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‘Farm to Table’: Air Transport Issues for an Island State

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Abstract

Traditionally, a combination of heavy industry and forestry has bolstered the island state of Tasmania’s economy. However, over the past two decades, the state’s economic structure has seen the decline of these and the growth of industries in tourism and specialised agriculture. Although challenged by sea transport, the air transport industry is critical to these two emerging industries. Evidence of the dependency is found in the growing ‘farm to table’ movement and culinary tourism, which requires the timely and effective air transport of tourists and perishable agricultural goods between regional communities and major city centres. This paper explores the ‘farm to table’ movement and the importance of aviation in the developing economies of these communities.

1. Introduction

‘Farm to table’ has emerged as a phrase and concept that seeks to question the entire food production process. Society’s heightened awareness of sustainable practices and processes has driven consumers to seek food that has been produced on the ‘farm’ and delivered to the ‘table’ safely and sustainably, yet maintains high quality. As Tasmania experiences a decline in traditional industries such as heavy industry and forestry, the increased demand for fresh agricultural produce has provided an opportunity for the agricultural industry to support the state through the transition. As an island state, Tasmania has relied heavily on sea freight to transport goods and produce to mainland Australia and the rest of the world. However, as the need for transport of perishable food products, and time-sensitive deliveries grows, access to air services becomes incredibly important. This paper explores the ‘farm to table’ movement and the importance of aviation in the developing economies of these communities. Five key challenges are discussed highlighting the forces impacting on the island state’s ability to access adequate air services that are critical to the ability of regional agricultural communities of the state to compete in the domestic and international market.

2. Methodology

The research aims to contribute to the body of knowledge on air transport services in the context of regional agricultural communities. In particular, the research aims to highlight the importance of air services in the transport of perishable food products in the rise of heightened societal awareness and demand for safe and sustainable agricultural produce. Quantitative analysis provides an indication of the growth and decline of agricultural production and transport of freight. However, a qualitative method has also been applied in an effort to understand the reasons behind the quantitative data.

One significant factor affecting the quantitative data is the lack of air freight records maintained by the Australian Bureau of Statistics. Nevertheless, the literature available including key industry stakeholder reports and analysis has been drawn on in an effort to close the gap in the literature associated with air freight in Tasmania.

3. Background

3.1 The 'farm to table' concept

The 'farm to table' or 'farm to fork' movement has grown on the back of a loss of consumer confidence in the ability of the food production industry to provide sustainable and safe food (Tuncer 2001). Additionally, an increasing societal awareness of sustainable processes including food production and transport has driven a new market, to which the agricultural industry is learning to adapt (O'Donovan, Quinlan & Barry 2012). Recent regulatory applications have been aimed at reviewing the entire range of steps involved in the food production process from animal health issues and quality of feed on the farm, use of chemical pesticides and fertilisers to the final quality of the product as it arrives on the consumer table (Loeber 2011). It is this perspective of food safety that has coined the term 'farm to fork' and developed into a movement with ramifications on food production industries and food transport operations.

While the health risks associated with intensive farming practices (e.g., use of hormones, genetic modification and pesticide contamination) has framed the food production market over the last two decades, the carbon footprint associated with delivery from 'farm to table' has also provided a need for agricultural industries and communities to consider the entire supply chain ('The carbon cost from farm to fork' 2008; O'Donovan et al. 2012).

This lack of confidence combined with changes to the economy has led many regional communities to consider the implications and requirements of consumers. Regional communities with agriculturally based economies have been advised that flexibility and adaptability to the tastes of consumers is necessary for survival. While the 'farm to fork' concept has also developed into a gourmet food sub-sector of the tourism and travel industry (i.e., as tourist travel to the agricultural source of niche or high-quality produce), this paper focuses on the issues associated with transport of perishable agricultural produce.

3.2 Tasmania's economic transition

In the past, Tasmania's economy has been bolstered by 'resource-dependent, processing-intensive, export oriented' and the forest-products industries (West 2013, p. 50; Stratford 2008). However, the decline of wood chip prices, the rising Australian dollar, increasing environmental regulation, international and domestic environmental campaigns have forced major export customers such as Japan and Europe to look to emerging competitors such as China. The forestry industry has collapsed from a decline in revenue, increasing costs combined with industry and government lack of effective or adaptable response (West 2013).

In 2012, those traditional industries, particularly forestry and energy-intensive manufacturing based on hydroelectricity were in significant decline (West 2013). In the wake of this decline, Tasmania's agricultural industry appears set to support Tasmania through its economic difficulties (Government of Tasmania 2013). Although the Australian Bureau of Statistics figures indicate that manufacturing is still Tasmania's largest generator of wealth, it is believed that the state's agriculture and tourism industries may provide the perfect partnership to bring more people to the state in search of world class food and beverages ('Farming to save Tassie' 2012). Additionally, the reputation for clean, high-quality, 'pure' produce has provided Tasmanian agricultural producers with a competitive advantage in the domestic and international markets (Airbiz 2012).

3.3 The importance of air services to regional communities

Access to the market can be a challenge for regional communities supporting agriculture and food production, particularly those in island states. With increasing consumer demand for high-quality, niche food production, the 'farm to table' movement requires efficient and

effective transport of perishable items. Recent reviews of Tasmania's freight task highlight the importance of road, sea and air transport in the wake of predicted growth in agricultural production (McGuire 2009; Airbiz 2012). However, the desire to reduce inventory and the increase in time-sensitive deliveries will see considerable growth in air freight (McGuire 2009).

For time-sensitive, perishable produce, access to market means access to airports and suitable air transport services with the ability to transport goods efficiently and effectively from 'farm to table'. Thus, regional aviation (or air transport in remote regions) is a significant factor in the development of regional and remote communities (Kille, Bates & Murray 2013). For many of these communities, the local airport represents success. It provides agricultural communities with critical access to markets and may lead to further development of business within the region (Kille et al. 2013; Airbiz 2012).

In the case of Tasmania, airports at Burnie, Devonport, Launceston and Hobart support the transport of goods to mainland Australia. Burnie, Devonport and Launceston provide access to the high rainfall and high fertility areas of the state known for beef, dairy and vegetable production (Australian Bureau of Statistics 2006). Thus, in the context of the 'farm to table' concept, access to air services for the transport of produce (i.e., freight) from Tasmania to mainland Australia and the world is of great importance to agricultural communities in Tasmania.

4. Data

4.1 Freight statistics

The Bureau of Transport and Regional Economics (2003) completed an estimate of freight flows and forecast that freight between Australian cities in 2020 will (on average) be twice their 2000 levels. The predicted 'doubling' of the freight task was generally supported by Manders (2006) and the Department of Transport and Regional Services (2004).

Over the 20-year period, an average annual increase of less than four per cent is required to meet the expected doubling of the freight task.

After consulting a variety of industry freight, logistic and transport stakeholders in Australia, McGuire (2009) provides the following estimates for the average annual growth for the 25 years from 1999 to 2025.

Table 1: Freight Task Projections: Average annual growth for the 25 years from 1999 to 2025

Mode	% Average Growth
Road	2.98
Rail	2.38
Coastal Shipping	1.51
Air	6.1
All Modes	2.75

4.2 Production statistics

Tasmanian farms embark on a range of farming activities. Although livestock can be found on most farms in the state, sheep are generally found in the drier regions (down through the midlands to the Derwent Valley), beef and dairy cattle are found in the regions of higher rainfall predominantly in the north.

Vegetable growing is concentrated in high rainfall areas, to the north west and around Meander Valley, but also in the north east. However, increasingly, vegetables are being grown in drier areas with good access to irrigation.

The following table provides the number of farms in the various regions or 'statistical divisions' as recorded by the Australian Bureau of Statistics.

Table 2: Establishments with agricultural activity (a), at 30 June 2005

Statistical Division	Number
Greater Hobart	^ 214
Southern	778
Northern	1,418
Mersey-Lyell	1,467
Tasmania	**3,877**

^ data subject to sampling variability between 10% and 25%
(a) Refers to farms with an EVAO of $5,000 or more.
Source: Australian Bureau of Statistics, 2005 Agricultural Survey.

Livestock activities are concentrated on cattle for beef and milk production, while sheep are raised for meat and fine wool. Apples are no longer as significant as the fruit crop once was. However, niche markets such as cherries and berries (strawberries, raspberries and blackberries) have emerged. The following table lists the principle agricultural production for Tasmania 2004–05.

Table 3: Principal agricultural production, Tasmania, 2004–05

Agricultural Product	Total ('000 t)
Barley	27.8
Wheat	30.5
Apples	45.5
Potatoes	320.8
Sheep and lambs	3,104.7

Source: Agricultural Commodities, Australia (cat. no. 7121.0).

The following table lists the contribution of agricultural commodities to the Tasmanian economy.

Table 4: Value of agriculture commodities produced: Tasmania 2011–12

Agricultural Commodity	Value ($)	
Total hay	$37.9 million	
Lucerne cut for hay		$8.2 million
Total fruit	$101 million	
Apples		$29.1 million
Grapes		$18.6 million
Total vegetables	$213 million	
Potatoes		$128 million
Onions		$33.9 million
Total livestock slaughter	$260 million	
Cattle and calves		$178 million
Sheep and lambs		$53.8 million

Agricultural Commodity	Value ($)
Total livestock products	$422 million
Milk	$315 million
Wool	$95.9 million
Value of total agriculture	$1.2 billion

Source: Australian Bureau of Statistics

4.3 Freight Equalisation Scheme statistics

The Tasmanian Freight Equalisation Scheme (TFES) commenced in 1976 in response to the recognition that Tasmania (as an island state) of the federation experienced a significant disadvantage with regards to the transport of goods between Tasmania and mainland Australia. The distance and might of the Bass Strait extending between Tasmania and Australia was considered an access disadvantage compared to the network of roads and rail of which other states experienced the luxury. It is also understood that as an island state, Tasmania depends on sea and airfreight to transport goods to and from mainland Australia. The costs of transporting this freight by air and sea is significantly greater than by road or rail, thus placing Tasmanian industries at a cost disadvantage (Logistics Information and Navigation Centre 2011). In 2008, the scheme was extended to include the freight shipped between Tasmania and King Island or the islands of the Furneaux Group (Department of Infrastructure and Transport 2013).

Through the scheme, shippers of freight between Tasmania and mainland Australia are provided with financial assistance. The intention of the scheme is to reduce the burden associated with the sea freight cost disadvantage that many shippers experience while shipping freight moved by sea. The following table lists the assistance paid through that scheme in 2002 and 2007.

Table 5: TFES Statistics: Assistance Paid 2002 and 2007

Commodity	Assistance Paid 2002 $	Assistance Paid 2007 $	Variation %
Vegetables Frozen	12,599,730	14,926,705	18.5
Manufacturing & Mining: Other	9,148,068	13,284,136	45.2
Newsprint	11,355,468	12,445,631	9.6
Paper	4,889,993	5,640,399	15.3
Vegetables: Fresh	2,046,266	4,725,912	131.0
Confectionery	3,044,559	4,344,107	42.7
Timber	3,340,564	3,847,515	15.2
Beverages: Cartons	2,214,057	3,769,177	70.2
Cattle Adult	737,276	2,493,348	238.2
Fodder (Excluding Wheat)	1,067,282	2,474,667	131.9
Manufacturing & Mining: High Density	1,719,424	2,396,316	39.4
Wood & Cork	3,202,704	2,322,008	–27.5
Fish: Fresh	956,492	2,034,219	112.7
Metal Waste and Scrap	1,316,220	1,967,058	49.4
Cheese	1,285,585	1,872,087	45.6
Milk: Dried, Condensed & UHT	1,125,793	1,519,291	35.0
Sheep Adult	373,186	1,143,851	206.5
Wheat	n/a	1,131,662	
Waste Paper	1,380,545	950,233	–31.2

Commodity	Assistance Paid 2002 $	Assistance Paid 2007 $	Variation %
Apples: Cartons	901,036	935,341	3.8

Source: (McGuire 2009)

5. Analysis and Discussion

5.1 Lack of statistics on air freight

One of the challenges of air transport (particularly in regional communities) is the lack of relevant and consistent statistics. The Bureau of Infrastructure, Transport and Regional Economics does not publish statistics on domestic and regional air freight moved in Australia.

It is also difficult to find a holistic picture of international freight associated with Tasmania, as the Australian Bureau of Statistics records only those goods imported directly to Tasmania from overseas. The only international airport is found to the south of the state. Much of the freight activity takes place to the north of the state at Devonport, Burnie and Bell Bay (Launceston) sea ports as major shipping companies take the weight of the freight task across the Bass Strait to and from mainland Australia (McGuire 2009). These three ports also provide access to the areas of high agricultural activity (see Table 2).

The Bass Strait provides the major shipping corridor for goods transported between Tasmania and mainland Australia. As environmentally conscious consumers seek pure produce via the 'farm to table' movement, it is known that significant amounts of consumer goods (i.e., agricultural produce) are transported internationally via mainland Australia. Unfortunately, these statistics do not record or capture Tasmanian produce and thus accounts for a significant difference between international imports and exports in both air and sea freight activity (Australian Bureau of Statistics 2008)

This lack of air transport freight statistics provides a significant challenge for the air transport industry in terms of sector development. Limited statistics lends to limited support for the sector from both government and private investment. This is exemplified in the historical development of the TFES. In 1974, the Australian Government commissioned an inquiry to assess if Tasmania experienced any disadvantages associated with the transport of persons and goods compared to mainland Australia. The government accepted a majority of the recommendations from that inquiry. However, most notable is the government's rejection of the recommendation that air transport should receive financial assistance for the movement of goods. The TFES was established in 1976 and limited assistance to sea freight only.

5.2 Growth in air freight task

Table 1 highlights the significant growth estimate applicable to aviation with regards to carriage of freight nationally. However, Manders (2006) reports that the domestic air freight task is relatively small, carrying only 0.25 billion tonne-kilometres of freight in the 150 billion total task.

In Tasmania, limited airfreight records leaves room for estimates that indicate that air freight accounts for approximately two per cent of the total freight task (McGuire 2009). While Tasmanian Ports Corporation claims that it facilitates 99 per cent of Tasmania's interstate and international trade, it confirms that Tasmania is predominantly an export state, with export freight generally twice that of imports. Nevertheless, the data indicates that it is the air freight task that is and will continue to see the growth particularly with the rise of sensitive deliveries and perishable food goods.

Given the lack of air freight statistics, it is difficult to determine the potential causes for the predicted increase in the air freight task. However, an examination of the TFES payments made recently provides some interesting insights. Table 5 lists the most significant categories of assistance payments made over a five-year period. The variation of payments between 2002 and 2007 is the most significant for the transport of freight associated with cattle, sheep, fodder, fresh vegetables and fresh fish. This further highlights the growth in

consumer needs. Not only is this an indicator of the transitioning economic structure of Tasmania, but it highlights the important change in consumer needs particularly with regards to Tasmania's high-quality agricultural produce.

5.3 Challenged by sea freight

Sea freight has always been a major challenge for air transport in Australia. Perhaps one of the reasons stems back to investor interests. One of Australia's major airlines was fathered by a group of shipping owners, with one of the most influential personalities being a Tasmanian (Gunn 1999).

As an island, sea freight is an important aspect of Tasmanian transport. According to the Australian Bureau of Statistics (2011), 9.5 per cent of Australia's coastal freight originates in Tasmania and 6.5 per cent of Australia's coastal freight is destined for Tasmania. Devonport affords the greatest number of trips. However, Launceston leads in terms of weight and value of freight.

Considering the history of transport in Tasmania, the accessibility of quality and reliable freight statistics associated with sea transport, and the recorded weight and value of sea freight (Airbiz 2012), it is no wonder the Tasmanian sea freight industry holds a challenging stance to air transport. This is seen in both government incentives (supports and subsidy schemes) and private investment.

Victoria is the most significant state in terms of voyages to and from Tasmania by weight of freight (Airbiz 2012). However, in the context of the 'farm to table' movement, the transport of time-sensitive and perishable produce is critical. Sea freight is not a timely option. Thus, exporters of Tasmania's fresh and perishable produce rely on air freight services in order to compete in international markets (Rundle 1998).

5.4 Challenged by infrastructure

The current state of Tasmanian air freight infrastructure and associated service levels are seen by some exporters of perishable agricultural produce as a major constraint to development and further export potential. In the 'farm to table' concept, produce from the 'farm' or the grower, must arrive at the 'table' or desired markets in an effective and efficient manner (Rundle 1998).

In Tasmania, one significant issue is the diverging economics of agriculture and manufacturing (West et al. 2012). Grower activities support the economics of agriculture. Although operating and cash returns are often modest, farmers rely on value being captured through their land as appreciating assets (West et al. 2012). Conversely, processing supports the economics of manufacturing. Unfortunately, the problems of Tasmanian processing are not unlike those problems experienced by contemporary Australian manufacturing. Higher exchange rates combined with high wages, increased regulatory burden and increased input costs are some of the challenges facing manufacturing. While there may be sufficient value maintained from the industry overall, the high costs associated with processing may not attract sufficient private investment to support industry expansion (West et al. 2012).

The key areas of Tasmania's economy strongly related to the 'farm to table' movement are dairy, aquaculture and horticulture. The dairy industry makes a significant contribution to the Tasmanian economy providing some of the best quality milk products in the world (Australian Government 2012; Australian Food News 2010). Tasmania's aquaculture industry demonstrates significant potential with the largest abalone fishery in the world and increasing demand for the state's salmon production (Australian Government 2012). The premium and niche markets account for 60 per cent of Tasmania's agricultural and food production. With Tasmania's reputation for quality and cleanliness, the Australian Government (2012) predicts that this is a key area for growth in Tasmania's economy.

Stolorz (2010) concurs that agriculture and food production are significant drivers of the Tasmanian economy. This is further demonstrated in the value of agricultural commodities produced in Tasmania (see Table 4). However, emphasis is placed on high-quality, niche products and premium produce that demand superior prices and maintain strength in global commodity market shifts (Australian Government 2012). Yet, in order to grow, technology, innovation, private sector investment and improved access to markets is what these industries need.

5.5 Challenged by domestic airline scheduling

Some constraints applicable to agricultural exporters stem from the passenger demand and scheduling policies of domestic airlines (Rundle 1998). Predominantly, the constraints are related to the inability of the domestic air operators to fulfil the service needs of exporters.

Five airports currently service the Tasmanian population of approximately 500,000 people. Commercial airlines (Virgin Australia, Qantas, Jetstar and Regional Express) operate between these airports and the Australian mainland (Airbiz 2012). Qantas provides jet services at Hobart (HBA) and Launceston (LST) and turbo-prop services at Devonport (DPO). Virgin Australia and Jetstar provide jet services to Hobart and Launceston, while Regional Express provides services at King Island (KNS) and Burnie (BWT) utilising turbo-prop aircraft.

In the last decade, the emergence of the low cost carrier (LCC) airline model has made a significant impact on passenger services and numbers to Tasmania. The rise of this airline model in Australia's airline environment has led to the delivery of greater air transport access to Tasmanians, in terms of passenger travel but also freight capacity.

In 2008–2009, Australia's domestic and regional airlines carried 49.6 million passengers, compared with only 16.8 million in 1988–1989 (Australian Government 2009). This demonstrates an average annual growth of 5.5 per cent. The Australian Government attributes this growth to the increase in competition from the entry of low cost airlines including Jetstar, Tiger Airways and what was formally Virgin Blue (Kille et al. 2013). The government also claims that the influx of these airlines has introduced low-fare jet services to many regional areas, commenting that regional tourism boosts have driven economic benefits to regional communities (Australian Government 2009; Airbiz 2012).

In terms of neoliberal policy or deregulation (as is the case of the domestic airline policy), the introduction of LCCs has the effect of stimulating the market and providing opportunities for air transport at competitive fares. Additionally, the services provide the opportunity for agricultural exporters in Tasmania to transport freight to mainland Australia and thus, the rest of the world. However, the LCC model is successful because it seeks to operate on high performing routes aimed at leisure travellers, which is effectively seasonal. The feature of the LCC model is the ability for airline operators to micromanage the airline schedule to match passenger demand. Changes to the network routes and schedules are necessary for profitable operations. However, the changeability of these routes and schedules effectively limits the ability of agricultural exporters to manage business operations, supply chains and distribution channels (Airbiz 2012).

Rundle (1998) suggests that Tasmanian exporters are further inhibited by the limited flights available to Melbourne and Sydney (which effectively provide a hub) for transport of niche agricultural produce to the rest of the world. With air transport services focusing on passenger transport, domestic air services are not always able to transport some standard freight package sizes or pallets.

A number of factors have impacted on the recent reduction in Tasmania's air service capacity: firstly, the knock on effects of the Global Financial Crisis that effectively led to a decline in demand for leisure travel; secondly, the strategic positioning of some airlines to focus on services to resource rich states and fly-in, fly-out operations; and finally, the Civil

Aviation Safety Authority's grounding of Tiger Airways from July 2011, which led to the grounding of the airline and thus loss of services provided by this airline to and from Tasmania (Airbiz 2012).

The capacity to Tasmania's regional airports of Devonport, Burnie and King Island has been relatively stable over the past decade. All three are served by daily direct flights to Melbourne. The air services provided to these destinations are inextricably bound to the local economic conditions. However, the ability of air operators to match the appropriate aircraft type to the market size is key to the continuation and sustainability of air services to these regions (Kille et al. 2013).

5.6 Future opportunities

The challenges facing regional air transport are numerous (Kille et al. 2013). This paper has sort to highlight five key issues directly impacting on Tasmania's ability to access adequate air services in regional agricultural communities. The lack of these services hinders the ability of the state to compete in the domestic and international market. In times of economic transition, these challenges present opportunities for a critical review and unified approach to solutions.

Air freight statistics and air freight task

The collection of accurate, current and categorised statistics on air freight is critical to the realisation of the future of freight transport. The growth in the air freight task is estimated based on many economic factors including consumer demand and the value of the Australian dollar. While the collection of air freight data is a critical step in informing government policy, it is difficult for many air operators to divulge this information. The difficulty in data collection is the result of three main factors; (1) the lack of federal, state and local government coordination in transport matters; (2) the additional cost burdens associated with data collection; and (3) the industry's culture of nondisclosure of data, fearing that disclosure will result in loss of competitive advantage.

Unfortunately, the disparate federal, state and local government policies associated with transport infrastructure, service provision, competition and regulation have created a difficult environment for regional air transport operators. The disjointed nature of policy administration affects the ability of authorities to regulate the collection, obtain and maintain appropriate data.

The second reason for the lack of available air freight statistics relates to the already high operating costs for many regional operators. Requirements for freight data collection and reporting create an additional time and therefore cost burden. Lower capacity, marginal profits and thinner routes, combined with relatively similar overhead costs to that of high capacity domestic operators are some of the cost challenges facing the sector. Any additional requirements for data collection need to be mandated, administered by an appropriately resourced authority and then accurately collected by appropriately resourced and equipped operators. In a sector that is already burdened by increased costs, additional requirements (with no apparent direct organisational benefit) are difficult to apply.

Thirdly, the highly competitive nature of regional air transport has created a professional culture of secrecy associated with any reference to the publication or dissemination of figures relating to the business environment. A dynamic industry of high entry barriers, high initial investment costs, high operating costs, relatively low profit margins and limited route protection (courtesy of the Australian macro-economic reform agenda), has left operators with an overwhelming fear of data disclosure.

The challenges of the lack of air freight statistics combined with the growth in the air freight task require a whole of government approach. Of course, statistics are not a costless

privilege. However, effective and efficient solutions to the lack of statistics may be to investigate data that already exists. It is perhaps necessary to mine data further down the supply chain. Many, if not all, significant business transactions relating to the transport of freight are already prevalent through taxation records. For example, transactions made by producers or growers to transport companies and the correlation of these records may provide more accurate air freight figures. Data interrogation and analysis of this style, applied at federal level, may provide the benefits of data and overcome the three factors hindering data collection described above.

Sea freight

Sea transport has preceded air transport in terms of scientific and historical development. By way of example, a shipping family based in Tasmania pioneered one of the first national airlines in Australia. For hundreds of years, ships have been used in trade to transport goods domestically and internationally. These years have seen shipping companies hold significant lobbying power with respect to government intervention. Regional air transport has a voice in the form of a handful of united national associations. In some respects a united front can assist with government engagement and better inform government decision-making.

Over the past two decades Australia's transport and regional affairs have predominantly been managed in a joint federal portfolio with one minister responsible. With many rural and regional communities holding Liberal National Party seats, this combination has generally worked well for the regional aviation industry under a Coalition Government. This positive relationship is seen in the range of incentives and initiatives offered during time in power.

However, many government policies (e.g., the Freight Equalisation Scheme described above) appear to inhibit the growth of aviation through a lack of future thinking. Of course the government's decisions are based on a range of factors associated with tourism, economic fairness and access. However, a certain policy decision aimed at bolstering sea freight services does little to consider the impacts on other modes of transport and consumer needs.

In this paper, the discussion of the challenges posed by sea freight is limited to government assistance. It is obvious that time sensitive, perishable produce needs access to timely, effective and efficient air transport services. This paper aims to highlight the growing need in this style of freight task to assist in the campaign for more integrated industry and government collaboration. This engagement will assist in defining the requirements of consumers, producers and access to relevant modes of transport. It is hoped that this approach may assist in the development of long-term strategic government policy that eliminates unnecessary challenges posed on air transport by other modes of transport.

Infrastructure

It is evident from the above discussion that the challenges facing agricultural infrastructure are heavily affected by the value of the Australian dollar. Certainly this is the case for Australia's ability to compete on a global platform in agricultural production, and also in Australia's ability to tempt international investors. Macro-economic reform does little to stimulate these abilities unless there are well-advised and strategic incentives provided to attract Australian and foreign investment. Incentives come at a cost to some aspect of the Australian economy.

Deregulation provided the necessary infrastructure developments to support the development of air transport infrastructure. For example, the privatisation of Australia's airports allowed foreign and domestic private investment to develop airports in areas of significant investment potential. The government also claims deregulation success due to its relatively unusual foreign investment policy associated with domestic airline ownership. However, regional aviation associations claim the policy hindered the sectors ability to grow

and compete. The policy attracted heavy investment in domestic air carrier start-ups, providing lower fares and greater options to domestic travellers. However, over the last decade, these domestic carriers have started to impinge on the regional passenger market previously the domain of regional carriers. Older aeroplanes, high operating costs and incomparable financial backing has left many regional carriers unable to compete.

In the case of the 'farm to table' movement, there are two aspects to the challenge of infrastructure. The first is the requirement for private investment, technology and innovation in the areas of growing and processing. This can only be achieved by appropriate financial incentives to attract foreign investment. Many niche products are highly successful in terms of quality due to the conditions of growing at specific locations. In many cases, this geographic limitation and specific growing climate is what makes the produce valuable. Time sensitive and perishable produce also does not have the luxury of distance to process as the travel to process time adds valuable time to the entire transport time. Additional incentives must come from federal, state and local governmental support into research in this area.

Access to scientific, transport and social research will further encourage private investment. This investment may result in development of infrastructure such as processing centres, innovative growing technologies, sustainable growing practices and improved job opportunities in regional Australia. In the case of Tasmania, considered a microcosm of Australia in many respects, the transitioning economy from heavy industry to agriculture must be supported with long-term strategy. If production of food continues to contribute significantly to the economy, the cost of labour is an important consideration in global competition. Strategies to address production, processing, and labour cost must be applied combined with significant investment in innovation and development of sustainable practices. This has the potential to provide the economy with the ability to sustain global competition.

The second requirement for private investment, technology and innovation is in the area of air transport access to regional communities. In the case of the 'farm to table' movement, air transport holds many benefits over road, rail and sea freight networks. Rail requires considerable infrastructure, long term planning with limited flexibility in the case of market fluctuations or changes to the regional requirements around the rail stations being constructed. Limited sea ports are also a challenge for growers seeking to distribute their goods from the farm to the table efficiently. In the case of Tasmania, sea ports provide access to coastal and regional areas surrounding the ports. However, access to other regional agricultural areas is limited with additional means (such as rail or road) necessary to transport goods to the closest sea port. Additionally, travel time imposed by road, rail and sea is not viable for the transport of fresh, perishable and time sensitive produce.

Aerodromes are found in great numbers across Australia and indeed Tasmania. However, adequate transport research is needed to determine the most appropriate airport sites. This research will provide suitable forecasts as to development potential and the cumulative economic benefits to the effected regional communities. Relevant research has the potential to spur private investment into airport infrastructure development. In the case of high-quality, niche products and premium produce applicable to the 'farm to table' movement, agriculture and food production industries will benefit from resulting improved access to markets.

Domestic airline scheduling

The challenges posed by domestic airline scheduling hinge on the agricultural and food industries reliance on air freight transport via regular passenger services. As discussed above, as airlines amend their schedules based on passenger demand, reliability of air freight services is reduced. The community of King Island to the north-west of Tasmania experienced a similar dilemma in recent years. With little to no regular transport services between the island and mainland Tasmania or mainland Australia, the community rallied together to create an air transport service financially supported by the residents of King Island.

In order to reduce the reliance on domestic passenger airline scheduling, growers may need to review this scenario. Systems of community have already been achieved successfully in other areas of agricultural business. Farmers cooperatives have emerged throughout Australia and certainly in Tasmania as agricultural communities identify a critical need, develop a cost effective strategy and deliver a solution to meet the needs of the community. With initial government support, this style of community initiative may allow air freight users to develop an air transport service specifically dedicated to the transport of freight. As the need is realised, reliability and consistency allows air freight users to commit business to the service, thus enhancing the financial viability of such a community initiative.

6. Conclusion

The 'farm to table' concept has emerged in response to increased awareness and consumer demand for the safe and sustainable production of quality food. For the island state of Tasmania, the reputation for purity has allowed the state to transition its economy from one supported primarily by heavy industry and forestry, to one that is supported significantly by an agricultural and food production industry. Although the island state has relied heavily on sea freight to transport goods and produce to mainland Australia and the rest of the world, this paper has addressed the importance of air services, as the need for transport of perishable food products and time-sensitive deliveries grows. While the five challenges discussed highlight important constraints on the island state's ability to compete in the domestic and international market, these issues also represent significant opportunities for improvement in services for Tasmania and the expansion of markets associated with the transport of perishable food products from 'farm to table'.

Acknowledgements

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