

# Nice work if you can get it

## Jobs outcomes from renewables growth policies

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*Australia has lost 5,100 jobs in renewable energy since 2012. The policies of the Coalition, Labor and Greens going into the 2016 election could deliver renewable jobs and growth, or continue the current stagnation.*

**Briefing note**

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# Summary

Renewable energy jobs have declined in Australia for the past three years. From a peak of 19,120 jobs in 2012, employment in renewables declined by 27 percent to 14,020 in 2015, the latest year of ABS statistics.

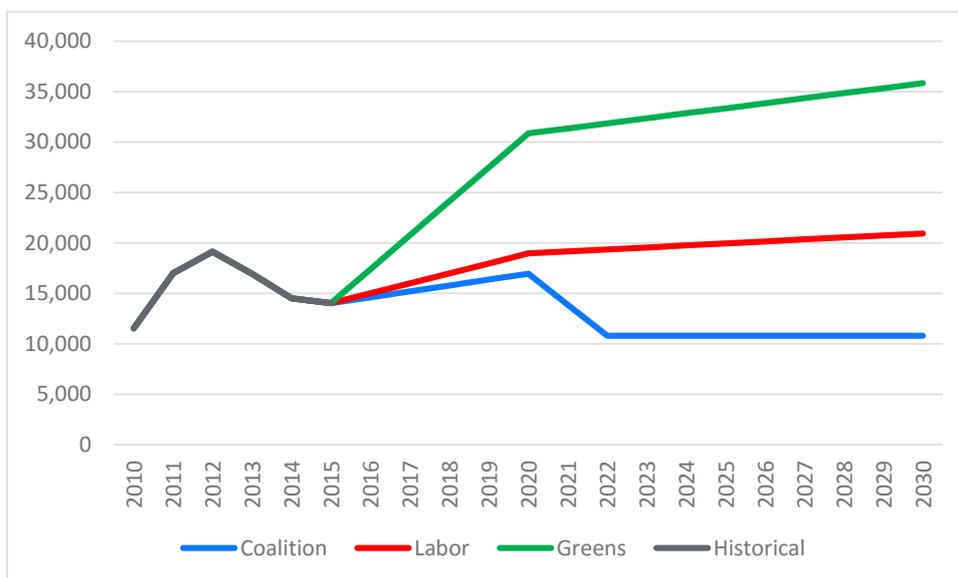
Renewable energy policy has become a central theme of the 2016 Australian federal election. The main engine of renewable energy growth in Australia is the federal Renewable Energy Target (RET).

Each of the key parties has its own target for the RET;

- Liberal Party - 23% by 2020
- Labor - 50% by 2030
- Greens – 90% by 2030

Based on the RET targets of the key parties and published estimates of how many jobs are created with each MW of wind and solar built, we estimate the job implications of these policies:

## Jobs in renewable energy, historic and election policies



Source: ABS (2016) *Employment in Renewable Energy Activities*, published policies of parties, ROAM Consulting. (2014) *RET Policy Analysis: Report to Clean Energy Council*, Australia Institute analysis

Under the Greens policy of 90% renewables by 2030, we estimate that employment in renewables would resume the growth seen at the start of the decade, increasing from the current 14,020 to just over 30,000 by 2020. Construction would then slow, with another 5,000 jobs being added over the following decade.

Labor's policies follow a similar trend, but at a far lower level, with employment rising to 2020, and then slow growth out to their 2030 target, reaching just over 20,000.

We estimate that under the Coalition's current policy renewable jobs would never again reach their 2012 peak. Some employment growth would occur to 2020, their target year, followed by decline as construction ends and employment is largely restricted to operational jobs.

The recent announcement by Prime Minister Turnbull to divert \$1 billion from the Clean Energy Finance Corporation to a new 10 year 'Reef Fund' is not likely to impact on how much renewable energy will be produced in Australia nor how many people will be employed in renewable energy.

If Australia's political parties are serious about jobs and growth, they need to look at their renewable energy policies.

# Introduction

Renewable energy jobs have declined in Australia for the past three years. From a peak of 19,120 jobs in 2012, employment in renewables declined by 27 percent to 14,020 in 2015, the latest year of ABS statistics.<sup>1</sup>

In the lead up to the 2016 federal election all parties are talking about jobs and economic opportunities. This report estimates the number of jobs that would be created in by the renewable energy policies of each party as at 10 June 2016.

The Renewable Energy Target (RET) is the main policy driving the development of renewable energy in Australia. Other policies are also important, including state and territory based targets and agencies such as the Clean Energy Finance Corporation and the Australian Renewable Energy Agency. However industry growth figures are strongly correlated to size and time scale of the RET.

The stated policies relating to renewable energy targets by each major political party can be summarised in Figure 1 below.

**Figure 1: Comparison of Renewable Energy Target policies**

Stated Policy	% Renewable Energy	Target Date
<b>Coalition</b>	23	2020
<b>Labor</b>	50	2030
<b>Greens</b>	90	2030

Source: party policies

Currently the large scale Renewable Energy Target (LRET) is based on a target each year building to its maximum in 2020 then levelling off until 2030. The target creates a market for Large Scale Renewable Energy Certificates (LGCs) that are generated during the operating life of a large-scale facility (up to 2030) and LGC prices rise or fall depending on demand verses supply.

The Coalition government's policy is for 23% renewable energy by 2020<sup>2</sup>, which is consistent with the current RET. The Coalition has not articulated any target growth

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<sup>1</sup> ABS (2016) *Employment in Renewable Energy Activities, Australia, 2014-15*, <http://www.abs.gov.au/AUSSTATS/abs@.nsf/DetailsPage/4631.02014-15?OpenDocument>

<sup>2</sup> Liberal Party of Australia (2016) *Our plan issue 14: Protecting our environment*, Liberal Party of Australia, <https://www.liberal.org.au/our-plan/protecting-our-environment> Accessed 6 June 2016.

beyond 2020. This will result in large scale RET demand growth of approximately 16,000 GWh in 2020.

The Labor policy is for 50% renewable energy by 2030. This will result in large scale RET demand growth rising to approximately 58,000 GWh in 2030<sup>3</sup>.

The Greens policy is for 90% renewable energy by 2030. This will result in large scale RET demand growth rising to approximately 146,000 GWh in 2030<sup>4</sup>.

The support for small-scale systems (below 100kW) is a different mechanism, where demand is created by the fixed price of Small Scale Technology Certificates (STCs), rather than a mandated target. None of the parties have specific policies for this area.

## Methodology

The predicted growth in renewable energy capacity to 2030 has been estimated on a linear increase in demand. Overall electricity demand in 2030 has been taken from Australian Energy Market Operator's (AEMO) forecasts and the 50% and 90% target has been calculated by removing existing renewable energy capacity.

For the purposes of estimating jobs created, it is assumed that the targets in 2030 will be met with a mix of large wind, large solar and small solar facilities.

In the case of the 2020 LRET, it is assumed that wind power will be the predominate technology taking up 80% of large-scale new capacity. However, it is expected that large solar will be more prevalent in the mix by 2030, and hence it is assumed that wind power will take up 60% of the large-scale facilities, with large solar making up the balance.

A key input to our analysis is an estimate of employment generated per megawatt of capacity installed for renewables technology. These estimates were produced by ROAM Consulting in 2014, for the Clean Energy Council.<sup>5</sup> These employment intensity

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<sup>3</sup> Labor. (2016) *50% renewable energy by 2030*, Labor <http://www.Labor Party.org.au/renewableenergy> Accessed 6 June 2016.

<sup>4</sup> The Greens. (2016) *Renew Australia*, The Greens, <http://greens.org.au/renew>, Accessed 6 June 2016.

<sup>5</sup> ROAM Consulting. (2014) *RET Policy Analysis: Report to Clean Energy Council* (23 May) <https://www.cleanenergycouncil.org.au/dam/cec/policy-and-advocacy/ret/roam-modelling-april-2014/RET-policy-analysis-full-report/RET%20policy%20analysis%20-%20full%20report.pdf>, ROAM Consulting, Brisbane

estimates are combined with each party's policy targets for growth in renewable energy generation.

**Figure 2: Jobs assumptions for small scale solar, large scale solar and wind in Australia**

Technology and scale	Construction jobs/MW	Duration yrs	Operations jobs/MW	Duration yrs
<b>Wind</b>	2.2	2	0.1	25
<b>Large scale solar PV</b>	2.4	1	0.13	25
<b>Small scale solar PV</b>	15	1	NA	NA

Source: ROAM Consulting (2014)

ROAM estimates that 2.2 jobs per MW are created in construction of wind energy projects, with construction periods lasting 2 years. Operating wind energy projects have 0.1 jobs per MW, over a lifetime of 25 years.

Large scale solar provides 2.4 jobs per MW for a one year construction period and 0.13 jobs per MW during an operating lifetime of 25 years.

Small scale solar provides 13 jobs per MW for installation over 1 year and 0 jobs per MW for operations. This is an underestimate as there will be some employment in repairs, cleaning and upgrades, particularly as Australia's 1.5 million solar households start to add battery storage their home energy systems.

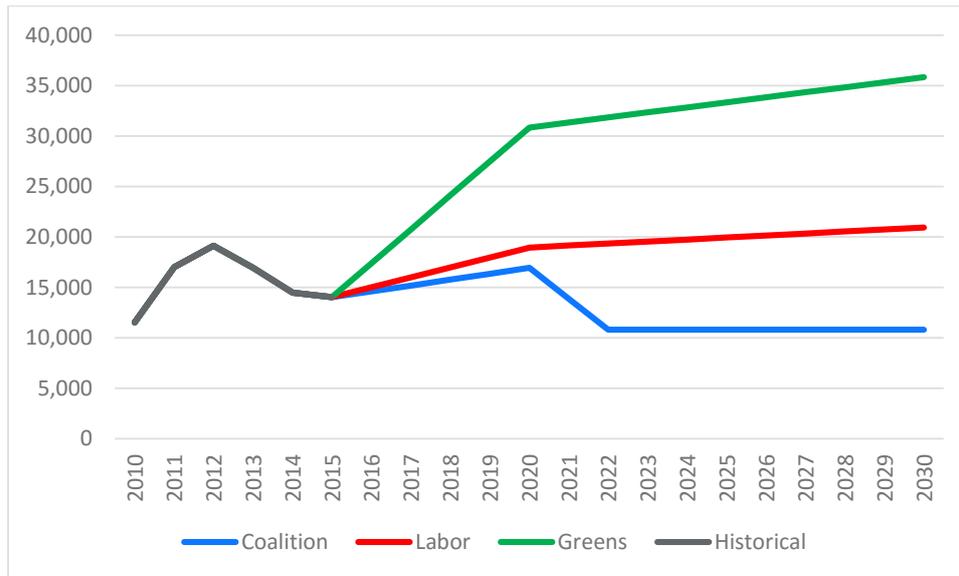
None of the parties have provided detail on how small-scale renewable energy systems will be supported in achieving the stated target. Accordingly, it has been assumed that the take-up rates for small scale systems is higher by 20% for a 50% target by 2030 and 20% again for a 90% target by 2030. In both these cases it has been assumed that the benefit is taken into account in the prediction of the large-scale demand in 2030.

Further, the total volume of STCs are provided as financial support at the time of installation, based on the expected output of the small-scale facility over 15 years. As the RET has less than 15 years to run (it terminates in 2030) the deemed number of certificates for a small facility effectively reduces by 1/15<sup>th</sup> each year until it disappears in 2030.

# Renewable jobs estimates

Based on published data on historical employment in renewables and the policies and assumptions outlined above, our estimates of jobs created are graphed in Figure 3 below:

**Figure 3: Jobs in renewable energy, historic and election policies**



Source: ABS (2016) *Employment in Renewable Energy Activities*, published policies of parties, jobs intensity data from ROAM report, Australia Institute analysis

Figure 3 shows that employment in renewables was growing strongly from 2010 to 2013. Following this peak, however, there was a sharp decline, almost certainly related to the uncertainty around renewable energy policy under the Abbott government.

Under the Greens policy of 90% renewables by 2030, we estimate that employment in renewables would resume the growth seen at the start of the decade, increasing from the current 14,020 to just over 30,000 by 2020. Construction would then slow, with another 5,000 jobs being added over the following decade.

Labor's policies follow a similar trend, but at a far lower level, with employment rising to 2020, and then slow growth out to their 2030 target, reaching just over 20,000.

We estimate that under the Coalition's current policy renewable jobs would never again reach their 2012 peak. Some employment growth would occur to 2020, their target year, followed by decline as construction ends and employment is largely restricted to operational jobs.

Importantly, some of these jobs will come at the expense of electricity generation in the fossil fuel sector. Fossil fuel electricity generation provided about 8,080 jobs in fossil fuel at last census.<sup>6</sup> There is clearly substantially more employment potential in building and operating new renewable energy generation than maintaining fossil fuels. Estimating how an increase in renewable investment and employment would affect employment in other parts of the electricity sector is beyond the scope of this report. It is important to note, however, that growth in one industry often comes at the expense of others and a transition to renewables is unlikely to be an exception.

The recent announcement by Prime Minister Turnbull to divert \$1 billion from the Clean Energy Finance Corporation to a new 10 year 'Reef Fund' is not likely to impact on how much renewable energy will be produced in Australia nor how many people will be employed in renewable energy. Efforts to help protect the Great Barrier Reef from pollution are welcome, but they should not be at the expense of investment in renewable energy that help address the Reef's battle with climate change.

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<sup>6</sup> Australian Bureau of Statistics. (2011) *Census of population and housing*, accessed through TableBuilder Basic, <https://www.censusdata.abs.gov.au/webapi/jsf/login.xhtml> Accessed 2 June 2016.

# Discussion and conclusion

In 2010 Australia ranked 4th in the world on the Renewable Energy Country Attractiveness Index (RECAI), which is published by Ernst & Young. We were behind only US, China, Germany and the UK (in that order). The authors were particularly positive about new funding agencies for renewable energy, "...Australia is attracting admiring glances from investors eager for a slice of its new US\$10b Clean Energy Finance Corporation."<sup>7</sup>

The renewable energy sector has the potential for substantial growth, particularly in regional areas, where large scale facilities are located. With Australia's labour force of over 12 million people, no single industry or policy area can solve the whole country's employment issues.<sup>8</sup> However, the strong growth seen up to 2013 could be regained under policies such as endorsed by the Greens and to a lesser extent the ALP.

The Coalition's policies look set to continue the stagnation in renewables employment seen since they took office.

When the Coalition government was elected in 2013, it changed policies and set a new narrative about clean energy. By 2015 investment in large scale renewables had plummeted 90% year on year, according to Bloomberg New Energy Finance.<sup>9</sup> Australia's reputation fell significantly, with our place on the RECAI dropping to 13th.

Ernst & Young said "Australia's Government appears to have launched an all-out attack on the country's wind sector while apparently softening toward utility-scale solar...". Acknowledging the more constructive attitude of PM Turnbull and the bipartisan agreement to set the Renewable Energy Target at 33,000 GWh, it said the federal government continued to send "mixed signals" (p.18). In the latest Index update (May 2016) Australia was ranked 10th.<sup>10</sup>

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<sup>7</sup> Ernst & Young. (2013). *RECAI Renewable energy country attractiveness index* (Issue 37, May) [http://www.ey.com/Publication/vwLUAssets/RECAI\\_renewable\\_energy\\_country\\_attractiveness\\_indices\\_-\\_Issue\\_37/\\$FILE/RECAI-May-2013.pdf](http://www.ey.com/Publication/vwLUAssets/RECAI_renewable_energy_country_attractiveness_indices_-_Issue_37/$FILE/RECAI-May-2013.pdf), Ernst & Young, London, p.10

<sup>8</sup> Australian Bureau of Statistics (2016) *6202.0 - Labour Force, Australia, Apr 2016*, <http://www.abs.gov.au/ausstats/abs@.nsf/mf/6202.0>

<sup>9</sup> Peter Hannam (2015). 'Australia's renewable energy investment grinds to a halt', *Sydney Morning Herald* (15 April 2015), <http://www.smh.com.au/environment/climate-change/australias-renewable-energy-investment-grinds-to-a-halt-20150414-1mkn70.html#ixzz488ROXJvU> Accessed 13 May 2016.

<sup>10</sup> Ernst & Young. (2016). *RECAI Renewable energy country attractiveness index* (Issue 46, February 2016) <http://www.ey.com/GL/en/Industries/Power---Utilities/EY-renewable-energy-country-attractiveness-index-feb-2016>

The importance of policy support for renewables cannot be understated. The absence of policy support for the last three years has seen Australia move in the opposite direction to the rest of the world. The Frankfurt School of Business reported two months ago that 2015 was the first year when new renewable energy installations - excluding large scale hydro - accounted for the majority of generation capacity built. That is 53.6% of generation built, for a total of US\$285.9 billion invested.<sup>11</sup>

According to the REN21 Renewables 2016 Global Status Report, published in June 2016 renewable energy investment was more than twice the size of fossil fuel investment in 2015.<sup>12</sup> (REN21, p.12). A total of 173 countries now have policy targets for renewable energy.

REN21 puts this growth of renewables in context:

This growth occurred despite tumbling global prices for all fossil fuels, ongoing fossil fuel subsidies and other challenges facing renewables, including the integration of rising shares of renewable generation, policy and political instability, regulatory barriers and fiscal constraints. (REN21, 2016, p.6)

As a result of this growth, renewable energy accounts for 8.1 million jobs globally, according to a recent report from the International Renewable Energy Agency (IRENA). This includes 2.7 million jobs in solar PV, with 1.6 million in China alone. There are over 1 million jobs in wind energy, with around half of those in China and 88,000 in America.<sup>13</sup>

Unlike other economic or climate policies<sup>14</sup> such as company tax cuts and carbon prices, which are be politically divisive, renewable energy is very popular across the electorate.

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<sup>11</sup> Frankfurt School-UNEP Centre/Bloomberg New Energy Finance. (2016) *Global Trends in Renewable Energy Investment 2016* <http://fs-unep-centre.org/publications/global-trends-renewable-energy-investment-2016>, Frankfurt School of Finance & Management, Frankfurt am Main, p.11

<sup>12</sup> REN21. (2016) *Renewables 2016 Global Status Report*, [http://www.ren21.net/wp-content/uploads/2016/06/GSR\\_2016\\_Key\\_Findings.pdf](http://www.ren21.net/wp-content/uploads/2016/06/GSR_2016_Key_Findings.pdf), REN21, Paris, p.12

<sup>13</sup> IRENA. (2016) *Renewable Energy and Jobs - Annual Review 2016*, [http://www.irena.org/DocumentDownloads/Publications/IRENA\\_RE\\_Jobs\\_Annual\\_Review\\_2016.pdf](http://www.irena.org/DocumentDownloads/Publications/IRENA_RE_Jobs_Annual_Review_2016.pdf), IRENA, Abu Dhabi, p.5, 7-8

<sup>14</sup> Dan Cass and Christopher Wright. (2016) 'Beyond the market fetish: Using renewables to build political momentum for climate action', *RenewEconomy*, (17 March), <http://reneweconomy.com.au/2016/beyond-the-market-fetish-using-renewables-to-build-political-momentum-for-climate-action-66974> , Accessed 10 June 2016.

If Australia's major political parties want to generate economic growth, then renewable energy is a perfect policy. It will lead to jobs and wider economic benefits and at the same time has significant local environmental outcomes as well as making a major cut in our climate footprint.

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