

# Gas Fired Backfire

Why a “gas fired recovery” would increase emissions and energy costs and squander our recovery spending

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*Subsidising the gas industry is a very poor option for stimulus and recovery spending. It would provide few jobs and would not bring down energy prices. There are many electrical alternatives to gas for manufacturing that are far cheaper than gas. Covid 19 recovery spending provides a once in a generation opportunity to electrify our manufacturing industry to permanently reduce energy costs. Locking in gas for manufacturing on the basis of a temporary fall in prices will undermine Australian manufacturing for decades to come.*

Discussion paper

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# Summary

Australia will spend many billions of dollars on economic recovery from the Covid 19 crisis. The core purpose is to create jobs to tackle expected record unemployment.

However the gas industry is one of the least labour intensive industries in Australia, providing around one eighth as many jobs per dollar spent as the average for all Australian industries. Investing recovery funds in virtually any other industry would create more jobs.

Subsidising gas will also displace renewable energy and lower cost efficient electrical alternatives to gas for our households, businesses and industry that can be run off renewable energy. This will lock Australia into both higher emissions and higher energy prices for decades to come.

Few of the multinational oil and gas companies operating in Australia pay any company tax at all in Australia. As such, recovery funds used to subsidise the gas industry are unlikely to provide any lasting benefit to Australia. A significant proportion of any taxpayers' money given to the industry is likely to be expatriated to shareholders overseas.

Recovery funding assistance provides Australian manufacturing with a unique opportunity to shift to electrification of many processes, providing clean, efficient, cheaper and more reliable alternatives to gas. If the Government locks Australian industry into dependence on this outdated fuel, on the basis of a temporary fall in gas prices, it will undermine Australian manufacturing for decades to come.

Assisting the manufacturing industry to electrify its processes will also help achieve one of Australia's key strategic priorities, to reduce greenhouse gas emissions to tackle climate change which represents an even greater threat to Australia than the Covid 19 pandemic.

Spending recovery money on "gas fired recovery" will squander these opportunities.

# Introduction

Australian Governments have closed down large sections of the Australian economy to combat the pandemic. These measures were absolutely necessary for public health reasons, but have the unintended negative consequences reducing growth and increasing unemployment. In these circumstances, it is clear that Australia will require many billions of dollars in stimulus spending to combat unemployment and drive economic growth.

Because job creation is a central aim recovery spending, and stimulus spending must be directed at sectors of the economy that are relatively labour intensive. It also presents Australia with a once in a generation opportunity to take measures to modernise parts of our economy to permanently reduce energy prices and emissions.

However, the Commonwealth Government and state governments have signalled intentions for recovery efforts to focus on gas.

Commonwealth Ministers have announced plans for a “gas fired recovery”, including subsidies to both gas mining and gas consumption.<sup>1</sup> The Commonwealth also set up a ‘National Coronavirus Coordination Committee’ to which it appointed gas mining and petrochemical executives,<sup>2</sup> who are already urging more gas as key to recovery.<sup>3</sup> COAG Resources Ministers have “agreed for the need to maintain onshore exploration to the greatest degree possible during and post COVID-19” and emphasised “the role resources will play in Australia’s economic recovery”.<sup>4</sup>

The gas industry is in fact a very poor option for stimulus and recovery spending. It provides few jobs. The industry also pays very little tax. More gas will not bring down energy prices. More gas will however lock in increased emissions, displacing the renewable energy we need to reduce energy prices and tackle global warming.

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<sup>1</sup> Foley (2020) *Gas to fire economic recovery and capitalise on cheap oil prices*, <https://www.smh.com.au/politics/federal/gas-to-fire-economic-recovery-and-capitalise-on-cheap-oil-prices-20200421-p54lw8.html>

<sup>2</sup> NCCC (2020) *Who We Are*, <https://www.smh.com.au/politics/federal/gas-to-fire-economic-recovery-and-capitalise-on-cheap-oil-prices-20200421-p54lw8.html>

<sup>3</sup> Davis (2020) *Why is the Covid commission backing a fertiliser plant as its top recovery project?* <https://www.theguardian.com/business/2020/may/03/why-is-the-covid-commission-backing-a-fertiliser-plant-as-its-top-recovery-project>

<sup>4</sup> COAG Energy Council (2020) *2nd Resources Ministers Roundtable Meeting Communique Thursday 16 April 2020*, <http://coagenergycouncil.gov.au/sites/prod.energycouncil/files/publications/documents/Resources%202nd%20Meeting%20Communique%20-%20COAG%20Resources%20Ministers%20Roundtable%20-%20April%2016%202020.pdf>

# Squandering our recovery spending

## JOB POOR

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Providing jobs is the main priority of Covid 19 recovery spending. However gas is capital intensive and job poor. It is one of the least labour intensive industries in the entire economy.

Australia is currently the world's largest exporter of liquefied natural gas (LNG). Yet the oil and gas extraction industry employs just 0.2% of all Australian workers.<sup>5</sup> In a room of 500 Australian workers, less than one on average would work in gas mining.

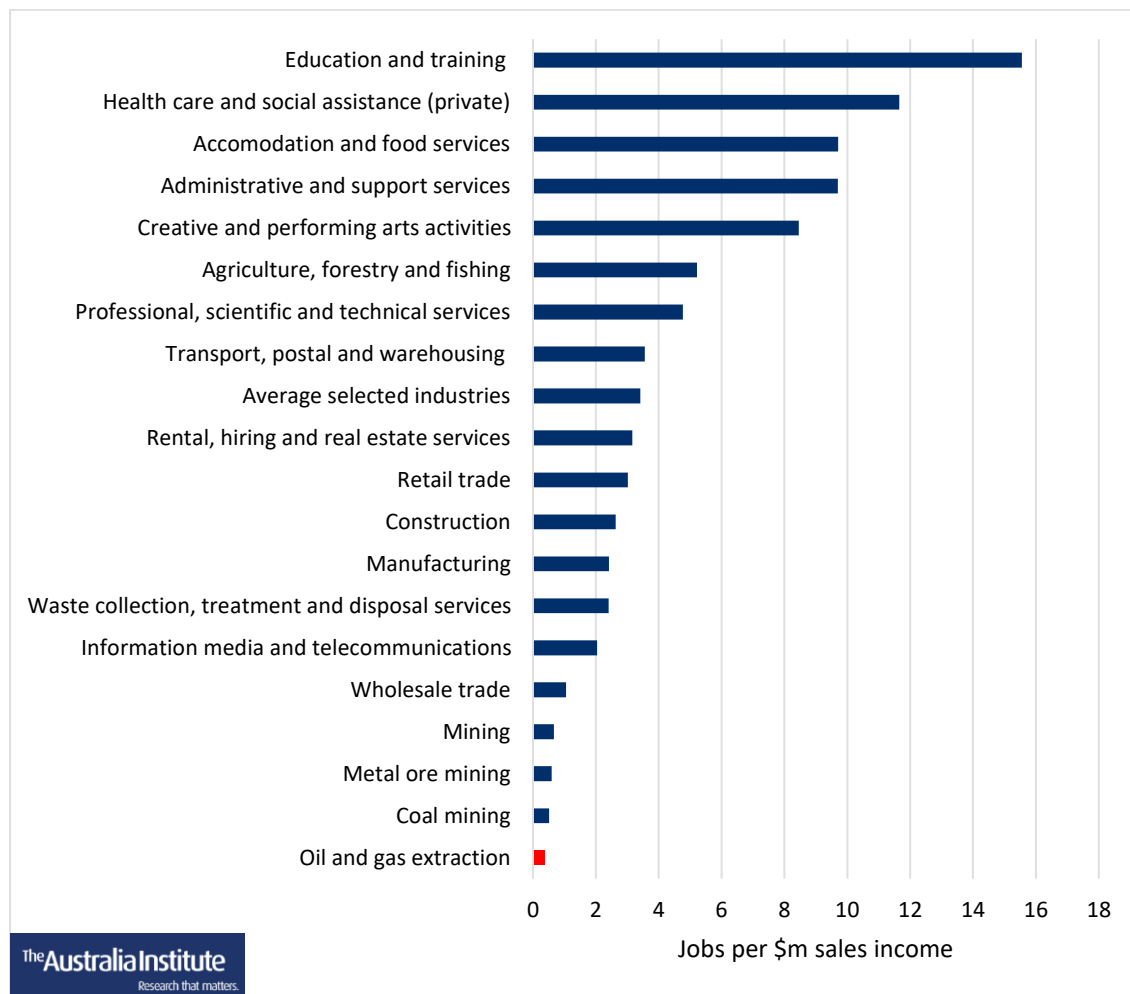
Figure 1 below shows the ratio of employment to sales income for different industries.

As the Figure shows, mining in general is the least job intensive form of economic activity. Oil and gas mining specifically is *even less* job intensive than other forms of mining.

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<sup>5</sup> ABS (2020) 81550DO002\_201718 Australian Industry, 2017-18,  
<https://www.abs.gov.au/AUSSTATS/abs@.nsf/DetailsPage/8155.02017-18?OpenDocument>

**Figure 1: Job intensity of selected Australian industries (jobs per \$m sales income)**



Source: ABS (2020) 81550DO002\_201718 Australian Industry, 2017-18,  
<https://www.abs.gov.au/AUSSTATS/abs@.nsf/DetailsPage/8155.02017-18?OpenDocument>

For every million dollars of sales income, only around 0.4 jobs are created on mining gas. The average for all Australian industries is 3.4 jobs.

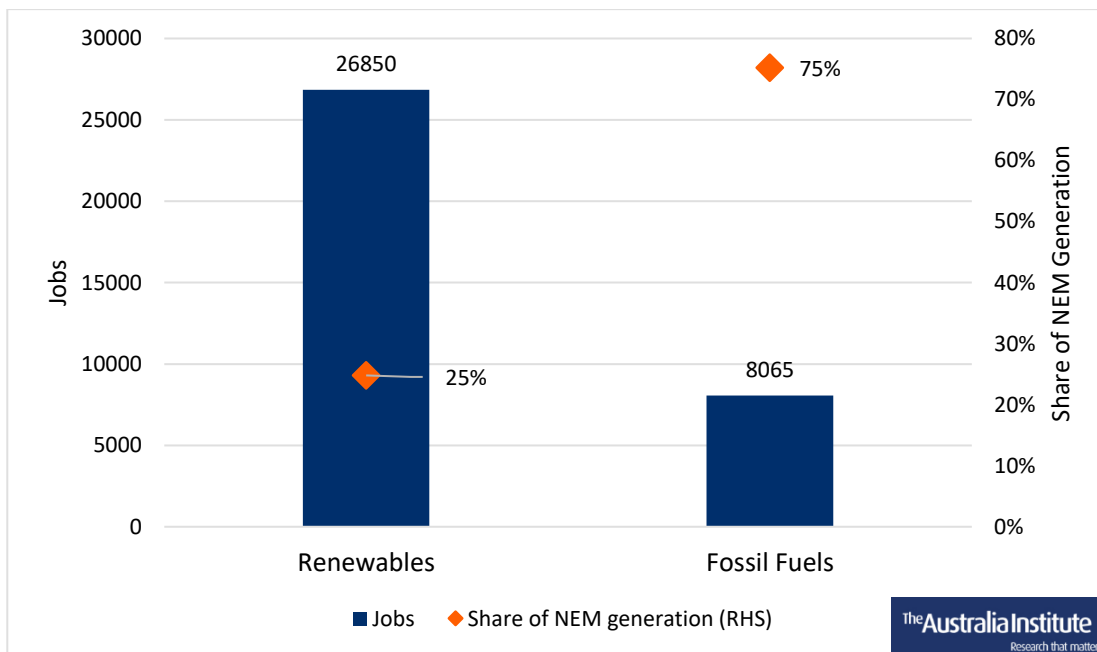
The story is the same when approached via other metrics for labour intensity. For example, industries can be assessed in terms of jobs per gross value added. On this metric, oil and gas mining is again the single most job poor industry subcategory, behind the rest of the mining sector and even gas supply.

Subsidising gas would squander our recovery spending. Gas is among the very worst options for stimulus, which should focus on jobs-rich industries. Investment in almost any other industry will provide more jobs than in the gas industry.

Moreover, facing unprecedented low prices and volatility the gas industry itself is delaying major projects. In a context of low prices it makes *even less* sense to subsidise new supply.

For electricity generation, renewable energy already provides many more jobs than gas. As shown in Figure 2 below, renewable energy employed 26,850 Australians in 2018-19, an increase of around a quarter in one year, and by three quarters in Victoria alone.<sup>6</sup> The number of Australians working in renewable energy is three times larger than the number working in coal and gas power stations as recorded in the 2016 Census (8,065 jobs), a number that is likely even lower now as some stations have closed.<sup>7</sup>

**Figure 2: Renewables vs fossil fuels – jobs vs share of NEM generation**



Source: ABS (2020) *Employment in Renewable Energy Activities, Australia, 2018-19*, <https://www.abs.gov.au/AUSSTATS/abs@.nsf/DetailsPage/4631.02018-19?OpenDocument>, ABS (2016) 2016 Census - Employment, Income and Education  
 OpenNEM (2020) *OpenNEM, FY20 to date*. <https://opennem.org.au/energy/nem>

The vast majority of Australians working in power generation are working in renewables, even though renewables only making up 25% of electricity production.<sup>8</sup> The data shows renewables are able to employ large numbers of Australians and to ramp up quickly. As the cheapest form of new power generation, even with storage, there are clear co-benefits for the electricity market.

<sup>6</sup> ABS (2020) *Employment in Renewable Energy Activities, Australia, 2018-19*, <https://www.abs.gov.au/AUSSTATS/abs@.nsf/DetailsPage/4631.02018-19?OpenDocument>

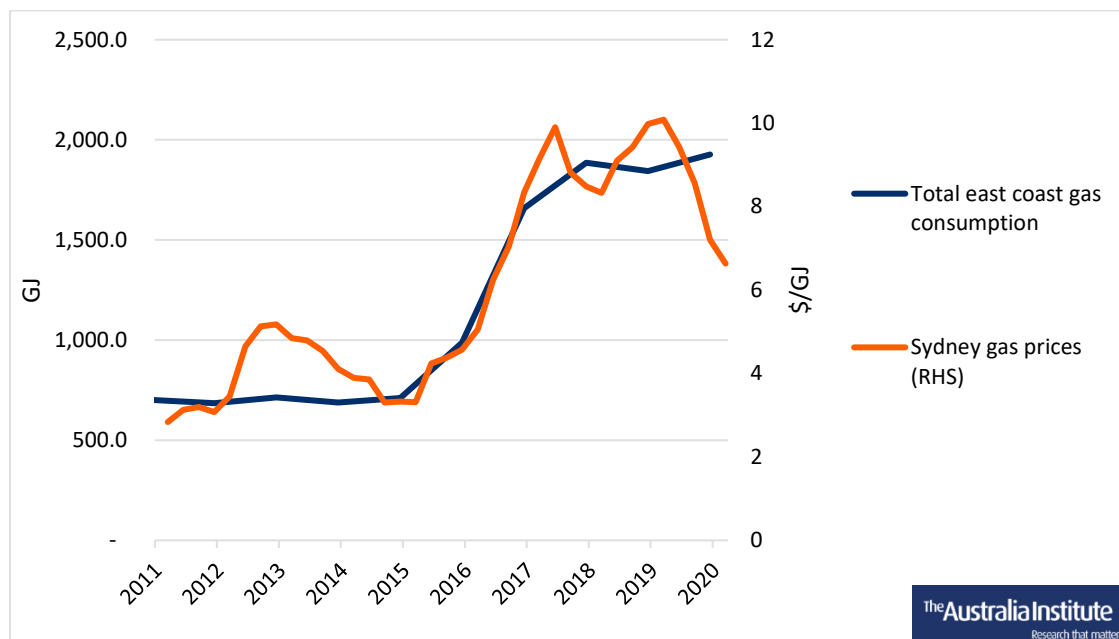
<sup>7</sup> ABS (2016) 2016 Census - Employment, Income and Education

<sup>8</sup> AEMO (2020) *Generation information, Key Connection Information Data File*, <https://aemo.com.au/en/energy-systems/electricity/national-electricity-market-nem/nem-forecasting-and-planning/forecasting-and-planning-data/generation-information>

## LOCKING IN HIGH ENERGY PRICES

Increasing gas production does not reduce the price of gas for Australian consumers, or even secure supply, as domestic consumers are now linked via export terminals to international gas markets. As shown in Figure 3 below, over recent years as gas production tripled, wholesale gas prices for Australian consumers also tripled.

**Figure 3: East coast gas production vs gas price**



Source: AEMO (2020) GSOO 2020, Figure 1 - Gas consumption actual and forecast, 2010-39, all sectors, Central scenario (PJ) <https://aemo.com.au/en/energy-systems/gas/gas-forecasting-and-planning/gas-statement-of-opportunities-gsoo>, AER (2020) STTM- Quarterly Prices, rolling three quarter average, <https://www.aer.gov.au/wholesale-markets/wholesale-statistics/sttm-quarterly-prices>,

Note the decline in gas prices at the end of 2019 and the first quarter of 2020. Even with unprecedented oil price wars and the coronavirus pandemic fuelling a collapse in world oil and gas prices, domestic gas prices remain higher than they were before the LNG expansion.

One of the reasons that gas prices will never go back to pre-LNG export levels is that most of the cheap gas in Australia has now been exported. Oil and gas companies usually extract gas with lower extraction costs first because it makes commercial sense to do so. As the fields with lower extraction costs deplete, only the higher cost fields remain, and the cost of extraction usually puts a floor under the gas price. With the LNG industry currently exporting twice the amount gas used in Australia annually, including gas from low cost fields in Bass Strait that were developed for domestic consumption, Australian consumers are increasingly being left with only high cost gas.

Government Ministers have suggested low prices are an opportunity for a 'gas fired recovery'. This is surprising, given impacts on Australian LNG exports. It has resulted in the



loss of around half the value in share prices of major gas exporters, like Woodside, Santos and Origin, all of which have delayed exploration or new projects and are likely to be facing loss-making exports under contract from their existing terminals.

While current low prices would seem to favour domestic consumption, the market outlook is deeply uncertain. Commercial assessments of new gas intensive equipment will have to assess risks of the return to higher prices.

In electric generation, the CSIRO and Australian Energy Market Operator (AEMO) have found that the renewables are lowest-cost ways to generate electricity from new power stations in Australia. This is even the case when adding the cost of six hours of storage to ensure renewable energy is available when it is needed.<sup>9</sup> The recent fall in gas prices have not increased gas generation to displace coal. Over the month of April 2020, even with low gas prices, gas provided just 7% of NEM generation, well below levels in 2019 of 9% and well down from the 2014 peak of 12%.<sup>10</sup> Existing gas generators already run at low capacity factors, making new capacity unnecessary.

Once capital is sunk into new gas power stations or manufacturing equipment that relies on gas, we lock our electricity system and manufacturing industries into gas for decades to come. Transitioning then requires stranding assets. Similarly, new gas heaters and hot waters systems in our homes and businesses will last a decade at least. This means that if we build gas infrastructure and install new gas appliances we miss the opportunity to install renewable energy and new efficient electrical appliances. To do so on the basis of temporarily low gas prices is misguided.

Efficient electrical systems for heating our households and businesses, heating hot water and cooking are already cheaper than gas and far less polluting.<sup>11</sup>

Programs to support installation of electric hot water, heating and cooking, and home energy efficiency, would provide work while reducing gas consumption and saving households money on energy bills.

## UNDERMINING MANUFACTURING

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The last decade has shown that when the Australian manufacturing industry is reliant on gas it is held to ransom by the market power of big global companies that can keep prices high

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<sup>9</sup> CSIRO and AEMO (2018) *GenCost 2018, Updated projections of electricity generation technology costs*, <https://www.csiro.au/en/News/News-releases/2018/Annual-update-finds-renewables-are-cheapest-new-build-power>

<sup>10</sup> OpenNEM (2020) *OpenNEM*, <https://opennem.org.au/energy/nem>

<sup>11</sup> Lombard and Price (2018) *Gas versus electricity: Your hip pocket guide*, <https://renew.org.au/renew-magazine/efficient-homes/gas-versus-electricity/>

because they have the option of exporting the gas overseas. Santos is has even claimed that high domestic gas prices was an intentional consequence of its plans to export

There are now commercially available electrical alternatives to gas that can be run off renewable energy for almost all industrial uses.<sup>12</sup> While these require capital expenditure to replace existing gas systems, manufacturing systems need to be replaced over time. Replacing old gas systems with often vastly more efficient electrical systems will often mean large energy and cost savings. In many cases, even when the cost of replacement is factored in, the additional costs are paid back over a short period of time through reduced energy costs.

One example is replacing industrial gas hot water heating with electrical heat pump systems. Many industrial process require hot water. Electrical heat pumps for heating hot water are usually far more efficient than gas. The energy savings and payback period depend on many factors including the relative efficiency and capital costs of new equipment, as well as gas and electricity prices.

A recent study by Beyond Zero Emissions with extensive industry input found that the payback period for replacing a 2 megawatt (MW) gas boiler with an electrical heat pump was under 2 years.<sup>13</sup> The same study details numerous global examples with energy savings of up to 70%, energy cost savings of up to 50% and payback periods under 5 years.<sup>14</sup>

There are many similar examples for replacing other types of industrial gas use. Despite very low gas prices in the US relative to Australia, one manufacturing company replaced its gas furnace with electrical induction heat treating devices leading to cost savings of up to 30% which paid for the initial investment within one year.<sup>15</sup>

While shifting from gas to electrical systems saves energy costs, and often makes commercial sense with short payback periods, the upfront investment remains a barrier for many companies.

However with unprecedented low borrowing costs, the Australian government is in an unprecedented position to overcome such barriers, and reducing energy costs for Australian manufacturing for decades to come.

Some of the largest industrial gas users are already switching to renewable energy for their electricity to avoid high wholesale costs caused by historically high gas prices and policy

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<sup>12</sup> Beyond Zero Emissions (2018) *Electrifying Industry*, <https://bze.org.au/wp-content/uploads/electrifying-industry-bze-report-2018.pdf>

<sup>13</sup> Lord et al (2018) *Electrifying Industry*, table B1.2 P.53, <https://bze.org.au/wp-content/uploads/electrifying-industry-bze-report-2018.pdf>

<sup>14</sup> Lord et al (2018) *Ibid.* Table B1.3 P.56.

<sup>15</sup> Lord et al (2018) *Ibid.* P.63.

uncertainty. Zinc refiner Sun Metals is building a 125MW solar farm in North Queensland,<sup>16</sup> while steel giant BlueScope turning to solar to supply 20% of its electricity to reduce costs and provide certainty. Liberty Steel in South Australia are planning 1 GW of solar with battery storage.<sup>17</sup>

Recovery funding assistance provides Australian manufacturing with a unique opportunity to shift to electrification of many processes, providing clean, efficient, cheaper and more reliable alternatives to gas. If the Government locks Australian industry into dependence on this outdated fuel, on the basis of a temporary fall in gas prices, it will undermine Australian manufacturing for decades to come.

While the Australian government has touted hydrogen as a new industry that can help reduce emissions, this is only possible if it is made with renewable energy. It is encouraging to see some funding to developing renewable powered hydrogen production. However the government is focusing on hydrogen made from gas, for example in fertiliser or explosives manufacture. This approach risks locking in high costs and high emissions. Instead the focus should be on developing Australia's hydrogen industry as a world leader in renewable electrolysis.

## GAS INDUSTRY TAX AVOIDANCE

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Recovery money spent subsidising global oil and gas majors operating in Australia is likely to go largely to these companies' profits with little return to Australians.

As shown in table 1 below, few oil and gas companies operating in Australia pay any tax at all in Australia, despite many having multi-billion income from the sale of Australian gas. The tax avoidance activities of many of these companies is well documented.<sup>18</sup>

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<sup>16</sup> Vorath (2018) "No need for new coal:" Sun Metals formally opens solar farm in "George" town, <https://reneweconomy.com.au/no-need-for-new-coal-sun-metals-formally-opens-solar-farm-in-george-town-26798/>

<sup>17</sup> Parkinson (2018) *Steel giant BlueScope turns to solar with major PPA deal*, <https://reneweconomy.com.au/steel-giant-bluescope-turns-to-solar-with-major-ppa-deal-37396/>

<sup>18</sup> Butler (2019) *ATO slugs Shell with \$755m bill in fight against multinational tax avoidance*, <https://www.theguardian.com/australia-news/2019/aug/25/ato-slugs-shell-with-755m-bill-in-fight-against-multinational-tax-avoidance>, Long (2017) *US oil giant Chevron faces \$300 million tax bill after ATO court victory*, <https://www.abc.net.au/news/2017-04-21/chevron-faces-massive-tax-bill-after-ato-court-victory/8460874>

**Table 1: Income and company tax paid by oil and gas companies in Australia 2017-18**

Company	Total income \$	Taxable income \$	Tax paid \$
WOODSIDE	6,287,256,902	1,284,636,699	0
SINOPEC	146,793,949		0
SANTOS	3,498,043,596		0
QGC	3,654,901,100		0
PETRONAS	2,018,272,595		0
ORIGIN	15,482,360,310	296,935,791	74,221,447
KOGAS	492,005,773		0
CONOCOPHILLIPS	1,083,135,954	102,041,668	0
CNOOC	1,358,578,247		0
CHEVRON	5,274,287,486		0
ARROW ENERGY	617,108,317		0

Source: ATO (2019) *Corporate Tax Transparency*, <https://www.ato.gov.au/business/large-business/corporate-tax-transparency/>

## HIGH EMISSIONS

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Claims that gas reduces emissions presuppose that the gas displaces coal. But new coal plants are no longer commercially competitive, and in Australia the federal government is opposing the closure of coal fired power plants.<sup>19</sup>

Viewed in terms of energy transition scenarios consistent with solving climate change, increased gas infrastructure displaces renewable energy and storage, not coal. Similarly, gas used for heating houses, hot water and even many industrial uses displaces far cleaner electrical alternatives that can be run off renewable energy.

Even in the narrow and largely irrelevant case of a comparison of coal and gas emissions for electricity generation there are significant questions about whether gas has a significant emissions advantage over coal. Natural gas is largely made up of methane which is a very powerful greenhouse gas. If small amounts of methane leak into the atmosphere through mining, processing or transport of gas, the emissions impacts increase. It is thought that gas has no benefit over coal for electricity production if methane leakage exceeds 3.2% of total production.<sup>20</sup> Atmospheric testing on methane emissions above onshore gas fields in the US has found levels of 2-17%.<sup>21</sup> Any emissions advantage of gas over coal is even less where the

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<sup>19</sup> Verrender (2020) *The future of coal has already been decided in boardrooms around the globe*, <https://www.abc.net.au/news/2020-01-28/why-finance-is-fleeing-fossil-fuels/11903928>

<sup>20</sup> Alvarez et al (2012) *Greater focus needed on methane leakage from natural gas infrastructure*, <https://www.pnas.org/content/109/17/6435>

<sup>21</sup> Forcey et al (2016), *A review of current and future methane emissions from Australian unconventional oil and gas, production*,

gas is exported as Liquefied Natural Gas (LNG) because of the large energy use to process, liquefy and transport the gas.

As such, more gas increases not decreases emissions.

Carbon budget analysis shows that most existing fossil fuel reserves must remain in the ground if we are to keep global warming below 2 degrees, let alone 1.5 degrees. Any new fossil fuel developments are incompatible with these targets.<sup>22</sup>

The International Energy Agency (IEA) *Sustainable Development Scenario* shows how to secure economic growth, universal energy access and success under the Paris Agreement. It means we stop the gas boom and reduce gas used out to 2040.<sup>23</sup> Yet as the United Nations Environment Report shows, Australian and global plans for gas expansion are grossly inconsistent with climate goals.<sup>24</sup> Instead, as the IEA shows, there needs to be an enormous expansion in renewable energy and storage.

The same finding is made clear in AEMO's draft Integrated System Report (ISR). The ISR scenarios that see deep cuts in emissions in the National Electricity Market, implemented with policies and planning to deliver the lowest costs, would see gas used fall to near zero levels.

If recovery funding is spent on building new gas infrastructure now, it will lock in emissions for decades to come and lock out zero-emissions renewable energy.

## OUT OF STEP WITH GLOBAL LEADERSHIP

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While the Australian government appears enthusiastic about a recovery involving more fossil fuels, many other nations and international agencies are calling for the opposite.

- 17 EU Environment Ministers have signed a joint opinion piece stating the “European Green Deal must be central to a resilient recovery after Covid-19”.<sup>25</sup> The Green Deal

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<http://climatecollege.unimelb.edu.au/files/site1/images/20161026%20Review%20of%20Methane%20Emissions.pdf>

<sup>22</sup> Steffen (2018) *Unburnable Carbon: Why we need to leave fossil fuels in the ground*,

<http://www.climatecouncil.org.au/uploads/a904b54ce67740c4b4ee2753134154b0.pdf>

<sup>23</sup> Moreover, the scenario includes high use of Carbon Capture and Storage. If the failure of this technology to date is instead assumed to continue, gas use will need to fall be even further.

IEA (2019) *WEO Gas Outlook by Scenario*, <https://www.iea.org/reports/world-energy-outlook-2019/gas#outlook-by-scenario>

<sup>24</sup> UNEP (2019) *Production Gap 2019*, <https://productiongap.org/2019report/>

<sup>25</sup> Climate Home (2020) *European Green Deal must be central to a resilient recovery after Covid-19*

<https://www.climatechangenews.com/2020/04/09/european-green-deal-must-central-resilient-recovery-covid-19/>

includes a wide range of measures to boost clean energy investment and also proposes border taxes on high carbon imports.

- The recently elected South Korean government will implement a ‘Green New Deal’, including an end to public funding of coal, new clean energy investment, a carbon tax, and an authority to manage the transition out of coal.<sup>26</sup>
- Presumptive US Democratic Presidential nominee Joe Biden has called for US Covid19 recovery funding to include a ‘Green New Deal’ to also tackle climate change.<sup>27</sup>
- The International Monetary Fund has called for any government bailouts or other recovery programs to include conditions requiring decarbonisation, carbon risk disclosure, subsidy phase outs and as well as substantially higher carbon prices.<sup>28</sup>
- The head of the International Energy Agency has called for green stimulus, saying there is a “historic opportunity” to “use the current situation to step up our ambition to tackle climate change.”<sup>29</sup>

Such statements stand in stark contrast to the focus so far of the Australian government on increasing the production and consumption of fossil fuels.

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<sup>26</sup> Farand (2020) *South Korea to implement Green New Deal after ruling party election win*  
<https://www.climatechangenews.com/2020/04/16/south-korea-implement-green-new-deal-ruling-party-election-win/>

<sup>27</sup> Jacobs (2020) *Joe Biden slams coronavirus bill over lack of progressive policies*  
<https://nypost.com/2020/03/26/joe-biden-slams-coronavirus-bill-over-lack-of-progressive-policies/>

<sup>28</sup> Monteiro (2020) *Nations Must Promote ‘Green Recovery’ From Virus, IMF Chief Says*  
<https://www.bloomberg.com/news/articles/2020-04-29/nations-must-promote-green-recovery-from-virus-imf-chief-says?sref=gPAG2MJ8>

<sup>29</sup> Farand (2020) <https://www.climatechangenews.com/2020/03/17/governments-historic-opportunity-accelerate-clean-energy-transition-iea-says/>

# Conclusion

Recovery spending from the Covid 19 Crisis must primarily be aimed at providing jobs. As such it is essential that it is invested in job intensive industries that will actually provide a significant amount of jobs for the money invested. If it doesn't, it fails in its primary purpose. The gas industry is one of the least job intensive industries in Australia

The recovery spending also provides a once in a generation opportunity to undertake projects that provide lasting benefits to Australia. This is even more so with record low interest rates.

Australia's manufacturing industry is currently very dependent on gas. As has been amply demonstrated over the last decade, this dependence on gas results in high energy costs and an insecure supply of energy.

Fortunately, there are many commercially available electrical alternatives to for manufacturing processes, many of which have far lower energy costs than gas and short payback times for the required capital expenditure. However, the initial capital expenditure still remains a barrier for many companies.

Covid 19 recovery stimulus spending provides a once in a generation opportunity for Australian governments to assist Australian manufacturing to upgrade its plant and equipment to far more efficient and lower cost electrical systems.

If our governments take the initiative, Australian manufacturing will permanently lower its energy costs and significantly increase our competitiveness globally.

These processes can be run off renewable energy, achieving very large emissions reductions and tackling global warming which remains an existential threat to Australia, far greater even than the pandemic over the longer term.

If our recovery spending is squandered on subsidising the gas industry, we will gain few jobs, lock in high energy prices and emissions for Australian manufacturing for decades to come, and miss a once in a generation opportunity to reduce emissions and tackle global warming.