

Identification of opportunities to support Structural Adjustment in the Latrobe Valley

Briefing Report Three

Four Sectors: Key features and prospects

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About this Report

In January 2012, the Commonwealth Department of Regional Australia, Local Government, Arts and Sports commissioned the Centre for Sustainable Organisations and Work (based within RMIT University) to examine opportunities for investment and job growth in the Latrobe Valley region. The economy of the Latrobe Valley region is significantly resource-based. Consequently, this briefing examines four resource sectors: food and agriculture (agribusiness); coal and electricity; forestry and paper; and oil and gas. In particular it seeks to develop an understanding of both the resources (strengths and limitations of each resource) and their value-adding potential. This focus allows a consideration of the competition between the sectors for labour, land usage and the use and exploitation of resources into the future. Of note, the analysis of manufacturing and construction in the region is tied into these four sectors.

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Introduction

The Latrobe Valley region economy is significantly resource-based. This briefing thus examines four selected sectors: food and agriculture (agribusiness); coal and electricity; forestry and paper; and oil and gas. Of note, the analysis of manufacturing and construction in the region is tied into these four sectors. The reason for focusing the analysis in this way is that future economic success will be built around existing resources and industries. An understanding of both the resources (strengths and limitations of each resource) and their value-adding potential is therefore vital. This focus allows a consideration of the competition between the sectors for labour, land usage and the use and exploitation of resources.

One critical condition for success in such transition is local capacity, particularly in terms of skills and the labour force. It is this skills base that will contribute to securing and/or limiting the future and success of local industries. Further, the resource based sectors cannot be considered in isolation from the broader Gippsland area. In this respect, these sectors, and particularly agribusiness and forestry, are not and cannot be defined by the local government boundaries of the Latrobe Valley region.

The future of the region as a whole, as well as the opportunities for and barriers to investment, job growth and skill development will be explored more fully in the final project report.

The analysis within this briefing is presented in four steps. First, we outline the conceptual approach. In the second section, we present an overview and context, including the employment profile for each of the sectors. Third, building on this preliminary analysis, some of the key opportunities for job growth and economic development are identified. The briefing concludes with a statement on considerations for further analysis.

A Resource and Organisational-based Approach

In this briefing paper, we focus on the four resource sectors. Each of these resource sectors has been shaped by dominant organisational networks and companies. These relationships change over time and operate in many cases as 'flexible organisational networks' – lead firms and layered suppliers, contractors and associated organisations providing goods, services and maintenance. Forestry resources, for example, are dominated by organisational interests, often in competition for the resource for the production of paper and wood products. Similarly, in agribusiness, dairy companies and vegetable processors rely on individual farms and often small suppliers and harvesters. Further, there is often competition between the sectors for labour and land usage, such as tree resources versus food commodities. Maintenance and construction contractors as well as transport companies frequently operate across the sectors.

There may be gradations of involvement and connection between lead firms and others in the sector. Some relationships are close and dependent, such as the continuous presence contractors (CPCs) to generators, and the dairy farmers to milk processors. In the case of forestry and paper, lead mills will sign long-term contracts for the supply of timber. Others will have more distanced relations, for example where the power generators rely on tender contracts. These contractors often also seek contracts with lead firms in other industries, such as in servicing oil and gas, or providing livestock to abattoirs.

This conceptualisation allows an understanding of the sectors as both integrated and cohesive. It allows for a more comprehensive analysis of the nuances and specific skills within each sector as well as the cooperative and competitive relations between sectors for these skills. Such features have implication. Associated manufacturing activities add further value to the region's resources, particularly in the processing of food, timber and paper products. This aspect is in addition to the manufacturing of components, especially for lead firms. The differences within and between each sector will be drawn out in the analysis.

Background, Context and Employment

The Latrobe Valley region is a core part of Gippsland. It is an area of natural resources: oil and gas, coal resources (in the Latrobe Valley region), water, forests, and agricultural produce (Gippsland Regional Plan Project Control Group, 2010). In addition, it is an area with a large health sector, education facilities, defence and retail sector. Nonetheless, the future prosperity of the region depends on the resource sector and the network of companies and employment they supports. Manufacturing and construction are inextricably linked to the development and future prosperity of these four resource based sectors. Targeted investment and promotion of these sectors will involve manufacturing, in the form of process activity, maintenance, supply and sourcing of products. As expansion or contraction occurs, it will have implications for both business and residential construction. This section presents the context for each of the four key resource sectors.

Coal and Electricity

The Latrobe Valley's lignite reserves are some of the largest in the world with an estimated 500 years of use at current levels of extraction; over 53,000 million tonnes (GHD Pty Ltd., 2005). The high moisture content of the coal, ranging from 48-70 per cent, makes it far less efficient and more CO² intensive than other fuels (DPI, 2011).

Unlike other States, where black coal, natural gas, hydro, and other energy sources are utilised for electricity production, Victoria's electricity (and half of the State's carbon emissions) is derived from the region's brown coal seams, with gas and

renewable energy sources comprising around 6 and 4 per cent respectively (Earth Resources Development Council, 2010; Climate Group, 2009). This coalfield provides nearly 80 per cent of Victoria's electricity (Latrobe City, 2010).

Some 60 million tonnes are mined per annum at the Yallourn, Hazelwood and Loy Yang mines, providing fuel for the four coal-fired power generators located nearby: Hazelwood Power Station, Yallourn Power Station, Loy Yang A, and Loy Yang B. Other current commercial uses of the region's brown coal include the production of char and briquettes. Three of the coal-fired generators and the associated mines are owned by internationally-based companies. The Paris-based GDF Suez owns Hazelwood Power Station, the Hazelwood Mine (also known as the Morwell Mine) and Loy Yang B. The Yallourn Power Station (as well as TruEnergy electricity retailing) is owned by the Hong Kong-based China Light and Power while the Tokyo-based Tokyo Electricity and Power Company maintains a 32 per cent ownership stake in Loy Yang A (the State's largest power station). Energy Brix is owned by HRL and represents the only solely Australian-owned facility in the region. The three largest power station companies have received State and Federal Government funding to assist them to develop ways to lower emissions, including carbon capture technologies. As Australia takes steps to introduce climate change mitigation policies there is increasing pressure on this sector to change the ways in which it currently operates.

In 2006, the coal and electricity sector accounted for the direct employment of 1193 people in the Greater Latrobe Valley (Figure 1). Like much of the energy sector more broadly, the coal and electricity generation industries in this region are heavily male dominated (93 per cent of the employees in this sector are male).

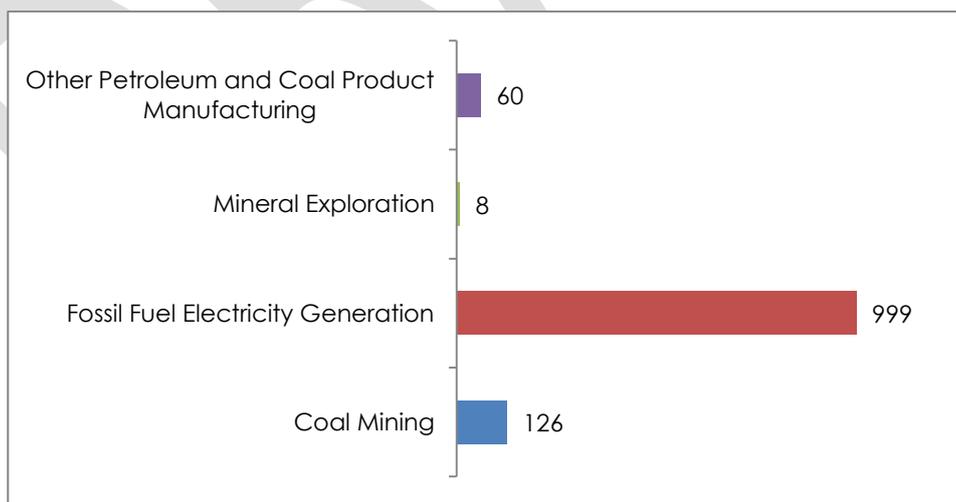


Figure 1: Employment figures by industry in the Latrobe Valley region coal and electricity sector.
Source: Australian Bureau of Statistics, 2006.

Note: Petroleum and coal manufacturing cannot be separated. The category for fossil fuel electricity generation also combines elements of the coal and oil/gas sectors. It is therefore likely that some employees presented here (although not in large numbers) may be more accurately described as being employed in the oil and gas sector.

Data in this figure has been randomly adjusted to avoid the release of confidential data.

A number of alternative applications for brown coal have been considered, including: gasification; diesel-type fuels; drying for export; and as fertiliser supplements. The possibility of heating and chemically treating the coal to create material similar to coking coal for steel production is also being considered (see Brown Coal Innovation Australia, 2012). To date, however, many of these projects have not moved beyond the research and development stage and/or attracted sufficient investment to become viable operations. These projects tend to be highly capital intensive and there is a general expectation by companies that governments will provide some level of financial support for the projects. Government support, however, has not guaranteed the success of many of these projects. Even in cases where policy and financial support from local and State governments has been provided, projects have not materialised for a range of reasons (e.g. infrastructure is not sufficiently developed, environmental opposition to the project is too great, company priorities change, etc.). There is a strong view held by large sections of State and Federal governments and those connected to the coal industry, however, that the region's brown coal reserves will continue to be exploited in the years ahead. Interest in the region's coal reserves by a range of local and international companies continues to be strong.

Agribusiness

A major focus of economic activity in the Latrobe Valley region is agriculture, comprising both primary production and processing. Across Gippsland, there are over one million hectares dedicated to agriculture. The prime dairy land produces 23% of Australia's milk, and there are excellent pastures for beef and lamb. Reliable water resources are also a factor in the growing horticulture industry. Given the region's fertility and water security, it is likely that there will be an intensification of agricultural activity in the future. Already, it is argued that there are the early signs that the region is well positioned to become a future food bowl for Victoria and Australia (Climate Works, 2011; SED Consulting, 2011). Opportunities for growth are particularly strong in the areas of food processing, organic milk production, and horticulture. Related tertiary sectors including retail, agribusiness trade, and tourism-related activities are also growing. The detail is as follows:

- **First**, the dairy industry is Gippsland's highest value agribusiness. Gippsland accounts for over 30% of Victoria's dairy output and 23% of national milk production (Dairy Australia, 2012). It provides around half of Gippsland's agricultural commodities (ABARE, 2008).
- **Second**, broadacre farming, focused primarily on beef but also includes cropping, wool and prime lamb production, representing over half of the region's farms. It is the second-largest agribusiness industry (Shearer *et al.*, 2011). The Latrobe Valley region accounts for 25% of Victoria's beef production, with some of the high value beef products exported to Asia.
- **Third**, horticulture produces a wide range of fruit and vegetables including mushrooms, potatoes, tomatoes, apples and berry fruit. Other crops include

lettuce, broccoli, asparagus, beans, capsicum, sweet corn, cauliflower and cucumber. These products are either transported directly to markets or processed, often locally in the region or across Gippsland more broadly. Seed production, nurseries, cut flowers and turf also make a significant contribution to horticultural activity in the region. Overall, 28% of the horticultural enterprises in the Latrobe Valley region earn an annual income of \$1 million or more (Shearer *et al.*, 2011).

- **Fourth**, the Latrobe Valley region also supports a growing viticulture industry, with a number of vineyards in the region growing cool climate grape varieties. Award-winning boutique beers are produced in the region by microbreweries, complemented by producers of bottled spring water and soft drinks.

The agri-business sector represents around 5% of the Latrobe Valley region's workforce, employing 3633 people. The majority of these workers are in primary production, which accounts for over 75% of total agribusiness employment (Figure 2). Male employees make up 65% of the region's agribusiness workforce (ABS, 2006).

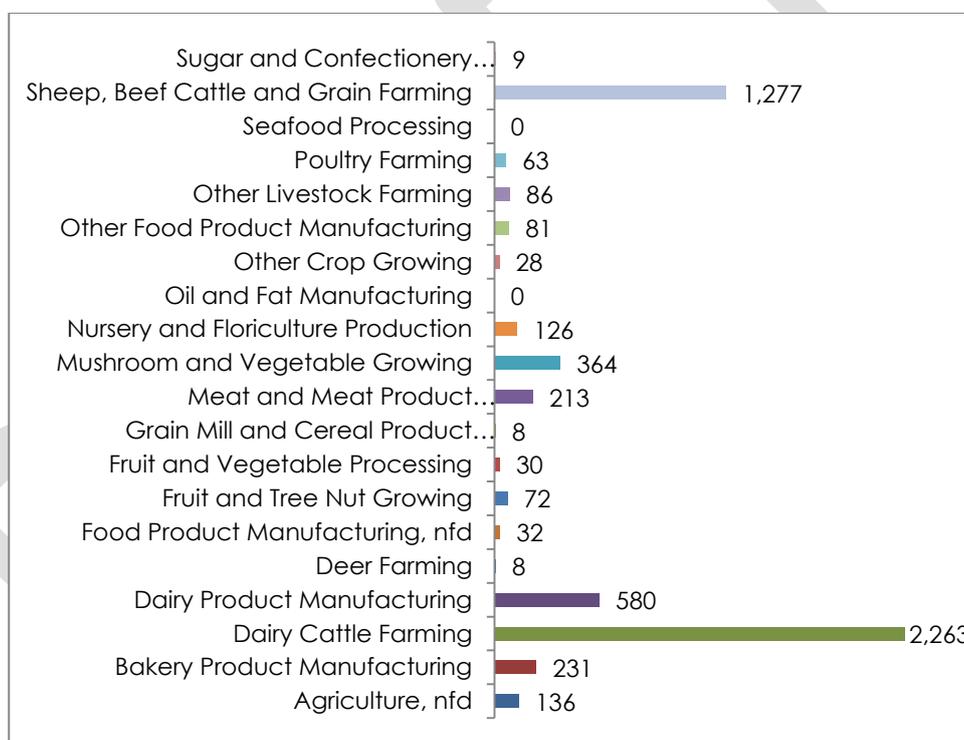


Figure 2: Employment figures by industry in the Latrobe Valley region agribusiness sector.

Source: Australian Bureau of Statistics, 2006

Data in this figure has been randomly adjusted to avoid the release of confidential data.

The most significant industry for employment in the sector is dairy. The combined workforce of dairy cattle farming and dairy product manufacturing represents over half of agribusiness employment in the Latrobe Valley region. Across greater Gippsland, the dairy industry provides employment for 6,800 people who work either on-farm or in the processing and manufacturing sector (Gippsdairy, 2012). The next highest industry of employment is broadacre farming, accounting for over 22% of the region's agribusiness workers. Whereas in neighbouring East Gippsland the food processing industry employs 7% of the region's total workforce, it accounts for only 1%

of total employment in the Latrobe Valley region (ABS, 2006; East Gippsland Food Cluster Inc., 2011). It should also be noted that the sector is characterised by relatively low wages, with close to half of the agribusiness workforce earning less than \$600 per week (ABS, 2006).

Forestry and Paper

The forestry and paper sector in the Latrobe Valley region comprises a range of forest and forest product operations. The sector has a workforce of 2405 people, and is worth more than \$1.1 billion per year to the local economy (ABS 2006; Gippsland Private Forestry, 2005). Timber processing activities in the region include pulp and paper manufacture, softwood sawmilling, hardwood sawmilling, truss and frame manufacture, softwood and hardwood pallet manufacture, timber preservation, and manufacture of landscape mulch and potting mix (Gippsland Private Forestry, 2005). Softwood processing is concentrated in the Latrobe City local government area (LGA), with hardwood sawmills spread more widely across the Latrobe Valley region and into East Gippsland. There is currently no veneer facility in the Latrobe Valley region and no panel or plywood mill.

Timber in the Latrobe Valley region is harvested from a combination of public native forests and privately-owned plantations. The Latrobe Valley region has 405,000 hectares of harvestable public native forest. Less than 10% of the public forest area available for harvest across Gippsland is considered old growth (Keenan and Ryan, 2004). The Latrobe Valley region has 96,000 hectares of hardwood and softwood plantations, growing primarily Tasmanian Blue Gum, Shining Gum, and Radiata Pine (Gavran and Parsons, 2011). These are predominantly large-scale company plantations, concentrated under Hancock Victorian Plantations, with smaller farm woodlots accounting for less than 10% of plantations in the region (Gippsland Private Forestry, 2005). In the main, these plantations are subject to long-term contracts to supply the paper and pulp mills of the area. There are currently no plans to expand the region's plantations.

Growth in the forestry and paper sector over the coming two decades is expected to be uneven across the Latrobe Valley region. While the value of the sector is projected to increase by as much as 6% across the local government areas of Wellington and Latrobe City, it is predicted to contract within the LGA of Baw Baw (KPMG, 2011). Opportunities for employment growth lie in harnessing new technologies and accessing new markets for value-added timber and paper products.

The forestry and paper sector in the Latrobe Valley region has a workforce of 2405 people, of which 87% are male. The largest industry by employment is paper manufacturing, which represents over 35% of employment in the sector (Figure 3).

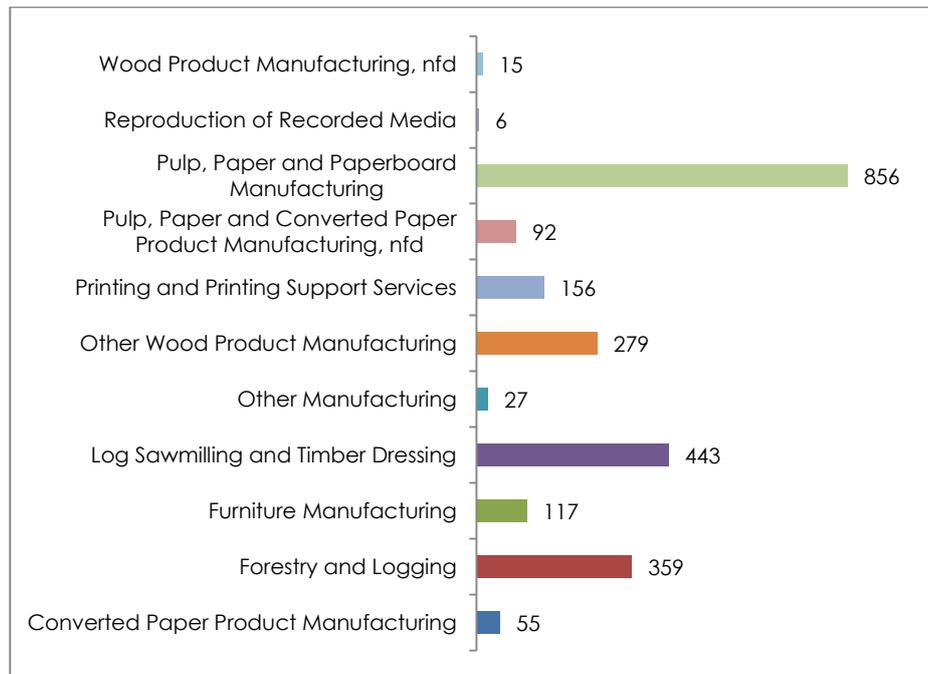


Figure 3: Employment figures by industry in the Latrobe Valley region forestry and paper sector.

Source: Australian Bureau of Statistics, 2006

Data in this figure has been randomly adjusted to avoid the release of confidential data.

While the largest concentration of employment is in the pulp and paper manufacturing mills, the paper industry is also dependent on the wider workforce within the sector. The second largest industry by employment is timber processing (log sawmilling and timber dressing), which accounts for just over 18% of the workforce. The third largest is forestry and logging, employing almost 15% of the workforce.

The forestry and paper sector is characterised by ongoing change that has both short-term and long-term impacts on employment (Schirmer, 2010). The skills of the workforce are continually evolving as a result of technological advancements, market trends and public opinion. Across the sector in Victoria, employment growth is typically being seen in processing and manufacturing activities (Schirmer, 2010).

Oil and Gas

The majority of Victoria's natural gas is extracted from the Gippsland Basin, and most of it is transferred to the Longford processing plant run by Esso (Exxon Mobil) in the Shire of Wellington. There are also much smaller processing plants at Lang Lang in the Shire of Cardinia, run by Origin Energy, and Patricia Baleen in the Shire of East Gippsland, run by Santos. According to the Department of Primary Industries (DPI), the Gippsland Basin is responsible for approximately two thirds of Australia's cumulative oil production and about one third of Australia's gas production. It is, therefore, strategically a very important area in terms of this natural resource.

In 2006, the oil and gas sector accounted for the direct employment of 614 people in the Greater Latrobe Valley. Across the Latrobe Valley region, extraction jobs account for the most significant proportion of oil and gas employment (Figure 4).

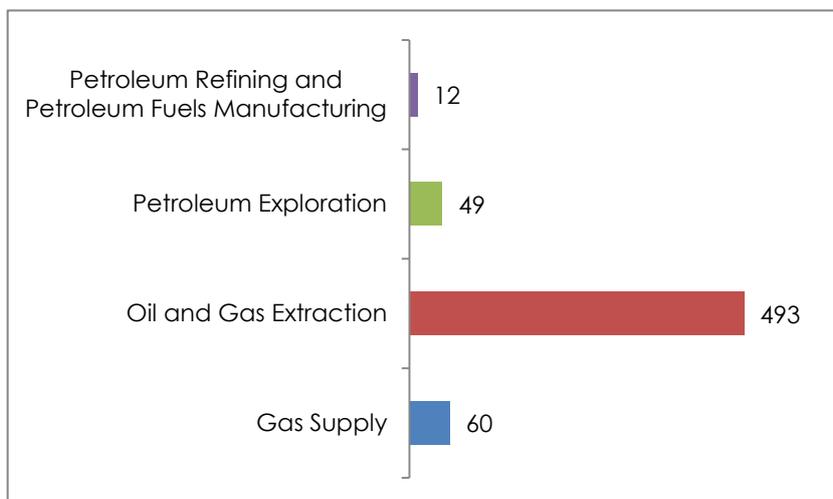


Figure 4: Employment figures by industry in the Latrobe Valley region oil and gas sector.

Source: Australian Bureau of Statistics, 2006

Data in this figure has been randomly adjusted to avoid the release of confidential data.

Ninety-four per cent of the employees in this sector are male, with many trade qualified. It is likely that the vast majority of these are based around the Longford processing plant in Wellington Shire. The sector is also characterised by relatively high wages, with more than a third of direct employees earning in excess of \$2000 per week (ABS census data, 2006).

There is expected to be continued growth in oil and gas exploration, extraction and processing in the next decade, with much of it centred on the Gippsland Basin. Within the Latrobe Valley region, virtually all of this growth will be limited to the Wellington LGA (KPMG, 2011). However, there is significant indirect employment, particularly through contracting, in the oil and gas sector, which is likely to include the employment of people residing in other areas of the Latrobe Valley.

Similarly, while the Lang Lang (Origin Energy) and Patricia Baleen (Santos) processing plants are located outside the Latrobe Valley region, they are likely to employ some people residing in the region. Therefore, any changes to these plants would impact upon the Latrobe Valley region.

The oil and gas sector is likely to expand over the next decade in terms of exploration and extraction, particularly in light of carbon pricing and the transition towards a low carbon economy. As a result of this transition, there are moves to shift Victoria's reliance on coal-based electricity to gas, at least as a short-to-medium term solution. It must be noted, however, that while the sector is likely to experience expansion, it is

not an area that employs large numbers of people (Figgis and Sanden, 2005). Employment growth beyond the construction and installation stages of new facilities in oil and gas is likely to be limited as this is a very capital intensive sector with high uptake rates for new technology.

Opportunities

The future of the Latrobe Valley region centres on these four sectors. As indicated, the coal and electricity sector is undergoing change, with the prospect of closure of at least one generator and possibly two. In the event of this occurrence, workers across this industry are likely to be displaced. Such developments will impact on the overall prosperity and future of the Latrobe Valley region. But, it is also the case that each of the four resource sectors has prospects for economic development, investment, job growth and skills development. These sectors are complex and distinct from each other, with differing skills requirements, levels of remuneration, and patterns of employment security and insecurity. Nonetheless, each of these sectors display possibilities for growth.

Coal and Electricity

Despite the interest in the Federal Government's Contract for Closure Programme among some of the region's brown coal fired generators, lignite will continue to remain the primary fuel for Victoria's power generation industry for the next decade or two. Carbon pricing, however, will force companies to reduce their carbon emissions and carbon exposure. Alternative directions for the sector include 'clean coal' technologies, the export of brown coal, and alternative uses of coal.

'Clean coal' technologies: It is a widely held view that the region's future brown coal electricity generation opportunities are dependent upon improving the quality of the resource through various 'clean coal' technologies. Clean coal technologies can be described as technologies that improve both the efficiency and the environmental impact of coal extraction, preparation and use and mainly relate to greenhouse gas emissions. Clean coal technologies may be an element of the shift required for the Latrobe Valley power generation sector to enable the future development of the coal industry in a carbon constrained environment. The resolution of the scientific, engineering, regulatory and commercial issues of emerging technologies is needed and faces challenges in a number of areas. Government will need to consider the investment incentives facing the private sector and current barriers to investment. It must be noted, however, that there are serious debates about the feasibility of clean coal and whether investment would be better steered out of the sector altogether and into more sustainable and "green" areas of energy generation such as wind and geothermal.

Brown coal export: Capturing economic opportunities through the export of brown coal has been discussed for decades. The high moisture content and volatile nature of the resource have proven to be major barriers. In recent years, however, technological advances in dewatering and stabilising the resource have contributed to a renewed interest in this possibility. Several companies are now proposing to develop an export industry for brown coal which they believe is competitive and ultimately a 'cleaner' product than black coal exported from other parts of the country. Infrastructure is perceived as sufficient to facilitate the initial development of the export industry but major investments in rail and port facilities will be needed if the industry is to realise its full potential. Countries in Southeast Asia and India are seen as the major markets for this dried brown coal product. Environmental opposition to the export of brown coal, however, may prove to be the major challenge for the industry.

Alternative Uses of Coal: There is significant economic potential with respect to investment in Gippsland's brown coal resource beyond that of its use for electricity generation. There are a number of brown coal based industries that have been discussed over the past decade, which include: coal to fertiliser plants, coal to liquid fuel plants, coal to gas plants. The plants proposed for these projects are designed to operate for many years and would potentially provide long-term employment and economic benefits to the region and State. In some cases the development of these projects may involve the opening of new coal fields. Licences for the development of 'new' coal fields in the Latrobe Valley in the last 10 years (e.g. in the Flynn, Gormandale and Driffield coalfields) fields are seen as an important component in the development of these new coal-based industries in the Gippsland region.

There are a number of other projects that are currently in the planning stages but which are not yet considered 'project ready'. These include dried brown coal export, additional coal to fertiliser and coal to liquid fuel plants. These may be constructed within the next 10-15 years, however this is not confirmed. The scale of capital investment in these additional projects is likely to be prohibitive.

Agribusiness

There are four principal possibilities of transition and development in the agribusiness sector. These possibilities would generate both direct and indirect employment opportunities.

Food processing: Food processing is recognised as providing a key area for jobs growth in the Latrobe Valley region (Latrobe City Council, 2011). Such operations in the region are currently dominated by the dairy and meat industries. However, the cluster of food processing plants currently located in East Gippsland provides a model for the range and scale of operations that might be developed in the Latrobe Valley region.

High Value and Organic Food Production: The range of specialty and organic high-value food products successfully produced in the Latrobe Valley region is growing. In particular, the demand for organic milk and organic dairy products is rapidly increasing in Australia and across the world. The Organic Dairy Farmer's Co-operative, based in the Latrobe Valley region, is constantly calling for new suppliers of organic milk to meet the growing demand. The co-operative provides security to dairy farmers making the transition to organic farming methods by offering a three-year contract, reflecting the strength of the industry.

General horticultural output: The Latrobe Valley region is well positioned to increase its horticultural production, particularly in the Macalister Irrigation District. With the market gardens in West Melbourne increasingly under threat from salinization as well as urbanisation in western Gippsland and outer Melbourne, the Latrobe Valley has the opportunity to capture a greater proportion of the Victorian horticulture industry. There may also be similar opportunities in viticulture.

Agri-tourism: The Bureau of Rural Sciences has identified Gippsland as a region that is undercapitalising on its agri-tourism potential. Across Australia agri-tourism, and food tourism, is increasingly attracting the interest of consumers and travellers seeking food and agricultural-based experiences or activities (Ecker *et al.*, 2010). To date the growth of agri-tourism in the Gippsland region has been limited by a shortage of accommodation options, and by an insufficient number of businesses engaging with the industry. However, some Gippsland farmers are already able to derive a significant percentage of their income from agri-tourism (Langworthy *et al.*, 2006).

Forestry and Paper

Over the coming decades, this sector is expected to experience growth in value and employment across the Latrobe Valley region (KPMG, 2011). There are three key possibilities for development and diversification within the sector.

Adaptation: The long-term viability of the forestry and paper sector in the Latrobe Valley region requires businesses to absorb the pressures of a globalised marketplace and to find innovative ways to source and process resources (Lavoie *et al.*, 2006). Possibilities for the paper industry include shifting towards alternative technologies to create pulp from Melbourne's recycled paper. In Scandinavia and North America, the pulp industry is on a process to move towards the production of pulp specialty cellulosic products or nanotechnology-based materials, which have a range of potential high-end applications. The timber industry in the Latrobe Valley region is being challenged by the low price of imports, the high cost of labour, and a diminishing investment in new and long-rotation plantations. Possibilities may include shifting away from commodities towards the manufacturing of niche products.

Niche and sustainable products: Alternative markets for the timber industry include engineered wood products and structural timber for mid-rise, commercial, institutional and industrial construction (Bayne and Page, 2009). The pulp industry can also shift away from the production of commodities to the manufacturing of niche products. One example would be the manufacturing of fluff pulp to make incontinence products. It is likely that the demographic of the Australian population will increasingly provide a secure domestic market for such products. It is predicted that 'green' or environmentally friendly timber and paper products will also increasingly attract the support of consumers (Lavoie *et al.*, 2006). Many consumers are now considering the health implications of chemicals used in the production process, as well as the environmental and social footprint attached to wood and paper products. Other niche products could target high-end design and construction. An example from the Latrobe Valley region is radially-sawed timber. Various architectural projects across Australia have used this timber for its unique appearance in exterior cladding and interior surfaces (Gregory Burgess Architects, 2012).

Biofuel Power Production: Climate Works Australia has identified the Latrobe Valley region as having significant potential for bioenergy production (Climate Works, 2011). Waste from the forestry and paper sector and from the region's agricultural industries could be used to generate cleaner energy, in turn reducing the waste disposal challenge facing shires and businesses. It should be noted that on-site generation of energy from waste products is already being practiced by a number of mills in the area, including Australian Paper's Maryvale mill and Carter Holt and Harvey's Morwell mill. There may be opportunities to expand bioenergy production in order to feed power into the local grid, as has been proposed at the South East Fibre Exports mill in Eden, NSW.

Oil and Gas

There is expected to be continued growth in oil and gas exploration, extraction and processing in the next decade, much of it centred on the Gippsland Basin. The *Latrobe Valley Industry Growth Projections* (KPMG, 2011) suggest that virtually all of this growth, in terms of the Latrobe Valley region, will be limited to the Shire of Wellington. There are two main opportunities in this sector, the expansion of operations and the potential to employ displaced workers from the coal and electricity sectors.

Expansion of Operations and Employment Prospects: The exploration and building phases for offshore extraction are some of the more labour intensive aspects of the oil and gas industries. In the construction phases of offshore platforms, for example, there is exceptionally high demand for specialised labour, albeit for a limited time period. The expansion of operations, therefore, should result in some increase in employment in the sector.

Claims from those within the industry are quite high. In early 2012, an ExxonMobil project manager claimed that the construction and installation of the new gas conditioning plant (currently in early stages of development) at Longford would

create about 1300 direct jobs (McRae, 2012). Such a figure is likely to be inflated, however, as the oil and gas sector only directly employs 3400-7000 people Australia-wide (Figgis & Standen, 2005). Any predictions with regard to more stable, long-term employment must be cautious as the oil and gas sector is very capital intensive and significant increases in output can be achieved with only minimal increases in labour (Figgis & Standen, 2005; KMPG, 2011).

Transferable Skills from Other Sectors: One of the opportunities that the gas and oil sector presents is that the skills required have considerable overlap with the skills likely to be held by workers who may be displaced from the coal-based electricity sector in the Latrobe Valley region. Both areas are heavily male dominated and Figgis and Standen (2005) found that rather than being recent graduates or apprentices, most new workers in the oil and gas sector typically had between five to ten years of experience working in another industry (most often a trade, although agriculture was another notable area of recruitment). The entry age is also relatively high, most new workers enter the oil and gas sector in their 30s and 40s.

Considerations

These sectors display a range of opportunities for growth and job creation, each with implications for land use (land use considerations are taken up more fully in the final report). Obviously the coal and energy sector is the focus of policies in relation to a transition to a low carbon economy, with major consequences for employment and job creation. The other sectors also provide a range of opportunities. As lead firms in these sectors move to more disaggregated forms of operating, many of the opportunities for job expansion will be in contract and associated organisations and not in the lead firm. For this reason it is necessary to not only understand the lead firm and their possibilities, but also the changes that may take place in the associated network.

Opportunities for labour and employers centre on skill sets. In some cases skills sets are relatively transferable across sectors, such as from coal to oil and gas. Any transfer from coal to other resource industries will be difficult without significant retraining. Remuneration differences in relation to both sectors and skills, however, may prove to be more significant barriers. This issue will be explored in full in the final report.

Finally, these processes point to an inverse relationship between Investment strategies and employment development. On the one hand, investment, particularly in capital, can undermine the need for labour. On the other hand, job growth may not transfer into comparable opportunities for displaced workers and the maintenance of decent work and employment (UNEP, 2008).

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