



Clean Energy Council

**Building on the
employment benefits of
clean energy**

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Clean Energy = Jobs, Jobs, Jobs.

Introduction

The policy debate that surrounds clean energy is often crudely summarised as ‘the environment versus the economy’, because while opinion polls highlight that Australians know clean energy has a strong role to play in reducing greenhouse gas emissions, it is also often assumed by policy commentators that it must come at a substantial price and that supporting investment in these cleaner technologies represents an undue economic burden.

The reality is different.

Costs have fallen dramatically in just the last few years, and the economic benefits already being reaped by the Australian community as clean energy investment has grown. The development and deployment of clean energy in Australia has resulted in substantial job opportunities. In particular, this employment is strong in rural and regional areas where the impact of Australia’s economic re-alignment with global markets is being felt most acutely.

So while a significant proportion of clean energy technology is sourced from countries with a competitive advantage in low-cost, high-volume manufacturing, it is the regions and local communities of Australia that experience the economic benefits of clean energy deployment.

This paper considers the nature of these employment opportunities and how Australia can maximise future employment opportunities in both the development and deployment of clean energy.

The policy framework

The main driver of investment and growth in the clean energy industry is the Renewable Energy Target (RET).

This bipartisan legislation has supported the deployment of both large- and small-scale technologies across Australia, although a number of state-based policies and programs from local governments have also played an important role in making it cheaper and easier for individual households and community groups to gain the benefits of generating their own power. However, most of the state-based initiatives, such as solar feed-in tariffs, have now been wound back.

Under the RET, around 3,500 MW of new renewable energy capacity has been commissioned since 2001, with total investment to date of \$18 billion.¹ This investment has been focused largely on solar, wind, bioenergy and hydro power (including expansions at existing hydro-electric facilities).

It is estimated that if the RET is left unchanged, it will stimulate a further \$18.5 billion in investment, with over \$3.5 billion of that figure already committed and under development.

Jobs

That level of direct investment has translated into jobs for Australians.

¹ SKM MMA, Benefit of the Renewable Energy Target to Australia’s Energy Markets and Economy, p. 27

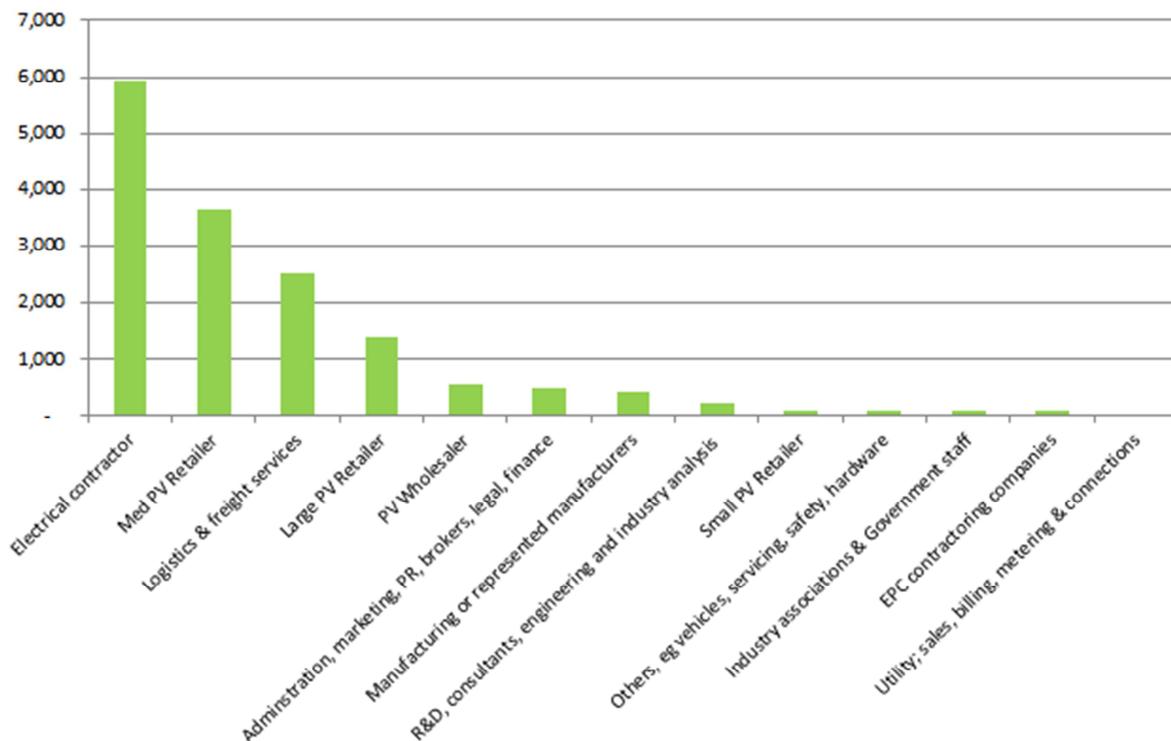
The number of employees in the renewable energy industry has grown significantly in the past decade. At the end of 2012 more than 24,300 people were directly employed by the sector.²

But the true impact of the industry in economic terms is expressed through its indirect benefits. Much of the work needed to design projects, supply parts, and build renewable energy generators is done by partners to the main contractor and this often obscures the true magnitude of the flow-on employment benefits of clean energy.

Many examples exist of partnerships between the clean energy industry and other parties. For example, in the bioenergy sector, much of the fuel for bioenergy plants is sourced from agricultural waste (for example, sugar cane bagasse) which provides a new and stable income stream for farmers to diversify their business during tough environmental or market conditions.

Meanwhile, the solar PV industry provides thousands of direct jobs in nearly every part of Australia through system installation, plus office-based retail and administrative jobs. It provides jobs for the whole gamut of skill levels, from the low-skilled to the tertiary-qualified. It also supports diverse indirect jobs in sectors such as utilities (installing the metering), research and development (an area in which Australia has substantial expertise), manufacturing in balance of system components, and distribution.

Case Study: Direct and Indirect Jobs in Australian Solar PV³



The multi-faceted flow-on benefits from renewable energy investments are further illustrated in the wind industry. Analysis of the deployment of wind energy in Australia reveals that 0.7 jobs are created per megawatt of locally installed capacity, and a flow-on of a further two indirect jobs for

² Clean Energy Australia 2012 Report, p. 20

³ Warwick Johnston & Nigel Morris, Solar Power Australia 2011-2012, Report for the Clean Energy Council, p.28

every direct job.⁴ In 2012, 359 MW of new wind energy came online. Other projects are currently under construction.

Summary of economic benefits of a wind farm to the local economy

- Construction of a 50 MW wind farm provides a gross value added of some \$50 million to a state and contributes up to 0.21 per cent to gross state product depending on the size of the state economy.
- Construction of a 50 MW wind farm is estimated to contribute up to 2.6 per cent to gross regional product depending on the size of the regional economy.
- Construction could lead to potential local personal expenditure of \$25,000 per person per annum. If, for example, a wind farm had an average construction workforce of some 35 over a two-year construction period then the expenditure in the region would be some \$875,000 in total per annum on accommodation, food and other services.
- The same wind farm could employ between five and six full-time-equivalent staff for operations and maintenance with a potential ongoing expenditure of \$125,000-150,000 per annum.
- In addition, a 50 MW wind farm project is likely to provide up to \$250,000 in payments to farmers and an ongoing community contribution that could be some \$80,000 per annum for the life of the project.
- This expenditure is likely to be a minimum as wind farm developers' policies of sourcing suppliers and services locally as far as possible also mean that transport, plant hire and materials such as crushed rock, cement, sand and gravel are likely to be provided from local sources.

SKM, Wind Farm Investment, Employment and Carbon Abatement in Australia, report for the Clean Energy Council, July 2012

A case study of the wind turbine company Vestas Australia illustrates the wind industry's broad employment impacts. Vestas has a significant direct workforce of around 200 Australia-wide, but in the course of building and maintaining the wind farms it is responsible for, it contracts with nearly 600 other Australian businesses from a range of sectors such as local accommodation providers, transport and logistics, engineering, equipment hire and electrical technicians.

Most of these suppliers are not solely in existence to provide services to Vestas or the wind industry, but the added demand for their services provides a more diversified customer base and greater economic resilience in a fragile economic climate.

Moreover, because wind farm construction is a localised and labour-intensive business the work must be done by companies local to the project whenever possible and this helps retain many of the economic benefits in the region.

⁴ SKM, Wind Farm Investment, Employment and Carbon Abatement in Australia, report for the Clean Energy Council July 2012, p. 28

Case Study: Vestas in Australia

- 868 Vestas turbines have been installed in Australia
- 731 of these under service contract with Vestas
- 1852 MW installed capacity
- Around 200 people directly employed by Vestas
- Vestas has more than 586 Australian suppliers across a range of sectors, from accommodation, transport and logistics to engineering, equipment hire and electrical

Challenges for the clean energy industry – shifting government policy

Unfortunately it's not all good news for the clean energy industry. The sector is facing a range of challenges from domestic and international factors. This includes fluctuations in exchange rates such that what is viable in one period may be less viable in another. As with other manufacturing-based business sectors, this is limiting – or even reducing – the level of clean energy jobs in Australia, particularly in local manufacture.

But the most substantial factor in maximising and protecting the long term employment opportunities in the clean energy sector is the need for stable, investment-grade policy support. Such support can give confidence to businesses and their investors to increase production and ultimately commit to employing and developing their most critical asset – their people.

Constant chopping and changing of government policy at short notice can have a profound impact on levels of employment within the clean energy sector, as well as the overall development of the industry and its constant pursuit of cost-reducing innovation.

One such example of the impact of substantial policy change is in energy efficiency.

Energy efficiency is a critical part of the clean energy sector. It can, and has, produced a significant number of employment opportunities but has also been the hardest-hit by shifting government policy. The clearest example of this is the insulation industry.

Insulation Industry in Australia

- Employs approximately 4000 staff
- Currently around 1 million homes without any ceiling insulation
- 2 million homes have less insulation than the current requirements for new homes
- 5 million homes have no wall insulation
- If all these gaps were filled, Australian consumers would achieve over \$4 billion in energy savings

It's become an accepted fact in the energy policy debate that no-one should ever mention the word 'insulation', following the huge media outcry over the Federal Government's home insulation rebate scheme. Although assessments of the scheme after it closed have been more positive about the sustained energy and carbon savings⁵ of the program – and have raised doubts about whether the number of serious incidents attributed to the scheme were higher than the rate existing before the scheme was introduced⁶ – the damage caused to Australia's insulation industry remains to this day.

⁵ Rodney Tiffen, *A mess? A shambles? A disaster?*, Inside Story, 26/3/10

⁶ *Insulation Fire Risk – The data is in*, Crikey, 19/10/10

Notwithstanding the controversy surrounding the insulation scheme's implementation, it did have a dramatic effect on the industry and on the number of homes with ceiling insulation. Insulation rates in Queensland jumped from around 45 per cent in 2005 to over 60 per cent in 2011. Overall, rates have increased from around 60 per cent to 70 per cent over the same period nationwide.⁷ Given that a large proportion of the insulation used in Australia is manufactured here (as well as all the installation and associated employment being local), this sector was a significant job creator.

The Commonwealth Department of the Environment, Water, Heritage and the Arts estimated that over two-thirds of the insulation program's expenditure generated employment downstream of the manufacturers – in distribution, warehousing, installation and support services. The Insulation Council of Australia and New Zealand suggests that for each manufacturing job created there were 20 to 30 downstream jobs created.⁸

But as was reported at the time, the overnight closure of the scheme devastated the industry. CSR, one of Australia's largest manufacturers of insulation, immediately⁹ laid off 100 staff and the rest of the industry followed suit.

Although the level of activity generated by the home insulation rebate couldn't have been maintained indefinitely, it did operate as an economic stimulus program. However, by exiling insulation from the policy debate entirely, the community has forgone substantial levels of sustained local employment in manufacturing and associated sectors.

Cost reductions are not universal or consistent

Across the clean energy industry, estimates of technology costs and the price of energy produced by them are falling rapidly. This has led to two contradictory challenges for the sector. The first is tackling the misconception that technologies like solar PV and wind are vastly more expensive than fossil fuel generation. The second is explaining to people why not every renewable energy technology can be expected to demonstrate the astonishing level of cost reduction that some others have experienced in recent years.

The solar industry is good example of this. While solar PV has shown an astonishing ability to reduce its underlying costs of production (thanks to improvements in the availability of core components like silicon, increases in production scale, fierce competition and design break-throughs), the solar hot water sector has not had the same improvement. Sceptics ask why years of programs to support solar hot water haven't seen the same radical price reductions observed in solar PV. The answer is quite simple. While solar PV is developing at astonishing rates, with many options for incremental and fundamental improvement, solar hot water is a highly mature and technically straightforward technology. The opportunities for big reductions in costs simply aren't there for solar hot water.

So does that difference mean that support for solar hot water is a waste of time, and all the effort should go into solar PV? Of course not. Solar hot water and heat pumps are technologies that can slash household energy bills (water heating is the single biggest source of energy usage in the average household). They also have the benefit of being a form of distributed energy storage, which allows energy to be captured (as heat) during the middle of the day, to be used at peak times when the price of electricity is much higher.

⁷ Clean Energy Australia 2012 Report, p. 34

⁸ Environment, Communications, and the Arts References Committee Report into the Energy Efficient Homes Package (ceiling insulation), Australian Senate, July 2010, p.21

⁹ Anthony Tannous, *New report finds insulation scheme will save billions*, Radio National, 13/9/12

However, solar hot water has a fundamental challenge: it has a higher up-front cost than competing technologies, but with a far lower running cost. Unfortunately most consumers focus on the sticker price and not the ongoing costs and so are put off investing in a system. Couple that with the challenges faced by all internationally-exposed manufacturers in Australia such as the high Australian dollar and you can see why the industry is struggling to meet its potential in terms of employment.

But that shouldn't obscure the fact that every Australian government – state and federal – has now closed down its rebate program (though solar hot water is still eligible under the RET) for consumers buying solar hot water. This has led to a drop of more than 50 per cent in the number of installations of solar hot water systems nationwide since the peak in 2009.

So it should be no surprise that this long-standing part of Australia's manufacturing base is currently in decline, or that this could be reversed with the right assistance. A quick overview of the workforce profile of solar hot water manufacturer Rheem gives a clear indication of what could be achieved with the right support from governments.

Case Study – Rheem Australia

Currently employs approximately 700 people in Australia, including:

- Manufacturing workers: 200
- Administration and distribution: 25
- Sales and marketing: 20
- Research and development: 15
- Dealer network: 400-500 principals and employees.

Encouraging greater community participation in clean energy deployment

Encouraging alternative ownership models for renewable energy would boost investment in the sector and ensure that local contractors and communities captured a greater share of the benefits. Options for facilitating this investment include support for:

- community ownership of larger wind and solar projects (including full or partial community ownership models)
- virtual metering schemes that allow people to invest in smaller-scale renewables even if their own homes are not appropriate structures for hosting systems
- more open energy market structures that allow for 'wheeling arrangements' (selling power from business to business directly, without going through electricity retailers)
- market structures to assist 'precinct-scale' cogeneration and trigeneration systems to operate cost-effectively for a number of local businesses.

Bringing more of these opportunities forward will be a key focus for the CEC in the year ahead.

Recommendations for maximising the level of direct economic benefit

As we have seen, in areas where there has been strong and stable policy support for clean energy – such as in the case of the RET – those segments of the industry have been significant employers.

Unfortunately, in those areas where policies have been inconsistent or simply abolished, the effect on the industry has been acute and ongoing.

To maximise the creation of new job opportunities, as well as sustain the current levels of employment in the clean energy sector, the Clean Energy Council recommends that:

- Federal and state policy makers maintain those policies that are currently working (principally the RET) to secure the stability required for businesses to invest in the future of the industry and in local communities.
- New, creative opportunities for co-investment by communities, consumers and the financial sector are identified and acted on.
- State-based energy efficiency schemes have an important role to play and should not be reduced or removed unless and until there is an equally effective national policy framework.
- Appropriate replacements for those energy efficiency policy support measures that have been abolished (such as support for insulation and solar hot water) need to be identified.
- Planning policies to facilitate the long-term deployment of clean energy are refreshed. (States are largely responsible for the planning and permit regimes for large scale technologies like wind farms, and without supportive and science-based regulations to guide planning decisions we will see a continued slow-down in wind energy investment.)
- Consider the development of centres of excellence to continue to maximise Australia's competitive advantage in key aspects of the clean energy development and deployment life cycle. It's critical that Australia targets particular niche areas and leverages these as much as possible, including linking with international partners as appropriate.
- Supporting an increased focus on workforce development, including tertiary training, industry standards and development to build a skilled workforce to meet the needs of the Australian clean energy industry.

It is vital that any new policy measures and support mechanisms are set at levels which can be sustained (financially and politically) over the long term.

Conclusion

The clean energy industry is now a major employer and is delivering significant economic benefits to Australia.

In many cases, the nation could be getting even more economic benefits from clean energy if an effective and consistent policy framework were maintained.

In other areas, we need to look at new policies and models of ownership to drive the next wave of investment in current and emerging technologies.

Policy-makers and the community need to be aware of how quickly renewable energy is moving down the cost curve, with a number of technologies rapidly closing the gap between their cost and that of fossil fuels.

But not all technologies have the same opportunities for reduction in underlying costs, and having the right expectations and an appropriate understanding of what the real barriers are to investment in those technologies will avoid parts of the industry being penalised unfairly.

Although the majority of jobs in the clean energy sector will be in areas other than manufacturing, we need to recognise and promote the importance of wealth-generating manufacturing both to the wider economy and to the individuals employed.

The Clean Energy industry wants to build an effective partnership with governments across the country. The mutual goal should be to provide sustained employment for large numbers of Australians with a range of skill levels and qualifications. These are needed now and are also essential for the economy's longer-term growth.

Clean energy is providing the power our economy needs today, and supporting the jobs we want to see remain in Australia into the future.

It's a great story of an industry which, with the right policy stability, will go from strength to strength.