, the nature of the innovation network operating in the exemplar value chain in this study was investigated using convergent interviewing and demonstrated mechanisms cognisant with the innovation literature. Further in-depth investigation of this concept and its application in the Australian context may be valuable for government planners, extension agencies and the understanding of innovation dynamics by value chain managers. This is complementary to the preceding Recommendation 2.

VNA is a methodology for understanding, visualising, and optimising internal and external value networks and complex economic ecosystems in regions and value chains. VNA methods include visualising sets of roles, interactions and relationships from a dynamic whole systems perspective, through three simple elements that affect the value accruing from improving the yield of economic rents: roles, transactions and deliverables. It is a structured approach, focusing on identifying the different roles that organizations play in a value network. The purpose of this analysis is also to capture the various types of intangible assets that reside in any given network. Unlike traditional social network analysis, where every link is of the same nature, every link in VNA denotes a specific and unique value deliverable. The method is widely used in the European Union to analyse rural innovation clusters (Eriksson et al., 2010).
Appendix 1: A toolbox for the VAD Framework

The VAD Framework is the methodology that reflects the theoretical framework previously outlined.

![Figure 7: VAD Framework](image)

The 3 Questions

- **Phase 1:** What is the current value of agriculture and agribusiness to the region?
- **Phase 2:** What are the facilitators and inhibitors that determine the value of agriculture?
- **Phase 3:** What can be done to enhance the value?

### Research Process

**Step 1.1:** Conduct a desk review of what is already known about the region

**Step 2:** Develop a ‘current state of the region paper’ with stakeholders

**Step 2.1:** Conduct interviews with key regional stakeholders

**Step 2.2:** Conduct focus groups with regional communities

**Step 2.3:** Conduct Rapid Value Chain Analyses of exemplar agrifood value chains

**Step 2.4:** Conduct an innovation & entrepreneurship survey of farmers and agribusinesses

**Step 2.5:** Analyse data from all sources

**Step 2.5:** Validate the ‘current state of the region’ with stakeholders

**Step 3.1:** Develop plausible, probable & preferred future scenarios

**Step 3.2:** Validate with stakeholders

**Step 3.3:** Publish

### Methods & Tools

- I/O Modelling
- Demographic analysis
- Other government analysis

- Convergent interviewing techniques
- ‘7 Capitals’ framework

- ‘7 Capitals’ framework
- Large group techniques

- Rapid Value Chain Analysis (Collins & Dunne, 2008)

- Quantitative survey
- Value network analysis
- Convergent interviewing techniques

- Quantitative analysis
- Qualitative thematic analysis

- Circulation for comment
- Focus groups

- Mercer’s (1998) short scenario method
- Cooke’s (2007) policy platform framework
- Convergent interviews
- E-mail Delphi

- Circulation for comment
- Focus groups
In Figure 7, three key questions are brought together with sequential or concurrent processes and methods and tools on the right hand side. The latter are by no means an exhaustive or prescribed list, but rather, those that were tested in this project. Other sources of methods and tools are suggested in subsequent sections.

**Convergent interviewing**

This research methodology employed semi-structured interviewing to enable the researcher to understand, as far as possible, the complex variables involved without any a priori categorisation that might constrain the responses. However, a variation on the semi-structured type called ‘convergent interviewing’ appeared to be appropriate for strategic investigations (Riege & Nair 2004; Williams & Lewis 2005), where there are critical, entrenched issues (Jepsen & Rodwell 2008), where the issues may not be known prior to the interview, and where the key issues are being sought (Dick 1999). Convergent interviewing is an inductive, cyclical process of selecting, interviewing, analysing and issue analysis which enables:

- The identification of key convergent and divergent issues;
- Their explication through initial analysis after each interview;
- Later validation or discarding through progressive refinement of the interviewing that reduces uncertainty by identifying the key issues;
- Knowing when to stop interviewing through progressive exploration (Rao & Perry, 2003).

Riege and Nair (2004) also suggest that firstly, the researcher should have adequate a priori knowledge of the theory and the context in which the interviews are conducted, due to the importance of interviewer credibility for senior managers. Secondly, they suggest that divergent views should not be discarded but incorporated into further questioning and be presented in the data analysis. This advice was integrated into the project method, which incorporated prior theory into the Interview Guide (Appendix 1) and pursued ‘divergent’ views to validate any ‘outlier’ issues of substance.

Interviews used Riege and Nair’s (2004) recommendations for convergent interviewing; namely, the employment of a sequence of designing questions, collecting the data, analysing the data and interpreting the data in each interview. This was largely a reflective process conducted prior to interview in the field (‘anticipatory’ reflection), during interviews (‘reflection-in-action’) and immediately after interviews (‘reflection-on-action’) (Raelin & Coghlan, 2006; Schön, 1983). It resulted in the identification of key emergent issues for further exploration in subsequent interviews. However, the full breadth of potential topics for questioning was never superseded because the Interview Guide was always the basic framework for the researchers, and some issues returned to central focus as interviewing continued.

The process identified ‘agreements’ and ‘disagreements’ amongst interviewees, explored them in greater depth and sought confirmation or disconfirmation from other sources (triangulation). In both situations, caution was exercised in accepting the emergence of an issue due to ‘reactivity’ factors such as the ‘Hawthorne effects’ or interviewee bias (Riege & Nair, 2004).

An Interview Guide should be developed to suit the research context, using the Seven Capitals Framework to assist researchers to be systematic, efficient and consistent across time and space with large numbers of interviews (Patton, 1990). However, the Guide should be used flexibly because of considerable variation in the emphasis and orientation of questions and discussion, dependant on the subject’s function, position and knowledge. It is not intended that every question be asked of respondents, but rather that the components of past, present and future for each of the Seven Capitals be covered with most respondents.
How we used convergent interviewing in this project

Interviews were conducted within the University of Tasmania’s Human Research Ethics Committee guidelines and approval processes established by the Privacy Act 1988. Interviews were mostly conducted with 2-3 researchers present, and recorded using a digital voice recorder; one person taking the lead in questioning with the other two providing supplementary questioning as they took notes. The recorded interviews were transcribed by a professional transcription service and the interviews analysed using the Computer-Assisted Qualitative Data Analysis Software, NVivo. However, such rigour may not be required for some purposes and manual qualitative content analysis may be sufficient.

What we learned from using convergent interviewing in this project

This is a disciplined, rigorous method of interviewing which elicits high quality data. This was largely a reflective process conducted prior to interview in the field (‘anticipatory’ reflection), during interviews (‘reflection-in-action’) and immediately after interviews (‘reflection-on-action’) and regularly discussed with individual members of the project team (Raelin & Coghlan, 2006; Schön, 1983).

Large group techniques – the ‘Charette’

There are many large group techniques that have been developed, sometimes with data-specific goals. A recommended text is: Bunker, BB & Alban, BT 2006, ‘The handbook of large group methods: creating systemic change in organizations and communities’, John Wiley & Sons, San Francisco, CA.

One of those methods, which may have utility in this community consultation context, is the ‘Charette’; there are others that may suit other contexts. ‘Charette’ is a French word meaning ‘small cart or wheelbarrow’, but in modern times the old Ecole des Beaux-Arts architectural school planning method has evolved to mean an intensive group-planning effort in an open forum format to achieve creative solutions.

![Figure 8: The Charette process](image-url)
The Charrette is an intensive brainstorming method for generating and prioritising ideas, and is designed to bring people from various segments of society into consensus within a short period of time. The pre-charrette planning breaks the main issue into its component parts. These parts become groups that periodically report to the whole. Feedback from the whole on these group reports is then addressed in the next round of group discussions. This sequence is repeated until consensus is reached at the final deadline for a report of the whole, to whomever—the news media, government officials, or the larger public drawn to the final event through media coverage of the process.

The setting is typically a large room, with small groups of six to eight arranged in circles. Group leaders may be pre-assigned or selected by the group. Each group leader is given one or more pieces of newsprint and a marker, then collects ideas from a small group and at a signal takes the recorded ideas to a new group. The groups stay put but the group leaders take their list and move to a different group. At the new group, the leader explains the ideas on the newsprint and asks for comments, additions, revisions, and, finally, prioritisation of ideas. Groups may then select a new leader, receive new discussion topics and newsprint, and repeat the procedure. At the end of the session, some or all of the group leaders may report top priorities to the entire group. Or, group leaders may meet together after the session to synthesise and prioritise. The groups must be numbered or arranged so leaders can easily understand in what direction to move. A Charrette will frequently move from the small groups to a plenary and back again to communicate overall findings to all participants; it is this process that links it to its historical roots.

Charrettes vary in size, from 50 to over 1,000 people, and in time, from one day to two weeks.

The strengths of the Charrette process are:

- Fosters a sense of commitment and cohesiveness, and positive feelings of involvement;
- Ideas lose their original identity and become group property;
- Problems may be broken into small parts, with each small group considering a unique aspect;
- Flexible time and cost.

Limitations include the need for a manager skilled with large groups, and the possibility of wasting time and effort if goals aren't clear. In unskilled hands, a whole roomful of people can end up in chaos. With a skilled person, however, hundreds of people can be actively involved in solving a problem.

The sponsoring group usually sets the goals and time limit, and prepares materials for the session. The Charrette has a facilitator or leader whose responsibility is to bring out all points of view from participants.

The components of a typical Charrette include:

- Definition of objectives or issues to be resolved
- Analysis of the problem and alternative approaches to solutions
- Assignment of small groups to clarify issues
- Use of staff people to find supporting data
- Development of proposals to respond to issues
- Development of alternative solutions
- Presentation and analysis of final proposal(s)
• Consensus and final resolution of the approach to be taken.

A Charette is oriented toward problem solving. The breadth of background of participants should assure full discussion of issues, interrelationships, and impacts. Its time limits challenge people to examine the problem rapidly, openly, and honestly and help potential adversaries reach consensus on an appropriate solution. A Charette produces visible results. It is often used early in a planning process to provide useful ideas and perspectives from concerned interest groups. In mid-process, a Charette helps resolve sticky issues. Late in the process, it is useful to resolve an impasse between groups.

The Charette leader should be familiar with group dynamics, and the substantive issues the group faces. The leader tailors the setting, background materials, and issues to the goal of the Charette and elicits participation from all group members within the allotted time. To avoid chaos in a Charette, a high level of discipline is required.

A minimum of four hours is essential for a Charette focused on a modest problem. While the average ranges from one to several days, some agencies hold one and two-week Charettes, or organise them as multiple sessions dispersed over a period of time.

How we used the Charette in this project

The Charette is a very useful and efficient method for large-scale community consultations, so this method was planned for the sub-regional consultation to generate data on constraints, opportunities and feedback for proposed solutions to the regional issues. Regional and sub-regional media notices and contact with key regional organisations were undertaken to encourage attendance. As a consequence of insufficient attendance due to ‘consultation fatigue’ in the region, the project reverted to seeking community input using normal focus group techniques and qualitative interviewing (see next section).

What we learned from using the Charette in this project

The method was not employed but is regarded as appropriate in other circumstances where greater participation may occur.

Focus groups

The Focus Group Question Guide in Appendix 2 has been developed from the VAD Framework (Figure 7). Considerable flexibility can be exercised when using this Guide, and it is appropriate to achieve the aims of the focus group process (usually, answering the research questions).

How we used focus groups in this project

In this project, the focus group method was used for community consultation because it provides insights into how people think, and provides a deeper understanding of the phenomena of place-based value, regional constraints, and possible solutions. Group interaction between members of the target population during focus groups may encourage participants to make connections to various concepts through the discussions that may not occur during individual interviews. A skilled facilitator can encourage these group interactions to capture this data to provide a more comprehensive understanding of what is being studied. Non-verbal communication is also data that can be captured in focus groups, as participants within a focus group may respond very differently to a topic.

What we learned from using focus groups in this project

We learned that:

• The focus group method is a useful consultative tool but one that may have to be flexibly used with other methods to achieve the desired level of input to projects.
• The project team received feedback that there is little interest in the rural community in discussing broad strategic issues unless there is a specific personal effect on those being consulted. In this region, people apparently regarded such issues as the responsibility of someone else to solve.

Rapid Supply Chain Analysis (RSCA)

The globalisation of agrifood markets and the liberalisation of world trade are creating a new competitive environment for primary producers, food manufacturers and retailers. The supplier dominance of the past has given way to retail control of the agrifood value chain that facilitates consumer choice. This has driven supermarkets to move from predominantly price-based competition to emphasise innovation-based competition focused on creating value in the eyes of the consumer (Wright & Lund 2003).

Innovation is regarded as the modern agrifood firm’s strategic response to uncertainty, low margins, poor financial performance and hyper-competition leading to loss of competitiveness. Thus, it is a means of changing an organisation in response to changes in the internal or external environment or taking pre-emptive action to maintain competitive advantage (Marshall et al. 2006). Innovation is strongly positively correlated to superior chain performance, and a number of researchers link collaboration, innovation, organisational performance and competitive advantage (Chapman & Corso 2005; Hult, G. T. M., Hurley & Knight 2004; Vincent, Bharadwaj & Challagalla 2005b).

The scale and intensity of continuous innovation for global markets has resulted in firms developing collaborative forms of innovation; between individuals or sections within firms, between firms and consumers in collaborative product design, horizontally between smaller firms to gain the critical mass for R&D, or vertically between firms in a chain collaborating at the inter-organisational interface (Bonney et al. 2007). The latter form involves firms increasingly vertically integrating their systems, processes, assets and governance to collaboratively innovate or ‘co-innovate’ to optimise their efficiency, effectiveness and consumer value creation. This co-innovation is more than just the sum of the innovation within firms and extends the concept of innovation to a collaborative form which occurs between two or more firms in a chain (Feller, Shunk & Callarman 2006; Maqsood, Walker & Finegan 2007; Porter 1998; Powell, Koput & Smith-Doerr 1996; Sporleder, Thomas L. & Peterson 2003). Consequently, many authors now regard value chains, an alliance of independent partners, as systems operating almost as a single entity (Bäckstrand 2007; Chroneer & Mirijamdotter 2009; Collins & Dunne 2008; Jain, Nagar & Srivastava 2006; Knoppen & Christiaanse 2007).

Therefore, the state of supply chains within a region or an industry sector is a critical issue because of this new competitive environment, where the locus of competition is shifting to whole chains (Christopher 2004) and the core strategy is continuous innovation (Chapman & Corso 2005; Harvey 2006) to create/adapt new products, processes, raw materials, markets or governance (Schumpeter, 1934). Despite the linkage between collaboration, innovation, organisational performance and competitiveness (Ahuja 2000; Baum, Calabrese & Silverman 2000; Prajogo, Power & Sohal 2004; Ring & van de Ven 1994), the agrifood industry has low levels of collaboration, lacks broadly-based forms of innovation and has been slow to adopt vertical collaborative innovation or ‘co-innovation’ (Nasiruddin, Islam & Quaddus 2011; Pitt 2007).

The Diagnostic Framework

The RSCA was developed by Prof Ray Collins and Dr Tony Dunne at the University of Queensland for an international development context. However, it is a variant of a full Value Chain Analysis (VCA) (L. Bonney, Clark, Collins, & Fearne, 2007), now widely used in both developing and developed country contexts. The advantage of the RSCA in a regional or industry development context is that it is very time-efficient by comparison to the full VCA. It allows multiple chains to be
investigated, thus building a broader understanding of the nature of chains within a region or industry sector. The following description is drawn directly from Collins and Dunne (2008).

There are five dimensions of a value chain that could be used to analyse issues associated with structural change: (1) the set of processes that create products demanded by consumers; (2) logistics; (3) financial flows; (4) reward and risk sharing; and (5) chain governance mechanisms (Boehlje, 1999). The six principles of value chain management identified by Collins and Dunne (2002) confirmed the importance of these dimensions of a supply chain, but also highlighted the necessity of analysing and managing them as elements of a dynamic system.

Combining Boehlje’s five dimensions with Collins and Dunne’s six principles resulted in a diagnostic framework based around four subsystems that were considered individually and collectively as being critical to the mango supply chain’s operational efficiency and competitiveness. These subsystems were:

- The product integrity subsystem that included technical aspects of the harvest and post-harvest processes, packing, storage, handling and transport;
- The communication subsystem that determined the nature of the information exchanged among members of the supply chain in terms of its target recipients, accuracy, timeliness and relevance;
- The value subsystem that identified where consumer value was either created or diminished within the supply chain; and
- The governance subsystem that determined how the activities of the supply chain were coordinated and how the value created from the sum of the chain’s activities was distributed among its participants.

After obtaining the necessary agreements from the chain participants, the first step is to understand consumer and customer perceptions of product/service value. This is necessary because it is the monetary value that drives chain activity. Fundamentally, in the value chain analytical process we are mapping where and why value is created and diminished within the chain processes.

Employing multidisciplinary teams to analyse the complex aspects of supply chains is essential when implementing an RSCA (Bonney, Clark, Collins, Dent, & Fearne, 2009).

The starting point for any supply chain system analysis is to construct a map of the chain that identifies its important participant groups and product flows. Although useful, a descriptive map is incapable of capturing the dynamics of decision-making and the behaviour of chain participants, their impacts on other chain participants, and ultimately, on the final consumer.

The four-element diagnostic framework is applied using convergent interviewing techniques, focus group techniques, observation and the collection of relevant documentary data.

RSCA can be undertaken for many purposes in 5 – 10 days (depending on the depth of data required), and is an ‘open framework’ within which many other tools such as life cycle analysis, carbon and water footprinting and various economic tools can be employed to add richness to the analysis. In this context, we are particularly interested in the innovativeness that operates in and between the chain members (co-innovativeness) to create value and solve shared chain problems.

The state of the ‘health of the chain’ may be due to internal and/or external factors. Value chains are systems of inter-related entities and individuals. Just as with biological organisms, when one part of the system is impacted by external factors the effects will be felt by all the other parts of the system. External factors may include drought, climate change, exchange rate fluctuation, regional or state legislation, the regulatory environment, infrastructure or cost infrastructure, and other strategic factors marginal to the control of chain members but within the influence of public policy. All these factors
need to be identified and addressed as part of developing the regional contribution of agriculture. Internal chain factors are essentially issues involving the management of the chain factors of production. They include goal alignment, chain or company cultures, communication and information, incentives at the company and chain levels, the manner in which power is used, and many other factors (Bonney et al., 2007).

Scepticism is fundamental to this research process; important statements and data need to be validated by triangulation with other sources. Researchers also need to be mindful of the Hawthorne Effects, and aware that social elements of supply chains such as power, politics (chain hegemony) and relational issues will sometimes bias responses.

Value chain analysis is a specialised skill, and so users of this manual who are not familiar with the technique should consult the wide body of literature available on the subject. Some are available on the TIA web site and elsewhere on the internet.

Figure 9: The RSCA process

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How we used RSCA in this project

For this project, of particular emphasis in the RSCA were the following:

- How well the companies involved were oriented towards their markets;
- How they evaluated and exploited opportunities;
- What forms of innovation they engaged in;
- How they undertook and managed internal and external innovation with chain partners; and
- The extent of networking to innovate and create value.

As this project was a pilot of the VAD Framework and Toolbox, only one RSCA was conducted to demonstrate its fitness for purpose.

What we learned from using RSCA in this project

The RSCA is a useful and flexible analytical tool for understanding the key constructs that drive the strategic alignment and innovative behaviours of supply chains. In summary, we learned that the method:

- Provides good data on market orientation and competitor intelligence, as well as the complex interactions of the internal chain governance, communications and relational issues;
- Provides good data on the status of change or continuous improvement to value chain management performance; and
- Provides good data on vertical and horizontal co-innovative behaviour; in particular, the employment of both local and international networks of knowledge, ideas, technical knowhow, market and competitive intelligence.

Qualitative analysis

Patton and Appelbaum (2003, p. 67) state that "the ultimate goal of the case study is to uncover patterns, determine meanings, construct conclusions and build theory". They state that this is achieved by “examining, categorizing, tabulating testing or otherwise recombining both quantitative and qualitative evidence to address the initial propositions of the study” (Yin 2003, p. 109). This is achieved through iterative data collection and analysis (Hartley 1994).

The pattern matching technique is applied to documentary text and interview transcripts, and identifies categories (known as ‘codes’) of words, phrases, sentences and paragraphs containing important concepts, ideas, perspectives, experiences, emotions, values, and attitudes of a person who has experienced the phenomena. The degree of rigour with which this is applied will depend on the needs of the research. For the purposes of an enabling explanation for those not familiar with the process, the following adopts a rigorous analytical approach.

The process recommended is that of Zhang and Wildemuth (2009). All recorded conversation is transcribed verbatim where possible and the unit of analysis used is a ‘theme’ rather than linguistic units such as phrases or paragraphs. The data are then reduced and organised using either a card system or Computer Aided Qualitative Data Analysis Software such as NVivo, so that ‘themes’ can be grouped into an NVivo 'node' (Richards & Morse, 2007).

The example used in this section has been taken from unrelated value chain analysis. Nineteen out of
30 respondents made reference to the ‘family orientation’ of the lead firm SaladCorp in various ways (Figure 10), so through a process of data reduction and organisation that became a ‘code’ (Boyatzis, 1998; Zhang & Wildemuth, 2009).

These are compared and contrasted to other sources in an iterative process that becomes increasingly abstracted to develop higher order categories or ‘codes’ (Miles & Huberman 1994). This is called ‘qualitative content analysis’ (Kohlbacher 2006, p. 10), and there are descriptive or causally related patterns or ‘themes’ that are directly observable (the manifest level) or underlie the phenomenon (the latent level). Themes may be theory driven, or generated deductively from prior research or inductively from the data that at a minimum describes or even interprets a phenomenon (Boyatzis 1998). In this example, the ‘family orientation’ code was grouped with other thematically related codes to form the theme of ‘commitment to organisational values’ (Figure 11).
Figure 11: The development of ‘themes’

In a multi-case study, such as this exemplar research, the codes and themes developed become the coding framework which is tested on a sample of text from the other case studies to determine its utility. This was then applied to all the data in a ‘constant comparative’ or iterative process (Glaser & Strauss, 1967) that cycled through the data, refining both coding and codes as new clustering occurred and new codes emerged or refined.

Gradually, as theoretical sensitivity develops understanding and insight into what is relevant to the inquiry, themes are clustered into categories of higher order abstractions, which appear to provide explanations and relationships that make sense in the context of the data (Miles & Huberman, 1994). In this example, the theme of ‘commitment to organisational values’ emerges as related to other themes at the same level as ‘recruitment’, ‘performance management’ and ‘professional development’. These themes are related to a higher order theme of ‘systematic management of chain culture’, which is influenced by other themes such as ‘individual incentives’ and ‘CEO mental models’ (Figure 12). This then leads to the development of ‘intention’, and ‘individual and group behaviours’ that are indicative of co-innovation occurring.
The within-case analysis involves incorporating all digitised data forms into NVivo software, then coding and relating it using a “compare-and-contrast process to extract observable differences between or among the samples” (Boyatzis 1998, p. 42). Patterns and themes were developed using NVivo to explore the relationships between the most important independent and dependent variables (Richards & Morse 2007).

‘Cross-case synthesis’ then combined the within-case analyses of the individual cases, treating each as a replication. This involved testing validity of the codes or themes across the sampled cases. Some codes were discarded and other new ones emerged, which then had to be tested on earlier sampling (Boyatzis 1998). This technique was the primary means of increasing internal and external validity to produce more reliable and generalisable findings (Voss, Tsikriktsis & Frohlich 2002; Yin 2003).

‘Explanation building’ for exploratory case studies involved pattern matching at a higher level of abstraction to build a plausible explanation about the phenomenon being studied through an iterative, comparative process (Yin 2003). This involves the ‘simple scaling’ of themes by adding sub-themes on the basis of conceptual relationships, and conceptual clustering on the basis of related characteristics (Boyatzis 1998).

Consistent with the interpretive methodology, these explanations are descriptive, although quantitative evaluation of themes can be undertaken.

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9 A qualitative code is simply a label which defines and aids identification of a theme (Boyatzis 1998). Each code is “anchored” (p. 42) in sub-samples of the sampled group which contains several to many interviewees referring to this theme.
A robust strategic thinking and planning method for rural industries, sectors and regions

Strategic thinking drives and is supported by strategic planning. Strategic thinking is about synthesis, intuition, creativity and moving into the unknown, whilst strategic planning is about analysis, planning processes, programming and building or extending the known (Conway and Voros, 2002). Planning to manage for the future, then, involves an overhaul of the way in which stakeholders think about the future.

In business, approaches to the management of people are increasingly integrating all four aspects of human existence: the individual self and consciousness, behaviour, culture and worldview, and social systems and the environment. Effective and organisationally useful planning involves these psycho-social levels of the key people in an organisation. The strategic foresight processes involved in the minds of individuals, and the psyche and culture of groups participating, can be as important as the plan itself. This concept is based on the observation that people instinctively and constantly develop alternative plans for the future. The mind has an innate capacity to store these for future reference, constantly rehearsing and integrating them into our perception of the future, effectively forming mental ‘templates’. This is the neuro-psychological principle that lies behind elite training, particularly in the military and sports, where it is important that people act instinctively (Ingvar, 1985; MacKay & McKiernan, 2004).
## Appendix 2: Semi structured interview guide

### Table 2: Semi structured interview guide

<table>
<thead>
<tr>
<th>Concept</th>
<th>Interview Questions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Natural capital</td>
<td>How does this form of capital contribute to agricultural activities?</td>
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<tr>
<td></td>
<td>How does it enhance future value from agriculture?</td>
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<td></td>
<td>How does it constrain the future value of agriculture?</td>
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<td></td>
<td>How does agricultural activity enhance it?</td>
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<td>How does agricultural activity degrade it?</td>
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<tr>
<td>Cultural capital</td>
<td>How does this form of capital contribute to agricultural activities?</td>
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<td>How does it enhance future value from agriculture?</td>
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<td>How does it constrain the future value of agriculture?</td>
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<td>How does agricultural activity enhance it?</td>
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<td>How does agricultural activity degrade it?</td>
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<tr>
<td>Human capital</td>
<td>How does this form of capital contribute to agricultural activities?</td>
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<td>How does it enhance future value from agriculture?</td>
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<td>How does it constrain the future value of agriculture?</td>
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<td>How does agricultural activity enhance it?</td>
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<td>How does agricultural activity degrade it?</td>
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<tr>
<td>Social capital</td>
<td>How does this form of capital contribute to agricultural activities?</td>
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<td></td>
<td>How does it enhance future value from agriculture?</td>
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<td></td>
<td>How does it constrain the future value of agriculture?</td>
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<tr>
<td></td>
<td>How does agricultural activity enhance it?</td>
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<tr>
<td></td>
<td>How does agricultural activity degrade it?</td>
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<tr>
<td>Political capital</td>
<td>How does this form of capital contribute to agricultural activities?</td>
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<td></td>
<td>How does it enhance future value from agriculture?</td>
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<tr>
<td></td>
<td>How does it constrain the future value of agriculture?</td>
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<tr>
<td></td>
<td>How does agricultural activity enhance it?</td>
</tr>
<tr>
<td></td>
<td>How does agricultural activity degrade it?</td>
</tr>
<tr>
<td>Financial capital</td>
<td>How does this form of capital contribute to agricultural activities?</td>
</tr>
<tr>
<td></td>
<td>How does it enhance future value from agriculture?</td>
</tr>
<tr>
<td></td>
<td>How does it constrain the future value of agriculture?</td>
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<tr>
<td></td>
<td>How does agricultural activity enhance it?</td>
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<tr>
<td></td>
<td>How does agricultural activity degrade it?</td>
</tr>
<tr>
<td>Built capital</td>
<td>How does this form of capital contribute to agricultural activities?</td>
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<td></td>
<td>How does it enhance future value from agriculture?</td>
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<td></td>
<td>How does it constrain the future value of agriculture?</td>
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<tr>
<td></td>
<td>How does agricultural activity enhance it?</td>
</tr>
<tr>
<td></td>
<td>How does agricultural activity degrade it?</td>
</tr>
</tbody>
</table>
Appendix 3: Focus group question guide

• What are the contributions of agriculture to the regional economy, social development and regional ecosystem services?

• What are the place-based constraints and opportunities that face agricultural industry development in the North West region?

• What federal, state and regional stakeholders and relevant networks are involved in decision making in respect to agriculture and regional development?

• What are the areas of influence and the decision-making jurisdiction of each stakeholder, and are there areas of overlap or duplication?

• What are the potential, probable, and preferable futures for how agriculture may develop within the region?

• What will be the impact of these futures on institutional arrangements in the region?
Appendix 4: Agricultural innovation and entrepreneurship survey

This survey is being conducted by the <Organisation> in partnership with the <Collaborator/s> and other regional stakeholders as part of a Rural Industries Research and Development Corporation (RIRDC) project to assist the development of agriculture to <the region’s name> regional economy. All input is anonymous and individuals are not identifiable.

In this survey, we use the following definitions:

- ‘Innovation’ is changing an existing or creating a new product, business process, raw material input, market or way of managing the supply chain to improve the efficiency and/or effectiveness of delivering value to consumers, and the overall competitive advantage of the chain.
- Where the term ‘product’ is used it refers to the crop produce, fibre or animals that you supply or market.
- Your customer is the next person in the supply chain. Your consumer is the person who ultimately buys and consumes your products.
- Your suppliers are the businesses from whom you buy farm inputs (e.g. fertiliser, seed, chemicals, technical advice).

Table 3: Agricultural innovation and entrepreneurship study

<table>
<thead>
<tr>
<th>PARAMETER OR CONSTRUCT</th>
<th>SCALE (SOURCE)</th>
</tr>
</thead>
</table>
| Integration            | 1. For our main enterprise we supply (tick box):
|                        | a. A spot market (we sell what we like, where we like, when we think we will get the best price) |
|                        | b. Our main customer on a specifications-based contract; |
|                        | c. Our main customer in a relationship-based alliance where we agree to work together and trust each other; |
|                        | d. A company formed with our main customer where we each invested and shared our resources (equity-based alliance); |
|                        | e. Vertical integration (the whole chain is owned by one company) (Gereffi & Frederick 2009; Peterson, Wysocki & Harsh 2001; Wysocki, Peterson & Harsh 2006). |
| Form of governance     | 2. My level of education is (tick box):
|                        | a. Certificate 1-4 (apprenticeship, traineeship etc) |
|                        | b. Associate Diploma |
|                        | c. Diploma |
|                        | d. Degree |
|                        | e. Graduate Certificate |
|                        | f. Graduate Diploma |
|                        | g. Masters |
| **Business size** | 3. The number of permanent employees our farm has is |
| **Production scale** | 4. The number of hectares under production is |

| **Innovation activities** | 5. Firms in our value chain frequently *(Yes-No-Don’t know-Non-applicable for introduction of innovation activities)*: |
| **Human innovation efforts** | a. Invest in employee training, seminars, self-study, study tours and company visits (Hino 2010). |
| **Type of innovation (after Schumpeter)** | b. Invest in or host experimental trials. |
| | c. Improve the packaging, quality or convenience of our products. |
| | d. Seek new geographical markets (Schumpeter 1934). |
| | e. Seek new sources of raw material inputs. |
| | f. Improve marketing of our products. |
| | g. Introduce new management structures and systems in the chain. |
| | h. Introduce new production technology. |
| | i. Participate in activities to build regional networks. |

| **Innovation results** | 6. In the last two years, the following activities done by value chain firms enhanced our own business success *(extent of significant contribution of applied innovation activity to business success – seven-point Likert scale with ‘Don’t know option’)*: |
| | a. Improved the packaging, quality or convenience of our products (Hino 2010). |
| | b. Entered new geographical markets or expanded supply to existing markets (Schumpeter 1934). |
| | d. Improved marketing. |
| | e. Introduced new management structures and tools. |
| | f. Introduced new production technology. |
| | g. Increased participation in regional networks. |

| **Collaboration for innovation** | 7. In our value chain there is effective collaboration to innovate between *(extent of significant contribution of applied innovation activity to business success – seven-point Likert scale with ‘Don’t know option’)*: |
| | a. Food manufacturer (processors) with marketer and retailer (Hino 2010) |
| | b. Farmers with food manufacturer (Hino 2010) |
| | c. Food manufacturer (processor) or marketer with freight provider (Hino 2010). |
| | d. Other (please specify) |

<p>| <strong>8.</strong> Please tick your level of disagreement or agreement with the following statements concerning how we do business <em>(extent of significant contribution of applied innovation activity to business success – seven-point Likert scale with ‘Don’t know option’)</em>: |</p>
<table>
<thead>
<tr>
<th>Market intelligence</th>
<th>a. In our farm we actively focus on serving the needs of downstream customers and consumers (Jaworski &amp; Kohli 1993; Zielke 2010).</th>
</tr>
</thead>
<tbody>
<tr>
<td>Market intelligence</td>
<td>b. We regularly meet with our immediate customers to better understand their needs (Sellers-Rubio &amp; MásRuiz 2009).</td>
</tr>
<tr>
<td>Market response</td>
<td>c. We develop solutions to the problems that affect our immediate customers and final consumers of our products and services without being asked to by our downstream chain partners (Goldman, Ramaswami &amp; Krider 2002).</td>
</tr>
<tr>
<td>Market intelligence</td>
<td>d. Our chain has processes to systematically and regularly measure consumer satisfaction (Goldman, Ramaswami &amp; Krider 2002).</td>
</tr>
<tr>
<td>Competitor intelligence</td>
<td>e. We monitor how changes in the economy, technology and regulations may influence our immediate and ultimate customers’ decision to buy from us (Jaworski &amp; Kohli 1993; Zielke 2010).</td>
</tr>
<tr>
<td>Long-term outlook</td>
<td>f. We evaluate the strengths, weaknesses and competitive position of our competitors (other farmers), and the competitors of our immediate customers (e.g. other processors, marketers) (Jaworski &amp; Kohli 1993; Zielke 2010).</td>
</tr>
<tr>
<td>Chain communication</td>
<td>g. We strive to establish long-term relationships with our suppliers and customers (Zielke 2010).</td>
</tr>
<tr>
<td>Whole-chain thinking</td>
<td>h. Value chain members tend not to share information with other chain members (Jaworski &amp; Kohli 1993; Zielke 2010).</td>
</tr>
<tr>
<td>Intelligence dissemination</td>
<td>i. We have a clear understanding of our ‘business model’, that is, how our business creates and delivers value to the final consumer (Jaworski &amp; Kohli 1993; Zielke 2010).</td>
</tr>
<tr>
<td>Strategy</td>
<td>j. We use all information at our disposal to modify and develop products to satisfy our consumers (Jaworski &amp; Kohli 1993; Zielke 2010).</td>
</tr>
<tr>
<td>Strategy</td>
<td>k. We attempt to differentiate our products from other market alternatives (Jaworski &amp; Kohli 1993; Zielke 2010).</td>
</tr>
<tr>
<td>Customer orientation</td>
<td>l. Our business invests significantly in the market research and promotion of our products, not just through commodity levies (Jaworski &amp; Kohli 1993).</td>
</tr>
<tr>
<td>Communication</td>
<td>m. We gather information about our supply performance from our downstream customers and communicate that information to our employees (Goldman, Ramaswami &amp; Krider 2002).</td>
</tr>
<tr>
<td>Strategy, information dissemination</td>
<td>n. The chain systematically shares experience and new information that will benefit the whole chain (e.g. on-line databases, benchmarking groups, communities of practice, regular grower meetings with our customers etc) (Zielke 2010).</td>
</tr>
<tr>
<td>Non-coercive power</td>
<td>o. The chain provides information technology that provides a supply forecasting and planning capability through-out the supply chain to make the entire chain more efficient and effective (Zielke 2010). Our farm business receives benefits from our supplier/customer when we regularly meet their needs/requirements (technical support/free advice/financial support/market information etc.) (Hino 2010) We are sure our supplier/customer would drop us as a supplier/customer if we had a bad</td>
</tr>
</tbody>
</table>
9. Please tick your level of disagreement or agreement with the following statements concerning innovation (extent of significant contribution of applied innovation activity to business success – seven-point Likert scale with ‘Don’t know option’):

<table>
<thead>
<tr>
<th>Innovation orientation</th>
</tr>
</thead>
</table>
| a. In general the businesses in our value chain do not have a strong emphasis on developing new and innovative services and/or products (Covin & Slevin 1988).  
| b. In general businesses in our value chain firms are willing to accept risks that have high potential social or economic returns (Covin & Slevin 1988).  
| c. Our businesses may bend the contract/supply agreement rules where we think it’s appropriate (Hino 2010).  
| d. Our suppliers/customers share in the costs of the resources for new products and developing ideas (e.g. time, money, equipment, staff) (Hino 2010).  
| e. Our suppliers are actively involved in our innovation processes (Zielke 2010).  
| f. Our customers are actively involved in our innovation processes (Zielke 2010).  

year/accident affecting production (Hino 2010).
Appendix 5: Rapid Supply Chain Analysis question guide

- What do consumers’ value in this chain? What are they prepared to pay a premium price for?
  - Attributes of the product
  - Attributes of the way the product is sold

- Where and how are each of these attributes created AND diminished in the chain?

- What segments exist that can be viably serviced?

- How well are production, processing, and logistics focused on the creation and maintenance of value?
  - Strategy (alternatives)
  - Chain relationships (trust, commitment, dependency/interdependency, influence)
  - Constraints

- How well does the chain create and share information with its members, especially information about customer and consumer needs?
  - Information exchanges (ordering)
  - Boundary spanners
  - Systematic sharing of knowledge with chain partners
  - Positioning
  - Exclusivity
  - Values

- How do the governance/relationships in the chain help or hinder the chain’s ability to meet the needs of its customers and consumers?
  - Contracts
  - Relational contracts
  - Incentives
  - Penalties/policies

- Efficiency within and between the businesses in the chain?

- How is power exercised?

- How does innovation to create or maintain value and reduce waste occur? Who do you go to when seeking ideas, knowledge, competitor and competitive intelligence and other resources?
- Collaborative problem-solving projects?
Appendix 6: A robust strategic thinking and planning method for rural industries, sectors and regions

Strategic planning or strategic thinking?

Strategic thinking drives, and is supported by, strategic planning. Strategic thinking is about synthesis, intuition, creativity, and moving into the unknown, whilst strategic planning is about analysis, planning processes, programming and building or extending the known (Conway & Voros, 2002). Planning to manage for the future, then, involves an overhaul of the way in which managers think about the future. Strategic thinking comes from a systems perspective and is holistic, intention-driven, focusing an organisation and its individual members on a goal that links the past, present and future in a balanced view of their separate roles, but also developing their capacity to break current paradigms.

In business, approaches to the management of people are increasingly integrating all four aspects of human existence: the individual self and consciousness, behaviour, culture and worldview, and social systems and the environment. Effective and organisationally useful planning involves these psycho-social levels of the key people in an organisation. The strategic foresight processes involved in the minds of individuals, and the psyche and culture of groups participating, can be as important as the plan itself. This concept is based on the observation that people instinctively and constantly develop alternative plans for the future. The mind has an innate capacity to store these for future reference, constantly rehearsing and integrating them into our perception of the future, effectively forming mental ‘templates’. This is the neuro-psychological principle that lies behind elite training, particularly in the military and sports, where it is important that people act instinctively (Ingvar, 1985; MacKay & McKiernan, 2004).

This is important to organisations and regions, given it is necessary to read the environment; observing and perceiving change, and spotting subtle differences. Such ability is conditioned by the way the past is perceived, by the sensory alertness to spot the departures from the past, and fresh developments in the present (Tsoukas & Shepherd, 2004). The organisation or community is then able to respond quickly and with unity. This is the goal of managing uncertainty.

What is the role of scenario planning in managing uncertainty (developing strategic foresight)?

The starting point for managing uncertainty is two-fold: having strategic conversations, and environmental scanning and scenario planning.

Strategic conversations

Foresight is an adaptive or purposeful learning process that also involves rapid decision-making, and constant re-adjustment of plans. This is often referred to as ‘nimbleness’, ‘resilience’ or ‘adaptivity’ and denotes an organisation that operates as a single unit where full organisational capacity resides not in the individual parts, but in the function of the whole. For organisations, it is a background characteristic or institutionalised capacity to create and maintain a high quality, coherent and functional forward view and to use the insights arising in useful ways that benefit the community and industry (Slaughter, 1999). The maintenance of this synergy is one of the most challenging tasks for managers in a dynamic environment (Costanza, 2003; van der Heijden, 2005).

The simplest approach to identifying strategic uncertainty relies on engaging key decision-makers in a strategic conversation about what is uncertain. Van der Heijden (2005) and Delaney (2005b) argue that, just as individuals employ a mental model in planning and then taking action, an organisation
must also share mental models in its planning before taking action. These mental models must be shared through ‘conversation’ amongst the key managers, starting with a wide range of unstructured thoughts and shared interpretations, resulting in a framework that can accommodate all the accepted views that then leads to joint action and shared experiences. Such a “strategic conversation” (Van der Heijden, 2005, pp. 41 - 42) requires a process language based on concepts and a structure.

Voros (2003) has characterised the alternative futures that might be developed from such a conversation as ranging from:

- Potential futures that have/have not yet been conceived
- Possible futures that ‘might happen’ based on future knowledge we don’t yet possess
- Plausible futures that ‘could happen’ based on knowledge that we currently possess
- Probable futures that are ‘likely to happen’ based on research of current trends
- Preferable futures when we might make a judgement about what we ‘want to happen’.

Initiating and promoting such a ‘strategic conversation’ within the focal region, as the basis for regional consensus on a preferred future for regional planning, is the underlying aim of incorporating this method.

Environmental Scanning and Scenario Planning

Kippenberger (1999) refers to defining the scenario space, and Schwartz (1996) to building scenarios by building outwards from a specific issue. Ringland (2002) refers to the application of intuitive logic to determine the issues, identify the possible outcomes, identify the lessons from the past, what changes would be required and decisions that need to be made. Delaney (2005a) argues that the employment of these processes results in triangulation using multiple information sources and angles. Strategic conversation is the primary method on which these processes are based.

A meta-method that can encompass all these facets and provides a flexible, rich framework to investigate the breadth and depth of a situation is that proposed by Slaughter in his book ‘Futures for a Third Millenium’ (Slaughter, 1999). That, and a method by Mercer (1997) for simpler scenario planning that can be employed in a day long forum, are discussed in the next section.

Are there appropriate interpretative frameworks and scenario planning for short forums?

Slaughter (1999, p.241) argues that contrary to the popular view that the future is an “empty space or a kind of blank screen upon which hopes and fears are widely projected”, the future is an intellectual domain that can be populated by insight and propositional knowledge providing a metaphor that can be useful in influencing planners and decision-makers. He proposes a ‘structural overview’ of six questions with wide application that can result in breadth and depth being developed to suit a range of situations. These are:

1. What are the main continuities?
2. What are the main trends?
3. What are the most important change processes?
4. What are the most serious problems?
5. What are the new factors ‘in the pipeline’?
6. What are the main sources of inspiration and hope? (Slaughter 1999, p.242)

When combined with Slaughter’s ‘levels of futures work’ (Slaughter 1999, p.281), this framework provides the breadth and depth required to challenge decision-makers to go beyond the trivial, popular media images of the present situation and the near-future. It encourages decision-makers to delve beyond the problem-oriented level that is typical of management workshops, and consider the critical and value-laden levels that underlie individual, organisational and community behaviour.

The strengths of this framework are its simplicity, and the processes that can be involved for each question generates much wider thinking (for example, consideration of continuities will also generate the discontinuities). However, given the time constraints, the size and the ingrained culture of the management team involved in this project, it will be difficult to go beyond the typical problem-centred level.

David Mercer (1997) argues that short scenario methods have a place feeding into standard institutional processes. This ensures that the output is both robust in organisational terms, but also one which fosters communication, and is motivational through its surfacing of and dealing with tensions and issues. Ratcliffe (2004) concurs, identifying that scenario methods challenge mental maps that shape decision-making and consider imaginative, unorthodox data, prioritising, analysing and testing propositions into a range of plausible futures. The main characteristics of short scenario methods include:

- Develop alternatives rather than extrapolate trends
- Include qualitative as well as quantitative approaches
- Allow for discontinuities to be evaluated
- Result in the questioning of basic assumptions
- Create a learning organisation with a common vocabulary for communication…..strategic conversation (Ratcliffe 2004, p. 8).

Mercer (1997) describes a scenario process, developed over many years of refinement, that compresses the five main steps into a one day exercise. Those steps are:

1. Decide the drivers of change
2. Bring the drivers together into a viable framework
3. Produce an initial five to nine mini-scenarios
4. Reduce these to two to three scenarios
5. Write the scenarios

Ratcliffe (2004) also developed a useful checklist for the implementation of scenario projects from the identification of a number of key lessons in the evaluation of twelve scenario planning projects. Those that are relevant to this project are:

- Purpose:
  - Foster client comprehension
  - Establish clear goals
  - Connect with strategic planning
○ Resolve whether the purpose is learning or planning
○ Create a shared vision
○ Create a shared language
○ Pay attention to organisational culture

• Participants:
  ○ Gain management support and involvement
  ○ Include decision-makers in the initial research process
  ○ Introduce a few ‘remarkable’ people at some stage
  ○ Find a ‘champion’ in the organisation

• Process:
  ○ Recognise that there are many ways of doing scenarios
  ○ Time and timing are all important
  ○ Futures-oriented exercises should be eclectic
  ○ Foresighting should be about breadth as well as depth
  ○ The process should be continuous and cumulative
  ○ Executive ownership must be fostered

• Method:
  ○ Employ a recognisable method
  ○ Decide between inductive or deductive methodology
  ○ Employ some form of environmental scanning
  ○ Appreciate that ‘brainstorming’ is behind it all
  ○ Secure the inclusion of relevant and compelling information
  ○ Enhance participation
  ○ Concentrate on the pivotal uncertainties

• Implementation:
  ○ Determine who is responsible for taking action
  ○ Make the recommendations simple, clear and relevant
  ○ Appreciate that there are other results as well as formal outcomes
  ○ Be innovative in presentation
  ○ Be aware that success is hard to pinpoint (Ratcliffe 2004, pp. 9-24)
The methodology relied on the communication of two key factors:

- An introduction to the basic concepts of futures to create shared language
- A conceptual framework of core questions which was Slaughter’s structural overview (Slaughter, 1999)

Ratcliffe’s (2004) truncated version of Mercer’s (1997) method can be employed within Slaughter’s (1999) Structural Overview. This is an inductive approach which builds progressively on the data emerging from the process and allowing the structure of the scenarios to develop by themselves.

**A robust strategic thinking and planning method for rural industries, sectors and regions**

Environmental scanning information could have occurred through the circulation of pre-forum documentation, which is then used by the industry to develop their own environmental scan. This could be used in the early discussions. Essentially, the project method was:

**Step 1:** Develop a Timeline 2004 – 2014: Developments in the industry sector during this period.

**Step 2:** What is likely to stay essentially the same between now and 2025?

**Step 3:** What are the major trends/drivers of change in place now that will influence the industry sector in 2025?

**Step 4:** What are the emerging issues that might come into play by 2025?

**Step 5:** What are the most serious problems facing the industry sector now and in the near term? Check for the possibility to group the linked forces and if possible, reduce the forces to the two most important which allows the scenarios to be presented in a neat x-y diagram.

**Step 6:** What needs to change to assure a viable and prosperous industry sector in 2025? Identify the extremes of the possible outcomes of the two driving forces and check the dimensions for consistency and plausibility. Three key points should be assessed:

- Time frame: are the trends compatible within the time frame in question?
- Internal consistency: do the forces describe uncertainties that can construct probable scenarios.
- The stakeholders: are any stakeholders currently in disequilibrium compared to their preferred situation, and will this evolve the scenario? Is it possible to create probable scenarios when considering the stakeholders? This is most important when creating macro-scenarios where governments, large organisations will try to influence the outcome.

**Step 7:** Develop the scenario logics:

- Continuities (rated for their impact).
- Trends – the social, technological, economic, environmental, and political changes that will affect the industry over the next ten years (rated for their impact as high uncertainties or medium-low uncertainties).
• Emerging issues – high impact, low probability on the business (rated for their impact as high uncertainties or medium-low uncertainties).

• Problems – identifying the most serious problems over the near term, and rating them for the level of control and their urgency.

Process: Define the scenarios, plotting them on a grid if possible. Usually, two to four scenarios are constructed avoiding the pure best-case and worst-case scenarios.

Assess the scenarios. Are they relevant for the goal? Are they internally consistent? Are they archetypical? Do they represent relatively stable outcome situations?

**Step 8:** Identify and prioritise the key challenges (opportunities and threats) over the next five years for the preferred scenario.

**Step 9:** Identify strategies to address the key challenges.

**Step 10:** Test (wind tunnel) the robustness of the strategies.

These steps can be reduced into five sessions to be conducted over a one or two half day workshop/s:

• Session 1 – Develop global scenario drivers to 2025 and bring them together into clusters
• Session 2 – Develop ‘industry sector’ drivers to 2004 - 2014
• Session 3 – Develop alternative scenarios

Session 4 - Investigate the key turning points and develop robust strategies. For each of the scenarios, assess the robustness of strategy against the scenarios.
References


Pitt, C. A. (2007). *Leading innovation and entrepreneurship: an action research study in the Australian red meat industry*. (DBA), Southern Cross University, Lismore, NSW.


Accounting for agriculture in place-based frameworks for regional

By Laurie Bonney, Angela Castles, Robyn Eversole, Morgan Miles and Megan Woods

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