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KNOWLEDGE…INNOVATION…ACTION

Senate inquiry about food production in Australia

Submission

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Declaration of interests and affiliations

Dr Silvia Estrada-Flores is Principal Consultant of Food Chain Intelligence, a consultancy business that provides advice in the practical aspects of the supply chain of perishable foods, from gate to plate; technical intelligence on the state of food logistics and food value chains; and operating procedures and plans to achieve an integrated supply chain. Silvia has worked extensively as a consultant to food and pharmaceutical industries and manufacturers of refrigerated equipment in Mexico and Australia. Silvia is an Australian citizen and a Mexican citizen.

From August 2001 to November 2007, Silvia was a Senior Researcher in the Packaging, Storage and Transport team at Food Science Australia (a joint venture of CSIRO and the Victorian Government) in Sydney.

Silvia is an Australian representative of the International Institute of Refrigeration (IIR). She is also a member of the Australian Institute of Refrigeration, Air Conditioning and Heating (AIRAH) and the Logistics Association of Australia (LAA).

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This submission responds to the call for participation in the review of food production in Australia, in particular:

- How to make food affordable to consumers.
- How to make food production viable by farmers.
- How to make food production of sustainable impact on the environment.

I have submitted separate submissions to the following calls for submissions:

1) The Review Panel of the National Innovation System
2) The Garnaut Review Forum

I am attaching these submissions as background information and as supporting evidence of the arguments I make in this document. From these submissions, I wish to emphasise the following points:

1. A recent study (European Commission, 2007) compared the competitiveness of the European food industry with their counterparts in Canada, New Zealand, US Brazil and Australia. The Australian performance was found to be the weakest, using comparisons of real value added, export share growth and real labour productivity.

2. There is an institutional lack of belief in innovation as a tool for improving the performance of the agri-food sector. This is reflected in the gradual withdrawal of CSIRO from horticultural research and other food-related areas, the demise of the Food Innovation Grants and the shortage of government-led innovation initiatives to steer the industry towards a sustainable and profitable future.

3. The Australian agri-food sector is not likely to achieve its full potential until we invest in innovation. Innovation is the key factor that will enable Australia and the rest of the world to supply safe, wholesome and affordable food in an environmentally-challenged future.

4. There is a need for a concerted approach to innovation in the food industry, from agricultural production and rural based manufacturing through retail to consumer, thus adopting a value chain perspective. Such a concerted approach should recognise the highly dynamic nature of the food manufacturing industry, the benefits of market driven innovation and the usefulness of policy as an instrument to encourage innovation in the marketplace.
5. The current innovation system, which focuses on CRCs, RDCs, public R&D organisations and universities, has delivered a small number of innovations to the marketplace. NFIS had a strategic role in supporting business innovation, manufacturing, supply chain and value addition projects. Additionally, NFIS approached food innovation with a 'whole-of-the-chain' perspective. The termination of this initiative leaves a vacuum in R&D focused to food manufacturing and other areas of knowledge required to introduce food innovations in the marketplace (e.g. supply chain, consumer science and packaging).
6. From production through processing to retail, food supply chains have an often unmeasured impact on the environment. Policies and corporate efforts should focus on three main aspects:
    - Operational issues, which deal with supply chain processes and strategies from primary transformation of foods (e.g. harvest, slaughter, packing house operations) through manufacturing to retail. Aspects such as the effect of primary production on climate change, the impact of freight transport (Food Miles) and food and packaging waste at retail levels are all operational issues.
    - Consumer issues, which encompass consumer attitudes to environmental drivers and the impact of food consumption trends on greenhouse gas emissions.
    - Corporate issues, which include standards and regulations, financial risks, carbon trading and offsets.
7. For economies that largely depend in agricultural exports, such as Australia and New Zealand, it will become critical to demonstrate alignment with good environmental practices. To do so, investment in environmental innovation with a particular focus on food supply chains will be required.
8. Cooling, freezing, cold storage, refrigerated transport, commercial and domestic refrigeration are undoubtedly large contributors to carbon emissions in food-related industries. The estimated total energy spent in the Australian food industry to keep an unbroken cold chain from farm to consumer (Estrada-Flores S and Platt, 2007) is 19,292 GWh/year (or 18 megatonnes of CO2 –e). This is equivalent to 4.3 million cars circulating on the roads each year (or 30% of the total number of cars registered in Australia in 2006). This footprint does not take into account fugitive emissions, which can have an equally large contribution as those from indirect emissions through energy consumption[1]. Any plans to offset the carbon footprint of food chains will need to take into account the contribution of the refrigeration sector.

[1] Although some argue that fugitive emissions could have significant environmental impacts than indirect emissions. See:

9. Food transport occurs at every step of the supply chain, connecting production centres, warehouses, export destinations, retail outlets and consumers' homes. It is estimated that food transport in Australia accounted for 6.2 megatonnes of CO2-e in 2007, including the use of diesel for refrigerated transport purposes. This amount is equivalent to approximately 1.4 million cars circulating in Australian roads each year. New supply chain strategies and transportation methods could significantly cut these emissions and the transport costs.

10. Food waste in Australia is estimated to be 3.3 million tonnes annually, worth about AUD $5.3 billion[2].The reasons for food waste are numerous and encompass all food chain players, from producers to consumers. Changes in attitudes, practices and technology are required to decrease food waste.

11. Recently, the South Australia Premier Mike Rann announced a plan to measure and reduce the greenhouse emissions of the SA wine industry[3]. This is a positive step that brings awareness on the responsibility of the food industry in reducing environmental impacts. However, this is an isolated study. No national guidelines to assess carbon footprints in the food industry exist in Australia. I therefore see a need to create an organisation similar to The Carbon Trust in the UK, whereby this organisation provides:

a. Leadership and steering of the manufacturing sector towards a new economy based on reducing carbon emissions.
b. Specific methodologies and guidelines for carrying out carbon footprint analyses, taking into account the unique Australian economic and environmental conditions.
c. Training and education for Australian producers, processors and retailers.
d. Platforms for interaction between policy makers and supply chain players.
e. Intelligence and strategy on climate change and carbon emission issues.

Such an organisation can encompass all manufacturing areas, including food.

SPECIFIC ACTIONS

To me, the fundamental aspect raised by this enquiry is "How can the Australian agri-food sector can be more competitive?" The issues of affordability, productivity and sustainability are all angles of competitiveness. It is thus necessary to frame this problem in a whole-of-the-chain approach: we cannot resolve the issue of affordability if we simply focus our attention on growers and farmers. This issue is a consequence of the entire efficiency of the food supply chain, thereby involving growers, manufacturers, logistics providers, suppliers, wholesalers, convenience sector and retailers. Furthermore, competitiveness is also a reflection of the historic public and private

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http://www.accc.gov.au/content/trimFile.phtml?trimFileName=D08+7432.pdf&trimFileTitle=D08+7432.pdf&trimFileFromVersionId=827849

[2] Hamilton, C., Deniss,R. and Baker, D. Wasteful consumption in Australia.Discussion Paper Number 77. [Online] 2005. http://www.tai.org.au/documents/dp_fulltext/DP77.pdf. ISSN 1322-5421.

[3] http://www.greenhouse.sa.gov.au/PDFs/winesectoragreement.pdf

investment in building and developing the agri-food industry, thereby involving policy makers, research and education providers, entrepreneurs, and all the actors needed to innovate and educate new entrants in the sector.

Therefore, the following actions are oriented to tackle the competitiveness of the agri-food sector as a whole.

A. A new "sustainable co-innovation" model for the food industry is proposed in the attached innovation submission. The model requires a central strategic organisation, which would:
    - Provide a strategic framework for national food innovation, from a market-led, supply chain perspective.
    - Coordinate the activities required to introduce new technology in the marketplace
    - Coordinate government-led food innovation activities (e.g. grants and strategic directions for public R&D), from a supply and value chain perspective. This would avoid the lack of supply chain focus and would increase critical mass in the initiatives undertaken.
    - Enable the commercialisation stages in the innovation process, including assistance in seeking for venture / equity capital.
    - Provide timely competitive and technical intelligence to all stakeholders about the particular innovation areas targeted, bringing attention to current and emerging technologies and innovation trends in the targeted markets.
B. A review of the National Public Health Nutrition Strategy would be of benefit. Such a review should focus on:
    - increasing the levels of well being through healthy eating (portion control and balanced eating);
    - decreasing the environmental impact of our diets through the decrease of food waste and its packaging;
    - selecting foods that have a decreased carbon footprint or that offset their footprint through carbon offset schemes.

    This review would provide a driver for the food industry to measure their carbon emissions and provide such information through carbon labelling.
C. The use of distributed food production, which makes use of hydroponics to cultivate horticultural products in the roofs of large commercial buildings and centres, should also be considered. In Australia, the use of hydroponics in drought-affected areas should be considered. This system would allow decreasing the bulk of foods transported thus reducing costs and environmental impacts.
D. Productivity in the agri-food sector is largely dependent on the labour market. The well-known skill shortages are particularly felt in low-paid agricultural jobs. One way to tackle

this issue is to increase the level of mechanisation in the industry, through the implementation of mechanical harvesters, robotic carcass cutters, robotic picking and packing and so on. Other ways deal with schemes to attract temporary workers into Australia.

E. Perhaps Australia should go back to promote small scale production of foods. The Australian food industry evolved from fierce competition in the 1980's to relentless consolidation and the supremacy of retailers as a market power in present times. However, manufacturing technologies and knowledge have evolved radically since 1980. There is evidence on the economic advantages of micro-machine processing, flexible manufacturing and production de-scaling. All these aspects should be investigated for implementation in modern food supply chains.

F. The use of distributed food production, which makes use of hydroponics to cultivate horticultural products in the roofs of large commercial buildings and centres, should also be considered. This system would allow decreasing the bulk of foods transported thus reducing costs and environmental impacts. The use of hydroponics in drought-affected areas should also be considered.

G. Innovative supply chain strategies should also be considered. A recent example of environmental co-innovation is the Sustainable Distribution strategy, which involves thirty seven well-known food and consumer goods companies in the U.K. It is expected that this initiative will lead to savings of 23 million litres of diesel fuel per year, through sharing of vehicles and optimising the use of warehouses. Multimodal transport also needs to be assessed: the use of refrigerated rail services could decrease significantly the cost and environmental footprint of food transportation. Improving the rail infrastructure would be a necessary step to achieve reliable multimodal transport services.

   According to a recent report by Woolworth's, a significant trend in grocery retailing is the increase in the frequency of low value purchases by consumers (top up trend). This trend is likely to continue as food prices increase, thus leading to more transport costs (for the consumer), more traffic and less profitable operations for supermarkets. To counter this trend, supermarket logistics that may involve a float of refrigerated vans/trucks, which can be effectively converted in 'mini-supers', with a range of foods and other products may help. This service would effectively bring the supermarket to consumer, providing products that are often purchased frequently. This system would also tackle a social problem: online supermarket services are very convenient for computer-savvy individuals with an internet connection at home, but are less convenient for older generations with no home internet access.

H. Government-led initiatives and policies that encourage horizontal and vertical collaboration between food chain partners can go a long way in shifting the way of doing business in the food industry. Small and medium-sized enterprises gain particular benefits of collaborative

approaches, which can acquire skills and knowledge beyond their own capabilities. Advantages for manufacturers include a more systematic approach to new product development (NPD), an increased emphasis on market-oriented NPD and a stronger network for product market intelligence. Likewise, innovative retail-led processes such as efficient consumer response, collaborative planning, forecasting and replenishment and category management rely on the joint development of strategic category plans and the collaborative work of retailers and their suppliers.

I. Establish a minimum quota of arable land that needs to remain dedicated for food production (as opposed to biodiesel production) and develop policies that will support and enforce these limits. This is an important measure, in view of the recent World Bank report[4], which shown that biofuels have forced world food prices up by 75 %.
J. Conduct an investigation on the level of food wastage in Australia, covering production, distribution, retail, convenience (e.g. restaurants, hotels, take-away businesses, hospitals, schools) and consumer. Evaluate the possibilities of reducing this waste through portion-control, consumer education and training for food handlers. Also, evaluate the potential for biofuel production from food waste.
K. Evaluate the use of policy and public procurement as a tool for improving the availability of foods (see attached document on innovation).
L. Consider lowering the barriers to food imports to tackle food affordability, thus allowing the imports of low cost food staples. To soften the effect of easing trade barriers for domestic producers, offer opportunities to add value to the products imported domestically, through improved packaging, storage, processing of imported raw materials, etc.
M. Differentiation through improved packaging, new product development and so on is essential to ensure that a downfall in food production can be tempered with increased value addition and product differentiation. This will make Australian products more marketable in discerning markets (e.g. Europe and USA).
N. Redouble efforts in research and commercialisation focused to develop the native food industry (e.g. bush tomato, desert limes and wattle seeds). This effort does not only pay in terms of product marketing and differentiation: it also makes use of desert land for food production.
O. Explore the benefits of using agricultural by-products to extract health-related substances (i.e. nutraceuticals) to value add further. A case study developed by CSIRO[5] shows the technical and financial aspects to be considered in this type of ventures.

[4] A. Chakrabortty Secret report: biofuel caused food crisis. Internal World Bank study delivers blow to plant energy drive. The Guardian: 4 July 2008. Accessed in 7 July at: http://www.guardian.co.uk/environment/2008/jul/03/biofuels.renewableenergy

[5] R. Seymour, S. Estrada-Flores, M. O'Grady, R. Garcia-Flores, D. Sier. 2007. Analysis of Value Chain Hurdles and entry restrictions in the meat industries for the production of chondroitin sulphate. Food Futures Flagship report. 105 pp.

P. Simplify/streamline the food regulatory system to support innovation and NPD, decreasing delays in the regulatory response to new product.
Q. Investigate the effect of changing supermarket practices on the entire supply chain, e.g. the introduction of retail-ready packaging and recyclable crates. Packaging costs greatly affect farmers. The introduction costs of new formats and new practices (e.g. packing of horticultural products in the field) are not necessarily shared amongst all the supply chain players. More studies on the value chain of perishable products and the distribution of costs and margins in Australian food chains are needed.
R. With decreased food security and increased food imports, an increase in food safety hazards can arise. Food safety in the Australian food supply chain should be highlighted as a potential issue of climate change and food shortages.

References:

ESTRADA-FLORES S & PLATT, G. (2007) Electricity usage in the Australian cold chain. Food Australia, 59, 382-394.

EUROPEAN COMMISSION (2007) Competitiveness of the European Food Industry: An economic and legal assessment. . IN J.H.M. WIJNANDS, B.M.J. VAN DER MEULEN & POPPE, K. J. (Eds.).