



**VFITB**

VICTORIAN FOOD INDUSTRY  
TRAINING BOARD

*Your independent voice*

## Food Processing Industry Change Drivers and Issues for Skills Development

February 2008



Victorian Food Industry Training Board

*For the Food, Beverage  
and Pharmaceutical Industries*

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The purpose of this report is to provide advice to the Office of Training & Tertiary Education (OTTE) regarding major issues impacting on enterprises within the industry and how they will shape strategic directions for training development, delivery and resources.

The report addresses the four key questions detailed in the 2006 OTTE Performance and Funding Agreement.

The information has been collated from the direct responses to the four key questions from selected industry forums, enterprises and associations and from research derived from key industry publications.



## **Introduction**

The Victorian Food Industry Training Board (VFITB) is the industry training board for all sub-sectors of the Food Processing industry.

These include:

### **Baking**

Plant, non-plant baking and retailing of bread, biscuits, cakes and pastry products.

### **Beverage**

Still and carbonated drinks, fruit juices, cordials, health/sport drinks, beers and pre-mixed alcoholic drinks.

### **Confectionery**

Chocolate, lollies and gum.

### **Dairy**

Includes milk processing, cheese, yoghurt, ice cream and milk powder.

### **Edible Oils and Fats**

Includes vegetable oils such as soya bean, sunflower, canola, cotton seed and palm oil as well as edible tallow. This sector supplies a diverse range of products to other food manufacturers, caterers and the hospitality industry.

### **Fruit and Vegetable**

Fresh, canned, frozen, dried and other packaged products.

### **General Foods**

Cereal foods, essences and flavours, food ingredients, frozen foods, health foods, ice cream cones, mustards, nuts, pasta products, pet food, potato chips, salt, spices, sugar, tea and coffee and materials used in other food sectors.

### **Meat**

Fresh, frozen and other processed/packaged meats and smallgoods, includes meat retailing.

### **Milling**

Products used in other food industry sectors, stockfeed and of value added export products.

### **Pharmaceutical**

Processing and packaging, includes some raw material production.

### **Poultry**

Fresh, frozen and other packaged poultry meat and manufactured poultry products.

### **Seafood**

Fresh, frozen and other packaged seafood and manufactured seafood products.

### **Wine**

Wine and spirit production and processing of by-products.

## Executive Summary - Changes in the last 12 months

*The factors driving change have intensified in the past year. This summary represents the resulting shifts and additional training needs since the February 2007 report.*

### **Q1. What are the major change drivers impacting the industry in relation to skill development & training in five years time?**

#### **Economic**

- Increased global opportunities and competition from China and India and new emerging economies of Turkey, Brazil, Argentina and Vietnam.
- More free trade agreements.

#### **Victoria's Comparative Advantage**

- Globally, profits are lifting, Victoria has maintained ¼ share of the manufacturing national economy and will build on niche markets.
- Good transport infrastructure & strong research & science will support this growth.
- Jobs growth strong particularly in full time employment.
- Shift to higher skilled workforce reducing labour intensity due to new technology.

But there are risks:

- Chance of China "blowing a tyre" is forecast to increase within next 5 years.

#### **Factors Driving Consumerism**

- Increased demand for convenience food which is converging with health.
- Maturing markets becoming wealthier.
- Increased demand for ethically produced food.
- Asian taste moving to western food, particularly dairy.
- Increasing awareness of prevention of disease (obesity) in Western world.

### **3 Global Consumer Mega-Trends**

- Health, convenience and indulgence - consumers want all three in a product.
- "I want it now consumer" society...demand for convenient food and drink options is expected to continue, driven by ageing population, growth of single person households and more women in the workplace.

#### **Environmental**

- More unstable weather patterns - Less rainfall in some regions, reducing yields leading to increased cost of ingredients and stock feed.
- Reduction of primary produce in drought affected regions may reduce processing capability.

#### **Social and Demographic**

- Decrease in working age population as proportion of total.
- The average woman will live longer and work longer.
- Higher incomes are leading people to work longer.
- Ageing tradespeople retiring.

Cities are the most dominant form of society - mega-cities are leading to:

- Decline in condition of air quality, scarce fresh water.
- China accused of flooding US with foods unfit for human consumption.
- Consumers become increasingly fussy about where their food comes from.
- Increasing global emphasis on food safety and quality requirements.

#### **Environmental Sustainability**

- In Victoria, our food systems have been built on the use of cheap resources.
- Production costs increasing - use of resources will need to change.
- Environmental factors will reshape markets and increase compliance costs.
- The clean and green image of Australian food is a significant selling point.

#### **Science and Technology**

- Early phases of a whole new set of technologies - nano, bio, information and cognitive sciences that will accelerate growth of pharmaceuticals.

**Q2. In response to the impact of these drivers, industry will:**

- capitalise on growth for functional foods by rapid development of innovative products that utilise advances in biotechnology;
- maintain comparative advantage in niche markets;
- quickly turn a 'super' functional attribute (e.g. antioxidants) into a point of difference utilising special health claims;
- develop high premium products focused on meeting diverse customers' needs - SMEs will capitalise on premium gourmet segment;
- increase industrialisation of food chain & create more seamless supply chain networks
- further develop smarter and more lean production techniques;
- introduce more automation to address labour costs and attrition;
- create products that are less footprint intensive;
- utilise technology to reduce resource use and be more environmentally friendly;
- move to more seasonal work in drought affected regions and reduce full time staff and operators.

**Q3. The implications of the industry's response for skills in five years time:**

- to create further efficiencies, skills for sustainable resource use, more competitive production innovation & quality will be required;
- diverse workforce requires team skills, in particular better conflict resolution;
- more innovative products requiring sector specific technical skills;
- higher level knowledge and skills from Food Science and Technology qualifications to improve systems that support diversification of products;
- broader range of skills will be required by SMEs including laboratory skills and labelling to expand gourmet sector.

Supervisor training will be needed for upskilling in Certificate III & IV in Competitive Manufacturing to effect:

- ongoing performance improvements through improved people management and better strategic planning;
- better production flow, planning and prioritising;
- less resource use through waste management and sustainability policies;
- project management.

**Q4. The relative importance of changing skill sets for training:**

**High importance:**

- enacting strategies to replace retiring tradespeople with apprentices particularly bakers and butchers, also engineers, electricians and people with skills in mechatronics (electronics & mechanical);
- quality assurance, compliance and food safety training will be critical;
- upskilling and multiskilling for new technology and waste & environmental management (Cert II, III & IV);
- sector specific, higher level specialised training;
- lean / competitive manufacturing / continuous improvement training to improve productivity and engagement most important at Cert III, IV & Diploma level;
- Certificate IV & Diploma in Food Science and Technology;
- increase in importance for pre-apprenticeships as training pathway for bakers & butchers.

**Moderate importance:**

- Diploma and Advanced Diploma, Graduate Certificates that include supply chain management, export and marketing units;
- team leader - Certificate III & IV level training increase;
- innovation and project management.

**Increasing in importance for effective skill development:**

- need for flexible training options (E-learning) that meet the needs of diverse age and multi-cultural groups;
- language literacy and numeracy training;
- conflict resolution.

## Q1. What are the major change drivers impacting the industry and its sectors currently and over the medium and long term future?

### Economic

As population and urbanisation increase across the world, the global market for processed foods and pharmaceuticals continues to grow strongly. This presents opportunities and risks for food, beverage and pharmaceutical manufacturing companies. The competition from emerging countries such as China and India, who have rapidly increased manufacturing capacity, has intensified.

Export demand is very strong and export and import replacement opportunities are the keys to growth for the Victorian food industry. International competition for export market share will increase further from emerging countries such as Turkey, Brazil, Vietnam and Argentina.

Other factors challenging the ability of Australian companies to compete in domestic and export markets are increased prices for water, food ingredients, energy, chemical and metal inputs. Wage growth has also remained strong.

Economic forecasts warn that the chances of China's boom continuing at its current rate are not strong, due to the overheating of its economy. Food prices are rising and challenges in economic and environmental management are increasing. Access Economics predicts China's economy may slow as early as 2009 and although this will decrease profits for Australia, as we have sold minerals for China's development, it may realign the Australian dollar to a level where Victorian food exports become more competitive.

The rise of emerging economies is proving a major boost for exporters of Australian fine food and wine.<sup>1</sup> Further free trade agreements (FTA) are being advanced. Indonesia and Australia have agreed to commence a feasibility study for an FTA due to be completed in April 2008. South Korea and Australia are fast tracking a feasibility study for a FTA that will benefit beef, dairy and wine exports.

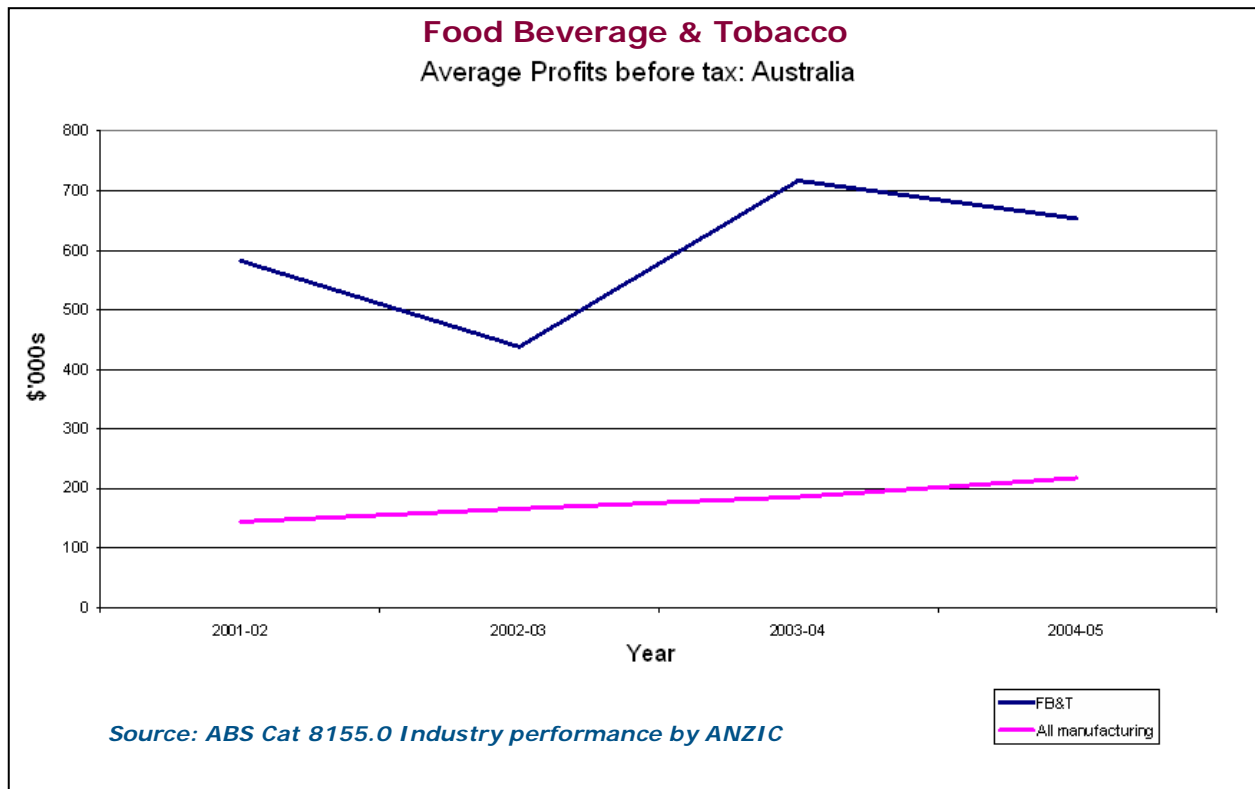
The globalisation of the food industry sees the emergence of global retail chains, which will result in major changes to the structure and operation of the food processing industry over the next five to ten years. This includes the development of global sourcing networks, industry restructuring along global lines and a changing focus on brands.

The high level of concentration of the supermarket system in Australia, and the desire by the two major supermarkets to increase their higher end home branded sector from Australian or overseas sources, creates downward pressure on prices and margins. Due to the purchasing policies of the supermarkets, which require all specific production and process data to be provided, easy changing of suppliers for a particular good can readily occur. As well as retail initiatives such as store brands, retailers are becoming more powerful and developing strategic initiatives to capture emerging markets.<sup>2</sup>

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<sup>1</sup> Fenton - Jones, M., 2007, 'Exports are food for thought', Australian Financial Review, 25 September, p.51

<sup>2</sup> Thompson, G., 2001, Supply Chain Management: Building Partnerships and Alliances in International Food and Agribusiness: A Report for the Rural Industries Research and Development Corporation, RIRDC Publication, April, No. 01/31, pp. vi-vii



## Environmental

Drought, climate change and consumers are putting pressure both domestically and internationally on companies to improve environmental outcomes and further develop sustainable practices and supply chains. Climate change is affecting all countries and will possibly limit food production. For example, drought, frost and smoke taint in Victoria have affected the quality and growing season for fruit, vegetables and grain, increasing their price due to reduced yields. Decreased rainfall, particularly in northern Victoria, has changed pastures leading to a reduction in milk supply and cream yields.

Strong global demand for milk and dairy products is expected with developing economies likely to provide 80% of the growth. Important markets such as the Middle East, South East Asia, Japan and Korea, will still rely on imported products, as their agricultural environment doesn't support dairy herds. While countries such as the Ukraine, Brazil and Argentina have rapidly growing dairy sectors, their combined exports in 2006 remained 30 per cent below Australia's export volumes. Australia is more competitive than the US or European Union. For processors the smaller milk supply in Victoria will exacerbate the problems of excess capacity and strong competition for milk and force exporters to tighten their focus on high - value markets.<sup>3</sup>

As a consequence of the impact of the drought on the agricultural sector, food processing is experiencing pressure regarding the supply of raw materials, including stockfeed. The drought is accelerating rationalisation of the industry, through vertical integration of supply chains, particularly through the use of water rights.

The cost of energy is going up and companies are changing the ways in which they use resources.

Victorian food companies are supporting the State Government's moratorium on the use of genetic modification in food production. This position is being reviewed as more evidence

<sup>3</sup> Hopkins, P., 2007, 'Dairy industry analysts bullish on exports as they look beyond the drought', The Age, 3 January, p.21

comes to light on either side of the debate. The tension exists between the desirable goal of improving production efficiencies and the undesirable potential to erode market confidence in the product. Genetically modified crops are becoming more common internationally.<sup>4</sup>

Environmental management is likely to be the next big issue to threaten China's image as a world citizen. Victorian companies may have more opportunities in the future to increase international market share if China is unable to manage pollution of its waterways and atmosphere from industrial waste as it is now at critical levels.<sup>5</sup> The clean and green image of Australian food is a significant selling point.

## Social, demographic & workforce

### Consumer trends

Food, beverage and pharmaceutical manufacturing companies are capitalising on greater opportunities for value added products as the middle class grows and increases its awareness of health and nutrition.

Faster growth in high value products has increased as companies cater for 'individualism' by producing convenience foods that capture cultural, ethnic, religious and health markets. The issue of obesity is a major driver of change for the food industry. Along similar lines of producing food with less fat content is also food that reduces allergic reactions and generally caters for the market sector that wishes to be well.

The functional food trend is likely to continue with producers touting formulations for the brain, heart, older women or overstressed. Bacteria enriched products are showing up in more than just yoghurt and "prebiotics" are on the way in to feed the 'good guy bugs' in your system. Consumers are putting pressure on food producers to remove additives and organic food and fair trade products are set to become the next big focus of conscience - driven consumers. This movement also seeks fair wages and treatment for workers in developing countries.<sup>6</sup>

Enterprises need to have a more multi-skilled workforce to accommodate the diversification of products required to meet the changing consumer demand.

Changing household structures are also providing the food processing industry with opportunities as pre-prepared meals are increasingly in demand throughout the developed world.<sup>7</sup> According to research commissioned by National Food Industry Strategy Ltd. today's supermarket shopper is most likely to be single, shops almost daily and makes a decision on what to have for dinner based on what's available in the supermarket. The research into Australian retail market trends, undertaken by *freshlogic* also revealed that the shopper is more frequently looking for ready prepared meals rather than ingredients.<sup>8</sup>

The 'I want it now' consumer society and demand for convenient food and drink options is expected to continue, driven by ageing population, growth of single person households and more women in the workplace.

Health, convenience and indulgence, not always complementary- consumers are increasingly seeking all three in a single product.<sup>9</sup>

<sup>4</sup>Just days after the VFITB presentation to OTTE, the State Government dropped its moratorium on the planting of genetically modified (GM) crops and gave the green light for the use of GM technologies

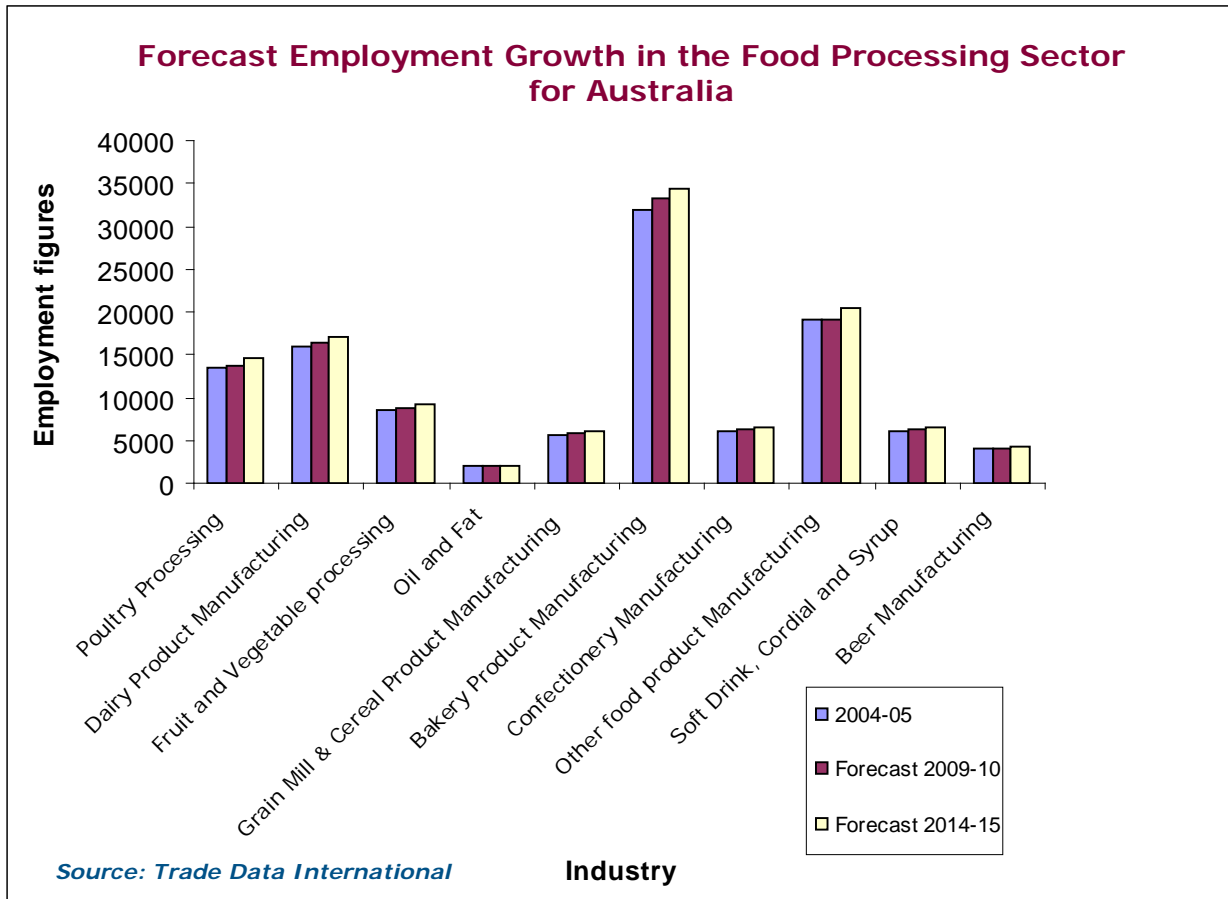
<sup>5</sup> Opinion, 2007, 'China at risk of overheating', Australian Financial Review, 27 August, p.62

<sup>6</sup> <http://www.theage.com.au/news/diet/top-five-food-trends-for-2008/2008/200801/03/> accessed 8 January, 2008

<sup>7</sup> Piggott, R. Griffith, G. & Nightingale, J., 2000, Market Power in the Australian Food Chain: Towards a Research Agenda: A Report for the Rural Industries Research and Development Corporation, RIRDC Publication, October, No. 00/150, pp. 1-52

<sup>8</sup> [http://www.nfis.com.au/dmdocuments/Freshlogic\\_report%20\\_05Dec06.pdf](http://www.nfis.com.au/dmdocuments/Freshlogic_report%20_05Dec06.pdf), freshlogic report to the National Food Industry Council, 2006, Retail market trends and their implications accessed 21 July, 2007

<sup>9</sup> Global Foresight Network, 2007, Future Foods for Future Health Conference



labour availability is now a constraint on output. To ensure a supply of labour, immigration may need to be increased. There have, however, been rising participation rates for both older men and women, some of whom have taken up traditional male roles. The Reserve Bank's dissection of the participation rate by age groups shows that much of the increase is explained by those aged 55 to 64 years, probably as a result of the growing awareness among workers of the need to save for retirement and as a result of federal government welfare reforms. There has also been growth in participation rate of females aged between 45 and 54 years.<sup>12</sup>

Competition for workers will increase and companies will need to identify new strategies to source skilled people. Rising living costs could be a deterrent for young entrants to take up apprenticeships and this is a significant issue for the traditional trade areas of baking and meat.

Labour shortages are expected to be greatest in industries where there are already high proportions of older workers. The impact on manufacturing (including food processing) is expected to be greater for this reason, than almost any other sector, in the short and medium term future. The challenge to replace older workers is imminent.

### **Social**

Increasing life expectancies and an ageing population will increase the demand for drugs, particularly for degenerative diseases such as cardiovascular, cardiopulmonary, cancers and arthritis. Increasing standards of health care and changes in practitioners' prescribing habits will also add to the growth of pharmaceutical sales. The emergence of new viruses, resurgence of infections and other viruses, and greater emphasis on prevention and a healthy lifestyle are increasing demand for an expanded range of over the counter pharmaceuticals and other health related products.

## **Government policy**

### **Regulation & compliance**

It is highly likely that global warming will lead to a greater level of legislation regarding the impact industry has on the environment. In November 2006 the state government highlighted climate change as a key area of emerging need and created two new Offices; Office of Water and the Office of Climate Change.

Adhering to the requirements that ensure traceability of product is rapidly becoming a standard international customer requirement. Enterprises also need to meet additional compliance requirements in order to minimise loss of product access to markets.

## **Technological**

Many enterprises are investing in new technology and taking advantage of advances in machinery, information technology and biotechnology. Technology uptake has increased to help industry remain competitive by reducing labour costs thus easing labour shortages whilst improving safety, quality and innovation.

Technological advances will lead to strong growth of biotechnology and bio-pharmaceuticals companies in particular. Recent years have seen strong growth in Australia's biotechnology industry particularly in relation to health. According to the Australian Biotechnology Report 2004, the number of core biotechnology companies is now thought to be 370, the 2003 report estimates the growth rate to be 50% over the past two years.

As we are in the early phases of a whole new set of technologies – nano, bio and information and cognitive sciences and are continuing to develop more sophisticated diagnostic processes, technological developments are likely to accelerate growth into the future.

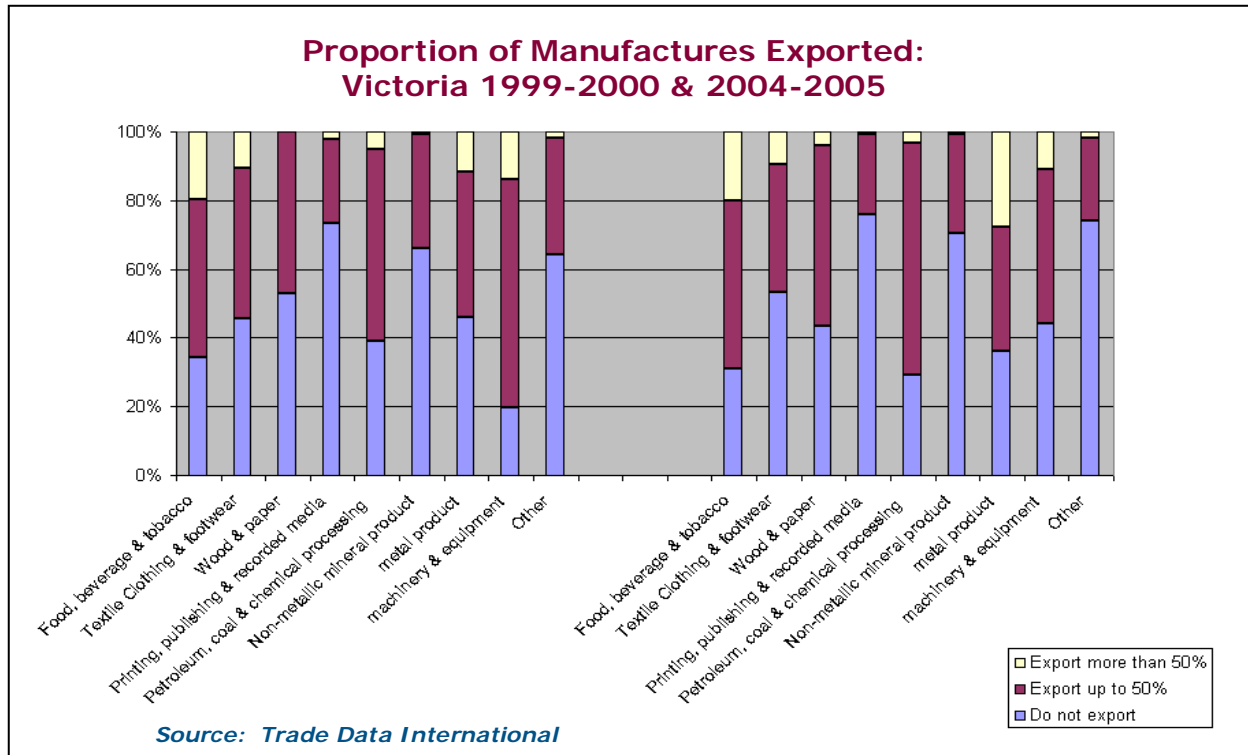
Many believe that between now and 2020 we will experience a rate of technological change equivalent to the last 100 years.<sup>13</sup>

<sup>12</sup> Mitchell, A., 2007, 'Drought, labour key to growth rebound, Australian Financial Review, 8 January, p.45

<sup>13</sup> Global Foresight Network, 2007, Future Foods for Future Health Conference  
February 2008



themselves to participate in these global supply chain networks or risk losing existing markets and the opportunity to participate in new ones.<sup>14</sup>



Food companies are also using market analysis to identify new opportunities, especially for niche markets where they can gain greatest competitive advantage. Companies are moving up the value chain to achieve greater profits by undertaking more research and development (R&D) to create innovative products in new and alternative formats. An example of such activity is R&D in natural foods, underpinned by science, where vitamins are preserved and the nutritional value of products can be promoted to achieve a higher value added component.

In order to meet changing consumer demands and minimise rising input and output costs, enterprises are collaborating and establishing cross sector partnerships. This can also be seen in the ethnic, religious and cultural specific products that are expanding market opportunities nationally and internationally.

Changes to the way meat products are being prepared for retail as well as increased value adding (e.g. producing ready cooked dinners for sale in supermarkets and shelf ready products) are going to impact on the skills sets required by workers in the post processing sectors. More companies will develop an adaptable approach to supply in order to offer domestic and export customers a wider range of products and services. Investing in skills to ensure the integrity of its supply chain, traceability and export approved production capability will be a major commitment. Many export customers will receive the same services as customers in the domestic market including fresh product delivery, custom trimming and packaging services.<sup>15</sup>

Many medium size businesses have been absorbed by bigger companies. Smaller niche companies are on the rise again with new initiatives that in turn will feed the cycle as they grow and bigger companies buy them up.

<sup>14</sup>Department of Agriculture, 2002, Fisheries and Forestry, Australia (AFFA), 2002 National Food Industry Strategy: Action Agenda, June, pp.7-25

<sup>15</sup> Meat and Livestock Australia, 2007, 'Feedback, Meat and Livestock Industry Journal Supplement, September, p.7

## Case Studies

### Dairy

Dairy is one of Australia's leading rural industries in terms of adding value through further downstream processing. The bulk of milk production occurs in Victoria. As enterprises utilise existing milk capacity as profitably as possible, less than 10% of milk is used in Victoria for drinking.<sup>16</sup> The industry has responded to competition with intensified innovation and rapid product development.

For example, enterprises are finding new applications for milk proteins in areas such as physical performance and health. Capturing more of the upstream value of components, companies are using ingredients to create more diverse products and setting up their own marketing structures. By investing heavily in research and development and backing up health claims with science some companies are moving from being commodity ingredient suppliers to manufacturers of high-value functional consumer products.<sup>17</sup>

Dairy farmers in the Goulburn Valley region are responding to the drought by selling their water allocations and using this money to buy stockfeed which is better value than buying water to irrigate pastures. For other regions in the south of the state it is business as usual with plants being upgraded including improvements to the environmental impact of the factories.

Due to the uncertainty of rain there are a couple of different scenarios. If there is continued drought in the north of the state and irrigation can't occur, that belt may not continue to support dairy herds. As herds diminish dairy production will be reduced. Consequently these plants will operate on a seasonal basis and therefore become reliant on seasonal workers, whom companies may not be able to retain.

If the drought eases in northern Victoria, all regions will require access to high level skills. The reasons for which are summarised below.

Dairy manufacturers are in general responding by:

- shifting from supplying traditional commodity based markets to value added markets which require more challenging and tighter product specifications;
- incorporation of new technologies and automation;
- shifting from autocratic to participative workplaces;
- producing more 'boutique', gourmet products at the small end of the market.<sup>18</sup>

### Stockfeed and Flour Milling

The cost of stockfeed and flour has increased due to drought pushing up the price of grain. 2007 has not been as bad as 2006 but coming on the back of last year has meant Victoria has had to buy in grains and oil seed, mostly from Western Australia and South Australia where there has been a big surplus.

Stockfeed enterprises are not direct exporters but the same drivers apply due to their link with meat. Flour millers export a small amount (10%) to Indonesia.

Like many sectors of the food industry this sector's response to change is incremental. As the sector adapts to climate changes the pattern of produce will move, requiring a huge shift in logistical management alone. Strong research and science is continuing for drought resistant plants and high end technology is used by the suppliers of ingredients and supplements for stockfeed.

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<sup>16</sup> Dairy Australia, 2006, 'Australian Dairy Industry in Focus 2006', Table 7 p.15 and Figure 13 p.16

<sup>17</sup> Food Victoria, 2007, 'Strategic Thinking on the Ascend', Taste of Victoria, Issue 40, Spring

<sup>18</sup> National Centre for Dairy Education Australia, 2007, Manufacturing Advisory Committee, Skill Ecosystem National Program 2006, Stage One Projects, Skill Ecosystem Draft Strategy, February

## Wine

Victorian wine exports grew rapidly, reaching \$525 million in 2005-2006 having doubled over the three years to June 2005.<sup>19</sup>

Overproduction has been an issue for wine makers, who say marketing is the key to capturing more export opportunities. The Australian wine industry's excess inventory has been estimated at something like 1.6 times annual sales.<sup>20</sup> This is typical of a cyclical industry which has just as quickly been affected again by drought. Low 2007 harvests nationally and possibly in the future will assist in drawing down stocks in a way that aligns with demand. The future promises slower rates of growth and a period of consolidation and targeted growth. Current plantings have the capacity to meet demand to 2011.<sup>21</sup>

Exports now account for 60% of Australian wine sales. Volume of growth in exports has been in popular premium wines mainly produced in the three big inland vineyards of Murray Darling; Swan Hill, Riverina and Riverland which produce 80% of the states' production.<sup>22</sup>

However, firming of the Australian currency, increasing competition in export markets and the pressure to clear accumulating wine inventories into export markets have caused a marked decline in the average price per litre obtained from exports. In this environment there has been a fall in export demand for premium Australian wines, a trend that is having a serious impact on many of Victoria's small and medium sized producers, particularly newer entrants to the industry.

Victoria is responding to export market opportunities by promotional programs and the development of the 'Wines of Victoria' brand. Small wineries are also increasing their distribution in restaurants, specialist wine retailers and growing their wine tourism markets.<sup>23</sup>

The number of Victorian small to medium size (SME) wineries has almost doubled from 320 in 1999 to 583 by 2005. Cellar door sales estimated at \$120 million in 2003 have also doubled to \$228 million in June 2005. For the next five years and beyond, ageing baby boomers will positively impact on wine sales.<sup>24</sup>

Overall, the important areas the industry is addressing include:

- trade access;
- sustainable practices;
- technological advancement;
- research and development;
- licences and regulation including label integrity; and
- training and development of existing workers and new entrants.

## Baking

Since 1999 the export value of Victorian bakery products has been growing strongly. The Baking sector has increased exports by over 11 billion US dollars and 5, 284 tonnes in 2003 - an increase of 45% over 2000 levels. Australian bakery product exports amounted to

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<sup>19</sup> Victorian Wine Industry Association, 2006, Wines of Victoria, Vintage 2010, Strategic Plan for the Wine Industry 2006-2010

<sup>20</sup> Hughes, A., 2006, 'Foster's rebound hints at difficult profit reporting season', Australian Financial Review, 2 February, p.2

<sup>21</sup> Wine Australia: Directions to 2025, 2007, Global Consumer Trends, Overview, Australian Wine and Brandy Corporation

<sup>22</sup> Victorian Wine Industry Association Wines of Victoria, 2006, Vintage 2010, Strategic Plan for the Wine Industry 2006-2010

<sup>23</sup> Victorian Wine Industry Association Wines of Victoria, 2006, Vintage 2010, Strategic Plan for the Wine Industry 2006-2010, 2006, p. 4

<sup>24</sup> Victorian Wine Industry Association Wines of Victoria, 2006, Vintage 2010, Strategic Plan for the Wine Industry 2006-2010, 2006, p. 11

\$US106 million in 2004-2005.<sup>25</sup> Given that the international trade in bakery products is very diverse and fast growing the industry is responding by using technology to seize upon export and import replacement opportunities.

Hot bread shops and supermarket in-store bakeries are capitalizing on the growth of premium bread products by increasing variety.

Strong competition between bread manufacturers means corporate plant bakeries are using further automation to keep bread prices competitive and are increasing product differentiation. Short product lives and high variety requires quality, responsiveness and flexibility. R&D activities are increasing further, stimulated by the government's ruling on health claims. Higher income consumer preferences combined with increasing health consciousness has stimulated the growth of many small to medium size firms that are catering for specific consumer needs. These privately owned small businesses are often more labour intensive allowing them to be flexible and respond to changing niche markets.

For most products, consumption increases with income. However in relation to food products, consumers are likely to purchase higher quality products rather than simply purchase more.

### **Pharmaceutical**

Australia has a relatively small existing pharmaceuticals sector. Rapid growth in the domestic and world pharmaceuticals markets has focused attention on the potential of the sector for future growth.<sup>26</sup> In 2007 NSW had the greatest concentration of pharmaceutical companies, followed by Victoria where the majority of multinational companies have chosen to locate to take advantage of the infrastructure provided and the market size.

Australia has become a strategic centre for pharmaceuticals manufacture and has developed research based alliances capitalizing on our science base. It is also a highly regulated sector that is responding to the pressures of regulation and competition by developing high-level technical plant and commercialising research and development.

Product innovation is expensive involving a high degree of risk and long lead times. It generally takes twelve years and \$1,200-1400 million to develop a new product. A number of key patents are about to expire over the next few years which will intensify competition. For example, although Pfizer's Viagra patent does not expire until 2010 Wrigleys, the chewing gum manufacturer, has already patented a Viagra chewing gum.

Strong growth rates are forecast to continue as the industry responds to various lifestyle trends including specialist manufacturers developing natural, homeopathic alternatives. Continuing advances in biotechnology are also leading to the development of bio-drugs.

Many of the major players have merged as escalating costs for R&D and shorter exclusivity times have increased the need for global marketing power. Also with the entry of the smaller specialty and biotech blockbuster drugs, the major traditional players are losing market share.

The demand for pharmaceuticals is also increasing due to the ageing population. According to the Department of Industry Tourism and Resources, pharmaceuticals are the third largest manufactured export after automobiles and wine. Real exports have doubled over the past decade and OECD data show R&D expenditure undertaken by the industry between 1985 & 1995 increased at an average real rate of 15% per annum, double the rate of OECD countries.

### **Meat**

Markets for meat remain buoyant. Growth in the Australian meat industry has traditionally been driven by strong domestic and overseas demand. In recent years, however, international competition has intensified and is forecast to continue. After Japan and South

<sup>25</sup>Trade Data International, 2005, An Investigation of the Trade Performance of the Victorian Bakery Industry 2005 A Report to the Baking Industry Association of Victoria (unpublished)

<sup>26</sup>The Australian Government Department of Industry, 2005, Tourism and Resources (DITR), Benchmarking Study of the Characteristics of the Australian and International Pharmaceuticals Industries, September, p.5

Korea banned US product due to detection of BSE (mad cow disease) in the USA and Canada, Australia capitalized on this by lifting its share of the Japanese and South Korean beef imports. The sector faces renewed competition as bans on imports of beef from the US have been lifted.<sup>27</sup> However the US has continuing difficulties in meeting the Korean requirements and they have not made significant inroads into this market.

Meat processors are amongst a group of Victorian businesses working with the government of Brunei to develop the world's first Halal brand by mid 2008. This is anticipated to be a very, very large program that will provide access to a billion dollar market niche particularly for offal products. Guidelines to develop the brand and packaging, along with a set of guidelines that producers need to follow in order to be accredited are expected to be developed by February 2008.<sup>28</sup>

As part of a range of initiatives to reassure importers Australia has developed a national livestock identification system (NLIS). This system enables reliable trace back to protect its reputation as an exporter of safe produce.

Due to drought and the rising price of feed, farmers were selling stock and many meat works were running to maximum capacity during 2007. There is uncertainty in the industry due to changes in rainfall. A break in the drought means farmers will hold on to their breeding stock. As many farmers have been killing stock it will cause some dislocation of supply. However, enough rainfall has occurred in some regions to maintain livestock levels.

Industry restructuring has been evident over the last eighteen months as processors have adjusted to tighter supply conditions, continued shortages in skilled labour and uncertainty over future livestock numbers. There has been a definite movement in the past several years towards two shift operations where possible in order to combat plant overheads and improve efficiencies. This has served to further concentrate throughput capacity and influenced some of the closures of recent months, including three Queensland abattoirs.<sup>29</sup> This has been to the advantage of Victorian processors who have increased market share.

The processing industry now seems to be coming to the end of a long period of reinvestment which has encompassed new slaughter floors, boning rooms, upgraded chiller and freezer provisions in addition to improved effluent and odour management measures. Processors are now faced with the ongoing challenge to make their investments in increased capacity pay off.<sup>30</sup>

### **Q3. What are the implications of the industry's response for skills needs in the industry (now and in the future)?**

Due to the highly competitive environment and rising cost of ingredients, companies require high performance practices from their workforce. Employees will need to be more highly skilled to create efficiencies in production, be innovative and more attuned to customer needs. Project teams will also be increasingly charged with continuous improvement. As employers assemble teams to undertake tasks, these teams are less hierarchical thus requiring workers to have the capacity for flexibility, autonomy, customer focus, knowledge, team-working, co-operation and ability to learn new skills.<sup>31</sup> Responses to waste and water management including new technology will increase the need for trouble shooting at the operator level. Running effective meetings and teams, time management, motivating a team, planning and coaching, presentation skills, decision

<sup>27</sup> Breush, J., 2007, 'Tick for beef tagging', Australian Financial Review, 8 January, p.5

<sup>28</sup> Sheridan N., 2007, 'Victorians work on first global halal brand', The Age, 24 September, Business Day p. 1

<sup>29</sup> Meat and Livestock Australia, 2007, 'Feedback, Meat and Livestock Industry Journal Supplement, September, p.4

<sup>30</sup> Meat and Livestock Australia, 2007, 'Feedback, Meat and Livestock Industry Journal Supplement, September, p.4

<sup>31</sup> The Future for Skills, 2006, Address by Professor Sue Richardson, VET Planning and Research Network, December, National Institute of Labour Studies, Flinders University, Adelaide

making and problem solving, conflict resolution and negotiation are skills required for operational level.

Many large manufacturing plants have eliminated highly paid managers to reduce costs. People in the more operational levels of these companies are expected to take on a broader managerial role with less experience. Thus more people will require higher level training as they need to operate in a multi-tasking environment as opposed to specialists who previously operated within a narrower, tightly defined realm. When these people move on or retire, replacement will be a significant issue. As food processing has an ageing workforce enterprises will require an increase in training for succession planning.

### Supply Chain Management

Supply chain management skills will be required as this area is increasingly combined with other job roles. Understanding the costs of processes along the supply chain is becoming increasingly important as trading partners need to achieve further cost savings and other benefits from distribution initiatives. Supply and 'value chains' are significant organisational arrangements expanding across global food markets. As companies look to compete in global markets they are controlled more by their supply chain and marketing and the need to develop products at prices that are more attuned to customer needs. Particularly important is the ability to form new partnerships and negotiation skills.

Also typical of large food processing companies is advances in technology being transferred into the manufacturing line. An example of this is laboratory testing being done more 'in line'. This means companies will require operational managers and operators (and more often operators will also be managers) to have broader underpinning knowledge of chemistry and microbiology.

### Skills that support innovation

As Australia will remain a niche player in the export market, more knowledge is needed to understand consumers and competitors in target markets to pursue global cost competitiveness and export opportunities through innovation and continuous improvement.

The diversification of products will require workers to develop sector specific, specialist skills and a higher level of underpinning knowledge and skills in food science and technology to understand what's happening during processing and be more effective with trouble shooting if problems arise.

As more companies increase product development to maintain and expand market share the need for paraprofessional, science based skills for food analysis and R&D in the laboratory will increase.

### Multiskilling

Cost cutting, the production of a broader range of products and the uptake of new technology mean the workforce is required to undertake a broader range of tasks. This means production workers need to be multiskilled and able to deal with technological change that is so rapid that capital equipment is being updated every second or third year, rather than every four to five years<sup>32</sup> as has been the case in the past.

### Global competitiveness

To further support global competitiveness more companies will require:

- trade data and analysis to better target marketing especially for small business;
- greater understanding of how to guide and use market research to meet business needs, particularly small business;
- more knowledge for business compliance with the move to new international standards;
- food standards to be updated and incorporated into transport and storage;
- understanding of intellectual property and licensing of new technology to harness full potential for both the product and technology;
- increased understanding of how to use design for the branding of products and public relations for better point of sale marketing;

<sup>32</sup> Manufacturing Futures, 2006, Achieving Global Fitness, Australian Industry Group, p.57  
 February 2008

- knowledge of packaging and labelling legislation and how to meet these requirements;
- training to address environmental issues such as business practice for waste management.

Ongoing skill needs are:

- food safety;
- food recall;
- quality assurance and auditing;
- business management;
- trades and entry level training;
- environmental/waste management;
- innovation;
- quality assurance systems;
- mechanical engineering, electronics and mechatronics;
- food induction – pre-employment training.

### **Recruitment Issues**

Enterprises will employ more mature age workers such as parents returning to work. As participation of adult learners and multi-cultural groups increases there will be a greater need for language, literacy and numeracy (LL&N) training for new entrants to achieve work performance standards.

### **Training Pathways**

The potential of VCAL, Block Credit Recognition in the VCE, mainstream VCE and school based apprenticeships as a way of engaging young people in the industry to address skill shortages will be utilised further. This approach will link young people (particularly in regional areas) to companies where there are job opportunities and enable companies to promote their industry as a career option. Entry level training, pre-employment training and pre-apprenticeships will be important pathways into some sectors.

Further promotion and development of training pathways, including post apprenticeship qualifications that provide career opportunities in the food industry will be needed. The Certificate IV and Diploma of Food Science and Technology will be used more to upskill operators in areas such as product development and the laboratory operations aspects of the industry. Similarly, master baking qualifications need to be developed to provide attractive pathways and upskill bakers.

### **Labour Force Issues**

One industry response to skills shortages has been to use the skilled migration program to fill labour needs for operators. Workplace communication, literacy and numeracy training is also required for such new entrants, for other production workers from non English speaking backgrounds and also for employees who have left school without basic literacy and numeracy skills. These skills are important in such cases due to the high level of regulation e.g. food safety requirements.

Skills in conflict resolution will also be required as the workplace becomes increasingly more complex.

The severity of the shortages identified is to some extent dependent on the location (urban or regional), and the infrastructure and flexibility in employment conditions of the business. Shortages in food safety, auditing and quality assurance, and the trades are, however, evident across the industry.<sup>33</sup>

If the drought continues in the north of the state more companies may be forced to operate on a seasonal basis and require short term labour. This will lead to an increase in training for food safety and OH&S at Certificate II level.

<sup>33</sup> Agri-Food Industry Skills Council, 2005, Industry Skills Report, June, p.11  
February 2008

## Sector differences

### Dairy

The pursuit of the high value added end of the market has highlighted a shortage of technical skills in dairy processing plants. There is a need to accelerate high end skills development for this sector.

These high end technical and management skills include:

- underpinning knowledge in food science and technology, particularly chemistry and microbiology;
- skills to operate highly sophisticated technology;
- management skills that incorporate a more participative style;
- higher levels of regulatory scrutiny for quality, food safety and environmental factors.<sup>34</sup>

If the drought continues, the milk supply will be diminished in some regions and become highly seasonal thus requiring a more short term workforce. A shift in the training in that region to Certificate II will occur as companies have less hold on retaining seasonal workers who will need to be trained in OH&S and food safety on a seasonal basis.

### Baking

Increased diversity in products, including those produced by the small to medium sized bakeries, and more varieties of bread being sold at supermarkets requires:

- entry level training - across all age groups;
- master level training for the artisan baker;
- business management training; and
- marketing and promotions training.

Areas that must be maintained and continually reviewed are:

- technical training;
- food safety training;
- OH&S training;
- quality assurance;
- training to address water and waste management;
- Certificate II level training for new entrants is critical to meet current skill shortages.

These areas are typical of other food processing companies.

### Wine

Specific skill shortages in the industry include:

- logistics;
- engineering;
- production management;
- technical operations;
- management skills; and
- vine operations.<sup>35</sup>

### Meat

To remain competitive, especially in the international market, the industry needs to continue to maintain its reputation for clean and safe production methods, quality assurance and product integrity.<sup>36</sup> Export plants are now subject to the Export Meat Orders and a whole range of new "outcomes-based" requirements. These will have a significant impact on industry needs for up-skilling middle managers, particularly in the areas of quality assurance and meat safety.

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<sup>34</sup> National Centre for Dairy Education Australia, 2007, Manufacturing Advisory Committee, Skill Ecosystem National Program 2006, Stage One Projects, Skill Ecosystem Draft Strategy, February

<sup>35</sup> Agri-Food Industry Skills Council, 2005, Industry Skills Report, June, p.12

<sup>36</sup> Agri-Food Industry Skills Council, 2005, Industry Skills Report, June, p.13

Likewise, the Animal Welfare Standards will necessitate stock handler and supervisor training to ensure compliance.

Meat processing is highly labour intensive, more so than any other sector. A widespread labour shortage in the meat processing sector has seen different approaches by enterprises. Some companies are recruiting young people to train which is increasing the churn at the bottom as many young people are alienated from practical work and find that they aren't able to sustain working in a physical environment.

In some instances companies are importing labour for specific tasks. Employer sponsored visas have been used under the 457 visa arrangements that allow skilled workers to come to Australia to work for an employer for up to four years. The union says 457 visas have been used to save money on wages and consequently the eligibility list for meat has been reduced to slaughter persons, meat tradespersons - butcher and supervisor and small goods makers. Thus the industry stands accused of exploiting the visa system. The industry does not have one position on the use of 457 visas. The unions say there are skilled people available. The implications are people need to be trained or relocated to where they will be employed. Political and industrial relations issues need to be worked out.

In addition companies are exploring ways to retain employees. Enterprises are keen to support pathways into the sector and higher level qualifications such as Certificates III, IV and Diploma of Meat Processing. These qualifications provide a structured framework and pathway for job progression in meat processing plants at a time when companies are keen for employees to understand there is a future in the industry. Companies are training employees in Competitive Manufacturing qualifications to better engage them in workplace productivity, take ownership of improvements that can be made and increase retention as employees feel more valued.

Areas for future skill development include:

- entry level skills (Cert II) due to churn;
- management skills at Certificate IV and Diploma Level to address the increase in quality assurance and management, particularly in assessing, calibration and audits;
- supply chain management - to deliver products anywhere in the world and ensure integrity and traceability;
- up-skilling for environmental management;
- skills for retail butchery (including supermarkets and also for export markets);
- food services for custom trimming and packaging of mass produced, value-added meat products and ready-to-eat meals;
- wholesale meat supply through the Food Services qualifications particularly Certificate II in Meat Processing (Food Services);
- smallgoods manufacturing;
- domestic & export abattoir practices;<sup>37</sup>
- level III training of boners, slicers and slaughterers;
- hybrid operations such as portion control;
- animal welfare to meet accountability requirements particularly in relation to slaughtering (stunning, shackling and sticking) for the halal market;
- laboratory skills;
- training and assessing migrants with low English speaking skills;
- competitive manufacturing across all levels;
- upskilling in other areas such as warehousing – freezer chiller load out, maintenance workers for personal hygiene, meat lumpers for transporting meat in line with Australian standards.

<sup>37</sup> Agri-Food Industry Skills Council, 2005, Industry Skills Report, June, p.13  
February 2008

#### Q4. What is the relative importance of changing skill sets for training provision (now and in the future)?

The Food Processing industry presents the VET system with the challenges of addressing the needs of the existing workforce, entry level training and the demands of thin training markets in regional areas as it is a geographically dispersed industry that is undergoing constant change.

### Importance for Training Provision

#### Increasing importance for supervisor level training in competitive manufacturing skills/lean thinking

Important skills for food, beverage and pharmaceutical companies are those that will maintain their competitive advantage. For example, more food companies want competitive manufacturing capabilities such as lean thinking across all occupations for employees to know more about products and processes. Trainers will need to take operators (Certificate II level training) to the next stage so they can take a systematic approach to systems and processes. Companies want training at Certificate III and IV in Competitive Manufacturing to be set in the relevant context by explaining why changes need to occur.

Training for leadership and project management is currently being delivered in competitive manufacturing to improve productivity. Qualifications and units of competence (including those in the Competitive Manufacturing Training Package) are becoming a higher priority as more enterprises need to address these skills. This priority is at supervisor/team leader level with the aim being that ideas will flow on through implementation.

Units covering skills in management can also be delivered at Certificate IV and Diploma levels of the Food Science and Technology qualifications and will be increasingly required as companies upskill employees to manage project teams to meet new targets for production, water and waste management. Delivery will vary from company to company. Some will offer full qualifications to staff as a pathway to management positions others will require delivery of skill sets.

The demand for training in the Certificate IV and Diploma of Food Science and Technology is also increasing in importance as more companies require technical knowledge for value adding as companies are forced to tighten their focus on high-value markets during product development. This qualification also offers training for quality and the specific technical and food science knowledge base that underpins problem solving. The Certificate IV in Food Science and Technology is nested in the Diploma of Food Science and Technology and is important as it can be used as a bridging qualification to higher level training and education.

Post trade training in qualifications such as the Diploma in Food Science and Technology, including the Certificate IV in Food Science and Technology is also increasing in importance as companies require workers to use underpinning knowledge whilst trouble-shooting on production lines.

There is a need to maintain the currency of Food Science and Technology qualifications to meet industry needs for new product development and the skill needs of advanced operators, team leaders, supervisors or production, quality and technical managers.

In 2007, a manufacturing advisory committee representing companies that make up the dairy sector in Victoria was formed. It has found many needs were consistent with the broader food industry. Higher level, sector specific training was an identified need and solutions to the issues are being supported by a National Skill System Project for a Skills Ecosystem for the dairy sector. It was identified that the likely cohort, termed high end performers, for dairy alone is likely to be around 1600 people requiring training at AQF level 3-5.<sup>38</sup>

<sup>38</sup> National Centre for Dairy Education Australia, Manufacturing Advisory Committee, Skill Ecosystem National Program 2006, 2007, Stage One Projects, Skill Ecosystem Draft Strategy, February, p.3

This qualification has a long training lead time and is currently a 'long haul' for those undertaking training. Meeting the needs of adult learners of diverse age and multicultural backgrounds will be a challenge. Training providers will need to negotiate with enterprises to find the middle ground where release for training is balanced by combining work with learning and on the job application. The development of resources that reduce the off the job training component and allow for flexible delivery such as e-learning would be beneficial.

### **Compliance is highest priority for enterprises.**

Enterprises give quality assurance, compliance (including WorkSafe regulations and legislation) and food safety training highest priority as they are critical to all sectors. Food Safety is particularly important for companies with export licences, and is of high priority for all sectors **mainly at Certificate II level** and some at Certificate I and III. Legislation requires OH&S training and food safety training and other quality standards. Every year most companies run an update, with a need for some specialised training becoming increasingly important to meet more complex labelling, food safety, traceability requirements at higher AQF levels.

Many companies reported that more legal training to address WorkSafe requirements and general supervisory skills were needed as the workforce becomes increasingly diverse and issues of discrimination and harassment are arising more due to age and cultural differences.

Meeting compliance requirements such as OH&S, GMP, food safety and traceability will continue to have a high priority across all sectors.

There is a strong likelihood of compliance training being required due to increased legislation on environmental management. Units of competence for sustainability in the workplace have been written and endorsed in the Competitive Manufacturing Training Package for a whole of business approach to environmental management at operator, supervisor and upper management levels.

Compliance requirements are creating a need for training that addresses the process of improvement, planning, audit requirements, risk management and workplace relationships. This will also increase the demand for training at Certificate IV and Diploma levels. Training will be required as whole qualifications and targeted short courses using groups of competencies, depending on the needs of the workplace.

Skill needs vary according to the company. Skill set delivery for existing employees to up-skill and multi-skill in new technology, waste and environmental management (at Cert II, III and IV qualification levels) is a medium need in relation to compliance training and supervisor level training.

Skill shortages will increase the importance of career promotion and qualifications that enhance career pathways within the industry. This will be an ongoing requirement in order to attract new entrants to meet the ongoing skill requirements of the industry.

In terms of sectors, the greatest increase in employment will be Bakery Product Manufacturing with a projected increase of nearly 2,500 employees (Australia wide), Other Food Product Manufacturing has an increase of 1,500 employees, Australia wide. This class includes manufacturing of coffee, tea, food flavourings, seasonings and colourings, frozen pre-prepared meals and health supplements. Dairy Product Manufacturing will also have an increase (1,200 employees).

Language, literacy and numeracy training will increase in importance as companies recruit people from more diverse age and multi-cultural groups. Recognition of prior learning and the building of a skills profile appropriate to the workplace will also be required.

Employees will need to be upskilled in Certificate II & III to create:

- further efficiencies (particularly in sustainable resource use), increase productivity, innovation and cater to customer and broader stakeholder needs (food safety / auditors);
- positive team skills in particular better conflict resolution.

There will be increased demand for short targeted training. This requires many RTOs to recognise that full qualifications may not meet industry needs at all times. The current use of federally based incentives has distorted the realities of the skill development needs of this industry. Training that is linked to real business outcomes is needed by all sectors across the food processing industry.

The baking and meat retailing industry sectors recognise as a priority the need to have higher level training specifically targeted at Certificate IV and Diploma level to meet their ongoing development needs. A "master class" for Baking could be an appropriate option for training delivery at the higher AQF levels and would need to be considered in the training package review. Retail butchers, to compete and stay viable, will need to increasingly add value to the products they sell as a way of differentiating their retail outlets. For these reasons the Diploma of Meat Processing (Meat Retailing) will be increasingly relevant. This is considered to be a low need.

The increasing use of computers and the sophistication of technology in all aspects of the food industry mean all levels of the workforce require the knowledge and skills to use technology and attitudes that support the adoption of new technologies.

The ability to develop products in multidisciplinary teams needs to be enhanced by suitable training strategies. Product development requirements will lead to teams being formed from external contractors working with employees. For example, multidisciplinary approaches to product development that also engage technical and scientific people with production people for small and large scale manufacturing is becoming increasingly important. This will require training in project management for large and small companies and is of moderate importance.

As nearly 51% of the 2004-05 workforce is estimated at forty five years of age and over, training for existing employees to supervisory level and attracting other employees into the industry will be a high priority.<sup>39</sup>

<sup>39</sup> Department of Agriculture, 2003, Fisheries and Forestry Australia, Australian Food Processing Industries Distribution of Employment' November, p.17