Agricultural Competitiveness White Paper Submission - IP196
Sunraysia Institute of TAFE
Submitted 16 April 2014

Sunraysia INSTITUTE of Technical and Further Education

9 April 2014

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Agricultural Competitiveness White Paper 2014.

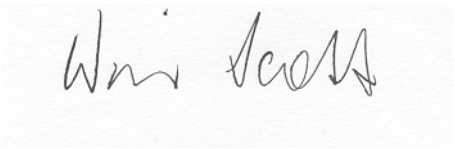
Sunraysia Institute of TAFE is pleased to provide a response to the Agricultural Competitiveness White Paper 2014, as attached.

The Institute has responded to points 6 and 7 as these were the points of particular relevance to us as a training provider.

The response was prepared by Ray Cadmore from Sunraysia Institute of TAFE. Ray is a 2014 Fulbright Scholar who will be visiting Forsyth Technical Community College in North Carolina, USA as part of his scholarship.

[redacted]

Yours sincerely



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Sunraysia Institute of TAFE
Response to the
Australian Government
Agricultural Competitiveness White Paper 2014

Prepared by Ray Cadmore

Sunraysia Institute of TAFE submits responses to points 6 and 7 of the Australian Government Agricultural Competitiveness White Paper 2014.

Author Details

Ray Cadmore is a Senior Educator at Sunraysia Institute of TAFE. Cadmore is the current Australian American Commission Fulbright Professional Scholar (V.E.T) and will undertake research in the USA to consider the integration of emerging and innovative industries and technologies into community college curriculum. In 2008 Cadmore undertook an ISS Institute Fellowship to Italy to consider renewable fuel skills deficiencies. The report for the ISS Institute was instrumental in Sunraysia Institute of TAFE gaining Victorian Government funds to research skills gaps of renewable energies in Australian Training Packages-curriculum. Cadmore holds a Master of Professional Education and Training, Graduate Diploma of Vocational Education and Training, Certificate IV Dairy Technology and Advanced Diploma of Business Management.

Executive Summary

VET/TAFE is in the business of moving knowledge from researcher innovators to implementer innovators. VET/TAFE learning is practical and seated in industry. As such VET/TAFE graduates are awake to the real life imperatives of agriculture, industry and commerce.

Sunraysia Institute of TAFE believes that there needs to be a funding focus on agricultural and regional training development which considers new learnings in new fields and innovations. VET/TAFE can provide the link between research and agriculture which has declined with the reduction in extension services provided by the various state governments. VET/TAFE provides skills to regional communities across a variety of levels and interests which provide regional people the opportunity to commence a skills development transit. The Australian VET/TAFE system is strong in part because it looks outside its own system to consider other VET systems responses to change and innovation. VET/TAFE provides the core learning necessary to enable regional students to articulate into higher education as part of a lifelong learning engagement. VET/TAFE enables people to engage in higher learning at points in their lives which are timely and desirable to the student's circumstances. TAFE especially, enables engagement at any age and is suited to *lifelong re-engagements in learning as skills requirements needed by industries emerge, evolve and change.*

Bio technology, bio energy, bio manufacturing are all within the domain of Australian agriculture value chains if we have the vision and skills to develop the opportunities. The agricultural value chain needs to be recognised at local and regional levels where the intrinsic value of each component part and interaction is identified and appraised.

6. **The efficiency and competitiveness of inputs to the agriculture value chain—such as skills, training, education and human capital; research and development; and critical infrastructure.**

Skills development and adaptation, innovation and cross pollination between researcher-innovators, implementer-innovators and the vocational education and training (VET) sector are critical considerations for agricultural competitiveness. Australian regions need to remain relevant to emerging markets and new uses for bio-based agricultural products. Skills and new knowledge across the span of the agricultural business, logistics, manufacturing and human capital value chains will need to be adapted to meet new challenges.

Human Capital

Human capital is the key to the future development of the Australian agricultural industries. There must be adequate opportunities for the development and maintenance of skills in regional Australia through the VET/TAFE system. TAFE offers the flexibility needed to operate in thin markets and yet maintain "in region" learning infrastructure and personnel capacity. Moving new knowledge and technologies into the practical domains of agriculture, industry and commerce is the business of vocational education and training (VET/TAFE); and VET/TAFE is therefore a keystone of emerging agricultural and regional industry developments. Agrifood Skills Australia Environmental Scan (2013) found that the rapid rate of change in the Agrifoods sector meant there is a need for,

> Widespread upskilling in new practice and new knowledge is urgently needed by existing workers in response to a changing policy environment, new work practices and to lift productivity levels.

However the current funding model does not allow for investments into new technology skills required to deliver new and emerging technologies or to construct industry incubators or similar models. There are very real opportunities for regional TAFE's to assist in the disaggregated value chains that agricultural or regional value chains present. Sunraysia Institute of TAFE has a demonstrated success in working closely with industry to develop programs for the Concentrated Voltaic Solar Power Array at Carwarp near Mildura. Other collaborations involving Sunraysia Institute of TAFE include development of online and workshop course work in the bioenergy-biogas field and the Regional Partnership Facilitation Fund (Government of Victoria) being led by the University of Melbourne.

Innovative agriculture is not necessarily a whole new value chain, but to use biogas production as an example; the better utilisation of by product or co products in other agricultural systems such as intensive livestock husbandry. The new skills gaps in those situations are niche in nature and require all levels of the workforce such as owners, managers, supervisors and operators to have additional competences and underpinning understandings of the technology and operational function of an agricultural enterprise revenue stream.

Science, technology, engineering and mathematics (STEM) are increasingly required at management and operational levels. Underpinning understandings of the sciences of innovative processes is required at all levels of work interactions and to understand the parameters of other value chain participants. A more innovative agricultural sector means we need a more technically and science aware agricultural workforce. In a speech at Forsyth Technical Community College in Winston Salem, North Carolina USA, President Obama (2010, http://www.youtube.com/watch?v=912_jj52xLw) observed that when the college opened in 1961 it ran automotive and machine shop courses. He noted that at that time a family could aspire to raising a family through the abundant factory work (tobacco, furniture, textiles) in the region which didn't require high level skills or knowledge. He then observed that today those employment opportunities which are opening up are at associate degree level. President Obama was making the point that community colleges were engine rooms of the US economy and in the aftermath of the Global Financial Crisis (GFC) they are key functionaries in the retooling of the USA's workforce skills and future prosperity.

The Australian VET/TAFE sector is bolstered by a strong system of examining skills and systems through bringing foreign scholars and skill holders to Australia and by sending Australian VET/TAFE practitioners overseas. Examples of such opportunities can be found in the International Specialist Skills Institute (ISS Institute) which has an annual program for ISS Institute Fellows to consider skills deficiencies through overseas study. Agrifoods Australia has been a sponsor of the ISS Institute for a number of years. The Australian Fulbright Commission has an annual award sponsored by the Department of Industry for a Fulbright Professional VET Scholarship for an Australian VET professional to undertake research in the USA. In 2014 all Australian Fulbright Scholars have received an additional invitation to spend several days as guests of the Kansas State University (K State). The author of this report was an ISS Institute (Italy) Fellow in 2008 during which he examined renewable fuels. The author is the current 2014 Fulbright Professional VET Scholar and will be hosted by Forsyth Technical Community College in North Carolina. His research will consider the integration of emerging technology into community college curriculum. The North Carolina 'Research Triangle' is the third largest bio manufacturing hub in the USA.

Regional Returners, Tree Changers and Resume Builders

Agriculture and regions need to be able to demonstrate to job seekers and new industries the value of a regional lifestyle. For regions to have an articulate and dynamic social and economic fabric there needs to be educational, social and family positive opportunities and amenities. The Regional Australia Institute (Australian Financial Review 1-2 March 2014) has observed the emergence of a demographic trend of 25-44 year olds moving back to the regions or 'regional returners'. This 25-44 year old demographic will be an important resource for agriculture, regional Australia and the associated value chains. The critical point in attracting regional youth back to regions will be the sticky memories they have of good lives for families, leisure and sporting choice, health and

being connected to other centres by affordable, timely, safe and reliable transport options.

Tree change or career changers who move to the regions are often required to attain VET qualifications required by agriculture and industries based in regions. Many of these people have higher qualifications which are either redundant or not pertinent to regional employment options. Barriers to second (regional) career training need to be removed. The Agrifood Australia Environmental Scan (2013) noted that, 'Attraction of greater numbers of people to the industry with sufficient aptitude to replace an ageing workforce', was required. Many people use country postings as a way to build their resumes and gain experience. These resume builders will often become enmeshed in the regional lifestyle if they think their families will benefit from remaining in the location.

In order to attract and keep newcomers and 'regional returners', the agricultural value chain must extend into all areas of education - primary, secondary, postsecondary and to families, health; and connectedness through arts, community, social opportunity, sports and dialogue. Country people want to be a part of the national conversation.

Drought

VET/TAFE provides the opportunity for drought affected farmer families to engage in training which may either support their current business endeavours or contribute to new pathways. Such training can include 'over the horizon-once the drought has broken' skills in a range of skills including asset (land, water, carbon) management, off farm agribusiness opportunities, research into alternative land/enterprise uses and technological capacity building of agri-centred clients/students. The constant presence of drought is bleak and notions of self-empowerment diminish as drought drags on and on. Training in skills other than agriculturally focussed courses, which are not immediately a part of the drought syndrome may allow participants to develop a positive future outlook. During the 10 year drought 2002-2012 in the Murray Darling Basin one such example at Sunraysia Institute of TAFE was a farmer who retrained into laboratory technology. This farmer was faced with the prospect of a fruit block which was no longer viable and a skill set which was 'out of cycle' or perhaps even redundant. His challenge was to find a way forward to keep relativity with the wider society and future income possibilities.

Critical Infrastructure

Educational and skills development infrastructure is not cheap. Notwithstanding the tremendous assistance given by some industries in supplying equipment or access to equipment to TAFE there remains a need for capital infrastructure spending. One recent example is the purchase of a New Holland tractor by Sunraysia Institute of TAFE Swan Hill Campus, This tractor is used for teaching a range of skills including global positioning systems (GPS), tyre changes, transmission, hydraulics, front suspension and electronic drive management among others. The cost of this learning infrastructure-tractor is in the range of $135,000.

Innovation and New Industries

Bio manufacturing has the capacity to become a significant employer and economic benefit for Australian regions which establish a viable presence. Bio manufacturing covers a range of products including bio-fuels, bio plastics, polymers, materials and chemicals which may support regionalised manufacturing skills development. Australian regions must explore ways to develop regional responses. VET must play an active role in this transition. Agrifoods Australia Environmental Scan 2013 observed that,

> Amidst the hype, there is clearly long term opportunity, particularly for high-value niche products. But in talking with the people doing the jobs and running the companies it is equally clear that a significant gap exists between the current business and supply chain capability within several sectors, and that which will be demanded of our industry if it is to compete effectively in these emerging markets. Traditional business models and our existing skills base will not be sufficiently agile or productive to compete in a dynamic, evolving environment.

The Australian Innovation System Report 2013 (p. 103) opinion piece, Vocational Education and Innovation by RMIT Principal Policy Advisor Gavin Moody discussed the positioning of TAFE as an 'innovation intermediary'. *Moody (2013, p. 103) specifically advocates a valid role for TAFE in regional centres as the most able institutions in the delivery of skills.*

Most Australian industry organisations in the bio-manufacturing/technology consider skills from the viewpoint of the skills apex where innovation is university focussed research. Sunraysia Institute of TAFE argues that more emphasis needs to be placed at the implementation level where technology is interpreted and evolved into a workplace function.

Science, technology, engineering and mathematics (STEM) need to be introduced into regional VET curricula or training packages at appropriate qualification/skills sets levels.

Farmer skills such as crop and animal management need to be augmented with the skills necessary to be able to work with the requirements of new and emerging technologies and adjust to market and value chain requirements.

The Australian Innovation System Report 2013 (p. 99, chart 3.6) showed that just 32% of agricultural employers use VET for training compared to 81% for construction and 60% for manufacturing. This places agriculture in the bottom sextile of employers sourcing VET training across the range of Australian industries. Unfortunately some of the training which has occurred in the sector has been of minimal value in terms of skills development. The formalisation of existing skills through Recognised Prior Learning (RPL) has meant that training subsidies have been used on past knowledge and not introducing new knowledge to new learners. Sunraysia Institute of TAFE believes that there needs to be a funding focus on agricultural and regional training which considers new learnings in new fields and innovations.

Sunraysia Institute of TAFE has undertaken extensive research into skills deficiencies in renewable fuels and has developed a course for the emergent biogas sector which will be a component part of many agricultural and value chain industries in the near future. The Australian Innovation System Report 2013 speaks extensively about the role of VET in bringing innovation to the practical domain of the implementer-doer. However societal movements in the funding of VET/TAFE means there is a focus upon training delivery. Regionally appropriate training responses and course developments are more difficult for regional institutes to develop due to this change in the funding model.

VET/TAFE in regional Australia must develop and maintain 'in region' capacity to partake in the opportunities presented by emerging technologies such as bio-manufacturing. The empowering role of VET/TAFE in providing a critical focus to emerging industries has been considered in a range of Australian Government reports over the past several years. The Department of Innovation, Industry, Science and Research (2011, p. 39) observed that,

> VET Institutes played a central role in the formation and success of Silicon Valley and many other clusters in the US.

Furthermore the bio-economy is recognised by The Department of Innovation, Industry, Science and Research (2011, p. 124, 126-7) as an,

> area of natural bounty for Australia which needs to be pursued as a development opportunity.

The Department of Innovation, Industry, Science and Research (2010, p. 5) also considered the bio economy and skills in other reports including, Scoping Bio-refineries: Temperate Biomass Value Chains, which identified opportunities to,

> provide adequate skills development and training opportunities across the value chain to ensure that Australian workers can meet the demands of industry.

And further, the Department of Innovation, Industry, Science and Research report, Bio-refinery Scoping Study: Tropical Biomass (2010, p. 3) noted that skills were challenges for an emerging industry inasmuch as,

> although not considered a deal breaker by overseas companies there is limited national experience in process development, chemical engineering, and scale-up and operational capability in industrial biotechnology in Australia.

The focus of Australian Government reports such as those discussed here indicates the pivotal place that bio technology and bio manufacturing may hold in the future skills requirements of the Australian workforce and regional/agricultural development.

There are opportunities for disaggregated agri/manufacturing enterprises and value chain clusters to be established in regions around either existing biomass supply or innovative biomass feed stocks. VET/TAFE needs to have the capacity to assist

innovation implementers put in place the technologies of innovation developers. How VET/TAFE institutions go about working to integrate emerging technology is pertinent to contemporary emerging technologies such as the bio/agri-economy and is a pivotal consideration for regional value chains. The farmer sits at the headwater of these value chains and the decisions made at that point will affect value stream outcomes. VET/TAFE has the demonstrated capacity to integrate as part of value chains and clusters to deliver skills. All of value chain collaborations will be needed to ensure successful outcomes.

Regional TAFE has the capacity to work at cutting edge developments. Regional economies and agricultural value streams will enhance the economic diversity of regional Australia. The skills used in non-agricultural developments can bolster the capacity of regional firms to do a wider range of works. One such example is the Silex-Solar Systems Ltd Concentrated Power Voltaic Array at Carwarp near Mildura. Sunraysia Institute of TAFE staff developed a fully integrated training program for use by the company during the development phase of the project. The development of learning materials required the interpretation of high level technical concepts through close communications with the company. The purpose of this program was to drive efficiencies in in the pilot phase which will be extrapolated into the full project development. Induction programs were developed for task orientated processes such as civil construction, engineering, electrical, mirror alignment and commissioning. The Silex-Solar Systems Ltd project used local contractors where possible which contributed and expanded technical capacity in the region. *Of particular note in the winning of this project by Mildura region was the integration of Sunraysia Institute of TAFE in the Mildura Development Corporation Solar Power Development Solar Project Working Group*. It is important to note that the Silex-Solar Systems Training project would not have progressed if not for Victorian Government Funds awarded through the Victorian Energy Training Network. The success of the Silex-Solar Systems Ltd project highlights the role of both state and Commonwealth Governments in assisting regional VET/TAFE to develop training content and courses through seed or grant funding.

The need for project funding is reinforced through successes such as the Silex-Solar Systems Ltd project. Both State and Commonwealth Governments have the opportunity to support regional Australia by supporting VET/TAFE developments of responses to emerging industries and agricultural value streams.

Agriculturally focussed projects undertaken at Sunraysia Institute of TAFE include skills gap analysis in renewable fuels for Skills Victoria now the Victorian Higher Education Skills Group, and subsequently the development of an Introduction to Biogas two day workshop. A current project is developing an online biogas course work resource and will be especially suited to the intensive animal husbandry industries.

Australian uptake of bio-technologies has been slow but is gaining traction. Farmers and the agricultural sector are principal inputs into regional development of skills for both agriculture and industry. Notions of food or fuel arguments are largely displaced in

Australia through effective value chain utilisation of by and co products and regionally appropriate and responsive land use.

The agricultural value chain needs to be recognised at local and regional levels where the intrinsic value of each component part is identified and appraised. The need to get in front of innovation and assist in the process of development is not unknown. The B20 Taskforce which is a working group of the G20 was reported in the Weekend Australian (1-2 March 2014) as expounding the need for educationalists to target 'areas where growth is going to be, not where growth isn't"

- VET/TAFE can provide the link between research and agriculture which has declined with the reduction in extension services provided by the various state governments.
- VET/TAFE provides skills to regional communities across a variety of levels and interests which provide regional people the opportunity to commence a skills development transit.
- VET/TAFE learning is practical and seated in industry. As such VET/TAFE graduates are awake to the real life imperatives of agriculture, industry and commerce.
- The Australian TAFE system is highly regarded in other advanced countries including the USA because of TAFE's connection with industry and the Australian Quality Framework. Australia has a homogenous system of qualification credentials.
- The Australian VET/TAFE system is strong in part because it looks outside its own system to consider other VET systems responses to change and innovation.
- VET/TAFE provides the core learning necessary to enable regional students to articulate into higher education.
- VET/TAFE enables people to engage in higher learning at points in their lives which are timely and desirable to the student's circumstances. TAFE enables engagement at any age and is suited to lifelong re-engagements in learning as skills for industries evolve and change.
- Collaborative investments such as the Integrated Curriculum for Conservation Land Management for Victoria under the *Regional Partnership Facilitation Fund (RPFF, Government of Victoria)* being led by the University of Melbourne and regional partners such as Sunraysia Institute of TAFE. This RPFF project will develop an integrated land management curriculum which speaks to the role of TAFE in intermediary roles (Moody 2013, p. 103); and of their capacity to advance regional and agricultural development.

7. The effectiveness of regulations affecting the agriculture sector, including the extent to which regulations promote or retard competition, investment and private sector-led growth.

Bio security and vendor quality assurance are driving reasons for regulations and oversight in the Australian agricultural sector. Australian regions are dependent upon the clean, safe image of our agricultural products and processes. Quality, occupational health and safety, food safety/HACCP, plant and equipment compliance and licencing, animal ethics/handling all contribute to the regulatory training load serviced by the TAFE sector.

Regulations which the agricultural sector needs to comply are often export or industry driven in response to market conditions. Proprietary requirements such as vendor quality assurance schemes also tend to be regarded by agricultural value stream enterprises as part of the regulatory overlay. The need to satisfy markets is often the reason for TAFE training in agri-businesses. In Victoria TAFE institutes are required to maintain a register of compliance legislation which provides a call to action to pending changes in legislation and regulations. This knowledge gives TAFE the capacity to maintain a proactive stance and provide currency to regulatory or compliance course offerings. Bio security is one area where TAFE training and knowledge will support the integrity of Australia's agricultural industries. Maintenance of Australia's bio security is critical to support the acceptance of Australian agricultural commence around the world.

Agrifood Skills Australia, Environmental Scan (2013) found that 'Widespread upskilling in new practice and new knowledge is urgently needed by existing workers in response to a changing policy environment, new work practices and to lift productivity levels', was necessary because of the rate of rapid change in the sector.

Sunraysia Institute of TAFE believes there is important work to be done in fully equipping the Australian agricultural value system for effective biosecurity training. Some parts of the Australian agricultural workforce are highly mobile. Some of these workers present with either few skills in the case of many migrant workers or redundant (inappropriate qualifications) high level skills in the case of many older retiring/downscaling or tree change workers. There is potential for a system fault in biosecurity if these skill and mobility issues are not integrated into a national training response. Australian agricultural value chain workers require in depth understandings of the implications of bio threats to Australia through human, stock, materials and food movement across enterprise thresh holds, within enterprises, regions and international borders.

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