

The Ruhr or Appalachia?

Towards estimates of the scale of costs of a Just Transition

Appendix to IRRC Report for CFMMEU Mining and Energy



Peter Sheldon
Raja Junankar
Anthony De Rosa Pontello

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Introduction: Costs, savings and investments

This IRRC report for CFMMEU Mining and Energy suggests viewing decarbonisation of energy generation as ideally involving three overlapping structural dimensions:

1. clean-energy transition;
2. clean-energy, economic-development transition; and
3. Just Transition.

As the report argues, the costs flowing from action on one dimension may be affected by decisions taken in one or both of the others. A Just Transition approach to costing explicitly recognises that both the routine operations and any closures of coal-fired power stations produce economic cost “externalities”. In doing this, this approach produces a much more accurate picture of the true costs of decisions—such as whether to close a power plant or not—and who carries the various costs under each option.

Importantly too, a Just Transition approach explicitly recognises that investments in one transition dimension can remove or reduce likely costs in another. For example, as part of a clean energy transition, investment in renewable energy generation in the locality of a power station closure fosters local economic development. In doing this, it may also reduce the otherwise necessary Just Transition costs of employment creation or improved redundancy compensation for former power station workers.

Weller, Sheehan and Tomaney (2011: 81-82) estimated that, without efforts to plan for a Just Transition, typically one third of any workforce made redundant through structural change finds jobs that are equal or better (but maybe after some early inferior employment), one third only manages to find inferior employment, and another third leaves the workforce permanently—often through involuntary retirement or unemployment. To avoid or reduce the predictable and preventable individual and social costs of the two final destinations means seeing Just Transition as an opportunity to invest in people, communities and regions.

The report also points out the wider costs of an unfair transition, one that allows the former workers and their communities to carry the costs of Australia decarbonising its energy production. For example, the Committee for Gippsland (2016: 43) estimated that, in the wake of a closure of one of the Latrobe Valley coal power plants, the consequent negative local employment multiplier would add more than double the number of local job losses to those sustained when the plant closed.

We have therefore explained in the report how one of the largest, most immediate impacts of plant closures, mass redundancies among those employed at the power station, can directly and indirectly harm not only those made redundant but their families, other local businesses and services, and their workers. In weakening the wider local economy, these processes can provoke heavy outward migration, collapsing house prices, greatly reduced local government revenues and a contraction of government and municipal services.

This broader view is crucial. Any estimating of the potentially very large corporate and governmental spending that would be necessary to achieve a Just Transition must be counterbalanced against the enormous private costs to individuals, families and local communities of an unjust transition. At the same time, estimates need to include how these private costs—in unemployment, poverty, homelessness, physical and mental illnesses, family breakdowns—then generate public/social costs through the health and welfare systems, and sometimes, the criminal justice system. This requires, at minimum, a whole-of-government approach to estimating potential costs and savings from new investment.

Those Just Transition costs include many that are, in fact, important investments in:

- ◇ economic innovation, diversification and technological up-lift;
- ◇ local and regional infrastructure—in e.g. education, transport and health;
- ◇ higher education diffusion and workforce skill development;
- ◇ improvements to the natural and built environments;
- ◇ workplace and public health; and of course,
- ◇ climate change remediation.

In any case, Just Transition costs—and those necessary for a clean-energy, economic-development transition, however large—will only be a small fraction of the total costs of shifting energy generation from coal to renewable sources, an inevitable process—and investment schedule—already well underway. The new investment is already coming from owners of existing coal-powered energy companies, governments as well as new entrants that specialise in renewable energy generation. Below, we provide a few recent estimates to indicate the dimensions of this investment.

Estimating costs for a clean-energy transition

Irrespective of the pressing requirement for a clean energy transition, as our Appendix 1 shows, a significant number of Australia's coal-fired power stations are approaching the end of their technical lives. This means that, in any case, very large new investments in power generation will be needed.

In 2013, the Australian Energy Market Operator (AEMO, 2013: 7-9), in a study for the Australian government, estimated that to construct a full clean-energy transition for the NEM states would cost at least \$219 billion (by 2030) to \$332 billion (by 2050), depending on the abatement and demand scenario chosen. And, the AEMO made clear its estimates worked

on narrow assumptions (that excluded, for example, land acquisition and costs to the transmission industry), were highly hypothetical (in the absence of knowledge regarding future technological change and government policy) and were, even so, likely too low. [Within this, we might include Prime Minister Malcolm Turnbull's March 2017 announcement to build an Australian government-funded Snowy Mountains pumped-hydro scheme at a (for now, and not fully costed) estimated cost of \$2 billion.]

Estimating savings from a clean-energy transition

The externalised costs, to all parties, of a power station closure depend on numerous factors. A closure announced to take place with sufficient notice and with clear planning for reducing the impacts on workers and the local community would impose lower costs on the individuals involved, local community and the government. A sudden closure would have significantly larger multiplier effects on the local and even regional economies.

However, there are also positive, if passive, impacts from the closure of power stations. There is extensive international literature on the adverse public health impacts of coal power stations, as noted by the Climate Council (2014). However, there is a lack of locally-based empirical research drawn from Australian experiences. Rather, some studies extrapolate findings from, for example the USA—and particularly Appalachia—to develop estimates for the Australian context (e.g. Ward and Power, 2015). However, these approaches overlook differences in important variables across countries, whether regarding, for example, production practices and technology used, regulatory regimes in place or geographical factors (Colagiuri, Cochrane and Girgis, 2012). Our Chapter 9 of our report has highlighted particular socio-economic and regulatory difficulties facing Appalachian coal communities that mark them as different to those in Australia.

Recent public health research collected from Hunter Valley areas with high concentrations of coal mines and coal-fired power stations have largely failed to find consistent, significant differences in many of the anticipated forms of negative public health effects compared to state-wide averages (Colagiuri, Cochrane and Girgis, 2012: 25-31; Merritt et al., 2013). As Colagiuri et al. (2012: 31) point out, that does not mean those negative effects are absent; the findings may just reflect the lack of appropriately designed studies that explore causes of disease patterns in the Hunter Valley.

Nonetheless, reducing exposure to coal power stations will have a health benefit though it is very difficult to quantify as well as improving other factors important to the lives of local residents, such as their sense of environmental wellbeing, through for example, reduced noise, and reduced stress (Colagiuri and Morrice, 2015; Colagiuri, Cochrane and Girgis, 2012). Thus, power station closures would produce savings (or revenues) as well as costs.

Furthermore, the areas surrounding the power station and the mines will benefit from decreased pollution through enjoying cleaner land, rivers, lakes, and air. Particularly after plant and mine site rehabilitation is completed, this may offer opportunities—both com-

mercial and not—for the development of other activities that require a clean environment: tourism; agriculture; forestry; health facilities, sporting and recreational facilities. Some of these bring advantages for further climate change abatement; others can improve the local economy, well-being and public health. These factors too can be factored into calculations as eventual revenues or savings.

Factors in estimating the costs of Just Transition power station closures

The costs of closure, from a Just Transition perspective, would include the following cost items. Some of these are the clear (legal) responsibility of plant (and mine) owners, for others funding responsibility remains unclear and open to negotiation or further legislation, and for still others, the costs will inevitably fall to governments to fund. They cover labour supply and demand as well as forms of compensation for those most disadvantaged:

- a. The costs of re-training and education programs for redundant workers. Most power station workers have trade qualifications plus informal skills rather than university degrees;
- b. Subsidies to redundant workers who find lower-paid work for a period of time (say 36 months). Most workers in electricity generation power plants have higher than average wages for their formal skill/education levels relative to other industries;
- c. Other labour market programs for redundant and unemployed workers (agency to help find new work, re-settlement grants to workers to move to new areas, etc.)
- d. Redundancy payments to workers. The amount paid depends on the size of the workforce and the seniority levels of employment;
- e. Unemployment benefits to unemployed workers (say 12 months). If there is sufficient advance planning, some workers may have moved out prior to closure, perhaps to another power station. Others may have access to a local power station employee pooling arrangement;
- f. Local infrastructure spending. This might include costs of remediation of the power station site and, where linked, its coal mine.
- g. Funding of local cluster formation and development, particularly taking advantage of local assets or experience (including links to eg university or technical college).
- h. Financial support for strengthening local factors: spending on higher and technical education, transport and health services. This may include subsidies to encourage new investment in renewable energy (solar and wind) in the affected region and/or support for local businesses to assist in their market diversification.

Some of these costs will also feature as savings or investments, particularly those aimed at improving the quantity and quality of labour supply and demand, whether, for example, through skill development programs or site remediation.

Some crude estimates of the costs of a Just Transition

It is very difficult to provide good estimates of the costs of a just transition without access to detailed data and a comprehensive analysis using good economic and econometric methods. Unfortunately, we do not even have details of the levels of employment in the different power stations, including their age distributions.

We need to provide estimates of remediation costs, redundancy costs, subsidies to workers who find alternative employment in lower paid jobs, training costs for helping unemployed workers, and costs of subsidising investment in regions where power stations have closed.

Ideally, we would also need estimates of the costs of externalities on health and the environment.

However, we are fortunate to have some broad data of government funding packages announced following Engie's Hazelwood closure announcement. Together, with other arrangements they suggest concerted strides towards a Just Transition response, after the fact. Therefore, we can provide some crude estimates based on several simplifying assumptions for:

- ◇ Redundancy payments
- ◇ Bridging compensation for workers getting worse jobs
- ◇ Job Transfer (pooled redundancies and redeployment) Schemes
- ◇ Local and regional infrastructure investment
- ◇ Supporting local clusters/economic development zones
- ◇ Retraining and further education

It is important to note that the cost estimates provided here include costs that private firms have to pay in meeting their legal obligations. These should therefore *not* be identified as part of the additional social costs of achieving Just Transition. We clearly indicate this distinction in the titles for relevant items and when aggregating the cost figures at the end of this document. Further, the likely timing of power station closures means that these costs would be incurred over decades; the majority would therefore not appear in four yearly public budget horizons.

Remediation costs/investment \$11.3 billion (firms liable for costs)

It is not clear whether this spending should feature in costings for a Just Transition. On the one hand, firms are bound through a legal responsibility to remediate their sites. However, their bonds are often inadequate. In the unfortunate situation where a government could or did not seek a true level of investment by the company, this would fall to the

government, probably at the state level. At that point, it would be part of a Just Transition program. As well, in either case, it represents an investment that should assist with other Just Transition goals.

We estimated the remediation costs using a simple approximation. Engie has committed \$743 million to the costs of remediation for Hazelwood power station and mine. The power station had a capacity of 1760 MW. Using this ratio relative to the total MW capacities of all the other power stations, we estimate the total costs of remediation for all the coal-fired power stations at \$11.3 billion. This is an upper estimate, as more recently-built power stations are likely to be easier to remediate.

Remediation costs are a private cost for which power companies are liable irrespective of Just Transition policy. We therefore distinguish them from the additional social costs of achieving Just Transition.

Redundancy payments \$2.29 billion (firms liable for costs)

These are costs incurred by power station owners and other employers.

Engie has committed \$342 million for redundancy (\$150 million) and leave entitlements (\$194 million) for Hazelwood's direct employees, of whom there were 450 at time of closure. As the accrued leave entitlements would be payable in the ordinary course of business, we have not counted them as a closure cost. Although approximately 125 Engie employees will continue to work for the next few years on Hazelwood site remediation, it appears that Engie will pay redundancy for all 450.

Employees (c. 300) of contractors to Engie will also receive statutory redundancy and leave payments but we have no information on the numbers or sums involved. Some of these workers may also continue to work for those contracting companies, perhaps on the post-closure site remediation and so would not get redundancy pay. We therefore estimate redundancy payments to contractors' employees at \$54 million.

We therefore worked our estimates on \$215 million for 750 workers at Hazelwood (direct employees and contractors' employees). Lacking other adequate data, we then estimated the total industry workforces by using Hazelwood's figures adjusted by power station capacity. This gave us an estimated total of 7,700. This would be an over-estimate as more recent power stations have lower employment-intensities than Hazelwood. However, as a counter point, it does not include—but it should—jobs in coal mines that are operated as separate businesses to power stations but are still highly dependent on them. We therefore conclude that the result is close to our previously-determined working figure of 8,000.

Applying Hazelwood's data as a ratio across an estimated 8,000-person industry workforce for all power stations, produced a total figure of \$2.29 billion. This is also a private cost to power station owners rather than an additional social cost of Just Transition.

Bridging compensation for workers getting worse jobs \$279 million

These are costs that will probably be incurred by government.

ABS (2017) data show workers in the power and other utilities sector earn, on average, more than \$1,000 per week more than those in low-paid industries like retail, accommodation and food service—industries that typically serve to provide low-level jobs for those made redundant from other sectors.

These are earnings data and pick up those sectors' high levels of casualisation, low pay and part-time work (ABS, 6306.0—Employee Earnings and Hours, Australia, May 2016. Available at: <http://www.abs.gov.au/ausstats/abs@.nsf/mf/6306.0/> (accessed 15 April 2018).

We estimate subsidies to workers based on this earnings differential (i.e. it factors in number of hours worked and paid overtime) of about \$1,000 per week for a third of the workers who may only find much lower paid employment, and assume the subsidy is paid for three years. This gives us a total of \$279 million.

Job transfers (pooled redundancies) \$240 million

As a result of activity from the CFMEU Mining and Energy Division, the Victorian Government committed to spending up to \$20 million to support an employee transfer scheme from Hazelwood to the three nearby power stations. In simple terms, the public sector contributes towards the cost, to other nearby power stations, of offering voluntary redundancy to some of their near-retirement workers in order to make way for younger workers from those power stations that are closing. These are costs that the other power station owner would not otherwise incur.

With a well-planned program of closures, this type of scheme would be available to workers at all the power stations which have at least one other in their vicinity. By aggregating power stations according to reasonable proximity, there are:

- ◇ four in Hunter Valley/Lake Macquarie region of NSW;
- ◇ three more remaining in the Latrobe Valley;
- ◇ four in Queensland's wider Rockhampton-Gladstone area
- ◇ two in Queensland's Darling Downs;
- ◇ two in Queensland's South Burnett region; and
- ◇ three in and around Collie in Western Australia.

This would mean that, in NSW, three power station workforces would be able to access such a scheme; two more in the Latrobe Valley; a total of five in Queensland; and two in Western Australia.

That leaves 12 power station workforces as potential beneficiaries of this type of innovative scheme. We cannot know now which order they will close nor what the sizes of their workforces will be at closure. However, if we assume that each such scheme will cost \$20 million (over time the costs will rise), this brings an estimate of \$240 million. This is an additional social cost in achieving Just Transition.

Local and regional infrastructure investment/strengthening local factors \$2.6 billion

These are costs that will be incurred by government.

The Victorian government has pledged an additional \$174 million and the Australian government \$20 million for local and regional infrastructure investment in response to the closure of Hazelwood. As well, the Australian government pledged a further \$20 million for local “jobs and growth” investment in response to the closure of Hazelwood. We have arbitrarily allocated \$6 million of that funding to this heading.

There appears to be a sense, in reports from the Latrobe Valley, that this \$200 million is, at least, a very good start. Furthermore, it responds not only to the Hazelwood closure but to the ongoing legacy of previous local difficulties since the privatisations of the 1990s.

Hypothetically, the regional grouping of power stations mentioned above makes it likely that such funds may not be necessary for every such closure but could be rationalised across local coal power regions. For example, a region with three or four power stations might get twice this amount over the time they all closed. Where there are two stations, that would bring just this one \$200 million investment. Where there is only a single power station, it may need only a proportion, for example half, of that investment. We estimate therefore a multiple of 13 such investments of \$200 million and a total of \$2.6 billion. This is an additional social cost of achieving Just Transition, but might well overlap with other infrastructure and industry development objectives and strategies.

Supporting local clusters or economic zones investment \$975 million

The Victorian government has pledged an additional \$50 million investment for a regional Economic Growth Zone to assist diversified development and \$20 million for a Latrobe Valley Authority to assist local development through managing the overall transition. As well, the Australian government pledged an additional \$20 million for local “jobs and growth” investment in response to the closure of Hazelwood. We have arbitrarily allocated \$5 million of that funding to this heading. There appears to be a sense, in reports from the Latrobe Valley, that this \$75 million is, at least, a very good start. Furthermore, it responds not only to the Hazelwood closure but to the ongoing legacy of previous local difficulties since the privatisations of the 1990s.

Hypothetically, the regional grouping of power stations mentioned above makes it likely that such funds may not be necessary for every such closure but could be rationalised across local coal power regions. For example, a region with three or four power stations might get twice this amount over the time they all closed. Where there are two stations, that would bring just this one \$75 million investment. Where there is only a single power station, it may need only a proportion, for example half, of that investment. We estimate therefore a multiple of 13 such investments of \$75 million and a total of \$975 million. This is an additional social cost of achieving Just Transition, but might well overlap with other infrastructure and industry development objectives and strategies.

Retraining and further education \$29.2 million

The Australian government pledged an additional \$20 million for local “jobs and growth” investment in response to the closure of Hazelwood. We have arbitrarily allocated \$9 million of this funding to that heading as the government announced training. The Victorian government is also currently pledging \$6 million from a special retraining fund (<https://www.sro.vic.gov.au/backtowork>) but there is undoubtedly more available through the traditional budget processes. We conservatively hypothesise another \$4 million per year over five years (\$20 million). Total estimated amount for Hazelwood would therefore be approximately \$35 million.

Another way to arrive at an aggregate national estimate is to look at that workforce in the light of the Victorian government scheme. The special fund allocates \$5,000 per retrenched Hazelwood employee. If we assume a total national coal powered-energy workforce of 8,000, and one-third of these take up the training allowance, this gives a total of \$13.3 million. If we add Australian government funding (\$9 million), this gives \$22.3 million. If we take a midpoint between these estimates, we get \$29.2 million. This is an additional social cost of achieving Just Transition, but might well overlap with other infrastructure and industry development objectives and strategies.

Additional unemployment and other social security benefits

These costs will be greater if Just Transition is done badly or not done at all. In any event, a substantial public cost is likely to be incurred due to major industry restructuring. For this exercise, it appears too difficult to estimate given the lack of data about every factor that may be involved.

Summary of estimated costs

These costs would be incurred over at least three decades unless power station closures are accelerated.

Private costs

These costs would be met by private firms under current legal obligations with respect to closure and are not an additional cost of achieving Just Transition:

- ◇ Site remediation—\$11.3 billion
- ◇ Redundancy payments—\$2.29 billion

Total—\$13.59 billion

Social costs

These are estimated additional social costs of achieving Just Transition. Under some scenarios including carbon pricing these could be funded by industry and consumers; in the absence of specific funding mechanisms they rely on general taxation revenue.

- ◇ Bridging compensation for workers getting worse jobs—\$279 million
- ◇ Job transfers (pooled redundancies)—\$240 million
- ◇ Local and regional infrastructure investment/strengthening local factors—\$2.6 billion
- ◇ Supporting local clusters or economic zones investment—\$975 million
- ◇ Retraining and further education—\$29.2 million

Total: \$4.123 billion

A comparison from our case studies

In the case of the Ruhr (see case in Section 7 in the report), the costs of the stage 2 closure program, from 2007, were much heavier in the early stages as the tripartite process managed the more disruptive early stages. Thus, governments spent 2 billion Euros (A\$3.08 billion) in 2011 alone but, with the closure of the industry, this will fall to an estimate of approximately 250 million Euros (A\$385m) in 2019. These costs include support to workers, subsidies to new industry to move to the declining region, and rehabilitation of mine sites (estimates drawn from Wodopia, 2017: 21). This is a good indication that proper early planning, staging and preparations can bring positive human and community outcomes while gradually reducing costs. To not prepare properly means costs—human and financial—increase over time.

Further, and as mentioned earlier in this Appendix, the investment cost for transitioning entirely to clean energy in Australia is regularly estimated in the hundreds of billions of dollars through to 2050. The cost of achieving Just Transition is very modest by comparison.

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The authors:

Peter Sheldon, Director of the Industrial Relations Research Centre, and Professor, School of Management, UNSW Sydney.

Raja Junankar, Visiting Professor, Industrial Relations Research Centre, UNSW Canberra.

Anthony Pontello de Rosa, Research Assistant, Industrial Relations Research Centre, UNSW Sydney.

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Cover photo: The Hazelwood brown coal power station that closed in March 2017, with the loss of approximately 750 direct jobs, and possibly more than a thousand in related industries.

Photo by Simpsons fan 66 at the English language Wikipedia

